THE
WORLDWIDE
GEOGRAPHIES

BY

JASPER-HSTEMBRIDGE

BOOK. III

EXPLOMNG.THE
BRITISH- ISLES

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The World-Wide Geographies

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PREFACE

THIS series of Geography Books owes its origin to a visit of some Staffordshire Headmasters to Denstone College, —a visit organised by Dr. A. Platts, M.A., one of His Majesty's Inspectors of Schools. Some of the visitors were interested in the Geography Room and in the School Geography Course, and they were kind enough to express a wish that I should expand my own Geography notes into a series of books covering the Junior School from seven to eleven and the Senior School from the latter age to fifteen.

Books I and II of the Junior Series tell in very simple language stories of other peoples and other lands. They describe the life led by folk who live under differing conditions in many parts of the world.

In addition to distinctive illustrations, photographs of simple models are given. These models were made originally by children working as a class, or in small groups, or as individuals.

In Book I I I the Study of the British Isles starts with the Home Region. The making of Relief maps, the use of Ordnance Maps, simple weather observations, etc., and a continuation of easy practical work, all contribute towards a sound geographical outlook. These principles are continued in Book IV which describes the World.

PREFACE

The foundations having been laid in the Junior books, the World is treated in the Senior series, Books V to VIII, on a systematic *Regional Basis.* Though no important area is neglected, yet special attention is paid to the British Empire and to its place in the World.

This is the third book of the series. For assistance and advice in connection with the chapters on Ireland, I am much indebted to Viscount Gharlemont, the Minister of Education for Northern Ireland, and to Mr. W. Welply, Chief Inspector of Schools. I should also like to thank Mr. F. L. Freeman, M.A., Secretary to the Southampton Education Committee; Mr. H. L. Fletcher, M.A., of the Leeds Educational Staff, and Mrs. Fletcher; and Mr. H. L. Little, M.A., for the help that they have given me in various ways.

In this, the fifth impression, a few corrections have been made, and I express my thanks to those friendly critics to whom they are due.

J. H. S.

Denstone College,
Staffordshire.

CONTENTS

ELY CATHEDRAL

The building of Ely Cathedral was begun nearly a thousand years ago. The little city itself stands on ground which rises slightly above the fens. At one time the district round Ely was an island, surrounded by marshes, and it was on this island that Hereward the Wake held out against the forces of William the Conqueror.

I. EXPLORING AT HOME

You know something about the life [1] led by the savages who dwell in the hot forests near the equator; and you know how different is their life from the life of people who live in the cold countries, such as Greenland. You have seen pictures of an oasis, and of a caravan crossing a desert; and perhaps you have seen a film that shows you life and work and play in other parts of the world.

All these stories and pictures that tell about other lands, and about the people who live in them, are part of *Geography*. But they are only one part. Another part of Geography begins at your own doors.

You cannot all go to explore foreign lands; and though some of you may one day travel about the world, you can never hope to see the whole of it. You can, however, try to explore your own district. By observing for yourselves, you can each learn something of the district round your home and your school. This part of Geography is a very important one. If you know your own home district, and if you learn something about your own county and country, it will help you better to understand other parts of the world and the peoples who live there.

You will perhaps say: "Oh! I know all about my own village, or my own town"—but do you? Have you ever walked right around your village or your town? Do you know where the highest point is, within easy distance of your school? How high is this point above sea level?

Perhaps there is a river flowing through or near the town or village in which you live. Do you know where this river

[1] See Books I and II of this Series.

rises? Can you say into what sea its waters fall? Do you know how many bridges there are over this river within a given distance? Can you say where are the fords or shallow places?

If you live in a small village, perhaps your water is drawn from a well. Nowadays, however, most towns and many villages have a proper water supply. Do you know where the nearest waterworks are? How many villages and towns do they supply? If you go for a picnic, are you able to find the nearest spring that yields good drinking water?

Perhaps there are some quarries near your school. If there are, do you know if they have supplied the stone for any of the buildings in the neighbourhood? Are there any coal or other mines near your home? If so, have you ever visited them?

What is the oldest building in your village or town? It is probably the church—do you know how old it is? Why is it that when one is approaching a town or village, the church is often the first building that one notices? Have you ever climbed to the top of a church tower? It is usually the best place from which we can get a view over the country-side.

§2

Could you sit at your desk and draw a very simple map of your village, or of the part of the town around your school? Fig. 1 shows some of the chief signs used on the one-inch Ordnance Map. It is a good thing to know these signs, for they will help us not only to make our own maps, but also to read others. The whole of the British Isles has been mapped, and Ordnance Maps can be obtained for every district. Everyone should be able to read such a map. If you have one of your own, you should take it out with you when you go for a walk.

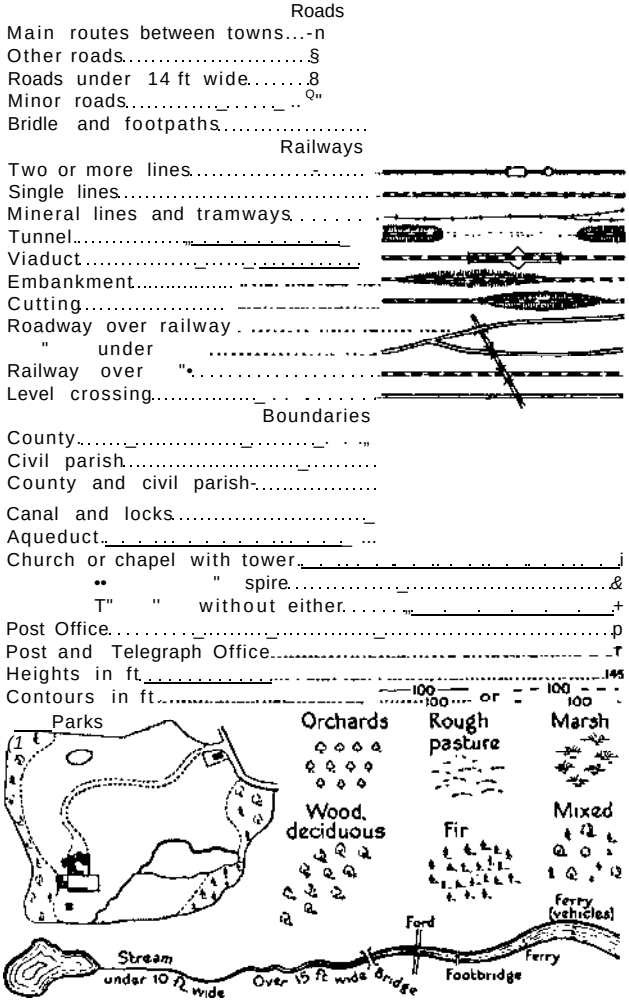

FIG. I.—ORDNANCE SURVEY MAP SIGNS

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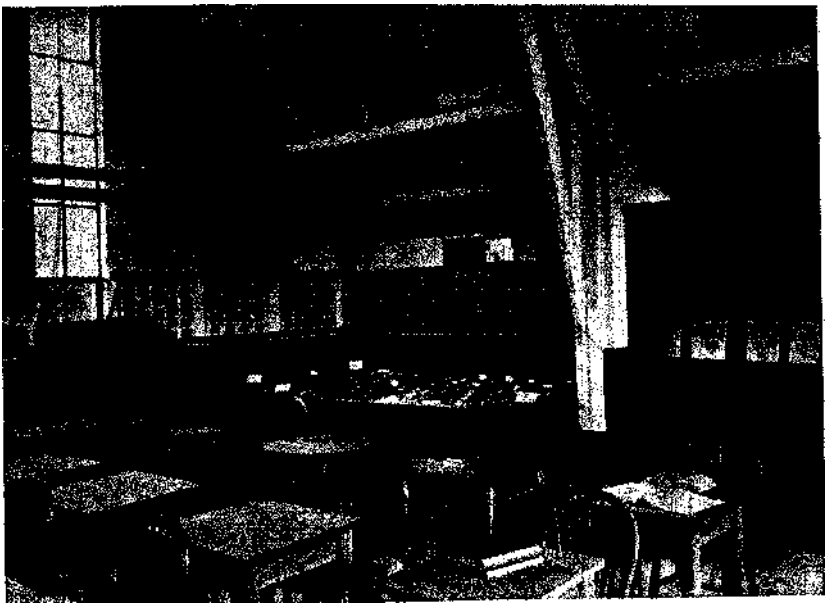


FIG. 2.—GEOGRAPHY ROOM

It will help you to learn all kinds of interesting facts about your own neighbourhood.

You will discover quite a lot in this way, and what you learn for yourself when you are exploring your own district is of more real value than what is taught you by other people. There have been many great explorers, both men and women; all of them have learned to observe things for themselves, and to depend to a large extent on their own efforts.

Now when we begin to think about these things, we are most of us very much surprised to find out how little we really know about our own neighbourhood. In fact, many of us could not say at once (though we see it every day) what is the length and

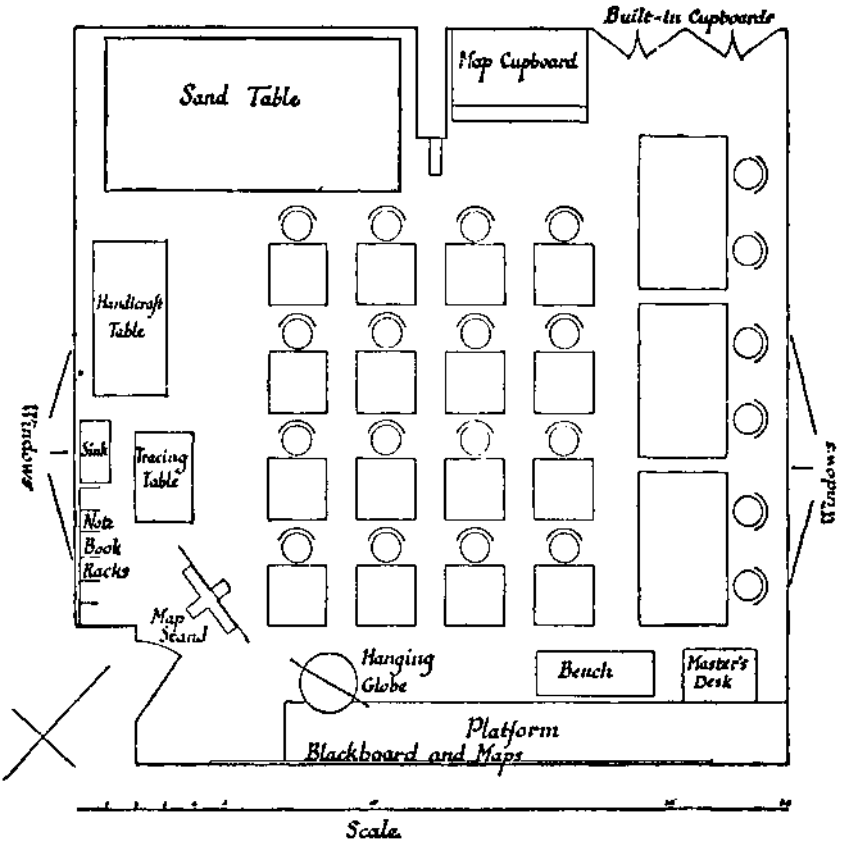


FIG.3.—MAP OF GEOGRAPHY ROOM

breadth of our classroom—a useful thing to know as a standard of measurement and size. Perhaps, therefore, one of the best ways to start our work, of exploring at home, is to learn something about our classroom and our school.

On the opposite page you will see a picture of part of a room that is used for the teaching of Geography, Facing the picture

is a *map* of the same room. You should compare the map with the picture, and when you have drawn a map of your own classroom, you will be able to compare it with the classroom itself.

At the present time, people are beginning to realise how very good sunlight is for everyone. We all know how much jollier a sunny day is than a dull, cloudy one. Yet how many of us can point to the direction in which the sun rises and to that in which it sets? The sun rises in the east and sets in the west. If, therefore, we know where the sun rises and where it sets, we shall know which is the east and which is the west..

At the end of this chapter there is explained a simple way of finding the north by means of the sun.

When you have learned how to find the chief points of the compass, then you can start to make a simple map of your district. You might, first of all, draw a map of your playground, or of a field; and then you can make one of your village, or of the whole or of a part of your town.

3While you are exploring your village or town, you will probably find out many interesting things about it.

Can you find the remains of the old *pound*—a square or round brick enclosure, where cattle and horses, found straying at large, were impounded or shut up till the " pinder " or pound-keeper discovered the owner and fined him for his negligence Perhaps your village has were paid at a gate, the money being used for the repair of the road.

Is there an old mound with a " fosse " or ditch round it, thrown up centuries ago by some of the earliest inhabitants of your village—British, Saxon or Dane ?

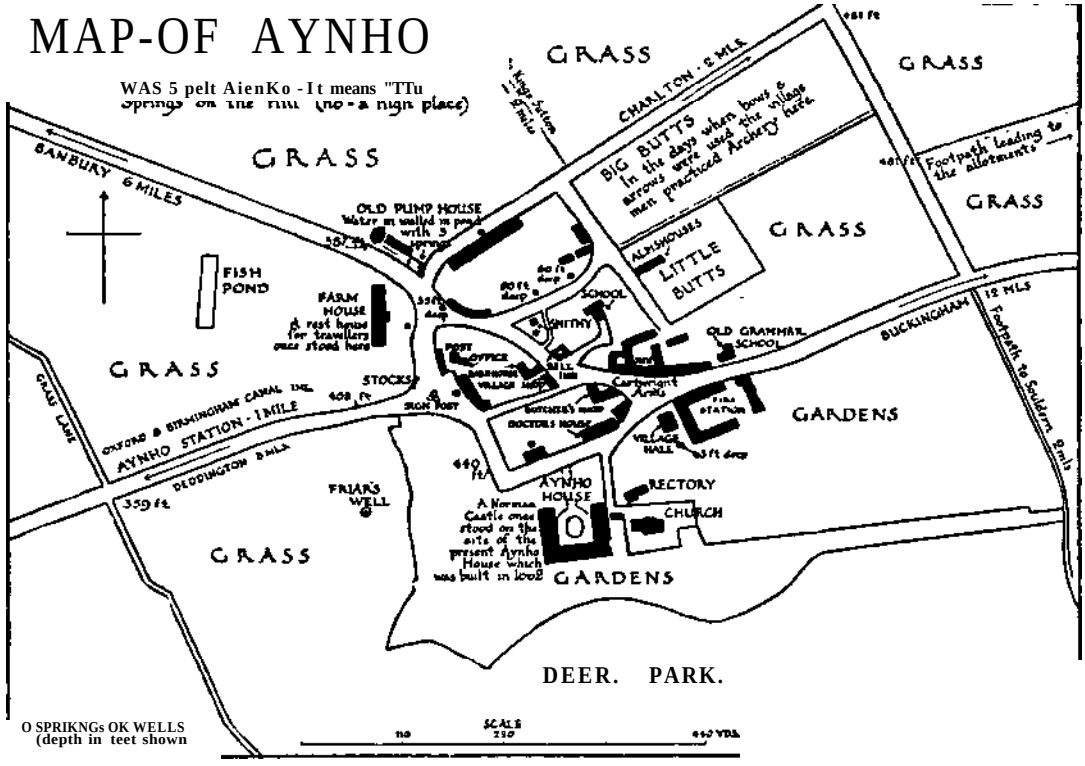


FIG. 4.—MAP OF AYNHO

All the houses in the village are built of stone which was quarried near the village. The timber used in the houses was grown in the district. The straw from the wheat was used to thatch the cottages.

Are there the remains of a Roman villa or road or camp? Or of a monastery, built in the Middle Ages? Or is there a Grammar School, endowed possibly in the days of the Tudors and perhaps still a well-known school?

Do you know the names of any of *the fields* of your village?—for almost every field has its own name, as you will discover if you inspect an old Tithe Map, often preserved in the village chest in the church. Some of these names are very interesting—as Bury field, containing the " bury " (burgh or fort or mound) which defended the village ages ago. And where were the old *roads* in your village or town? When and where was the *railway* made, and why was it made there?

The simple map of the village of Aynho was made by a Boy Scout with the help of the 6-inch Ordnance Survey Map. He was camping with his troop near the village. Many of the scouts became much interested in its history, and so they tried to learn something about it during the time that they were staying there. In Aynho the old road from Banbury came up a steep hill to the Bell Inn. The modern road passes in front of Aynho House. In the village there still remain the old stocks. In olden days people who did not behave properly were placed in the stocks for punishment. This must have been very unpleasant for them, for all kinds of people came to stare and to make jeering remarks.

§4

The people who live in a village or town make their living in many different ways. In the villages many people work on farms, while in other districts people work in factories or in mills. Even the smallest village usually has a post office, an inn, a shop, and a church. There is probably also, if the district

is a farming one, a smithy, where the farmers send their horses to be shod, and where repairs are done to the various machines used on the farms.

In the market towns there are different kinds of shops, and there are also garages and banks, as well as a townhall, a police station, and a fire station. Here, too, live the doctors and the lawyers. Most of the roads of the district lead to the market town, and along them come, on market days, the farmers and country folk on their way to the market where they can buy and sell their goods.

In villages and towns by the sea, the people are often fishermen, or they spend their time looking after the wants of visitors. But whatever people do, there is a reason for their occupation. In your own village or town, try to find out what most of the people do and why they do it. Explorers do not simply learn about places, but they also learn about the way people live and what they do for a living. When you know something about your village or town, you can then try to discover something about your county.

It is a good plan to get an exercise book in which you can paste pictures of places and things, and keep a record of some of the things learnt while exploring. This book might be called your *Record Book* or *Log Book.* Such a book will become constantly more interesting as it grows with your exploration.

The exercises and experiments at the end of this chapter will help you to start exploring. As you read this book, which tells you about our islands, you will find that there are many other parts of the country which, in some way or other, are very like your own part.

Your teacher will always be ready to help you in your exploration; but you must remember that if you are going to

explore, you must observe and discover things for yourself. You will also find that the more you do for yourself, the more ready other people are to help you.

SUGGESTIONS FOR THE HOME EXPLORER

I . *Map of your desk, room and school,*

(a) How long is the top of your desk? What is its width? Make a map of the top of your desk. Represent each foot by an inch on the paper. Give a name to your map.

(b) Draw another map to represent the top of your desk. Represent each foot by ½| inch on your paper.

(c) How many yards long is the classroom? How many yards wide is it? Draw a map of the classroom. Represent each yard by | inch on your paper. Show the windows, doors, cupboards and desks on your map. Mark the place where you sit. Give a title to your map.

(d) Make a map of your school in order to show the room where you usually work. Write a title under the map.

2. *Use the plan of the Geography Room shown in Fig,* 3 *in order to answer the following questions :*

(a) What is the greatest length of the room? What is the greatest width?

(b) How long is the sand table? How wide is it? What is its area in square feet?

(c) What is the area of one of the small tables in the centre of the room?

3. *The Sun.*

(a) In what direction does the sun rise? Point to this direction. In what direction does your shadow fall at this time?

(b) In what direction does the sun set? Point to this direction. In what direction does your shadow fall at this time?

4. *How to find the North by the Sun.*

Take a pole and set it upright in the ground. Mark the ends of the shadows cast by the pole at each 15 minutes between 11.30

a.m and 12.30 p.m. (Greenwich Time). Measure the length of each of these shadows and enter it in your notebook.

What do you notice ?— *When the shadow is shortest it is* NOON *by the True or Sun time.*

The direction of the line cast by the shortest shadow is **DUE NORTH.**

In what direction is the sun at this time?

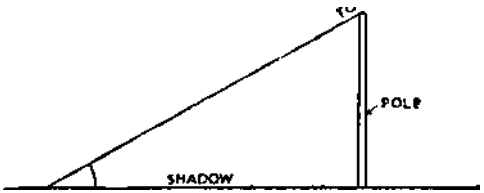


FIG. 5.—How TO FIND TRUE NORTH.

Produce the line cast by the shadow in the opposite direction. Which way will it be pointing?

Draw a line at right angles in order to obtain the east and west directions.

Compare the True Time, as shown by the shortest shadow, with the Greenwich Time, as shown by your watch. What do you notice?

5. *How to make a Compass Card.*

Take a thin piece of cardboard. With the same centre, describe three circles with a radius of 1, $1^1/_4$ and 1½ ins. respectively. Divide the circumference of the outer circle into 16 equal parts. Complete the diagram as shown in the figure. Cut carefully round the outer circle. You have now a Compass Card.

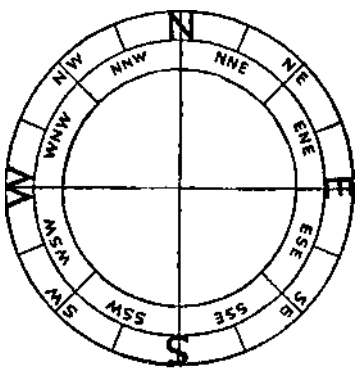


FIG. 6.—A COMPASS CARD

6. *More Maps.*

(a) From some given point take 20 strides. Measure the distance taken. Divide this length by 20. This will give you the length of your average stride.

(b) Make a rough map of the playing-field or the playground.

Measure the length of the boundaries by striding, and enter these lengths on your map. Now calculate the length of each side, and make a more accurate map by using a suitable scale. Give a title to your map.

(c) Either—Draw a simple map of your town or village. Show the position of your school. Give the map a title. (See the map of Aynho.)

Or—If you live in a large town draw two maps :

(i) To show your journey from your home to school.

(2) To show the district around your school.

(d) Suppose that someone who is arriving by rail wishes to visit your school. Draw a map to show him how to get to the school from the station. Write a suitable title under the map.

7. Tell what you can of the history and geography of your own town or village. If you can, consult the Ordnance Map and also an old Tithe Map (your teacher may know where one can be seen).

2. MORE ABOUT MAPS

WHAT interesting things maps are! If we know how to read a map, what a great deal we can learn from itl A clear map will often tell us more about a district or a country than many pages of a book.

From the earliest times maps have been used, and indeed some of the early maps were very strange indeed. At the present time many kinds of maps are made. In addition to the ordinary maps showing the surface and the names of places, there are in many atlases maps that show the rainfall of a country; the pasture lands and the wheat lands; the kinds of rocks; the parts where *many* people live and those parts where there are *only jew* people. These are, however, just a few of the many kinds of maps that are made.

What a tiny place our own Islands look on a map of the World; and how small even the great city of London appears on a map of the British Isles! Yet there are whole atlases about the British Isles, and whole maps of London.

While we have been exploring our own district, we have probably used maps that tell us many things about the places around our home. The *one-inch ordnance map* not only shows us the towns and villages but also the churches, the post and telegraph offices, the roads and the railways, and many other things of interest. The *six-inch maps* give us even fuller details.

Perhaps we have made a *model* of a hill or of a valley; or we may even have made a larger model of part of our own district, or of our town or village. Such a model, or *relief map* as it is called, may show the rivers and the roads; and it also makes the high ground show higher than the low ground instead of the whole surface being level, as on an ordinary map.

When we come to think about the many maps that we can see, we shall realise that there are many ways of showing *height* on a map. In some of those that we have drawn for ourselves, we have probably shown the high land either by shading it, or by colouring the different heights by means of paints or crayons.

§2

Suppose that we take a lump of clay, or a piece of plasticine, and make from it a *model of a hill.* If this hill were 600 feet high, we might represent each 100 feet by half an inch on our model. Thus when we had finished it, our model hill would be 3 inches high.

Now let us put our model in a dish or tin, and let us flood

this dish or tin with water to a depth of half an inch. Next let us draw a line around our hill at the level of the water. We will continue to fill the dish with water until a depth of one inch is reached. Then we will again drawn a line round our hill at water level. Let us continue this process at 1½ inches, 2 inches, *2½* inches and 3 inches, until the model is completely covered with water.

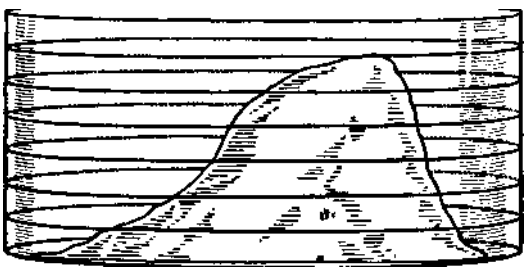


FIG. 7.—MODEL IN TANK

We might then take the model out of the dish. Let us look down on it just as we might look down on a real hill from an aeroplane; and let us draw on paper the lines as they appear on our model. In doing this, the best way to start is to put the model on our paper and then make a tracing around its base; the rest of the lines will then be quite easy to draw.

When we have finished drawing the lines, we shall have made a *map of the hill* on our paper.

This map which we have made is called a *contour map;* and the lines that we have drawn to show the various heights are known as *contour lines.*

At the end of this chapter are some other easy experiments which we can carry out for ourselves either at school or in our own homes. These will show how easy it is for us to make contour maps for ourselves.

When we have made one or two contour maps, we might try not only to show the heights above sea level by means of contour lines, but we might also, on the same map, try to show

how far it is from the east of the map to the west, and also how far it is from the north to the south.

When we have been using our ordnance maps for our home explorations, we may have noticed that there are contour lines marked on them. Now we must look for something else as well as the usual ordnance signs that tell us so much about the district around our homes.

For instance, suppose that we are going to explore a fresh bit of country: we shall perhaps plan out our route, by the aid of a map, before we begin our journey. By looking at the contour lines, we shall be able to tell whether our walk is to be over hilly ground or over flat ground. We may perhaps see a contour line crossing a road at 300 feet, and soon another line which cuts the road at 400 feet. So here, we know before we start, we shall have a fairly steep hill to climb. What is the steepest hill near your school? Can you find it on the map of the district?

It is very jolly to work out our way beforehand, and then to compare it with the actual district as we travel through it.

But we must not always depend on the map when we explore. Sometimes we should try to visit a fresh piece of land, and make our own sketch map from the country itself. Later on we might compare this sketch map with the Ordnance Map. We shall probably find that our map is rather different. We may have made some mistakes, but we may also have some things marked on our map, such as new buildings, which are not shown on the Ordnance Map.

In this way we shall be constantly learning about our own district, and we shall be able to compare it with other parts of our islands and even of the world. Many people are only just beginning to realise how very important it is for us to learn about

FIG. 8.—PHOTO OF RELIEF MAP OF DENSTONE

the world in which we live. At one time people thought that geography was not very important, and that it really did not matter whether we learnt it or not. But the more we explore, and the more we learn about our own neighbourhood and county and Empire as a whole, the more we shall realise how important a subject geography really is.

The Relief Map of Denstone village and district was made by the boys and girls of the Elementary School, and nearly every boy and every girl in the Upper School helped to make it. Their fathers and mothers helped them by telling them what they knew about the village; so that a very great number of people in this little village, both young and old, assisted in making the map, and thus took some part in the exploration of their own district.

We may encourage other people to take an interest in the exploration of the neighbourhood round our home, and we shall certainly meet many people who will be able to tell us a great many interesting facts about our own and other places. Nothing will prove a greater help to us than our maps.

EXERCISES IN MODEL AND CONTOUR AND ORDNANCE MAPS

I. Make a model in clay or plasticine of a hill 500 feet high. Let ½ inch represent 100 feet. Place the model in a dish or tin. Fill the dish with water to a depth of ½ inch. Draw a line round

ft)

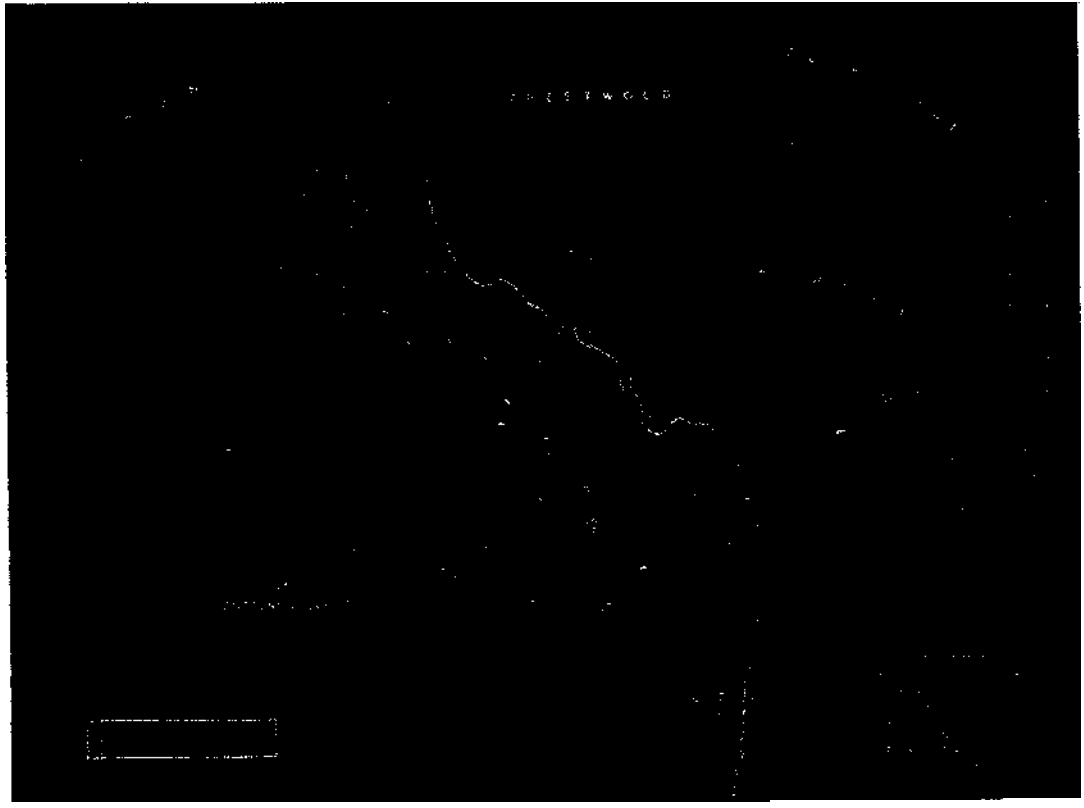


FIG. 9—RELIEF MAP OF DENSTONE AS AN AIRMAN WOULD SEE IT

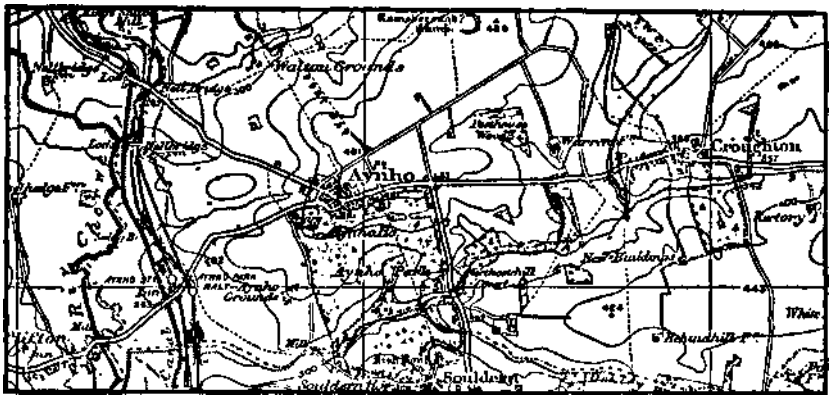


FIG. 10.—I" MAP OF THE DISTRICT AROUND AYNHO

Reproduced from the Ordnance Survey Map with the sanctum of the Controller of H.M. Stationery Office.

the model at water level. Fill the dish to a depth of I inch. Draw another line round the model at water level. Continue to do this for each ½ inch until the model is completely covered. Now, looking down on the model, draw on paper the lines as they appear on it.

2. A hill is 4 miles long from east to west and 2 miles broad from north to south. It is about 400 feet high. Make a model of the hill. Let every mile on the ground be represented by 1 inch on your model. Let every 100 feet of height be represented by ½ inch on your model. After you have made your model, place it in water, as in the previous experiment, and draw lines round it for every ½ inch. Reproduce these lines on paper and thus make a contour map.

3. Make a model of a *pass,* about 400 feet high, with hills on either side rising up to 800 feet. Let every 100 feet be represented by ½ inch on your model. When you have made your model proceed as in the previous experiments.

4. Find the village of Aynho on the i-inch Ordnance Map in Fig. 10. Where is the nearest river? What is its name?

How far are the following villages from Aynho:—Clifton, Souldern, Croughton? Has the church at Souldern a tower or a spire? How far is it to motor from this church to Aynho station?

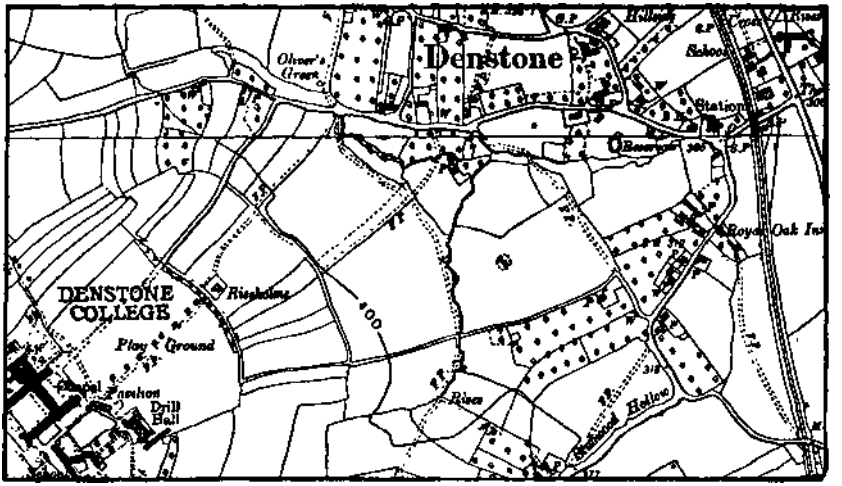


FIG. 11.—6" MAP OF DENSTONE

Reproduced from the Ordnance Survey Map with the sanction of the Controller of H.M. Stationery Office.

5. Compare the Relief Map (p. 23) of Denstone with the portion of the 6-inch map which is shown.

Where is the lowest ground? Which is on higher ground, Denstone College or the village school? How far is it by road from Denstone College to Denstone Station?

3. THE WEATHER—MOUNTAINS, CLOUDS, AND RAIN

MOST of the high land in Great Britain lies in the west. In Scotland the mountains are broader than they are in England.

The eastern lands are lowlands, but these lowlands are, on the other hand, broader in England than they are in Scotland.

In Ireland there are not such high mountains as there are in Great Britain. A broad plain stretches from the east coast,

across the central parts of the country, towards the base of the hills which fringe the western coastline. To the north and to the south of this plain lie mountains, but they are not so continuous as the mountains of Northern Scotland or of Wales.

The mountain districts are the wettest parts of the British Isles, while the lowlands of the east receive much less rain.

If we were to place some water in a saucer, and leave it for a few days, we should notice after that time that the water had dried up. It has disappeared into the air. When moisture passes into the air in this way, *evaporation* is said to take place. All air contains a certain amount of water vapour.

If we were to take some ice and to put it in a glass jug, the outside of the jug would become cold. We should soon notice that this cold outside had become wet. Where has this moisture come from? It has come from the air, for some of the moisture in the air has been *condensed* on the cold surface of the jug. Thus we see that cool air cannot contain as much moisture as warm air.

§3

As the winds pass over the seas or oceans they collect moisture. In fine warm weather we cannot see this moisture, but in cold damp weather it becomes visible in the form of *clouds* or *jog.* When the clouds grow very heavy, the vapour is condensed *(i.e.* becomes liquid) and falls in the form of *rain.*

When the water vapour in the air is condensed at a point below freezing point, it turns into *snow* instead of rain.

Rain and snow come from the clouds, but *hoar frost* and *dew* form on the surface of the earth. When the air near the ground is so full of moisture that it can contain no more, it deposits

some of this moisture on any cool surface. The moisture thus deposited is dew.

When the air is *above freezing point* but cool, dew is formed, but when it is *below freezing pointy* then hoar frost is formed.

The surface of the earth cools more quickly on a clear night than it does on a cloudy night, for the clouds help to check the escape of heat. On windy nights the warm and the cool air mix together and the temperature is more even. If you have cycled or walked on a calm night, you may have noticed warm patches of air. You do not find these, however, on a windy night.

FIG. 12.—A MAP TO SHOW WHICH ARE THE WETTEST AND WHICH ARE THE DRIEST PARTS OF THE BRITISH ISLES

When a moisture-laden wind reaches high land, it rises into higher regions and becomes cooler. As it cannot retain all its moisture, some of this is condensed and falls in the form of rain.

If we look at our globe, we shall see that on the west of the British Isles lies the broad Atlantic ocean. Most of the winds that blow over the British Isles come from the *west* or the *south-west'* and therefore they are moisture-bearing winds. When these reach the high lands in the west, they are forced up the slopes of the mountains and are cooled. As a result of this

cooling, some of the moisture is condensed and falls in the form of rain.

In districts such as Snowdon or the English Lake District, where the mountains are high, the moisture-laden air becomes greatly cooled as it passes up the slopes. Thus such regions as these receive a greater amount of rain than those which are not so high. These westerly winds pass on over the mountains; but when they reach the east of the British Isles, they are fairly dry winds, for they have parted with most of their moisture. Thus they do not bring much rain to the east.

The winds which blow from the *east* are much drier winds than those which blow from the west, for they have come across the mainland of Europe, and have been able to gather up only a little moisture as they passed over the narrow North Sea. Again, the eastern side of England is flat, and there is very little high land to cause the air to rise. That is why the east receives much less rain than the west.

§5

The sea takes longer to heat than the land, but it keeps its heat longer. Thus, in summer the sea is fairly cool and the winds that blow over it are cool winds. In winter, however, the sea is warmer than the land, so that it warms the winds that cross it. We see that in winter the winds which have blown over the Atlantic Ocean help to make our country less cold than it would otherwise be. The winds from the east in summer are not usually so cool as the westerly winds, but in winter they are generally very much colder. Thus the east of the British Isles is much colder than the west at this season of the year.

We should try to observe the weather for ourselves, and watch how it often changes from day to day. If we keep a

DATE	TIME	TEMPERATURE	WIND	STATE OF CLOUDS	WET OR FINE	FROST, ICE OR SNOW. DEW	STATE OF ROADS
9 March	9 a.m.	Mild	S.W.	Rather Cloudy	Fine	—	Muddy

FIG. 13.—WEATHER RECORD SHEET

simple record for a few weeks it will help us to understand the weather signs. Do you know the rhyme about the weather which says?—

" Evening red and morning grey
Sets the traveller on his way;
But evening grey and morning red
Brings down rain upon his head."

Watch the weather and see if this is true.

EXERCISES AND EXPERIMENTS

1. Find on your map the places mentioned here. Write out the summary below and learn what you have written.

Most of the higher land in our islands lies in the west. The winds usually blow from the west or the south-west. They collect up moisture as they travel over the waters of the Atlantic Ocean. When they reach the high land they are forced upwards into cooler regions, and the moisture in them is condensed, so that some of it falls in the form of rain. The wettest parts of our islands are therefore in the west, whilst the drier parts are in the east.

2. At a certain time each day (say 8.50 a.m.) make a record of the weather. Fill in the result of your observations on your *Weather Record Sheet.*

It will probably be easier if one or two of you work together in keeping the record of the weather. You should, however, each keep a separate record of the observations. Try to keep a record for one month during each of the four seasons of the year.

3. At the end of your month's observations, use your sheet in order to fill in the missing words in the following exercise. Underline these words.

" I have kept my record sheet for . . . . . I started on the . . . . . day of . . . . . and I finished on the . . . . . day of . . . . . The weather has been . . . . . on . . . . . days, ... on . . . . . days, ... on . . . . . days and . . . . . on . . . . . days. The wind usually blew from the . . . . . , and it was generally a . . . . . day when this wind was blowing. On . . . . . days there was . . . . . The wind came from the . . . . . when it snowed. There were . . . . . days when the sky was clear for most of the day, ... days when it was fairly clear, ... days when it was cloudy, and . . . . . days when it was very cloudy. There has been rain for most of the day on . . . . . days."

4. Place some stones, bits of wood, pieces of slate, etc., outside. Examine them as early as you can in the morning.

Which substances have usually the most dew on them?

Has the upper or the lower surface more dew on it?

Does dew form under bushes, trees, or shrubs? Why?

Does it form on a clear night? Why?

Does dew form on a very windy night? Why?

5. Make a tracing of the map that shows where there is most rain in the British Isles.

Place this tracing over the map that shows the high land.

Where is the highest land?

What parts of our islands receive most rain?

From what direction do most of our winds blow?

What ocean have they crossed?

Where are the lowest parts of the British Isles?

Are they the driest or the wettest parts?

6. Tell, as clearly as you can, how each of these is formed:—Clouds; Rain; Snow; Frost; Dew.

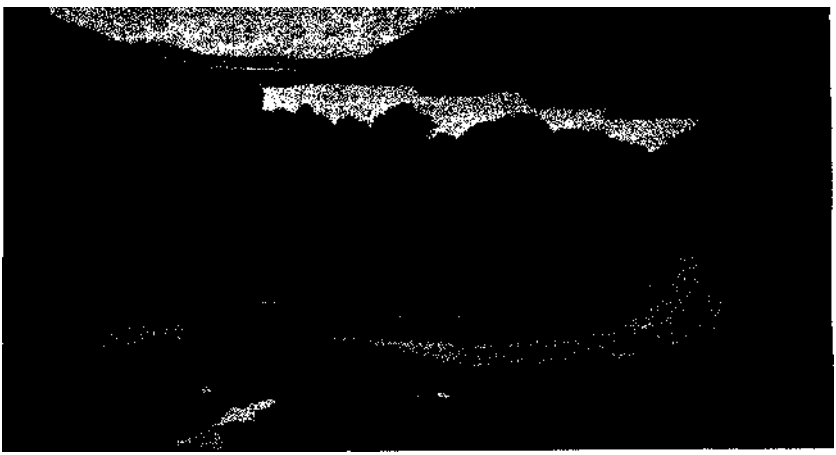


FIG. 14.—THE LAKE DISTRICT—LAKE DERWENTWATER

4. THE PENNINES AND THE LAKE DISTRICT

THE Pennines stretch from the hilly lands of Southern Scotland to the valley of the Trent in Derbyshire. These high lands separate the broad plain of Yorkshire from the narrower plain of Lancashire.

Let us leave these flat plains and make our way up one of the broad valleys that lead to the Pennine uplands on the west. Through the trees we sometimes catch a glimpse of the stone houses of some little village, and above the roofs we shall probably spy the grey tower of the little church.

As we pass from the broader valley into the narrower *dale;* we notice that the sides get steeper and steeper, and that the

trees are beginning to disappear. In time we reach the moorland. As far as we can see, there stretch the high plains, or *plateaux'* which form the Pennine moors. Most of the land is covered with brownish grass, while here and there are clumps of heather, stone walls, or masses of dull grey rock.

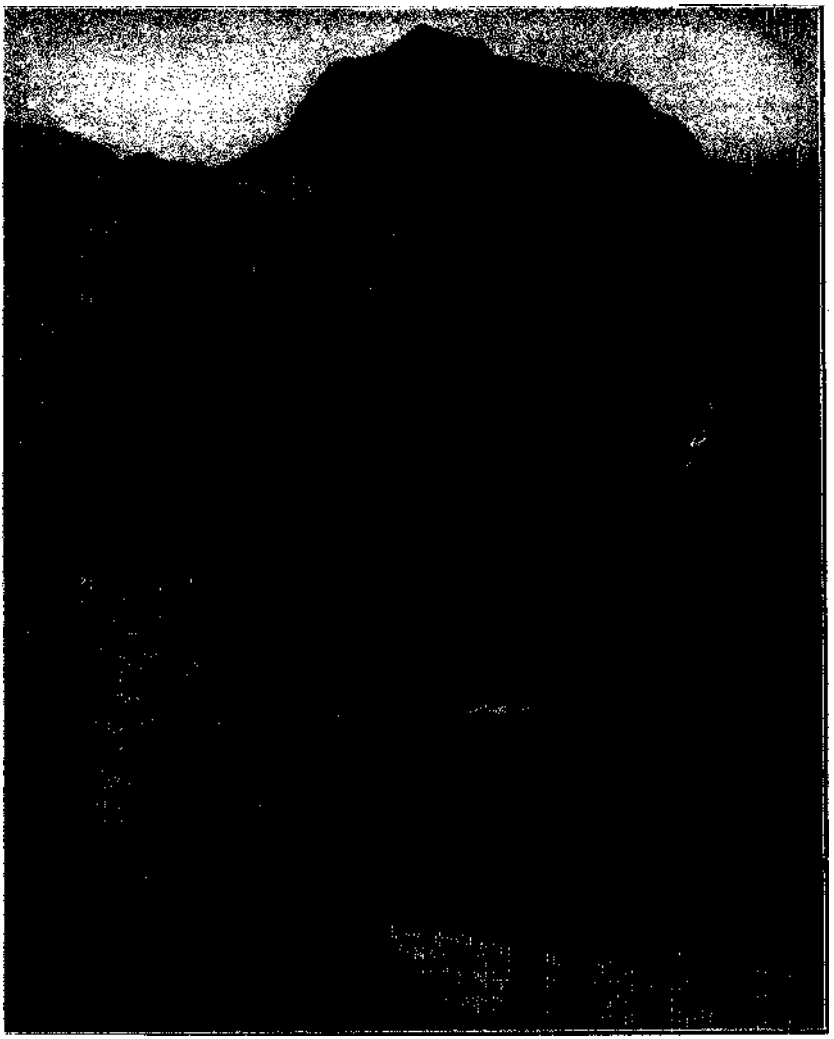
If we follow one of the roads across the moors, we shall notice the gleam of some large sheet of water breaking the dulness of the scenery. Many of these lakes have been made by damming up or blocking the upper parts of the valleys, and the reservoirs thus formed are used to supply water to the busy manufacturing towns that lie on either side of the Pennines.

Manchester, however, obtains most of its water from the Lake District, while Liverpool gets its supply from Lake Vyrnwy in North Wales.

In the north-west, the high ground of Shap Fell joins these uplands to the mountains of the Lake District. Here a rock called *granite* is quarried.

The different parts of the earth's crust are made up of *rocks.* They may be hard rocks like granite, or they may be soft like gravel, and they are composed of many substances called *minerals.*

The Pennine Uplands and the Mountains of the Lake District are made up of different kinds of rocks. Two of the most important which are found in the Pennines are *limestone* and a hard kind of sandstone called *millstone grit.* Both of these rocks are used as building materials, for they are easily worked by the stonemason. Most of the houses in these districts are built of this local stone, which is well suited to withstand the damp and cool climate.



[Photograph by Will F. Tavlue

FIG. 15.—HARRISON STICKLE, LANGDALE, IN THE LAKE DISTRICT

In the Lake District granite and slate are common. *Granite* is much harder than either sandstone or limestone, and it is, as a rule, only used for building materials in the district in which it is quarried. Slate is used generally for roofing houses; but in the districts where it is found, it is often used for building the walls as well as the roofs.

In the Peak District of Derbyshire there is a great deal of limestone. The Derwent and the Dove flow through steep valleys, whose sides have been worn down by the action of water in past ages. In such regions as these, streams sometimes disappear and flow for some distance underground. Wonderful caves, too, have been formed by these underground streams, whose waters have dissolved the limestone rock. In this part of the Pennines there are fine houses and castles, such as Haddon Hall, and they are nearly all built of the grey limestone.

§3

The upper layers of the rocks of which the crust of the earth is composed, are said to " *weather* " to form the soil. It is on this upper layer that plants grow.

Soils are of many kinds. Some are composed chiefly of gravel or of clay, while others are made up mainly of sand. Most soils are, however, a mixture of these and other materials. Some are " warm " and some are " cold." Good soils contain vegetable matter known as *humus.*

In a fertile soil, such as that of the Vale of York, this is worked about by worms and other creatures. In cold wet districts, however, such as the Pennine moorlands, these creatures are absent, and as a result, the vegetable matter does not decay in the same way as it does in more favoured districts, so that *peat*

is found there. Peat is a half-way stage between ordinary vegetable matter and coal.

On the grass lands that cover much of the Pennine moors,

FIG. 16.—THE PENNINES AND THE LAKE DISTRICT

many sheep are bred, and their wool helps to supply the factories of those Yorkshire towns which manufacture woollen goods. In the Lake District the moors are called *fells,* and here too there are many sheep farms.

Photograph by Will F. Taylor.

FIG. 17.—THE PENNINE UPLANDS RISING ABOVE THE EDEN VALLEY

q4

It is difficult to cross a hilly region such as the uplands of Northern England, The chief roads and railways naturally cross by the lowest parts—that is, by the *Passes* or *Cols,* which lie between the hills.

There are two chief ways through the Pennines which form easy routes from one side to the other. The most southerly of these is formed by the river Aire, while farther north the river Tyne has helped to cut another way through the mountains. It is much more important for us to know the Passes in a district than it is to know the Peaks.

EXERCISES

1. Find on your map the places mentioned here.

Write out the summary below, and learn what you have written.

The Pennine Uplands stretch from the Southern Uplands of Scotland to the valley of the river Trent.

On the west, the mountains of the Lake District are connected with the Pennines by Shap Fell.

The chief Gaps in the Pennines are the Aire Gap and the Tyne Gap.

2. Do a "composition" on *Rocks* by answering the following questions:

What kinds of *rocks* are there near your school? Write down a list of them and say where they are found.

Are there any quarries within easy reach of your school?

What kinds of rocks are obtained from them? What are they used for?

Are the houses in your district built of brick or of stone? If they are built of stone, what kind of stone is it?

Do you know how bricks are made? What is the chief material that is used in the making of bricks?

Concrete is largely used as a building material at the present time. It is made by mixing sand and gravel with a paste composed of cement and water. Are there any houses in your district that have been built largely of concrete? What is the framework made of that is used in the construction of such houses?

Are there any coal-mines near your school? If so, how far away are they?

Are there any other mines in the district? If there are, what is mined there?

Does the ground near your school dry quickly after rain, or does it remain muddy?

Write down the names of three kinds of rock that let water soak through them easily.

Name three kinds of rock that do not let water soak through them easily.

3. How is the *water* obtained for your town or village? If it is obtained from a waterworks or a reservoir, where is this situated? How far is it away?

4. From what districts do *(a)* Manchester, *(b)* Liverpool obtain their water supplies?

5. Say clearly what is meant by—a dale, a plateau; weathering of soil; humus; peat; a pass or col.

5. THE FARMS OF THE EASTERN PLAIN

WHAT is the food that we eat at almost every meal? If we were asked this question, we should reply, *breads* for nearly everyone eats more bread than any other kind of food. Most of the flour from which our bread is made is obtained from *wheat.* Until about 150 years ago, we grew in our island home all the wheat we needed for food. Since then our people have so increased in numbers, and their occupations have changed so much, that nowadays we have to import most of the food we need. The people of our islands eat a very great deal of bread, and as we cannot grow enough wheat for everybody, much of it has to be sent to us from other countries, such as Canada and Australia.

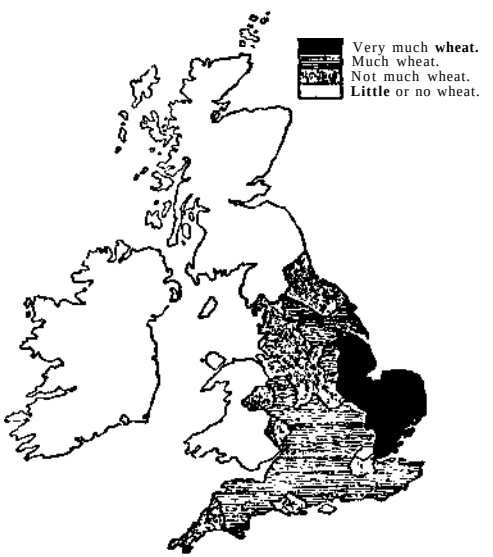


FIG. 18.—A MAP TO SHOW WHERE MOST WHEAT IS GROWN

Some of the best wheat in the world, however, is grown in our own country, on the plain of East Anglia and the Fens. If we look at our map of the British Isles, we shall see that the eastern portion is, for the most part, a flat plain. Part of this

plain is crossed by very low hills, but the district that lies around the Wash is so flat that it is almost like a great table. This region is called the *Fenlands.* Into the shallow opening of the Wash flow the slow-moving waters of four rivers—the Ouse, the Nen, the Welland, and the Witham.

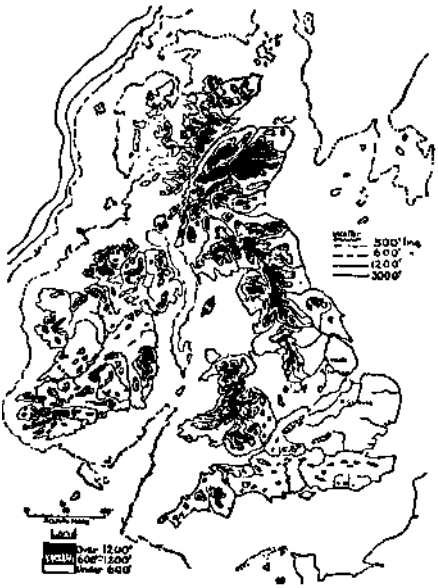


FIG. 19.—A MAP TO SHOW THE HIGHEST LAND IN THE BRITISH ISLES

Along much of the coast of the county of *Norfolk,* the sea is constantly wearing away the land, and in places such as Hunstanton, it is biting its way into the cliffs. The material thus worn away is carried by the currents of the sea farther south, where it helps to form the sandbanks and the mud flats which are found along the coast of *Essex.*

Many of the river mouths are almost blocked up by bars of shingle and of sand. The entrance to the lake into which the three rivers the Yare, the Waveney, and the Bure flow has been almost closed. In this part of Norfolk a chain of shallow lakes, joined by willow-bordered streams, forms the *Broads.* They lie amidst reed beds, marshes, and low-lying bright green fields. In winter many sea birds and other wild fowl make their homes here; but in summer the Broads are bright with the gleaming sails of pleasure boats, for a great

number of people come here in order to spend a jolly holiday in the open air.

All round our coasts the restless sea is always at work. In some places the waves wear away the land, as along the Norfolk coast; but in others they are helping, as we have seen, to build up the coast-line. The town of Dunwich on the Suffolk coast has been almost swallowed up by the sea, and there only remains a small village to remind us of this once great port and old cathedral town.

Many of the old river ports, such as King's Lynn and Ipswich, are being gradually silted up. At high tide, however, the mud flats that border the estuaries of many of the rivers of Eastern England are covered by the sea. An *estuary* is the mouth of a river up which the tide flows. The in-flowing tide is called the *flood-tide,* while the out-flowing tide is called the *ebb-tide.*

For many hundreds of years the low-lying *Fenlands* remained, for the most part, a land of marshes and swamps, across which rivers and streams flowed slowly along. It was in the midst of these wild and desolate marsh lands that Hereward the Wake held out so long, in his stronghold of the Isle of Ely, against Norman William.

Though the Romans first of all started to drain the *Fens;* it is only during the last three hundred years that much of the land has been reclaimed from the waters. To-day the rivers are bordered by banks; and the canals and dykes, which are also bordered by high banks, help to carry away the waters to the sea. Water is pumped up from the smaller canals to the larger ones, and thus the whole district is drained.

FIG. 20.—A WINDMILL IN THE FEN COUNTRY

In the winter the men in charge of the pumping stations have a busy time, for the engines have to be constantly at work. Sometimes the protecting banks break, and then much land is flooded.

Rough roads, often little more than cart tracks, cross the canals by means of wooden bridges ; larger suspension bridges enable the more important roads to cross the larger rivers and the bigger canals. Tall rows of poplars help to break the force of the wind.

Some of the streams are fringed by willows, but most of the banks of the canals are simply covered with grass. The slender shoots of the willow tree, which are called osiers, are used for making baskets, and the wood of this tree is used in the manufacture of cricket bats.

Here and there we see, on slightly rising ground, a windmill, its broad sails turning round in the breeze. Many of these windmills are, however, being replaced by more up-to-date machinery.

§3

Most of the soil in Eastern England is made up of clay, which was left behind by the great glaciers that long ages ago

covered most of this island. On such a soil as this *wheat* thrives. Of course wheat does not always grow well where there is a clay soil, but in this part of England the summers are warm and the rainfall is not too heavy. There is also plenty of sunshine, and sunshine is necessary in order that the wheat may ripen. As the land is very flat, the farmers are able to use machinery for tilling, for sowing, and for harvesting.

In the north of Norfolk, the sandy soil is more suitable for the growth of barley than for wheat. Here, too, instead of finding oaks and elms, we see pine trees and clusters of ferns and bracken. All of these have long roots which can get right down into the sandy soil.

Southwards in Essex, woods of oaks, elms, birch trees, and beeches remain to show how thickly wooded this part of Eastern England once was.

4 otatoes are an important crop for our food. Though they are grownin nmanyother parts of the British Isles, yet they seem to be specially suited to the rich black soil of the Fenlands. The early kinds of potatoes are generally planted in April, and are, as a rule, taken out of the ground in July and sold as " new " potatoes. These early potatoes are planted in rows about one and a half to two feet apart, and the plants are about the same distance apart in the rows. The later kinds are planted somewhat farther apart, for, as the weather is warmer, these plants produce more leaves than the early kinds. The late potatoes provide us with food for the winter months. They are usually taken from the ground when the top of the plant begins to turn brown and die.

In the districts near Cambridge, and around the little

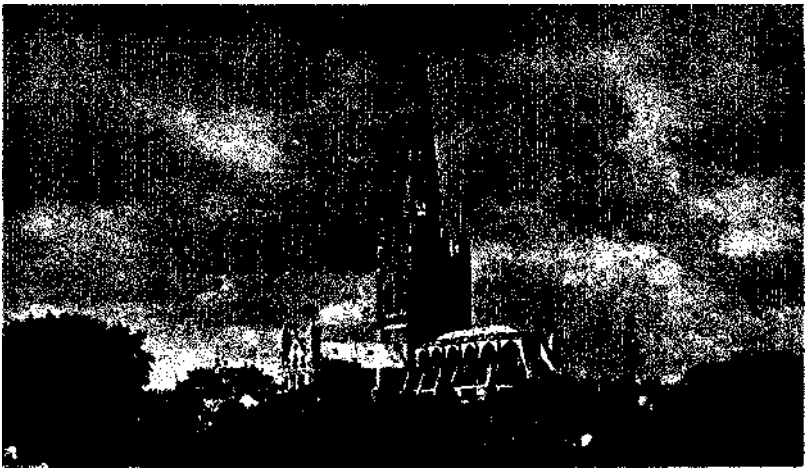


FIG. 21.—NORWICH CATHEDRAL

[Photographs by Will F. Tavlue.

FIG. 22.—LINCOLN CATHEDRAL

market town of Wisbech, there are many fruit gardens. The trees are planted in rows, and the ground between them is dug and often planted with smaller trees, or bushes such as gooseberries and raspberries. Gooseberries are the first of the "soft" fruits to be picked; then come strawberries, raspberries and currants. These are followed by plums, and later by pears and apples. Much of the fruit is made into jam.

Here too all kinds of green vegetables such as cauliflowers, green peas, and brussels sprouts, as well as onions, vegetable marrows, and asparagus, are cultivated. There are also fields of sweet peas, tulips, hyacinths, and many other flowers. All these things are packed in hampers, called "flats," and are sent to the large towns.

Where the land is rather too damp for wheat or for other crops, cattle and horses are bred. At St. Ives, on the edge of the Fens, large cattle markets are held. Newmarket, lying near the edge of the low chalk East Anglian Heights, is famous for its horses, which feed on the short grass covering the chalky hills.

§ 5

Most of the people depend on the land in some measure for their livelihood. The quiet country towns, such as Huntingdon, are market centres to which the farmer brings his produce, and where he and his family buy the goods they need. Some of the larger towns, such as Ipswich, Norwich, and Lincoln, make agricultural machinery. The latter two towns, together with Ely, are also famous for their beautiful cathedrals. Great Yarmouth, **of** which we shall read later on, is celebrated **for** its fish.

FIG. 23.—CATTLE MARKET, NORWICH ON THE LEFT IS THE SQUARE CASTLE BUILT BY THE NORMANS

Thus we see that the people of the Eastern Plain are chiefly farmers or are in some way connected with the land. Though wheat is their most important crop, yet they also produce many other things. They live in small market towns, or in long straggling villages, or on farmsteads which vary very greatly in size. Most of them lead a healthy, out-of-door life, and they play an important part in helping to produce the nation's food.

AN EXPEDITION

Try to get leave to visit a farm, and then find out the following facts about it:

(a) What is the name of the farm?

What is its area?

How many fields are there?

How many of them are under grass, and how many of them consist of arable land?

THE FARMS OF THE EASTERN PLAIN

What are the principal kinds of animals reared on the farm? What is the approximate number of each kind?

What does the farmer get from his animals?

FIG. 24.—THE EASTERN PLAIN

What does the farmer do with the things that he obtains from them?

(b) Draw a simple sketch of the farm in order to show the farm buildings, the way in which the farm is divided up, and the roads which serve it.

(c) If possible, make a tracing from the 6-inch Ordnance Map of the area in which the farm is situated. On this tracing, colour the fields in order to show the different uses to which they are put.

Try to find a reason for these uses.

EXERCISES

1. Find on your map the places mentioned here.

Write out the summary below and learn what you have written.

The best wheat in the British Isles is grown in the Eastern Plain (East Anglia).

The rivers Great Ouse, Nen, Welland, and Witham all flow into the shallow opening of the Wash.

Note:—The Fens ; the Norfolk Broads.

Towns:—Cambridge (University) ; Ely (Cathedral) ; King's Lynn; Ipswich; Norwich (Cathedral) ; Lincoln (Cathedral) ; Great Yarmouth (Fishing) ; Wisbech.

2. Some of the best wheat in the world is grown in Eastern England. Write down some of the chief causes of this.

3. What are the chief occupations of the people in your village or town? Can you explain why these occupations are carried on there ?

How far is it from your home to the nearest *market town?* Which is the quickest way to get there? How do you usually go?

How far is the market town (or, if you live in a market town, how far is the nearest large town) by rail from your home ? How long does the journey take ?

4. Imagine that you have spent a week's holiday in the *Fens* or on the *Broads*—tell what you saw and did.

5. Write a full account of any farm you have visited. (See *(a) (b)* and (c).)

6. THE THAMES AND ITS BASIN

HAVE you ever seen the Thames near London, or the Severn below Gloucester, or the Yorkshire Ouse after it has entered the estuary of the Humber? (Find them on the map.) If you have seen such large rivers as these, have you ever thought how they started as little streams on some distant hill or mountain **side ?**

As each little stream runs along, other tiny streams, or *tributaries* , add their waters to it; and so the stream grows gradually bigger and bigger, until it may at last become a broad river.

If we look at our map, we shall see that nearly all the streams which flow down the southern slopes of the Cotswold Hills help to form the river *Thames.* By the time the Thames has

reached old London Town, the waters of many other streams have been added to it. If we were able to draw a line just outside all the land which is drained by the Thames and its tributaries, the area inside that line would be the *basin* of the river.

Though the Thames is one of the biggest rivers in the British Isles, yet it is very small indeed when compared with such gigantic waterways as the Amazon, the Mississippi, and the Nile. (Find these on a map of the world.) In spite of this, however, our river Thames is still one of the most interesting and most important rivers of the world.

Let us follow one of these little Cotswold streams, the Churn, from its *source*, not far from the crest of the hills. It flows across dry grassy slopes, on which many sheep are feeding, and by little villages with their stone-built houses, until it reaches the interesting old town of Cirencester—in Roman times one of the most important towns in Britain. Flowing on to Cricklade, the Churn is joined by another little stream which also helps to form the headwaters of the Thames.

Other streams, such as the Windrush and the Evenlode, also flow across the hillside and empty their waters into the main stream. Most of them are not very swiftly flowing; but they are all, in their upper courses, helping to wear away the surface of the land over which they flow, and each is gradually deepening its channel.

If we look at the stones in the bed of any little stream, we shall see that they are rounded and smooth. The water

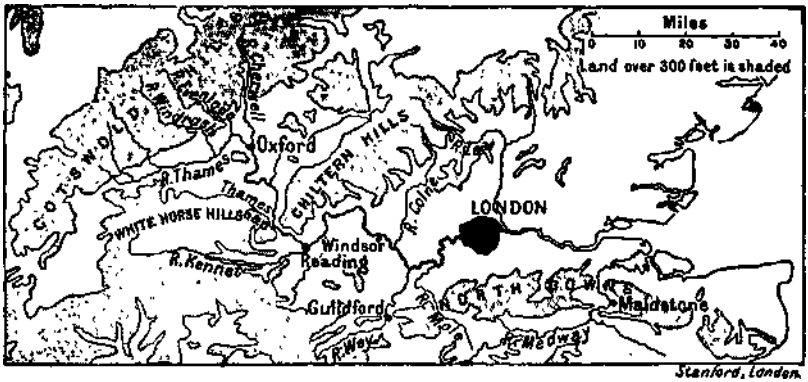


FIG. 25.—THE THAMES BASIN

is constantly rubbing them against one another, and making them rounder, and smoother, and smaller, as it carries them along.

Let us take a bottle, and place in it some fine sand, some coarse gravel, and some tiny stones, and then fill it with water. Next let us shake the bottle well, and then allow it to stand. If we watch the water in the bottle, we shall see that first of all the tiny stones fall to the bottom, next the gravel, and lastly the sand.

The running water of a river works in the same way as this. When the stream flows over steep land, its current is swift, and it can carry sand and gravel and even stones along with it.

When, however, the land is flatter, the current runs more slowly, and some of the gravel and sand, or *sediment* as it is called, falls on the bed of the river and so helps to raise it. At the same time, the sides of the channel are being worn away by the action of rain and water and many other things, so that the channel is gradually becoming broader.

§4

If we continue our journey down the Thames we shall reach Oxford, which is at the *confluence* or joining of the Thames and the iiCherwell.

This great university town of Oxford, like Cambridge, is a very ancient town lying in the midst of a farming area.

The land around Oxford is low and marshy. After heavy rains, the Thames is often flooded. Then the river rushes along, carrying with it much sediment; and after the floods have gone down, the low-lying land near the river is covered with fine mud. This mud is good for the land, for it helps to enrich the soil.

After leaving Oxford, the Thames passes through a gap between chalk hills. This narrow gap is called the Goring Gap, and it forms a pass between the upper and the lower Thames valley.

At the southern end of this gap lies Reading. Here the Kennet joins the Thames, and now the ever-broadening river swings in great bends across the wide valley, which is bounded on both sides by chalk hills. Northward are the Chiltern Hills, stretching away towards the low-lying East Anglian Heights. Southward lie the North Downs.

§5

As the stream flows round a bend, it eats into the bank on one side and cuts it away, thus forming a steep little cliff or *bluff* (see Fig. 27). On the opposite side the current flows more slowly, and so some of the sediment it is carrying is constantly being dropped here. Thus the bank is always being built up on this side of the stream. You can seen this for yourself if you walk along the banks of almost any river.

[Photograph by Will P. Taylor.

FIG. 26.—GORING CHURCH FROM STREATLEY

On such a steep bank, rising above the winding Thames, William the Conqueror made a fort. Later Henry I I I began to build a fortress which was the beginning of the buildings we know as Windsor Castle. For nearly nine hundred years the Castle has been one of the chief homes of our English kings. It has often been altered and added to, and it is to-day the most celebrated of all the castles and palaces in our islands.

Below Windsor, other tributaries flow into the Thames both on the *left* and on the *right* banks. (As we travel *down stream*, the left bank is on our left hand and the right bank is on our right hand.)

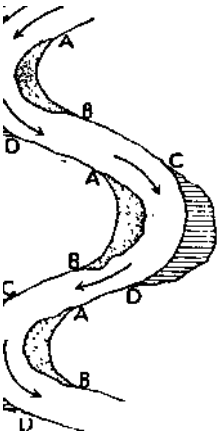


FIG. 27.—DIRECTION OF CURRENT
The bank is being built up at A B. At C D the river has eaten into the bank and is forming a blufi.

§6

We pass through wooded meadows, by little woods, parks, and market gardens. Many of the people who work in London live in the towns and villages that lie in the Thames valley. Some of these villages are very old, and have quaint old stone houses with thatched roofs.

The milk and the butter obtained from the cows, and the fruit and vegetables grown in these villages, are nearly all sent to London.

As we travel along, we notice that there are more houses by the river-side. Many of them have beautiful gardens which stretch down to the water's edge. And as we approach the *Port of London*, we no longer see merely pleasure craft, but vessels of other kinds as well. The banks here are lined with wharves and warehouses.

London Bridge marks the highest point on the river to which sea-going vessels can come. The Tower Bridge, a little lower down, has to open in the middle to let them through.

Below London, the Thames is bordered by low-lying strips of land, formed from the sediment that is brought down by the river. At low tide the shores are seen to be mainly mud. There are very strong tides in the Thames, and their waters have spread the sediment all over the bed of the estuary, where it forms sandbanks and shoals.

In order to keep the channels clear for vessels, boats called

dredgers are always at work collecting the sediment from the river bed and taking it out to sea.

Big steamers are guided up the river by tugboats. The Thames pilots, whose work it is to guide boats going up and down the river, have a difficult job. It is necessary for them to know all the channels between the shallows, and they must be constantly on the alert.

At the mouth of the Thames the Nore Lightship is anchored, and along the banks of the stream are signal lights, which help to mark the course for ships at night-time.

EXPLORATION OF A STREAM NEAR THE SCHOOL

(a) Let us pay a visit to the nearest stream.

What is its name? How far is it from the school?

Is it a swiftly or a slowly flowing stream?

Which can carry the greater quantity of sediment, swiftly or slowly flowing water?

What is running water like after heavy rain? Is it clear or is it muddy?

(b) When the stream is very high it may sometimes flood the surrounding meadows. At what season of the year does this usually happen? Why is this?

What is left behind on the fields after the water has gone?

Do you think that this flooding is a good thing for the land? Give reasons for your answer.

(c) Let us walk up-stream for a short distance.

Where is the bank cut away? Where is the sediment deposited? Watch the stream carefully, and see if you can find out why this is so by watching the speed of the current.

(d) How are the banks of a river named?

What do we call the place where two or more streams join?

Make a map of the part of the stream which you have visited, and show, by means of arrows, the direction of the current.

[Photograph by Will P. Taylor,

FIG. 28.—THE THAMES BELOW LONDON BRIDGE

EXERCISES

1. Find on your map the places mentioned here.

Write out the summary below and learn what you have written.

The Thames rises in the Cotswold Hills. It is 215 miles long.

Towns :—Oxford (University) ; Reading (University and Biscuits) ; Windsor (Castle) ; London.

2. What is the chief river that rises in, or flows through, your county ?

Into what sea does this river flow?

Draw a simple map to show this river and its tributaries Shade the high land thus:—

Mark the boundary of the river basin by means of a dotted line.

3. Describe the river Thames from Windsor to Oxford. Draw a map.

4. Write an account of how you explored a stream near your school.

5. Tell what you can about Oxford and Windsor.

7. LAND OF CIDER AND CREAM—SOUTH-WESTERN ENGLAND

§ 1

IN the south-west of our Islands is a land of hills and valleys, whose coasts are washed on two sides by the sea. Here we have broad low-lying plains such as Sedgemoor, and high plateaux such as Dartmoor, Exmoor, and Bodmin Moor.

The rocky coasts of Cornwall and Devon are cut up by many openings, and are fringed, here and there, by little islets and larger islands. Some of these openings, such as Plymouth Sound, are long and winding; but others are just little harbours and tiny bays, often half enclosed between two rocky points, and nestling at the foot of steeply rising cliffs.

Along this rocky shore the sea is always at work. Sometimes the waves roll lazily against the foot of the cliffs, or chase each other up the sandy beaches of the coves. But at other times the south-westerly winds drive the waves on, and they dash themselves against the *promontories*, as the steep-sided headlands are called, breaking off the rocks, pounding them one against another, and smashing them into smaller and smaller pieces. Many of these little fragments they throw up on the beaches, thus helping to build them up.

In Somerset, however, between the Quantock Hills and the mouth of the Bristol Avon, the coast is much lower. Here the south-westerly winds are constantly driving the sand inland, while in the Bristol Channel itself mud and sandbanks make coastal shipping difficult.

The higher parts of Exmoor and Dartmoor are wild *moorlands,* covered with heather and with but few large trees. On a summer day the purple heather often stretches away as far as we can see. It is broken only by clumps of yellow gorse, or by such evergreen bushes as the bog myrtle or the smaller whortleberry. There is little life; even the sheep are few. We may catch a glimpse of a herd of small half-wild ponies, for which both Dartmoor and Exmoor are famous. On the latter moor we may also see some of the wild deer that live here. The stillness and the quietness are, as a rule, almost unbroken, except for the croak of a raven or the cry of a blackcock or a curlew.

On the somewhat lower parts of the moorland, the grass lands are separated by stone walls, and here we see flocks of sheep munching the short grass. Here and there is a little stone house, built in some sheltered hollow in order to protect it from the winds and storms. In winter these uplands are swept by winds and drenched by the rain storms that drive across them.

We may descend to the valleys and the little plains by one of the lanes, which are shut in by high banks and thick overhanging hedges on either side. The bank alone, without the hedge, is often eight feet in height. In spring these banks are bright with yellow primroses and purple violets ; later on they are covered with ferns, amid which we can see bright

red wild strawberries. What a jolly dish they make, especially when eaten with the cream for which Devonshire and Cornwall are famous!

§3

On the rich grass lands are herds of the celebrated red Devon cattle. In the fields early potatoes, cauliflowers, straw-

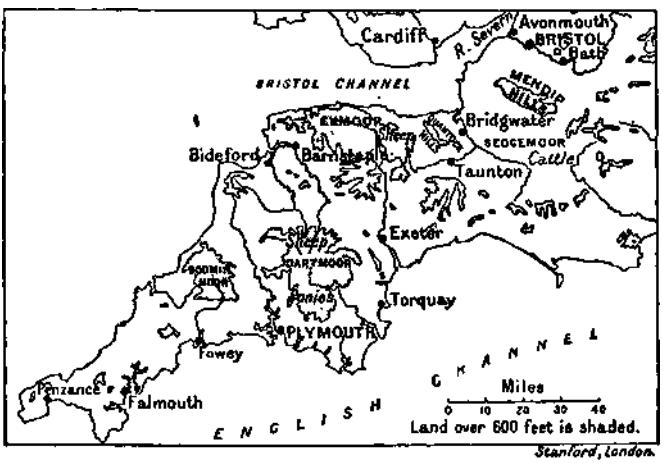


FIG. 29.—SOUTH-WESTERN ENGLAND

berries, and flowers are grown. Much of the milk produced in Devon, Cornwall, and Somerset is sent to London, and to the large towns of the west such as Bristol and Plymouth.

Some is made into cheese. Though Cheddar cheese is now made in many other parts of England, yet the district between the little village lying at the foot of the Cheddar Gorge and Yeovil is still famous for its cheese.

First of all the milk is warmed in big pans. When it has

reached a certain temperature, rennet is added to it; this turns it sour. After standing for about three-quarters of an hour the whey is drained off, and the remainder is cut up into small pieces. Later it is heated again, and then squeezed by hand, and more whey is drained off. The cheese is now ready to be put in the moulds, where it is allowed to ripen.

Somerset and Devon are both famous for their apples, from which cider is made. In most of the little valleys and combes we see orchards of cider-apple trees. In September the apples are piled in heaps on the ground, but even if we were to walk through the orchard, it would be no temptation to take one of the apples, for, in spite of their rosy cheeks, cider apples are extremely sour. When the apples are ready they are taken to the farm or to a factory. Here they are placed in a press in order to squeeze out the juice, which is then put into barrels, where it is kept for some time.

The broad plain of Sedgemoor in the west, which stretches from the Quantock Hills to the Mendips, reminds us a little of the Fenlands in the east. Lines of short stumpy willow trees mark the edges of the narrow *rhines*, as the drainage canals are called by the Somerset folk. In winter, large areas are often flooded, and the people cross the moors in flat-bottomed boats. From this low-lying moor, as well as from the upland moorlands, such as Exmoor, peat is obtained. After it has been dug it is placed in stacks to dry. The heavier parts of the peat are used for fuel, while the lighter portions make an excellent litter for cattle and horses.

§4

The uplands, moorlands, the low-lying moors, and the sheltered valleys, all help to provide the people with work.

[Photograph by Will F. Taylor.

FIG. 30.—CHEDDAR GORGE

The sea also provides an occupation for many West-Country folk. For generations the men in this part of England have been famous not only as fishermen but also as explorers. Sir Francis Drake and Sir John Hawkins were both Devon men.

The old ports of Bristol and Plymouth, and smaller ports, too, saw many a brave captain and his crew set out on their voyages of discovery. It is not to be wondered at that a people bred within sight and sound of the sea should produce so many brave and daring fishermen and mariners.

To-day many of our sailors come from Devon, where the town of Plymouth is one of our most famous naval harbours. Steamers coming from North America, from India, and from

Australia, call at Plymouth, and many naval craft are usually to be seen in the harbour.

Such little ports as Brixham, St. Ives, Falmouth, and Barnstaple (find them on the map) are the homes of fisher-folk. Their boats bring back sardines, mackerel, herrings, and other fish. From another quaint little port, Fowey, china clay is sent to the Pottery district of North Staffordshire.

Many people visit this part of England, not only because of its beautiful scenery, but also because of its mild climate.

EXERCISES

I. Find on your map the places mentioned here.

Write out the summary below and learn what you have written.

Uplands of Exmoor and Dartmoor.

Plain of Sedgemoor, drained by the Parret.

Counties:—Cornwall, Devon, Somerset.

Towns:—Ports of Bristol and Plymouth are the most important. Brixham, St. Ives, and Falmouth are smaller fishing centres. Fowey exports china clay.

2. Is the land around your school fairly level, gently sloping, or hilly?

Draw a simple sketch map of the district within about a quarter mile radius of your school, and shade the higher land thus:— 

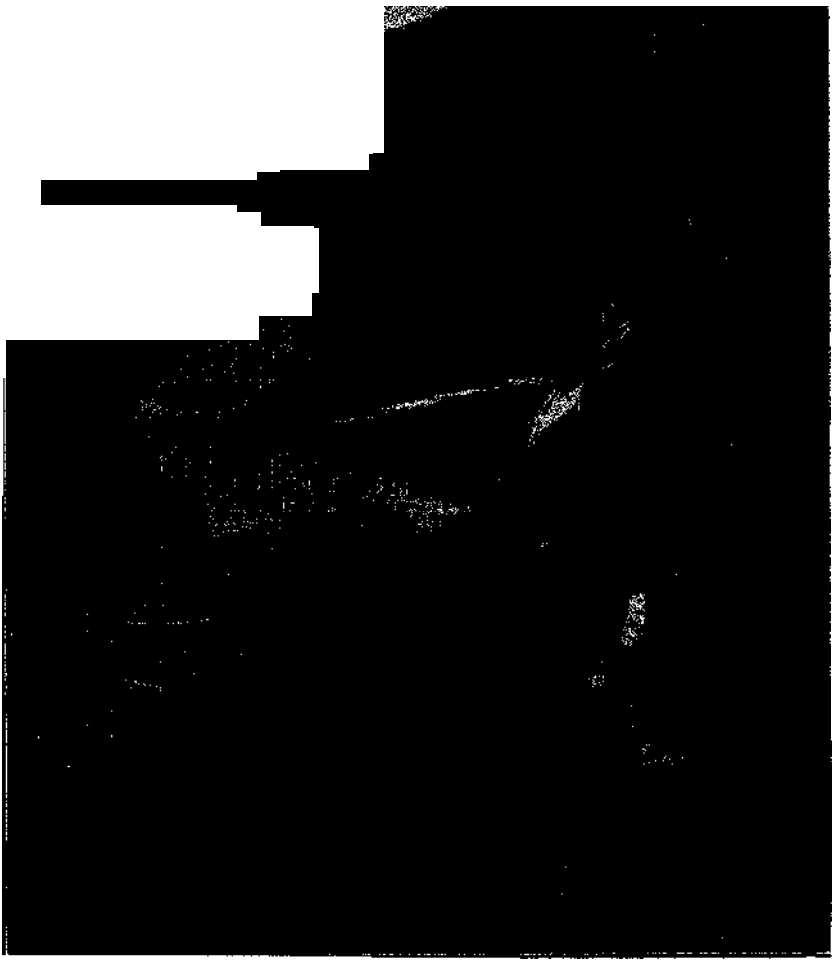
What is the highest point within walking distance of your school? In what direction does it lie?

How high is it above sea level? How far away is it?

Is the nearest railway station on higher or on lower ground than your school?

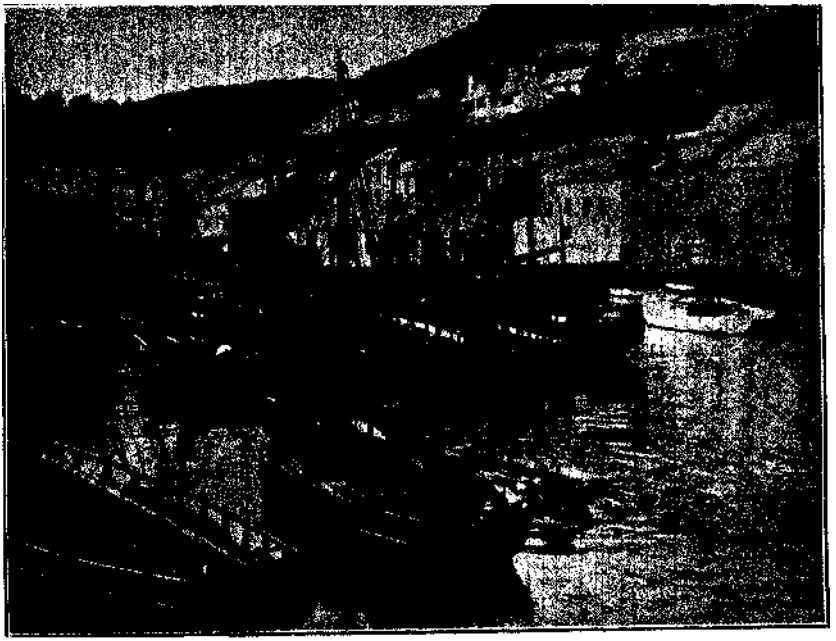
3. Write an essay on your county town by answering these questions:

How far do you live from your *county town?*



{Photograph by Will P. Toy tor.

FIG. 31.—AN EXMOOR POSTMAN GOING HIS ROUNDS



[*Photograph by Will F. Taylor.*

FIG. 32.—P0LPERR0—A CORNISH FISHING TOWN

Is this town on higher or on lower ground than your own town or village?

Is your county town on a river? If it is, in which direction does this river flow? What is its name?

What are the chief industries of the county town?

What is, roughly, its population?

Name some of its chief buildings.

What is the building called in which the work of governing of the county is carried on, *i.e.* in which the County Council meets?

Is the county town the most important town in the county?

If it is not, can you give a reason for its decline in importance?

What railway line, or lines, serve the county town?

What other counties adjoin your county?

Use your compass card to find out how each of these towns lies in relation to your own county town.

{Photograph by Will P. Taylor.

FIG. 33.—STREET IN ST. IVES, CORNWALLF

4. Write about— *(a)* Exmoor, Dartmoor, Sedgemoor.
(b) Cheddar cheese.
(c) Cider and cream.
(d) West-country sailors.

5. Would you like to spend a holiday in the West Country? Why?

8. THE GARDEN OF ENGLAND—DOWNLAND AND WEALD

§ i

FROM the north of Hampshire, *chalk downs* run north-west into Wiltshire and eastward into Surrey; while southward they run along the coast of Sussex.

How peaceful are these Downlands! From the crest of the Sussex Downs we might look towards the English Channel and watch the ships of many nations passing on their way to and fro. Inland, there stretches mile upon mile of grassland or of wheat-fields. There are few trees and few walls.

Over there we may see a flock of sheep. But these sheep are not like the Welsh sheep, which wander freely over the hills. These *Southdown sheep* are guided by a shepherd, who is helped by his wonderful sheep dog. What clever animals these sheep dogs are! How skilful they are in rounding up the sheep!

Here and there we shall probably come across a *dew-pond.* These ponds have been made by man, many of them probably hundreds of years ago.

A hollow is dug in the ground and is then covered with layers of straw. On top of the straw is placed a thick layer of clay; this is well beaten down to make it water-tight. The straw prevents the heat passing out of the earth into the clay, which therefore remains cool. The moisture in the air is condensed on the surface of the cool clay, and so a dew-pond is formed. Fortunately sheep do not need much to drink, for, apart from these ponds, there is little water.

The rain sinks through the chalk of the Downs **until** it reaches **the** clay, which **will** not allow the **water to run through**

FIG. 34.—THE GARDEN OF ENGLAND

it. It then runs along the surface of the clay until it finds an outlet. At the place where the porous chalk and the clay join, *springs* are found.

Owing to the lack of water, there are few houses on the Downs. Most of the farm-houses and the villages lie lower down in some sheltered valley. There the farmer not only obtains grass for his sheep to feed upon, but he also has a good water supply in the springs and wetter land. Here he can grow wheat, barley and other crops which will provide winter food for the sheep.

In many parts of Kent and Sussex, where there were once forests, are now found orchards of apples, plums, cherries, and pear trees. In some districts the land between the trees is covered with grass; in others it is dug and planted with smaller fruit trees, such as raspberries and gooseberries.

In the districts near the large towns, such as the great seaside

town of Brighton, but especially in the district around London, we find market gardens where vegetables of all kinds are grown.

If we travel through the heart of Kent, we shall notice some very curious round brick towers. At the top of these towers there is a large cowl which swings with the wind. If we asked what these buildings are, we should be told that they are the " oast " houses where hops are taken to be dried. Inside the oast house is a fire, and near the roof is an iron lattice. On this framework the hops are placed, and the warm air, passing through the lattice, is thus able to dry them. After this has been done, the hops are packed in long canvas bags and sent to the breweries to make beer. More hops are grown in Kent than in any other county in England.

FIG. 35.—AN OAST HOUSE

By courtesy of the Southern Railway.

Poles, cut from larch or other suitable trees, are placed upright in the ground. To these poles are attached wires.

These wires support the weak twining stems of the hop plants. At the beginning of September the hops are ready to be gathered. Then large numbers of people come from London to the hop gardens, in order to help with the picking. Whole families, men, women, and children, crowd to Kent for the hop-picking season.

Amidst the hop gardens and the orchards and the market gardens lies Canterbury. It is situated at one end of the gap which the river Stour has cut through the chalk hills. This quiet and ancient city has one of the most beautiful cathedral churches in England. Here, too, comes the road from Dover to London.

§3

South-Eastern England, like the valley of the Thames, is the home of many people who work in London. They live not only in the towns near the great city, but also at such places along the coast as Brighton, Eastbourne, Hastings, and Folkestone.

Nearly all the things that are grown in the various districts of South-East England are sent to London. Wheat, fruit, vegetables, and flowers; butter, milk, and eggs; beef and mutton—all these things are sent to help to supply the many wants of the people of the capital.

The little hills and valleys, the woods and heaths, and the meadows and orchards of the *Weald* are very different from the sweeping grass and wheat lands of the Downs. Here are little villages, surrounded by trees, and quiet little country towns which only wake up on market days.

Many of them, too, like Canterbury, lie at the ends of gaps through the chalk hills. Such a town is Lewes, the county town

of Sussex. In the Ouse valley, and on the flat lands around Newhaven and stretching away towards Hastings, are many cattle. The Downs above Lewes are the home of great numbers of sheep. So at Lewes there is held each week a big cattle market, and on the hills above the town there takes place, about three times a year, a large sheep market.

In very early days the Weald was covered with thick forests, and few people lived there. Gradually these woods began to be cut down. From the time of the Romans up to about one hundred years ago, the part of Kent lying around the Upper Medway, and the part of Sussex that adjoins it, were famous for iron ore. The trees were cut down in order to provide the charcoal for smelting.

EXERCISES

I. Find on your map the places mentioned here.

Write out the summary below and learn what you have written.

North and South Downs.

The Weald.

Rivers:—Medway, Stour, Sussex Ouse, Arun, Itchen.

Counties:—Kent, Surrey, Sussex.

Hops; fruit; sheep.

Towns:—Dover (Packet Station); Canterbury (Cathedral); Brighton; Hastings; Folkestone (Packet Station); Newhaven (Packet Station); Lewes (County Town); Maidstone (County Town); Guildford (County Town).

2. Copy the map of South-East England (see Fig. 34). On your map mark and name the towns of Arundel, Lewes, Canterbury, Maidstone, and Guildford. Name the river.

3. What do you notice about the position of these towns?

4. Tell all you know about the Downlands.

Write about— (a) Dew-ponds.
(b) Southdown sheep.
(c) Hop-gardens and oast houses.
(d) Canterbury.
(e) The Weald.

9. THE BUSY MIDLANDS

LYING in the middle of England is a region which is known, on account of its position, as the *Midlands.* To the west are the mountains of Wales; to the north are the Pennine Uplands. On the south-east, ranges of low hills divide the Midlands from the Thames valley. On the east, however, the Midlands pass gradually into the flat land around the Wash.

The Midland plain is not quite so flat as the lands to the east. It is broken by low plateaus, such as the sandy heath of Cannock Chase, north-east of Wolverhampton, or by the grass-covered chalk lands of Leicestershire. Like the people of the Eastern Plain, many of the people of the Midlands are farmers. But many are miners and manufacturers, and so we find more large towns in this part of the country than we do in the east.

East of the river Severn is a low sandstone upland, much of which is still covered with heaths and woodlands. The town that lies in the centre of this district is Birmingham,

At the time of the Norman Conquest, *Birmingham* was only a tiny village; but about 400 years ago the smiths of Birmingham became famous for their iron goods, and from that time the town began to grow in importance. In the old days, charcoal,

FIG. 36.—A SCENE IN THE BLACK COUNTRY

obtained from the forests, was used to smelt the iron ore. The charcoal and the ore were heaped together on the hearth. When, owing to the great heat, the ore became soft, it was beaten out by means of heavy hammers. Later, when coal began to be used, Birmingham became more and more important until, at the present time, it is not only one of the foremost centres of the iron industry, but it is also one of **the** most important towns in the British Isles.

No longer are there woods and heaths in the district around Birmingham itself. At night, the whole district is lit up with the flames from the great furnaces. The smoke from the furnaces and the factories has covered the houses and the plants with dirt and soot. Thus the name of the *Black Country* has been given to this region.

§3

Farther north there is another district which is something like the Black Country. This is the *Potteries.* Here the chief occupation of the people is the making of pottery of all kinds. At one time most of the china-clay used for this industry was obtained in this part of Staffordshire. Now, however, much of it is sent from Cornwall.

In early times pottery was made on a potter's wheel. The potter threw the clay on to the wheel, and as he turned it by means of a treadle, he shaped the article he wished to make. At the present time, only the finest ware is made by hand in this way. After the article has been shaped, it is dried and then placed in a kiln where it is baked, at great heat, for several days. Finally, it is finished by being glazed and decorated.

§ 4

Much of the Midland region is covered with grass lands, some of which are dotted with trees. In the valleys of the Trent, the Severn, and the Warwickshire Avon, many cattle are bred, while on the drier slopes of the chalk and limestone hills sheep are reared. At one time much wheat was grown in these districts, but now the wheat has been mainly replaced by grass. This is especially the case in the west, where there is more rain. ' If we were to travel from west to east, we should notice that the quantity of wheat that was grown increased as the rainfall became less.

In addition to providing milk, butter, cheese, meat, and wool, the animals also provide skins. These are tanned, and the leather is used for the manufacture of boots. At one time one man did all the work required to make a pair of boots, but to-day,

in the large factories of *Stafford, Northampton,* and *Leicester,* different workmen are employed on the various stages in the production of a single pair of boots or shoes.

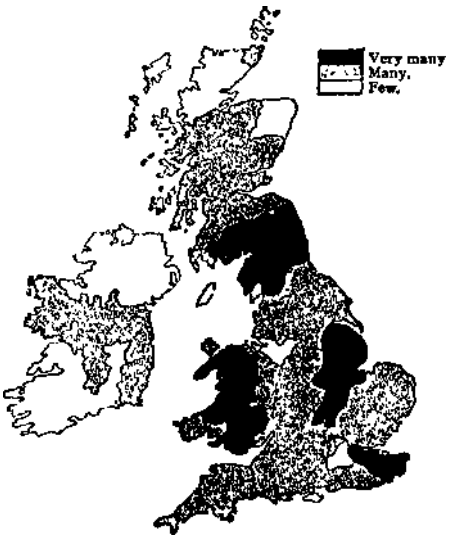


FIG. 37.—A MAP TO SHOW WHERE MOST SHEEP ARE BRED

§5

The chief ways from north to south and from east to west have always crossed the Midlands. Where these roads crossed the rivers, or at the points where they crossed each other, there were usually towns, and these towns were often guarded by castles.

Many of these may still be seen, such as the splendid castle at *Warwick,* which is one of the glories of England. The cathedral city of *Lichfield,* once a very important place, lies near the spot where two Roman roads crossed.

We see, therefore, that in this central part of England there are not only farmers, who, like those of the Eastern' Plain, help to produce our food; but there are vast numbers of other people, who mine our coal, or work in the great furnaces or the factories of the Black Country, or make our cups, and saucers, and dishes, or produce boots and shoes for us to wear.

These are, however, only a few of the many occupations that are carried on by the people who live in Midland England.

EXERCISES

I. Find on your map the places mentioned here.

Write out the summary below and learn what you have written.

The *Black Country* (Coal and Iron).

Towns: — Birmingham, Wolverhampton.

The *Potteries* (North Staffordshire).

Town:—S t o k e - o n - Trent.

Grass Lands : — Cattle and sheep, hides (skins), boots.

Other *towns :*—Warwick (Castle) ; Lichfield (Cathedral).

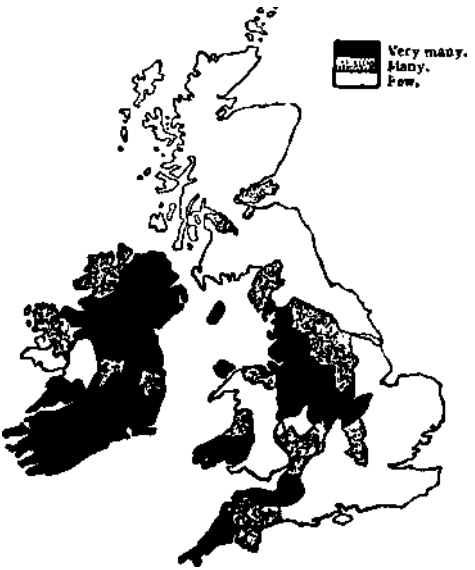


FIG. 38.—A MAP TO SHOW WHERE MOST CATTLE ARE BRED

2. Draw a sketch map of your county to show the high ground. Shade this ground.

What rivers rise on, or flow across, this high ground? Mark the courses of these rivers and show, by means of arrows, the directions in which they flow, Name the sea into which these waters fall.

3. Draw a map of the Severn. Show the tributaries of the Teme and the Warwickshire Avon. Shade the high land. Mark and name the towns of Shrewsbury, Worcester, Tewkesbury, Warwick, and Gloucester.

4. From what is leather made?

FIG. 39.—THE BUSY MIDLANDS

What are the chief things that we wear which are made of leather? Name three towns in England where these things are manufactured.

5. Write about—

(*a*) Cannock Chase.
(*b*) Birmingham and its history.
(*c*) The Potteries.
(*d*) Warwick and Lichfield.
(*e*) The story of the Iron industry.

10. THE LAND OF WALES AND ITS BORDERS

§ 1

LET US follow the valley of the Severn up-stream until we reach the county town of Worcester, whose cathedral overlooks the river. Now we might leave the main stream and make our way up one of the valleys which lead to the Uplands of Wales. We should probably pass through a beautiful district where villages, with their thatched houses, are surrounded by orchards and hop gardens. On the grass lands we shall possibly see herds of cattle grazing; if our visit is in June, we shall notice the tall grass in the fields ready for the mowing-machines. The

hay helps to provide food for the cattle during the winter months. Oats and barley are grown in the fields, but there is little wheat. Why is this?

As we climb upwards we notice that the valley is becoming narrower, while at the same time the stream is flowing more swiftly. There are no longer fields and orchards, but wooded grass lands. We are making our way into the heart of Wales.

At last we reach the moorlands. The trees have disappeared, for it is too cold and too exposed for them to grow. On the coarse grass of the *Welsh Highlands*, or Cambrian Mountains, thousands of sheep are reared. A few stone walls enclose vast tracts of land over which the sheep wander freely as they will. Their bleating, mingling with the tinkling of their bells and with the cries of such birds as the curlew, the plover, the snipe, and the yellow-hammer, are the only sounds that break the stillness of the mountain side.

FIG. 40.—WALES

It is much more difficult to travel through a hilly district than it is to cross a plain. In winter the few roads that cross

the Welsh mountains are often covered with snow. There are not many easy ways that lead into the centre of the country. The three valleys, of the Dee in the north, the upper Severn in the centre, and the Wye in the south, form the chief ways into the interior of Wales.

The two main ways run north and south of the mountains. The northern one goes from Chester, westward along the coast, between the sea and the mountains. These mountains of North Wales contain many slate quarries. Slate splits easily into thin plates, and for this reason it is much used for roofing houses.

The southern way runs from Gloucester and through the busy towns and ports of South Wales. It is along these coastal plains, but especially along the southern one, that most of the people of Wales live.

Nearly all the towns and villages in the inland valleys are small, and it is difficult to get from one to another. In Wales itself there is no town of any size in a really central position. On the borders of England and Wales there are big towns, such as Shrewsbury. Like Chester in the north, and Hereford, Worcester, and Gloucester farther south, this ancient town was the site of one of the castles that were built to guard the English border lands against the Welsh. The castle at Shrewsbury is still standing, and if we visit the town we can see also the remains of some of the old walls that once encircled the town.

The life led by the people who live in the Welsh villages, half hidden in the valleys between the mountains, is still a very simple one. If we were to visit one of the little stone-built cottages, we might still see the large open fireplace, just the same as it was some hundreds of years ago. Very little coal is used,

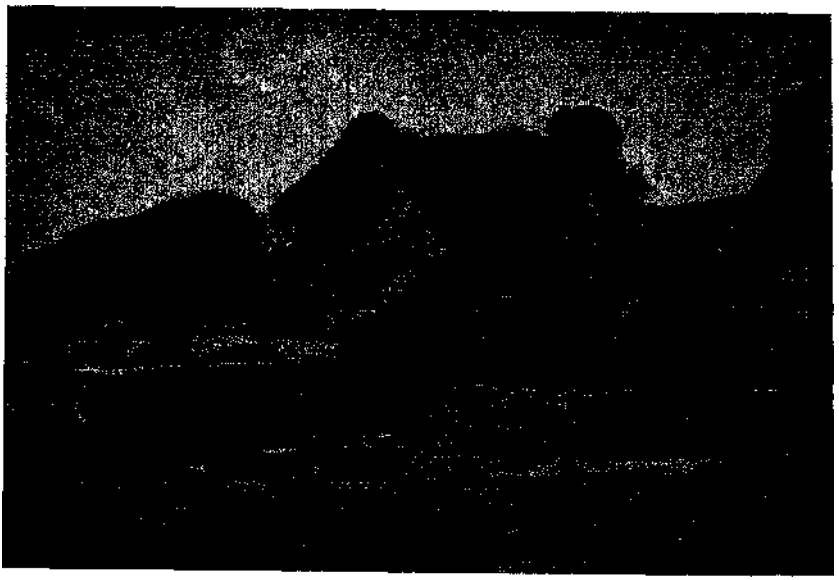


FIG. 41.—A WELSH HILL FARM

the chief fuel being peat and wood, both of which are burnt on the big open hearth. The food, too, is simple, and milk, cheese, and oatmeal are more common than meat. The life is healthy, but many people have left the mountains and have either gone to work in the mining districts of South Wales, or on the more fertile plains, or have made their homes in other parts of our Empire.

§3

The mining valleys of South Wales are very different from the quiet peaceful valleys of the central part of the country. The air is made gloomy by the smoke from the factory chimneys, and soot and dirt cover not only the buildings, but also the few stunted trees around the towns.

The *South Wales Coalfield* is one of the most important in the British Isles. From Newport, Cardiff, Swansea, and other ports, coal is sent all over the world.

Coal is formed in layers, called seams, which often lie at a considerable distance from the surface of the ground. In many parts of the South Wales Coalfield, the rivers have hollowed out their valleys in the coal, and thus the seams are easily worked. In most mines, shafts have to be sunk into the ground. Every mine must have at least two shafts, in order that it may be properly ventilated. Fresh air passes down one and foul air comes up through the other. These currents are now produced by fans worked by machinery; but in older mines a furnace was lit under the up shaft, in order to heat the air and thus produce an upward current.

Round the entrance to the mine are various buildings, and over the shafts we see the gear that winds the cage up and down. This cage is hauled by means of a steel wire rope, which passes over a large wheel at the top, and thence to a drum which is driven by the winding engine.

If we wish to go down the mine, we enter the steel cage and sink swiftly into the depths. The shaft will take us to the lowest part of the mine. The water, which is found in the workings, drains to this lowest point, and it can then be pumped up to the surface. From the shaft, tunnels lead in various directions. We can go along the main tunnel, and then follow one of the smaller tunnels that open out from it. Here we shall see the miners at work.

In an up-to-date mine the miner probably uses an electric drill, as well as a pick and shovel. The drill is used for blasting hard coal. The small holes made by the drill are filled with explosives, and when these are fired, down comes the coal in great lumps.

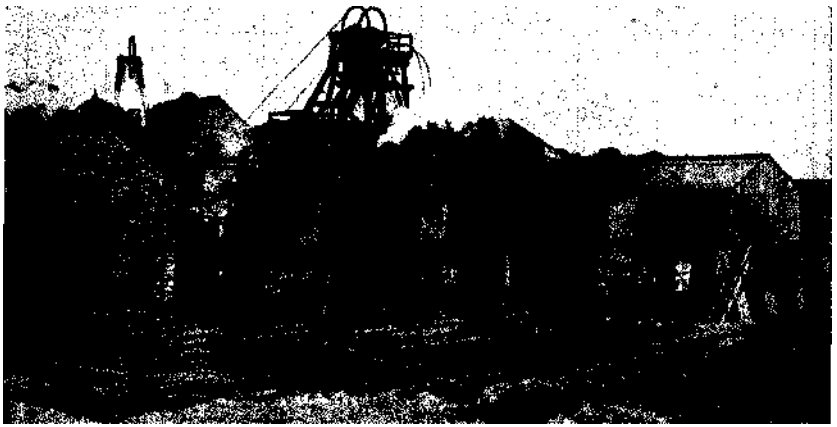


FIG. 42.—PITHEAD

By courtesy of the " StaffordshirStntiml."

The roofs of the passages are supported by wooden poles, called props. In many cases the miner has to work lying on his side, or even on his back.

After the coal has been obtained, it is placed in tubs, and is taken to the bottom of the shaft. At one time, pit ponies pulled the tubs along the rails, but now in most of the more important mines electricity is used.

The tubs are next placed in the cage and are taken to the surface. Here the coal is sorted by machinery and finally by hand. The coal, now ready for use, is placed on the railway or sent away by lorries.

Through this busy district the *Great Western Railway* runs on its way to the port of Fishguard. Here passengers leave for Rosslare in Ireland.

EXERCISES

I. Find on your map the places mentioned here.

Write out the summary below and learn what you have written.

Welsh Highlands or Cambrian Mountains, Snowdon.

FIG. 43.—THE BOTTOM OF A SHAFT

Rivers:—Dee ; Severn (Teme) ; Wye ; Usk ; Taff ; Tawe.

Towns:—In Severn Valley: Shrewsbuiy,Worcester, Gloucester; on Dee: Chester; in South Wales: Newport, Cardiff, Swansea (Coal port, etc.); Packet Stations for Ireland: Holyhead (L.M.S.); Fishguard (G.W.R.).

2. Draw a map to show the principal towns in your county. Show the chief roads which join them to the county town. Give a title to your map.

3. How does the merchant bring coal to your home?

From whence does your coal merchant obtain his supplies of coal? If the coal is brought to your town or village by rail, through what large towns does it probably pass on its way to your town?

4. Imagine a visit to the Welsh Highlands and villages, and describe it.

FIG. 44.—COALFIELDS IN THE BRITISH ISLES

5. Tell of the South Wales Coalfield and its chief ports.
6. Tell about a coal-mine and the miner's work.

11. EAST AND WEST OF THE PENNINES

§ 1

MOST of our clothing is made either of cotton or of wool, or of a mixture of both these materials. In winter we wear thicker clothes than in summer, and our winter clothing is often

largely made of wool, for this substance does not allow the heat of our body to pass through it as easily as cotton clothing.

Let us take a piece of cloth and examine it. We shall see little pieces sticking out at the sides. These pieces are called *yarn.* Let us pull out a bit of yarn from the cloth. If we look at it carefully we shall see that it is made up of a number of small *fibres* which have been twisted together to form the yarn. This process is called *spinning.* Cloth is made by crossing the length-wise yarn (the *warp)* with another set of yarn called the *woof.*

For thousands of years the work of spinning all over the civilised world was done by means of a *spindle* and a *distaff.* Then later on the *spinning-wheel* was invented. When the yarn had been spun, it was woven into cloth on a *hand-loom.*

For a very long time the people of the sheep-rearing districts spun the wool into yarn and wove the yarn into cloth in their own homes. They usually worked on the farms as well, and made the woollen cloth in their spare time. In some parts of Scotland and Ireland cloth is still woven by hand in this way.

§ 2

When the cotton fibre was brought to England by traders from the Eastern Mediterranean and from India, our people already knew how to spin and to weave. Some of this cotton was brought to *Lancashire,* and the people there began to manufacture *cotton cloth.* Two of the most important rocks found in the Pennines are, as we know, limestone and the hard sandstone called millstone grit. Streams that flow over limestone dissolve some of the rock, and their water becomes " hard." Water that flows through a sandstone region does not dissolve the rock, and in such areas the water is " soft."

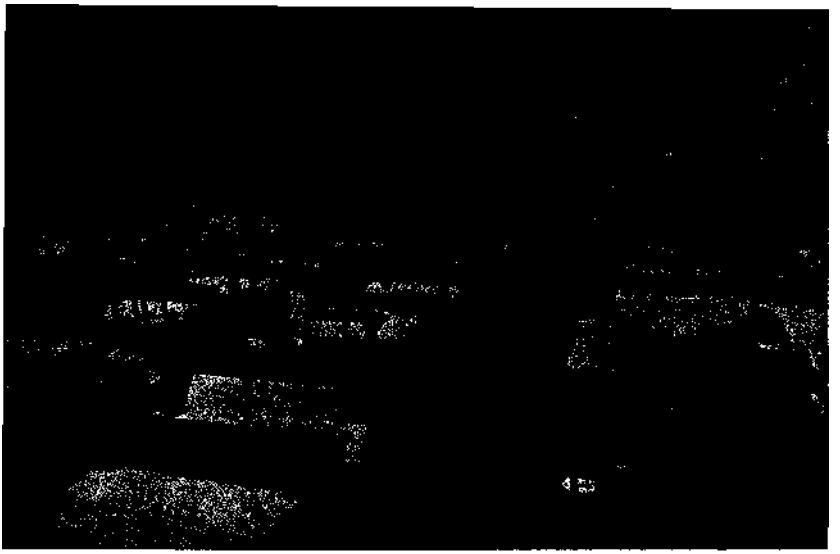


FIG. 45.—A WEAVING SHED

This " soft " water is very good for washing purposes, for it does not require much soap. It is, on the other hand, difficult to make " hard " water lather easily.

The Lancashire folk soon found that the soft water in the millstone grit and in other sandstone valleys was good for washing, dyeing, and bleaching cotton goods, and so this manufacture rose up in the valleys where the water was soft, but not in the limestone valleys where the water was " hard." Lancashire is a damp county, for, as we know, the westerly winds bring plenty of rain to this part of England, and the streams that flow down the western slopes of the Pennine Uplands are plentifully supplied with water.

The making of cotton goods gradually became so important in Lancashire that in time woollen cloth was scarcely made at

all. As time went on—about the middle of the eighteenth century—men began to improve the machines that were in use. Then people began to work in the factories, instead of being partly farmers and partly spinners and weavers. The early factories were built at the entrance to the valleys, so that the water from the swiftly flowing streams could be used to drive machinery.

But with the discovery of *coal*, a great change took place in Lancashire. The little towns and villages began to grow very quickly. Less than sixty years ago there were green fields within three miles of the centre of Manchester, and most of the towns that lie around the city to-day, and are joined to her by roads and by railways, were still only tiny villages. Now there are no longer green fields round Manchester. Instead, the damp air is full of smoke and soot, and the long rows of houses that stretch for miles are covered with grime and dirt.

If we visited one of the factory towns in the early morning, we should probably hear a clatter on the cobbled streets. Streaming along them we should see the mill girls, with wooden clogs on their feet and shawls around their heads. But we should have to be up early in order to see this, for work starts early in the day.

At the present time Lancashire is the most important cotton manufacturing district in the world. The bales of cotton are sent to *Liverpool* from the *United States*, from *India*, from *Egypt*, and from the *Sudan*.

Much of this cotton is unloaded at Liverpool, but some of it is now taken direct to Manchester itself, for this great town has been joined to the sea by the cutting of the *Manchester Ship Canal*. At Manchester the merchants meet to buy and sell the cotton. All around the different towns each take their own

[Photograph by Will F. Tmylot.

FIG. 46.—MILL GIRLS GOING TO WORK

special part in helping to manufacture the cotton goods. Some of the towns *weave,* while others *spin,* and others *dye* the woven cloth.

§3

If we made our way through the gap cut by the river Aire through the Pennine moorlands, we should find ourselves in a drier district. The rainfall is much less on this eastern side of the uplands. In this part of *Yorkshire* also we find factory towns, but here the factories are making woollen goods instead of cotton goods. The history of these towns is very like that

of the Lancashire towns. With the discovery of coal, the little villages grew until they became big towns.

For some time the sheep of the Pennines and of the Yorkshire Moors and Wolds were able to supply most of the wool needed for the factories. Now these districts are not able to supply nearly enough wool for the mills; much is sent to Yorkshire from the *sheep-rearing districts* of *South Africa, Australia, New Zealand,* and the *Argentine.* This wool is brought to London and to Liverpool, as well as to the great Yorkshire port of Hull, and it is then taken to Leeds and other manufacturing towns. Suits and many other kinds of clothing are made at *Leeds.* Perhaps some of the clothes that you are wearing came from this important Yorkshire town.

Have you a penknife? If so you will probably find that it was made at *Sheffield.* This town, which lies on the river Don, is some distance south of Leeds. It has been famous for many hundreds of years for its cutlery, but now it makes many other kinds of steel goods as well. The axe that we use to chop our wood, the wheels on the railway carriage in which we travel, were both very possibly made at Sheffield.

§4

Eastward of the busy manufacturing towns of Yorkshire lies the Plain of York. Here we are in a farming district once more, and the country is more like the south of England than that which we have just visited.

In the centre of the Plain lies *York.* Once upon a time, sea-going vessels were able to sail up the Ouse as far as this town, and so a port grew up here. York was a very important town in the time of the Romans, and the Normans had a castle here. The beautiful cathedral and the ancient walls

remain to remind us what a very important place York once was.

The northern way from York goes by Northallerton. This town is situated in the broad stretch of land lying between the Pennines and the Yorkshire Moors. This "gate to the North," which is called the "Northallerton Gate/' reminds us of that other broad way which lies between the Welsh mountains and the Pennines and which is called the "Midland Gate."

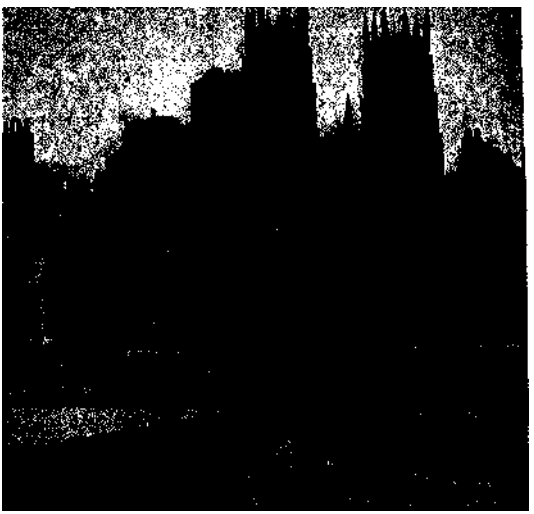


FIG. 47.—YORK MINSTER AND GATE IN OLD CITY WALL

EXERCISES

I. Find on your map the places mentioned here.

Write out the summary below and learn what you have written.

Lancashire: Cotton (from the United States, India, Sudan, Egypt).

Towns:—Manchester (market) ; Liverpool (port).

Yorkshire: Wool (South Africa, Australia, New Zealand, Argentine).

Towns:—Hull (port) ; Leeds (all kinds of clothing); Sheffield (cutlery) ; York (cathedral centre of Vale of York ; farming).

2. Rewrite the following in your notebook. Fill in the missing words. Underline them.

" Much of our clothing is made of a mixture of . . . . . and of . . . . . The fibres which make up a piece of cloth have been twisted together to form . . . . . This process is called . . . . . Cloth is woven by crossing one set of yarn called the . . . . . with another set of yarn called the . . . . . Most of our wool comes from sheep, though some is also obtained from other animals, such as camels, goats, and alpacas. The cotton is obtained from the cotton plant, and most of our supplies of this product are sent to Lancashire from the southern part of the . . . . . , ... and from Egypt and . . . . . Liverpool is the great cotton port of Lancashire, but . . . . . is the great cotton market."

3. Name two important rocks that are found in the Pennines. What difference do these rocks make to the water that flows over them? How does this affect the position of the cotton manufacturing towns?

4. Write down three of the chief countries that send wool to Yorkshire. Through what English ports is this product chiefly sent?

5. Write about the Manchester Ship Canal; Leeds; Sheffield; York; the " Northallerton Gate " ; the " Midland Gate."'

6. Try to tell what difference the use of coal made to the cotton and woollen industries.

12. THE BORDER LANDS BETWEEN ENGLAND AND SCOTLAND—THE LOWLANDS ON EITHER SIDE

§ 1

IF we were to follow the road through the Tyne Gap from Newcastle to Carlisle we should see, on our right, part of the remains of a great wall which the Romans built between the river Tyne, on the east, and the Solway Firth, on the west.

BETWEEN ENGLAND AND SCOTLAND

This *Roman Wall* was made in order to protect the people who lived in what is now Northern England from the savage Picts of Scotland. For hundreds of years after Roman times these lands, around the Cheviots, were the scene of constant raids and fighting, as many of the old Ballads tell us.

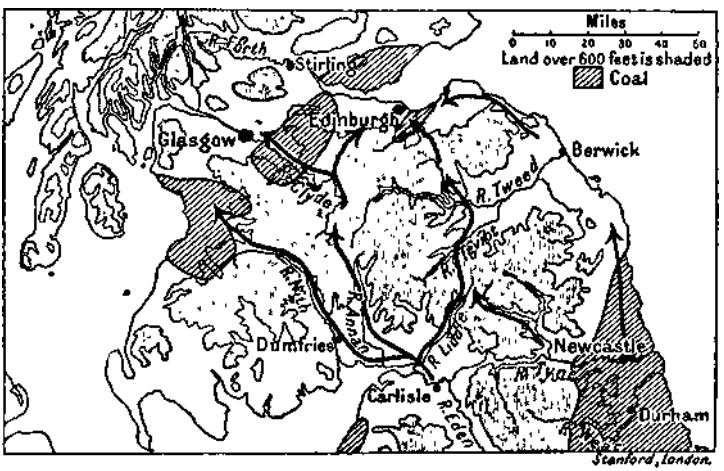


FIG. 48.—THE BORDER LANDS

The English and the Scottish kings all through the Middle Ages were always quarrelling with one another, and the great nobles on each side of the Border spent much of their time in fighting. If you had lived on the Border about four hundred years ago, you might quite well have had your house burnt down and your cattle and horses stolen.

If we were to explore this *Border Land*, we should find the ruins of many castles and the remains of beautiful abbeys. The castles were the strongholds of the chieftains, and the abbeys were the homes of the monks, who were great farmers.

§ 2

There are several ways leading from England to Scotland. The easiest roads go by the east coast. As we can see by looking at our map, the western way is much more difficult to cross, for it is far more mountainous. On the English side, the towns of *Newcastle* and *Carlisle* guard the way. At the former town we may still see the old Norman castle; and though this city is to-day one of the most important industrial towns in Northern England, yet we may still wander through some of the old streets with their quaint houses.

At *Carlisle,* too, the castle remains, though it has been much altered in the course of centuries. Many roads lead to Carlisle. One comes down the Eden valley ; another follows the Tyne Gap. Then down the valleys from Scotland come roads following the rivers Liddle, Esk, and Annan. This last way comes from Glasgow, while the one down the Esk comes from Edinburgh and the basin of the river Tweed.

Along the east coast the road to Scotland runs by Alnwick, whose castle can still be seen, to the famous town of Berwick-on-Tweed. This town grew up at the lowest spot where there was a bridge over the river Tweed. During the centuries there has been much fighting around the town, and sometimes Berwick was held by the English and sometimes by the Scots.

There is another and more difficult way into Scotland. If, instead of going right through the Tyne Gap from Newcastle, we had turned northward at Hexham, we might have followed the more northerly branch of the Tyne right into the heart of the Cheviot country. The valley of the Rede would have led us up to Carter Bar Pass; and from here we could have crossed the heather-clad *Cheviot Moorlands,* which, with

their stone walls and their flocks of sheep, remind us of the Pennines or of the Welsh mountains. As we descend by the valley of the Jed, we notice how the woods begin to re-appear as soon as we leave the rather bleak moors above. The Tweed basin which we have now reached is one of the most fertile parts of Scotland. In the sheltered valleys there are fields of wheat, oats, and barley.

Towns such as Hawick, on the river Teviot, manufacture woollen goods, but the woollen manufactures of the Tweed basin are not so important as those of Yorkshire.

If we were to visit the low plains that border the Solway Firth, we should see cattle feeding on the grasslands and there would be few sheep. We should also notice that there were no wheat-fields. The rich grass of the plain is more suited to cattle than to sheep, and there is rather too much rain, brought from the Atlantic by the westerly winds, and too little sunshine for wheat to be successfully grown.

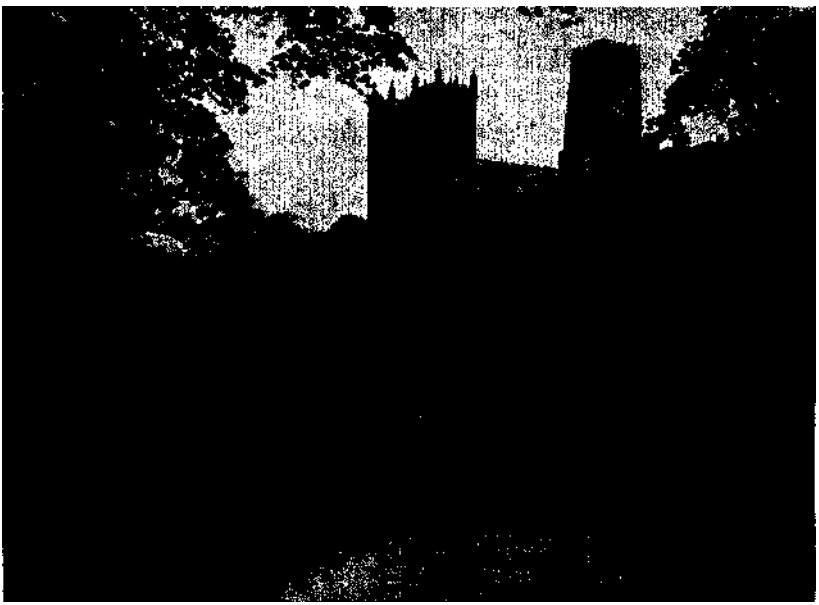
On either side of the uplands of the Border Land are lowland regions. If we look at our map we shall see that, in the north, the Lowland Plain of Scotland stretches from the Firth of Forth to the Firth of Clyde, while in the south there are two lowland districts separated by the Pennine uplands, and only connected by the road through the Tyne Gap.

§3

In all these districts there are *coal-mines,* and, as we should expect, a great many more people live here than in the uplands.

In both the Northumberland and Durham mining areas, and in the smaller Whitehaven Coalfield, the mines are close to the sea. In both areas, many of the mines actually run under the sea itself.

Durham, on the Wear, lies in the centre of one of the mining districts. Like the larger town of Newcastle, Durham, lying around the hill on which stands the magnificent Norman castle and Norman cathedral, is very ancient.



[Fhotograpk by Will i. *lay tor.*

FIG. 49.—DURHAM CATHEDRAL AND CASTLE

The *Central Lowlands* of Scotland are really a broad valley broken by ridges and hills. Though this part of Scotland only forms about a quarter of the whole country, yet more than two-thirds of the people in the country live here. All the coal-mines in Scotland are here, but some of the best farming land lies here too.

Between the Sidlaw Hills and the waters of the Firth of Tay is a plain, with rich meadow lands, fields and orchards. It is known as the *Carse of Gowrie.* The chief town, *Dundee,* has grown from a small fishing port to be one of the largest towns in Scotland. There much fruit is made into jam. Oranges are sent to Dundee from Spain and other parts of the world, for the town is famous for its marmalade. The most important manufacture of all is the making of sacks, bags, mats, and sail-cloth. All these are made from the fibres of the jute or the hemp plants. Most of the jute is sent to Dundee from India, where it is grown in the delta of the Ganges, and exported from the port of Calcutta.

§4

At the head of the estuary of the Tay stands the ancient town of Perth. Like Stirling, on the Forth, and Berwick, on the Tweed, this town was built at the lowest place where a bridge could be built over the river on which it stands. Both Stirling and Perth lie in gaps between the hills.

South of the estuary of the Forth stands *Edinburgh,* which, too, stands in a gap. On one side of this gap are the Pentland Hills, and on the other side is the sea. At this point Edinburgh Castle was built on what, many ages ago, was a volcano. From the walls of the old castle we get a splendid view of the modern city. We can look down on Princes Street, which runs through the newer part of Edinburgh, and which is lined on one side by fine shops and on the other by magnificent gardens. In a valley we can see the two main railway lines that serve Edinburgh. We can walk down the old High Street and the Canongate to the Palace of Holyrood.

Owing to lack of space, the houses in the old city of Edin-

burgh were crowded together and were built many stories high. These ancient winding streets and narrow alleys are very different from the broad streets of the modern city.

On the opposite side of the Lowland Plain lies *Glasgow*, which is not only the largest city in Scotland but also one of the greatest towns in the British Isles. It lies at the head of the estuary of the Clyde at the point where several ways meet. Here the way from England, down the Clyde, meets the way from Edinburgh and Stirling which comes from the east. The way from the Nith valley and Kilmarnock comes between the hills, and another way down the right bank of the Clyde estuary also crosses the river at the point where Glasgow stands. To this meeting-place of land routes comes the sea way up the Firth of Clyde.

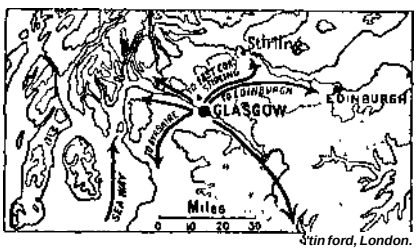


FIG. 50.—GLASGOW

To the east of Glasgow lies the largest coalfield in Scotland. Iron ore is found as well as coal, and this ore helps to supply the material required by the great shipbuilding yards that lie along the estuary of the river.

EXERCISES

I. Find on your map the places mentioned here.

Write out the summary below and learn what you have written.

Southern Uplands of Scotland ; the Cheviots.

Rivers:—Tyne ; Eden ; Liddle ; Esk ; Annan ; Tweed (Teviot) ; Clyde; Forth.

Towns:—At points where many ways meet: Carlisle, Newcastle, Berwick, Edinburgh (Capital of Scotland), Glasgow, Dundee, Perth, Stirling.

Coal:—Northumberland and Durham ; Whitehaven ; Scottish Coalfields.

Shipbuilding:—On Clyde, Tyne, Tees, and Wear ports. (Why ?)

2. Fig. 50 shows the position of Glasgow. Look at this map carefully. Now draw a map to show the position of Carlisle.

3. Name three parts of the British Isles where fruit is largely grown.

4. *Roads.*—Let us visit the nearest main road, and take up our position at some point beside it from which we can obtain a good view of the traffic.

Let us make a record of all the traffic that passes along the road during a period of 30 minutes.

Make a copy of the following Traffic Record in your notebook. Fill in the necessary details on your copy.

Traffic Record.

Road from . . . . . to . . . . . .
Number of people walking.
Number of people cycling.
Number of traps.
Number of waggons.
Number of farm carts.
Number of cattle, sheep, etc.
Number of light motor-cars.
Number of heavy lorries.
Number of motor buses.
Other traffic.

State, as far as you can, from whence you think the traffic has come, and to what place it may be going.

Where possible make a note of the kinds of goods that are carried.

On what days in the week is the traffic heaviest? Why is this? Is the traffic chiefly of one kind on those days?

5. Why is the manufacture of woollen goods not so important in the valley of the Tweed as it is in Yorkshire?

6. Write notes on : The Roman Wall, Carlisle, Berwick, Cheviot moorlands, Carse of Gowrie, Edinburgh, Glasgow.

7. Do a composition on " The Border Lands," *or,* tell of any " Border Ballad " that you know.

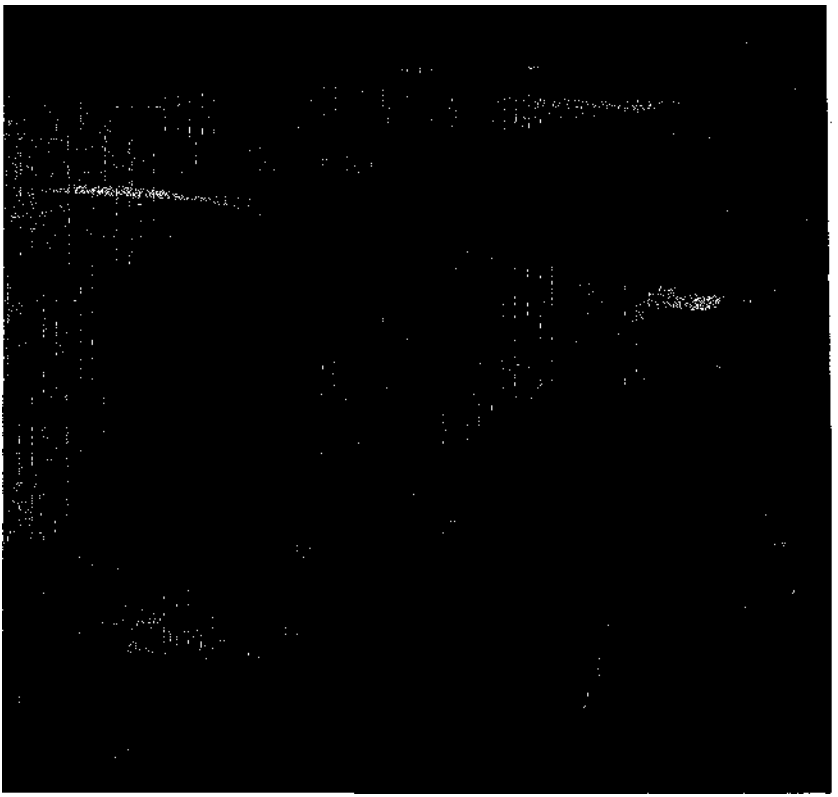
13. THE HIGHLANDS OF SCOTLAND—THE FISHERMEN

§ 1

IF we look at our map of Scotland we shall see that beyond the lowlands, which stretch from the Firth of Forth to the Clyde, is a mountainous region. This highland area is bordered by a fairly broad plain that stretches along the east coast from Inverness to Perth. Apart from this, however, nearly the whole of this region consists of uplands. These uplands are really a series of high plateaux, between which run deep valleys such as that in which the river Tay flows.

In the upper parts of some of these valleys are long, narrow lakes whose dark and gloomy waters are shut in by the steep sides of the mountains. One of the wildest and most beautiful parts of the Highlands lies along the west coast. Here long, steep-sided openings called *lochs* run far into the land. The waves dash and roar against the headlands on either side of the lochs, and in this way constantly help to break up these projecting points.

Beyond the lochs are islands. Some of these are tiny, while others—such as Mull and Skye or the island of Lewis and Harris —are large.



[Photograph by Will F. *Tmylor.*

FIG. 51.—A HIGHLAND LOCH

§ 2

At one time the Highlands of Scotland were even more rugged than they are at the present time. Their surface was worn down by great glaciers ages ago, when our islands were for the most part covered with ice. Since that time, rain and rivers have been constantly at work, wearing down the mountain sides and deepening the valleys.

If we were to walk down one of the Highland *glens,* we should see below us the mountain torrent, rushing along between the boulders and the smaller stones with which its course is strewn. The swift current, especially after heavy rain or when the snows are melting in the spring, can carry along these rocks and stones. It pounds them together and wears them away as it bears them along on its downward course.

As we clamber along, we shall see that the glen is beginning to get wider and its sides are not so steep. There are more trees, and we may catch a glimpse of the smoke rising up from some little cottage near the stream. We are leaving the glen and are reaching the broad valley or *strath.*

§3

The strath, with its strips of cultivated land and its neat little cottage farms, is very different from the lonely heather-covered moors. Here are " runs " for sheep, or stretches of land which are preserved for deer-stalking.

On these lonely moors we may occasionally come across the house of a *crofter.* His little dwelling is built of stone, and may be thatched with heather from the moor. In a few of these huts there is still no chimney, the cooking being done on an open fire in the centre of the room. Peat is used as fuel for the fire,

[Photograph by will til F. Taylor.

FIG. 52.—A CROFTER'S HUT

and it is, as a rule, always kept burning. Round the little house is perhaps a small patch where oats and potatoes are grown. The oats are crushed for oatmeal, which is boiled as porridge on the open fire, or baked as flat oat-cakes on the hot stones. The old thatch from the roof, and the heather litter from the animals' stalls, are used to manure the ground in spring. The life led by a crofter is a very lonely one, but the old customs and ways of living which have lasted so long have almost died out.

Owing to the poorness of the land, there are practically no villages in the Highlands, and even along the west coast there are very few indeed. Nearly all the villages and towns in Northern Scotland depend on the sea for the livelihood of their inhabitants.

How do people in the Western Highlands travel from one

place to another? The ways up the valleys are difficult. We have only to look at the map to see that it would be almost impossible to make a good road along the west coast. In the Southern Uplands there were easy ways through the Border Lands; but in the Western Highlands such ways are few.

When St. Columba came from Ireland to tell the people of Scotland about Christianity, he founded his church on the island of Iona. From this place he made his way about the country by boat. It is in this way to-day that most of the travelling in Western Scotland is done.

§4

Along the east coast there are more people, more villages, and some quite large towns. Here on the broader plain there is excellent land both for grazing and for crops. There is more sunlight, and though the winters are colder than those of the west, yet the summers are warmer. On these broad plains we see herds of cattle grazing, while in the fields crops of barley, oats, and potatoes are grown.

The chief port of north-east Scotland is Aberdeen. If we look at our map, we shall see that at this point the coast way meets the ways that come from the west down the valleys of the Dee and the Don. Here at Aberdeen, at this meeting-place of land ways, come also the sea ways from across the North Sea.

Farther north at the northern end of the Vale of Glenmore is Inverness. Look at your atlas, and find the ways that lead to Inverness. The lakes in the beautiful valley of Glenmore have been joined by a canal, which is not, however, very important. At the southern end of the valley lies the little town of Fort William.

§5

In the far north of Scotland, on either side of a small plain, are the two little fishing towns of Wick and Thurso, Beyond the stormy Pentland Firth are the *Orkney Islands;* still farther north are the Shetlands.

The population of the treeless, wind-swept *Shetlands* would be much less if it were not for the fishing industry. The people, like those of the western islands of Scotland, depend almost entirely on the sea for their livelihood.

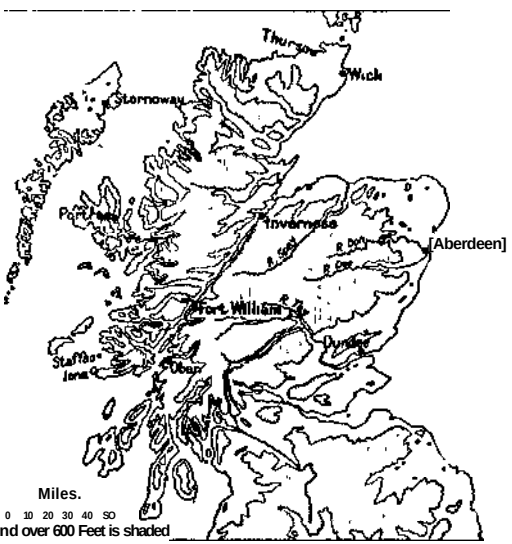


FIG. 53.—THE HIGHLANDS

At the beginning of June, fishing boats come to the Shetlands for the herring fisheries. There are boats not only from all parts of the British Isles, but also from Norway, Sweden, Denmark and Holland. What a busy time it is for about six weeks! Both the fishermen who catch the fish and the women on the shore who clean and salt them are fully occupied. After the herrings have been prepared, they are packed in boxes or barrels and are then sent away.

Herrings swim in shoals near the surface of the water. The

" drifters,' as the herring boats are called, let down big nets, which are supported by large corks and weighed down to keep them upright. The herrings swim into the meshes of the nets, and so get their heads caught, and they are unable to withdraw them on account of their gills.

Fish like cod and haddock feed near the bottom of the sea and are known as " bottom " fish. The boat that fishes for them is called a " trawler." From this boat a big bag-like net is let down. This net drags along the bed of the sea and so catches the fish.

The *North Sea* is one of the finest fishing grounds in the world. In addition to the Scottish fishing ports, such as those of the Shetlands and the important centre of Aberdeen, many others lie along the eastern shores of the British Isles. Of these Hull, Grimsby, Great Yarmouth, and Lowestoft are the most important.

The most famous fishing ground in the North Sea is the *Dogger Bank.* Both Hull and Grimsby lie within easy reach of this Bank, while the fishermen of Aberdeen are nearer to the *Great Fisher Bank.*

Fishing ports must not only have good harbours, but also places where the fish can be cleaned and prepared for the market. It must also be possible to get the fish away quickly. There must, therefore, either be a good train service from the fishing port, or a service of fast boats from the port to some other port where there is such a service.

Both the Scottish and the English fishermen sail across the broad Atlantic to the fishing grounds of *Iceland,* and to the Grand Banks of *Newfoundland.* The latter are very famous for **their** cod fisheries.

[Photograph by Aero film.

FIG. 54.—AN AIR VIEW OF MACDUFF, A TYPICAL SCOTTISH FISHING PORT

EXERCISES

I. Find on your map the places mentioned here.

Write out the summary below and learn what you have written.

The Scottish Highlands consist of the country lying to the north of the Central Lowlands. They are bordered by a narrow plain on the east.

***West Coast:*—Rugged and wild ; lochs ; islands of Lewis and Harris, Skye, Mull, Staffa, Iona.**

***Rivers:*—Dee, Don, Spey.**

Vale of Glenmore.

Orkneys and Shetlands lie beyond the Pentland Firth.

***Towns:*—Aberdeen, Inverness, Fort William.**

***Chief Occupation:*—Fishing, North Sea fishing grounds visited by fishermen from all parts of Europe (Dogger Bank, Great Fisher Bank).**

2. Draw a map of the east coast of the British Isles, and mark and name the chief fishing ports.

3. What is the chief occupation of the people of Northern Scotland? Why is this? What is the chief town in this part of Scotland?

4. What are : lochs, glens, straths ?

5. Describe the house and life of a *crofter.*

6. Tell about the Orkneys and Shetlands.

7. Write on the North Sea and its Fisheries.

8. Try to imagine a holiday in the Highlands and describe what you will see.

14. EXPLORING IRELAND

A BROAD plain stretches right across Ireland, from the shores of the Irish Sea to those which are washed by the Atlantic Ocean; but most of the higher lands in Ireland, unlike those in England or in Scotland, lie around the coast.

These *Irish Uplands* are not, as a rule, as high as the Pennine Moorlands or the Highlands of Scotland; they are more like the Uplands of Cornwall and Devon.

The *Irish Plain* too is very different from the Plain of Eastern England. There is much more grass, and the fields and the hedges are of a much brighter green. The chief reason for this is that, as we know, there is much more rain in the western parts of our islands than in the eastern.

If we were to pay a visit to Ireland in the summer, we should probably find that the air is cooler than that of Eastern England. The waters of the Atlantic, which wash the shores of Ireland, take longer to get warm than the land. Land heats more quickly than water does. So the westerly winds that blow over the Atlantic are rather cool during the summer.

In winter these westerly winds are warm winds, for the sea has been steadily getting warm during the summer months, and it only gradually loses this heat. So in winter we find that Ireland has a fairly warm climate.

The central plain consists chiefly of limestone rock. In many districts this limestone is covered with boulder clay, which was left behind by the great sheets of ice that once covered these islands. Many of the hollows in the surface of the plain are filled with water, which forms *lakes* and *bogs.*

The shallower sheets of water, in the course of time, have become overgrown with peat moss and other damp-loving plants. A very large part of Ireland is covered with these *peat* bogs. As in the wind-swept and wet Pennine Moorlands, so, too, in Ireland large areas are covered with peat.

There is little coal in the country, and there is not very much woodland, and peat therefore forms the chief fuel.

Shallow trenches are cut, and the peat is dug out of them by

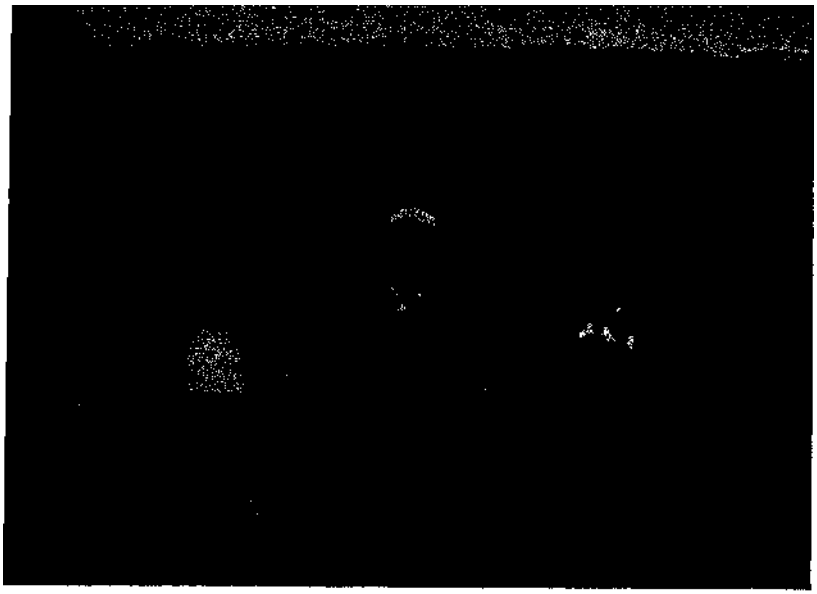


FIG. 55.—A PEAT BOG

means of a sharp spade. The little blocks of peat, which are about the size of a brick, are piled up on the sides of the trenches to dry. The Irish peasants cut this peat largely during the summer months, in order that they may have a plentiful supply during the winter-time.

Across the flat plain flow many slowly moving streams. The largest of these is the *Shannon*, which is a broad stream, widening out in many places into lakes or *loughs* such as Loughs Allen, Ree, and Derg. Below Killaloe, which lies at the southern end of Lough Derg, the river flows swiftly through a narrow gorge into its broad estuary. Here, at the head of the estuary, stands the town of *Limerick*, the largest port in the west of Ireland.

It grew up at the lowest spot where it was possible to build a bridge over the Shannon.

On the rich grass fields of the Irish Plain many cattle, horses, and pigs are reared. Irish cattle and horses are famous. On the rich plains of Meath, horses for hunting are bred, and in the upland district of Connemara in the west sturdy ponies are raised.

Most of the farms are small, and the farmers join together and send their milk to *creameries,* where it is made into butter and cheese.

Ireland is celebrated for its dairy produce. Such ports as Cork, in the south, send large quantities of butter, eggs, and bacon to England. As we should expect from its position, Cork trades with Bristol and with the ports of South Wales. The latter ports send coal to Cork in exchange for the dairy produce.

In this rainy green land of Ireland there is little wheat grown. It is far too wet, and there is not enough sunshine in summer to ripen the grain. But in the drier eastern corner, barley is produced. Much of this crop is sent to Dublin, where it is used in the making of beer.

Oats can be grown in a fairly damp and cool climate, and they are grown all over Ireland. Potatoes, too, are found nearly everywhere; in fact, in many of the poorer districts the peasants live largely on potatoes.

In the western hill lands the number of people is very small indeed. Among the wooded Kerry Mountains lie the beautiful Lakes of Killarney. In Connaught, too, are many delightful **lakes.** Some **of them are** connected by underground streams.

In these districts of limestone rocks, many streams disappear under the surface of the ground, and cut their way more and more deeply into the rock. Thus in time they form *caves.*

Many of these caves—similar to those at Cheddar, in the Mendip Hills—are very beautiful. Hanging from the roof like icicles and rising from the floor like pillars, are large stems, which gleam like crystal if they are lit up by a ray of light. They have been formed by little drops of water, each of which has left a very tiny portion of a substance called carbonate of lime.

On the peat moors of *Donegal,* in the north-west of Ireland, sheep are bred. Their wool is woven in the cottages, and from it is made a fine cloth called Donegal tweed.

Most of the homes of the Irish peasants, especially in such a lonely region as Donegal, are very simple indeed. Many of them have only two rooms. Like the crofters' houses in the Scottish Highlands, the cottages are built of stone and are thatched with heather. Some of these cottages have no chimney. In the centre of the main room, the peat fire burns on the hearth. Often the living-room forms at night a shelter for the pigs and the cow, and during the day hens are constantly running in and out of the doorway.

The *Wicklow Mountains,* south of Dublin, are another very beautiful region. Down their wooded vales, little streams run between the trees and ferns, as they tumble over the rocks and stones. These vales and their heather-covered moorlands remind us of the Welsh Uplands which, on a clear day, we can see far away across the Irish Sea.

A good many people visit the Wicklow Mountains on account of their nearness to *Dublin.* Ways from all parts of Ireland lead towards Dublin. Here are breweries, and biscuit, **soap,** and **boot and** shoe factories. The Houses of Parliament

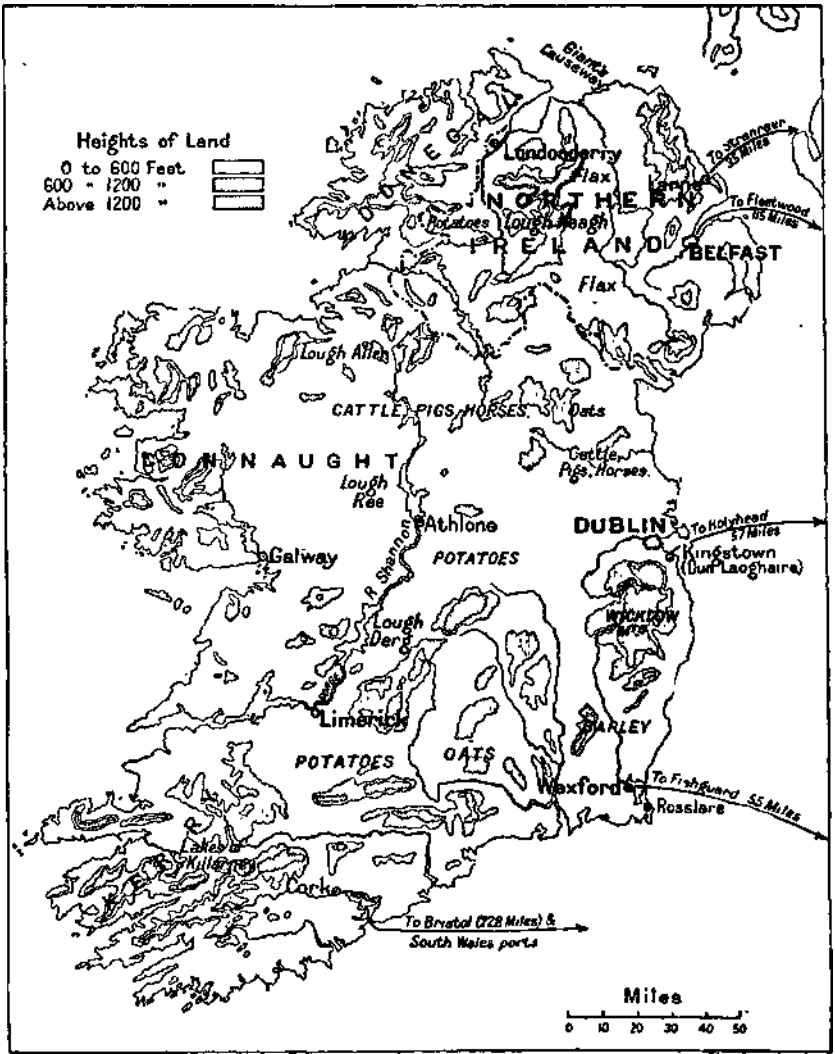


FIG. 56.—IRELAND

of the Irish Free State, the Law Courts, and the residence of the Governor-General are all situated in Dublin.

To it come the sea-ways across the Irish Sea. It is some fifty-seven miles from Holyhead to Kingstown, the port of Dublin. Regular services run between these two ports each day.

Dublin has long been a centre of Irish life. To-day it is not only the capital, but it is also the most important town in the Free State of Ireland. Like all the important towns of Ireland, it is a port, and like Belfast, the capital of Northern Ireland, it faces the west coast of Great Britain. It is on this portion of Great Britain that Ireland depends for most of her supplies, and also for an outlet for the goods which she herself produces.

§ 3

Before we visit the north-eastern portion of Ireland let us find out why Ireland is divided into the *Irish Free State* and *Northern Ireland*. Why is it not one country ?

There are several reasons. First, let us look at our map. Just across the Irish Sea lie England and Scotland. Thus, a fairly short sea-way, and one that could be easily crossed, connects the three countries.

In the Middle Ages, and in fact until recently, travel by land was much more difficult than it is to-day. There were no railways and most of the roads were very bad indeed. Thus travelling by water was often much easier than travelling by land.

So from time to time people came from the poorer lands of Scotland, and from England too, to the richer ones of the north-east of Ireland and elsewhere. Some of them came in **order** to

take part in the quarrels of the Irish people. Most of them remained and settled down.

These colonists drove out many of the folk they found in the country, and the exiled peoples settled in the highland districts of Donegal and in many other poorer mountain areas. The native Irish in the country districts always remained loyal to the Pope, whereas the Anglo-Irish in the towns and the English and the Scottish settlers became Protestants. Thus the country was much divided, and resistance centred in Northern Ireland.

Ulster, which had once been more Irish than Leinster, became a very mixed province, and in the fierce struggles of Charles I's and William III's reigns, the mixed peoples of Ulster took opposite sides.

In 1801 came the Union of Ireland with Great Britain. From that year, Ireland sent members of Parliament to Westminster and began to devote itself to its trades and manufactures.

So we see that people who live in *Northern Ireland* to-day are more akin to the Scottish and to the English than they are to the folk who live in the Irish Free State.

Compared with the rest of Ireland, the North has always been rather independent. Yet though it has its own story, that story has, as we have seen, always been closely linked with the rest of the country, and the North has often led and sometimes ruled Ireland.

For a long time there was much quarrelling about the way in which Ireland should be governed. The problem was solved after the Great World War. In 1920, it was arranged that the people who lived in what is now the *Irish Free State* should rule

themselves, in much the same way that the people of Canada do.

The North of Ireland folk did not wish to be separated from the rest of Great Britain. So it was arranged that *Northern Ireland* was to have a Parliament of its own for local affairs, but that they were also to go on sending members to the Parliament in London. They were to pay the same taxes as the people of England and Wales and Scotland, and for many things rhey were to remain under the same laws.

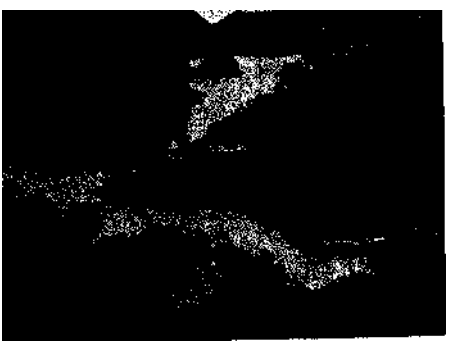


FIG. 57.—LAKES OF KILLARNEY

That is the reason why if an Englishman wishes to send certain things (such as a pair of boots) to a friend in Cork or Dublin, he has to pay a customs duty on his parcel; but if his friend lives in Belfast or in Londonderry, he does not pay any duty, because Northern Ireland has, for this purpose, the same government as England and Scotland.

EXERCISES

I. Find on your map the places mentioned here.

Write out the summary below and learn what you have written.

Most of the higher lands in Ireland lie around the coast. A broad *Plain* separates the Northern *Upland* regions from those

which lie in the south. Slowly flowing streams cross the plain, in which there are many lakes and bogs.

Rivers:—Shannon, with Loughs Allen, Ree, and Derg; the Liffey; the Lagan.

Lakes of Killarney; Lough Neagh ; Upper and Lower Lough Erne ; Loughs Conn, Mask, and Corrib.

There is little *Coal. Peat* is the chief fuel. The use of Electric Power is increasing.

Chief *Towns* are ports : Dublin (capital) ; Limerick; Cork (trades with Bristol—dairy produce) ; Wexford.

Chief Occupations:—Farming: cattle (dairy produce), sheep on uplands, pigs, horses ; crops: oats, potatoes, barley (in south-east), flax (in Northern Ireland).

2. Draw a simple sketch map of Ireland to show:

(a) The regions where cattle, pigs, horses, and sheep are reared;

(b) The districts where barley is chiefly grown.

(c) On your map mark and name the towns of Belfast, Dublin, Cork, Limerick, and Waterford.

3. Rewrite the following and fill in the missing words:

" In the west of Ireland the cottages of the peasants are extremely poor. The walls are built of rough..... and the roofs are thatched with. . . . . .These dwellings are something like those of the. . . . . .who live in the Highlands of Scotland.

The houses in the villages on either side of the Pennine Uplands in England are usually built either of. . . . . .or of. . . . . Both of these rocks are easily worked by the stonemason.

In towns most of the houses are built of brick and are roofed with slates. There are many slate quarries in North . . . . . Slates are also obtained from Devonshire and from the English Lake District, as well as from parts of Ireland and Scotland. The walls of the house in which I live are built of.....and the roof is a. . . . . .one.

In Ireland the chief fuel used by the peasants is. . . . . .In my home we use. . . . . .for heating the rooms and. . . . . .for cooking. The house in which I live is lit by means of. . . . . Our water supply is obtained from. . . . . ."

4. Say how you would get from your home to Dublin.
5. Try to tell why Ireland is divided into the two parts.
6. What is meant by *(a)* Northern Ireland, *(b)* The Irish Free State?

15. NORTHERN IRELAND

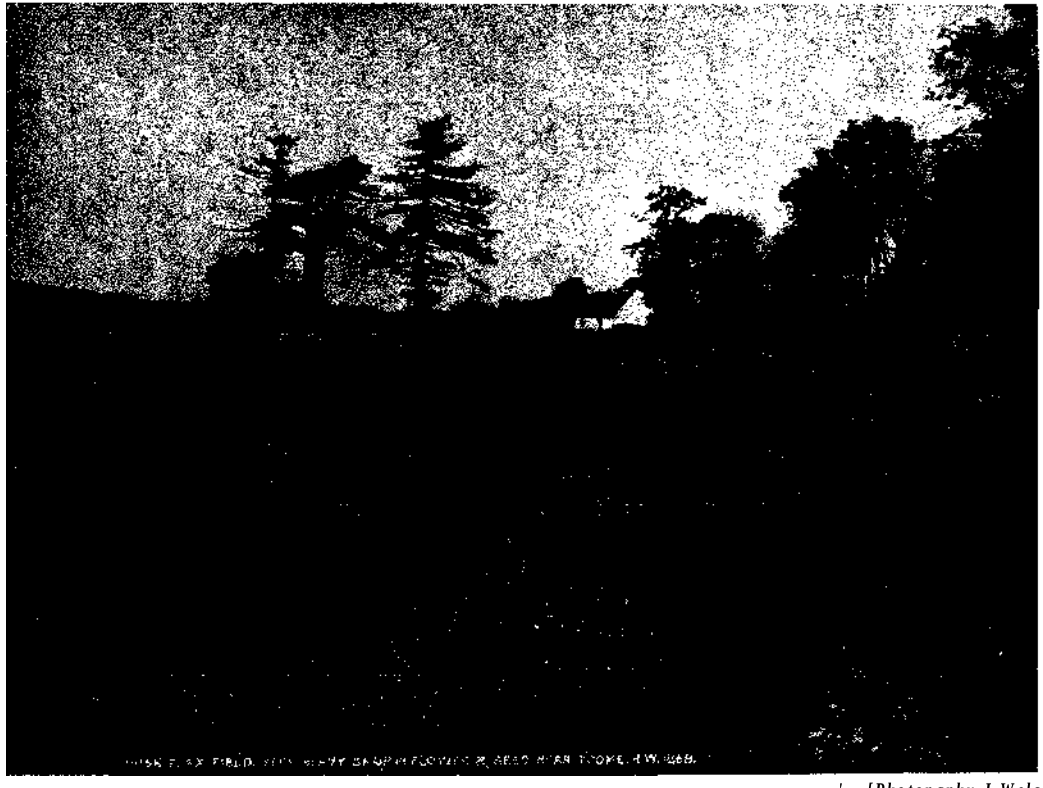
§ 1

IN the centre of north-eastern Ireland lies *Lough Neag/i*, which is the largest lake in the British Isles. This broad sheet of water is very different from most of the long narrow lakes that are found in other parts of Ireland.

Broad ways lead between the uplands from Lough Neagh. Southward there is an easy way through the Newry Gap to the sea, and along the east coast to Dublin. On the south-west a canal connects the valley of the river Blackwater with Lough Erne and with the Shannon. The valley of the Lagan leads towards Belfast, and the Bann flows northward until it reaches the sea at the busy little port of Coleraine.

West of the mouth of the Bann lies the broad estuary of the Foyle, at the head of which stands the port of Londonderry. A little to the east of Coleraine lies Portrush. From here one might pay a visit to the wonderful Giant's Causeway, whose terraces and pillars are formed of volcanic rocks. The magnificent cliffs and the rugged glens of this north-eastern county of Antrim form one of the most wild and picturesque parts of Ireland.

On the slopes of the Sperrin, the Mourne, and other mountain districts, sheep are bred, while in the broad river valleys there are many cattle. The farmers of Northern Ireland, like



[Photopapky.J.Welch.

FIG. 58.—**A** FIELD OF FLAX IN- N. IRELAND

those of the Free State, send much of their milk to central creameries. After the cream has been separated, the milk that is left is taken back to the farms in order that it may be used to help feed the calves and the pigs.

Potatoes and oats are two important crops. Both are used not only as food for people, but for animals as well.

Flax is, however, a still more important crop of Northern Ireland. When the flax is in bloom it is a truly beautiful sight. The pale blue flowers look like a sea of gently moving blue waves.

Flax is a very useful plant. It supplies the fibre used for the manufacture of *linen,*9 and from the seeds an oil is obtained which is used in the making of *oil-cake* for cattle, as well as for linseed oil. This oil is used in the making of paints, printer's ink, and other articles.

The most important thing that is obtained from the flax plant is, however, the fibre. Flax is not cut like wheat or oats, but it is pulled up by the roots. The bundles are then stacked up in the fields to dry. The seed is taken away, and the flax is then placed in streams or in pools where it is allowed to soak. The woody part of the stem decays, and the fibre can then be more easily separated from the stalk. This process is known as *retting.*

The flax is then crushed, after which it is *scutched*—that is, cleared of woody fibre. During the winter months, the work of preparing the flax for the factory is one of the most important occupations of the people of Northern Ireland.

Though the chief linen factories are situated in Belfast and in Londonderry, there are many factories along the river valleys, especially along the valley of the Lagan.

§2

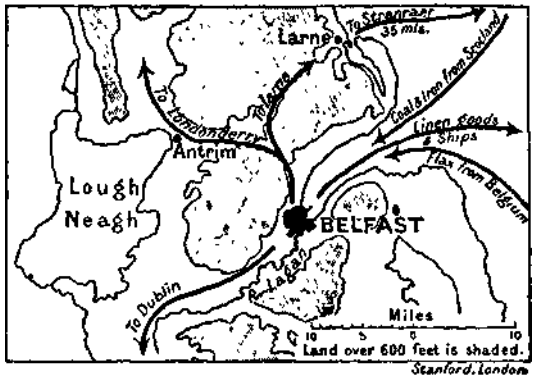


FIG. 59.—BELFAST

Another very important industry in Northern Ireland is *shipbuilding.* One of the chief shipbuilding yards in the world is situated at *Belfast.* There is little coal and iron in Northern Ireland, but Belfast is easily able to obtain, by water, the supplies she needs from the Scottish coal and iron areas. As one would expect in a shipbuilding town, there are also important *rope* manufactures at Belfast.

We shall see many fine buildings if we take a walk through the city. They show how important is this capital of Northern Ireland. There are not only the City Hall and other splendid public buildings, but there are also many fine offices and business houses.

About a hundred years ago the number of people who lived in Belfast was under 40,000. To-day, with a population of nearly half a million, the city is about the same size as Dublin.

Like the Clyde at Glasgow, the Lagan has been deepened, in order to allow big ships to unload their cargoes at the quays of this busy port.

If we were to visit a Belfast family, we should probably find that the women and the younger people worked in the linen factories, while the men were employed in the shipbuilding yards or in the engineering works. Like the folk who live in

the cotton manufacturing towns of Lancashire, or in the woollen towns of Yorkshire, both the men and women lead very busy lives.

The most important industry of *Londonderry* is shirt-making. The shirts are cut out and partly made at home, and then they are taken to the factories to be finished. Londonderry, like Belfast, trades with Glasgow and with Liverpool.

EXERCISES

I. Find on your map the places mentioned here.

Write out the summary below and learn what you have written.

Northern Ireland consists of the six eastern counties of the old Province of *Ulster*.

In the centre lies Lough Neagh, which is surrounded by (I) the Antrim Plateau on the north-east, (2) the Sperrin Mountains on the west, and (3) the Mourne Mountains on the south. Easy ways lead to the sea.

Rivers:—Bann, Lagan, Blackwater, Foyle.

Lough Neagh (largest lake in the British Isles) ; Upper and Lower Lough Erne.

Chief *towns:*—Belfast (capital of Northern Ireland: linen manufacture, shipbuilding) ; Londonderry (linen, shirts) ; Larne (port to Stranraer in Scotland) ; Coleraine.

Occupations:—Farming : cattle, sheep, pigs; crops : flax (for linen and oil-cake), oats, potatoes; shipbuilding, linen manufacture.

2. Draw a map of Northern Ireland. Shade the high land and mark and name the chief lakes, rivers, and towns. Give a title to your map.

3. Suppose that you have a friend in Belfast, and that he is coming to stay with you. Describe his journey from this city to your home. Draw a sketch map to show this journey. How far is it?

4. Tell what you know about flax.

5. Describe a summer holiday in Northern Ireland. Say what places you would like to go to, and why you wish to visit them.

6. Why is there an important shipbuilding industry at Belfast?

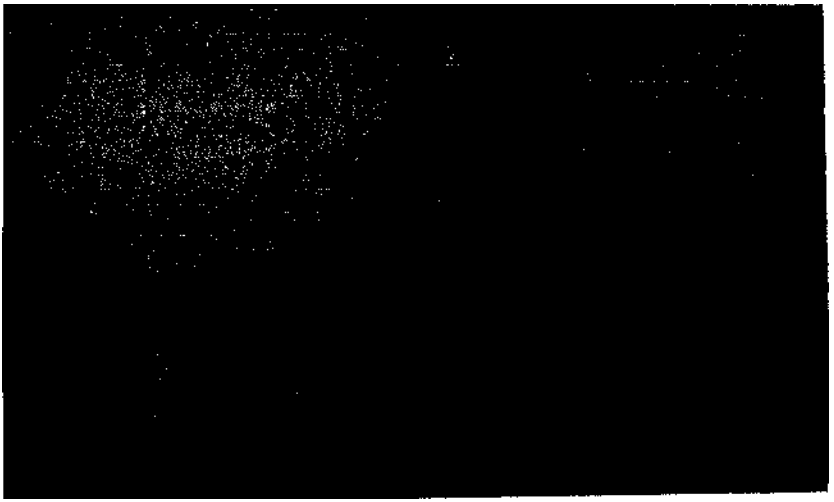


FIG. 60.—COALING SHIPS IN THE DOCK, LIVERPOOL

16. BRITAIN'S GATEWAYS

§ 1

LET us look at our *Globe.* What a little place our islands look upon the surface of the Globe! It is difficult to realise that here, in these little islands, is the centre of the greatest Empire of the world.

Before the New World was discovered, our islands lay on the outskirts of the most important parts of the then known world. But what a difference the discovery of the New World made! The British Isles now lay on the chief sea road: the way between Europe—the most important part of the Old World—and the New World of America,

Here then, right on this great sea-way across the Atlantic,

lie our islands. The first thing that we should probably notice, on looking at our map of the British Isles, would be their remarkable *coast-line.* Nearly all our coasts are cut up with bays, estuaries, and gulfs; and so there are few places far from the seas that wash our shores.

How different it would be if we lived in the heart of such a country as Russia or the United States of America! From a village or town in the middle of one of those countries it might take us several days to travel to the ocean. In Britain, there is not a town or a village from which the sea cannot be reached in a day, and from most places in less than a day.

The great *estuaries*—of the Thames and the Bristol Channel; the Humber and the Mersey; the Forth and the Clyde—all lead right into the heart of our lands. Twice each day the tides deepen and widen these estuaries, and thus allow large ships to reach the important ports situated on their waters.

Some of the greatest *ports* in the world are situated in the British Isles. To them come ships from all parts of the earth. Let us look at the position of some of these great ports. The three most important are London, Liverpool, and Glasgow.

Each of these ports lies some distance up an estuary. Why is this? Why is not London situated at the mouth of the Thames, Liverpool at the entrance to the Mersey, and Glasgow farther down the Clyde? Surely if they were, ships would be able to get to them more quickly? Yet, as we have just seen, these are our three most important ports.

It is, however, much more expensive to send goods by land than by water. Therefore, the farther a ship can get up a river, the less distance will the goods she brings have to be sent by

land ways. If, too, a port lies inland, its position will naturally be more central than if it lies on the coast.

Big ships, like the great steamers that go to America, to India, and to Australia, need deep water in which to anchor; so we see that a good port must have both deep water and a deep waterway leading to it.

Many of the waterways that lead to our big ports have been deepened so that ships can get up to them. At one time the Clyde at Glasgow was a small river, and ships had to stop farther down the estuary. So the river was banked and made to flow in a proper channel, which was dredged and deepened. Thus to-day big ships with their loads can get right up to Glasgow.

The entrance to the Mersey estuary has to be constantly dredged to allow the passage of ships to and from Liverpool and Manchester. The banks of the Mersey at Liverpool are lined with *docks.*

At the entrance to the docks are great gates. These gates allow the water and the ships to enter at high tide. They are then closed, and the water can be kept inside the dock until the next high tide.

In the days before docks were built, ships had to anchor farther away from the land. The goods they brought had to be taken ashore in small boats, or even carried on the backs of men who waded through the water. Nowadays ships can enter the docks, and their cargoes are unloaded there.

So great is the *tidal range,* or the difference between high and low water, in the Mersey estuary, that floating platforms, which rise and fall with the tide, are anchored on either side of the river. These platforms allow passengers to board more easily the ferry-boats that cross from one side of the Mersey to the other.

FIG. 61.—A MAP TO SHOW WHERE THERE ARE MOST PEOPLE IN THE BRITISH ISLES

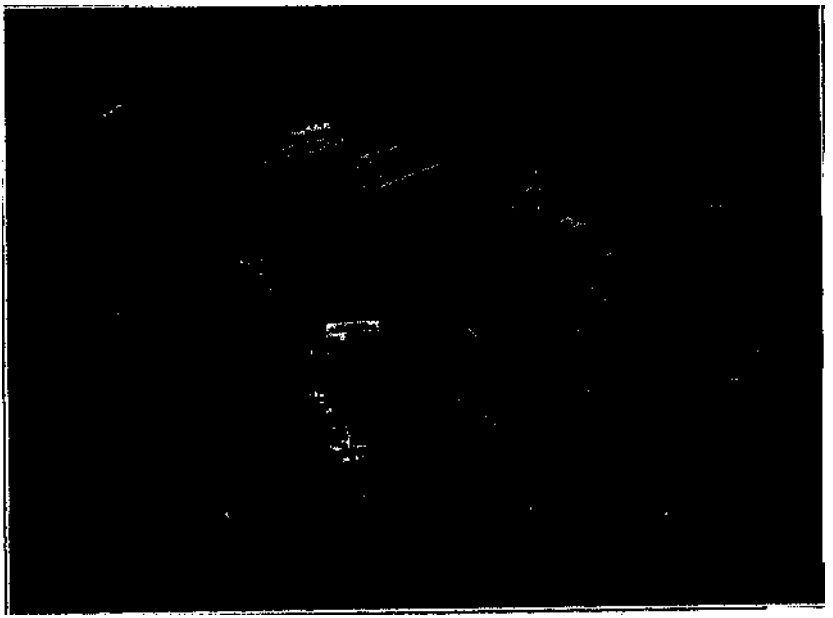
The making of a great *ship canal*, some thirty-five miles long, has connected Manchester with the sea, and has made this great town an inland port. Large ocean-going steamers can now go right up to Manchester instead of having to stop at Liverpool.

§3

Farther south along the west coast is another port, which was once much more important than Liverpool. This is the ancient town of *Bristol.* In the time of Queen Elizabeth this port was the second in the British Isles. From it Cabot sailed when he discovered Newfoundland. To Bristol came ships from many lands, and along its quays walked sailors from all parts of the world.

To-day Bristol is not nearly so important as Liverpool. The reason for this is, that ships are now very much bigger than they were, and very big ships cannot get up to the port of Bristol, but must remain at the docks at Avonmouth. The river is too shallow for them, and there is also a big bend in the Avon below Bristol, the Horseshoe Bend, round which it would be impossible for a very big ship to turn.

Behind Liverpool there is a district where the many people who are engaged in the cotton and other manufactures live; but



60 *[Photograph by Atrofilms Ltd.*

FIG. 02.—SOUTHAMPTON DOCKS

around Bristol there are not nearly so many people, and there is not, therefore, nearly so much trade as there is in the busy manufacturing district of Lancashire.

Along the shores of the Bristol Channel lie the ports of Newport and Cardiff. These towns, and others along this shore, send their coal to all parts of the world.

If we were going to New York, we should probably set sail from Southampton, which is the greatest port on the south coast. This town lies at the head of the long estuary of Southampton Water, which forms one of the most beautiful natural harbours in the world. It has also a wonderful advantage owing to the fact that it has four tides a day instead of two,

Southampton is a great *passenger port,* and from it sail some of the chief passenger ships to all parts of the world. We can see great ships passing up the waters of the Solent, which lies between the Isle of Wight and the mainland.

Up these same waters, many hundreds of years ago, came traders from ancient Greece and other parts of the Mediterranean Sea. Later, both the Romans and the Saxons had settlements here. We may still pass through the old Bar Gate, which was built by the Normans when they made very strong walls and defences to protect the town against the attacks of the French.

When Winchester was the capital of England, as in the time of Alfred the Great, its port was Southampton. To-day many people, who come from other lands to visit our capital, and many of the goods that are going to London, are landed at Southampton.

§4

The great ports—such as London, Liverpool, and Glasgow—and the somewhat smaller ports—such as Hull, Bristol, and Southampton—are, however, only some of the more important " gates " through which people and goods enter and leave our islands. There are many other smaller gates.

At the point where the coast of England is nearest to the continent of Europe is Dover. Near to this port is Folkestone, and farther westward along the coast lies Newhaven. These ports are the chief places through which people pass on their way to and from the Continent.

These and other similar ports do not lie at the heads of estuaries, but they are at or near projecting points of land. In ports such as Dover, the harbours are not natural ones,

but have had to be constructed. Now, as a rule, most people when they are travelling wish to get to their destination as quickly as they can. It is quicker to travel by train than it is by boat, and so if a sea journey can be shortened, time is saved.

The boats that cross the English Channel or the North Sea are not nearly so large as the great steamers that go to America or to India. Such ports as Dover, therefore, do not need to have such large or such deep harbours as those of Liverpool or of Southampton. A small harbour and one that need not be very deep is all that is necessary.

FIG. 63.—THE TOWER OF LONDON

These ports, which are used chiefly for passengers and for mails, are called *packet stations.* There are many packet stations around our shores, and most of them lie in positions similar to those that we have mentioned.

§5

We have seen something of the different kinds of ports which form the gateways to our islands, but there is one that forms the greatest gateway of all. This is *London.*

In very early times there were few bridges, and if people

(Photograph by Aerofilms Ltd.

FIG. 64.—LONDON—WESTMINSTER BRIDGE, THE HOUSES OF PARLIAMENT, AND WESTMINSTER ABBEY

wished to cross a river they usually had to find a shallow place or ford. It was at such a ford that the road from Dover and Canterbury to London first crossed the Thames, Later a bridge was built a little farther down the river at a place where there was firm ground and high banks on either side. In Roman times there was a wooden bridge at this spot, which was, as we have already seen, the lowest place on the river where a bridge could conveniently be built.

Here, at this point, land routes from all directions met the sea-ways that came up the estuary of the Thames. The city of London grew up around two hills on the left bank of the

river. On one of these hills was built the Tower of London ; later on St. Paul's Cathedral crowned the other.

Throughout the centuries, London has increased in importance, and to-day it is the chief town of the British Empire, and the most important town in the world. If we were to visit the *Port of London,* we might see vessels from all parts of the world. To its quays come ships bringing wool from Australia, mutton from New Zealand, fruit from Tasmania and South Africa, tea from India, Ceylon and China, wheat from Canada, timber from Norway, and coffee from Brazil. Yet these are only a few of the things that are brought to this great port.

If we spent a holiday in London, we might visit some of the chief buildings of our country and our Empire. We should see the Houses of Parliament, where our laws are made; the Tower of London, built by William the Conqueror nearly nine hundred years ago; Buckingham Palace, which is one of the houses of the King; the Bank of England; the Mansion House, where the Lord Mayor of London lives; the National Gallery, which is full of beautiful pictures; and many other places of interest.

EXERCISES

I . Find the places mentioned here on your map.

Write out the summary below and learn what you have written.

Estuaries of the Thames; Bristol Channel (Avon) ; Humber; Mersey ; Forth ; Clyde ; Southampton Water.

Ports:—London (Thames) ; Liverpool (Mersey); Glasgow (Clyde) ; Bristol (Avon) ; Cardiff and South Wales Ports; Southampton ; Dover for the Continent; London (greatest gateway of all).

2. *How to judge distance on your maps by means of circles.*

(a) Take a piece of tracing paper. With the same centre describe circles of i, 2, 3, and 4 inches respectively.

(b) Place the piece of tracing paper over a map of the British Isles so that its centre is over your county town. Look at the scale of your map. How much does an inch represent?

(c) How far are the following ports from your county town?—London, Liverpool, Bristol, Hull, Southampton, Glasgow.

(d) Can you state some of the chief goods which are sent to your own town or village through *three* of these ports?

3. From what port would you sail if you were going to Canada?

How far is this port from your home?

If you travelled to the port by rail, could you go by a through train or would you have to change on the way?

How long would the journey take you if you went by the fastest train in the day?

What is the third-class railway fare?

4. Draw a map to show how you would get from your home to the seaport you have named in the previous question. Give the map a title.

5. Look at your map of the world. On it find Ceylon.

Ceylon sends tea to the British Isles. Name four ports at which the steamer bringing this tea would probably call on its way from Ceylon to England.

To what English port would the steamer probably bring the tea?

6. Write notes on : our coastline; the value of estuaries; docks; tidal range; passenger ports; packet stations; fords.

7. Why is Liverpool more important than Bristol to-day?

8. Imagine that you have paid a visit to London, and tell what you saw.

9. Compare the map (Fig. 61) which shows where there are most people in the British Isles with the Coalfield Map (Fig. 44). Write down the chief things that you can learn by doing this.