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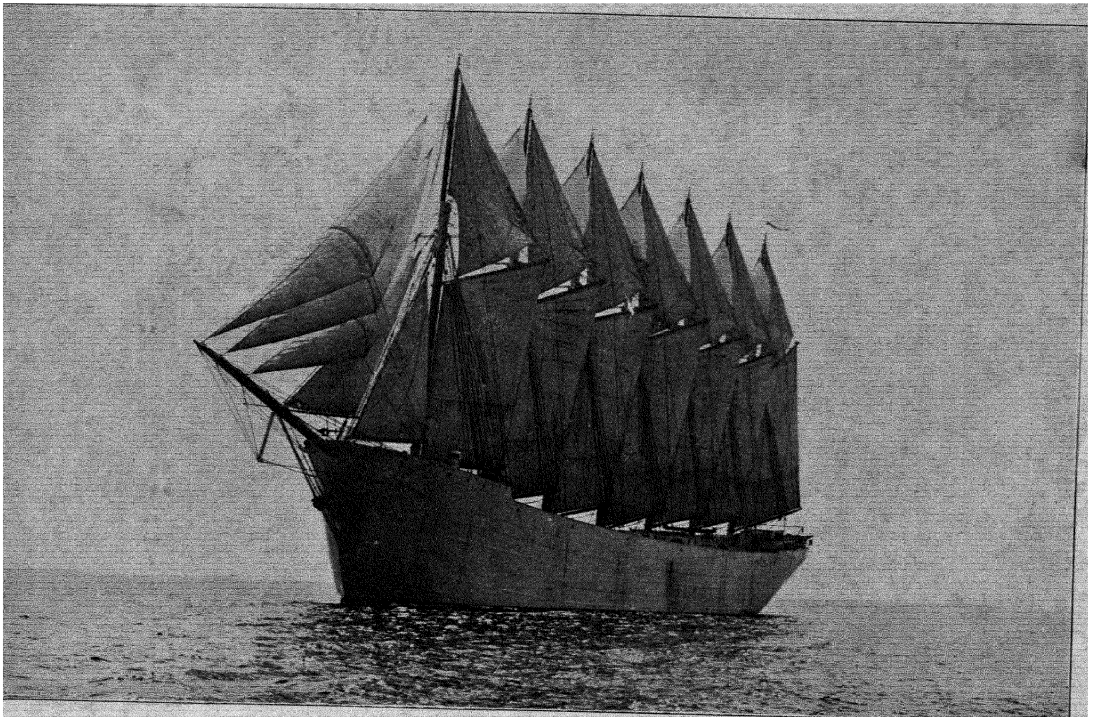

SEVEN-MASTED SCHOONER "THOMAS LAWSON"

MACMILLAN'S COMMERCIAL SERIES

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THE GEOGRAPHY OF COMMERCE

A TEXT-BOOK

BY

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PREFACE

THIS book involves two points of view: physical geography (physiography), and the activities of men and organizations of men. This makes necessary the union of two phases of thought, often treated as unrelated, one dealing with physical science, the other with economic affairs. The balance between these has been sought in the interpretation of commercial life as dependent upon physical surroundings. This, it is conceived, should be the method for the study of the geographical basis of commerce. If commercial geography is to serve its true ends in education, it must be primarily geography, not a mere aggregation of commercial data. The unrelated facts of commerce have slight educational value; they should be made to illustrate some underlying principle, to make clear a natural law, to stand in relation to the great stream of causes and effects.

For the purposes of introductory study as outlined in the present work, facts should be taken with a certain largeness of view, and will have their highest utility in indicating relative conditions at a particular time. The actual amount of the wheat crop in bushels or of the coal output in tons for a given year is of little significance, unless comparison is made with similar data for previous years, also with the statistics of population and with data for other countries. Thus is obtained a view of the relative increase and the relation of the commodity or industry in question. Graphic representation to illustrate the increase of a commodity or industry, either absolutely or in relation to population, or in relation to the increase or decrease of other commodities or industries, or in comparison with production in other countries, etc., has vastly more meaning than has any one set of facts.

Graphic representation has been employed in the present work to represent the approximate condition of various commercial activities.

Notable among the sources used in the preparation of this book are the special and general reports in the Monthly Summary of Commerce and Finance of the Bureau of Statistics; volumes of the Twelfth Census; Commercial Relations of the United States; Yearbooks of Agriculture; Mineral Resources of the United States; Consular Reports and reports of Boards of Trade; publications of the Bureau of American Republics; the *Statesman's Year Book; Handbook of Commercial Geography* by Chisholm; and various articles in the *International Geography* by Davis, Chisholm, Mill, Keltie, Herbertson, Kirchhoff, and other writers no less worthy of mention. Use has also been made of many other works.

The author's thanks are due to Mr. O. P. Austin, of the Bureau of Statistics, for his courtesy and kindness in supplying much valuable data; also to Mr. Frederic Emory, of the Bureau of Foreign Commerce Thanks are extended to Principal Charles T. McFarlane of the Brockport (New York) State Normal School, for valuable aid in the preparation of the manuscript, also to Mr. Edmund B. Smith, of the Hyde Park High School, and Dr. William H. Allen of New York City, for reading the book in proof. Many errors have been avoided and the book has been much improved from the suggestions of these gentlemen. The author is likewise under obligation to the Philadelphia Commercial Museum, for allowing reproduction of certain illustrations and furnishing data.

The author's illness placed the final revision of the manuscript and the reading of proof in the hands of the editor of the Series in which the book appears. Dr. Herrick was a colaborer in the preparation of the manuscript and supplied the suggestive questions which accompany the chapters. To him the author desires to express a sense of appreciation of helpfulness, encouragement, and sound advice which were always freely given.

S. T.

SWARTHMORE COLLEGE, PENNSYLVANIA,
June, 1903.

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EDITOR'S INTRODUCTION

THE book presented herewith is the first of a Series designed to cover ultimately the whole field of commercial education. Closely related to the present book, and to follow it in due time, are three other works: one dealing with commercial products; one with economics applied to commercial affairs; and another with the history of commerce. These with the geography will serve as the backbone of the Series, and the other books to be published will be articulated with them.

The book on commercial products will treat of ready-to-hand materials of commerce from the standpoint of science and industrial processes. It will deal with the commodities of commerce — how secured, parts used, how prepared, etc. By such treatment science becomes an eminently practical subject, not restricted to formal systems of classification or to the gross anatomy of selected types.

The *Geography of Commerce* fixes the attention on the earth as an agent in the production of commodities upon which human life depends. In a broad way it treats of the relations of men to their physical surroundings. The aim has been to give an account of the physical features, the products, and the trade of the United States, also a more general view of these for the world at large; in dealing with other countries emphasis has been laid on their trade relations with the United States. It is believed that the sequence of the different parts is logical. The plan followed has been to treat the commerce of each country under the following heads: first, the physical basis; second, the people; third, the products; and fourth, the trade. Thus in dealing with the causal relations of physical environment to men, of men and environment to products, and

of products to trade, there is given a unity that will make the book readily adaptable for class purposes.

The *Geography of Commerce* was prepared to make clear the present conditions of trade, but with the attention fixed primarily on the physical laws and facts by which it is influenced. It is geography from the science side and is in conformity with the ideal expressed some years ago by President Gilman, now of the Carnegie Institution, "The geography of the future will be written by a scientist, preferably by a biologist."

The *Economics of Commerce* will deal with the present conditions of industry and trade, but will treat them more particularly from the standpoint of men and organizations of men. Economics will be made inductive and practical.

The *History of Commerce* will present the evolution of trade; it will furnish a view of the past state of trade as Geography and Economics do of its present condition.

This Series will not be revolutionary; the authors and the editor have tried the old and the new in our system of education; they have become somewhat acquainted with practices in foreign schools, and have made themselves familiar with the best of the books used there; they aim to present a group of books that will hold fast to that which is good in our own experience, and give it added value through fresh applications and by the introduction of new elements. The books are the result of years of experiment and planning. Neither labor nor expense will be spared in their preparation and presentation. These books are being prepared by experienced teachers who have due regard for the needs of class instruction. Suggestions for the improvement of this Series will be gratefully received.

We have reached the third and all-important phase of the question of giving commercial instruction in public high schools. The first was, Shall such instruction be attempted? This was answered in the affirmative. The second was, What shall be put into the curriculum? By general agreement four years of studies are recommended, these

to be of stable educational worth. The final question in answer to which the present Series was projected, is, How get out of the curriculum the educational results claimed for commercial studies? Properly prepared teachers and suitable text-books are the requisites, and the second is not less important than the first. Commercial education has been delayed only because suitable books were not available.

The Geography has been published first because it is the treatment of commerce that can be most satisfactorily introduced as a new branch of study. Geography is the most universal subject of the group. It is a study of the earth, but in its relations to men; hence geography touches on science, industry, economics, and history.

Dr. Trotter's book is on the "practical side" of geography which, according to a recent statement of Professor Davis, "is best taught in a well-developed course of commercial geography placed after earlier courses on general geography in the grades and a course in elementary physiography either in the grades or in an early high school year." Though the manuscript of this book was prepared before the appearance of Professor Davis's formulation of the requirements for a commercial geography, it fairly answers those requirements. After expressing the belief that commercial geography if well founded and well developed is to have a prominent place in our system of education, Professor Davis adds, "If commercial geography is to gain the place it deserves, it is of vital importance that it should be taught as that part of regional geography in which man, the trader, responds so marvelously to his environing conditions."[1]

Probably the further we look into the matter the better we shall agree that the attempted sharp division of geography into political, physical, and commercial is misleading and illogical. Political geography may well involve physical and commercial elements; physical geography can be given practical application; and commercial geography should have the basis of the physical. Dr. Trotter's book is

[1] *Geography in the Schools*, p. 48. See Bibliography, p. 7. Every teacher of geography should study this monograph.

not what so long has been to students the purposeless pure science of physical geography. Under the head of regional geography the best of the physical has been retained, and it is made instinct with meaning by practical application. Nor is the book a commercial geography of the sort that "is in the woods, without compass or sun, lost among the brambles of infinite detail." Instead of the "woods" of principles being obscured by the "trees" of facts, principles and facts are so presented that it is possible to see at once the woods and the trees.

Several chapters of the book have been used for class instruction; all the proof has been studied by high school students, and the matter so altered as to bring it fairly within their comprehension. The aim has been to be perfectly clear, but this does not imply that there is no effort to be put forward by teacher and pupil. In several instances, for example, monetary values are given in units of foreign countries, so that by performing the reductions (by use of table, p. 383) the student will learn the monetary standard of different countries, and something of the computations for foreign exchange.

An effort has been made to furnish the book with a working equipment as complete as possible. The subject is new, and it has been thought wise to append lists of books for further consultation. These lists are meant merely as suggestions as to some of the available newer material. Difficulties sometimes arise in using such reading lists, and to point the way in using those furnished, supplementary questions and topics are supplied. Many of these are an outgrowth from the text, but some of them relate to matters outside of the text, and refer directly to the book lists. The questions have been in part compiled from those published by the London Chamber of Commerce, the County Council of the West Riding of Yorkshire, the Board of Regents of New York State, and those prepared to accompany Longmans' *School Geography*. The question lists are suggestive merely, and will be most useful in promoting other questions upon the text and outside of it.

C. A. H.

PHILADELPHIA, August, 1903.

SUGGESTIONS FOR A WORKING METHOD

A BOOK of this sort would be most valuable if it were truly a *text*, to be enlarged upon by outside reading and class discussion. The present book is complete in itself and may be made the basis of class recitation, but a higher value will be realized if it furnishes the means for wider study and class teaching. To make the latter more feasible two definite lines are suggested for supplementary work: (1) the collection and use of a museum of commercial materials; and (2) the building up and utilization of a reference library on commercial geography.

Though the commercial museum idea is new, it does not present great difficulties. A few dollars for bottles and labels will give the start. Cereals, fibers, woods, tea, coffee, cacao, starches, sugars, ores, metals, coal, clay, brick, building stone, pigments, gums, oils, hides and skins, leather, etc., can be readily secured. Varieties of the different materials should be shown in a raw state, in various stages of manufacture, and as finished products. Special attention should be given to local industries and products. It is quite possible that schools in different sections may be able ultimately to exchange their surplus materials to mutual advantage. In every community will be found manufacturers and dealers who will contribute the small amounts of material needed for illustrative purposes. Indeed, a simple request to a class will often bring a goodly return of products for a museum.

If funds are available, a tolerably good museum can be bought outright; but this method of obtaining one is not necessary, perhaps

it is not desirable. Two inexpensive methods are known by which materials have been gathered and arranged. One is to assign different products to individual students, furnish them with credentials, and let them solicit and arrange the material under the teacher's supervision. A fairly complete commercial museum has been thus collected at Drexel Institute, Philadelphia. A good working collection has been made in a very different way by Mr. Frank O. Carpenter of the English High School in Boston. Mr. Carpenter bought his own bottles and cases, and gathered and arranged the products, placing them in the school as a loan collection. Where the former method can be put into practice it would seem more promising of educational results.

Ordinary exhibition cases or simple book shelves furnish the display space necessary for a commercial museum. Such a museum should be kept either about the walls of the class-room or adjacent to it. It is believed that any teacher who gives this supplementary work a fair trial for a year will be gratified at the showing he is able to make and the interest he can arouse. The single book most useful for this work is Yeats, *Natural History of Raw Materials of Commerce* (London: Philip & Son. Price 6*s*.).

The special library also is largely a matter of personal attention, and calls for but a limited expenditure in money. There should be for reference, preferably on a reading table, in the class-room, a commercial atlas, a few standard books, and numerous documents and reports.

Of the atlases in English, Bartholomew's *Commercial Atlas* is probably the best (Macmillan Co., $ 1.00); but one in the German, more modern and much superior, is Scobel, *Handels-Atlas* (Leipzig: Verhagen and Klasing. Price 6 marks). It is desirable to have in the class-room, also, a large wall map or chart. A very satisfactory one is Johnson's *Commercial Chart* (London: Johnson Map Concern). Mention should be made of the maps in numerous government reports, particularly of the Bureau of Statistics. Many

of these are large, being folded as insets. Such maps when taken out and mounted on muslin will be found useful. By use of outline maps students can be given, at a minimum expenditure of time, much valuable practice in fixing the distribution of products, the location of industries, the centering and direction of trade, etc. Very satisfactory outline maps are those of the McKinley Publishing Co. of Philadelphia. (Large size, 75 cents a hundred.) The same publishers also furnish coördinate paper for the representation of statistical matter on graphs and diagrams.

The most indispensable book for reference purposes is the *Statesman's Year Book* (Macmillan Co., Annual Issues, $3.00). The *Commercial Yearbook* (Journal of Commerce, New York City) furnishes a useful compend of statistics, as does the annual *Statistical Abstract of the Federal Bureau of Statistics* (formerly in the Treasury Department). The former is $1.00, and the latter may be had on request. The *British Statistical Abstract for Foreign Countries* contains much valuable information (London: Eyre and Spottiswoode, 1*s.* 6*d.*). The *Shipping World Yearbook* (Annual) gives the tariff arrangements of all nations, also detailed information of important ports, — their incoming and outgoing trade, harbor facilities, etc. (London: *The Shipping World.* Price to foreign countries 6*s.*). A pamphlet of value is the *World's Commerce and American Industries*, published by the Philadelphia Commercial Museum, 1903. (Price 50 cents.) A useful and inexpensive reference book is the annual almanac issued by various newspapers; the one by the *New York World* is particularly good (25 cents).

The *International Geography*, prepared by a group of scholars, is clearly the best single volume on geography (Appleton and Co., $3.50). Of the distinctively commercial geographies, the *Handbook* by Chisholm is still the best (Longmans, Green, and Co., $4.00). Zehden's *Commercial Geography* is a typical German text-book which may be had in English translation (London: Blackie and Son, 5*s.*). A recent French book of distinct value is Du Bois and

Kergomard's *Précis de Géographie Économique* (Paris: 1903, Masson and Co, 8 francs). Several briefer commercial geographies have appeared in England, among them Mill's, Gonner's, Smith's, and Lyde's. Others have been published in this country, notably those by Adams, Macfarlane, Redway, and Tilden.

The government reports are mostly for gratuitous distribution. They may sometimes be secured by application to the heads of the bureaus, or departments, by which they are prepared; but the numbers for such distribution are usually limited, and they can be had with less delay by presenting a request through a member of Congress. The Consular Reports should come first, to be followed by the regular and special reports of the Bureaus of Commerce and Statistics (now consolidated in the new Department of Commerce and Labor); also the reports of the new Bureau of Manufactures in the department just named. There should be had, if possible, the volumes on Agriculture and Manufactures of the Twelfth Census, and, in any event, the Abstract of this census and the reports of the Permanent Census Bureau. Add to the foregoing, the Yearbooks of the Department of Agriculture, the annual and other reports of the Weather Bureau, and special reports of the Foreign Markets Section of the same department; the annual volume of the Geological Survey on *Mineral Resources of the United States;* Reports of the Bureau of Insular Affairs in the War Department; Annual Report of the Commissioner of Navigation; and the Annual Report of the Interstate Commerce Commission. This list is by no means exhaustive, but it serves to indicate how rich are the stores of information furnished by our government.

Slightly different from the preceding in organization, is the International Bureau of American Republics. It controls its own literature, which is usually sold at a nominal price. Its Monthly Bulletin and Handbooks are of first importance in dealing with the republics of the western hemisphere. Of special value for many countries are selected reports of the British Board of Trade and the

Diplomatic and Consular Reports of the British Foreign Office, selections from the Miscellaneous and Annual Series. These are sold separately at a very low price (Eyre and Spottiswoode, London).

A recent study of the United States from a British standpoint is suggestive: *American Industrial Problems*, by Lawson (McClure, Phillips & Co., $2.00). A very useful book is Clow's *Introduction to the Study of Commerce* (Silver, Burdett & Co., $1.25). A valuable English book along similar lines is Galt and Gambaro's *Lessons in Commerce* (London: 3*s.* 6*d.*). Slightly different in character, but also to be recommended, is Yeats, *Recent and Existing Commerce* (London: Philip & Son, 6*s.*).

The selection of books and documents from the above list should be supplemented by magazine literature and trade journals. Poole's *Index to Periodical Literature* gives a survey of the field. The *Cumulative Index to Periodical Literature* (Minneapolis) makes available the contents of magazines in advance of Poole's *Index*. Of the magazines themselves there should be mentioned first the *Magazine of Commerce* (London). This is an illustrated monthly, dealing with various phases of commercial affairs. Its first number appeared in November, 1902, and up to date it has been ably written and highly artistic. (Foreign subscription rate, 18*s.* per year.) The *World's Work* and the *Review of Reviews* are monthlies of our own country which should be mentioned. The latter furnishes a summary of the contents of other leading magazines.

If possible a few of the standard trade papers should be secured, such as the *American Agriculturist* (New York and Chicago, $1.00, Weekly); *The Engineering and Mining Journal* (New York, $5.00, Weekly); *Financial and Commercial Chronicle* (New York, $10.00, Weekly); *The Iron Age* (New York, $1.00, Weekly; *The Textile World* (Boston, $2.00, Monthly); *The Railroad Gazette* (New York, $4.20, Weekly); *Board of Trade Journal* (London, Weekly, 1*d.* per number); The *Journal of Geography* should be included in this list (Lancaster, Pa., $1.50).

Publishers of trade journals have sometimes been made to see that it is to their advantage to have young people being educated for business, familiar with their publications, and when they have so seen they have given schools complimentary subscriptions. Business houses often get a large number of journals which are read and abstracted, after which they go for old paper. Such journals would be cheerfully given to schools. Students will sometimes contribute recent issues of magazines.

More important than getting these papers is the use to be made of them. One successful method is to have them read and cuttings made of important articles as a class exercise. In thus working under the eye of the teacher, students get a breadth of view in the subject, and training of the selective faculty. The cuttings should be classified and kept in envelopes or folders. A simple "vertical letter file" has been found satisfactory as a device for classification. This works on the card index principle, can be used for minute or loose classification, and is capable of indefinite expansion. Plain board boxes, with folded sheets of paper and pasteboard dividers, will serve as a substitute for the vertical letter file.

No statement on method would be complete without mention of lantern illustration. The heliostat, stereopticon, oxyhydrogen, and electric lanterns are familiar. It is preferable to have dark shades in the class-room, thus making it possible to use the illustrations in connection with the subjects which they illustrate. The stereoscope may be used to advantage, especially in small classes. Diagrams, maps, statistics, etc., may be prepared for lantern projection by drawing on glass with an ink thickened with gum.

C. A. H.

THE GEOGRAPHY OF COMMERCE

THE GEOGRAPHY OF COMMERCE

PART I

INTRODUCTORY

CHAPTER I

THE RELATIONS OF GEOGRAPHY AND COMMERCE

1. Scope of the Work. — This book aims to describe commercial life as it is influenced and determined by geographical conditions. To understand the relations of geography and commerce, the various industries and occupations of men must be studied in the light of their dependence upon physiographic surroundings. "Physiographic" as distinct from "geographic," is taken to include the physical environment, as climate, soil, topography, and the distribution of resources. Geography, as distinct from physiography, includes not only the physical environment, but the human element as well. Geography is used in the following pages, in its broad meaning, and includes an account of man and nature, and the interactions which are an outcome of their relationship to each other. Commerce grows out of the adjustment of men to their physical environment. The study of regions, it has well been said, passes naturally into what regions produce, and similarly the study of men leads to what men make.[1] Thus the geography of commerce includes what is coming to be understood as economic geography, — the production and distribution of raw commodities; and industrial geography, — or the location of manufactures and the distribution of their products.

Commerce enables men to give the goods they produce, or that

[1] Redway, *New Basis of Geography*, p. 176.

are produced in the region they inhabit, for goods not produced; its utility is in that men of each region can enjoy the productions of all regions. The geography of commerce should furnish first, an account of the natural raw products of the earth, and the localization of industries. Unequal distribution of products necessitates their transfer, hence the subject also includes a description of the earth as an agent that aids or hinders in transportation. In last analysis, life is conditioned by physical environment; the geography being studied is therefore a statement of the facts and laws of the physical universe affecting man's economic life; or, it deals with the earth in its relation to man's physical well-being. In brief, the geography of commerce sets forth the things that the earth does or is made to do, in supplying the material needs of men. This book aims to give an eye picture of world trade, from the view point of physical facts and laws. In this picture the bold lines are the centers of production, great commercial cities, and commercial routes, with the reasons therefor. These subjects are treated with special regard for the commercial interests of the United States.

2. **The Physiographic Control of Commerce.** — The commercial life of peoples is based primarily on the physiographic conditions of the regions which they inhabit. By physiographic conditions is meant such things as the relief and drainage of the land, the nature of the soil, the contour of the shore line, and the climate. Relief produces slope, which bears directly upon agricultural production, and likewise influences in transportation. Thus, a broad, gently sloping plain is favorable to agriculture. Mountain ranges offer barriers to transportation; on the other hand, a river flowing through a region affords a natural highway of transportation, either by its waters, or by the lowlands along its valley. The river valley, again, especially in its lower portion, is covered by a rich soil which the water has spread over its flood plain. The land of Egypt is richly productive because it is the flood plain of the Nile. Similar flood plains are found in many other river valleys.

The nature of the soil is also a determining factor of commercial life. The admixture of sand and clay forms the fertile *loam* which contains the elements of plant food; the presence or absence of loam, therefore, determines the presence or absence of agriculture on any scale. Human welfare ultimately rests on the nature of the soil, for from it man draws directly or indirectly, his food, clothing, and shelter. Soils result from the "weathering" or breaking up of rocks under the action of rain, frost, and other atmospheric agencies. The irregular particles which make up a soil do not fit closely together, but leave interspaces which are filled by air or water or both. Under normal conditions each tiny particle of soil is surrounded by a film of moisture. The root hairs of plants attach themselves to the particles of soil and absorb the mineral matters that are dissolved in this moisture. The air is likewise of great importance to plant life. Soils are found to differ as to their porosity. Thus in clay the particles fit so closely together as to leave comparatively little interspace. This produces a stiff, compact soil through which water and air find their way with difficulty. Such a soil is unsuited to the growth of many kinds of plants. On the other hand, sandy soils are loose, with comparatively large interspaces. The ease with which these drain, renders them also ill adapted to the growth of many kinds of plants. A mingling of sand and clay (loam) combines the requisite conditions for the great majority of the grasses and other useful plants, for both the ingredients are rich in the elements of plant food. Many limestones also form excellent soils, for they are rich in plant food which is readily dissolved by percolating water. The alluvial mud of rivers, and old lake bottoms, is a fertile mixture of sand and clay. The productive fertility of soils also depends largely upon the presence of decaying organic matter, both vegetable and animal. The mold or "humus" which forms the surface soil of many regions (notably of forest lands), gradually works downward and mixes with the earth. Bacterial organisms, earthworms, and other living beings perform an important

service to plant life by converting various substances into available food for plants. Darwin estimated that in England, from seven to eighteen tons of soil per acre were annually brought to the surface and exposed to the influence of the air through the agency of earthworms.

In a word, a soil, to meet the fullest requirements of agriculture, should contain the needful food elements of plant life, and should be easily broken up by the plow and harrow, neither too stiff and compact nor too loose and porous.

The effects of contour are seen in Europe, for example, where a long and tortuous coast line incloses inland-reaching bodies of sea water. These bays and seas have had a direct effect in stimulating commercial activity by favoring a seafaring life, and rendering access to the ocean highway easy. Rivers discharging into the sea by sunken valleys or estuaries, and deep inlets of the ocean of whatever kind, when other conditions exist, form natural harbors for shipping. The African continent presents the reverse of these conditions with comparatively unindented coast line and scarcity of inlets. Irregularity of shore lines is in large measure the result of a sinking of land in a past age, the higher portions of the land remaining as islands, peninsulas, etc. Islands tend to foster trade by the comparative smallness of their areas which forces an increasing population to offer manufactured products in exchange for the food-stuffs and commodities of other countries. Islands also, by their isolation, afford protection from the devastating effects of invasion, and in this way foster an industrial life. Great Britain and Japan are illustrations of the effects of an island environment.

Climate exerts a controlling influence upon commerce through its two factors of temperature and moisture. The food plants of the temperate zone require a summer temperature sufficient to insure their maturing. The exact amount of temperature which each kind requires, varies according to its nature. Thus corn requires a greater sum total of heat than wheat, and rye and barley a less. The two

last are consequently grown farther north than wheat, and wheat farther north than corn. Tropical and subtropical regions are areas of highest production because of the greater amount of heat present throughout the year. The proximity of a considerable body of ocean water tends to equalize climate, since water absorbs a relatively large amount of heat and parts with it very slowly. An oceanic climate therefore is not marked by the extremes of heat and cold which characterize the climate of the interior continental land masses. The proper supply of moisture is quite as important as temperature. The average annual amount and the distribution of rainfall affect the character of occupations in a region. A region of abundant precipitation is a region favorable to agriculture, providing the conditions of slope, soil, and temperature be likewise favorable. Forest regions are usually in areas of high average annual rainfall. On the other hand, a region of less rainfall may be grass-covered steppe land, such as the Great Plains of the western United States, and thus be adapted to grazing; or it may be a desert, the difference depending largely upon the nature of the soil and the prevailing winds. The relative position of highlands and mountain ranges in causing precipitation on their upper windward slopes, largely determines the degree of aridity or humidity of the regions on both sides. Thus the western plains of the United States are arid from a lessened rainfall because the prevailing westerly winds have been deprived of their moisture in crossing the mountains.

It should be noted also that mountain ranges are usually rich in mineral wealth. In the mountains, conditions were favorable for the formation of mineral veins and deposits, which subsequent erosion and atmospheric weathering have laid bare in many places.

3. Fundamental Principles of Commercial Geography. — The three basal interests of the Geography of Commerce are *Production*, *Transportation*, and *Consumption*. Under production naturally falls consideration of the resources of a region as dependent upon soil, climate, topography, etc. Transportation is conditioned by

topography and deals with such questions as the presence and position of navigable rivers and lakes, mountain ranges, and divides; transportation seeks to cut canals and build railroads along the lines of least resistance. Engineering skill has accomplished wonderful results. The tunneling of a mountain is almost equivalent to its removal as a barrier to transportation, and the same result is accomplished by the bridging of rivers and estuaries. Under the head of consumption comes the consideration of cities as centers of population, dependent upon such conditions of commercial activity, as manufacture and transportation. In modern times the growth of a city is largely dependent upon its position for trade. New York has become a metropolis by virtue of its being at the entrance of the Hudson, commanding the ocean highway on the one hand and a vast area of interior country on the other. Philadelphia is a manufacturing center from its geographical position in relation to the coal fields. Cities are disbursers of either raw or manufactured products, — rarely of both. The New England towns became manufacturing centers from the fact that the soil and the long and rigorous winter offered slight inducements to agricultural pursuits, and in New England the fast-flowing streams afforded vast sources of water power for manufacturing purposes. Boston commands the ocean and is a disburser of manufactured products. On the other hand, Charleston, Savannah, and the other cities of the South Atlantic seaboard and of the Gulf, have become, chiefly, disbursers of raw products from their geographical relation to the great corn, cotton, tobacco, and sugar growing lands of the southern Coastal Plain.

The relation between the physiographic and the human elements in commerce is only a phase of utilizing the resources of the earth. Resources represent so much power that is stored away, and that must be liberated by working intelligence in order that it may create the materials upon which human life depends. The interaction of man and nature finds its expression in the production, transportation, and consumption of goods.

SUGGESTED QUESTIONS AND TOPICS

1. In what sense is geography an independent subject, and in what sense is it composite? What are the advantages from its being a "meeting place" of other sciences? State the practical uses to be served by a study of the geography of commerce. What is its relation to physical geography? (See Davis and De Garmo, noted below.)

2. Note the following summary by Captain Mahan (*Sea Power*, Chapter II): —

"The principal conditions affecting the sea power of nations are as follows: I. Geographical Position; II. Physical Conformation, including, as connected therewith, natural productions and climate; III. Extent of Territory; IV. Number of Population; V. Character of the People; VI. Character of the Government, including therein the national institutions." It will be observed that, of the six points, three have to deal with the physical environment and three with men. Keep this summary in mind and apply it to the commerce of the United States and other nations.

3. With the Amazon Valley as an illustration, show how nature has been too prolific. Cite other illustrations and explain them.

4. Point out advantages and disadvantages of an island environment to a commercial people.

5. With coal as an illustration, show the relation between energy and working forces. Indicate some of the ways in which the energy of coal is turned into working forces.

6. Establish the relations between the physiographic features in the region where you live, and the industries and occupations being carried on there.

Books to be Consulted[1]

*Davis, W. M., *Geography in the Schools.* University of Chicago Press; 1902.
*De Garmo, *Correlation of Studies.* Educational Review; May, 1893.
*Redway, *The New Basis of Geography.* Macmillan Co.; 1901.
**Keltie, in the International Geography; Chapter X, *Political and Applied Geography.*

[1] Books especially recommended are marked with a double star (**); those less useful but also of special value are marked with a single star (*). Other books are mentioned as suggestions to those who may wish to make more detailed study under any head.

*Mill, *General Geography.* Macmillan Geographical Series.

Buckle, *History of Civilization.*

**Shaler, *Origin and Nature of Soils.* Twelfth Annual Report of the Geological Survey, Washington, D.C.

Trotter, *The Social Function of Geography.* Fourth Yearbook of the National Herbart Society, Chicago; 1898.

CHAPTER II

CLIMATE AND COMMERCE

4. General Statement. — Climate and soil are the most determining physical facts which influence commerce. The relations of soil to commerce were considered in a general way in the preceding chapter. A more detailed account of climate is necessary to understand its influence. Climate is here used as meaning the combined average result of the varied conditions of the atmosphere as regards temperature and moisture. Weather, on the other hand, is used to denote the purely local and temporary conditions of temperature and moisture at any given place and time; it "is only one phase in the succession of phenomena whose completed cycle constitutes climate."[1]

5. Distribution of Temperature. — The distribution of temperature depends upon (1) latitude, or position in relation to the sun's rays, (2) the relations of land and water, and (3) the topography or relief features of the land surface.

(1) *Latitude.* — When the tropical zone is compared with the rest of the earth's surface, it is found that in this zone the rays of sunlight fall more directly throughout the year. In regions where the sun's rays are vertical or nearly so, a greater number of rays are concentrated on a given space than is possible where they fall obliquely, and thus their heat-producing power is greater. On either side of the tropics, in the temperate and frigid zones, the sun's rays fall more obliquely, and consequently exert less energy in heating the surface. The

[1] Hann, *Handbook of Climatology*, p. 1.

apparent change of the sun's position in relation to the northern and southern hemispheres, as a result of the earth's annual movement or revolution, and the inclination on its axis, give rise to variations of temperature which are called seasons.

(2) *Land and Water.* — The sun's rays penetrate to some depth below the surface of the water, and the heat is diffused more uniformly than is the case with the land; only a thin surface layer of land is heated. The land heat is soon given off by radiation; on the other hand, the water parts with its heat more slowly. During the day the layer of atmosphere overlying the land is continuously heated by radiation from the ground. This is followed immediately after sundown by a coolness from the rapid dissipation of the heat into the higher levels. The water on the other hand retains its heat at night for a longer time.

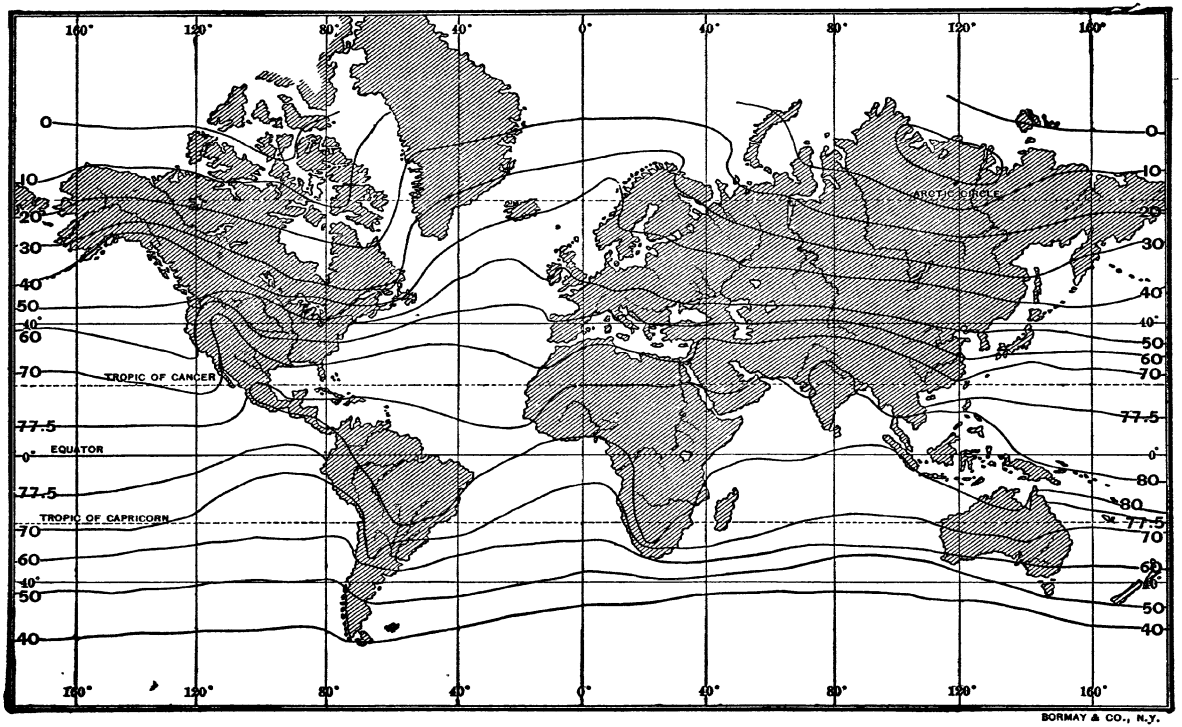
As a result of these conditions the temperature of the air overlying the sea is more uniform than that over the land. The water retains its heat longer and parts with it more slowly, while the comparatively large amount of evaporation and condensation taking place still further tends to equalize temperature. An oceanic climate is, therefore, subject to less extremes of temperature than a continental climate.

From the equatorial zone the heated water on the surface of the ocean flows toward the polar regions. This surface outflow of warm water gives rise, under the prevailing winds of tropical latitudes and the relative positions of the continental land masses, to several so-called ocean currents, as the Gulf Stream and Japan Current. These surface drift currents are important distributers of heat. Deeper drifts of cold water flow away from the polar oceans toward the equatorial zone, and in many places influence the climate of lands near which they pass as in the case of the Labrador ice current.

(3) *Topographical or Relief Features.* — The surface of highland regions is irregular. The rocky and gravelly nature of the soil, covered with scant vegetation, allows what heat is received to be quickly

radiated. The evaporation at high altitudes is also rapid, and less moisture is present in the atmosphere, both of which factors add to the lowering of temperature.

6. Isotherms. — A line drawn through places having the same temperature is known as an isotherm or isothermal line. An isotherm may connect places having the same temperatures, either at a time of observation, or when averaged over a given time. The great temperature zones of the earth, characterized by peculiarities of vegetation and animal life, are somewhat definitely bounded by isotherms. The tropical zone of temperature is included within the annual isotherms of 70° Fahrenheit, north and south of the equator. The north and south temperate zones lie between the isotherms of 70° Fahrenheit and the annual isotherms of 32° Fahrenheit, marked in the northern hemisphere by the limit of forest tree growth and the beginning of continuously frozen ground. Included within the irregular isothermal circles of 32° are the Arctic and Antarctic zones. The greater preponderance of land in the northern hemisphere, with the variety in its surface features, and the character of the ocean drifts, cause the isotherms in that part of the earth to be very irregular. The isothermal lines and their included zones move with the apparent annual motion of the sun. Thus the midwinter and midsummer isotherms in the northern hemisphere bear no fixed relation to each other, but change with the changing conditions of temperature induced by the influence of the greater or less obliquity of the sun's rays. For example, "the coast of Alaska, the central United States, the lower Lake Region, Newfoundland, the Scandinavian Peninsula, Central Russia, Mongolia, Korea, and Northern Japan have the mean January temperature of 20°, while in July the temperature of these places does not correspond. For instance, in July the coast of Alaska has the same mean temperature as Northern Siberia, and the July isotherm of the central United States passes through Northern Africa. The annual isotherm is a line drawn to represent the average sum of the mean monthly temperatures taken



MEAN ANNUAL ISOTHERMS

from observations covering a period of several years." (Map opposite.)

7. The Trade Winds. — In a voyage from New York around Cape Horn or the Cape of Good Hope, a ship, after getting clear of the variable winds and weather of the North Atlantic, falls into a region of "calms" in the neighborhood of the Tropic of Cancer. After light, baffling winds she strikes the steadily blowing "trades" from the northeast, which carry her over thirty degrees of latitude. Just before crossing "the line" the "trades" die down, and she finds herself in the region of "equatorial calms." Once past the equatorial calms, the ship is for about thirty degrees in the southeast trade wind zone. Another belt of calms is then encountered, and beyond this the boisterous "westerlies" or "roaring forties" of the South Atlantic mark the rest of the voyage around either cape. During any month of the year a vessel will encounter these zones of wind and calm, though their boundaries fluctuate over a few degrees. This is true of any of the three great oceans, and, with certain modifications, is true also of the land areas lying within the zones above described. The constant winds here noted are the trade winds, which blow in one direction almost uninterruptedly throughout the year. The trade winds have always played an important part in the history of ocean-going commerce, especially in the days before the steamship; even now their influence upon steam-driven vessels is not inconsiderable.

8. Periodic Winds. — The difference between the day and the night temperature of the air over the land and sea, as a result of the unequal heating of land and water surfaces, causes winds which set toward or away from the land. During the daytime, when the radiation from the heated ground makes the overlying atmosphere an area of low atmospheric pressure, the cooler air over the ocean blows in as a sea breeze. After sundown an exchange of conditions takes place. The air over the land becomes quickly cooled, as already explained, while that over the ocean becomes relatively warmer

from the slow radiation of the water. A wind then sets in from the land toward the sea known as a land breeze.

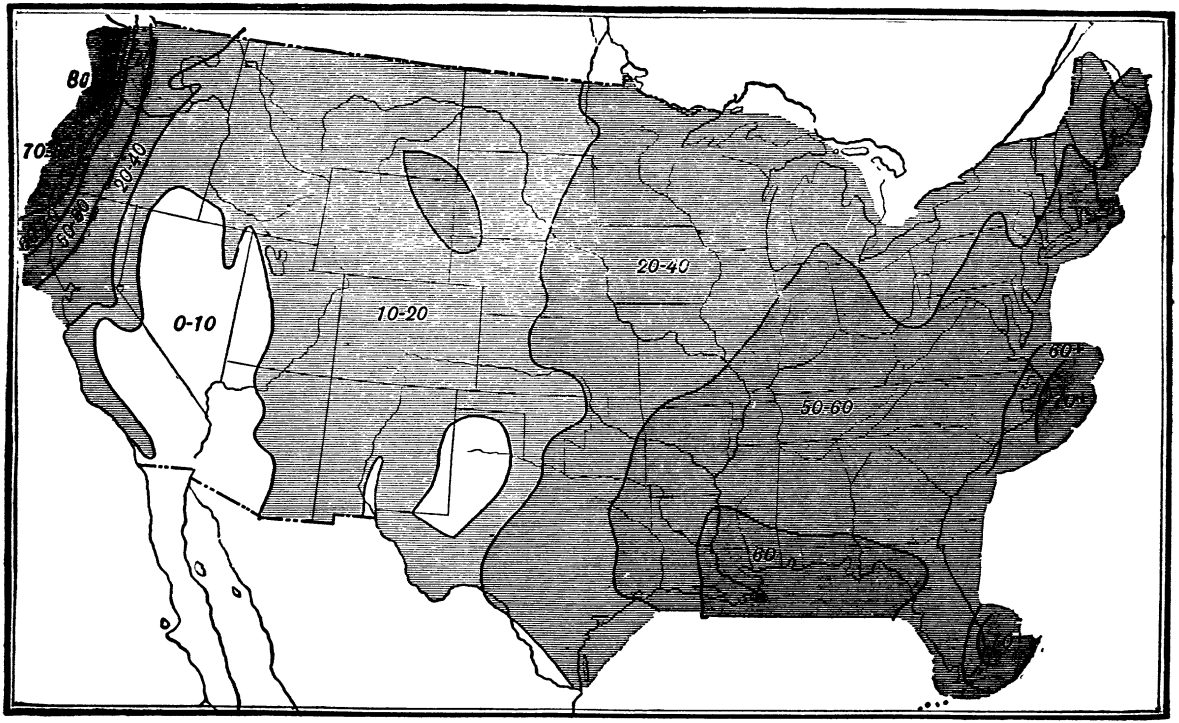
On a larger scale, but for similar reasons, are the yearly differences in the direction of certain "season" winds. When the sun is to the northward in summer and is more directly over the land of southern Asia, that region becomes an area of "low pressure," and a persistent movement takes place from the cooler air over the Indian Ocean in the form of a strong and often violent wind called the "monsoon." When the sun has moved south to a winter position over the Tropic of Capricorn, a reversal of the conditions takes place, the so-called "winter monsoon" blowing for six months of the year in an opposite direction. The winter monsoon has not nearly the same force as the summer or southwest monsoon, since the ocean area far exceeds that of the land in the region of the southern tropic. The waters of the Indian Ocean and the shore lands of southern Asia are thus swept by these monsoon winds for six months of the year in one direction and for the remaining six months in the other. Monsoon-like winds similarly occur on the coasts of Africa, Australia, and South America within the torrid zone, but are not marked by such force and regularity as are the monsoons of the Indian region. The monsoon is taken advantage of by vessels making the voyage through the Indian Ocean; but during the time of the changes, in April and October, known as the "bursting of the monsoon," violent gales and storms are prevalent.

9. Rainfall. — The distribution of rainfall is determined by the relative positions of land and sea, by topographical features (as mountain ranges), and by the direction of the prevailing winds. The heaviest rainfall on the earth is in the region of the Bay of Bengal, where the total amounts to more than five hundred inches annually.

Rainless regions, such, for example, as Upper Egypt, Arabia, the Desert of Gobi, and the Desert of Atacama in Peru, are the result of an intensely heated atmosphere which absorbs the moisture

present, or of dry winds, deprived of their moisture in crossing highlands. In the United States the amount of rainfall over different portions is largely governed by the movements of cyclonic storms across the country from west to east. As shown by the map on p. 16, the heaviest rainfall occurs on the Pacific coast north of San Francisco, since the moist winds from the ocean are forced to rise in striking against the high coast ranges, and a copious precipitation results. The same currents after passing the crest of the range will blow as dry winds; hence the light rainfall of the Great Plains. The effect of a great highland mass, like the Plateau Region of the western United States, is felt for a considerable distance eastward; because of this the rainfall is lighter throughout the Lake Region and the states immediately west of the Mississippi (extending to the Gulf coast of Texas) than in the more eastern portion of the country. The lower Mississippi Valley, the Gulf coast, and the entire Atlantic seaboard, on the other hand, enjoy a much more abundant rainfall from the proximity of the ocean and also from the fact that many storms sweep northeastward from the warm waters of the Gulf of Mexico and the Caribbean Sea. On the Atlantic coast the rainfall diminishes from Florida northward; on the Pacific coast it diminishes from Washington southward.

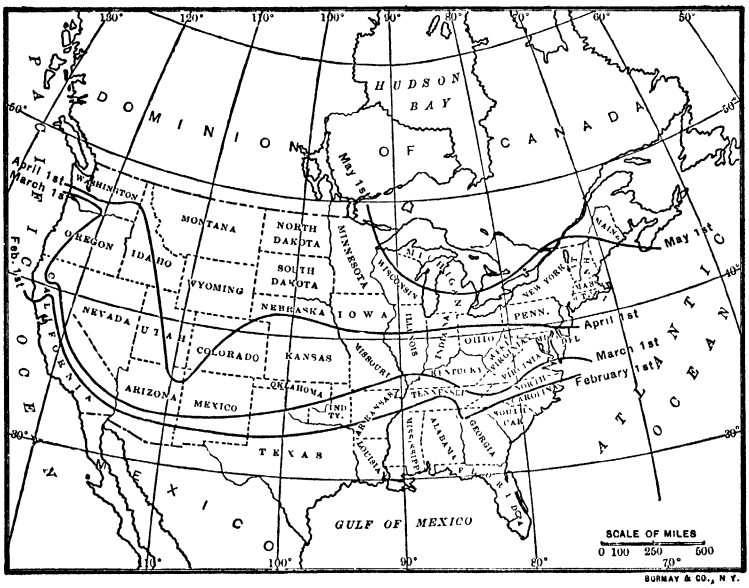
10. Irrigation. — In regions of deficient rainfall, or where the seasonal distribution of rain is irregular, it becomes necessary to resort to irrigation to insure a sufficient crop return. Water for irrigation is secured by impounding river water in a reservoir, or by storage of rain or well water in tanks. Water is also sometimes used directly from springs. In many parts of the west, wells have been sunk and the water pumped by windmills into reservoirs for distribution. In the modern improved methods of irrigation as carried on in the arid regions of the western United States, the water is brought from the reservoir, often a distance of many miles, through flumes, pipes, or cemented ditches, and distributed according to the nature of the crop to be irrigated. Large tracts in the western part of the United States



RAINFALL OF THE UNITED STATES (IN INCHES)

have thus been reclaimed, and what were formerly desert wastes are now rich agricultural regions. Irrigation is employed in three sections of the western United States: (1) that known as the Great Plains or sub-humid region; (2) the Rocky Mountain section; and (3) the arid region proper, which includes Nevada, Arizona, and parts of the Pacific States.

Irrigation is one means of materially increasing the production of the United States. The establishment of farms and homesteads in



ADVENT OF SPRING

Northward movement of the isotherm of 43.8 F.[1]

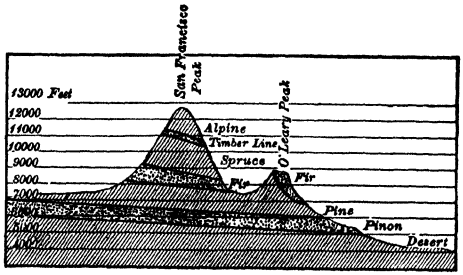
the arid regions of the west opens a wide field for future commercial enterprise. With the increasing interest in the subject among individuals, the favorable attitude of federal and state governments, and the activity of the various irrigation associations, the settlement

[1] After Harrington, *Harper's Magazine*, Vol. 88, p. 874.

of much of the arid area by an agricultural population, bids fair to be an accomplished fact in the not distant future.

11. Temperature Control. — Every species of animal and plant requires a certain sum total of heat in order to complete its full cycle of growth and reproduction. It has been ascertained through extended observation that the temperature required to start the dormant activities of plant life is 42.8° F. The northward movement of the isotherm of this temperature (usually taken as one degree higher, or 43.8° F.) marks the advent of spring in the northern hemisphere, calling into activity the germinating force in seeds, and the growth and flowering of vegetation. (See map on p. 17.)

Each variety of plant or animal has a definite relation to temperature which is expressed as its "heat constant." This is obtained by taking the sum of the mean normal daily temperatures above the initial point of 42.8° F. throughout the period of reproductive activity (*i.e.* the spring and summer). Thus corn has a higher "heat constant" than wheat; *i.e.* it requires a greater sum total of heat to effect its growth and ripening. The life features of the climatic zones (especially the features of vegetation) are based upon the laws of temperature control. The distribution of products is governed by the same laws, commerce being thus conditioned by temperature.[1]



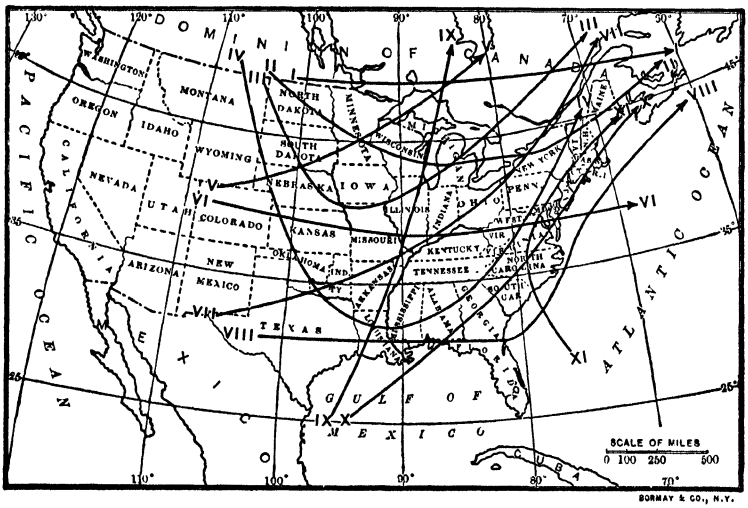
EFFECTS OF SLOPE EXPOSURE ON VEGETATION
(After Merriam)

12. Slope Exposure. — The effects of increased temperature on the

[1] C. Hart Merriam, *Laws of Temperature Control of the Geographic Distribution of Terrestrial Animals and Plants*. National Geographic Magazine, Vol. VI, 1894, pp. 229–238.

southern slopes of hills and mountains in the northern hemisphere (the conditions being reversed in the southern hemisphere), is very marked in the character and development of the vegetation; many species of plants appear earlier in the spring on southern slopes, and certain forest trees reach a higher elevation than they do on the northern side of mountains. In the northern hemisphere the southern slopes of hills are favorite locations for orchards, gardens, and vineyards, the different varieties of fruits and vegetables coming to greater perfection and ripening earlier in these situations.

13. Climatic Features of the United States. — The climate over the greater portion of the United States is of continental character. This



STORM TRACKS

The paths followed by the low-pressure area of cyclonic storms

results from several factors, notably from the vast extent of land mass which, being readily heated and radiating rapidly, produces extremes of temperature. Another factor of importance is the prevalence of westerly winds and the consequent eastward movement of so-called

cyclonic storms, from the Plateau Region to the Atlantic. These storm movements exert a powerful influence over the climate of the United States, causing the characteristic "changes of weather." With the advance of these storms the humidity and the temperature are increased, and the barometric pressure is continually lowered until the storm center has passed a given locality. Following the storm are areas of high pressure or anti-cyclones, characterized by very dry air. In the winter season they produce the clear and intensely cold spells of weather called "cold waves" which sweep over the land, dominating its entire climate. In summer, from increased insolation, they cause the dry and hot sirocco-like spells known as "hot waves." This unending succession of "lows" and "highs," or cyclones and anti-cyclones, is a characteristic feature of weather and climate in the United States east of the Rocky Mountains, influenced of course by the time of year. Cyclonic storms seem to be the result of local eddies of low pressure developed in the currents of the westerly winds as they cross the highlands and ranges of the Plateau Region. Another class of cyclonic storms are the tropical cyclones or West India hurricanes, a system of revolving winds accompanied by heavy rains around a low pressure area that moves northward along the eastern seaboard from the tropical latitudes of the ocean. These dangerous gales cause much destruction of life and property on land and sea (p. 202). On the Pacific Slope the climate is much more equable from the proximity of the ocean and the prevalence of the westerly winds, which bring in an abundance of warm, moist air.

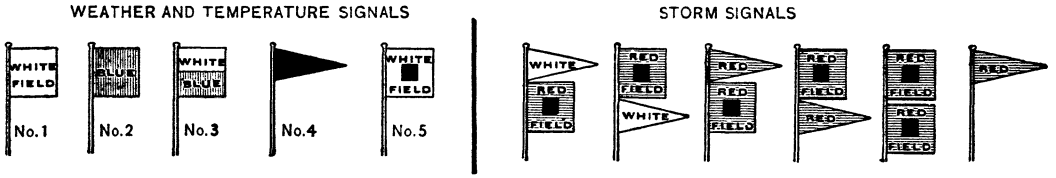
South of the Lake Region, the eastern portion of the United States is warmer and moister than the western half of the continent, merging into a semi-tropical climate along the Gulf of Mexico. This forms the "humid province" — the great area of crop production. West of about the one hundredth meridian, the rainfall materially decreases and an "arid province" prevails, reaching to the western border of the Plateau Region.

14. Weather and Commerce. — The influence of weather conditions

upon commerce is of such vast moment that it forms an important subject of investigation by an accurately trained corps of scientists in a special department of governmental work. The Weather Bureau is a leading feature of the government of nearly every civilized country. Agriculture, the basis of material prosperity, is a delicate index of atmospheric conditions. A disastrous flood, a season of drought, a killing frost, or a series of heavy storms of wind and rain, if sufficiently widespread, may so far throw the productive machinery out of gear, through the destruction and failure of important crops, that serious financial disturbances result, the effects of which may reach throughout the civilized world.

The United States Weather Bureau, under the direction of the Department of Agriculture, issues climate and crop bulletins and a Monthly Weather Review; besides these are the daily maps, weather reports, and forecasts, which are circulated throughout the country. Weather conditions are reported to headquarters at Washington, D.C., by the local observers at stations in every part of the United States. The data thus received form the basis of the weather forecasts issued daily. So important is this information that the weather report has precedence over other messages sent by telegraph. Special warnings are issued relative to killing frosts and to the probable movement of the "frost line," based on a long series of observations. These cold wave, frost and storm predictions are of untold value in the case of the less hardy fruits and market vegetables, and in the planting, sowing, and caring for crops. The rural free-mail delivery is now utilized for a wide distribution of the weather forecasts throughout agricultural districts. Shipping, both upon the Great Lakes and the seaboard, is protected by the weather forecasts. Reports of observations are now made to the United States Weather Bureau from the continent of Europe, the Azores, the Bermudas, Mexico, and South America. Storms are thus located long in advance of their arrival. "Storm signals" are displayed and are a sign for shipping to seek the shelter of some protecting harbor. Similarly,

SIGNALS OF UNITED STATES WEATHER BUREAU



Flags 8 feet square. Pennants 5 feet hoist, 12 feet fly

EXPLANATION

No. 1 alone	fair weather, stationary temperature
" 2 "	rain or snow, stationary temperature
" 3 "	local rain, stationary temperature
" 1 with No. 4 above it	fair weather, warmer
" 1 " " 4 below it	fair weather, colder
" 2 " " 4 above it	warmer weather, rain or snow
" 2 " " 4 below it	colder weather, rain or snow
" 3 " " 4 above it . . .	warmer weather, with local rains
" 3 " " 4 below it	colder weather, with local rains
" 1 " " 5 above it	fair weather, cold wave
" 2 " " 5 below it	wet weather, cold wave

The Weather, Temperature, and Storm Signals are displayed by the United States Weather Bureau (1903) at 141 stations situated on the Atlantic and Gulf coasts of the United States from Eastport, Me., to Brownsville, Tex.

The Storm Signal indicates that the winds expected are dangerous to all classes of vessels. The Red Pennant, except when displayed alone, indicates easterly winds, and the White Pennant westerly winds. The Pennant above the Flag indicates northerly and below the Flag southerly winds. The Red Pennant when displayed alone is the Information Signal and indicates that the local observer has received information of a storm covering a limited area dangerous only for vessels to sail to certain points. This signal is intended to be a notification to shipmasters that valuable information will be given them upon application to the local observer. The "Hurricane" Signal denotes the expected approach of a tropical hurricane or of one of those severe and dangerous storms that occasionally move across the Lakes and the Atlantic Coast.

Night Signals. — By night a Red Light indicates easterly winds and a White Light above a Red Light westerly winds.

the weather forecast gives the probable weather condition for the transatlantic steamships about to sail. (Weather and Storm Signals opposite.) As an illustration of the close relations that exist between the weather and trade conditions in general, the observations of a recent writer[1] covering the period of a year, from June, 1901, to June, 1902, are of especial value. While the weather conditions change from year to year, the dependence upon them does not vary.

Unusually cool weather and rains of the early summer in the year above mentioned, retarded crop growth and raised the price of grain and cotton. Umbrellas, storm clothing, and foot wear were in "exceptional demand." With the increased production due to the later warm weather there was a corresponding fall in the price of dairy and garden produce. The onset of an intensely hot spell and a long period of drought in midsummer did damage to the grain crops and brought results in advanced prices. Another general result of the intense heat was to paralyze trade by its effect upon the people. The markets for fresh and perishable goods, involving the meat, dairy, fruit, and market-garden produce, likewise received a setback, and prices were raised owing to scarcity of supply, but at the same time the demand for canned goods increased and caused a strong advance in prices. The shortage of pasture in the southwest, incident to the drought, caused "record-breaking shipments" of live stock to the yards at Kansas City. This affected prices by enabling buyers to dictate their own terms and complicated the hide market and the tanning industry. These facts indicate a remarkable dependence of the various aspects of commercial activity upon the weather. Any set of similar observations would show a correspondence of change of prices following a change in the weather. So well recognized is this principle, that those who speculate on "futures" in vegetable products (and to a less degree in animal and mineral products, railway

[1] Robert DeC. Ward, *A Year of Weather and Trade in the United States.* Popular Science Monthly; September, 1902.

stocks, bonds, etc.) make a study of the weather as a basis of their operations.

15. Comparison of Different Regions. — In the tropical zone continuous high temperature and the great amount of moisture produce a rank vegetation of wonderful variety and luxuriance. The soil of tropical forests is rich in all the elements of plant food, and little effort in cultivation is needed. Contrasted with this are the lands of the temperate zone where much lower yearly temperatures prevail and where moisture is less abundantly distributed. Here the changes of season check the growth of plant life for a part of the year, and here, too, the soil is not extensively enriched by vegetable mold. The almost unlimited capacity for production in the tropics is offset by the effects of the hot and humid climate on the bodily activities. The indolent native gathers his fruits and food plants with comparative ease. The white man as he enters the tropics is at a disadvantage. Unacclimated and unaccustomed to the native's indolent ways, he is in danger of finding the climate his master. Labor is cheap and production practically unlimited, but life in the tropics for the white man is not the life he leads in the temperate zone. At home he has to work to make the soil yield its increase. The climate braces him to effort. Industry, invention, and progress follow. In tropical lands he cannot do the work himself, but is forced to employ native labor. He may bring his inventions into the tropics, but the native must do the actual work. It is a question of becoming acclimated (a long and often disastrous affair to a people nurtured in the temperate zone) before the harvest of the tropics can be gathered with his own hands. Some peoples, like the Latin races in South America, have intermarried with the natives to such an extent that the greater part of the population is of mixed blood. This is meeting the tropical environment half-way. But this mixing of races is repugnant to the Anglo-Saxon's ideals and standards.

The far northern lands repress human effort and advancement more than do the tropics, for they withhold all but the barest necessities

for existence. With the Eskimo, the peoples of northern Siberia, and the fishing peoples of Labrador and the northern states of Europe, the struggle is too severe, and life is practically stifled by its environment. The tropics lavish their products upon man, but lower his bodily energies and thus discourage effort. The temperate zone supplies the golden mean for labor, — the winning of the land against odds, and the stimulus for advancement.

SUGGESTED QUESTIONS AND TOPICS

7. What conditions does Paul Bourget's characterization of an American city, "no climate, only samples of weather," best suit? John Burroughs (*Winter Sunshine*) says that England has an atmosphere but no climate, the North Atlantic coast of the United States a climate but no atmosphere, while the region south of the Potomac has an atmosphere as well as a climate. Discuss these statements.

8. Name places situated under the equator that have productions of the semi-tropical and temperate regions. Contrast the temperature of mountain peaks and table-lands, and valleys of the same altitude. How account for the differences?

9. Contrast a "continental climate" with an "island climate." How may climate retard the progress of a given region?

10. In what regions of the world do the isotherms and parallels correspond most closely? In what regions do they differ the most? What does this indicate? (See map, p. 12.)

11. Discuss the following: The sea is a "wide common" or "great highway" over which men pass in every direction, but on which are certain "well-worn paths" termed "trade routes." (Mahan, *Sea Power*.) See the etymology of "trade"; apply the root meaning to winds, to an industrial occupation, and to exchange.

12. What are the relations of "sea breeze" and "land breeze" to sunrise and sunset? Why? Apply the same principle to the seasonal winds.

13. Name regions of the world that suffer from (*a*) an excessive, and (*b*) a deficient rainfall. Describe the causes in each case, and the results as affecting commerce.

14. What is the meaning of "low pressure" or "high pressure" as applied to atmospheric conditions? Define "isobar." What may be expected about the direction of winds in areas of low and high pressure?

15. How does the term "ocean drift" differ from Gulf Stream or Japan

Current? Does Professor Gannett prove his point, that the western coast of Europe is not largely influenced by the Gulf Stream or western North America by the Japan Current? ("Errors in Geography," Bulletin of American Geographical Society, July, 1901.)

16. Secure a Weather Map from the Department of Agriculture. Locate the places at which observations are made, also the point where your forecast maps are printed. Trace the information from the observation until it is issued as a forecast.

17. The April Crop Bulletin of the Department of Agriculture has quite accurately forecasted the yield of winter wheat in sixteen out of the past twenty years (1903). What effect does an approaching forecast have on the produce exchange? Under what conditions will a forecast lead to a rising, and to a falling market? How are railroad stocks affected by weather conditions? Find out the facts about speculators being weather forecasters.

18. "A deep depression is moving up the Atlantic seaboard from the Gulf." Upon what evidence is such a statement from the Weather Bureau based? What weather is likely to follow? Would storm signals be raised?

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**Dickson, The International Geography; Chapter VII, *The Atmosphere and Climate.*

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*Russell, *Meteorology.* Macmillan Co.

*Henry, *Amplification of Weather Forecasts*, and other papers relating to climate, Yearbook of Department of Agriculture for 1900.

Smythe, *The Conquest of Arid America.*

**Ward, *A Year of Weather and Trade.* Popular Science Monthly; September, 1902; also *Exercises in Meteorology.* Ginn & Co.

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King, *Irrigation and Drainage.* New York, Macmillan Co.; 1899.

**United States Hydrographic Bureau, *Monthly Pilot Charts of the North Atlantic and North Pacific.*

CHAPTER III

THE FOREST

16. The Forest. — The vast area of leafage and rootage presented by a forest is a most important factor in regulating the increase of atmospheric moisture. The roots of trees are continually drawing up water from the soil and passing it through their trunks and branches to the leaves which return it to the air in the form of vapor. By this circulation of water through its tissues, from root to leaf, the tree performs its life functions, forming the various products which it needs in its growth and distributing them throughout its parts. Not only is the tree utilizing this phase of the circulation of water to its own ends, but it serves also a far-reaching purpose in the economy of nature as a check on the too rapid evaporation of water. Much of the rainfall over a forest area is thus returned to the atmosphere through the tissues of trees, the water vapor being slowly liberated by the process of transpiration from the leaves.

Such an assemblage of leaves exerts a cooling effect on the air immediately in contact, and causes a lowering of temperature by the evaporation of water. The shade cast by the forest is likewise an important element in protecting the ground from the drying effects of uninterrupted sunlight; a considerable amount of water is held in the soil among the network of roots. The forest is thus a steady source of supply to the many springs which feed a river basin. The forest further protects the ground from the effects of heavy downpours of rain which otherwise would tear away and remove masses of soil. The soil of the forest floor is a rich humus or vegetable mold, formed by the slow decay of fallen tree trunks, dead leaves,

and rotting undergrowth; this continually works downward into the deeper layers of subsoil. Snow lies longer in the forest than it does on the open ground, and protects the ground from the effects of frost for a much longer time. In melting slowly it percolates downward through the softened soil, making an additional supply to the waters of springs and rivers.

17. Economic Effects of the Forest. — When the forests are cut down, delicate adjustments in the balance of nature are destroyed, and the effects are obvious. The soil is exposed to the disintegrating action of the atmosphere. In summer it is baked to dryness; in winter it rapidly loses heat by radiation. In colder regions the loosening effects of frost are readily seen in an exposed soil. In a region denuded of trees the supply of springs becomes intermittent, no longer fed from the constant and unfailing reservoir of the forest soil. The heavy dash of rains washes away the loose earth, carrying it into the streams, which become turbid torrents. In the spring, when the ground is still hard from frost, the rainfall and the rapidly melting snow run off the slopes, leaving only a small part to sink into the ground. This immediately swells the brooks and tributaries of a river basin beyond their carrying capacity, causing freshets which tear away the banks and obstruct the channels at various points, with accumulations of stone and other débris. The overfull brooks, discharging into the larger tributaries, raise the waters of the rivers into mighty torrents that sweep seaward, often causing disastrous floods in the lower valleys. Almost as quickly as they rise the rivers fall again, and should a prolonged period of dry weather follow, they will shrink away into their deeper channels, leaving the side shoals exposed as mud flats. The brooks become dry beds, no longer fed through springs nursed by the bountiful supply of a forest region. This is but one phase of the results of the cutting down of a forest. Less obvious are the effects on temperature and the general humidity of the atmosphere, which, though small at first, must in the long run, and over wide areas denuded of forest, produce marked changes of

climate. The presence of the forest tends to equalize climatic conditions, and its removal must result in producing greater extremes.

In primitive times the forest was at once man's shelter and his source of food supply. The fruits, berries, and roots on which he lived grew in the forest. Many of the animals that he sought for food, or for the skins to make his raiment, were forest dwellers like himself. In tropical regions the leaves and bark of certain trees have always been used for clothing.

Man has cut down the forests for two purposes. First, to clear the ground for agriculture, — the forest region affording a rich soil for growing crops; second, to utilize the wood of the forest trees for building and for various other purposes.

In modern civilized life the products of the forest, both tropical and temperate, contribute an enormous share to man's welfare and progress. The manifold uses of woods, gums, resins, juices, roots, leaves, flowers, and fruits, — all yielding materials useful for food or in the arts, — these are familiar facts. In the temperate zone the chief uses of the forests are the wood for lumber and the bark for tanning. This, with the reckless clearing of land for agriculture as it has been carried on in the past, bids fair to destroy the forests of the United States at no distant day, unless protective measures are enforced throughout the forested states.

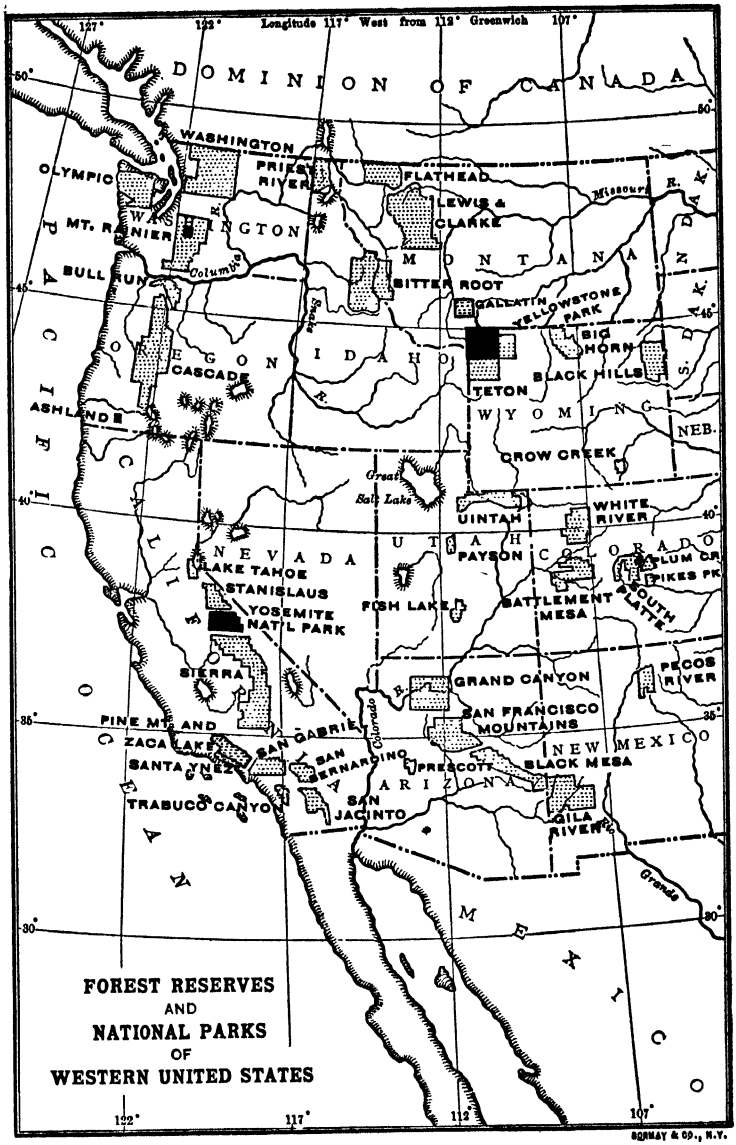
18. Forestry as a Science. — The study of the forest as a living organism, the life of each individual tree as a unit in a vast assemblage, and the best means of caring for and preserving the whole, is the modern "science of forestry." The struggle for existence among forest trees; the enemies of trees; the protection against forest fires; the power of resistance of certain species to various adverse conditions; the laws of tree growth; and the proper age at which a tree should be felled to make room for other growing trees, are all subjects of the utmost importance in the science and the art of the forester. The forest should be planted if need be, and at least tended and harvested as are other crops.

In parts of the United States the government has set apart large tracts of land as *forest reserves* (see map), and certain states have likewise their own reserves, and have appointed corps of experienced and intelligent foresters. It is only by this means that we can hope to avert the ultimate destruction of our forests. These reserves should be about the head waters of the large rivers to insure against the destructive floods and the drying up of the springs.

In many European countries, notably in Germany and Switzerland, the forest "holds" are of great importance. In these countries they are objects of government protection and sources of revenue; in the countries named, knowledge of the life and growth of the forest, its practical uses, and the laws which govern its control, form an important feature in education. In our system of education the importance of forestry has of late years been recognized, and departments have been created for the scientific teaching of the subject in some of the larger universities, — for example, at Cornell in connection with state forest reserves, and at Yale. Many private landholders are taking an active interest in developing forests on their estates, as in the case of the Vanderbilt forest reserve at Biltmore, North Carolina.

On farms the advantage of reserving a small portion of the area for wood growth is obvious when we come to consider the important uses of wood in farm economy. With care in selecting the trees for cutting, the farmer may keep himself supplied with posts and rails for fencing, seasoned timber for repairing and building, and with a certain amount of fuel. Furthermore, the surplus may be sold to good advantage. Aside from this narrow utilitarian view, a woodland area is no loss to the farm, inasmuch as it preserves the land and improves the quality of the soil, and there are few farms that do not have some piece of ground unfit for tillage, though it would be profitable as a wood lot.

The pasturing of cattle and sheep in woodlands and forest reserves is a subject of importance, and one that is receiving considerable attention from both federal and state governments. Sheep, it has



BASED ON "YEARBOOK OF AGRICULTURE," 1899, AND MUIR'S "NATIONAL PARKS

been found, are "close nibblers" and destroy young trees, as they also lay bare the soil over wide areas by grazing and tramping. After the trees reach a certain height it is possible to permit judicious grazing, especially in certain kinds of forests.

Tree planting is a very important feature of forestry and has been followed with success on the prairie lands of the Middle West, as well as in other sections of the country. The Federal Government encouraged the planting of trees by giving land on what were known as "tree claims."

SUGGESTED QUESTIONS AND TOPICS

19. See Professor Gannett in support of the theory that there is little connection between the presence of forests and amount of rainfall. (Bulletin of American Geographical Society; July, 1901.) What is quite as important as the amount of rainfall?

20. Contrast the results from the use of a part of the land for forest and the use of all of it for tillage and pasture. Show how it is possible to get more from a part than from all. Point out the bearing of use of forests upon "living for the immediate future or living for the more remote future."

21. Discuss the justice of the state exercising the right of eminent domain to preserve forests.

22. How is the fact accounted for that an average annual rainfall of fifteen inches in some regions gives only grass plains, while a rainfall of ten inches or less in others, produces forests?

23. What is the pioneer's attitude toward the forest? Why? Compare the sentiment on the forests in European countries and the United States.

24. It is said (1903) that forest fires destroy over fifty millions of dollars' worth of timber annually. What can you say under the head of results and remedies?

25. Write a short essay on Forestry as a Profession. (Publications of Bureau of Forestry and work at Cornell and Yale.)

26. Where in the United States is there the greatest present need for forest reserves? Where are the best available tracts for reservations? (See Senate Document, No. 84, 57th Congress, 1st Session.)

27. Discuss the following as a statement of the world condition with regard to timber: —

"The price of timber is rapidly rising, and the supply fails to increase owing to widespread deforestation in new countries. Within fifty years there is likely

to be a timber famine. There is little possibility of supplying the demand from tropical countries for two reasons: (1) the unsuitability of the tropical woods to serve as substitutes for conifers and hard woods; (2) the rapidity of decay. A thoroughgoing and widespread reforestation is the only remedy."

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*Gifford, *Practical Forestry.* New York; 1902.

**Fernow, *Economics of Forestry.* New York; 1902.

**Pinchot, *Primer of Forestry.* United States Department of Agriculture.

**Pinchot, *Progress of Forestry in the United States;* Roth, *Grazing in the Forest Reserves; Suggestions to Prospective Forest Students,* — and other publications of Bureau of Forestry, Department of Agriculture.

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CHAPTER IV

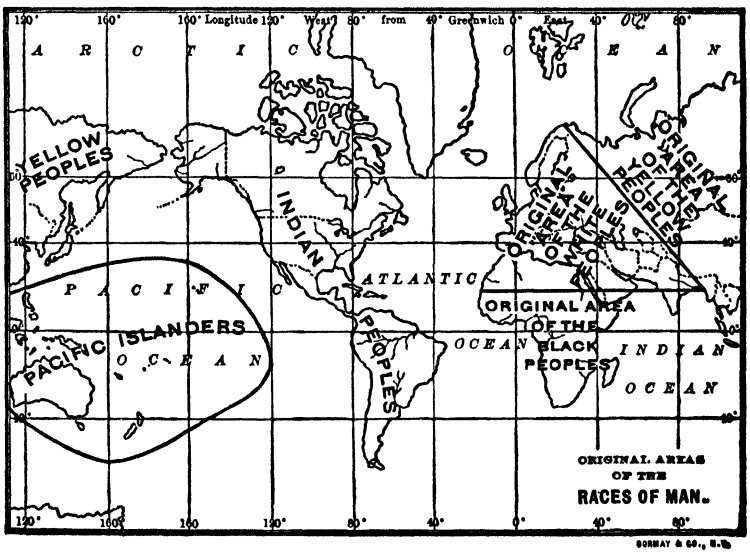
THE MAN ELEMENT IN COMMERCE

19. Overcoming Obstacles.— From a few and simple primary wants, such as the satisfaction of appetite and instinct, mankind has developed that marvelous range of consumption which commercial activity alone can supply. Man's intelligence has been directed largely to developing means to overcome the physiographic barriers to commercial intercourse. In this he has summoned to his aid the natural forces of the environment; he has taken advantage of the easiest routes in passing from one country to another; he has utilized the force of the wind to move his ships. Water of streams, lakes, and tides has been turned to account as a source of motive power. The African rivers, for example, form cataracts and rapids where they flow from the shelf of the continental table-land. These rapids were long a barrier to transportation into the interior, but they are now destined to become an aid in this direction, through the utilization of their power to generate electricity for motive purposes. In the earliest ages, man made use of certain animals as "beasts of burden." In later years the forces of steam and electricity are used as a substitute. Canals have been cut from one river basin to another, affording easy highways for transportation. Railroads have been laid from shore to shore of a continent. Mountain barriers have been tunneled and wide rivers spanned. The mineral wealth of the earth and the manifold riches of the forest have been brought into requisition for human needs. Irrigation has in many places converted a desert into a productive agricultural region. Many varieties of plants and animals have been acclimatized, and flourish in regions quite different from

those in which they were native. Indian corn has been spread by man throughout the warm lands of both hemispheres. The same is true of cotton, rice, sugar, and many other plants. In pursuing his instinct for trade man has largely overcome the natural obstacles and in this way exerts a controlling influence over the earth.

At the outset it is well to understand that commerce is only a result of human activity working under conditions of the physical environment. Physiographic factors must always exert a most powerful control over commerce, and the degree to which a people has adapted itself to overcome the physical environment is an index of prosperity and intellectual advancement.

20. Racial Types. — The present racial differences among men are of great antiquity, since it requires an enormously long time



for changes to take place. The term "race" refers to the primary groups into which mankind is divided, as white, yellow, and black. Each race may again be divided into branches, each

branch into stocks, and each stock into peoples. A line drawn from the North Cape of Europe southeastward to the base of the Pamirs, serves roughly to indicate the barrier zone that in primitive times separated the white from the yellow man, while the area of the black man lay wholly south of the desert tracts of the Sahara. (Illustration, p. 35.) Three distinct types are recognized among the European peoples, — the Teutonic, the Celtic, and the Mediterranean. The first includes among others the modern Germans and the Anglo-Saxons. The Celtic includes the Irish, the Gaelic Scotch, the natives of Brittany, and the peoples of Alpine Europe. The Mediterranean type includes the Spanish, the Portuguese, Italians, and many of the inhabitants of France. Another group of European peoples is the Slavonic, which includes the modern Russians, the Poles, Servians, and Bulgarians. The Teutonic peoples took possession of the fertile river valleys, driving the earlier Celtic inhabitants into the rugged mountain districts where their descendants are found to-day.[1] The Berbers of the Atlas Mountains in northern Africa, the natives of Egypt, the Jewish peoples, the Arabs, and the Abyssinians belong to the Semitic stock of the white race.

The Asian peoples are disposed in two primary groups or branches, one including the Chinese, Tibetans, and the inhabitants of the Indo-Chinese Peninsula, and the other comprising the different tribes and nations from the Black Sea and Eastern Russia across Siberia, Turkestan, and the Mongolian deserts to the Pacific. At the ends of this immense territory are the Japanese, — the most civilized of Asian peoples, and the Ottoman Turks. Various tribes dwell along the shores of the Arctic Ocean. Many are also roving horsemen, as the Cossacks and Kirghis of the Central Asian steppes. Most of these nomadic tribes are now under the dominion of Russia.

The black peoples are distributed throughout Africa south of the Sahara. They are divided into numerous tribes and kingdoms, and lead a hunting and fishing life in the great forest region, cultivating

[1] Ripley, *Races of Europe*, Vol. I, pp. 103–130.

only patches of ground about their villages; they raise plantains, maize and other food plants with little effort. The pastoral tribes, inhabiting the grass lands of East, Central, and South Africa, possess large herds of cattle and sheep. African peoples are naturally divided into three primary branches, — the true negroes of the equatorial forest region and the Sudan, the Bantu peoples, including the pastoral tribes of the grass lands, and the dwarf peoples of the Kongo forest and South Africa.

The islands of the Malay Archipelago and the vast island area of the Pacific, including Australia, are inhabited by a race of people quite different among themselves, though possessed of certain traits that indicate a common origin. Many of them, like the aboriginal Australians, are among the lowest of mankind; others, again, have reached a considerable degree of culture, as the various Polynesian peoples. The Indian peoples of America are probably descendants from some primitive Asian stock.

21. Migration. — One of the most notable features in the opening of a new region and the establishment of trade is the phenomenon of the migration of peoples. Its cause lies in the increase in population in a more or less restricted area, and the consequent cutting down of the food supply. This is one of the conditions that has from time to time forced a body of people to move out and seek new territory. Once on the move, new conditions were met with. In the main the movement has been always to the westward. Wave upon wave swept on, stopping only at the bounds of the ocean, but even this proved no absolute barrier. The Norsemen reached Greenland and the shores of a new continent. The close of the fifteenth century saw the people of western Europe on those marvelous voyages of discovery. The sixteenth and seventeenth centuries witnessed the migration of European peoples across the Atlantic. The eighteenth and nineteenth centuries saw the westward movement across the North American continent and the occupancy and settlement of a wilderness. The opening of the twentieth

century finds the vanguard of western migration invading eastern Asia and meeting the reverse wave of Slavonic migration, which has moved eastward across Siberia. Each migration has enlarged the sphere of commercial activity and made the problems of commerce more intricate. Not infrequently, as a result of conditions in the new home, a people has developed a commercial instinct formerly wanting.

22. The Relation between Trading and Aboriginal Peoples. — The history of mankind is largely an account of the invasion of new regions, and the dispossession of the aboriginal peoples of their native soil. The civilized world of to-day is face to face with this problem as the actively commercial peoples reach out for wider territory. How are the invaders to treat the native peoples in new lands? Some nations have in part solved this problem, as the Dutch in Java, and the British in India, but the results in most cases have been far from satisfactory. Man's history seems to bear out what science has shown to be true in the case of the lower animals, that the newcomer thrives at the expense of the native stock. The more radical the racial difference, the more surely will the aboriginal possessors of the soil tend to diminish and ultimately to go down before the invading peoples. This is especially true in the case of the Anglo-Saxon invader. The Latin peoples have mingled with the natives in the new lands, and though the native stock has been largely intermingled with the blood of the invaders, it has not been wiped out to the extent that it has under Anglo-Saxon influence.

A respect for aboriginal institutions and customs, the gradual spread of education, the recognition of a people's rights, the fostering of every trait that tends toward the betterment of native populations, and the prohibition of all harmful influences, should be included in the policies adopted by the commercial invaders and colonizers of new lands.

23. Occupations. — The gaining of a livelihood is the basal need of man in every stage of development. In a primitive society — such as

exists among savage peoples — the division of labor is presented in its simplest terms and is largely a matter of sex. The men of a tribe hunt and fish, and engage in offensive and defensive warfare, while the women are employed in the cultivation of food plants, the grinding of seeds and grains into meal, in weaving, and the making of garments and utensils. In the higher stage of culture, as among civilized peoples, sex distinction as to the kind of occupation becomes less apparent. Woman's work is mainly concerned with the household, while man is more largely engaged in the field of what are termed "gainful" pursuits.

The many and various sorts of gainful occupations fall in one of four classes: (1) Those that are purely "extractive," or concerned in the production of raw materials, as the agricultural, mining, lumbering, and fishing industries. (2) The transforming industries — the working up of the raw materials into manufactured products either by machine or hand. (3) The transporting and transferring industries, which include the carrying of products either by water, rail, pack-train, or wagon, and the marketing of the same. (4) Those gainful occupations that are rendered by individuals for the general welfare of a community, such as the professions, police duty, domestic service, etc., which are grouped under the head of personal, domestic, and professional service. Of these four groups the first and third are distinctively masculine in character, the second is largely so, while the fourth, that of personal service, includes pursuits in which both men and women engage.

24. Racial Traits. — To trade or barter is a natural instinct. Different peoples exhibit different degrees of commercial aptitude. The most highly developed people, those that have reached an advanced state of civilization, are possessed of a commercial spirit which is highly developed. The degree of commercial aptitude is not a fixed quantity in any race or people, but is largely a question of environment. Professor Ross in a recent essay says: "The superiorities that, at a given time, one people may display over other peoples, are

not necessarily racial. Physical inferiorities that disappear as the people are equalized in diet and dwelling, and mental inferiorities that disappear when the peoples are leveled up in respect to culture and means of education, are due not to race but to condition, not to blood but to surroundings."[1] Among the causes of race superiority and commercial superiority may be mentioned climatic adaptability, native energy, the development of better standards of living, and a sense of the value of things.

While the animal is largely the slave of its environment, man adapts himself to surrounding conditions, and shapes his environment to his own ends. He, "alone of living beings, has been able in large measure to emancipate himself from the tyranny of natural forces."[2] Man's intelligence finds its most effective manifestation in the social life. The interaction of the physical and the social environments is the underlying principle of the human progress of which commerce is an expression. It is this view of the subject that gives the true value to the study. We should never lose sight of the fact that the central theme in the geography of commerce is the material welfare of humanity viewed against the background of physiographic conditions.

SUGGESTED QUESTIONS AND TOPICS

28. What are the principal stages of social progress? What is the characteristic occupation of each? What use does man make of his physical environment in each stage?

29. What is meant by "subduing nature"? With progress, does man become more or less dependent upon his physical surroundings?

30. What is meant by passive and active as applied to races? Historic and non-historic?

31. Is there any physical law to explain the general westerly migrations?

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[1] Edward A. Ross, *The Causes of Race Superiority.* Annals of the American Academy of Political and Social Science; July, 1901.

[2] Scott, *An Introduction to Geology.*

32. Discuss the ethics of enslaving an aboriginal people; of destroying them by war. What shall be done with an aboriginal people that refuses to become civilized?

33. Compare the classification of occupations in Section 23 with that in the Twelfth Census.

34. Cite what may be regarded as instances of "racial instincts" for industry or trade.

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*Shaler, *Nature and Man in America.* New York, Scribners; 1891.
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*Lawson, *American Industrial Problems.* Sections on Personal Factors, Corporate Factors, and National Factors, Chapters VII to XIX.

REGIONAL MAP
OF THE
UNITED STATES
SCALE OF MILES
0 100 200 300 400 500
DOMINION OF CANADA
PACIFIC OCEAN
ATLANTIC OCEAN
GULF OF MEXICO
MEXICO
Cape Flattery
Seattle
Portland
Columbia R.
OREGON
WASHINGTON
Willamette Valley
PACIFIC MOUNTAIN SYSTEM
PACIFIC MOUNTAINS AND VALLEYS
COLUMBIA PLATEAU
ROCKY MOUNTAIN REGION
IDAHO
MONTANA
YELLOWSTONE NATIONAL PARK
WYOMING
NORTH DAKOTA
SOUTH DAKOTA
BLACK HILLS
GREAT PLAINS
Missouri River
Minneapolis
St. Paul
MINN.
WISCONSIN UPLANDS
L. SUPERIOR
L. MICHIGAN
MICHIGAN UPLANDS
Detroit
L. HURON
L. ERIE
ONTARIO
Rochester
Buffalo
NEW YORK
ADIRONDACKS
St. Lawrence R.
MAINE
NEW ENGLAND HIGHLANDS
MASS.
Boston
Cape Cod
CONN.
New York
Philadelphia
Baltimore
Washington
Richmond
Cape Charles
Cape Henry
Cape Hatteras
Cleveland
Toledo
Chicago
Milwaukee
IOWA
NEBRASKA
Omaha
Great Salt Lake
Salt Lake City
NEVADA
UTAH
COLORADO
Denver
Kansas City
St. Louis
MO.
ILL.
IND.
OHIO
Indianapolis
Columbus
Cincinnati
Ohio R.
Louisville
Pittsburg
W. VA.
KENTUCKY
Nashville
TENN.
Memphis
Mississippi R.
ARK.
MISS.
ALA.
GA.
N. CAR.
S. CAR.
Atlanta
Charleston
Savannah
FLORIDA
Cape Sable
New Orleans
Red R.
Rio Grande
OKLAHOMA IND. TY.
Arkansas R.
OZARK PLATEAU
OUACHITA M'TNS
COASTAL PLAIN
NEWER APPALACHIAN BELT
OLDER APPALACHIAN BELT
APPALACHIAN HIGHLANDS
CALIFORNIA RANGES
California Valley
San Francisco
Los Angeles
Colorado R.
ARIZONA
NEW MEXICO
TEXAS
BASIN REGION
COLORADO PLATEAU
Longitude West from Greenwich
BORMAY & CO., N. Y.

PART II

THE UNITED STATES

CHAPTER V

REGIONAL GEOGRAPHY OF THE UNITED STATES[1]

25. Physical Regions. — The entire area of the United States may be divided into six more or less well defined regions as follows: (1) The *Coastal Plain Region;* (2) The *Appalachian Region;* (3) The *Middle Prairie and Lake Region;* (4) The *Great Plains or Steppe Region;* (5) The *Cordilleran or Plateau Region,* and (6) The *Pacific Slope Region.* The primitive nucleus of the continent probably existed in the region now embraced by Canada and the upper Lake district, with detached masses of land that extended southward through the areas of New England and portions of the Atlantic States. An isolated mass existed where is now the eastern side of the Rocky Mountains, inclosing between it and the eastern land areas a vast interior sea from the sediments of which the central portion of the continent was ultimately developed. Throughout these areas the rocks are crystalline in character (granites, schists, etc.), and belong to an early period of geological history.

26. The Atlantic Coastal Plain. — This characteristic region may be said to begin at Long Island, extending from thence southward as a widening belt of country across southern New Jersey, Delaware, and the eastern parts of Maryland, Virginia, the Carolinas,

[1] In preparing the map opposite, and the present account, the author gratefully acknowledges his indebtedness to Professor Davis's admirable chapters in *The International Geography* (Bibliography, p. 59).

and Georgia, where it merges into the Southern Coastal Plain of the Gulf States. Its inland border is marked by crystalline rocks which form the "upland terrace," where the Appalachian region begins. The maritime districts of the Coastal Plain are marked by a fringe of sand spits or low outer beaches, between which and the mainland, are the salt lagoons or maritime marshes. In the inland-reaching bays or estuaries are the oyster beds of the Atlantic coast. These outer sand beaches from Long Island southward along the coasts of New Jersey, Delaware, Maryland, and Virginia present two aspects of life, — that of the seaside resorts which have developed here and there, and the fishing of a scanty native population. Along the shores of North Carolina these outer "banks," as they are called, form the dangerous capes of Fear, Lookout, and Hatteras, for which this part of the coast is so well known. Immediately succeeding the marshes, in passing inland from the coast, are the "pine barrens," a monotonous sandy waste, well developed in southern New Jersey, and forming wide, level tracts of sparsely settled, sandy country in Virginia and the Carolinas. These pine lands in the South are an important source of lumber, tar, and turpentine. Succeeding the sandy plains and pine barrens is a fertile country, extending to the upland terrace. In some places, as in portions of New Jersey, the soil is a marl or limestone deposit. To the south, in Virginia and the Carolinas, this fertile area forms the agricultural belt of the lowlands.

CITIES OF THE FALL-LINE

A number of large and important cities are located on the Atlantic Coastal Plain, either on one of the numerous estuaries, or on the rivers at the head of navigation where the streams flow down from the older Appalachian area to the more recent deposits of the Coastal Plain ("upland terrace" and "fall-line"). Philadelphia is

near the head of tide-water on the Delaware. Trenton, New Jersey, is on the same river at the fall-line a few miles above Philadelphia. Baltimore, Maryland, Washington, D.C., and Richmond, Virginia, are on river estuaries which reach in from Chesapeake Bay (a sunken river valley). Raleigh, North Carolina, and Columbia, South Carolina, are at the fall-line of rivers some distance above tide-water. Norfolk, Virginia, Wilmington, North Carolina, Charleston, South Carolina, and Savannah, Georgia, are on the coast

The Atlantic Coastal Plain was an early settled portion of the country. The division of its area into commonwealths was largely determined by the topography and configuration of the coasts. The sunken river valleys represented by the present Delaware and Chesapeake bays led to settlements at favorable points. Thus, Philadelphia was located on the only bluff that rose along the western shore of the Delaware for many miles. New Jersey became a separate commonwealth because of the Delaware. The colony of Delaware became separated from Pennsylvania largely as a result of its peninsular position. The Maryland colony was first settled on the peninsula and along the shores of Chesapeake Bay, and gained comparatively little territory because of the wide inlets that severed its population from the mainland Virginia and the Carolina colonies claimed vast tracts of land to the westward, for here the Coastal Plain becomes very much broader, and is uninterrupted by great estuaries, such as the Chesapeake and Delaware, which extend in a north and south direction for long distances. On the broader part of the Coastal Plain, the Virginian became a tobacco planter, and the many estuaries allowed sea-going vessels to load directly at the plantation wharves. Hence no great commercial centers were early developed.

27. The Southern Coastal Plain. — This area is a continuation of the Atlantic Coastal Plain south of the mountain terminus; it was formed during the same period, under the same conditions, and presents similar characteristics. It is the great cotton-growing region; its principal port is Mobile, Alabama, at the head of a tide-water

estuary. The Southern Coastal Plain merges into the flood plain of the Mississippi and is continuous beyond in the Coastal Plain of Texas. The Florida Peninsula forms a peculiar exception to the general features of the Atlantic Coastal Plain, its more southern portion being a rim of coral limestone surrounding a vast wilderness of swamp and marsh, known as the Everglades. The peninsula is fringed with numerous coral reefs with shallow lagoons separating them from the mainland. The entire Coastal Plain Region is the result of the accumulation of sediments which have been slowly uplifted into a land area with a slight tilting seaward.

28. The Appalachian Region.— The Appalachian region embraces all of New England and the Middle Atlantic and Southern States, from the inner border of the Coastal Plain to the western border of the mountains, including the eastern portions of Ohio, Kentucky, and Tennessee. An outlying mass of highlands in Missouri and Arkansas (the Ozark and Ouachita Mountains) may also be included in this region. The main region (outside of the Missouri and Arkansas highlands) is divisible into two well-defined units or belts: (1) The New England area and Piedmont Belt, known as the Older Appalachian, and (2) the Newer Appalachian Belt and the Alleghany Plateau.

29. New England. — The characteristic rocks of the New England area are the crystalline granites, gneisses, and schists, which represent the base of a very old land surface, the overlying domes of which have been entirely removed by erosion. This worn-down area with its exposed rocks is part of the original nucleus of the continent already referred to.

The whole of New England was covered by the ice sheet during the glacial period. This left its characteristics, among other things, in the scattered bowlder drift and transported rock debris or "till" which forms the loose soil that is spread over the surface and piled up here and there into rounded hillocks or "drumlins." North of the Hudson the coast of the continent underwent a sinking which submerged a considerable area of Coastal Plain and brought

the eastern border of the Old Appalachian area into contact with the sea. Hence the rugged and indented character of the New England coast. Its numerous offshore islands are the highest parts of the sunken land, and some, as Nantucket and Martha's Vineyard, reveal their comparatively recent separation from the mainland by the glacial features of their surfaces.

Boston, the chief city of New England, is situated at the head of Massachusetts Bay, one of the numerous deep inlets of the sunken shore which afford good harbors. Portland, Maine, and Portsmouth, New Hampshire, are other cities which have developed under similar conditions. The exposure of vast areas of bed rock and the nature of the soil as a result of glacial action render most of the land throughout New England unfit for farming on a large scale. This is compensated for, however, by the ample water power that is available in the many streams of the region. These streams have successions of falls and rapids, and do not present any considerable reaches of tide water as do those of the Coastal Plain. Many of the important cities of New England are situated at the shelf (fall-line) where the streams descend to the lower level of the tide-water region. This position gives them the desirable advantage of power for manufactures and deep draught for commerce. In the South, which is generally contrasted with manufacturing New England, as an agricultural region, the fall-line has in recent years similarly determined the location and development of numerous manufacturing centers.

30. The Piedmont Belt. — The Older Appalachian area is continued southward as the Piedmont Belt, which lies between the inner border of the Coastal Plain (upland terrace) and the eastern base of the Appalachian ranges proper. Like New England it is an old worn-down land surface with the underlying crystalline rocks exposed, and represents a southward extension of the ancient nucleus of the continent. Unlike New England, however, it was not subjected to glacial action, and its surface represents a broadly rolling upland, well covered with a fertile soil that has been formed by the weathering of

the crystalline rocks in places. It may be said to begin south of the Hudson, extending as an increasingly broader belt to Georgia. From New Jersey southward, the Piedmont Belt is an agricultural country. Philadelphia, Baltimore, Washington, and Richmond are the important cities situated on or near the border line between the Piedmont Belt and the Coastal Plain.

31. The Newer Appalachian Belt. — The ranges of the Appalachians proper begin immediately west of the Piedmont and constitute the Newer Appalachian Belt. Unlike the crystalline rocks of the Piedmont and New England area, the rocks of this region are stratified deposits of great thickness. They form a long trend of mountain ranges with intervening longitudinal valleys of considerable breadth. One of these valleys, known as the Great Valley, trends along the eastern side of the mountain ranges for a long distance north and south. It may be said to begin in the St. Lawrence Valley and is continued southward through Lake Champlain into the valley of the Hudson. The Hudson leaves the Great Valley before it enters the Highlands. The Great Valley continues southward under various local names — the Kittatinny Valley in New Jersey, the Lebanon and Lehigh Valleys in eastern Pennsylvania, the Cumberland Valley in southern Pennsylvania, the Shenandoah Valley in Virginia, and the East Tennessee Valley. It is underlaid with limestone in many places, and throughout its extent is noted for its fertility, being the seat of numerous agricultural communities. The rivers of the Atlantic Slope, south of the Hudson, as the Delaware, Susquehanna, and Potomac, rise on the farther side of the Great Valley and flow across it, having cut their way through the intervening ridges.

32. The Alleghany Plateau. — The mountain ranges on the western side of the Appalachian Highlands constitute the Alleghany Plateau. They are of the same vast thickness as the more eastern mountains, but are unlike them in their topography, being a maze of branching spurs instead of long trending ridges. The region is a dissected plateau, the even sky line of the various ridges and spurs being a characteristic

feature. The valleys between are occupied by the head streams of the Atlantic rivers and those of the Mississippi Basin, the crest-line of the region thus forming the divide. The Alleghany Plateau is much higher toward the south, its western side (the Highland Rim) descending quite sharply into the limestone belts of Kentucky and Tennessee, the former embracing the famous "blue grass" country. To the north, in Pennsylvania and New York, the plateau becomes lower, ending somewhat abruptly on the western side of the Hudson in the Catskills and farther west in the Helderberg Mountains.

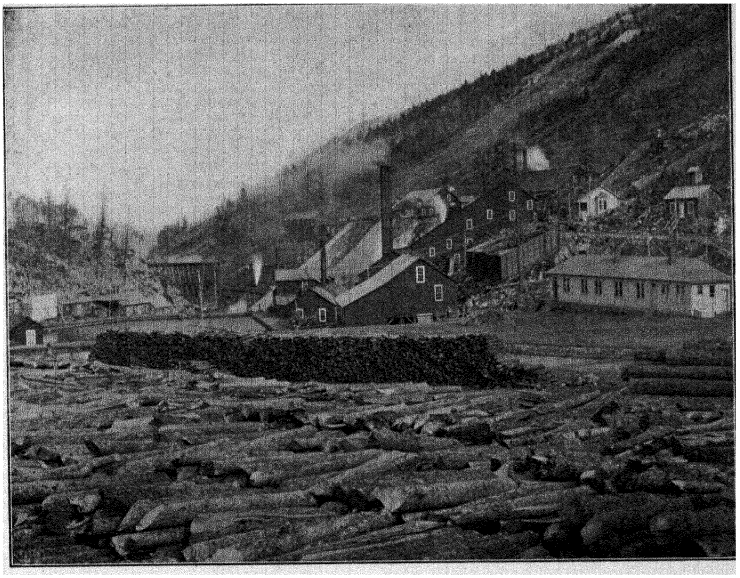
The eastern side of the Alleghany Plateau along its entire extent from northeast to southwest, presents a decided wall or escarpment — the Alleghany Mountain proper ("Alleghany Front"). Its western slope in the northern portion passes gently into the prairie lands of Ohio, quite different from the bold western escarpment of its southern portion which forms the bluffs of the Highland Rim.

33. Effects of the Appalachian Highland. — The Appalachian Highland is still largely a wilderness. In many parts the primeval forest has been cut off by the lumbermen, a strong "second growth" taking its place. The strata contain vast deposits of coal and iron which have made possible the development of the mining industry in many parts of the region. Busy centers of manufacture, as Pittsburg in western Pennsylvania, and Birmingham in Alabama, have developed incident to the coal and iron of the region. The mining operations and the manufacturing centers have drawn a large influx of foreign labor (Poles, Huns, etc.) into the population. Outside of the mining and industrial centers, the population is chiefly of the "mountaineer" type, scattered communities and isolated families, dwelling in the "back country," and often preserving many of the traits, customs, and manners of speech of their ancestors.

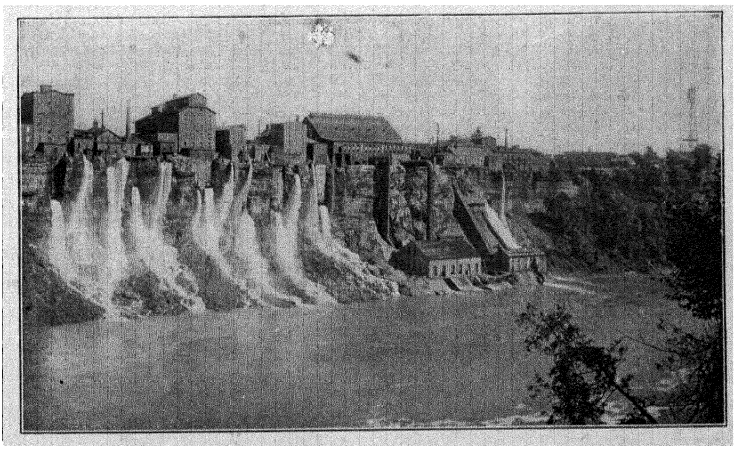
The Appalachian wilderness long formed a barrier to the western movement of population from the settled parts along the Atlantic seaboard. Many of the towns throughout the region began as frontier forts for protection against the Indians. The Scotch-Irish and Ger-

mans were among the earliest pioneers, clearing and cultivating the fertile strips of the Great Valley, while some, like Daniel Boone, penetrated into the wilderness beyond the mountains. The greater breadth and height of the Appalachian Highland in the south, made this portion an effectual barrier to western migration. Passage around the south of the highland was disputed by the presence of hostile Indian tribes. In Pennsylvania and Maryland the divide between the Atlantic rivers and the Ohio drainage is comparatively low, and the valleys of the Susquehanna and Potomac have always marked cut natural highways of travel. A remarkable illustration of the effect of topography on the movement of people is seen in the Mohawk Valley. A depression exists in the northern end of the Appalachian uplift, between the northern terminus of what is now the Alleghany Plateau (Catskill and Helderberg Mountains) and the outlying group of old crystalline rocks, forming the present Adirondack mountain region. Through this depression the Mohawk River flowed eastward into the Hudson, thus opening a broad highway, unobstructed by mountain ridges, between the Great Valley and the Lake Region and prairies. Before the advent of Europeans and for many years after, the land from the Mohawk to the Niagara River was the "Long House" of the Iroquois Confederacy or Five Nations, who by virtue of their strategic position, dominated a wide territory, holding many of the surrounding tribes in vassalage. This region contains numerous glacial lakes and glacial river channels which have further facilitated communication. ("Finger lakes.")

The broad depression leading from the Hudson to the Ohio prairies and the Lake Region, in connection with the sinking of land that made the Hudson an estuary as far as the Mohawk, has more than anything else, determined the supremacy of New York City as the metropolis of America. To a lesser extent, Philadelphia and Baltimore have become great cities from their proximity to the lower portion of the Appalachian Highland.



MARYSVILLE (MONTANA) GOLD MILL



WATER POWER, NIAGARA FALLS

34. Outliers of the Appalachians. — A re-appearance of strata similar to that of the Appalachians is observed to the west of the Mississippi in the Ozark Plateau in Missouri, south of the Missouri River (composed of gently inclined strata, ending in escarpments or cliffs of moderate elevation), and in the Ouachita Mountains in Arkansas. These regions are largely forested and sparsely settled, the people cultivating small farms in the river valleys. Here and there a dome of crystalline rock rises through the strata, as Pilot Knob and Iron Mountain in the Ozark country.

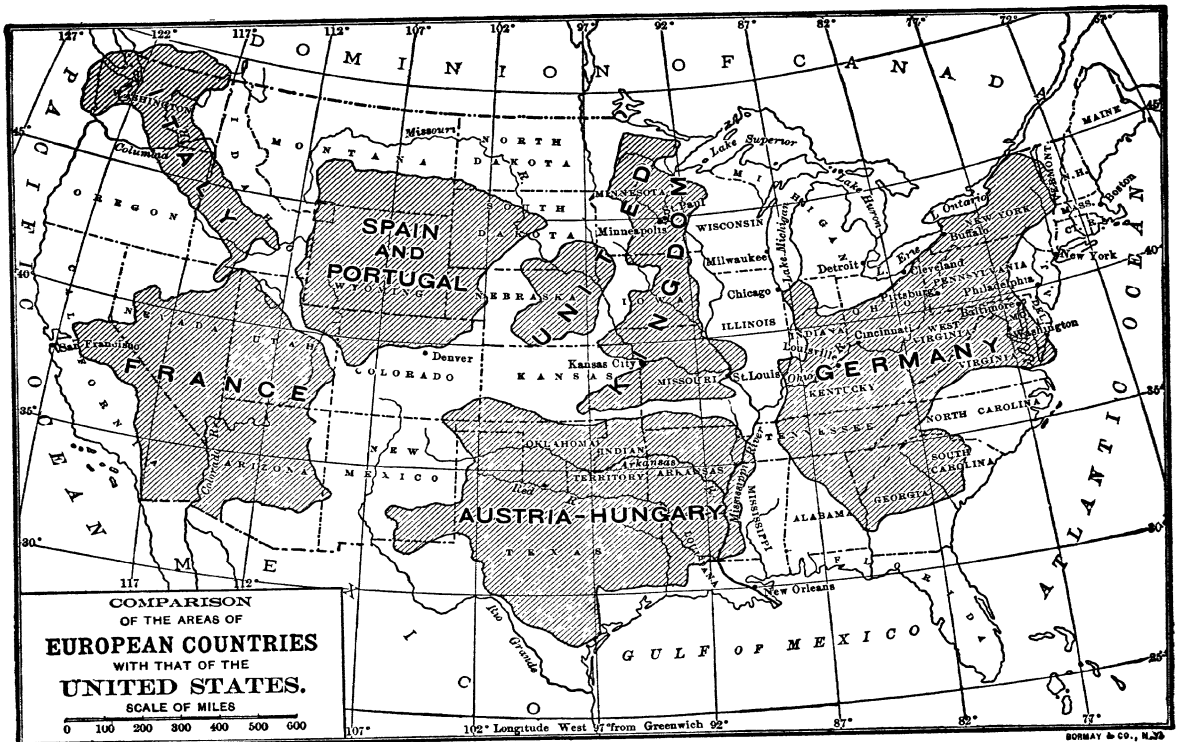
35. The Middle Prairies and Lake Region. — Extending northward from the northern bank of the Ohio and of the Lower Missouri to the borders of the Great Lakes and the Canadian frontier, is a broad expanse of open country known as the *prairies* of the Middle West. They embrace the western part of Ohio, the whole of Indiana, Illinois and Iowa, the northern portion of Missouri, the eastern edge of Nebraska and the Dakotas, and portions of Minnesota and Wisconsin. The eastern part of this area is composed of the thinned-out strata of the Appalachians.

Between the basins of Lakes Ontario and Erie is a bluff-like escarpment of limestone over which the Niagara River plunges, forming the famous cataract. This escarpment may be traced northwest between Lake Huron and Georgian Bay, across the Mackinaw Peninsula, and southwest along the western side of Lake Michigan to beyond the Mississippi. The line of escarpment marks the inner border of an old coastal plain. Masses of crystalline rock of the old land occur to the northwest of it in Minnesota and Wisconsin, and a mountainous uplift forms a rugged, forested district in the Michigan Peninsula. The Lake basins occupy depressions in the floor of this coastal plain as the result of conditions developed during the glacial period. From the ridge of this limestone escarpment the country slopes gently toward the south as the prairies. The Mohawk Valley leads into the prairie region through the depression north of the Alleghany Plateau. This last feature shows very clearly

how accessible the prairies were to the early settlers who followed this natural highway.

The soil of the prairies is extremely fertile and supports an immense population. It is the center of the corn-belt and is one of the richest regions of the continent. During the glacial period the ice sheet covered its surface to the present banks of the Ohio and Missouri rivers. Unlike New England, however, the glacial soil or "till" was deposited layer upon layer mingled with silt and finely powdered materials which covered over previous irregularities, making the present comparatively even prairie surface, and forming a deep, loam soil of wonderful fertility. The belts of low hills which occur here and there over the prairies are the moraines of the old glaciers. Many of the smaller prairie streams rise in low divides and flow into the nearest lake or river basin as determined by the slope. The absence of trees on the prairies is a marked feature of the landscape, especially in the more western part of the region. This has been attributed to the burning off of the woodland by the Indians to make more pasture for the buffalo, the range of which extended eastward into the Appalachian region at the time of the first settlements. It may have been partially due to this, but probably also to the very fine character of the glacial soil which is not well adapted to support tree growth.

36. Prairie Cities. — The rapid peopling of the prairies resulted from the wonderful agricultural opportunities which the region offered. To-day agricultural interests are the basis of the region's commercial activities. During the last half of the nineteenth century centers of population which began as scattered settlements, grew into important towns, and in some instances into great cities. The ease with which railroads could be built has added immensely to the growth of the region. In the prairie region are a network of railroad lines connecting the various towns. Chicago — the Prairie Metropolis — is a type of this development. Its situation at the southern end of Lake Michigan made it the focus of the region's commerce in the


COMPARISON
OF THE AREAS OF
EUROPEAN COUNTRIES
WITH THAT OF THE
UNITED STATES.
SCALE OF MILES
0 100 200 300 400 500 600
DOMINION OF CANADA
SPAIN AND PORTUGAL
FRANCE
AUSTRIA-HUNGARY
GERMANY
UNITED STATES
PACIFIC OCEAN
ATLANTIC OCEAN
GULF OF MEXICO
MEXICO
San Francisco
Denver
Kansas City
St Louis
Chicago
Milwaukee
Detroit
Cleveland
Buffalo
New York
Boston
Philadelphia
Washington
Cincinnati
Louisville
Pittsburg
Baltimore
New Orleans
Minneapolis
St Paul
Lake Superior
Lake Michigan
Lake Huron
Lake Erie
Ontario
Missouri
Columbia
Rio Grande
Mississippi
Ohio
102° Longitude West from Greenwich 92°
BORMAY & CO., N.Y.

beginning, for all routes to the northwest passed through it. Besides, it is favorably located for the Lake traffic of the entire central region. Its importance as a commercial center has extended far beyond the limits of the prairies, for it is the center of the trade in the food supply of millions of people, both at home and abroad.

37. The Great Plains or Steppe Region. — In the eastern part of the second tier of states which lie west of the Mississippi River — Kansas, Nebraska, and the Dakotas — the prairies gradually pass into a more arid steppe-like region known as the *Great Plains*. The term "plains" is a misnomer inasmuch as the surface of the region is far from plain-like in character, being a high, rolling country of very uneven contour; the swells of land often reach several hundred feet above the intervening depressions. The entire area is the result of an uplift of strata which were laid down in what was once a great interior sea. The rivers of the region, with their numerous tributary streams, have cut deeply through these strata, forming characteristic bluff-walled valleys. The plains are a treeless expanse of grass land as a result of deficient rainfall; the only tree growth is in fringes along the numerous river bottoms. The rivers rise on the eastern side of the Cordilleran Highland and flow across the plains, for the most part into the Missouri-Mississippi system. The plains reach northward far beyond the Canadian border. Southward they extend into the plateau country of northern Texas known as the *Llano Estacado*, or "Staked Plains." They end abruptly on the west at the eastern foothills of the Rocky Mountains. Their eastern limitation, where they merge into the lower prairie lands of the Mississippi region, may for convenience be taken as the 100th meridian of west longitude.

The entire region shows the effects of denudation under arid conditions. To the north the country is dissected into many remarkable forms of relief (mesas, buttes, etc.), forming the characteristic "Bad Lands." In Nebraska, north of the Platte River, are many low sand dunes as the result of wind action in piling up the loose, finely disin-

tegrated soil. In South Dakota, near the borders of Wyoming, is an ancient mountainous region of exposed crystalline rocks denuded of their overlying strata. This island-like district is known as the *Black Hills*. Being elevated above the surrounding plains, they induce a greater rainfall and are consequently forest covered. In this "island of crystalline rocks" are many valuable mineral deposits, and the Black Hills region has become an important mining center.

Over the vast expanse of the Great Plains the dryness of the climate precludes agriculture, save along the narrow bottom lands of the rivers, and where irrigation is possible. The region is mainly given over to grazing and stock raising, and the cattle of the great "ranges" are shipped by thousands to the stock yards of Chicago, Omaha, Kansas City, St. Louis, and to the markets of the eastern United States and Europe.

Denver, the city of the Great Plains, has developed owing to its nearness to the mountain region, and its accessibility by railroad to the east.

38. The Cordilleran or Plateau Region. — Under the general name of the Rocky Mountains are included a number of ranges, as the Wasatch and Uintah ranges in Utah, the Sawatch range in Colorado, and the Teton and Wind River ranges in Wyoming, the Bitter Root Mountains in Montana and Idaho, and numerous other ranges. In this western part the Great Plains reach a general elevation of about five thousand feet. From this elevated base, the eastern range of the Rocky Mountains proper, rises abruptly to heights varying from ten thousand to fourteen thousand feet above the sea level. The ranges of the Rocky Mountains consist of vast series of folded strata. Erosion has in many places revealed valuable mineral deposits, and mining has become the characteristic industry throughout the region. Various mining centers or "camps" have sprung up in relation to the rich lodes, as Cripple Creek and Leadville in Colorado, Butte in Montana, and others, some of which have grown into important towns.

Peculiar level areas called "basins" are found here and there hemmed in among the ranges where the stockmen and ranchers have developed permanent settlements. These *intermont basins* have been produced by the twisting or warping of strata, which has formed a trough, somewhat oval in form. They are usually covered with a thick soil which is the accumulation of land waste from the surrounding ridges. Their surface is covered with good grass and clumps of evergreens, which have won for them the name of "parks" in several cases. Cattle raising and wheat growing are here carried on successfully, and the railroads have pushed their way among the ridges to reach these districts. These basins are drained by rivers that have cut their way out through deep cañons and are, in some instances, rapidly denuding the floor of the basin itself. The Big Horn Basin and the Yellowstone Park in Wyoming, North, Middle, and South Parks in Colorado, and the San Luis Valley on the borders of Colorado and New Mexico, are illustrations of these intermont basins.

A dry elevated region of considerable extent occurs toward the south known as the *Great Basin*. It embraces a large part of Utah and Arizona, the whole of Nevada, and the southern portion of California. Many of the Basin ranges are devoid of trees to their summits, and the entire region is covered with a characteristic growth of sage brush, interspersed with various thorny species of plants, such as the cactus and yuccas. Much of the surface is an alkali waste, with the remains of lakes which have disappeared under the drying effects of the atmosphere. In Utah this region is the home of a large Mormon population which has converted wide areas of desert into productive farm lands and built up a great city on the shores of Salt Lake. In many parts of the Basin ranges, rich "lodes" of gold and silver have been discovered and mining camps have sprung up, one of which — Virginia City, Nevada, on the Comstock Lode — developed into a mining and commercial center of some importance. The Cordilleran region has been the scene of great volcanic activity. Immense sheets of lava here overflowed wide areas, producing characteristic

features of scenery. In Oregon, Washington, and Idaho are a series of great lava plateaus, deeply trenched by the numerous streams of the Snake and Columbia rivers which drain the region. The Snake River has cut out a remarkable cañon four thousand feet in depth. These plateaus, though sparsely covered with grass, afford extensive ranges for the stockmen. Spokane, Washington, is the commercial center of the region and in large measure owes its rapid development to the water power of the falls.

In New Mexico and Arizona a desert plateau occurs in which the strata have been uplifted in a nearly horizontal position to an elevation of over six thousand feet. The region has been deeply dissected by river erosion, the Colorado flowing through one of the most remarkable cañons in the world. Numerous evidences of volcanic action are present in lava sheets and such extinct volcanic peaks as San Francisco Mountain.

39. The Pacific Slope. — On the western edge of the Cordilleran region, separated from the Rocky Mountains by the broad stretch of the Columbia Plateaus on the north and the Great Basin on the south, rise the lofty ranges of the Sierra Nevada and Cascade Mountains. Their eastern sides are steep and rise into numerous snow-clad summits which reach elevations of from twelve thousand to fifteen thousand feet above the sea level. These slopes feed the streams which water the valleys below. The ranges are watered with the abundant moisture from the ocean, and are well wooded, being covered with a magnificent growth of forests, among which are the giant redwood and sequoia. In this respect they are in striking contrast to the less heavily forested ranges of the Rocky Mountains. Several rivers have cut their way through the ranges in their course to the Pacific — the Pitt tributary of the Sacramento in California, and the Columbia and Klamath in the Cascade Range. The entire range of the Sierra Nevada and Cascade appears as a huge tilted block, uplifted along its eastern side. Several remarkable valleys are in this region, the most notable being the Yosemite.

To the west, and fronting on the Pacific, are the lower, parallel Coast Ranges, including between them and the Sierra Nevada and Cascade on the east the broad, fertile valleys of California which extend northward into Oregon. The valley floors are covered deep with soil brought down from the denuded ranges. Evidences of a local sinking of the coast line are seen in the sea cliffs of the Coast Range at various points, and the few deep inlets, as the Golden Gate, the estuary of the Columbia, and Puget Sound. The great cities of the Pacific coast — San Francisco, California, Portland, Oregon, Tacoma and Seattle, Washington — are located on these sunken river valleys.

The mountain barrier of the Sierras and the Cascade Range, the wide stretches of Cordilleran and desert ranges, and beyond these still the Great Plains, long isolated the peoples of the Pacific Slope from the life of the east. The early settlement of California was Spanish, and for long the chief interest in its civilization was because of the "missions." The discovery of gold led to the rapid increase of population by immigration from the east, but the real basis of prosperity was the fertile soil of the valleys which determined permanent settlement by an agricultural population.

SUGGESTED QUESTIONS AND TOPICS

35. Does the phrase "black belt" as applied to the Southern Coastal Plain refer to the nature of the soil or to the large proportion of negro population in the region?

36. What is the meaning of "fall-line"? Enumerate the advantages of cities situated on the fall-line for manufactures and commerce. Is the conventional explanation that New England became a manufacturing region and the South agricultural because of the water power in New England true to the facts?

37. Fanciers tell the ages of animals by examining their teeth. Compare this with geologists telling the ages of mountains. Explain the phrases "worn to the roots" and "gnawed by the tooth of time," as applied to mountains.

38. The Appalachian Highlands, three hundred miles in width, presented a barrier of forest and mountain "almost as impassable as the Alps" (Shaler). Discuss this, showing its result on the settlement of the interior, fixing of trade routes, location of cities, and present conduct of trade.

39. What has been the effect of the Great Valley of the Appalachians on the distribution of population?

40. "A lake is an inverted island." Apply this to the Lake Region of western New York. What do the "finger lakes" show about the geological history of the region?

41. What was the effect of opening the Erie Canal (1825) upon New York? Upon Philadelphia?

42. Does it seem probable that the prairies of the United States were due to the annual burning by the Indians in order to get tender grass, and thus enlarge the pasture of the buffalo? (See Shaler, *Nature and Man in America*, pp. 184–187.)

43. Note the presence of the following products in the Middle West: coal, iron, timber, grain, and cattle. What have been the results of the Great Lakes as a highway connecting the regions producing these various products? (See p. 135.)

44. Compare the population of the states west of the Alleghanies, north of the Ohio, and east of the Great Plains, with the combined population of New England and the Middle Atlantic States. Compare the probable future of the two districts, basing the comparison on the resources.

45. What is the origin of the name Butte, Montana, and what does this indicate about the geological history of the region?

46. Approximately, what proportion of the area of the United States lies west of the Rocky Mountains? How will the future of this region be affected by the completion of the Isthmian Canal and the development of the lands about the Pacific?

Books to be Consulted

**Davis, *The Continent of North America*, Chapter XXXVII, and *The United States of America*, Chapter XXXIX, in The International Geography.

*Gannett, *The United States* in Stanford's Series, 1898.

Physical Geography of the United States as represented in the better class of text-books.

Tarr, *Economic Geology of the United States*, Chapter III. Macmillan Co.

Outlines of Geography with reference to History as represented by Shaler, McMaster, Fiske, Winsor, Channing and other writers.

*Shaler, *Aspects of the Earth* and *Nature and Man in America*.

Powell, Russell *et al.*, *National Geographic Monographs*. New York, American Book Co.

*Lawson, *American Industrial Problems*, Chapters III to VI, Soil and Climate; also Ports and Harbors.

CHAPTER VI

RESOURCES: MINERAL PRODUCTS

VARIOUS methods suggest themselves for studying the products of the United States, but the scientific method of classification and presentation is here adopted. This is in line with what has come to be known as economic mineralogy, botany, and zoölogy. This method includes only those products which are of use to man, and it has, moreover, the advantages of conforming to well-established principles of science that have become matters of common knowledge.

40. Metals. — The elements may be classified in two primary groups: the Metals and the Non-metals or Metalloids. The former are distinguished by various physical properties, as ultimate constituents of minerals — luster, tenacity, ductility, and malleability, and by their power to conduct heat and electricity. Metals differ widely among themselves in these physical properties, but each usually possesses some one property in a marked degree, and it is this which makes it of value in the arts. The metals occur usually in combination with some non-metallic element, as sulphur, for example, though some few, like gold and platinum, occur *native*, *i.e.* uncombined or free. The metallic compound or metal as it occurs in nature, forms an *ore*, though the term "ore" is applied only when the metal can be profitably extracted. The ores of the metals usually occur as "veins" in the fissures and "faults" that cut through rock masses of the earth's crust. These fissures are mainly filled with quartz or other mineral substances known as the "vein-stuff," in which the ore occurs as threads or pockets.[1]

[1] Some metals, *e.g.*, tin and gold (see pp. 69 and 71), are found as "placer deposits."

The metalliferous veins are most abundant in the mountainous regions, for the conditions incident to mountain building were also favorable to the formation of metallic ores, and these regions have further been the scene of great erosion by streams and atmospheric weathering, whereby the metal-bearing veins have been exposed over wide areas. In the United States the Old and New Appalachian Belts, the Cordilleran or Plateau Region, and the Lake Superior hill region are the areas of greatest metal production.

I. METALLIC SUBSTANCES

41. Iron.—As a workable ore of commercial value iron is found in four forms: *limonite* or *brown hematite,* including the *bog ores; red hematite; magnetite;* and the *carbonate* called *siderite* or *spathic iron.*[1] The first three are oxides of the metal. Native iron is of rare occurrence, and does not enter into commerce. The sulphide of iron, or *pyrite,* is mined solely for the sulphur which it contains. Limonite, though not the richest in the amount of metal contained, is worked with comparative ease, and was the first ore mined in this country. The remains of the old works are still to be seen in many places in the Eastern States, as open pits and dump heaps where the ore was dug out of the ground.

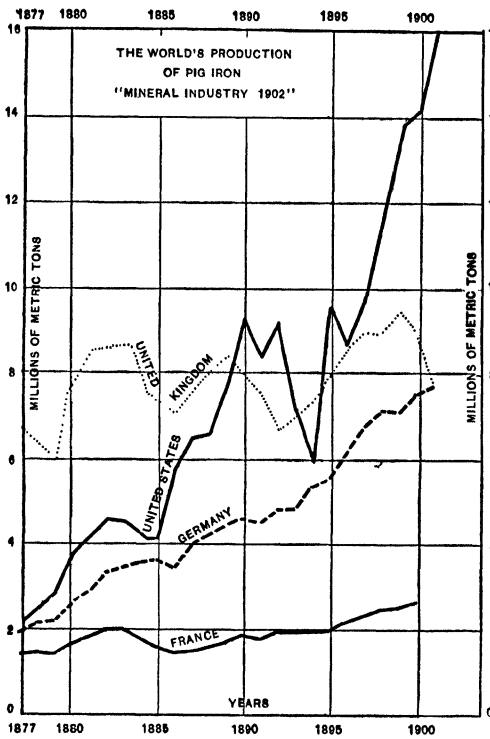
The commercial aspects of iron production are thus set forth by Professor Tarr: "An iron ore, in the present state of the iron industry, must occur in a very favorable position as regards market, it must be of good quality and considerable quantity, and favorably situated for extraction and smelting. The presence of sulphur or phosphorus in an ore makes it valueless unless the quantity is very slight. Iron is now so cheap that, where mining

[1] In 1901 the production of iron ore in the United States in long tons was as follows:—

Brown hematite	3,016,715
Red hematite	24,006,025
Magnetite	1,813,076
Carbonate	51,663

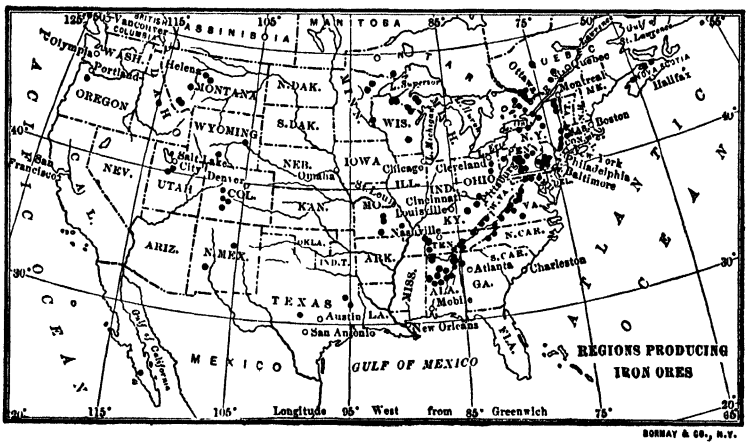
—*Mineral Resources of the United States,* p. 46.

operations are difficult, as, for instance, where the mine is deep, the vein narrow, gangue abundant, or transportation difficult, it cannot be mined. There are a sufficient number of good iron deposits in this country to make selection possible, and consequently many of the older mines are being abandoned because of the development of these more profitable mines. For reasons of this sort, the New Jersey region, for instance, which was once an important iron-producing section, is becoming abandoned; and whereas only a few years ago there were many score of profitable mines in that state, now there are very few. As this ore is chiefly magnetite, and some of it of a very high grade, it is possible that the use of electricity in the separation of the ore, which is now being experimented with, may revolutionize the iron industry of that state.



"The most favorable situation of an iron ore for profitable extraction is near good coking coal for smelting and limestone for a flux, as in the Birmingham district of Alabama; and in such a

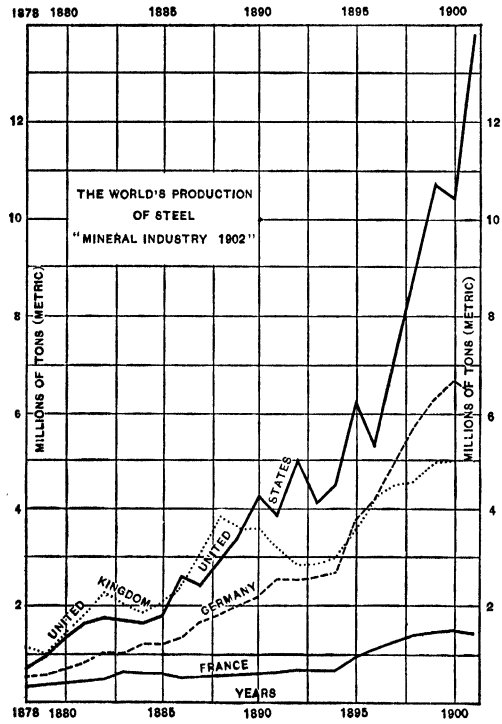
situation even low-grade ores can be worked profitably. Unless this is the case, iron ore cannot be extensively mined excepting under conditions of great abundance and economical methods of transportation, as in the Lake Superior district, where thick and remarkably uniform beds of good ore occur in such a position that water transportation to the market is possible. Where these conditions do not exist, iron mining is feasible only on a small scale for the local market. Thus, in the Rocky Mountains there are almost inexhaustible supplies of iron, often of a high grade, which are at present of no value whatsoever."[1]



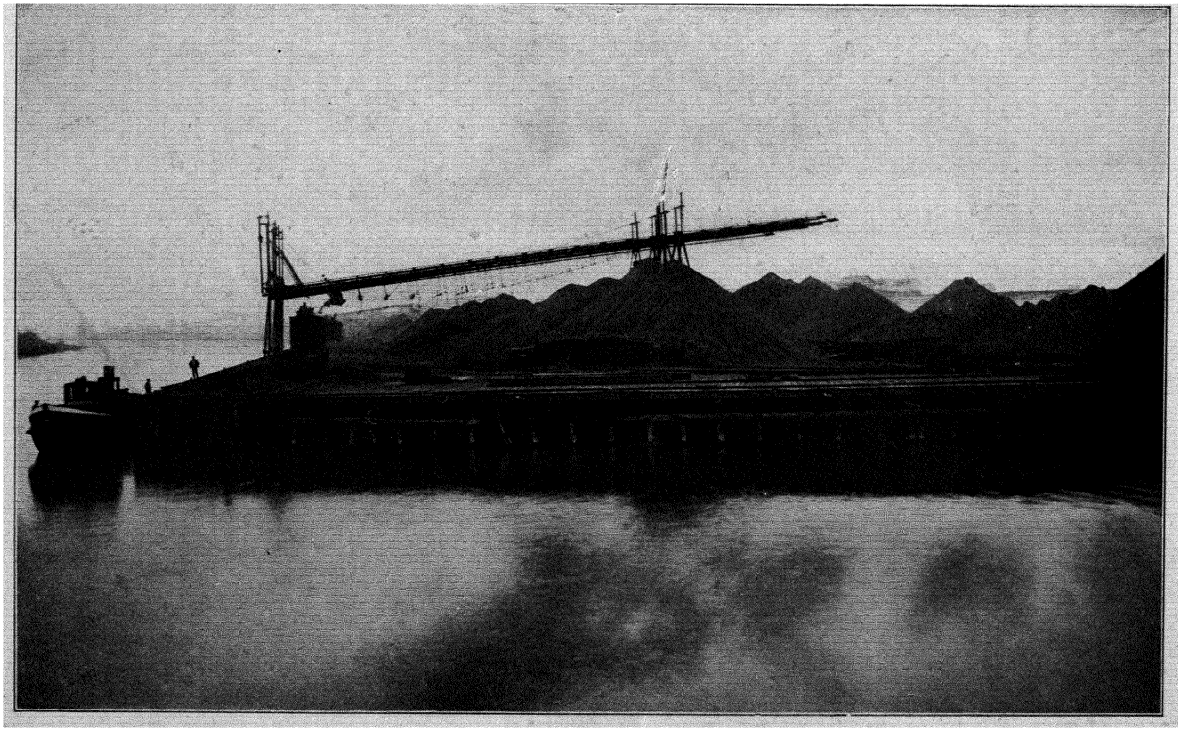
Though very widely disseminated, the workable deposits of iron ore are remarkably local in their distribution. The chief iron-producing states, named in order of their importance, are (1901) Minnesota, Michigan, Alabama, and Pennsylvania. Of these Minnesota and Michigan are in the Lake Superior region, — an ancient mountain area worn down to a core of low hills; here the weathering process has laid bare the rich ore deposits. The other states mentioned are in the Appalachian belts. Iron is also

[1] Tarr, *Economic Geology of the United States*, pp. 7 and 119–120.

produced in many other states, but to a comparatively limited extent. A very striking fact is the recent shifting of the iron-mining industry from the northern Appalachian area (New York and Pennsylvania) to the Lake Superior and Alabama regions. This is due to the conditions already noted, — more productive deposits and better facilities for transportation. The larger part of the Lake Superior ore is smelted in Pittsburg and vicinity, and at South Chicago. Iron is worked extensively in the Mahoning Valley district of Ohio, and in the Connellsville region in Pennsylvania because cokable coal and limestone are accessible. Of the several ores, red hematite is best adapted for the production of steel, and is the principal ore mined in Lake Superior and Alabama districts. Pennsylvania and New York produce all four varieties of the ore, while Ohio is the only state producing the carbonate (siderite) to any extent.



The production of iron ore in the United States in the year 1901 amounted to 28,887,479 long tons (2240 pounds per ton). In 1901



ORE DOCKS, FAIRPORT, OHIO

the total world production of pig iron amounted to upward of 40,000,000 metric tons (metric ton equals 2204 pounds) and of steel more than 31,000,000 tons, of which the United States produced approximately 16,000,000 and 13,000,000 tons of each respectively, or nearly 40 per cent and 41 per cent of the world's product.[1]

42. Copper. — The chief sources of commercial copper are sulphide ores and the native metal. Other metals are often found associated with copper, as mechanical admixtures of the ore. Gold, silver, zinc, and lead are some of the metals thus found. The United States is the greatest copper-producing country of the world; the bulk of the world's supply is produced here and

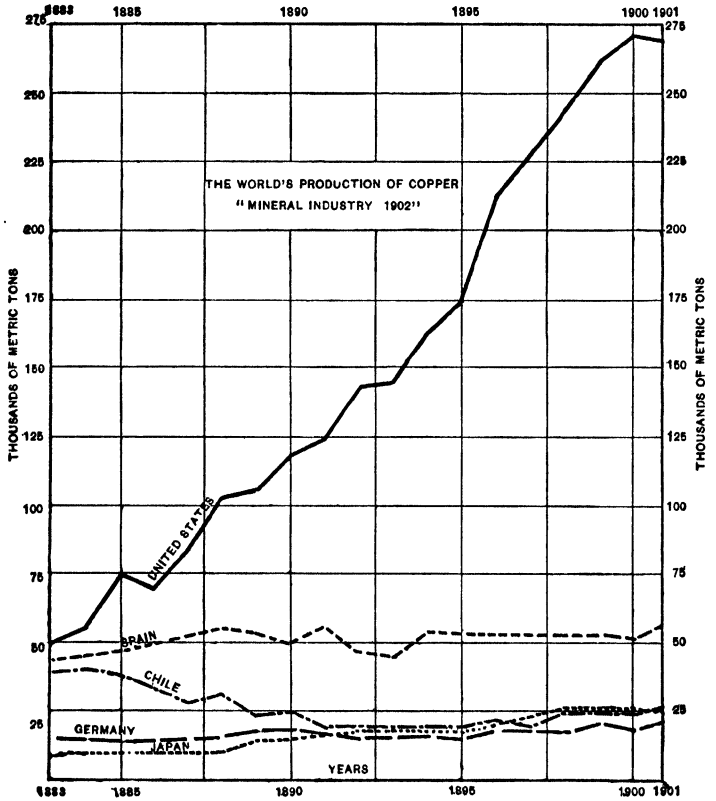
[1] Statistics of the production of pig iron, in the period when the United States passed from being an unimportant producer to the foremost place in production, are given below. The figures are averages of the five-year periods in thousands of tons. *London Commercial Intelligence*, May 10, 1902: —

COUNTRIES	1866–70	1871–75	1876–80	1881–85	1886–90	1891–95	1896–1900	1901
United States	1,464	2,248	2,563	4,301	7,079	8,133	11,492	15,878
United Kingdom	5,133	6,458	6,658	8,098	7,759	7,245	8,879	7,750
Germany	1,226	1 913	2,142	3,353	4,147	5,001	7,326	7,663
Russia	322	326	421	482	682	1,192	2,192	3 100
France	1,201	1,250	1,493	1 869	1,666	1 994	2 493	2 362
Austria	223	467	411	650	794	975	1,251	1 500
Belgium	500	580	501	708	768	773	987	1 020
Sweden	264	326	351	423	439	463	512	510
Canada	. . .	. . .	13	25	25	35	73	245
Other	200	220	240	270	300	330	360	380
Total	10,533	13,848	14,793	20,189	23,659	26,141	35,565	40 408

PERCENTAGE OF THE TOTAL CONTRIBUTED BY THE DIFFERENT COUNTRIES AT EACH PERIOD

United States	14.0	16.3	17.4	21.3	29 9	31.1	32.3	39.3
United Kingdom	48.7	46 7	45.0	40.1	32.9	27.7	25.0	19.2
Germany	11.7	13.8	14.5	16.6	17.4	19·1	20.6	19.0
Russia	3.0	2 7	2 8	2.4	2.9	4·5	6.2	7.7
France	11.4	9 0	10 1	9 3	7.0	7·7	7.0	5 8
Other	11.2	11.5	10 2	10.3	9.9	9·9	8.9	9.0
Total	100 0	100.0	100 0	100.0	100.0	100.0	100.0	100.0

in Spain and Chile. Like iron and other metals, copper occurs chiefly in mountain regions, such as the Rocky Mountains; it is also found in old mountain areas that are worn down to their core, such as New England and the Lake Superior district. The distribution



of the workable ore is exceedingly local, and in 1901 only two states and one territory were copper-producing on a large scale, — Montana, Michigan, and Arizona. Copper minerals of the Appalachian region are considerable in quantity, but of rather low grade. The opening up

of the western region caused the Appalachian region to decrease its output; but with cheaper methods in mining and easier extraction, this copper may be made to pay if the demand should continue to increase. As in the case of iron, the Michigan Peninsula in the Lake Superior district, is an important center of copper production; much of the copper mined there is native and there are good transportation facilities to market. The largest mine in the region has reached a depth of over 4000 feet below the surface, with no sign of diminution in the supply of the metal. The Montana copper production is the largest in the United States and is confined chiefly to a hill in the town of Butte and at the near-by Anaconda Mine. The ores here are chiefly sulphides associated with silver and lead. The Arizona mines occur in several districts, among the better known being the Copper Queen, Old Dominion, United Verde, and Arizona Copper. A number of smaller deposits are also worked in Colorado, California, New Mexico, and Utah. The total world production of copper in 1901 amounted to 532,000 metric tons, of which the United States produced more than half.

The principal uses of copper are in the manufacture of copper wire for electrical construction, cables, dynamos, etc., and as sheet-copper in the manufacture of boilers and stills, for roofing houses, and sheathing the bottoms of ships. Enormous quantities of copper are also used in the form of alloys, such as the bronzes (alloys of copper and tin), brass (alloy of copper and zinc), and German silver.

43. Lead and Zinc. — These two metals are nearly always found associated, one or the other usually predominating. The principal ore of lead is a sulphide known as galena. Much of this ore is silver-bearing (argentiferous); it occurs to a large extent in the Rocky Mountain region. It is because the ore is argentiferous that the mining of lead in the Rocky Mountain region is profitable, it being taken out with the silver as a by-product. The same is true to a large extent in the case of copper in the Rocky Mountains, where the copper frequently occurs in gold and silver

bearing ores. One of the best known localities of the Rocky Mountain district is the silver and lead bearing lode at Leadville, Colorado. Copper, zinc, and gold are also associated in this vein. In the Mississippi Valley the lead ore is non-argentiferous and is associated with zinc, occurring in a vein-stuff of limestone. Its abundance, and the ease with which it may be mined, make it a paying product. The Missouri district is the center of lead production in this area. Lead also occurs throughout the Appalachian region, but in small, non-argentiferous veins which hardly pay in competition with the central and western products. Lead has a wide use in the arts, its softness making it especially adapted for plumbing purposes (lead pipes and sheeting). Its most important use is as "white lead" (a hydrated carbonate) in the manufacture of paint; the oxide of lead also is used in this way. With a small addition of arsenic, which renders it hard, lead is used in the manufacture of shot, and a mixture of lead and antimony forms the alloy known as type metal, used in the casting of type. The United States and Spain are the leading countries in the world in the production of lead.

Zinc occurs mainly as the sulphide in the ore known as "blende," and is in association with galena as already noted. In the silver-bearing ores of the West, the percentage of zinc is small; the chief center of the output is the Mississippi Valley districts. In New Jersey zinc ores of commercial importance occur as oxides and silicates. In Pennsylvania there is, likewise, a zinc-mining district. Commercial zinc is known as "spelter." Zinc finds an important place in the arts for plumbing and roofing purposes. Alloyed with copper it forms brass as already noted. It is largely used in the process of galvanizing as a coating to iron. "White metal" is another alloy of zinc and copper which has a wide use in the arts, being extensively made into buttons. Still another alloy with copper forms "gold foil" used in gilding. Zinc plates are likewise used in the preparation of electric batteries. In 1901 the United

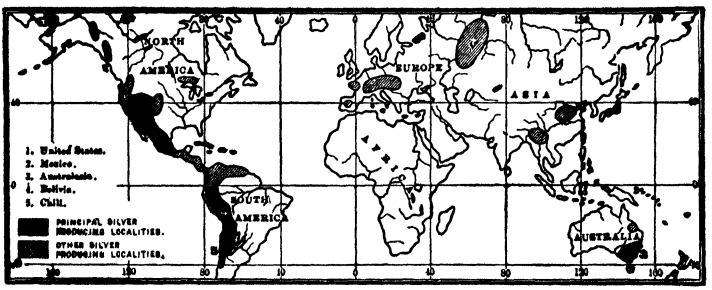
States produced over 25 per cent of the world's output; Belgium, Rhenish Prussia and Silesia furnished the larger portion of the balance.

44. Tin. — The only important ore of tin is tin stone or cassiterite, which occurs in granite rocks of coarse texture. It is widely distributed, but is only found in paying quantities where the heavy metal has been washed from its granite source in the process of erosion and weathering, and has collected in gravel and sand as a placer deposit termed "stream tin." Tin mines, wherever they exist, have been discovered by tracing these stream deposits back to their source in some parent granite or associated rock. In the United States, California, and the Black Hills district in South Dakota, are regions where the best tin mines have been found. The California mine is the only one that so far has furnished much of importance. Other localities where tin has been found, and mined to some extent, are the Shenandoah Valley in Virginia, also North Carolina and Alabama. Tin is largely made into tin plate (a coating of tin on iron to prevent rusting), which forms the various tinware articles of manufacture. Its alloys with copper — the bronzes — have already been mentioned. Alloyed with antimony and a small percentage of zinc and copper it forms Britannia metal, much used in the manufacture of the cheaper sort of domestic utensils. The world's supply of tin comes chiefly from the Straits Settlements in the Malay Peninsula, the Cornwall and Devonshire mines of Great Britain, Bolivia, and Australia (Tasmania). The total amounted in 1901, to slightly over 90,000 metric tons.

45. Aluminium. — Though aluminium is a very abundant and widely distributed element of the earth's crust, it never occurs free. The chief ore from which commercial aluminium is obtained is cryolite. "Bauxite" (a hydrated oxide of aluminium) occurs in the United States, in Georgia, Alabama, and Arkansas, and will undoubtedly be found in other localities. More than 23,000 tons of this ore were produced in 1900. Aluminium possesses remark-

able lightness of weight and is very ductile and malleable. Its lightness renders it valuable for construction purposes where little weight without special strength is desirable, as in racing boats and in certain instruments. It also resists the action of the atmosphere to a marked degree. It has a wide use in the manufacture of fancy articles and ornamental work. Some of its alloys with different metals, especially copper, are important.

46. Silver. — The workable ores of silver are mainly sulphides, though many other varieties occur. The metal is also obtained largely as a by-product in the extraction of other metals, notably lead and copper. The output of silver in the United States is

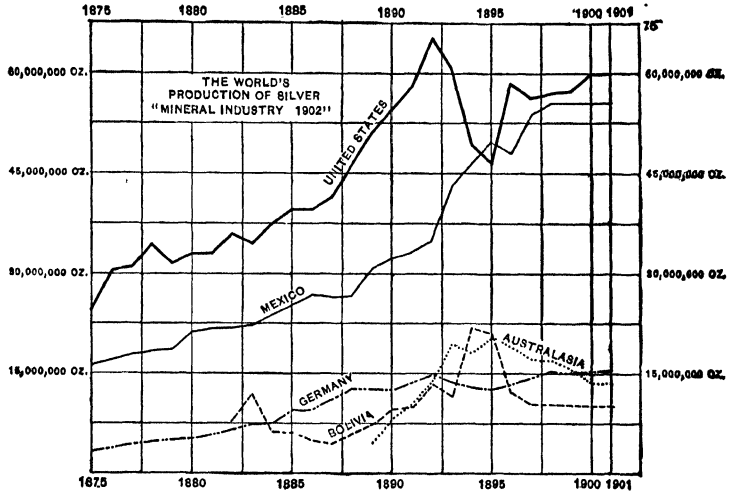


WORLD'S DISTRIBUTION OF SILVER

almost entirely from the Rocky Mountain region, Colorado, Montana, Utah, Idaho, and Arizona being the chief producers (1901). At one time Nevada held first rank in the production of silver, and millions of dollars were spent in exploiting the famous Comstock Lode; this created a city (Virginia City) on the site of the lode, and raised Nevada to the rank of a state. Mismanagement, litigation, destructive fires in the mines, and costly methods, however, caused many of the operations to be abandoned, and reduced Nevada to sixth rank as a producer of silver. Lead and copper ores as noted above, are the chief sources of silver. The United States' product in 1900 amounted to nearly 60,000,000 ounces

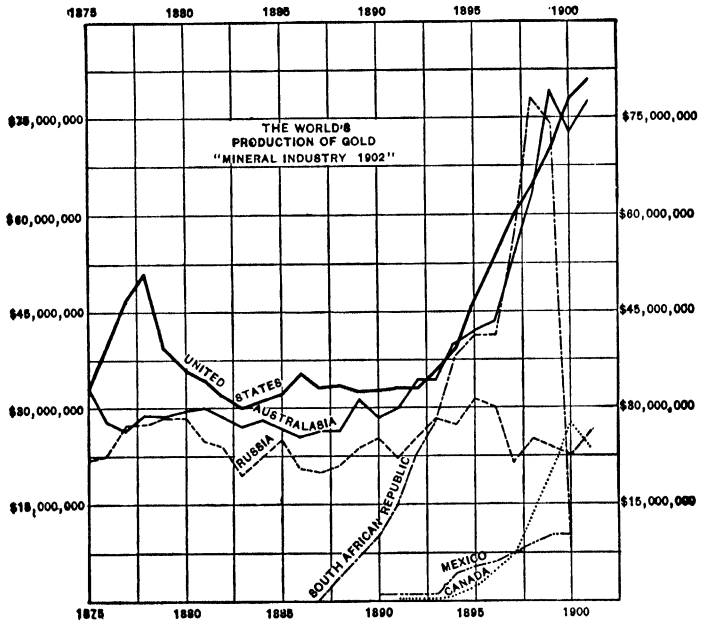
(fine ounce). Silver is extensively used in alloy with other metals in the manufacture of fine wares and in jewelry; all silverware is alloyed with copper in order to increase its hardness. The silver coins of the United States contain ten per cent of copper.

47. Gold. — Gold occurs native (*i.e.* uncombined with other elements) and is chiefly found in veins of quartz or as *placer* gold in the gravels and sands of streams as a result of the weathering of gold-bearing (auriferous) rocks. It occurs in these situa-



tions in grains and flakes disseminated through the quartz or the gravels, or in larger pieces called "nuggets." A large part of the gold of commerce, however, is obtained as a by-product in the mining of silver and copper, and certain other metals. In this connection, the gold probably exists mechanically mixed with the other metals, and not in chemical combination. Native gold is thus largely associated with silver, and the two are generally mined together. The gold-producing areas of the United States are in the Appalachian and the Plateau and Pacific Slope regions.

Until the discovery of gold in California in 1848 the southern Appalachians produced all the gold of the country, chiefly from the states of North Carolina, Georgia, and South Carolina. At the present day the Western States and Alaska are the chief producers of this precious metal. Colorado heads the list (1900), followed by California, Alaska, Montana, South Dakota (Black Hills district)



and Utah. A number of other states produce smaller amounts. The United States output for 1901 amounted to nearly 4,000,000 ounces (fine) of which over 3,000,000 ounces were obtained from the quartz, the remainder being from placer deposits. This includes the gold output of Alaska. The principal placer deposits are in California, where the gold has been washed down from the Sierras and accumulated in the gravels of the slack-water reaches

of rivers. The placer deposits are now mined by the hydraulic process, a stream of water being played with force upon the banks, and the water and sediment run into sluices where the heavy gold collects back of the riffles and is held by mercury with which it forms an amalgam. This has largely done away with the process of washing the gravel by hand. The important use of gold is as a basis of coinage and in the manufacture of costly ornamental wares and jewelry. It is highly ductile and malleable and, unlike silver, does not tarnish. Being comparatively soft, gold is alloyed with other metals to give it durability; silver and copper are the chief additions.

48. Platinum. — This metal is occasionally found in the gold-bearing gravels, but its production has little commercial importance in the United States; the chief supply comes from Russia.

Platinum is a heavy metal, remarkable for its ductility, malleability, and high melting point. It is alloyed with iridium and other metals to make it harder. Its chief use is in the manufacture of crucibles, wire, and other chemical utensils required to withstand a high degree of heat, as well as the action of chemicals. It is used extensively in the manufacture of incandescent electric and gas lights, and in dentistry.

49. Mercury. — The ore from which mercury or quicksilver is obtained is known as *cinnabar*, and is found in the United States in paying quantities only in California. The United States in 1900 stood next to Spain in the production of this metal. Its chief use is in the extraction of gold and silver from the ore. It is also used in the manufacture of a material for the "silvering" of mirrors, and on account of its remaining liquid at ordinary temperatures, it is the substance most generally employed in the construction of thermometers. The same fact and its high specific gravity render it useful in the construction of barometers. Mercury is also largely employed in medicine as calomel and corrosive sublimate, and in the form of ointment. Cinnabar, mixed with other ingredients, is the basis of the pigment vermilion.

50. Other Metals. — *Manganese* is obtained from several different ores. The largest producing regions of the United States (1901) are Michigan and Wisconsin. Its oxides are mined as a by-product in the silver ores of Leadville, Colorado, and in the zinc ores at Franklin Furnace, New Jersey. It is also produced in Georgia, Virginia, and Arkansas. Its chief use is in the manufacture of steel as alloys known as "spiegeleisen," and "ferromanganese." It is also used as a bleacher, as a drier in varnishes, in the manufacture of disinfectants, in calico printing, and in the coloring of glass and pottery.

Iron pyrite (sulphide of iron) occurs largely in the Appalachian region and is mined in various places solely for sulphur used in the manufacture of sulphuric acid.

Chromium occurs chiefly as a chrome iron ore (chromite). The metal itself is used only as an alloy with steel, but in combination it forms the basis of several yellow and green pigments, and in the form of the bichromate of potash is used in the printing of calicoes. "Chrome steel" is used in the manufacture of edge tools and burglar-proof safes. Mining of chrome iron ore was formerly almost entirely confined to Maryland and southern Pennsylvania, but California is now the only state that produces it in any quantity. Baltimore is the center of the chrome industry.

Antimony, obtained from the ore stibnite (a sulphide of the metal), is chiefly used in alloys to impart hardness to other metals, notably with lead to form type metal and with copper and tin to form pewter, Britannia metal, etc. The sulphide is used in the process of vulcanizing rubber; a tartaric acid compound of the oxide, known as tartar-emetic, is employed as a mordant in dyeing, and also in medicine. Antimony ores are found in the United States, in California, Idaho, and South Dakota. Germany leads in the world's supply of antimony and antimony compounds (1900).

Nickel and cobalt are two metals usually associated in several varieties of ore. Cobalt is mainly obtained as a by-product

in the extraction of nickel. Though found in various localities, the only commercial source of these metals in the United States since the closing of the nickel mines near Lancaster, Pennsylvania, is in their extraction as a by-product in the mining of lead at Mine Lamotte, Missouri. The chief sources of the world's supply of nickel are the Dominion of Canada, France, and Germany. Nickel enters into the process of plating and as an alloy in the formation of nickel steel. It is also used in the so-called "German silver," in cheap watches and jewelry, and in coinage (five-cent piece). Cobalt as an oxide, is used in the manufacture of a blue pigment (cobalt blue or smalt).

II. NON-METALLIC SUBSTANCES

51. Coal. — Coal is the accumulated carbonaceous matter from the decay of plant life in past ages of the earth's history. There are all grades, from peat (the dark brown, partially formed coal in vegetable sod of bogs and swamps), through lignite or wood coal and bituminous (soft) coal, to the more completely mineralized anthracite (hard) coal. Coal occurs in beds, often of great thickness, and is widely distributed throughout the world. Iron and coal, more than any other mineral substances, are the basis of a nation's prosperity, and with a fertile soil form the tripod upon which modern civilization rests. In the United States the chief coal fields are distributed in six areas, as follows: (1) the Appalachian coal fields from Pennsylvania to Alabama, including about 65,000 square miles, and the most important coal-producing area of the country; (2) the northern area, about 7000 square miles in Michigan; (3) the central area of about 48,000 square miles, embracing Indiana, Illinois, and the western part of Kentucky; (4) the western area, a vast trans-Mississippi strip of about 98,000 square miles, extending in detached fields from Iowa to the Mexican border; (5) the Rocky Mountain area of numerous isolated basins scattered throughout the Plateau States; and (6) the Pacific Slope coal fields of California, Oregon, and Washington.

Coal of a peculiar nature is also found in southern New England. This is an anthracite which does not burn readily, but it is not quickly consumed, and it produces relatively a large amount of heat. In its nature it approaches graphite. In the region where this is found there have developed from it, local industries in the manufacture of stove facings, stove blacking, pipe coverings, and paints.

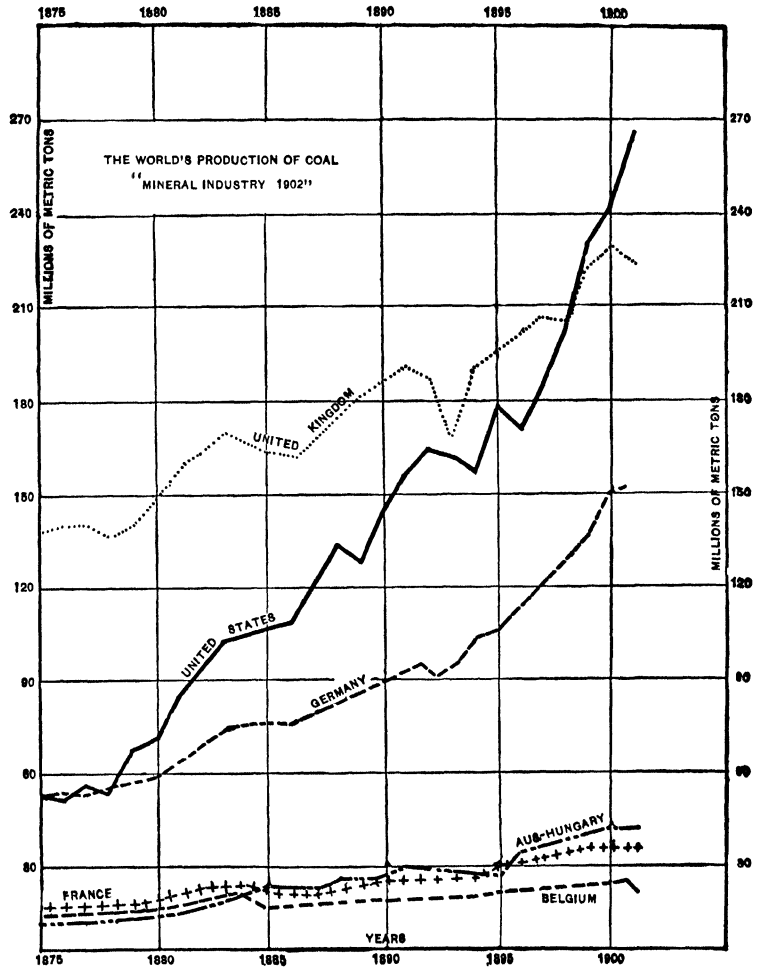
Both bituminous and anthracite coal occur in the Appalachian area, the latter being found only in eastern Pennsylvania (the Schuylkill, Lehigh, and Wyoming districts). The rest of the Appalachian coal measures are bituminous and include important fields in western Pennsylvania, Maryland, Ohio, West Virginia, the eastern part of Kentucky, and in Tennessee, Alabama, and Georgia. The bituminous (and semi-bituminous) occurs in relation with iron in this area, and this fact has been of great importance in the development of the coal-mining industry, creating an immediate market for the coal in the iron furnaces of the region. Coke (bituminous coal from which the volatile substances have been driven off) is largely used in the manufacture of pig iron and steel.

The central and western areas produce bituminous chiefly, and the coal is easily mined since the measures exist in horizontal beds and not tilted as in the mountainous region of the Appalachian area. Much of the Texas coal is impure, although the output is of considerable local importance. Both anthracite and bituminous beds of excellent quality are found in the Rocky Mountain and Pacific Slope areas.

Pennsylvania is the largest coal-producing state of the Union; the output of this state for 1901 amounted to more than 82,000,000 (long) tons bituminous, and 60,000,000 (long) tons anthracite. Illinois, West Virginia, and Ohio are also large bituminous producers.

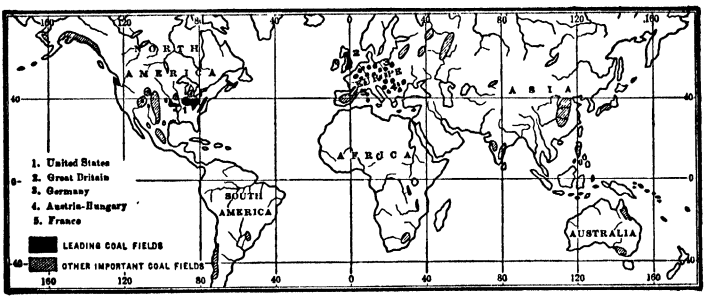
The world supply of coal in 1900 amounted to more than 765,000,000 tons (metric), an increase of over 40,000,000

tons from the previous year. Of this the United States furnished about 31 per cent. The output of Great Britain was a



little short of this, while that of Germany amounted to about 19 per cent of the whole.

The total area of the world's known coal fields is about 471,800 square miles, the area of the United States coal fields being about 41 per cent of this (194,000 square miles). The known coal fields of China and Japan collectively exceed in area those of the United States. The output of the three great coal producing countries — the United States, Great Britain, and Germany — amounts to



WORLD'S DISTRIBUTION OF COAL

upwards of 81 per cent of the world's total production. Improved methods in mining and machinery have greatly lessened the cost of coal by increasing the yield per miner and this has been of immense advantage to the industries of the world at large.

52. Petroleum. — Coal oil or petroleum is found in rock strata of certain localities. It, too, is the result of the decomposition of organic matter in past geological periods. The most extensive oil production of the world is in the United States and the Caspian region of Russia, though oil occurs also in Japan, in New Zealand, and in Canada. In the United States the chief fields are in western Pennsylvania and New York, in Ohio, West Virginia, Texas, Colorado, and California. It is likely that oil will be discovered in other localities not yet known to be oil-producing, the recent discovery of the Texas field being an illustration of such discovery. The products of petroleum have many uses in industrial and domestic life, kerosene for illuminating purposes and for fuel,

lubricating oil, benzine, gasoline, naphtha, and paraffin from the last of which vaseline is manufactured. "Petroleum must be classed with coal and iron as one of the most important products of the country, and one which has added largely, not only to our industrial progress, but also to the comforts of living."[1] The oil is shipped in barrels or tanks, or "piped" to distant points; the method of piping is employed on an enormous scale in some sections. Much of the crude oil is thus transported through pipe lines to the refineries. Over 69,000,000 barrels (42 gallons) of crude petroleum were produced in the United States in 1901. In the same year Russia produced more than 85,000,000 barrels.[2] These two countries furnished over 93 per cent of the world's supply of petroleum.

53. Natural Gas. — Natural gas is closely related to petroleum both in origin and distribution. The chief centers of natural gas are western Pennsylvania and West Virginia, the northwestern part of Ohio, and the eastern part of Indiana. It also occurs in California, and Kentucky. Its use is local for illuminating and fuel purposes, it being conducted from the gas wells in pipes for relatively short distances only. It is used as fuel in the manufacture of iron, steel, and glass. The economic outlook for natural gas is limited, for with the diminution of supply in a given region which must necessarily follow, its value as a factor in industry will decline.

54. Asphaltum. — A number of allied substances of a bituminous nature are grouped together under the general head of asphaltum. The principal use of the material is in the manufacture of asphalt for paving purposes. In the United States certain sandstones in California, Kentucky, and Indian Territory, and some limestone in Indian Territory and Texas, are quarried for the bituminous material which is used in making asphalt,[3] but the bulk of the sup-

[1] Tarr, *Economic Geology of the United States*, p. 348.

[2] Mineral Resources of the United States (1901). The total for Russia given in Rothwell, *Mineral Industry, 1902*, is 80,945,247 barrels, p. 523.

[3] Eldridge, Report of the United States Geological Survey (1900–1901), Part I pp. 219–252.

ply comes from the great pitch lake in the island of Trinidad, off the northern coast of South America. (See illustration facing p. 202.) An allied substance, known as mineral wax or "ozokerite," is found chiefly in Austria-Hungary. It is used in the manufacture of candles, and as a substitute for beeswax and vaseline. It is also used as an insulator in electrical work.

55. Building Stones. — The use of building stones is still largely local; the best varieties, however, are being shipped considerable distances within the country, but building stones are not exported to any extent. The weight and size of the material precludes the transportation of the poorer varieties. Nearly every region finds the rocks of its own vicinity suited to building purposes, though of late the trade in building stone has developed considerably.[1] Granite is mostly quarried in New England, but many other states have important granite quarries, as Pennsylvania, California, Georgia, Virginia, Delaware, Maryland, New Jersey, New York, Wisconsin, Missouri, Colorado, and South Dakota. Sandstone, a widespread rock much used in building, is largely quarried in Ohio and the Middle Atlantic States. Bluestone, a fine-grained sandstone of the nature of a shale, which breaks into large, slab-like pieces, is much used for flagstones in paving. It is mainly quarried in New York, Pennsylvania, and New Jersey. Slate depends upon its peculiar cleavage (the property of splitting up into thin sheets) for its usefulness. Its chief value is for roofing purposes, school slates, flagging, doorsills, etc. It is largely quarried in New England and the Appalachian States, notably Vermont and Pennsylvania. Marble is a limestone, of a crystalline texture and generally white in color, though frequently banded and mottled with blue, brown, and other shades. It is extensively

[1] "Within twenty years combinations among stone producers have followed the lead of other productive industries; close business relations in far distant localities have brought about sharp competition, with consequent improvements in methods of producing, marketing, transporting, and finishing grades of stone formerly used only locally." — *21st Annual Report of the United States Geological Survey.*

used for building purposes and is quarried in many parts of the United States, though Vermont is the chief marble-quarrying state. The Rutland quarries there are celebrated throughout the country. Serpentine, a stone of a greenish or reddish appearance, is used locally for building purposes, notably in southeastern Pennsylvania and in Maryland. Limestone is quarried in many parts of the country, and aside from its use as a building material, is mainly employed in the manufacture of quicklime for mortar, as a flux in blast furnaces, in the making of plaster, and for fertilizers. Pennsylvania, Ohio, New York, Maine, Vermont, Massachusetts, Missouri, Illinois, California, and Connecticut are (1901) the largest producers of building stones.

56. Cements. — Limestone burned in kilns forms lime, which mixed with water and sand, makes a cement known as mortar or plaster. Hydraulic and Portland cements have the property of "setting" or hardening under water. Cement is produced most largely in Pennsylvania, New Jersey, Ohio, and New York.

57. Clays. — Clays result from the decomposition of rock, the finer and purer grades coming from a feldspar. Clay enters into industrial life in the manufacture of bricks, for the lining of furnaces (fire clay), for drainage tiles, for chinaware, and for pottery of various sorts. The workable clays are usually found in beds as the deposit of some ancient sea, lake, or estuary bottom. In the glazing industry the finer sort of clay (kaolin) is of quite local production. The chief centers are Georgia, Pennsylvania and New Jersey.

58. Fertilizers. — The materials used to enrich the soil as plant foods may be divided into three groups, — (1) limestone, (2) gypsum, and (3) phosphates. Limestone (the carbonate) in the form of the burnt product (lime) is spread upon the soil for fertilizing purposes. Marl (a clay containing vast quantities of shells) is of local use as a fertilizer, especially in New Jersey where it is more or less abundant. Gypsum has two important uses, — as a fertilizer

and in the form of plaster of Paris. It is widely distributed and is frequently associated with salt. Two classes of phosphatic deposit are recognized, — the mineral phosphate and rock phosphate (resulting from guano, bone beds, etc.). Little if any of the mineral phosphate is mined in the United States, but it is worked to some extent in Canada. Guano is a form of rock phosphate, the result of the accumulated excrement of sea fowl on rocky shores and islands. Vast deposits of this material have been formed on the west coast of South America. Rock phosphate is found in the bone beds of Florida, Tennessee, and South Carolina, and in other localities of the southern Coastal Plain. These beds are immense accumulations of the remains of fossil animals, which have been converted into mineral substance. The remains appear to have been accumulated in old estuaries. Charleston and Beaufort, South Carolina, are the chief centers of the phosphate industry. Artificial manures are also prepared from the refuse of fish and other animals; large factories for this purpose are established in various places.

59. Mineral Waters. — Water issuing from the ground as springs contains mineral matter in solution. In some of these springs the dissolved mineral matter is of such character and quantity as to qualify the spring as "mineral." The utilization of these waters for medicinal purposes is a growing industry in various parts of the country, either directly from the spring, or by bottling and shipment. New York, Michigan, Wisconsin, and California are (1901) among the chief states in the production of mineral waters.

60. Precious Stones. — Most of the varieties of gems or precious stones are found in this country, but not in quantities that would warrant commercial enterprise. The only gems produced in paying quantities are turquoise and pearls. The latter are frequently found in certain fresh-water clams (the pearl itself being the result of a deposit in the clam shell due to the irritation by a grain of sand or some other foreign matter). Veins of turquoise exist in New Mexico.

61. Abrasive Materials. — The mineral known as corundum (of which sapphire is a pure crystalline form) is an important abrasive material, containing much oxide of iron; this is termed emery. The chief sources of corundum in this country are North Carolina, Georgia, and Montana. Emery is found in Massachusetts, though the larger part used in the United States is imported. The silicious tests, or minute shells, of certain low forms of life (diatoms and infusoria) have collected in some localities in large quantities as a result of stream deposit. This deposit is known as diatomaceous or infusorial earth and is largely used in the form of a powder for cleaning purposes. It is also used as an absorbent in the manufacture of dynamite. It occurs chiefly in New Hampshire, New Jersey, Maryland, and California. Sandstone of a firm, gritty character, is used in the manufacture of grindstones, which come mainly from localities in Ohio, Michigan, South Dakota, and California. A much more compact variety of sandstone is used in the manufacture of millstones or "buhrstones," though its use in milling is largely being replaced by the metal and porcelain rollers. Oilstones of a fine grain are found in Arkansas, which is the chief center of oilstone manufacture in this country, though Indiana and New Hampshire also produce very good stones of this sort. Whetstones are a somewhat coarser variety; the chief center of their production is in New Hampshire, Vermont, and Massachusetts.

62. Salt. — Common salt (chloride of sodium) is obtained either by the evaporation of a brine, or from deposits of rock salt. These deposits resulted from the evaporation of salt water or brine in past ages, leaving the material incorporated as rock salt with the other rock strata. A number of salt works are located about the salt lakes of Utah and Nevada; these obtain salt by the evaporation of water. The use of the product from these works is mainly local (process of chlorination in reducing ores). The main supply of the salt used in this country comes from the deposits of rock salt in various places, chiefly in Michigan and New

York, though Kansas, Ohio, California, and West Virginia contribute considerable quantities. Over 20,000,000 barrels of salt were produced in the United States in 1900 (a barrel equals 280 pounds), representing a value of more than 6,000,000 dollars. Aside from the use of salt for domestic purposes, a large quantity is used in the manufacture of baking and caustic soda, and in the reduction of metallic ores. Great Britain, Russia, Germany, and the United States are the largest salt-producing countries in the world.

63. Other Non-metallic Substances. — *Graphite* or *plumbago* (a pure form of carbon) is the result of the alteration of carbonaceous matter. It occurs in Rhode Island in relation with anthracite coal. The chief center of graphite mining is at Ticonderoga, New York, but some mining is also done in Pennsylvania, Michigan, and other states. Its most important use is in the manufacture of lead pencils, black lead crucibles, and as a lubricant. The cheaper varieties are used for stove blacking, etc. *Talc* and *steatite* or *soapstone* occur in many parts of the country, but their quarrying is confined to a few localities. The chief states producing soapstone are Virginia, Pennsylvania, and North Carolina. The large slabs are used for hearths, stove linings, and tubs of various sorts, the smaller pieces for slate pencils and ornaments. It is also used as a basis for toilet powders, in the adulteration of soap, paper, and rubber, in the manufacture of paint, and as a lubricant. *Asbestos* is a fibrous substance derived from two kinds of minerals. It is used largely for fireproofing purposes in the form of cloth, paint, paper, etc. The domestic supply comes chiefly from Georgia; some is found in Massachusetts, and California, and to some extent in other regions. *Sulphur* is used mainly in the manufacture of matches, gunpowder, and sulphuric acid, and for medicinal purposes. It is obtained largely from native sulphur, the supply of which in this country comes almost entirely from Utah and Nevada. *Magnesite* and *soda*

both occur in the western part of the United States and will undoubtedly be found available for the various purposes to which they are applied when the demand is sufficiently developed to make their exploitation profitable. *Bromine* is produced as a by-product in the salt manufacture in Michigan, West Virginia, etc. Its chief use is for chemical and disinfectant purposes. *Borax* is found in the arid districts of the West, chiefly in the dry lake beds of California and Nevada, from whence our main supply comes. It has a wide use in the arts and in medicine. *Barytes*, used as a pigment and for purposes of adulteration, comes chiefly from Missouri, Tennessee, Virginia, and from North and South Carolina. *Mica* is mainly quarried in North Carolina and New Hampshire, but is also produced in South Dakota and New Mexico. Its principal use is in the manufacture of panels for stoves and furnace doors, for electrical purposes, as a lubricant, and for making the frosting on wall papers. *Fluorite*, used as a flux in ore reduction, in the manufacture of certain kinds of glass, and for chemical purposes, is mined in the southern part of Illinois, where it occurs in the galena-bearing limestones. It has also been discovered in other regions.

SUGGESTED QUESTIONS AND TOPICS

47. What other methods of dealing with products than that entered upon in Chapter VI? (See Clow, *Introduction to The Study of Commerce*, Chapter II).

48. What is the meaning of commodities? Of goods? Of merchandise?

49. What is meant by raw materials of commerce? Try to make a fundamental distinction between raw products and manufactured commodities. Show by illustration how a commodity that is a finished product for one industrial process may be raw material for another.

50. What is the meaning of the word "staples" as applied to products of different regions? What is the meaning of "native" as applied to metals?

51. Why is the iron ore transported to the fuel, and not *vice versa?* Name the three greatest centers of iron and steel manufacture in the United States. How account for the prominence in each case?

52. What is the weight in pounds of a short ton? Long ton? Metric ton? What is the origin of each and to what sort of commodities is each applied? Which of these will likely be the standard ultimately?

53. Compare the value of the gold production of California with the value of her agricultural products.

54. "The Coal Question:" Discuss the ethics and the economics of wastefulness in the domestic and industrial consumption of coal. Compare the known coal supply of the United States with that of the other great industrial powers, keeping in mind the dependence on coal. What conclusion is reached from the comparison?

55. Write a short essay on salt, dealing with the following: (*a*) sources of supply; (*b*) commercial use and value; and (*c*) trade.

56. With an outline map of the United States, fill in the regional distribution of the principal commercial mineral products.

57. What is the meaning of "by-product" as applied to an industry? Try to find out about the profits from the converting of waste material into by-products. What are the chief by-products of petroleum refining?

Books to be Consulted

Tarr, *Economic Geology of the United States.* Macmillan Co.

*Rothwell, *The Mineral Industry*, issued annually. Volume for 1902, edited by Struthers. New York and London.

**United States Geological Survey, *Mineral Resources of the United States.* Published annually.

*Rocheleau, *Minerals*, Vol. I in "Great American Industries." Elementary but valuable. Flanigan Company, Chicago.

Coal Trade of the United States and the World's Coal Supply and Trade. Monthly Summary of Bureau of Statistics, Treasury Department; September, 1902.

**Yeats, *Natural History of Raw Materials of Commerce*, Part IV. Philip & Son, London.

CHAPTER VII

RESOURCES: VEGETABLE PRODUCTS

64. Distribution of Vegetable Products in Relation to Temperature and Moisture. — The area of the United States is divisible because of conditions of climate, into two temperature regions or zones, — the northern and the southern. In each of these, certain characteristic features in animal and plant life prevail, as conditioned by temperature. The general facts of temperature control have already been outlined (Section 11). The boundary line between the two regions is exceedingly irregular, owing to topographical influences. Thus, in the eastern part of the country, the lower temperature prevailing over the Appalachian Highland causes the line to bend southward for a considerable distance around the southern end of the mountains, while in the central region it extends far northward to the valley of the Saskatchewan River in Canada, because of the comparatively high summer temperature prevailing over the Great Plains and Mississippi Valley.[1] The southern region is again divided into an upper and a lower zone as a result of the great increase of temperature over the southern Coastal Plain and the Gulf border. The lower southern zone is the great cotton-growing region of the United States. The upper southern zone corresponds in general with the corn-belt and the zone of winter wheat, while spring wheat is grown in the northern region. Among forest trees the magnolias, live oaks, papaws, buckeyes, tulip trees, and sweet

[1] The boundary between the northern and southern zones is an isothermal line — the midsummer isotherm of 64.40° F., which represents the average for the six hottest consecutive weeks. It is not a fixed line, but represents an approximate boundary during the period of plant growth.

gums are conspicuously southern. These gradually give place toward the north to the hickories, chestnuts, and oaks of the middle region. Farther north still, as in New England and on the Appalachians, the maples, beeches, aspens, and birches, extend to the borders of the northern zone of evergreen forests, where pines, spruces, firs, and larches are the predominating trees.

The southern region is further divided into an eastern humid and a western arid province, as already noticed (Section 13).

These features of the distribution of temperature and moisture lie at the basis of the agriculture of the United States. Six industrial divisions are recognized, in each of which some form of agriculture is the basic factor of prosperity: (1) in the region embraced by New England and New York mixed farming, dairying, and market gardening are carried on as staple agricultural pursuits. Farming on a large scale has been precluded because of the irregularity of relief, the forbidding nature of the climate and the thin soil, and from the fact that no single crop ever became preëminent; (2) the corn and winter wheat belt lies in a zone included approximately between the forty-third and thirty-fifth parallels of latitude, and extending from the Atlantic seaboard to the western borders of Nebraska and Kansas. It thus corresponds, in a general way, to the upper zone of the southern region. In this area the raising of live stock, as dependent upon corn, is a leading industry; (3) south of the thirty-fifth parallel is the cotton-growing belt, reaching to the western border of Texas. This area corresponds almost exactly with the lower zone of the southern region; (4) the spring wheat belt lies north of the forty-third parallel, extending from the Lake Region westward to Montana and Wyoming; (5) the Plateau States — Montana, Idaho, Wyoming, Colorado, New Mexico, Utah, Arizona, and Nevada — are preëminently "range states," owing to the diminished rainfall. They are given over to the production of live stock and wool; (6) the Pacific States — Washington, Oregon, and California — form an

agricultural unit. Wheat, barley, fruits, and live stock (besides timber) form the staple products.[1]

In reviewing the vegetable products of the United States, the most natural and logical order is: first, *food plants;* second, *fiber plants;* third, *forest products;* and fourth, *other vegetable products.*

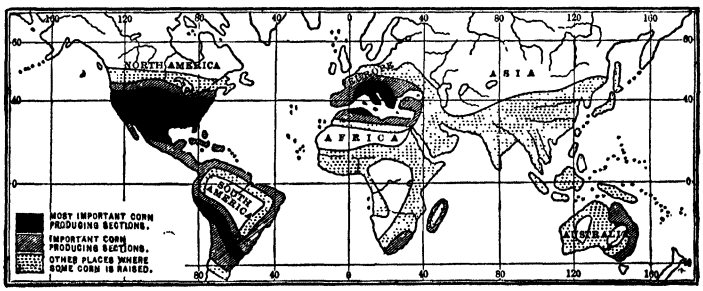
I. FOOD PLANTS

65. Corn or Maize. — Indian corn or maize is the largest single crop in the United States, the yield of 1900 amounting to upwards of 2,000,000,000 bushels. This amount represents about four-fifths of the total world production of corn. The states of greatest production 1901 (each state producing over 100,000,000 bushels) are Iowa, Illinois, and Nebraska. Other states producing largely of corn are Missouri, Kansas, Indiana, and Ohio. These constitute the "corn-belt." Their combined production amounted to over one-half of the entire crop of the country. Corn is used chiefly as a food for man and stock. Its value as a food lies in the comparatively large percentage of fatty material contained in the grain, and in the starch and nitrogenous substances. The ease with which it can be cultivated in newly cleared land was a very important factor in the early settlement of the Middle West. When ground, its flour forms the cheap and nutritious *corn meal* or *Indian meal* so largely used in domestic economy. In the manufacture of glucose, starch, and distilled liquors it has a very wide and important use. The glucose industry alone consumes between 50,000,000 and 60,000,000 bushels of each year's crop. The value of the export from glucose manufactures amounts to $3,600,000, which is only a small fraction of the value of this product consumed at home. It is, however, as a stock food that corn finds its greatest use. Not only is the grain used for feeding and fattening cattle, hogs, and fowls, but the whole plant, leaves and stalk, is used as "fodder," either dry and stacked, or as "ensilage" kept in large

[1] See Map of Productive Areas, opposite p. 124.

quantities under pressure, or in a pit or "silo." Returns in beef and hog-products, milk, butter, eggs, and poultry, are largely from corn converted by the process of animal life (metabolism) into these more concentrated forms. Seventy-five per cent of the corn crop of the United States is used as a food for stock in the corn-belt section. The land is again enriched for future crops by the manures returned to it from animal life. The small portion of corn exported, finds its way for the most part into Canada, Great Britain, and the countries of Europe. The United States had devoted 83,320,872 acres of land to producing corn in 1900, and the value of the entire crop, at farm prices, amounted to upward of $750,000,000.[1]

Maize grows best in a rich, loamy soil, and in a climate of abundant sunshine and rainfall. A region where the summer is comparatively long, from four and one-half to seven months, and where the possibilities of frost during the crop's growth are reduced to a minimum, where the soil is rich in the elements of plant food (as in river



DISTRIBUTION OF INDIAN CORN

alluvium, glacial deposits, and old forest floors), and is not too stiff and compact to allow of readily drying after rains by free drainage; where the summer rains, though copious, are not too heavy and frequent — such a region is an ideal one for the cultiva-

[1] Figures of the Department of Agriculture.

tion of maize. All these conditions are found throughout the corn-belt of the United States, save in the very western portion where the disability of diminishing rainfall is overcome by irrigation.

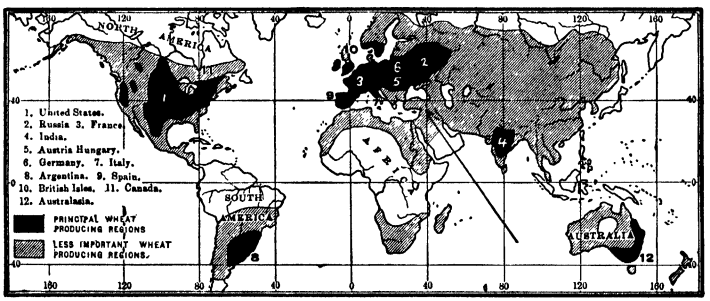
Maize was originally a native of the warmer parts of America, and has spread by cultivation throughout a large portion of the tropical and temperate regions of the world. The world's supply of maize to-day comes from the United States, Hungary, Rumania, Italy, Argentina, southern Russia, Turkey, and Egypt.

66. Wheat. — Next to corn, wheat is the most important food crop of the United States. The production of wheat for 1900 amounted to 522,230,000 bushels.[1] This exceeded the crop of any other single country by more than 100,000,000 bushels. For 1901 the Department of Agriculture reported 748,460,000 bushels. Good wheat land is usually a moderately rolling country, which insures sufficient drainage, and at the same time allows of easy tilling and of harvesting by field machinery. The best soils are loams or light clays of not too stiff a character, and containing the necessary elements of plant food. Climate is essentially a controlling factor in wheat growth. Wheat differs from corn in one particular, for while the latter is a summer crop, wheat from its nature, being a "winter annual," requires a season of coolness and moisture in which to germinate and attain its young growth. Alternate spells of freezing and thawing kill the young plants, while the warmth induced by a covering of snow is the most favorable condition possible for winter wheat. According to climatic and weather conditions, wheat is sown either in the autumn or in the early spring. The heads of the grain come to perfection best in dry, sunny, summer weather. "The ideal climate for wheat is one with a long and rather wet winter, with but little or no frost, prolonged into a cool and rather wet spring, which gradually fades into a warmer summer, the weather growing gradually drier as it grows

[1] This statement is based on The Yearbook of Agriculture.

warmer."[1] These conditions are met throughout many regions in the temperate zones. In North America the wheat-growing region extends much farther north than the corn-belt, reaching beyond the northern tier of states into Canada. The soil and climate of the Prairie Region and of the northern portions of the Pacific Slope are especially favorable for wheat culture.

With the invention and improvement of farm machinery, the vast wheat crop of the United States is planted and harvested with comparatively little labor and expense. Large quantities of the grain are stored in elevators at various centers, ready for immediate shipment "on call." A vast amount finds its way to



DISTRIBUTION OF WHEAT

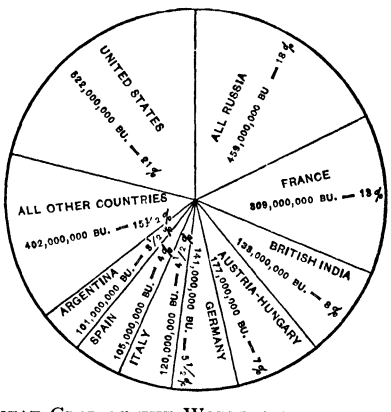
the great mills of Minneapolis and Superior, where it is ground between chilled iron and porcelain rollers, and is shipped to the markets of the world as wheat flour. This flour forms the main breadstuff of civilized peoples; to the world's supply the United States in 1900 (outside of home consumption) furnished 18,699,194 barrels.

Wheat is grown to some extent in every region of the north and south temperate zones, and also within the limits of the tropics where soil and climate are favorable. To-day the principal wheat-growing countries (those producing over 100,000,000

[1] Statistics of Agriculture. Tenth Census, pp. 63-64.

bushels a year) are United States, Russia, France, British India, Austria-Hungary, Germany, Italy, Spain and Argentina. In most countries only enough is produced for home consumption, and in many there is a large deficit which has to be made up by importation from the greater wheat-producing lands. The following diagram shows the comparative output of wheat for 1900: —

Wheat presents a great number of varieties, and these depend largely upon the character of the climate. Among the principal features of variation are the amount and character of the gluten (the nitrogenous principle of the grain) and the hardness of the coats or coverings. The superior quality of certain wheats appears to depend upon the relative amount of sunshine during the period of ripening. American wheats are particularly noted for the brightness of their grain. Hard wheats are drought-resistent, and this feature characterizes many of the Russian wheats which are especially adapted for growth in semi-arid regions, like those in the southwestern United States and in parts of the Russian Empire. The same is true of the macaroni varieties, which besides have a pasty gluten, making them especially adapted to the manufacture of macaroni. The hard wheats produced in various parts of the world have revolutionized milling machinery, the old millstones having been replaced by the chilled iron and porcelain rollers.



WHEAT CROP OF THE WORLD APPROXIMATED IN BUSHELS (1900)
Total, 2,586,564,000

67. Rye. — The rye crop of the United States in 1901 amounted

to only 30,345,000 bushels as compared with the crop of the world which amounted to 1,448,072,000 bushels. Of the United States, Pennsylvania, Wisconsin and New York, led as rye-producing states, followed by Nebraska, Michigan, and Minnesota.[1]

Rye is capable of withstanding a greater degree of cold than wheat, and is consequently grown farther north. It also thrives in a less fertile soil. It forms the chief breadstuff of many millions of European peoples, and is the most important grain crop of central and northern Europe, vast areas of which are covered by a sandy soil of very poor quality. It has a wide use for distilling in the manufacture of whisky.

68. Barley. — Barley is the most widely ranging of all the cereals, being grown in Norway as high as latitude 70° N. and throughout the Mediterranean countries. Outside of Scandinavia, where it is largely used as a breadstuff, its chief use is for malt in the fermentive process of the brewing industries; in Scotland and Ireland barley is used in the making of whisky. Out of the 995,466,000 bushels reported for the world at large, for the year 1901, the United States contributed only 109,933,000 bushels, and this chiefly from the states of California, Iowa, Minnesota, North Dakota, South Dakota, and Wisconsin.

69. Oats. — The total oat crop of the United States for 1900 amounted to 809,125,989 bushels, while that for the rest of the world amounted to 3,120,100,000 bushels. The chief states in oat production are Iowa, Illinois, Wisconsin, Minnesota, Indiana, and Nebraska. Of these, Illinois and Iowa furnished nearly one-third of the entire crop, while the other states produced more than half of the remainder. Pennsylvania, New York and Texas also produced important crops.[2]

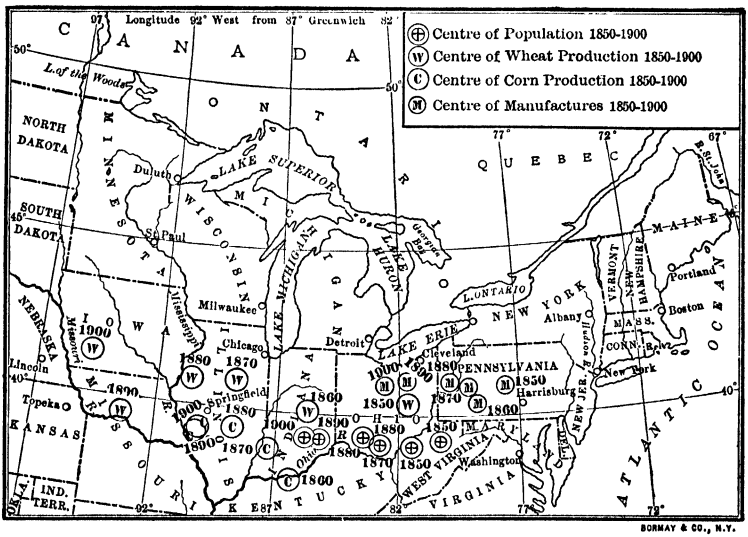
Oats thrive best in a moist climate with cool summers. They do well in a variety of soils, but exhibit a remarkable variation in the

[1] See United States Yearbook of Agriculture for 1900.

[2] See United States Yearbooks of Agriculture, for 1900, p. 773; for 1901, p. 719.

amounts produced in different localities. Their chief use in this country is as a food for horses, and the same may be said for most of the European countries. In certain regions, however, oatmeal forms an important breadstuff of the peoples, notably in Scotland, where it is eaten in the form of oat cakes and oatmeal porridge.

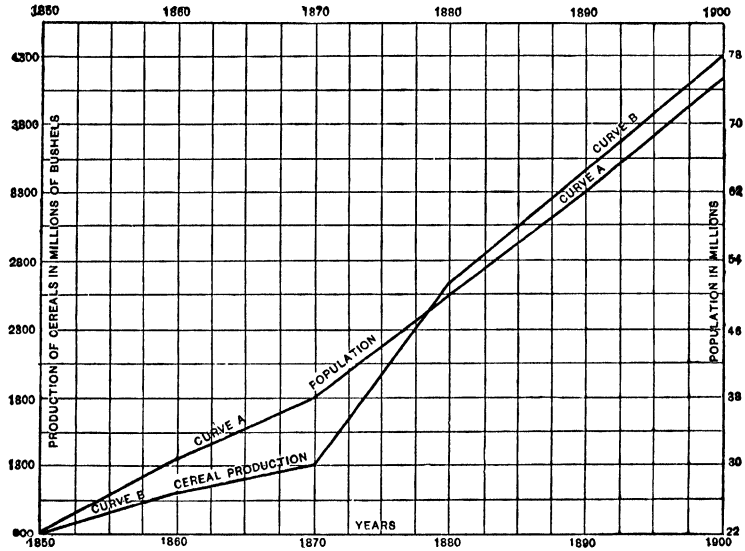
70. Review of the Cereals. — The cereals are grasses, the seeds or grains of which are used as a food. With the exception of



WESTWARD MOVEMENT OF CEREAL PRODUCTION IN RELATION TO THAT OF POPULATION AND MANUFACTURE

maize, those in use to-day are all Old World species, and their cultivation reaches back to a great antiquity. As has already been noted the different kinds vary in their relations to soil and climate, and to some extent, therefore, in their geographical distribution. They are the source of the breadstuffs of the world, and some one of them is cultivated in practically every region of the earth occupied by civilized man. Wheat is undoubtedly the most important and the

most widely distributed of the cereals; maize is well adapted to the warmer regions; rye, barley, and oats are more restricted in their use and distribution. In the United States a very interesting relation is observed between the westward movement of population and the westward extension of cereal cultivation. The map on page 95 shows that while the center of population has advanced slowly westward, and is now located in southeastern Indiana, the center



General Relation of Cereal Production of the United States to Population

of cereal production has advanced west of the Mississippi. The available land is thus utilized for crop growth in advance of the movement of population.

A question of very great importance is the relation that exists between the increase of population and the increase of cereal production, and in recent years there has been much discussion as to whether the future wheat supply of the world could be increased

proportionately with the increase of population. Some writers hold that if the present ratio between the increase of bread-eating peoples and the yield per acre of wheat continues, there will be a universal wheat famine at the end of thirty years.[1] However this may be, the most important of the problems which any government can undertake is "intensive agriculture," the utilization of all available land, and the conservation of the crop-producing qualities of the soil. The irrigation of arid districts will undoubtedly recover much land now lying idle, and the knowledge of the best wheats for growth in semi-arid regions is fully as important. The term "semi-arid regions," applied in the United States, refers to "that portion of the Great Plains lying between the ninety-ninth and one hundred and second meridians, to portions of eastern Washington and Oregon, and to those small portions of the Rocky Mountain and basin states where crops are grown without irrigation."[2] As available new land for wheat growth is rapidly diminishing, the main point is how to increase the productivity of existing wheat areas.

71. Forage Crops. — Hay is the principal forage crop of the United States; the two main varieties of hay are timothy and clover. The former is a grass, the latter a leguminous plant. Several species of millet (sorghum, Kafir corn, etc.) are also grown for forage, notably the varieties of broom-corn millet from Japan and Russia. Clover is especially valuable in the "rotation of crops," as a "soil crop," being rich in nitrogenous compounds, and it greatly increases the productivity of the soil for wheat and other grains when "plowed in." Some of the millets are also valuable as soil crops. Lucerne, another leguminous plant allied to clover, is largely grown in California and portions of the southwestern United States under the name of "alfalfa." It was introduced from South America some years ago, and is valuable as a forage and soil crop. The chief hay-producing states are New York, Iowa, Kansas, Missouri,

[1] Crookes, *The Wheat Problem.*

[2] See *Successful Wheat-growing in Semiarid Districts*, by M. A. Carleton, United States Yearbook of Agriculture for 1900, p. 529.

Pennsylvania, Nebraska, Illinois, and Indiana. These states each produced over 2,000,000 tons of hay during 1899; New York, Iowa, and Kansas produced 5,154,965, 4,649,378, and 4,337,342 tons respectively.[1]

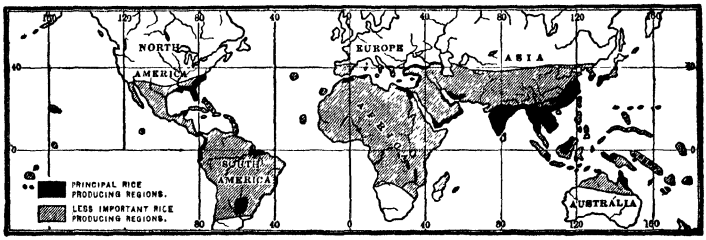
72. Buckwheat. — The plant producing the buckwheat of commerce is a member of the same family as the knotweeds and also of the common dock or sorrel. Its seeds resemble the nuts of the beech in their general form, hence the name. Its cultivation in the United States has decreased considerably, as in most regions it is a very uncertain crop. It grows in poor soil and is sown late in the spring; it is, therefore, adapted to cultivation in mountainous districts. Pennsylvania and New York produce two-thirds of the buckwheat crop, which amounted, in 1901, to 15,125,939 bushels for the entire country.

73. Potatoes. — The tubers, or swollen starch-filled portions of underground stems, form the potato of commerce. The plant was originally a native of the Andes, and was introduced into Europe about the middle of the sixteenth century. Its adaptability to a wide range of climate and its ease of cultivation, together with the fact that its starch forms a nutritious food-stuff, make it a staple article of diet among the peasant and working classes throughout many European countries and in the United States. Potatoes form the main food supply of the Irish peoples; in Northern Germany, also, they constitute a large proportion of the food of the working classes. Regions dependent upon the potato are subject to scarcity of food because of the rotting of the crop in seasons of abundant moisture.

The potato crop of the United States for 1900 amounted to 210,926,897 bushels, at a farm value of $90,811,167. By far the larger part of the crop is produced by New York, Iowa, Pennsylvania, Michigan, Illinois, Ohio, Wisconsin, Nebraska, Minnesota, Missouri, Kansas, and Maine.[2]

[1] Twelfth Census. [2] United States Yearbook of Agriculture for 1900, p. 796.

74. Rice.—The plant furnishing the rice of commerce is a grass which grows in warm regions in the low-lying, swampy districts of river estuaries and flood plains. In such countries as China and India it forms the staple food supply of millions of people. The nutritious matter is in the seeds or grains, and consists chiefly



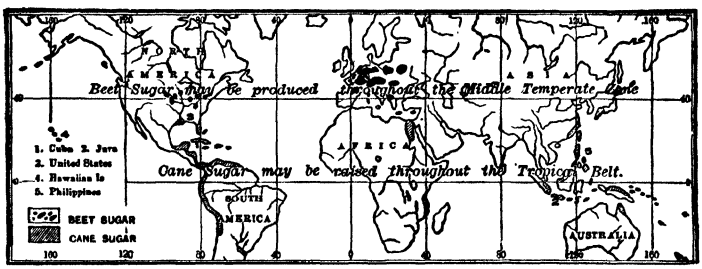
DISTRIBUTION OF RICE

of starch. In the United States only those states lying along the South Atlantic and Gulf border are rice producers. The principal states which grow rice are North and South Carolina, Georgia, and Louisiana. The estimated rice crop for 1900 was more than 285,000,000 pounds.

75. Sugar.—The sugar of the civilized world is derived from two main sources,—sugar cane and beet root. The sugar cane is a grass, allied to the cereals, which grows in low, swampy regions in the warmer parts of the world. Though originally a native of India, it has spread by cultivation throughout the tropical and subtropical lands of both hemispheres. The juice of the cane, which is pressed from the stalks by heavy rollers in a mill, yields a saccharine material from which the raw sugar of commerce is crystallized by boiling, filtering, and chemical processes; the residue forms the molasses of commerce. Louisiana is the only state of the Union producing sugar extensively from the cane. The sugar output for this state for 1901–1902 amounted to 275,000 (long) tons. The bulk of the sugar of the United States comes from Cuba, the Hawaiian Islands, and Porto Rico, and will be further consid-

ered under these heads. The sugar crop of the world amounts to over 10,000,000 tons, including both cane and beet-root production.

Beet sugar has become an important item in the world's commerce. Considerable competition exists between the cane and the beet as sources of sugar. On the side of the cane, the ease of cultivation, the cheapness of labor in the regions where it grows, and the comparatively small cost of the rough machinery for handling it, are of advantage as compared with the beet. On the other hand, however, the beet, though requiring more care in cultivation and more expensive machinery in the process of extraction, is produced in the more densely populated regions where it is used, thus obviating the cost of shipment. Furthermore, the residue of

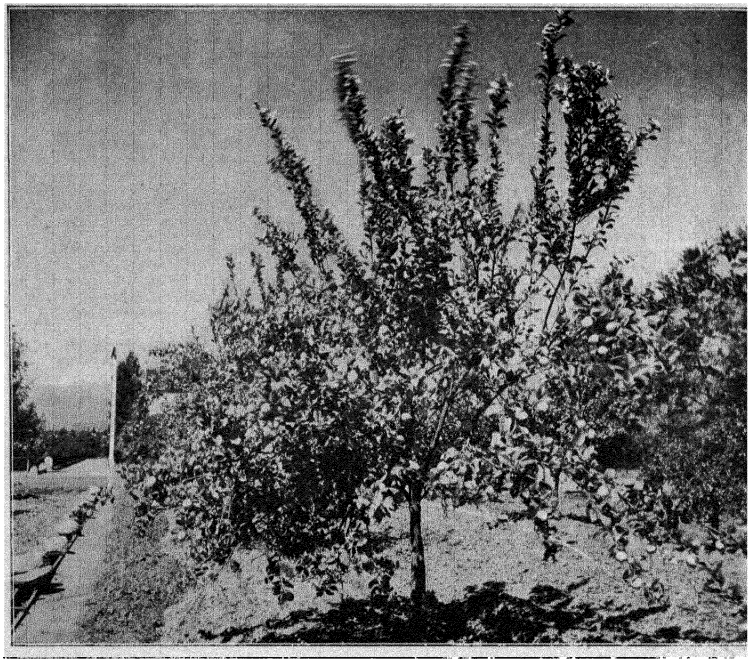


AREAS OF BEET AND CANE SUGAR PRODUCTION

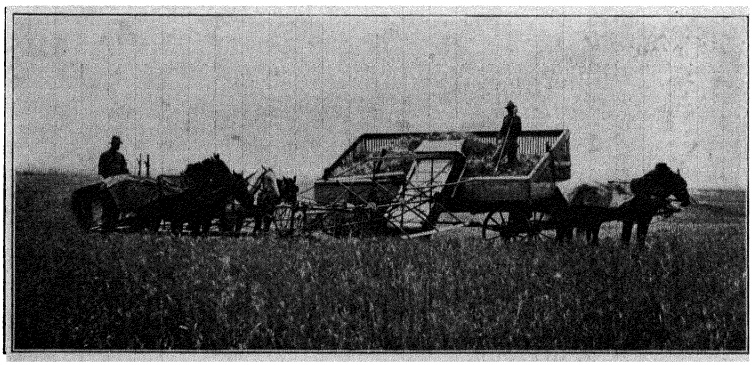
the beet can be used as a food for cattle, while the crushed stalks of the cane are comparatively valueless. (For relations of production see p. 387.)

The beet sugar industry has been greatly developed in European countries, notably in Germany, Austria, and France. The production in Europe for 1901–1902 amounted to 6,825,000 tons. In the United States the cultivation of the beet for sugar is carried on principally in California and Michigan, which produce about two-thirds of the entire product in beet sugar. Nebraska, Utah, New York, and Colorado produce over four-fifths of the remainder.[1] A

[1] See United States Yearbook of Agriculture for 1901, pp. 764–765.



California Lemon Trees



Wheat Harvesting in Dakota

small amount of sugar is produced in certain other localities, for example in the southern and central States from sorghum, and in the mountainous districts of New England and the middle States from the sap of sugar maples.

76. Fruit Culture and Garden Trucking. — Fruit and garden farming form important industries in many parts of the United States. Apples of many varieties are grown in abundance. In 1900 the shipment of ripe and green apples out of the country amounted to 526,636 barrels, while the export of the dried fruit reached 2,247,851 pounds. The chief peach-growing states are California, New York, Pennsylvania, Illinois, and Michigan. The Pacific Slope is especially adapted to fruit culture, its abundant moisture and wide range of climate (embracing both temperate and subtropical conditions) being peculiarly favorable for the cultivation of many different varieties. Chief among these are oranges, lemons, raisins, apricots, figs, prunes, and olives. The grape is cultivated to a large extent, and many fine domestic wines are produced, especially in California, and to a limited extent in other localities.

Florida, in a subtropical climate, produces lemons, pineapples, and other tropical fruits. The orange crop in Florida has been severely impaired by frosts. The raising of small fruits for the home markets is a very important branch of agriculture in many parts of the country. Chief among these is the strawberry.

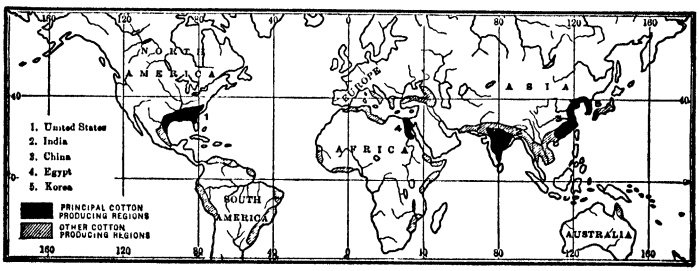
Vegetable gardening is carried on to supply the home market, the material being in the main too bulky and perishable for export. Peas and beans are grown to a large extent in many localities, also egg plants, squashes, lettuce, spinach, melons, cucumbers, asparagus, tomatoes, and sweet potatoes. Cabbages, turnips, and celery are among the important root and stock plants grown on the truck farms.

Truck gardening, both for vegetables and fruits, has developed very largely of late years. This is to a great extent due to the

demand for fresh vegetables and fruits out of season. This has been dependent upon development in the means of transportation. Fast freight trains, equipped with refrigerator cars, rush the fresh fruits and vegetables from California and Florida, and vegetables from the great truck farms of the southern States and the Mississippi Valley, to the populous cities of the central States and the Atlantic seaboard. Fast steamships, equipped with refrigerators, perform the same service along the coast. Many varieties of fruits and vegetables are also raised under glass during the winter in the neighborhood of the large cities. The principal truck farm districts are the South Atlantic States, the Mississippi Valley, the Gulf border from Alabama to Texas, the Maryland and Delaware Peninsula, New Jersey, and the country about the great eastern cities.

II. FIBER PLANTS

77. Cotton. — The cotton of commerce is the fibrous down or hair surrounding the seeds of a plant. The cotton plant is now



DISTRIBUTION OF COTTON

pretty generally cultivated throughout the tropical and warm temperate regions of the earth. The plant requires a warm and moderately moist climate, an absence of frost, and a comparatively long summer. In the United States these conditions are met in the South Atlantic and Gulf States which constitute the "cotton-belt." Two species are grown: Barbados or "sea-island cotton," and

"upland cotton." In the "sea-island cotton" the "staple" (*i.e.* the fibrous hairs) is much longer than in the "upland" variety, and it is chiefly used in the manufacture of thread, and the finer sorts of lace and cambrics, while the upland species with shorter "staple" is more frequently used in the manufacture of coarse clothing stuffs. The name "sea-island" comes from the fact that this cotton was first cultivated in the United States on the low, sandy islands that fringe the shores of South Carolina and Georgia; this locality still produces the best long-staple cotton of the United States. The soil and atmosphere along the coast influence the development of this variety of cotton; it deteriorates when grown in the interior.

From the field the cotton is taken to the "gin," a machine for separating the fiber from the seed. From the gin it is packed in bales, averaging about 500 pounds each; next it is shipped to the market towns where it is sold by the cotton brokers, on commission, to the purchasing agents of buyers both at home and abroad. Formerly the cotton mills were located for the greater part in New England and the middle States, but now a great number of mills have started throughout the southern States, and over 1,000,000 bales of cotton a year are being used directly in the cotton-belt.

The cotton crop of the United States in 1899 exceeded the crop of 1866 by 7,045,584 bales, representing an increase of over 17,000,000 acres of the area under cotton. The world's consumption of cotton for 1900–1901 amounted to 13,593,000 bales (500 pounds each), more than 10,000,000 of which were produced in the United States. The principal cotton-producing states (those of over 1,000,000 bales) are Texas, Mississippi, Georgia, and Alabama, followed more or less closely by North and South Carolina, Arkansas, Indian Territory, Louisiana, and Tennessee. Virginia, Utah, Oklahoma, Missouri, Kentucky, Kansas, and Florida also produce some cotton.

78. Flax and Hemp. — These are plants the stalks of which yield a fiber much used in the manufacture of various materials such as linen, bagging, rope, cordage, and sailcloth. They are produced for fiber to a limited extent in the United States. Flax in the United States is grown chiefly for its seeds which yield the well-known "linseed oil," used in the mixing of paints and in varnishes. The cake left after the oil has been pressed out is used as a food for cattle. Cotton seed likewise yields an oil of considerable importance in the arts, the residual cake being also used in fattening cattle and fowls. The ground flaxseed forms linseed meal, much used in medicine. The flaxseed product for the whole world in 1900 amounted to over 64,000,000 bushels, of which the United States furnished nearly one-third. Hemp is chiefly grown in Kentucky, but has little commercial value; its chief use is in the place of jute for cordage. The cost of land, however, and the heavy labor attending its reaping and "breaking" preclude the present cultivation of hemp on an extensive scale, though there is a prospect that it may be developed on new lines by the use of more suitable varieties, better machinery, and improved methods of cultivation.

III. FOREST PRODUCTS

79. Important Forest Trees and their Distribution. — We have already considered the forests in their general effects (Chapter III); it remains under this head to consider forests as a timber-producing crop. The forest trees of the United States belong to two distinct groups or classes: (1) the evergreens or conifers, having needle-shaped leaves; and (2) the deciduous or broad-leafed trees. The latter are often distinguished from the former by the term "hardwood" trees, because of the harder and more dense character of the woody tissue. To the first group belong all the different varieties of pine, spruce, fir, and hemlock, while to the second belong the other forest trees of the country, as oaks, chest-

nuts, walnuts, hickories, ashes, maples, etc. Broadly speaking, the evergreens or conifers characterize the more northern region of the country — the spruce and fir forests of northern New England and the "pineries" of Michigan, Wisconsin, and Minnesota are illustrations of this fact. A distinction is to be made in the use of the terms "timber" and "lumber." Timber is collectively the trees themselves and their unsawed logs after being felled; while lumber, strictly speaking, means the same material sawed.

Of the pines there are a number of species, valuable both on account of their timber and for the protecting effects of their shade in relation to the soil and to the water supply of streams. The white pine, the most important conifer in the United States, is abundant throughout the northern tier of states, reaching its best development in the region about the Great Lakes. Its wood is soft and light, easily worked and free from resin. It is used in immense quantities for lumber. This tree grows best in light, sandy soils of good depth, and under these conditions it is of rapid growth. The best quality of pine lumber is from trees at least one hundred years old. The white pine extends southward to the mountains. The red or Norway pine has a similar range, reaching its best development from Michigan to Minnesota. These two trees form the pineries of this region. Red pine is lighter, harder, and stronger than white pine, but much more resinous. It is handled in commerce with the white pine.

In the middle and southern States are several species of pine, valuable for their timber and also for the resin which they contain; from the resin is manufactured commercial turpentine, tar, and pitch. These include, among other species, the yellow and the long-leaf pines. On the western Pacific Slope the sugar pine is quite similar to the white pine, and is used for the same purposes.

The spruces are chiefly used for wood pulp in the manufacture of paper, and for lumber. They are mainly northeastern in their distribution. In the Rocky Mountain Region and on the

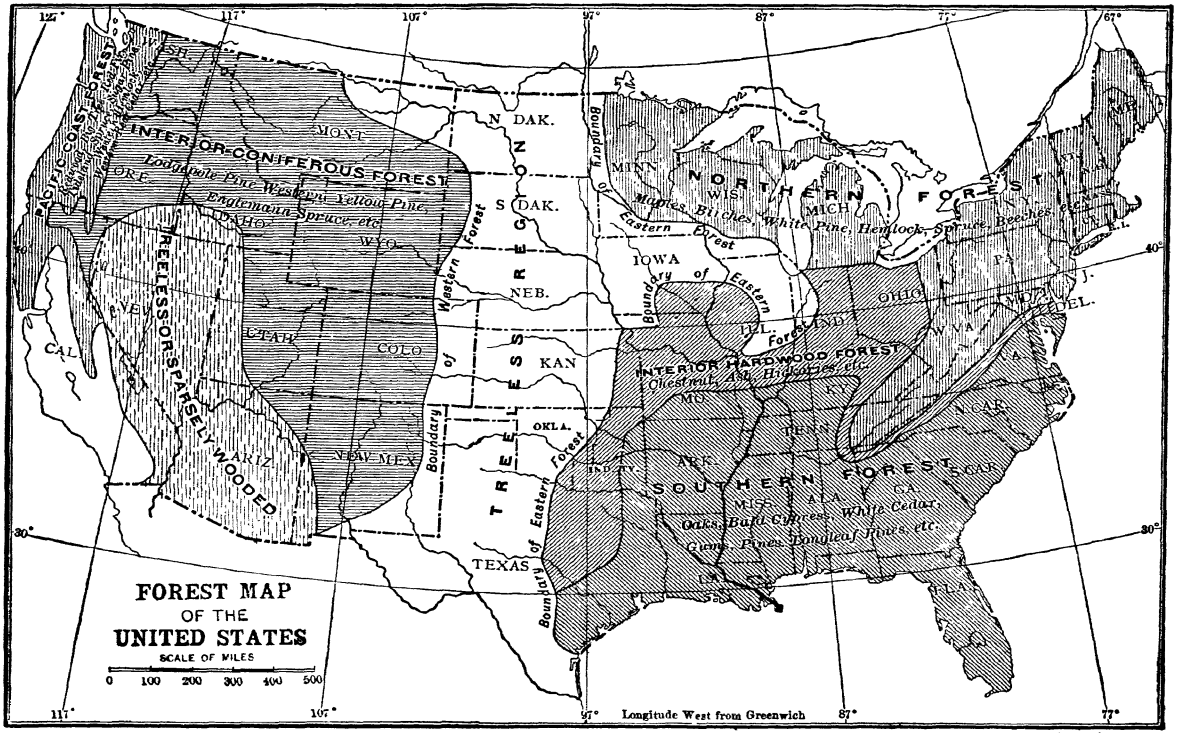
Pacific Slope the Douglas spruce or Oregon pine is an important source of lumber. The two species of hemlock from the northeast and the northwest sections of the country produce lumber of second grade. The bark of the northeastern species is an important agent used in tanning.

In the southern States the bald cypress, growing in swamps, forms an important source of lumber. The western larch, or tamarack, is used to some extent in the region where it grows. In the eastern United States the red juniper, cedar, or savin, as it is differently called, is used for a number of purposes, one of which is in the making of lead pencils. The yellow cedar and the redwood, both from the Pacific Slope, are a valuable source of lumber.

Among the hardwood or deciduous trees, the various species of oak are conspicuous for their usefulness. The white oak of the central, northern, and eastern States, supplies a tough, strong, and heavy lumber, largely used in shipbuilding, for cooperage, the making of agricultural implements, and a variety of other purposes. The tree attains its best development on the western slope of the Alleghanies and in the valley of the Ohio. In the southern States the swamp chestnut, and cow or basket oak are quite the equal of the white oak as a source of lumber supply. The basket oak reaches its best development in the rich bottom lands of Arkansas and Louisiana. The tan-bark oak, best developed in the California redwood belt, is chiefly valuable for the tanning qualities of its bark. The black oak, the red oak, and the post oak are all valuable species occurring east of the Rocky Mountains. The two former, best developed in New England, are also used for tanning.

The beech is an important timber tree, growing abundantly throughout the region east of the Mississippi River.

The black walnut, the shagbark hickory, the pecan, the black cherry, and the tulip tree or yellow poplar, are all wide-ranging species of the eastern United States (some, as the pecan and tulip, being more southerly than the others), and their wood is valuable


FOREST MAP
OF THE
UNITED STATES
SCALE OF MILES
0 100 200 300 400 500
INTERIOR-CONIFEROUS FOREST
Lodgepole Pine, Western Yellow Pine,
Engelmann Spruce, etc.
PACIFIC COAST FOREST
TREELESS OR SPARSELY WOODED
TREELESS
Boundary of Western Forest
Boundary of Eastern Forest
NORTHERN FOREST
Maples, Birches, White Pine, Hemlock, Spruce, Beeches, etc.
INTERIOR HARDWOOD FOREST
Chestnut, Ash, Hickories, etc.
SOUTHERN FOREST
Oaks, Bald Cypress, White Cedar,
Gum, Pines, Longleaf Pines, etc.
N DAK.
S DAK.
NEB.
KAN
OKLA.
TEXAS
MONT.
WYO.
COLO.
UTAH
NEV.
ARIZ.
N. MEX.
IDAHO
ORE.
CAL.
MINN.
IOWA
MO.
ARK.
LA.
MISS.
ALA.
GA.
FLA.
S.C.
N.C.
TENN.
KY.
VA.
W. VA.
PA.
N.Y.
MICH.
WIS.
ILL.
IND.
OHIO
125°
117°
107°
97°
87°
77°
67°
40°
30°
Longitude West from Greenwich

BORMAY & CO ,N.Y.

for a great variety of purposes. The forests of the eastern United States also supply lumber from the ash, maple, elm, and basswood or linden.

Besides the species above mentioned there are many other trees, both conifers and hardwoods, that produce valuable lumber of the second and third grades.[1]

80. The Lumber Industry. — As has already been said, the forest is a crop, and its returns will depend on the intelligence exercised in its planting, tending, and harvesting (see p. 29). Millions of dollars' worth of lumber is cut each year in the United States to be used at home and abroad. A forest is equal to a grain crop in its importance to civilized life. We have but to look about us to see the manifold uses of wood and to realize that without it our present life would be hardly possible.

Much of the lumber used in building, comes from the pine region of the northern States, where lumbering is one of the chief industries. Lumber is difficult of transportation, and in many regions natural conditions are taken advantage of in getting it out of the woods, and starting it on its journey to the markets. The deep snows in the northern woods are of great advantage to the lumberman, for during the winter the logs can be more easily hauled out. The rafting of logs on the upper courses of the rivers during the spring freshets was at one time extensively practiced. The chain of Great Lakes forms a highway for the movement of lumber from the pine region. Formerly the saw mills were run by the water power of the streams, and the logs had to be hauled or floated to them to be worked up; but with the increase of railroad facilities, and the improvements in machinery, steam saw mills are now set up in the woods and the logs worked up near the lumbering operations.

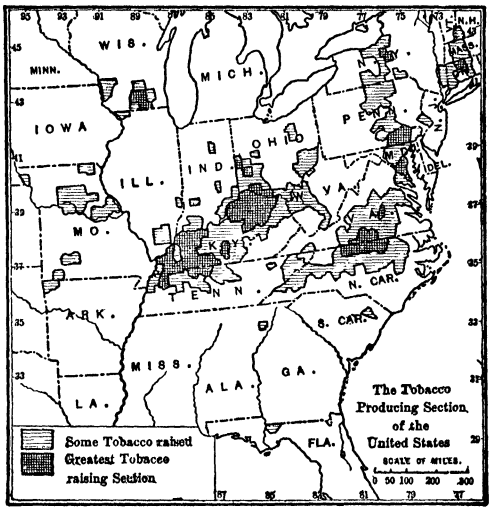
The United States not only produces enough wood for its own consumption, but exports a vast quantity as well. In 1900 the

[1] Yearbook of Agriculture for 1897, pp. 644–669.

value of the lumber export amounted to more than thirty-seven millions of dollars, and of wood manufactures to over ten millions more. This export was sent to all parts of the world.

IV. OTHER VEGETABLE PRODUCTS

81. Tobacco. — The tobacco of commerce is the dried leaves of a plant belonging to the same family as the white potato. It is a native of America, where it was found under cultivation and in use by the native peoples at the time of the discovery. The plant is now widely grown throughout the warmer regions of the world. A crop of tobacco has an impoverishing effect upon the soil, reducing its fertility in a short time unless the proper means are taken to enrich the land by fertilizers. A number of varieties of the plant are cultivated, each adapted to peculiarities of soil and climate, and differing widely from one another in the quality of their leaf.



DISTRIBUTION OF TOBACCO IN THE UNITED STATES

From the returns of the Twelfth Census (1900) upwards of 9,574,000 acres of land in the United States are under tobacco. Kentucky is the leading tobacco-producing state, both in the amount produced and in the area under cultivation. In 1900 the domestic tobacco consumed and exported amounted to upward of 668,000,000 of pounds. Though widely grown throughout the

United States, the regions of greatest tobacco cultivation and largest production are Kentucky, North Carolina, Virginia, Ohio, and Wisconsin. In Louisiana the famous perique tobacco is grown, principally in the St. James Parish. The tobacco from each of these different sections has its own peculiar qualities and its special uses in manufacture.

82. Hops. — The hops of commerce are the flowers of a climbing plant largely used to impart the bitter flavor to malt liquors. In 1899 the hop production of the world amounted to 1,286,460 bales (180 pounds each), of which the United States furnished 235,300 bales (latest statistics available). Hop production, like that of tobacco, has a deteriorating effect on soils. The chief hop-growing states are New York, Oregon, California, and Washington. The Pacific coast production has steadily increased during the past five years, while that of New York has decreased. Austria, England, and Germany are the largest hop-growing countries of Europe.

83. Plants that might be cultivated in the United States. — In the eighteenth century the cultivation of the indigo plant was carried on to a considerable extent in the southern States and considerable quantities of indigo were manufactured, but the industry gradually declined, and has disappeared. The cultivation of indigo might be again introduced.

The tea plant can be grown in the United States in a region where the temperature rarely falls below 25° F., and never below zero, and where a sufficient rainfall is assured. Even with the abundant rainfall of the South Atlantic States, however, irrigation must be resorted to. The United States Department of Agriculture is conducting a series of experiments in tea growing at Pinehurst plantation, South Carolina, which bid fair to be a success. The conclusions are that tea culture can be made profitable in the United States in two ways: (1) by conducting it on the scale of the Pinehurst experiment; and (2) by cultivation in the garden for

home use.[1] The cultivation of the opium poppy has been attempted in some sections of the United States, but the high price of labor renders its production under present conditions unprofitable. Egyptian cotton of a superior quality has been grown in this country. The date palm is now being raised experimentally in Arizona; no doubt the cultivation of many other vegetable products will be introduced into the United States.

SUGGESTED QUESTIONS AND TOPICS

58. Distinguish between the earlier use of the word "corn" and the current use in United States. What is the appropriateness of the title "King Corn"?

59. State the climatic conditions under which different varieties of wheat (including macaroni) may be grown.

60. Compare the increase of cereal production in the United States with the increase of population. (1850–1900, Twelfth Census.)

61. Is buckwheat a cereal? What is the origin of the name?

62. Ascertain the total value of the hay crop for 1900. Compare it with the value of other leading products.

63. "Describe the sugar trade of the world, having regard to the various sources of raw sugar, the position of the refineries, and the degree to which each of the chief countries is an importer." Contrast the total world's production of cane and beet sugar. (Monograph of Bureau of Commerce and Finance, Treasury Department, *The World's Sugar Production and Consumption*, see p. 205.)

64. In the total value of exports from the United States, how does cotton compare with other leading commodities?

65. Enumerate the principal vegetable fibers for the textile industries. Select one and write a brief account of its production, uses, and trade.

66. The Secretary of Agriculture (Report 1901) says that the United States is paying millions of dollars annually for productions of the tropics that might be grown within her own territory without interfering with industries already established. Discuss this statement with thought of its bearing on the future trade of the United States.

67. Take an outline map of the United States and fill in the principal vegetable products of the different regions.

[1] Bulletin No. 61, *Tea Culture*, United States Department of Agriculture.

Books to be Consulted

** Publications of the United States Department of Agriculture, Yearbook and Bulletins.

* Twelfth Census, Reports on Agricultural Products.

Crookes, *The Wheat Problem*, New York and London; 1900.

Stevenson, *The Trees of Commerce*. London edition.

* Rocheleau, *Products of the Soil*. Vol. II of Great American Industries. Flanigan Company, Chicago. Elementary, but a good introduction.

** Yeats, *Natural History of the Raw Materials of Commerce*, Part II, London. Philip & Son.

* Edgar, *The Story of a Grain of Wheat*, New York; 1903.

CHAPTER VIII

RESOURCES : ANIMAL PRODUCTS

84. Cattle and Dairy Products. — The history of extensive cattle raising in the United States is a part of the westward movement of population. The mixed breeds of cattle that originated on the eastern seaboard from the stock of the early English, Dutch, and Swedish settlers, gradually improved as more abundant pasturage opened westward. Cattle raising on a large scale must always be outside the older settled districts. In the early part of the nineteenth century, the prairies of the Ohio and Mississippi basins were the great grazing grounds, and it was here that the native stock showed its first marked improvement. In the beginning of the latter half of that century the Great Plains west of the Mississippi, for ages the pasture land of the immense bison herds, were invaded by the cattlemen, who first opened up these vast grazing "ranges" from Montana to Texas. Subsequent to this invasion, was the building of the railroad and the establishment of a market for the western stock in the more densely populated districts of the East. At first it was only a question of home consumption; but with improvements in the means for the shipment and preservation, a market was created for American meat products in the manufacturing countries of western Europe. For a time the cattle were shipped by train from the stock yards of the western cities to the Atlantic ports, and there put aboard "cattle ships" for the ocean voyage; but with the improvement in preserving meats by cold storage, the shipment of live cattle has been largely superseded by the shipment of fresh meat. Refrigerator cars and cold

storage compartments of steamships, now carry most of the meat products transported. Cold storage is effected either by chilling or freezing with ice, or by lowering the temperature through the expansion of compressed air. Various other methods of preserving meat are also employed, as drying, smoking, salting, and canning. Most of the meat sent across the Atlantic is kept by the expansive process, but ice is necessary in shipment across the tropics.

The great ranch states are Montana, Wyoming, Colorado, New Mexico, and Texas, and these all lie for the most part in the arid region, where crop growing is confined to the smaller areas which are under irrigation. Notwithstanding the great ranges of "buffalo grass" in the West, the cattle raised in the corn-belt are fatter from the more abundant supply of forage and grain, and the more nutritious qualities of these foods. Much of the prosperity of such cities as Chicago, Kansas City, and Omaha has been from cattle and cattle products. In these cities are the great slaughter-houses and the beef-packing establishments, famous throughout the world. In the twenty years from 1880 to 1900 the average annual production of beef cattle in the United States amounted to over 32,000,000 head. The refuse from the slaughter-houses (hoofs, horns, bones, sinews, etc.) is used in various manufacturing industries, and the hides are converted into leather.

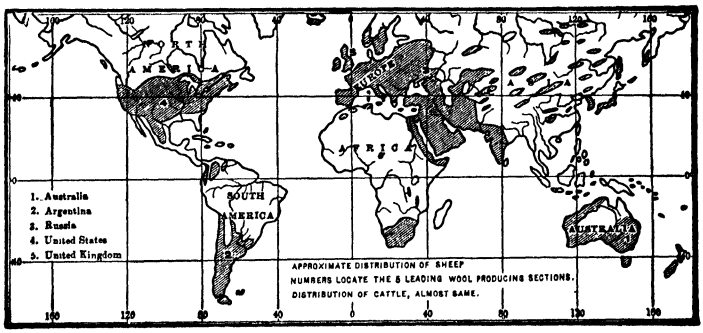
The dairy industry is mainly confined to the corn-belt and the eastern States. During the last half of the nineteenth century the various breeds of milch cows were greatly improved by careful selection and crossing with the best foreign stocks. Butter making also received a wonderful stimulus with the invention of separator machines, by which the cream is taken from the milk by centrifugal force — the heavier milk being thrown outward from a rapidly revolving cylinder while the cream remains at the center. Both the separators and the churns are driven by steam; the old process of "setting" and "skimming" and of hand churning on any large scale has been done away with. On January 1, 1900, there were

in the United States over 16,000,000 milch cows, representing a value of more than 514,000,000 dollars. Of this number New York, Illinois, Wisconsin, and Iowa each had over 1,000,000 head, while Pennsylvania had nearly 1,000,000, and Ohio, Indiana, Minnesota, Missouri, Kansas, Nebraska, and Texas more than 500,000 each. The total butter production for 1899 amounted to about 1,430,000,000 pounds; and over 20,000,000 pounds, or between 1 and 2 per cent of this, were exported in cold storage. The production of cheese amounted to 300,000,000 pounds, of which over 38,000,000 pounds were exported.

A substance made from various animal fats, and known as oleomargarine, is used as a substitute for butter, and its manufacture is an increasing industry. A law, however, requires it to be marketed under its own name; its sale as butter is unfair to the consumer and would materially affect the dairyman's interests. With the increased use of cold storage the exportation of butter should increase, and larger foreign markets be secured for the United States.

85. Hogs and Hog Products. — The United States is the largest hog-producing country in the world, supplying about one-third of the world's market, and raising more swine than Russia, Germany, and Austria-Hungary combined. Next to the United States the countries last named produce most largely of swine. The center of the hog-producing industry is the western portion of the corn-belt, and fully one-third of the entire corn crop is converted into pork. The chief pork-packing centers are Omaha, Kansas City, and Chicago, while Milwaukee, Indianapolis, Cincinnati, Cleveland, Buffalo, Boston, and some other cities in the East also do a large business in this line. The meat-packing establishments in these cities do more work in pork than in beef or mutton, since the latter are now kept and transported in cold storage which has done away, to a large extent, with the various curing methods. Very little of the hog goes to waste. The fat is made into lard; the bones are ground up for use as fertilizers, or when burnt to

charcoal are utilized in the sugar-refining process; the gut, cleaned and filled with the finely ground mixture of beef and pork and twisted into links, constitutes sausage; the hair is used in the mixing of mortar; the tough connective tissues, as the tendons and ligaments, are used in the manufacture of glue; while the flesh becomes ham, bacon, and pork, prepared by various curing processes, — smoking, salting, pickling, etc., — as well as being cold-stored and used as fresh meat. The total of swine in the United States in 1900 was 62,876,000 head, which was an increase of 9.5 per cent over the number in 1890.



DISTRIBUTION OF SHEEP

86. Sheep and Wool. — The number of sheep in the United States in 1900, was 61,837,112 head. By far the larger portion of these were on the great sheep ranches of the West. Montana, Wyoming, and New Mexico each contributed over 4,000,000 head, while Colorado, Utah, Idaho, and Oregon had each over 2,000,000 head. East of the Mississippi, Ohio and Michigan are the leading sheep-raising states, — the former having over 4,000,000 and the latter over 2,000,000 head.[1] The chief breed of sheep raised in this country is the merino or varieties of it.

[1] Twelfth Census, larger than figures in the Yearbook of Agriculture.

The wool of the merino is especially adapted for the manufacture of strong staple fabrics.

Though sheep are slaughtered to some extent in the great meat-packing centers and for local consumption, the principal use of the animal is for wool. This material is, with cotton, chiefly used in the textile industries of the world. The manufacturing countries do not raise enough for their own supply, but draw mainly upon the great sheep-raising regions of Australia, New Zealand, South Africa, and Argentina. The United States imports the finer grades of wool for its more costly manufactures. Because of the absence of alkali the water in certain parts of the country is better adapted for wool cleansing than in other districts, and this has to some extent, determined the growth of woolen industries in certain sections. Philadelphia, the largest center of woolen manufacture in the United States, is peculiarly favored in water that is suited for cleansing wool.

The chief materials into which American wool enters are woolen cloths, worsteds, carpets, and felts. Outside of Philadelphia and the neighboring towns of Camden, New Jersey, and Chester, Pennsylvania, the New England towns are the chief centers of the woolen industries. Boston is the largest wool market in the country. The total wool production for the United States during 1901 amounted to 302,502,328 pounds, of which only 199,565 pounds were exported. Over one hundred and three million pounds, however, were imported.[1]

87. Horses and Mules. — Horses and mules are the chief traction and draught animals. The ox and the ass are still in use, however, where the requirements of work are not such as to demand a combination of strength and quickness of movement in a single animal. The mule is peculiarly adapted to certain sorts of work, and is, moreover, an immune to some diseases which affect the horse. There are two main purposes in raising horses in the United States: for draught and farm use, and for driving

[1] From Statistics of National Association of Wool Manufacturers, Boston, Mass.

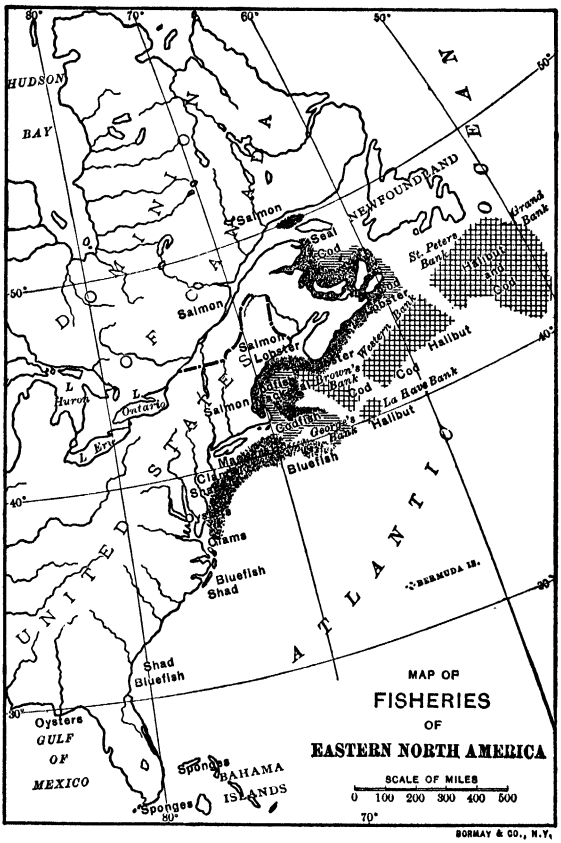
and saddle animals. The breeding of mules is chiefly for the supply of work animals.

The number of native horses in the United States, on June 1, 1900, amounted to more than 21,000,000 head, while the number of mules was 3,445,029. Horses and mules are raised in most of the states, especially on the larger farms of the South and West. In the East the principal states producing horses are New York, Pennsylvania, Maine, Maryland, and Virginia; comparatively few mules are raised in this section. Horses in the United States have been much improved for draught purposes by the importation of heavier stock from abroad, as the Clydesdale, Norman, and Percheron breeds. The American bred horse is gradually finding its way into foreign markets, and is in considerable demand in Great Britain and other European countries. A war between foreign powers stimulates horse and mule raising in the United States, as the large area of country and abundant forage produce a large number of animals of superior quality at a lessened cost. The carcass of the horse is not permitted to go to waste. The connective tissue is turned into glue; the bones make fertilizer; the hair is used for upholstery, and the hide is converted into leather for various purposes, notably for gloves, razor strops, and shoe uppers.

88. Poultry and Eggs. — The Yearbook of Agriculture for 1901 reported upward of 233,000,000 chickens on farms throughout the United States, and more than 17,000,000 fowl of other sorts, as ducks, geese, and turkeys. The value of eggs produced in 1899 amounted to more than $144,000,000. The raising and fattening of poultry is chiefly for the home market, but large exports of eggs are made from the United States. The industry has received considerable stimulus from the importation of fine breeds of fowls, and by intelligent selection and crossing on the part of farmers and fanciers.

89. Food Fishes and the Fisheries of the United States. — The three great fishing regions of the United States are: (1) the North

Atlantic banks and adjacent coast waters; (2) the Pacific coast and the Columbia River; and (3) the Great Lakes. The most important species of food fishes are the cod, herring, salmon, shad,



mackerel, halibut, sturgeon, and whitefish. The various species of fishes congregate in vast "schools" at certain times of the year in order to spawn or deposit their eggs in the bays and river estuaries and along the shallower parts of the sea bottom. Some of them,

such as the salmon and shad, ascend rivers for long distances to accomplish this, even stemming rapids and leaping falls in following their instinct to spawn in cold, fresh water.

The headquarters of the Atlantic fishing industry is Gloucester, Massachusetts, from which port a large fleet of vessels is engaged in cruising the fishing grounds and the offshore "banks" that stretch from Newfoundland to Cape Cod. (See map.) The fishing rights of a nation extend for three miles from shore, beyond which the "deep-water fishing," as it is called, is open to all nations. On the fishing grounds of the banks, the fishermen from France, Canada, the United States, and other nations, meet and ply their trade. The most important food fish of the North Atlantic coasts is the cod, of which vast numbers are annually caught. Commercially it is the most valuable of all the food fishes, and is sold either fresh, or salted and dried. The fishing vessels carry small boats called dories, in which the crews go out when the fishing grounds are reached, and catch the fish with hand lines. Heavy fogs continually hang over the banks, and gales are of frequent occurrence, making the fishing in these parts a very dangerous business. The risk is increased from the danger of being run down by steamers, or of the dories getting lost from their vessels. The larger part of the fish are salted on board and taken to port where they are sun-dried, and they are then ready for the market as "salt cod." A small portion have the bones removed and are packed in boxes as "boneless cod." The haddock, a species closely related to the cod, and inhabiting the waters nearer the shore, is locally an important food fish. The cod is valuable also from the oil which is obtained from its liver, "cod-liver oil" being of especial value in medicine. Next to the cod the herring and the mackerel are the most important food fishes. They are generally caught nearer the coast than the cod, the herring being taken in close-meshed nets or seines which are set and hauled by the fishermen. Both these fish are sold salted and dried, as well as

fresh. The small herring called "sardines," though not the true sardine (which is found in the Mediterranean), are packed in oil and salted. This forms an important branch of the fishing industry on the Maine coast, and American sardines are largely taking the place of the Old World product. Shad are mainly caught by seining in the spring, in the rivers of the Atlantic seaboard, while they are running up to spawn. The same is true of the Atlantic salmon, a very superior food fish, the flesh of which is considered a great delicacy.

The main feature of the Pacific coast fishing is the capture and canning of several species of salmon, which differ from the Atlantic salmon in their appearance and habits. These salmon are taken in great numbers in the Columbia River while running up to spawn in the head streams among the mountains. They are also caught in vast numbers in more northern waters, in the rivers of British Columbia, and along the coast of Alaska; the salmon canning industry in Alaska is very important. The early explorers found the Indian peoples along the Columbia engaged in spearing and catching salmon and drying them. Catching of them has continued until the present; they are caught mostly in large traps or weirs into which the fish run and cannot escape, something after the manner of a rat trap, and also by "wheels" which scoop the fish out of the water. Many large factories have long been established on the Columbia, where salmon are cooked and canned and sent out to all parts of the world. Much fresh salmon from this region is also shipped by refrigerator cars.

The principal fish of the Lakes are the whitefish, the Lake trout, and the sturgeon. Little fishing is now done in Lake Ontario, the commercial Lake fishing being wholly west of the Niagara River. A large industry in sturgeon is in the preparation of "caviare" from the salted roe or eggs.

The eastern cities and coast towns of the United States are collectively the greatest fish market in the world. The United

States Fish Commission is actively engaged in looking after the fishing interests and industries of the country, improving the conditions of the important fishes in the matter of their food supply and reproduction. The government has also established fish hatcheries at various convenient places. The small species of fish which swarm on our coasts, and which are fed upon by the cod and other food fishes, are under government protection.

Along the rocky shores of New England, lobster catching and canning form a very important industry. The oyster and clam are commercially the most important shellfish of the United States coasts. Oyster culture is mainly carried on along the bays of the Middle Atlantic States, and to some extent southward along the Atlantic shores. Here there are grown in immense beds, in the shallow waters of estuaries and bays, the largest and finest oysters in the world. Baltimore is an important oyster center, and does a big canning business to supply the interior cities and towns.

Though once an important industry, whale fishing and the marketing of the products, has gradually declined. This has come from the growing scarcity of whales and the introduction of petroleum and other products as celluloid, steel, and rubber, which have almost entirely taken the place of whale oil and whalebone. To-day comparatively few whales are caught, and these mostly in Baffin Bay and Bering Sea. The right or Greenland whale inhabits the Arctic seas; it is the species that supplies the whalebone (a horny substance from the upper jaw) and train oil from the fat or blubber under the skin. The sperm whale, a native of the southern oceans, yields sperm oil (a valuable lubricant for machinery) and spermaceti (a mass of white substance found in a large cavity of the skull), which is used as the basis for ointments and in the manufacture of sperm candles. The principal ports now engaged in whaling are Dundee, in Scotland, and San Francisco in the United States.

90. Sponges. — The sponge is a colony of animals of a low

grade of organization, inhabiting the waters of the warmer parts of the world. The whole mass or colony is fastened to the sea bottom at a varying depth of from one to two hundred feet. In the shallow waters of the Florida grounds, sponges are torn loose by a three-pronged fork. The commercial sponge is the dried fibrous skeleton or framework of the colony, from which the jellylike living matter which formed its body has been rotted away. Most of the sponges of commerce come from the Mediterranean region. A considerable fishery, however, is carried on in the waters about Florida and the Bahamas.

SUGGESTED QUESTIONS AND TOPICS

68. Contrast the Eastern and Western Hemispheres in the supply of native animals capable of domestication. Make a similar comparison for the supply of indigenous plants. (See Shaler, *Nature and Man in America*, p. 145.)

69. Discuss the economy of nature by which mineral matter in the sea, feeds vegetable life, which nourishes a lower order of animal life, which is fed upon by a higher order of marine animals, which are in their turn food for men. Apply the same method of reasoning to soil constituents, grass, cattle, and men.

70. Compare the relative proportion of vegetable to animal commercial products from the sea, with the proportion of these upon the land.

71. Indicate how the cattle and meat trade of the present day are largely dependent upon certain inventions and scientific discoveries.

72. What are the special qualities of the merino wool? How and where were these qualities secured and how have they been introduced into the United States?

73. What are the chief by-products of the meat-packing industries?

74. What are the principal animal oils and what are their uses?

Books to be Consulted

** Publications of the United States Department of Agriculture, *Yearbook and Bulletins of Bureau of Animal Industries.*

* Twelfth Census Reports, *Animal Products*, Part I of Agriculture.

** Yeats, *Natural History of the Raw Materials of Commerce*, Part III. London, Philip & Son.

* Simmonds, *Commercial Products of the Sea.* New York, Appleton & Co. *Animal Products, Their Preparation, Uses and Value.* London, Chapman & Hall.

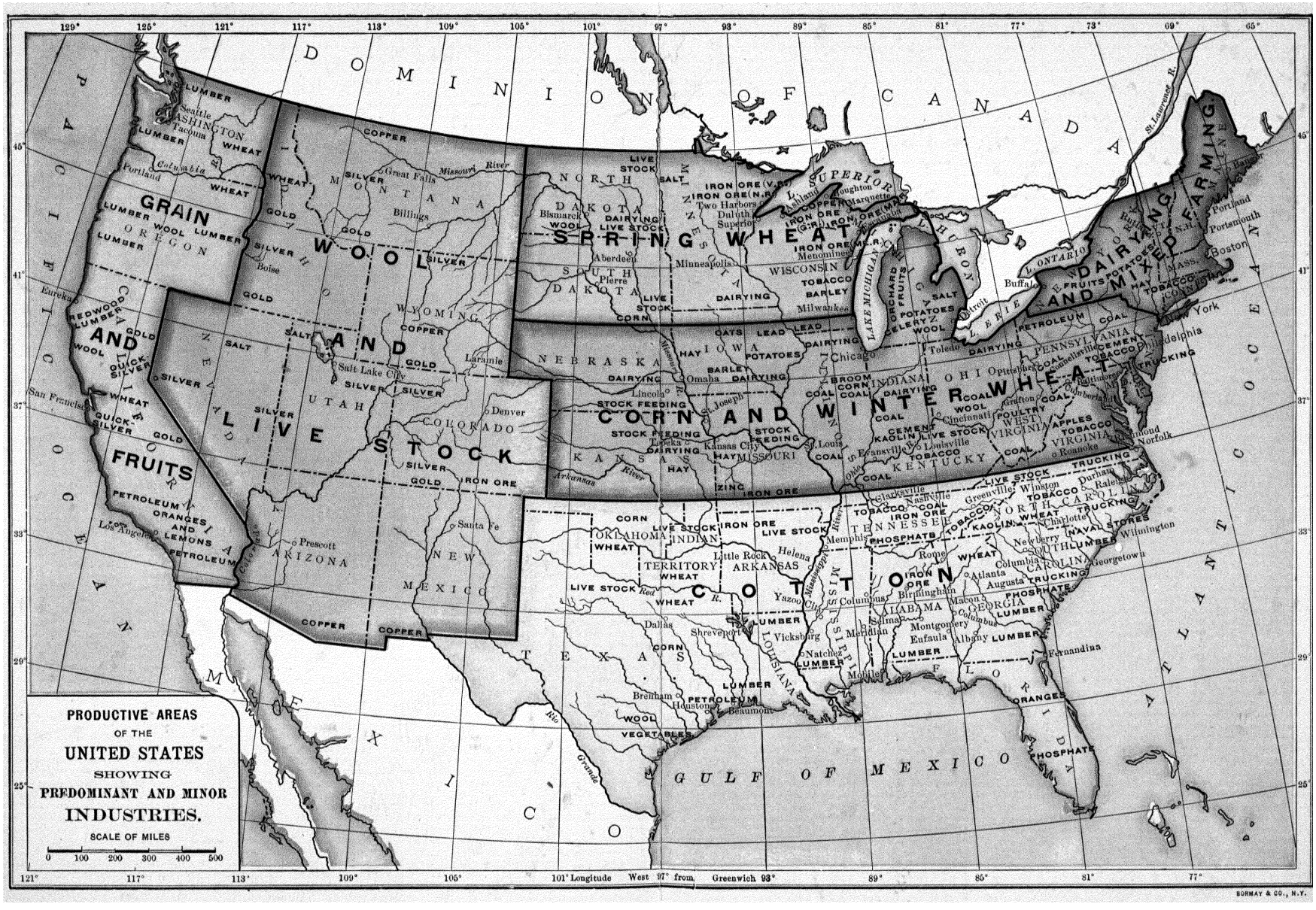
CHAPTER IX

INTERNAL COMMERCE OF THE UNITED STATES

91. The Basis of Internal Commerce. — Two facts are necessary to explain the exchange of goods: differences in aptitudes and inclinations of men, and differences in the regions where men live. These may be termed, in brief, differences in skill, and differences in locality. Local trade grows most largely out of the first, international trade out of the second.

No other country is so well adapted to the support of its population as is the United States. Wide diversities in soil, climate, and topography, were noted in Chapter V; there are also marked differences in the tastes and powers of the people in the several sections. Industrially the United States is like a number of nations rather than one nation. Differences in the inhabitants, and in the resources and productions of the several parts of the country have tended to make trade, and this has been further increased from the comparative nearness of the different areas with facilities for the transfer of goods. Natural highways, such as rivers and lake chains, extend in various directions, affording easy means of transportation. The different regions have been bound together by the most extensive system of railroads in the world. (See p. 386.) Thus there has come about within the United States, trade of great variety and extent.

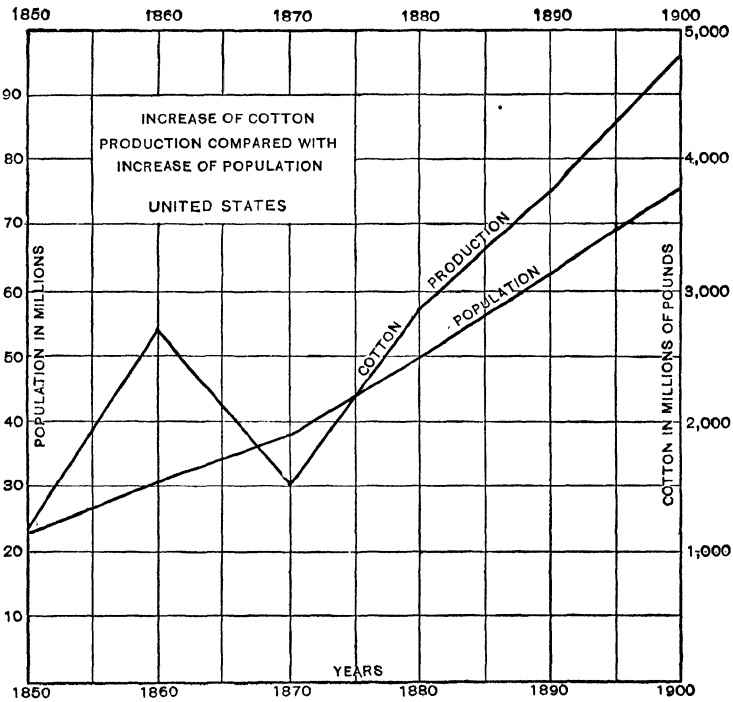
92. Distribution of Trade and Manufacture. — Population is drawn to the centers of trade and manufacture. The location of these centers is largely determined by geographic conditions, which are mainly to be resolved into: raw material supply, power facilities, and transportation facilities. In the early history of the country the location of an industry was almost entirely dependent upon local sources of


PRODUCTIVE AREAS
OF THE
UNITED STATES
SHOWING
PREDOMINANT AND MINOR
INDUSTRIES.
SCALE OF MILES
0 100 200 300 400 500
GRAIN
LUMBER WOOL LUMBER
WOOL
LIVE STOCK
FRUITS
PETROLEUM ORANGES AND LEMONS
SPRING WHEAT
DAIRYING
CORN AND WINTER WHEAT
COTTON
DAIRYING AND MIXED FARMING
GULF OF MEXICO
DOMINION OF CANADA
Longitude West 97° from Greenwich
BORMAY & CO., N.Y.

power. Thus New England became a region of manufacture largely because of its abundant water power; but with the advent of steam-driven machinery the manufacturing industries spread out over wider and wider areas, conditioned only by the facilities for transportation and the proximity of coal and iron. Another factor determining the location of special industries is the presence of a raw product available for manufacture. Places like Minneapolis grew up as a result of the presence of water power (St. Anthony's Falls) in proximity to the pine belt, the saw mill being the first industry in the region. Transportation facilities have, however, extended the industries of the region, the chief feature to-day being flour milling, as a result of the nearness of the hard-wheat belt, though water is no longer the only source of power. Pittsburg was at first a disbursing center for the Ohio traffic; but with the utilization of the coal and iron in the region it became a modern vulcan in the steel and iron industry. Birmingham, Alabama, prior to its great boom as the result of the discovery of coal and iron deposits, was the site of a cotton plantation.

The industrial history of the country is a record of the distribution of manufactures from certain productive centers where available power compelled localization, and where difficulties of transportation narrowed the industries largely to the use of raw materials immediately at hand. To-day no manufacturing industry is absolutely restricted to any particular region, though certain manufactures predominate and give color and character to certain regions, partly as a result of existing physical conditions, and partly as a result of practices inherited from earlier times. New England is preëminently a region of general manufacture, as a result, not only of its original water power facilities, but of its seaboard position as well, — raw cotton from southern ports being brought to its mills through an extensive coastwise traffic. The Middle Atlantic Slope is a region of general manufacture, first because of its river facilities, for both navigation and water power, and later from its close proximity to the coal and iron of the Appalachian region. The iron and coal of the southern Appalachians

are rapidly changing the South from a purely agricultural region into one of manufacture. The region of greatest manufacture lies east of the Mississippi River, while the vast extent of western territory is given up mainly to crop growing, stock raising, and mining operations. It has already been shown that the geographical center of agriculture



keeps in advance of the center of population. In the westward movement the center of manufacture, on the other hand, is in the rear of the center of population, being located (1900) somewhat to the northeast of Columbus, Ohio. (See map page 95.)

93. Population and Trade. — Purely agricultural regions are sparsely peopled as compared with manufacturing districts, the better

chance for work, and the profits of trade, increasing the population of the latter at the expense of the former. The larger the population of a country, the greater is likely to be the demand for variety of manufactures. At the same time, in large populations there is usually the best chance for the development of inventive genius, since a great diversity of mind exists as the result of the commingling of many different individual elements. Without this vital factor our industry could never have attained its present development, notwithstanding the abundance of natural resources. The invention of labor-saving machinery has increased the output and reduced the cost of manufactures of all sorts.

94. Reasons for the Localization of Industries. — Certain factors are recognized as influencing the localization of various industries. Among the causes for localization, seven are enumerated in the Twelfth Census[1] as follows: (1) proximity of raw-material supply; (2) readily accessible markets; (3) presence of water power; (4) favorable climate; (5) availability of labor; (6) availability of capital; (7) the momentum of an early start. The first four of these are distinctly geographical causes, while the three remaining ones are more or less determined by the first four. The data for these observations are based on the relative values of an industry in a state or city as compared with the total value of the same industry for the United States at large.

Fifteen different industries are selected to illustrate the principle. For example, it is shown that the manufacture of agricultural implements is localized chiefly in Illinois, Ohio, and New York, and further, that it has increased remarkably in Illinois, and has declined in Ohio and New York. The factors operating in the localization of this industry are first, the situation in the heart of the great agricultural section, making a ready market. This fact has caused the movement of the agricultural implement industry from New York westward on account of the cost of transporting the finished goods. A second fact is the nearness of the Ohio and Illinois districts to ex-

[1] F. S. Hall, *The Localization of Industries*. Census Bulletin.

tensive hardwood forests, while a third factor is the nearness of the iron supply.

The manufacture of boots and shoes is another industry largely localized; Massachusetts is credited with upward of 44 per cent of the total United States factory output in 1900. The establishment of the industry goes back to the early days of the colony, as a result of the centering of population in New England, and also from the fact that the largest production of leather was in that section. The industry drew capital and expert labor (hand workers) and has continued by virtue of the momentum of an early start.

Massachusetts shows over 32 per cent of all the cotton goods manufactured in the country; this is a result of the early utilization of water power and the presence of a moist climate. Its supremacy today is clearly due to the advantages of an early start. The southern States have advanced in cotton manufacture during the last decade, particularly North and South Carolina, which show a combined increase during this period of upward of two million spindles. Over fifty new mills were completed in the two states in 1900. Accessibility to the raw-material supply is here an important factor, coupled with water power, cheap fuel, and the comparatively low cost of living.

Pennsylvania produces 54 per cent of all the iron and steel of the country from the proximity to the coal, and because of iron ore, and limestone (flux) deposits of the Alleghany Plateau. In the early days it also had the advantage of the great forests of the region for fuel. The center of the industry has migrated westward from the anthracite region of eastern Pennsylvania to the western part (Connellsville region) and to eastern Ohio as a result of the use of coke (a bituminous product) in the blast furnaces, and also because of the use of large quantities of Lake Superior ore. The increase of the industry in Illinois is the result of the great market for steel goods, the supply of fuel and proximity to the ore fields.

The center of leather manufacturing (dependent upon tree bark for tanning) has migrated with the disappearance of forests in New

England and New York to the hemlock region of Pennsylvania; of late the industry has shown a tendency toward a further westward movement, following the cutting away of the Appalachian forest. The paper and wood-pulp industry is likewise dependent upon the forest as a source of raw-material supply, and also upon the presence of water power as a cheap means of running the heavy machinery for manufacture. New York, Massachusetts, and Maine lead in this industry, because of the proximity of the spruce and poplar timber which are the kinds chiefly used in wood-pulp manufacture.

The centering of the pottery industries at Trenton, New Jersey, and East Liverpool, Ohio, is again the result of an early start due originally to local deposits of clay suitable for the purpose. The Trenton potteries found a market in the eastern seaboard states, while the Ohio potteries supplied the country west of the Alleghanies. Both cities are favorably located in regard to river transportation. Each drew a large number of skilled workmen from the Staffordshire district in England. Modern railway transportation has rendered more distant clay deposits available, and the material is now brought to these centers from a distance of from fifty to a hundred miles.

The slaughtering and meat-packing industry had its origin at Cincinnati, Ohio, as early as 1818, incident to the live stock and corn production of the surrounding region, and the transportation facilities of the Ohio River. The center has migrated westward with the westward extension of the corn-belt and the cattle ranges, and it is now in Illinois; the Chicago packing industry has an output of over 35 per cent of the total United States product. This centering of the industry rests upon the fattening power of the corn-belt food supply, and railroad facilities which bring live stock from the more distant western ranges, as well as upon the perfected development of the cold-storage process of shipment.

These illustrations show the nature of the localizing process and the reasons therefor. The following table indicates some of the chief industries of the United States in regard to their localization: —

LOCALIZATION OF SPECIFIED INDUSTRIES BY STATES: SUMMARY, 1900[1]

Specified Industries	Value of products in the United States	States	Value of products in the state named	Per cent of the United States in the state named
Collars and cuffs	$15,769,132	New York	$15,703,541	99.6
Plated and britannia ware	12,608,770	Connecticut	9,538,397	75.7
Oysters, canning and preserving	3,670,134	Maryland	2,417,331	65.9
Leather gloves and mittens	16,721,234	New York	10,854,221	64.9
Clocks	7,157,856	Connecticut	4,545,047	63.5
Coke	35,585,445	Pennsylvania	22,282,358	62.6
Safes and vaults	3,927,867	Ohio	2,407,655	61.3
Whips	2,734,471	Massachusetts	1,651,221	60.4
Liquors, vinous	6,547,310	California	3,937,871	60.1
Brassware	17,140,075	Connecticut	9,269,159	54.1
Iron and steel	803,968,273	Pennsylvania	434,445,200	54.0
Carpets and rugs, other than rag	48,192,351	Pennsylvania	23,113,058	48.0
Corsets	14,878,116	Connecticut	6,846,946	46.0
Boots and shoes, factory product	261,028,580	Massachusetts	117,115,243	44.9
Agricultural implements	101,207,428	Illinois	42,033,796	41.5
Slaughtering and meat packing, wholesale	698,206,548	Illinois	279,842,835	40.1
Turpentine and rosin	20,344,888	Georgia	8,110,468	39.9
Cotton, ginning	14,748,270	Texas	5,886,923	39.9
Liquors, distilled	96,798,443	Illinois	38,208,076	39.5
Glass	56,539,712	Pennsylvania	22,001,130	38.9
Hosiery and knit goods	95,482,566	New York	35,886,048	37.6
Silk and silk goods	107,256,258	New Jersey	39,966,662	37.3
Silverware	10,569,121	Rhode Island	3,834,408	36.3
Salt	7,966,897	New York	2,698,691	33.9
Cotton goods	339,200,320	Massachusetts	111,125,175	32.8
Jewelry	46,501,181	Rhode Island	13,320,620	28.6
Leather, tanned, curried, and finished	204,038,127	Pennsylvania	55,615,009	27.3
Fur hats	27,811,187	Connecticut	7,546,882	27.2
Pottery, terra cotta, and fire-clay products	44,263,386	Ohio	11,851,225	26.8
Paper and wood pulp	127,326,162	New York	26,715,628	21.0

[1] Twelfth Census, Vol. VII.

95. Geographical Basis of the Movement of Commodities. — As has already been stated (Section 64), the entire area of the United States may be divided into six great industrial sections, in each of which certain staple agricultural industries are fundamental to its prosperity. To recapitulate briefly, these sections with their dominant agricultural features are as follows: (1) The New England and New York section, characterized by small farming and dairying interests; (2) the corn and winter-wheat belt, lying between the parallels of 43° and 35°, from the Atlantic seaboard to western Kansas and Nebraska; the raising of live stock in this region is an essential feature; (3) the cotton-belt, south of parallel 35°, and west into Texas; (4) the spring-wheat belt, north of 43° and reaching from the Lake Region to Montana and Wyoming; (5) the Plateau States, with stock raising and wool production as the chief industries; and (6) the Pacific Coast States, largely given over to agriculture and the lumber interests.

The cardinal fact involved in this industrial division of the country is that no one section is self-sufficing, but each is dependent upon the other sections for its maintenance, as to food supply, the raw materials for manufacture, and the finished products. From this fact there has originated a movement of commodities from one region to another, which has become organized into the extensive internal commerce of the country. The characteristic industry of each section determines the nature of the materials entering into this movement. Thus the industrial sections, comprising New England, New York, and the Middle Atlantic region, draw upon all the other sections for food supplies and raw materials, and in return, send out manufactured products to the country at large. Each section sends out its surplus into the channels of trade. This surplus may be greater or less according to the nature of the product, the facilities for manufacture, and the population. The entire wool clip and the vast bulk of the live stock is shipped away from the Plateau section; similarly, the greater part of the California fruit finds an east

ern market. The larger portion of the staple of the cotton-belt forms a surplus. The centralizing of the live stock and grain in the corn-belt calls for such a vast movement that most of the great trunk lines are concentrated within its borders. The bulk of the internal trade of the country is made up of the movement of a few great staple products, — grain, live stock, cotton, lumber, fruits, and coal and iron. The carrying of manufactures is a small item in comparison with the movement of these few staple commodities.

Agriculture, stock raising, mining, lumbering, and the fisheries are the fundamental or extractive industries, and form the basis of national prosperity. The outgoing or foreign trade, likewise, depends upon these industries, whether the material exported be in the raw state or as a manufactured product. The underlying principle of internal commerce is largely a physiographical one; the diversity of products which characterizes the different sections of the United States is the result of contrasted physical conditions of the several regions.[1]

96. Transportation. — The distribution of commodities depends upon transportation facilities which are largely conditioned by geography (topography). Rivers and lake chains are everywhere the natural highways of commerce. The river valley has always been a line of travel. Trails lead over mountain ranges by way of their passes. These trails may have been formed originally by various wild animals, as buffalo and deer, followed by the Indian and later by the frontiersman and the packhorse. The wagon road has naturally developed on the earlier trail, and later the railroad followed the same line.

The features of transportation in the United States require some notice of river traffic, canals, steam and electric railroads, wagon road, and coastwise commerce.

97. River Traffic. — The natural channel of the river must, in many instances, be deepened by dredging and by dams and locks at various points, in order to facilitate shipping movements. For

[1] O. P. Austin, *Geographical Basis of Internal Commerce.* In Monthly Summary of Commerce and Finance for January, 1901, pp. 1629-1630.

this work the United States annually appropriates millions of dollars (River and Harbor Bill). The larger rivers of the United States form extensive lines of waterway for the movement of its internal traffic, and were very early utilized. River traffic is practically continuous by way of the Ohio and the Missouri, from Pittsburg, Pennsylvania, to the mouth of the Yellowstone, on the border of Montana. The Mississippi affords a waterway from St. Paul, Minnesota, and from Pittsburg by way of the Ohio, to the Gulf of Mexico.

NAVIGABLE WATERWAYS OF THE UNITED STATES

Many of the Atlantic rivers are navigable for some distance inland (to the "fall-line"), and tributaries of the Ohio afford traffic facilities with the western slopes of the southern Appalachians. Transportation by water, though slower, is much cheaper than by land, owing to economy in motive power. The advantages of water transportation are thus set forth in a recent bulletin of the Treasury Bureau of Statistics: "With a few well-known exceptions, the river and canal traffic of the United States has been allowed to stand, in point of equipment, very much where it was fifty years ago, while railways

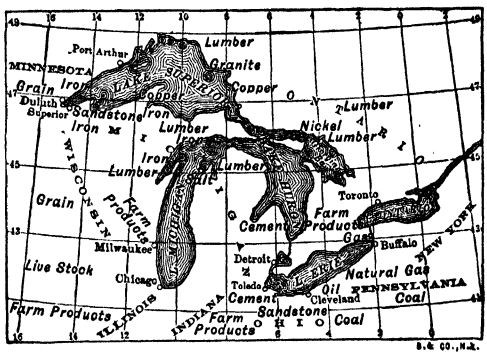
have shown an equally wonderful versatility in emancipating themselves from their mistakes in policy and uncommercial methods of management, which kill rather than encourage traffic. One of the exceptions in the development of river traffic is seen in the case of the Ohio River and its tributaries, where navigation has been greatly promoted by the construction of a series of dams, giving the city of Pittsburg a deep-water harbor throughout the entire year. During times of high water barges are floated down-stream at the cost of guidance and towing. Thus, at an outlay of about $1,000,000, many millions have not only been saved each year in freights, but markets have been retained for coal and iron from this locality, which would otherwise have been lost long since to other coal-producing and iron-making localities."[1] Facts like the above serve to illustrate the important features of river commerce.

98. Lake Commerce. — The chain of Great Lakes forms a remarkable highway of commerce, especially so since the construction of the ship-canal at St. Mary's Falls. Like many rivers, the Great Lakes are not open to traffic for several months during the winter season on account of the ice. The relation of the Great Lakes to traffic is thus well described by O. P. Austin in his report on internal commerce: "Several factors distinguish the commerce of the Great Lakes from all other water-borne traffic in which American vessels are engaged, not even excepting the movement of freights on the Mississippi River and tributary waters. . . . In the first place, the carrying trade of the Great Lakes not only embraces, almost exclusively, raw material, but is made up principally of a limited number of commodities. Secondly, it is to a great extent a through traffic — that is, the number and volume of cargoes transported from a lower to an upper Lake port, so called, or vice versa, greatly exceed the short coastwise hauls. Coal, both anthracite and bituminous, is shipped from the various ports on the south shore of Lake Erie to ports on Lakes Superior and Michigan, while flour and grain, iron

[1] See Monthly Summary of Commerce and Finance, January, 1901, p. 1695.

ore, copper, and lumber make the trip from Lake Superior and Lake Michigan ports to unloading docks on Lake Erie. The movement of unclassified freight, by no means an inconsiderable item in itself, makes up, to a very large extent, the interchange of commodities between ports in close proximity."

Certain Lake ports are closely related to areas of production and are consequently the points at which staple commodities are concentrated. Thus, Duluth, Superior, Milwaukee, and Chicago are points for a large wheat and other grain shipment. Some half-dozen Lake points are the chief centers for the shipment of iron ore. As regards destination, much of the grain reaches the elevators at Buffalo for further disbursement by rail and canal, while the proximity of the south shore of Lake Erie to the great iron and steel manufacturing centers causes most of the iron ore to be unloaded at a half-dozen ports on this shore. (See illustration opposite p. 64.)



PRODUCTIONS OF THE LAKE REGION

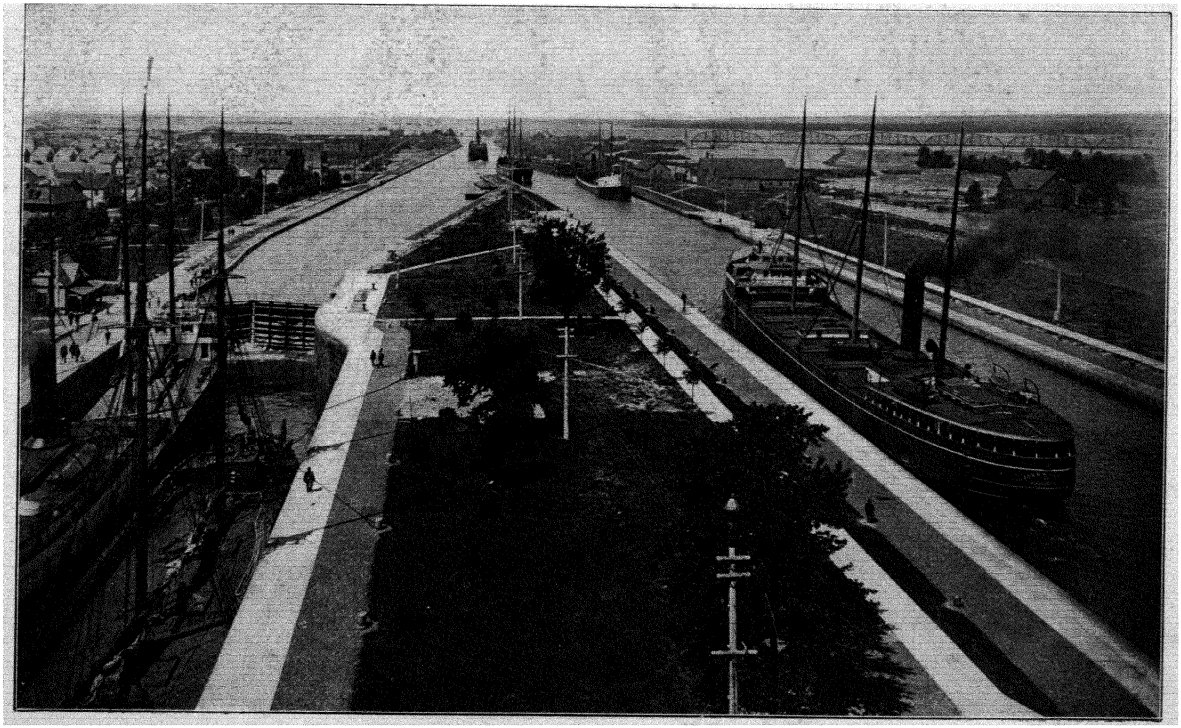
In the past twenty-one years — from 1881–1902 — the registered tonnage (net tons) that passed through the St. Mary's Canal increased more than 1500 per cent, while the total freight (in net tons) increased more than 1750 per cent. In 1902, 22,659 vessels passed through the canal. The total volume of freight that passed through the canal in the same year amounted to 35,961,146 net tons. (See p. 147.)

99. Canals. — The utilization of canals as a means of transportation was begun early in the last century. The navigability of the Hudson River from New York to Albany, coupled with the opening of the prairie region, led to the building of the Erie Canal which

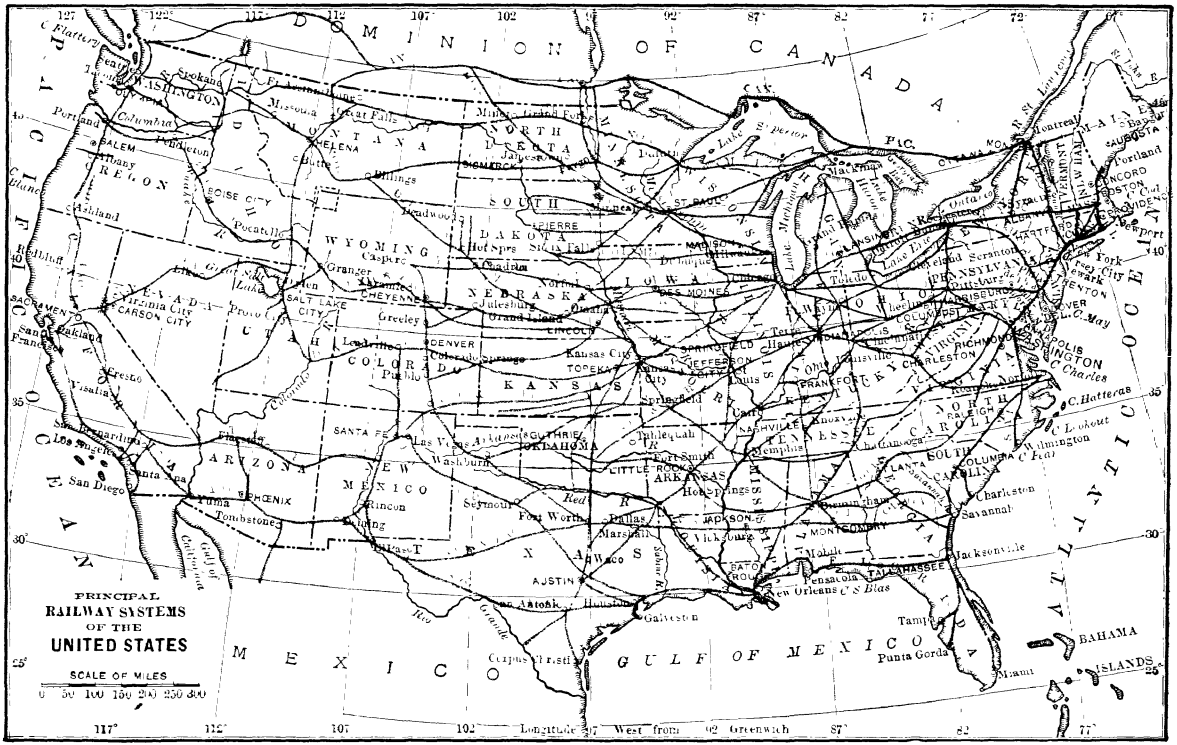
connects the Hudson, by way of the Mohawk Valley and other streams and lakes, with the Great Lakes at Buffalo. By this means a continuous waterway was opened from the Atlantic seaboard to the great interior region, and a steady stream of trade was established between the East and the West. Since then many other canals have been built, notably the Champlain Canal, which connects the Hudson River with the St. Lawrence drainage, and the "Soo" canals (ship-canals built by the United States and Canada) at Sault Ste. Marie (St. Mary's Falls), between Lake Superior and Lake Huron. The Welland ship-canal between Lake Erie and Lake Ontario, in Canadian territory, affords a continuous passage by way of the St. Lawrence, from the Lakes to the ocean. Besides those above mentioned, many small canals have been constructed in various parts of the country.

The economic effect of canals is of vast and far-reaching importance. For example, the St. Mary's Canal has not only affected commercial movements, but has likewise influenced the movement of population and has affected various industries, notably that of iron and steel. Both the "Soo" (St. Mary's) and the Suez canals have greatly increased the production of wheat by facilitating transportation. Cheaper rates to the markets of Europe have followed and large areas of new land have come under wheat cultivation, both of which factors have resulted in the reduction of the price of the cereal, and removed in large measure the possibility of famines.

100. Railroad Traffic. — At the present day the railroad is the most important carrier in the internal trade of the country. As the volume of traffic has increased, freight rates have tended to decline. Aside from the rapid strides in railroad building (bridge-work, tunneling, rolling of rails, etc.), probably one of the most important factors in the development of the American railway is the use of the swiveling truck, which enables the locomotive and its train of cars to take curves of comparatively short radii. In the early days this was an essential feature in following the windings of a river valley or in

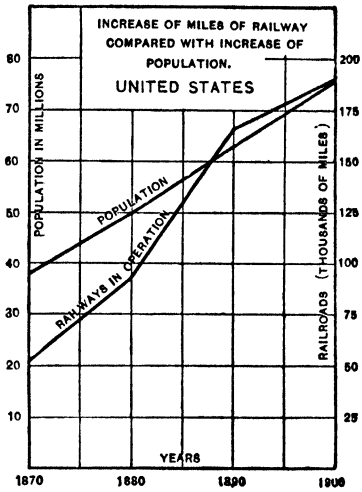


SAULT STE. MARIE ("SOO") CANAL


PRINCIPAL
RAILWAY SYSTEMS
OF THE
UNITED STATES
SCALE OF MILES
0 50 100 150 200 250 300
DOMINION OF CANADA
MEXICO
GULF OF MEXICO
PACIFIC OCEAN
ATLANTIC OCEAN
Longitude West from Greenwich

crossing a mountain region. The ease of construction on the comparatively level plains and prairie lands of the central and western States was no small factor in the rapid advance of railroading.

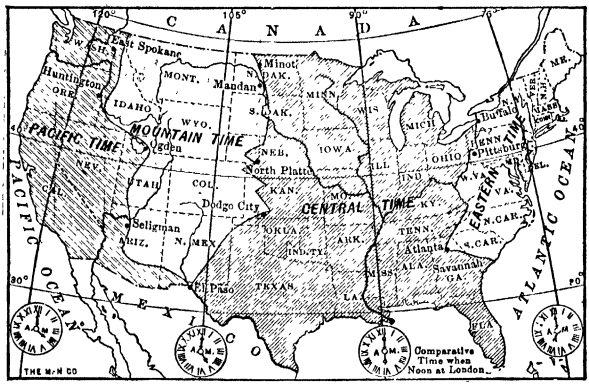
The consolidation of various railroad lines into single systems is a marked tendency in the United States. A comparatively few systems hold a controlling interest in more than 150,000 miles of railroad, or over three-fourths of the total mileage of the country. The principal railroad interests of the United States are thus grouped into five great systems, each of which consists of various lines formerly independent. Each system operates throughout a vast territory and controls a wide area of production. Freight was moved over the several lines in 1901 as follows: —



Class of Commodity	Tonnage reported as originating on line	Per cent of aggregate
Products of agriculture	56,102,838	10.76
Products of animals	15,145,297	2.91
Products of mines	269,372,556	51.67
Products of forest	60,844,933	11.67
Manufactures	71,681,178	13.75
Merchandise	21,697,693	4.16
Miscellaneous	26,493,338	5.08
Grand total	521,337,833	100 [1]

[1] *Statistics of Railways*, Interstate Commerce Commission Report, 1901.

101. Standard Time and the Time Belts. — In running trains across such a broad stretch of country as the United States, it is of the utmost importance to have a uniform system of time over certain "belts." For convenience railroad companies have adopted a system of "Standard Time" by dividing the United States from east to west into four time belts, as follows: (1) The region of *Eastern Time* — reckoned on the 75th meridian; *i.e.* when the sun is on this meridian, it is 12 noon for all places within this belt, no matter what may be the "local time" of such places; (2) *Central Time*, reckoned on the 90th meridian; (3) *Mountain Time*,



TIME BELTS

reckoned on the 105th meridian; and (4) *Pacific Time*, reckoned on 120th meridian. Each of these four meridians runs approximately through the middle of its time belt, though the boundaries of the belt are irregular, since, for certain railroads in a given district, it is more convenient to keep the same time than to change for a short distance into the next belt. Thus the eastern belt includes all the territory between the Atlantic coast and an irregular line drawn from Buffalo to Charleston; the central belt from this line west to an irregular line running through Bismarck, North Dakota, to the Rio Grande at the western border of Texas; the mountain

belt west from this to an irregular line running through western Montana, Idaho, western Utah, and the western border of Arizona ; the Pacific belt from this to the shores of the Pacific Ocean. There is one hour's difference between adjacent time belts. Thus, when it is nine o'clock A.M. for all places in the eastern time belt, it is eight o'clock A.M. for all places in the central time belt, seven A.M. for all places in the mountain belt, and six A.M. for all places in the Pacific time belt. In passing from one time belt to the next in going west, watches are set back one hour ; and in going east they are set forward one hour.

The local or actual sun time of a place differs somewhat from its standard time, varying according to its distance from the meridian. Thus the actual time at New York is four minutes faster than the standard.

102. Electric Roads. — In recent years the trolley has become an important short-distance carrier. In many instances it reaches regions into which the railroad has not penetrated and it has stimulated trade by the development of localities which before had been out of touch with the centers of commercial activity. The chief economic features of electric road are rapid and cheap transportation. In this way they have cut into the suburban traffic of the steam roads. Continuous trolley transportation is now in operation between many cities through systems of connecting lines. The cost of building and maintaining the roadbed is much less than in the case of steam roads, and public highways are utilized in many cases. A decided advantage has been effected by the trolley in developing suburban life and preventing the overcrowding of the large cities. Electric lines in various parts of the country have become important carriers of market produce, milk, butter, etc., from outlying districts to the centers. This phase of their activity will undoubtedly be of growing importance in the future.

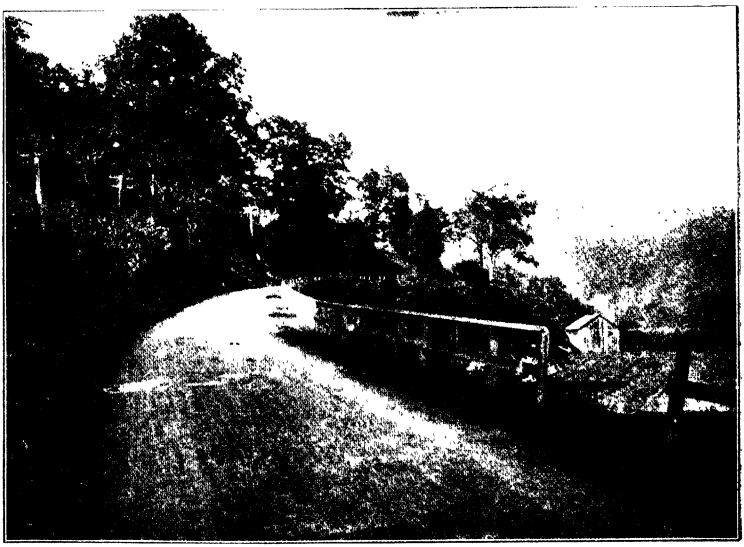
103. Wagon Roads. — The question of good wagon roads is a vital one in the problem of transportation. It has been demonstrated

that it often costs more to move a ton of hay, or a bushel of wheat, ten miles over an ordinary country road than to transport it five hundred miles by rail or two thousand miles by water. Bad roads are a menace to the trade of a region, for the farmers frequently let their crops go to waste from inability to get them to market. As Mr. Dodge of the Office of Public Roads Inquiries says: "To those who follow the trade reports of the newspapers, the announcement of a rise in the price of some staple, 'due to inability to market the crop on account of the impossible condition of the country roads,' is familiar reading at certain seasons of the year. It has happened that the success or failure of a skillfully manipulated 'corner' has depended likewise upon the dominance of 'King Mud,' and that the bottomless state of rural highways, making country trade dull and wholesale collections slow, has been responsible for a serious stringency in the money market."

The Good Road Movement that is now being pushed in many states, aims to bring before the public the advantage of well-constructed highways, not only from an industrial and purely business point of view, but also from their effects on the general welfare of communities. The use of the bicycle and, more recently, of the automobile, have contributed to the interest in the movement for good roads.

104. Coastwise Commerce. — The carrying of merchandise from one port to another has always been an important feature of the commerce of the seaboard states. By this means the New England factories gained cheap transportation for the raw cotton of the South. An increase in the number of sailing schooners built on the Atlantic coast (notably in Maine) is an important commercial fact of recent years. This type of vessel is the one most in use as a carrier in the coasting trade of the Atlantic and Gulf seaboard, while the "steam-driven schooner" is the one most in vogue on the Pacific coast. Coal, lumber, cotton, etc., are among the more important commodities handled in this way. Boston depends upon the coast-

MASSACHUSETTS ROAD BEFORE IMPROVEMENT



MASSACHUSETTS ROAD AFTER IMPROVEMENT

wise transportation of coal for its supply of fuel. This is due to the fact that the economic movement of coal from its area of production is first toward the seaboard by the shortest line of hauling. The use of steam machinery in manipulating sails and in loading and unloading cargoes, is increasing of late the prominence of the sailing craft at the expense of the steamship.[1]

Only vessels flying the American flag can engage in the coastwise trade, and this has been a very important factor, not only in the development of the trade itself, but in fostering the ship-building industry on both the Atlantic and Pacific coasts. Maine has always had a prominent place in ship-building for the coast trade, owing to the nearness of the lumber supply. The same advantage is enjoyed by the states of Washington and Oregon.

105. The Movement of Grain. — The importance of corn as a food for stock has already been alluded to (p. 90). Various experiments tend to show that the money return from a corn crop is increased by converting it into fat animals. This twofold demand for the product — *i.e.* for stock raising within the corn-belt and for shipment — has increased its importance. If meat is relatively high, it will obviously be to the advantage of the producer to convert his corn into meat; but if, through failure of foreign crops or other causes, the value of corn is relatively increased, the advantage will be in selling it direct. These facts have a definite bearing on the movement of the surplus. Eight or ten of the largest primary grain markets of the country are located in the corn and winter-wheat belt, and this, together with the centers of live stock concentration in the same area, has determined the centralizing of the railroad lines in this section. The western half of the corn-belt is the area of greatest production, while in the eastern half are located the great centers of consumption. The movement is thus largely an eastern one for both grain and live stock products.

A great corn center like St. Louis will serve to illustrate the general

[1] Monthly Summary of Commerce and Finance, January, 1901, p. 1693.

movement. At this market, in 1899, 23,300,000 bushels of corn were received, of which more than 20,000,000 bushels were disbursed as a surplus. Of this surplus shipment, over 52 per cent found its way to the markets of the Atlantic seaboard by rail, 39 per cent was distributed throughout the eastern and southern sections of the country, and only 8 per cent entered into export trade by way of New Orleans. These facts clearly illustrate the important place of home consumption in the case of corn.[1]

The commercial value of wheat lies in the fact that it is wholly a breadstuff and almost never, like corn, used as a stock food. For this reason it enters more largely into the world's cereal movement and is in close competition with the foreign wheat supply, particularly that of Russia, India, Australia, and Argentina. The hard-grained spring wheat, unless concentrated for manufacture at the great milling centers of Minneapolis and Superior, finds its way into the channels of trade, mainly through Duluth and other upper Lake ports, to lower Lake ports, from which it is disbursed by canal and railway to the eastern and seaboard centers of consumption.

The development of the milling industry follows closely upon the spread of wheat growing. Not only the large mill, but the small one as well, finds an increasing market for its flour, and the competition thus involved benefits both producer and consumer. The spread of wheat tends to widen the industry, and its concentration at particular points is determined by the best facilities for distribution. The demand for wheat at such milling centers as Minneapolis and other Minnesota towns causes some movement of the grain from the northwestern area of Washington and Oregon, as well as from Canada. The extreme northwest is rapidly becoming an important wheat-producing section, and is also introducing some milling industries of its own. Columbia River and Puget Sound afford lines of outlet, and the surplus of the crop finds an export trade to Asiatic markets, in addition to what is sent to Hawaii and southern Pacific coast points.

[1] Monthly Summary of Commerce and Finance, January, 1901, p. 1635.

The chief centers for the concentration and distribution of the grain crop of the United States are the large Lake and river ports of the middle section of the country. These are advantageously situated in relation to the corn-belt and wheat-producing areas. There are eleven principal markets, several of which have vast elevator capacity for storage: Chicago (elevator capacity over 57,000,000 bushels); St. Louis (11,000,000 to 12,000,000 bushels); Kansas City (over 6,000,000); and Minneapolis, Duluth, Superior, Milwaukee, Detroit, Cincinnati, Peoria, and Toledo. Farther east, Buffalo is an important center of the Lake grain trade, because of its relation to the Erie Canal and various lines of railroad. Most of the corn consumed at Peoria is used in the distillation of alcoholic products.

106. The Movement of Live Stock. — Three principal areas are sources of the cattle supply: (1) The southern, including Texas, Oklahoma, and Indian Territory; (2) the western ranches of Colorado, Wyoming, Montana, and North and South Dakota; and (3) the corn-belt states. From these areas the cattle are moved by train to the central markets, which, with the exception of Chicago, are on the Missouri River. The rate of concentration at these centers is enormous. Thus, for example, at the five principal points — Chicago, Kansas City, Omaha, St. Louis, and St. Joseph, upwards of 185,000 head of cattle, 466,000 hogs, and 193,000 sheep were received in one week during the year 1900. Of late years a heavy western movement of live stock has also taken place from the Rocky Mountain States to the Pacific coast, because of the inflow of settlers and the growth of towns in the northwest. The establishment of the meat-packing industry at various points on the Pacific coast bids fair ultimately to compete with the packing centers of Chicago and the Missouri River points. These meat-packing establishments in the far West are in part the result of the development of Asiatic and Pacific trade. The stock movement from the Mountain States is thus in two directions, eastward and westward, with a resulting advantage to the producer and a general development of the section.

Following on the demands of the market, the general tendency of cattle raising at present is toward the improved breed for fattening, with the gradual disappearance of the long-horned type of Texas steer. Large numbers of range cattle now find a sale for fattening on the farms of the corn-belt states. Just as the increased demand for the Minnesota milling industry draws wheat from Canada and the far northwest, so the packing industries exhaust the country's supply,

and regularly draw cattle from beyond the Mexican border to be fattened in the corn-belt. The great provision centers which are dependent upon live stock products, are included within a triangular territory, formed by the Missouri and the Ohio rivers on two sides, and on the third by a line reaching from Pennsylvania to Nebraska.[1]

107. The Movement of Cotton. — The distribution of cotton is first from its areas of production to the Atlantic and Gulf sea-

[1] Monthly Summary of Commerce and Finance, January, 1901, p. 1663.

board, its movement from thence being by water. More than half the cotton of Texas and Indian Territory reaches Galveston as a centralizing and distributing point. The Mississippi River and its tributaries gather the crops of Louisiana, Mississippi, Tennessee, Oklahoma, Arkansas, and other parts of the region and centralize the product at New Orleans. The cotton from Alabama and the South Atlantic cotton States, finds its way by rail to the South Atlantic seaboard, chiefly Charleston and Savannah. A certain amount of cotton is moved by rail from the areas of production to northern and eastern factories; some of the cotton from Texas thus comes a distance of 2000 miles. The bulk of the movement, however, is towards the South Atlantic and Gulf seaboard.

Upwards of 10,000,000 bales of cotton are yearly produced, (1901–1902), approximately one-tenth of which is consumed within the area of production. Quite a proportion of the cotton manufactures of the country are now in the cotton growing states. It is not unlikely that these states may yet manufacture the bulk of their product. Of the surplus about 2,000,000 bales go to the northern manufacturing centers, the remainder (over 6,000,000 bales) enters into foreign trade. The increased growth of the cotton-mill industry in the South is attended by an increased stimulus to various other departments of trade throughout the country at large. In nine southern States, during the year 1900, 131 cotton mills were built, against 40 new mills in nine northern States. "The influence of this fact on the cotton movement is far-reaching. In the first place it changes the haul of the raw materials from a long to a short one, and therefore reduces the proportion of expense which enters into the cost of the manufactured product. It furthermore increases the purchasing power of the southern communities in which this raw cotton is manufactured, and thus quickens commerce from every quarter of the Union; upon this commerce southern communities become more dependent. The general effect, therefore, is to increase the demands

of the South, on the northern and western manufacturing centers and farm communities."[1]

108. The Movement of Coal and Iron. — The position of the coal fields calls for coal movement by rail. It is obviously desirable to make this as short as possible on account of the cost of rail transportation. Two divisions occur in the main distribution of coal from the mines, — first, rail haulage to near-by Atlantic seaboard and Lake ports, and second, water transportation to more distant coastwise and Lake points for consumption and further distribution. The shipments of coal to the Atlantic seaboard cities is one of the largest items in the entire yearly internal trade of the country. Large quantities of coal are shipped to lower Lake ports for consumption and for further distribution, notably through Buffalo, Erie, and Cleveland. The source of this supply, both to the Lakes and the seaboard, is in the coal-producing areas of Pennsylvania, West Virginia, Maryland, Ohio, Indiana, and Illinois. The southern coal trade is supplied to a growing extent by Alabama, Kentucky, and Tennessee. Colorado, Iowa, Kansas, Missouri, and Wyoming are the chief coal-producing states west of the Mississippi, while Washington is the only state on the Pacific coast that produces coal of commercial value in any quantity.

The movement of iron is intimately related with the movement of coal. The Pittsburg district of western Pennsylvania produces approximately one-half of the total pig iron made in the United States. This calls for a supply of ore which comes mainly from the Lake Superior region by a long water and rail haulage. Important centers of pig iron production also occur in Ohio, Illinois (South Chicago), and Alabama (Birmingham). The above facts serve to show some of the features of the movement of these two great commodities. Not only are coal and iron important in themselves, but they serve as a basis for more general industrial activity.

109. The Movement of Lumber. — There are several important

[1] Monthly Summary of Commerce and Finance, January, 1901, p. 1660.

areas of distribution in the lumber trade, in each of which, one or more markets receive the bulk of the products. In 1900 New York City handled a quantity of lumber aggregating over a billion feet. There were four main movements: (1) From the South, the products being chiefly yellow pine which was transported by water; (2) from Maine and other points to the eastward, likewise coming by water; (3) a movement by rail from the interior which is second in importance to the southern movement; and (4) a movement by way of the canals and the Hudson River.

St. Louis is an important lumber market of the central region, having cheap transportation and being conveniently situated in relation to both the northern and southern areas of the Mississippi Valley. Chicago is an important center in the Lake Region. The white pine and hemlock timber of the pine belt finds its way through the upper Lake ports, and by way of the Mississippi, into the general commercial movement. On the Pacific coast there are two main movements, one by rail and the other by water. Fully one-third of the cargo shipment of lumber from British Columbia, for 1900, was to eastern points by way of Cape Horn. This region is adjacent to the Washington timber area. The rail movement from Washington is mainly eastward, reaching to the Mississippi Valley.

SUMMARY OF LAKE COMMERCE 1901 AND 1902.[1]

Commodities	Receipts		Shipments	
	1901	1902	1901	1902
Flour . . . . . barrels	14,257,020	16,765,550	14.028,140	16,292.560
Grain and flaxseed . . . bushels	153,508,928	130 700,987	150,870,192	126.207.984
Coal . . . . . net tons	9.205,764	8,255.117	9,480,541	9,632.966
Ore and minerals . . . gross tons	20,770,447	27,898,424	20,872,470	27,854,152
Lumber and logs . . . . M feet	2,475,430	2,500,797	2,454.060	2 399.958
Unclassified freight . . . net tons	4,238,178	5,438,647	4,275,208	5,132,556
Total freight reduced to net tons	45,007,019	54,074,729	45,138,420	55,045.636

[1] Bureau of Statistics, Treasury Department.

SUGGESTED QUESTIONS AND TOPICS

75. The following occurs in Washington's Farewell Address (1796): "The North, in an unrestrained intercourse with the South, finds, in the productions of the latter, great and additional resources of maritime and commercial enterprise and precious materials of manufacturing industry. The South, in the same intercourse, benefiting by the agency of the North, sees its agriculture grow and its commerce expand. The East, in like intercourse with the West, already finds, and in the progressive improvement of interior communications by land and water, will more and more find a valuable vent for the commodities which it brings from abroad, or manufactures at home. The West derives from the East supplies requisite to its growth and comfort, and it must of necessity owe the secure enjoyment of indispensable outlets for its own productions to the weight, influences, and the future maritime strength of the Atlantic side of the Union, directed by an indissoluble community of interest as one nation." Explain the preceding as a statement of the benefits of internal commerce. Consider it under the heads of prophecy already fulfilled, and prophecy to be fulfilled.

76. What were the percentages of rural and urban population of the last three censuses? How do you account for the change?

77. What are some of the advantages and disadvantages of the centralization of manufactures and different branches of commerce?

78. Take an outline map of the United States and draw boundaries for the chief trade areas. Mark on this map the principal raw products and manufactures in each area.

79. President Grant is said to be the only national executive to make a pun in an annual message. It was, "Agriculture is the groundwork of our national resources." How largely is this statement true to-day? For the last census year what proportion of the total wealth produced in the United States was in agricultural products?

80. Locate the "Iroquois trail," the "Kittanning path," and other portages of the Alleghanies. What is indicated by the succession of buffalo trail, Indian path, pack train and wagon road of frontiersmen, and later of canal and railroad, along one of these lines? (Hulbert, *Historic Highways*, Vols. I and II.)

81. What is meant by the "canalizing" of a river? Upon what does the commercial value of a river depend? (See p. 220, Question 152.) What are the chief advantages of your nearest important commercial river?

82. What are the peculiar qualities of the Lake steamers termed "whale-backs"?

83. The governor of Minnesota in a public address (Minneapolis, 1902) claimed a greater freight shipment from Duluth and its neighboring port of Superior, than is shipped from any other port in the United States. Substantiate or disprove this claim. How do you account for the large shipments from Duluth?

84. How many vessels on the average passed through the "Soo" Canal for every day of the last season of navigation? Compare with shipping through the Suez.

85. In railroading usage what is meant by "coaler"? By "granger"? By "trunk line"? Illustrate each of these, showing the termini, the chief cities served, and the commodities moved.

86. Consider the relation between electric roads and steam roads as "great arteries" and "feeders." Can you see any good reason why there should be rivalry between these as instruments of transportation? Investigate the experiments with the "freight trolley" about Cleveland, Ohio, and in Massachusetts. (Special Report of the Massachusetts Railway Commission on the latter.)

87. Get documents from the Public Roads Inquiries Office of the Department of Agriculture, consult magazine articles, and prepare an essay on The Recent Movement for Good Roads.

88. What have been the effects on ships and shipping from reserving coastwise commerce of the United States to American ships? Compare our merchant fleet engaged in domestic commerce with our fleet engaged in foreign trade. (See p. 153.)

89. Consider the commerce of the following cities: Boston, Pittsburg, Savannah, New Orleans, St. Louis, Kansas City, Portland, and San Francisco. Study each city according to the following plan: (*a*) the raw materials for which it is a distributing point; (*b*) the manufactures carried on in or close about the city; and (*c*) its transportation advantages.

90. What three routes are available for the shipment of Minnesota grain? What will determine choice of routes?

91. Can you account for the prevalent "small shop" industries of New York City and the large industrial establishments of Philadelphia?

92. Discuss the statement, "no nation is so near to starvation as the one that gives itself solely to the raising of food products."

93. Sketch the industrial development of the South since 1870. To what has this "New South" been due? Twelfth Census, Vol. VII.

Books to be Consulted

**Treasury Department, Monthly Summary of Commerce and Finance, January, 1901.

*Rocheleau, *Manufacturing*. Great American Industries, Volume III. Flanigan Company, Chicago. Elementary.

*Lawson, *American Industrial Problems*. Chapters XIV and XV, Railways, and XXIV to XXIX, Typical Industries.

*Johnson, *Inland Waterways*. Publications of American Academy of Political and Social Science.

*Twelfth Census on Manufactures.

CHAPTER X

WIDER TRADE OUTLOOK OF THE UNITED STATES

"*The era of exclusiveness is past.*"
— WILLIAM MCKINLEY.

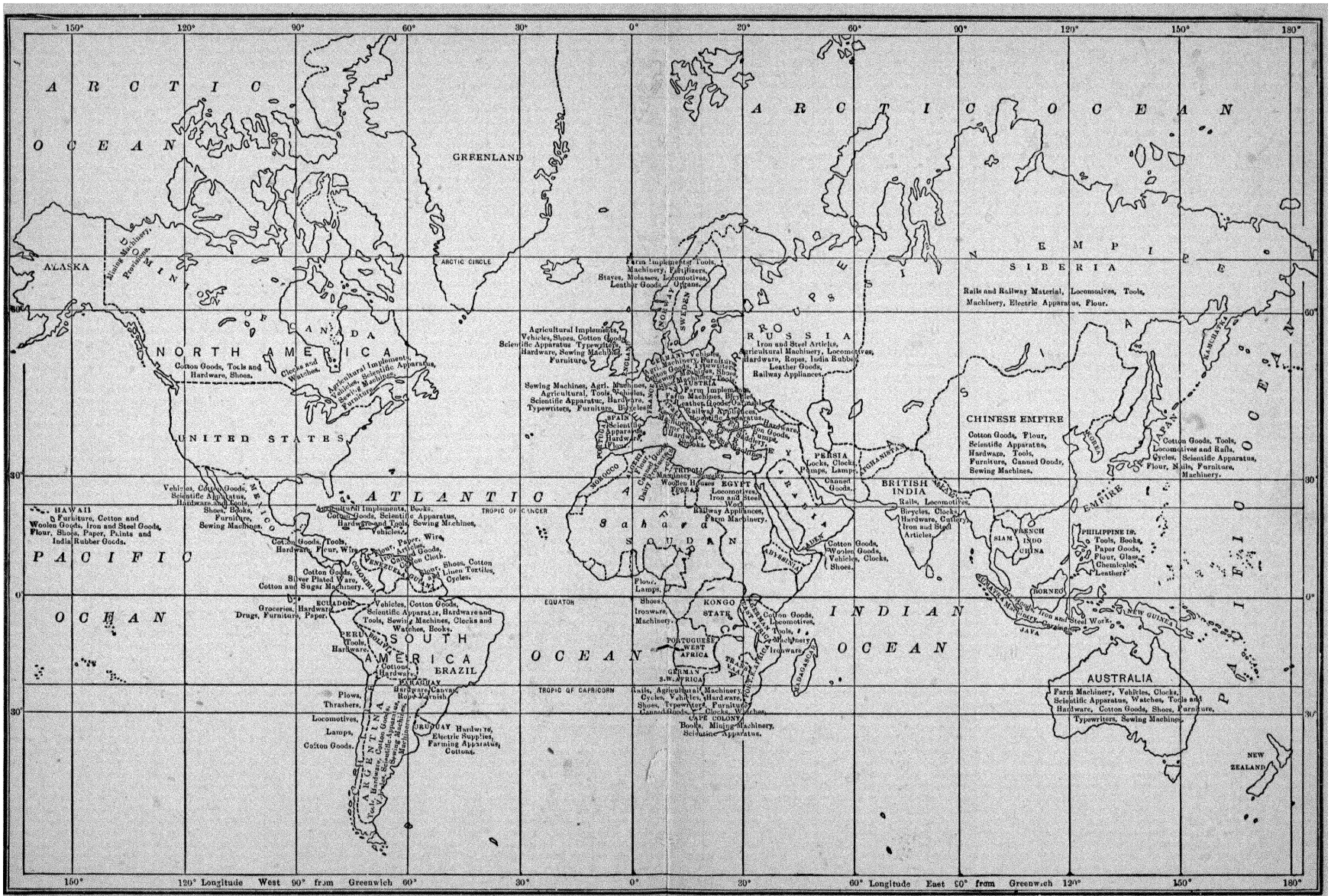
110. New Trade Outlook. — The crowning and closing words of President McKinley's life marked the ushering in of a new commercial era. The rapid development of the means of transportation since the completion of the first great transcontinental railroad in 1869, has caused an enormous increase in production, particularly in agriculture. For example, the increased transportation facilities have doubled the yearly production of wheat in the past thirty years, and more than doubled the annual corn production during the same period. In three decades cotton production has increased 150 per cent, and the yearly production of wool has advanced from 150,000,000 pounds to more than 300,000,000 pounds. The growth in the production of mineral products has been even more rapid.

EUROPE	$215,000,000	—	52%
NORTH AMERICA	$96,000,000	—	23%
ASIA	$34,000,000	—	8%
OCEANIA	$29,000,000	—	7%
SOUTH AMERICA	$27,000,000	—	7%
AFRICA	$11,000,000	—	3%

UNITED STATES' EXPORTS OF MANUFACTURED PRODUCTS FOR 1901, APPROXIMATED IN MILLIONS OF DOLLARS

Total, $412,000,000

At the same time there has been a marked fall in the transportation


ARCTIC OCEAN
GREENLAND
ALASKA
ARCTIC CIRCLE
NORTH AMERICA
Cotton Goods, Tools and Hardware, Shoes.
Clocks and Watches.
Agricultural Implements, Vehicles, Scientific Apparatus, Sewing Machines, Furniture.
UNITED STATES
HAWAII
Furniture, Cotton and Woolen Goods, Iron and Steel Goods, Flour, Shoes, Paper, Prints and India Rubber Goods.
PACIFIC OCEAN
ATLANTIC OCEAN
TROPIC OF CANCER
EQUATOR
TROPIC OF CAPRICORN
SOUTH AMERICA
BRAZIL
ARGENTINA
Locomotives, Lamps, Cotton Goods.
Plows, Thrashers.
Electric Supplies, Farming Apparatus, Cottons.
Graceries, Drugs, Furniture, Paper.
Cotton Goods, Silver Plated Ware, Cotton and Sugar Machinery.
Agricultural Implements, Books, Cotton Goods, Scientific Apparatus, Hardware and Tools, Sewing Machines, Vehicles.
Cotton Goods, Tools, Hardware, Flour, Wire.
Paper, Wire, Cotton Goods, Cotton Cloth.
Shoes, Cotton Goods, Linen Textiles, Cycles.
Vehicles, Cotton Goods, Scientific Apparatus, Hardware and Tools, Sewing Machines, Clocks and Watches, Books.
Cotton Goods, Hardware.
Hardware, Canvas, Rope, Cotton.
Farm Implements, Tools, Machinery, Explosives, Staves, Molasses, Locomotives, Leather Goods, Organs.
Agricultural Implements, Vehicles, Shoes, Cotton Goods, Scientific Apparatus, Typewriters, Hardware, Sewing Machines, Furniture.
Sewing Machines, Agri. Machines, Agricultural, Tools, Vehicles, Scientific Apparatus, Hardware, Typewriters, Furniture, Bicycles.
RUSSIA
Iron and Steel Articles, Agricultural Machinery, Locomotives, Hardware, Ropes, India Rubber, Leather Goods, Railway Appliances.
SIBERIA
Rails and Railway Material, Locomotives, Tools, Machinery, Electric Apparatus, Flour.
CHINESE EMPIRE
Cotton Goods, Flour, Scientific Apparatus, Hardware, Tools, Furniture, Canned Goods, Sewing Machines.
Cotton Goods, Tools, Locomotives and Rails, Cycles, Scientific Apparatus, Flour, Nails, Furniture, Machinery.
JAPAN
KAMCHATKA
PERSIA
Locks, Clocks, Pumps, Lamps, Canned Goods.
EGYPT
Locomotives, Iron and Steel Work, Railway Appliances, Farm Machinery.
Cotton Goods, Woolen Goods, Vehicles, Clocks, Shoes.
BRITISH INDIA
Rails, Locomotives, Bicycles, Clocks, Hardware, Cutlery, Iron and Steel Articles.
FRENCH INDO CHINA
SIAM
PHILIPPINE IS.
Tools, Books, Paper Goods, Flour, Glass, Chemicals, Leathers.
BORNEO
JAVA
Iron and Steel Work, Carriages.
NEW GUINEA
AUSTRALIA
Farm Machinery, Vehicles, Clocks, Scientific Apparatus, Watches, Tools and Hardware, Cotton Goods, Shoes, Furniture, Typewriters, Sewing Machines.
NEW ZEALAND
KONGO STATE
Cotton Goods, Locomotives, Tools, Machinery, Ironware.
PORTUGUESE WEST AFRICA
GERMAN S.W. AFRICA
CAPE COLONY
Rails, Agricultural Machinery, Cycles, Vehicles, Hardware, Shoes, Typewriters, Furniture, Canned Goods, Clocks, Watches, Books, Mining Machinery, Scientific Apparatus.
MADAGASCAR
Shoes, Ironware, Machinery.
Flour, Lamps.
Railway Appliances, Farm Machinery.
Woolen Goods.
Locomotives, Iron and Steel Work.
Machinery, Electric Apparatus, Cotton Goods, Scientific Apparatus, Typewriters, Furniture, Bicycles.
Farm Implements, Machinery, Explosives, Staves, Molasses, Locomotives, Leather Goods, Organs.
Farm Machines, Bicycles, Leather Goods, Cutlery, Railway Appliances.
Hardware, Cotton Goods, Pumps, Machinery.
Scientific Apparatus, Hardware, Flour.
Shoes, Books.
Machinery, Woolen Goods.
Woolen Goods, Hardware.
Cotton Goods, Woolen Goods, Hardware, Machinery, Railway Appliances.
Cotton Goods, Woolen Goods, Vehicles, Clocks, Shoes.
Railway Appliances, Farm Machinery.
Locomotives, Iron and Steel Work.
Canned Goods.
Locks, Clocks, Pumps, Lamps.
Machinery, Woolen Goods.
Woolen Goods, Hardware.
Cotton Goods, Woolen Goods, Vehicles, Clocks, Shoes.
Railway Appliances, Farm Machinery.
Locomotives, Iron and Steel Work.
Machinery, Electric Apparatus, Cotton Goods, Scientific Apparatus, Typewriters, Furniture, Bicycles.
Farm Machines, Bicycles, Leather Goods, Cutlery, Railway Appliances.
Hardware, Cotton Goods, Pumps, Machinery.
Scientific Apparatus, Hardware, Flour.
Shoes, Books.
Machinery, Woolen Goods.
Woolen Goods, Hardware

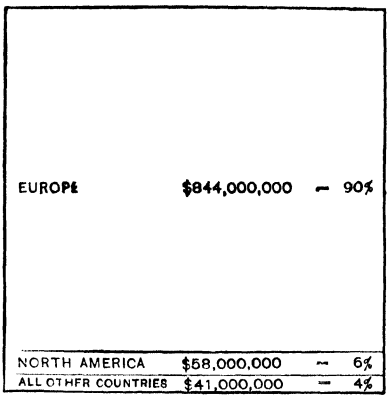
rates,—the cost of shipping wheat by rail from Chicago to New York, for example, having declined upwards of 20 cents per bushel. One striking effect of this increased production of raw material has been enormously to increase manufacture. Upwards of 5,500,000 persons are now engaged in the various manufacturing industries as against 2,000,000 in 1870. The money in circulation has also increased from $17.50 per capita to $28.66 per capita. As Mr. O. P. Austin of the Bureau of Statistics has remarked in a recent paper, all this has come about within the short space of thirty years, during which time the population increased 100 per cent.[1]

111. Commercial Expansion. — The effect of this immense increase in both raw and manufactured products is to create a surplus which must find a market outside of the United States. In 1902, the United States stood second only to Great Britain in the value of exports, and very nearly equaled that country. The United States' exports in 1900 and 1901 were larger than for 1902, and in the former years this nation took first place in the value of the export trade. Germany stands third as an exporting nation. As an importing nation, the United States occupies third place, Great Britain and Germany having a larger import trade. It is estimated that nearly 45 per cent of the United States' imports is raw material for use in the various manufacturing industries, which require more material than the country itself supplies; much of this is returned as finished goods to the world's markets.

The demand for American goods in foreign markets is due to their cheapness and excellence. Increase in our foreign sales is also affected by the variety of the goods produced. As a British writer has recently said, "From shaving-soap to electric motors, and from shirt-waists to telephones, the American is clearing the field." "Nothing could well be more gratifying," says Mr. Frederic Emory, of the Bureau of Foreign Commerce, "than the picture of our foreign trade as it is to-day by comparison with the figures of very recent years.

[1] *The World's Work*, August, 1902.

It is all the more remarkable because our progress has been achieved with but little effort, and by means not directed specifically to the promotion of foreign trade, but is largely fortuitous, and springing from our intense absorption, for many years, in domestic industry and internal development. In other words, we have reached a surprising eminence in the exportation of manufactured goods, not because we were seeking that goal, but because, in developing our resources, and in manufacturing for the home market, we attained an excellence and comparative cheapness of production which, to the astonishment of ourselves as well as of the world at large, has suddenly made us a formidable competitor,—perhaps the most formidable of all,—in the great international rivalry for trade."[1] Viewed in this light, foreign trade is, after all, only the expansion of the internal commerce of the country — the doing well of what lies nearest at hand.



UNITED STATES' EXPORTS OF AGRICULTURAL PRODUCTS FOR 1901, APPROXIMATED IN MILLIONS OF DOLLARS

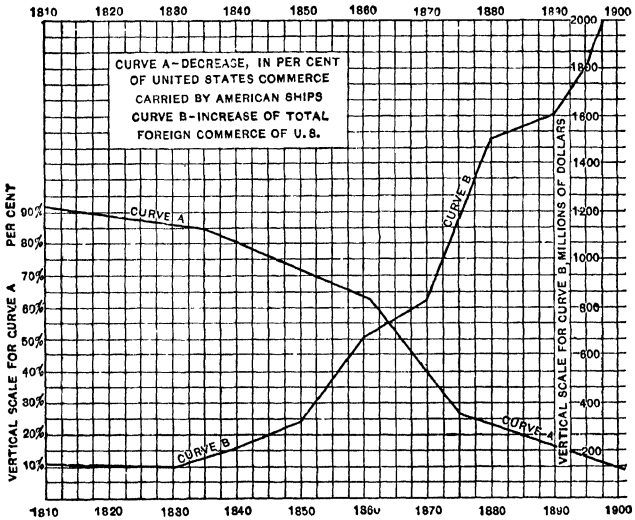
Total, $943,000,000

There are certain other factors, however, to be taken into consideration in the review of our commercial expansion. One of these is the establishment of favorable trade agreements, and another the increase of the merchant marine. Special trade agreements have at various times been brought into force between the United States and several other countries. The establishment of an American merchant marine on a larger scale is a necessity, if we wish to secure the full advantages of foreign commerce. The subsidizing of steamship lines by the

[1] Introduction to Review of the World's Commerce for 1900, Department of State, Vol. I, p. 21.

government has of late been urged as an important aid to secure regular steamship service.

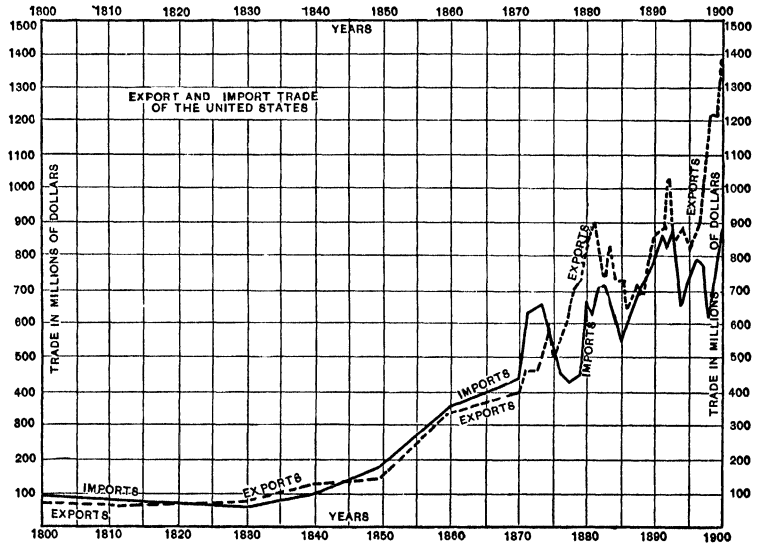
One of the chief obstacles to the building up of a large merchant marine is the difficulty of securing regularity of shipment, and return cargoes. Experience has shown that in several instances an increase of trade has developed in both directions by putting into operation a line of steamships as regular carriers between certain foreign ports and the United States. This is illustrated in the regular communi-



cation established with various countries. The excellence of our consular service is another factor in the growth of American commerce abroad. The consular reports submitted to the Bureau of Foreign Commerce, indicate with tolerable accuracy the character and volume of trade in different parts of the world and keep our producers and business houses in touch with the needs of foreign markets.

112. Fundamental Principles. — The underlying principle of foreign trade is the same as that which underlies the internal trade of

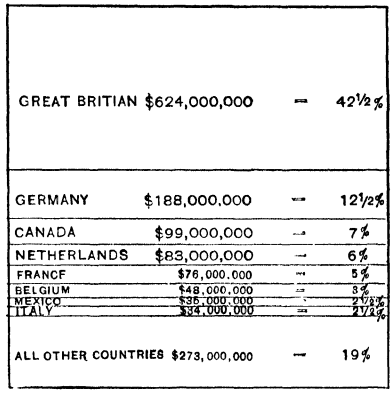
the country. It was seen in reviewing the different industrial sections of the United States that no one of them is economically self-sufficient, and that the demand for outside products and the ability to furnish products of its own, in the case of each of the sections, based on the physiographical features of the cultivated regions, were the vital principles that have expanded into organized commercial life. The same principles hold in the relations of the country as a whole to the world at large. Though the United States might exist in a state of



self-sufficiency for a greater or less length of time, it would do so at the expense of its national vitality. The demands of the industrial life regularly overreach the country's capacity for production and draw its raw material from outside of the national domain. This was seen to be the case in the milling and cattle industries (see p. 144), and it is true of other branches of industry. The physical contrasts between different countries, the want of self-sufficiency, the varying industrial activities, and the surplus of production over consumption,

call into existence a world movement of commodities which has been organized into the foreign commerce of nations. The great contrast that exists between the temperate zone and the tropics is a fundamental factor in the world's trade to-day, and the development of commercial activity with this in mind calls for careful consideration on the part of governments, and the establishment of a sound policy based on the reciprocal advantages of trade.

113. Tropical Colonization and Control. — The statement above made concerning the trade between tropical and temperate lands, leads naturally to a question of the control of the tropics. That tropical lands will come more and more under the control of outside peoples, is apparent from the present efforts toward expansion on the part of the leading nations, and also from recent experiences in the tropics. The Dutch and Portuguese in the East, the Spanish influence in tropical America, the British control of India, the French in Indo-China and Tonquin, the Russian invasion of China, the partition of tropical Africa, the United States in the West Indies and the Philippines, are familiar. These facts do not imply that tropical colonization has ever taken place or is ever likely again to take place in the same way as North America was colonized by Europeans, or as Siberia is being colonized by Russians to-day. It is true that tropical America has become Spanish America, but only through widespread intermarriage with the native peoples and the universal employment of a peasant class in labor, not by colonization in the strict sense of the



COMMERCE OF UNITED STATES (1900–1901). EXPORTS BY COUNTRIES, APPROXIMATED IN MILLIONS OF DOLLARS

Total, $1,460,000,000

word. For reasons already pointed out (p. 24) permanent residence in the tropics by white peoples is hardly possible on the scale to establish permanent settlements. The tropics can probably best be controlled from the outside, by increasing the advantages of trade to the peoples of dissimilar environments.

The increasing demand among peoples of the temperate zone for tropical products, — tea, coffee, cacao, tobacco, sugar, spices, rubber, oils, drugs, dyestuffs, fruits, woods, hemp, cotton, jute, rice, and even wheat (where conditions of growth are favorable), has been and is the cause of this widespread invasion of the tropics. "What the European wants is raw products, not territory, and he goes to the tropics, not for settlement, but to obtain tropical products."[1] The inhabitants of the tropics most need the manufactured products of the temperate zone. Such being the case, the control of the tropics is best secured by the establishment of reciprocal trade rather than by conquest. Tropical possessions call for a wise policy on the part of the home government by establishing the native peoples on a firm basis of prosperity, by creating and diffusing a commercial interest which will further the development of resources, and by the establishment of a trade advantageous to both. By this means only can tropical possessions be profitably held.

UNITED KINGDOM	167.7	18%
GERMANY	102	11%
FRANCE	83	9%
BRAZIL	79	8.7%
BRITISH NORTH AMERICA	48 8	5.3%
ALL OTHER COUNTRIES	424.8	48%

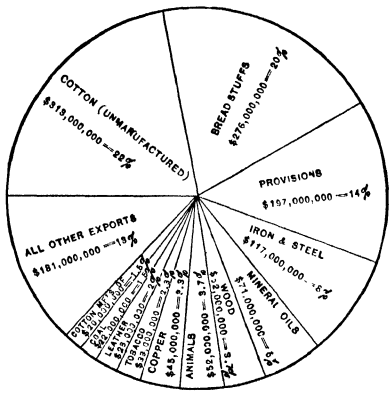
IMPORTS INTO UNITED STATES BY COUNTRIES (1901–1902), APPROXIMATED IN MILLIONS OF DOLLARS

Total imports, $903,320,948

114. Effects of Commercial Expansion. — The geographical posi-

[1] Major Younghusband in Monthly Review, February, 1902; also Kidd, *The Control of the Tropics*.

tion of the United States gives it an advantage in the commercial rivalry of nations. Situated between the two great oceans, with Europe on one side and Asia on the other, a vast territory under a single government, the United States is in a position to hold an increasingly larger share of the world's commerce. The markets of Japan, China, and Asiatic Russia are nearer to us than to any European country. The completion of the Isthmian Canal will give us a still greater advantage. With our increased commercial supremacy and the advantage of geographical position, we shall undoubtedly have a decided influence in future international affairs, for commercial supremacy means more than an ability successfully to compete in the world's market. It is a potent factor in the question of the balance of power, and as such may be used to secure international peace.

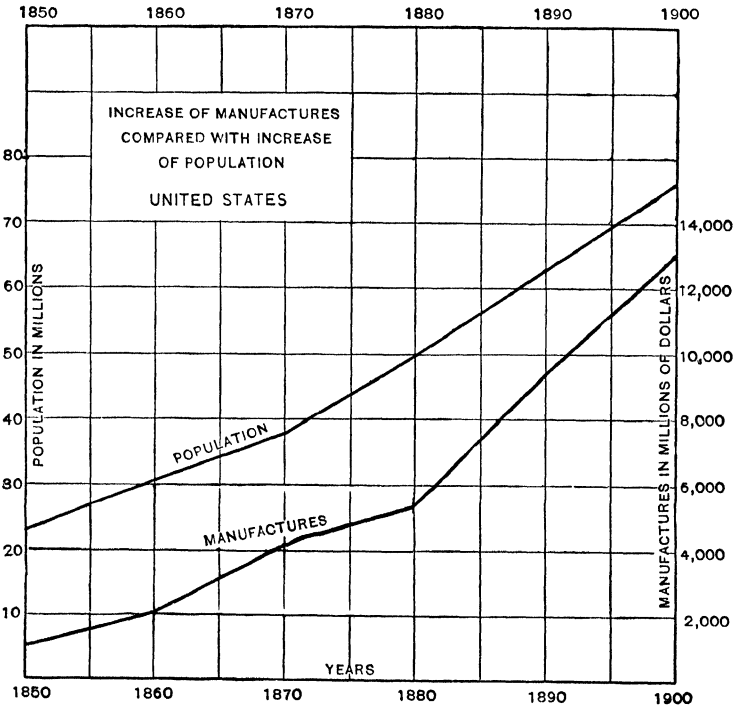


APPROXIMATED VALUES OF EXPORTS FROM THE UNITED STATES (1900–1901)
Total exports, $1,460,000,000

The attempt to force competitors out of the market in every department of trade is of doubtful advantage. Its tendency in the long run would be to destroy markets rather than to build them up. The underlying principle in international trade is the territorial division of labor. Trade policy should recognize the adaptability of certain regions and peoples for certain lines of work. A particular people by their inherent qualities and the conditions of their environment may be better fitted than any other people for carrying on a certain industry. This should be recognized and the particular industry fostered.

The student of the Geography of Commerce will readily see by a

survey of a country in what directions the activities of the people should tend. The extractive industries, such as agriculture, mining, lumbering, and the fisheries, have usually been the basis of prosperity. As this prosperity increases, the manufacturing industries will assume importance, varying according to the character of the people and



the resources at their command. At first manufacturing will be for home consumption; but later, if the people possess commercial vitality, the growth of manufacture will draw raw material from outside sources, and the manufactured products will find an ever increasing sale in the world's markets. Such, in brief, has been the industrial and commercial evolution of the United States.

MANUFACTURES AND EXPORTS OF THE UNITED STATES[1]

Commodities	Manufactures (1900)	Exports (1901)	Per Cent of Manufactures exported
Pottery, terra-cotta	$ 44,000,000	$ 600,000	1.4
Leather	204,000,000	29,790,000	14.6
Wool	297,000,000	1,500,000	5
Iron, steel	835,000,000	117,000,000	14
Cotton goods	339,000,000	32,000,000	9.4
Carpets, rugs	48,000,000	105,000	.2
Packing-house products	699,000,000	185,000,000	26.4
Carriages, wagons	122,000,000	2,790,000	2.3
Hardware	35,800,000	5,500,000	15
Boots, shoes	261,000,000	6,000,000	2.3
Silk	107,000,000	301,000	.3
Furniture	125,000,000	4,100,000	32
Glass	56,000,000	2,000,000	3.5

VALUES OF PRINCIPAL COMMODITIES IMPORTED INTO THE UNITED STATES

	1900–1901[2]	1901–1902[2]
Sugar	$ 90,487,800	$ 55,061,097
Coffee	62,861,399	70,982,155
Chemicals, drugs, and dyes	53,508,157	57,723,622
Hides and skins	48,224,470	58,011,168
Cotton, manufactures of	40,246,935	44,460,126
Vegetable fibers and textile grasses, manufactures of	32,762,608	39,036,364
Silk, unmanufactured	30,051,365	42,635,000
India rubber and gutta-percha	28,835,178	25,652,977
Silk, manufactures of	26,842,138	32,640,242
Vegetable fibers, textile grasses, unmanufactured	22,932,506	31,545,962
Precious stones	20,425,736	23,348,225
Wood, and manufactures of	19,754,205	24,445,599
Fruits and nuts	19,586,703	21,480,525
Tin	19,805,551	19,461,850
Tobacco, and manufactures of	18,770,526	17,706,493
Iron and steel, manufactures of	17,874,789	27,180,247
Wool, manufactured	14,585,306	17,384,463
Wines and liquors	14,266,600	15,246,640
Total of all imports	$823,172,165	$903.320,948

[1] Report of Philadelphia Commercial Museum.

[2] Fiscal year ending June 30.

SUGGESTED QUESTIONS AND TOPICS

94. What is the meaning of the phrase "trade follows the flag"? Discuss this in its relation to the foreign commerce of the United States.

95. Consider cost of production and excellence of product in their bearing on international trade.

96. What was the general relation of imports and exports for the United States before 1875? What since? Are the totals for imports affected by our system of tariff? (See p. 154 and Reference to Question 122, p. 186.)

97. Is the United States most largely an agricultural or a manufacturing country? Compare the values of agriculture and manufactured products for 1850, 1880, and the latest year for which statistics are available.

98. Name in the order of their importance the five principal foreign trade seaports of the United States. Discuss the trade of each. (See Question 89, p. 149.)

99. What proportion of the manufactured products of the United States is consumed at home and what is exported?

100. Write an essay on the Consular Service of the United States and point out its influence on foreign trade. (Examine the Consular Reports. See Conner, noted below.)

101. Investigate the subject, Ship Subsidies in their Influence on Fostering Foreign Commerce. (See *Poole's Index to Periodical Literature*, under "Ship Subsidies.")

102. What are the different methods of tropical control? (See Kidd, *Control of the Tropics;* also *The Forum*, July, 1899.)

103. What was the influence of opening up the West upon sea-faring life in the United States?

104. Consult a standard work on political economy for the idea of the international division of labor. Make clear that the foreign commerce of the United States is but an enlargement of the same principles that underlie the domestic commerce.

105. Make a study of the organization and work of the Department of Commerce and Labor of the Federal Government.

106. What is the difference between "calendar" year and "fiscal" year? What is the fiscal year of the United States? Can you ascertain any good reason for this?

Books to be Consulted

Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations.*

** *Commercial Relations of the United States.* Issued annually by Bureau of Foreign Commerce. Washington, D.C.

* Benjamin Kidd, *The Control of the Tropics.* Macmillan Co.
* Lawson, *American Industrial Problems.* Chapters XX to XXIII, The Tariff; Exports and Imports and America's Best Markets.
** Vanderlip, *American Commercial Invasion of Europe.* Three Papers, Scribner's Magazine, beginning January, 1902.
* Publications of Foreign Market Section of the Department of Agriculture, Washington, D.C.
* Conner, *Uncle Sam Abroad.* Rand, McNally & Co., 1900.
* Marvin, *American Merchant Marine.* New York, 1902.
** The World's Work: Emory, *The Greater America,* December, 1901; and Austin, *Will our Commercial Expansion Continue?* August, 1902.
Laughlin & Willis, *Reciprocity.* New York; 1903.

CHAPTER XI

OUTLYING POSSESSIONS OF THE UNITED STATES

115. The Philippine Islands. — The Philippines form an archipelago of about 2000 islands extending between 4° and 21° north latitude. They are separated from the continent of Asia by the South China Sea. The archipelago extends practically from Borneo to Formosa. The greater number are small islands, and they are separated from one another by comparatively narrow channels. The islands are volcanic; earthquakes and volcanic eruptions are of frequent occurrence. The surface of the various islands is rugged and mountainous; the mountains are interspersed with wide valleys, which are watered by numerous streams. The climate and vegetation are tropical, and the soil, of volcanic débris, is extremely fertile. This, together with the abundant natural irrigation of the soil, gives to the islands the appearance of gardens of luxuriant growth. The area of the entire archipelago is equal to about the area of the New England States, New York and New Jersey combined. The largest and most important island is Luzon, about equal in area to New York State. Mindanao is nearly as large. Between Luzon on the north and Mindanao on the south are the smaller islands of Mindoro, Panay, Negros, Cebu, Bohol, Leyte, and Samar. South of Mindanao lies the Sulu Archipelago, and to the west the long island of Palawan, both of which are geographically more nearly related to Borneo, though they are included in the Philippine group.

The population of the Philippines (about 8,000,000) is of very mixed character, consisting for the most part of peoples of Negritic and Malayan stock with an infusion of Chinese. Much diversity

of language exists among the various tribes. About 25,000 whites and 100,000 Chinese are resident in the islands, and these, in the main, control the industrial interests. The United States at first held the islands by military force, but has instituted local government in a large number of towns and is rapidly establishing schools throughout the various districts. There are already in the islands upwards of 700 miles of telegraph and more than 600 miles of railroad. The entire group of islands is divided into three separate governments — Luzon, the Visayas, and Mindanao — which together constitute the colony.

The industries are mostly agricultural and the products altogether tropical. The mean annual temperature is 81° F., the extremes rarely going below 61° or above 97°. The rainfall is abundant, and the year is divided into three seasons, — a dry temperate season from November to February, a dry hot season from March to May, and the rainy or wet temperate season from June to October. Sugar, hemp, and tobacco are the principal crops of export value, while rice and maize are also raised as food crops for native consumption. Coffee and cotton were formerly very important products. Cacao and indigo are also grown to a considerable extent. The hemp, or more properly speaking, the Manila hemp, is the fiber from the long leaves of a native tree closely related to the banana and plantain. It is of great value in the manufacture of rope, cordage, and sacking. Cocoanuts, pineapple fiber, copra (the dried kernel or meat of the cocoanut), and certain native woods are also important products. The forests of the Philippines are destined to be a source of great wealth in the future. Numerous varieties of valuable timber occur, some of them being very hard and capable of resisting the attacks of the shipworm. These are useful for sea-piling work and for railroad ties. Some varieties of wood also take a very high polish. The 385 species of timber-producing trees in the archipelago are classified in groups according to their economic value. A great variety of trees yield valuable gums, rubber, gutta-percha, essential oils, and dyestuffs.

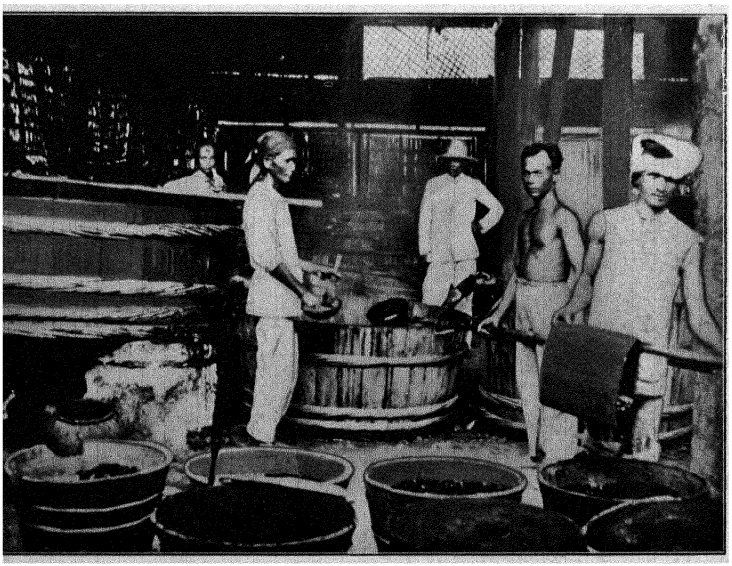
Seventeen different kinds of dyewoods are found throughout the islands. It is estimated that not less than 40,000,000 acres of the land are forest-covered. The United States government has established a forestry bureau which regulates the utilization of the forest products on the state lands.

There is known mineral wealth throughout the islands, though, as yet, little has been done to develop it. Gold, copper, silver, lead, and iron have been reported from various places. Coal and petroleum are said to exist in Cebu and Panay, and sulphur in Leyte. The richest district in mineral deposits is embraced in the provinces of Benguet, Lepanto, and Bontoc. Much of the copper ore contains veins of gold-bearing quartz. The assay of this ore gives an average of 8 per cent copper, and the deposits are of very great extent. The gold outlook is equally favorable. The Philippine coal deposits are mainly lignites and compare favorably with other coals of the same grade for steaming and domestic purposes. The Philippine coals do not form clinkers to the same extent as do those of Japan and Australia. The development of the iron deposits will undoubtedly attend the future exploitation of the coal.

Hemp, copra, tobacco, hides, and sugar form 80 per cent of the value of Philippine exports. Under normal conditions, raw sugar is, next to hemp, the most important Philippine export; the output of sugar, prior to the Spanish-American war, amounted to over 400,000,000 pounds annually. Most of the hemp is shipped to the United States and England. Leaf tobacco, cigars, and copra (which supplies an oil used in the manufacture of soap) go mainly to European countries. Sugar and sapan wood are sent into China and Japan.

The imports are chiefly flour, rice, wines and liquors, dress goods, coal, and petroleum. Of imports from the United States, bottled beer and other liquors have a leading place. Flour and breadstuffs; cloth, thread, and yarn; iron manufactures; beef, ham, and meat products; watches, bicycles, and paper follow in the order named.

MANILA TOBACCO FACTORY

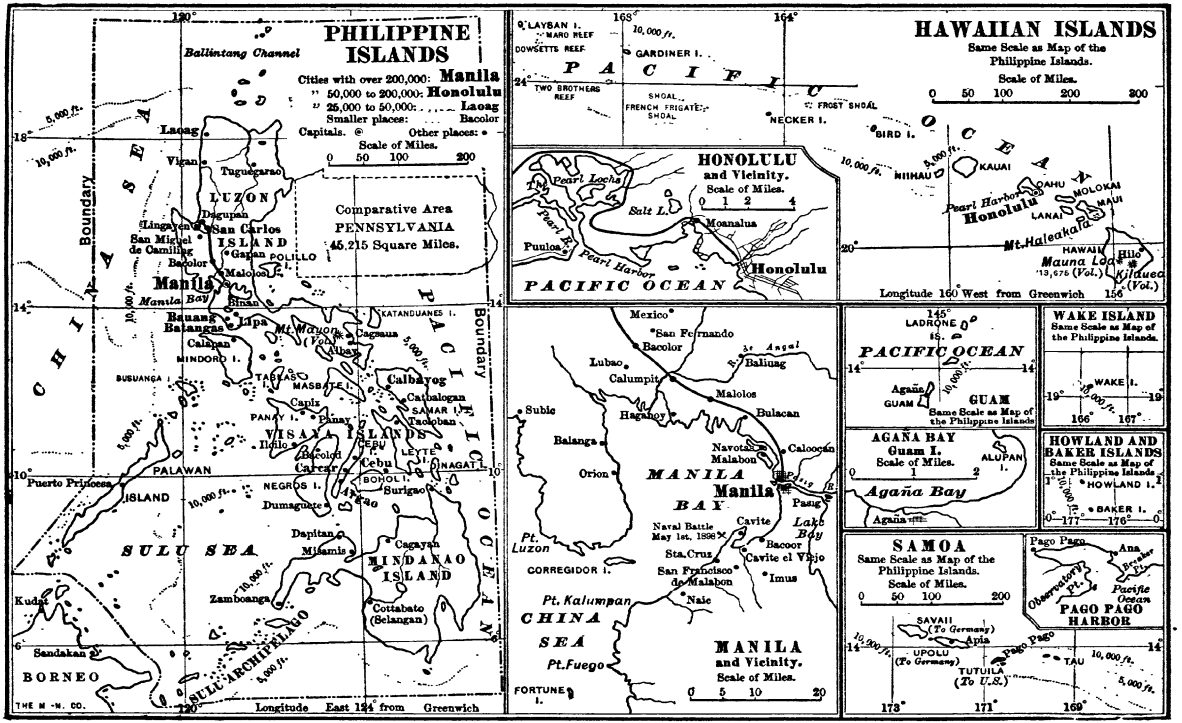


MANILA SUGAR REFINING

Manila, the capital and chief commercial city of the islands, has a population of over 300,000; it commands a fine harbor on the southwestern coast of Luzon. The entrance to this harbor is guarded by the fortifications of Cavite. The town is lighted by electricity and has undergone rapid improvement in its sanitary conditions. Iloilo, on the island of Panay, is next to Manila in size and importance. Cebu, on the island of the same name and Zamboanga, on Mindanao, are also towns of some note.

116. Guam. — This is the largest island of the Ladrone or Marianne Archipelago and was ceded by Spain to the United States in the Treaty of Peace at Paris in December, 1898. The island is in direct line between San Francisco and the Philippines, upward of 5000 miles from the former, and about 900 miles from Manila. It has an area of about 200 square miles, with a rich and productive soil, well watered and well forested. The inhabitants, numbering about 9000, are mostly immigrants from the Philippines and nine-tenths of them can read and write. Both Spanish and English are spoken. The capital is Agana, with a population of about 6000. The principal productions are sugar cane, rice, maize, cacao, tobacco, and coffee. A great profusion and variety of native fruits occur. Among these are the cocoanut, which gives rise to the only important industry of the island — that of copra production. Several kinds of breadfruit, figs, custard apples, yams (a tuber much like the sweet potato), lemons, oranges, shaddocks, citrons, limes, pineapples, mangoes, and egg plants are also cultivated. Among timber trees and fiber plants, may be mentioned the pandanus, or screw pine, the long and slender leaves of which are used in the making of hats and mats, the "ifil" or "ipil," a native tree yielding a very hard and durable but brittle wood, the cotton tree used for making pillows, but not woven into cloth on account of the poor quality of the staple, and numerous others. Arrowroot, turmeric, ginger, and peppers are also found in abundance.

The island is destined to be a coaling station of growing impor-



UNITED STATES' DEPENDENCIES IN THE PACIFIC.

in parts. The soils of the islands are of volcanic origin and are of remarkable fertility. The so-called "sedimentary" soils are the débris of volcanic lavas that have accumulated on the lower coastal lands and river deltas. It is on these soils that a large portion of the sugar cane is grown. Sugar is the chief production of the islands, employing the greater part of the capital and labor of Hawaii, and being the chief export and source of wealth. A number of large estates have productive capacities varying from 1000 to 20,000 tons of sugar per year, and are equipped with modern mill machinery for sugar refining. Two years are required on an average to produce a crop of Hawaiian sugar, while but one year is required in Louisiana. Rice is the second most important Hawaiian crop; the production is largely in the hands of the Chinese who appear to be immune to the fevers of the rice swamps. Coffee is cultivated quite extensively on the four larger islands. It appears to be a native of Hawaii, having been long known and used in the wild state. The chief fruits grown are bananas and pineapples, which form a considerable item of export. Vegetables are also raised to a limited extent.

The forests of Hawaii contain a great variety of useful trees and plants, but much of the island area has been deforested owing to clearing away for cultivation without replanting, and to neglect in caring for the forests. The destruction of these forests has undoubtedly influenced the cultivation, causing disastrous droughts, and forcing planters to resort to irrigation. Active measures for restoring and conserving the Hawaiian forests should be a prominent department of governmental work.

Large areas are given over to ranches where cattle and sheep are grazed to supply meat for home consumption. The grazing industry, however, has diminished with the increased spread of sugar planting, incident to the relatively high price of sugar, thus making it pay to plant on even the thinnest soils. But hides and wool still form a considerable item of export.

Many new products and industries are possible for Hawaii.

Cereal production is promising, especially maize and wheat. The cinchona tree would undoubtedly thrive on the upper forested slopes of the mountain ranges. Grape culture and wine production, silk culture, the rubber industry, tobacco, market gardening and fruit growing, the growing of orchids, and many other industries are being considered in Hawaii to-day. The land is adapted for great diversity in agricultural pursuits, and agriculture will be the basis of Hawaiian industry and prosperity.

Honolulu, the capital (on Oahu Island), with a population of nearly 40,000 souls, commands a good harbor and is the calling port of several trans-Pacific lines of steamers and numerous other vessels engaged in trade. It is essentially an American city with many fine buildings and all the appliances of modern civilization. The business of the islands is mainly in the hands of English and American houses. The central position of Hawaii in relation to the Pacific trade routes has been largely responsible for its growing commercial importance. Honolulu is a station for the new American cable to the Philippines.

119. Porto Rico. — The island of Porto Rico was acquired by the United States from Spain in the treaty of December, 1898. It has an area of some 3600 square miles (about three-fourths the size of Connecticut) and a population slightly over 950,000, over one-third of whom are negroes and mulattoes. The soil is fertile and the climate entirely tropical, the island lying about 18° north and within the trade-wind zone. The rainfall is abundant from the great quantity of moisture that is condensed on the high mountain slopes ; it is heaviest in November and lightest in February. During the late summer and in the autumn the island is peculiarly liable to the passage of severe tropical hurricanes because of the equatorial calms. A central core of mountain ranges, with forested slopes, extends nearly the entire length of the island. These slopes are broken to form the divides between numerous streams that flow through the rolling hill country and across the coast plain,

watering the land abundantly. The upper courses of these streams afford an ample source of power. The climate, though tropical, is not characterized by extreme heat, being tempered by the never failing trade winds. The humidity is somewhat enervating, but the climate is on the whole healthful and there is a remarkable freedom from epidemic diseases.

Cultivation is carried on to a large extent by the peasant population on the small interior farms, where fruits and vegetables of various sorts form the chief produce, though there are numerous large coffee and sugar estates and tobacco plantations, as well as land given over to grazing. Coffee, sugar, and tobacco are the staple products of the island. In 1900–1901, 166,000 acres were under coffee, the annual yield of which is about 60,000,000 pounds. The coffee bushes are grown in the shade of banana and guava trees. Porto Rican coffee is of fine quality, and after the berries have been polished and slightly colored, it finds a good market in the United States and European countries. Eighty thousand acres are under sugar with a yield of about 160,000,000 pounds, while the 13,000 acres of tobacco yield some 12,000,000 pounds annually. Pine-apples, bananas, oranges, guavas, maize, rice, and cotton are also important crops, and cocoanuts grow abundantly, especially on the sandy shores. The raising of cattle is a considerable industry; the chief cattle districts are on the northern side of the island. Much valuable timber is found in the forests, including ebony, cedar, and sandalwood, and many varieties useful for building, as well as dyes, tanning stuffs, spices, etc. Among minerals, magnetite, copper ores, and gold exist in considerable quantities. Salt, also, forms an important product, the commercial output of which amounts to about 10,000,000 pounds a year. Large quantities of marble and other building stones occur.

Coffee forms over 63 per cent of the entire export value, and sugar 28 per cent. The remainder is made up of tobacco, honey, cacao, molasses, cotton, cattle, timber, and hides. The export trade of the

island to the United States for 1900–1901 amounted to upwards of $8,000,000, and the imports from the same country upwards of $10,000,000. The chief imports are provisions, cotton goods, and rice. Codfish and rice form the chief food of the working classes, the former being imported largely from Canada. The trade with foreign countries in 1900–1901 was nearly $2,000,000 for imports, and slightly over $3,000,000 for exports. Of this foreign trade the larger part was with Spain. The chief manufacturing interests at present are in the preparation of chocolate, tobacco, wax, rum, bay rum, matches, soap, and straw hats. The development of manufactures and better use of resources, the construction of wagon roads, railroads, and telegraph lines, the improvement of harbor facilities, and the furthering of educational interests are important forms of progress. Labor is cheap, and new industries need to be started in order to support the working classes. Cattle raising affords a supply of hides which could readily be tanned by the use of the mangle tree, and leather manufacture might be made an important industrial feature of the island. The fibers of many native plants can be used in textile and cordage manufacture. Starch factories could be started with prospects of good returns. The fishing industries have as yet been but little developed. The European beet sugar has caused the decline of the cane sugar industry in Porto Rico as in other West Indian islands. What is needed in the island is capital, better transportation facilities, and more general education.

A number of commercial towns occur along the seacoast at favorable harbor points. San Juan, the capital (population 32,000), is on the north shore, 1411 miles from New York. Ponce (population nearly 28,000) is on the south shore. Steamers ply from port to port around the coast, and several lines connect the island with other West Indian islands, as well as with United States and European ports.

120. Commercial Prospects of Our Tropical Possessions. — The future outlook for trade with our tropical possessions must be based on the development of their resources and the creating of a demand for

our manufactures and food-stuffs. All of the possessions are agricultural. A comparatively few staple products have heretofore characterized the industries of these regions: hemp and sugar in the Philippines, sugar in Hawaii, and coffee, sugar, and tobacco in Porto Rico. There is every indication, however, that a much greater variety of tropical products may be successfully cultivated with prospects of good returns. One obstacle at present to the development of the resources and commerce of the several islands in question is the inadequacy of the means of transportation throughout their interior parts. Good wagon roads and railroads are a necessity for increased commercial enterprise.

At present the annual importations of the United States' tropical possessions amounts in round numbers to about $50,000,000. This is divided about equally between manufactured and agricultural products. This consuming power is no index to the producing capacity of the islands. Increased areas in cultivation and increased productivity, such as the reclaiming of waste land, etc., mean that more goods will be bought from the outside. Recent developments have, in fact, decidedly stimulated trade. The value of United States' imports into Hawaii increased upwards of 57 per cent in one year, and the value of imports into Porto Rico upwards of 78 per cent in the same time. The United States spends on an average upwards of $250,000,000 annually in the importation of tropical products. More of these might be grown with profit in her own outlying possessions. In the fiscal year ending June 30, 1902, the United States secured about four and one-half per cent of her total imports from her own islands.

121. Alaska. — The territory of Alaska was acquired from the Russian government by purchase in 1867. Its area (590,884 square miles) is about one-sixth that of the entire United States. The habitable portion of the territory is the coast strip and numerous islands of the Alexander Archipelago, extending southward for about 500 miles. Back of the coast ranges the interior of Alaska

is a frozen waste, covered with dense beds of moss and a stunted vegetation. The Yukon River and its valley is the only natural highway into the interior, but navigation on this river is only possible for a short time during the summer, and its mouth is situated too far north to make it easily accessible. The Twelfth Census reports a total population (including Indian peoples) of 63,592, which was nearly double that of the preceding census.

Sitka, the capital, is situated on Baranoff Island, where it has an open winter harbor. The chief resources of the country are in the fur-seal and salmon fisheries, and in the gold fields of the upper Yukon Valley (Klondike region). The invasion of Alaska by gold hunters is likely to further develop the resources of the country, especially its mineral wealth. A railroad has been built over the White Pass leading to the upper Yukon gold districts. Gold has also been discovered in the sea sands at Cape Nome.

The salmon fishery is one of the prominent industrial features of Alaska. Salmon swarm along the coast and in the rivers and are especially abundant in Bristol Bay and the Bering Sea region. It is estimated that the Alaskan salmon fisheries now supply more than half of the United States product. Fifty-five canneries and twelve salteries were reported in operation in 1901, with a total output of about 100,000,000 pounds of salmon packed and shipped, representing a value of nearly $7,000,000. The cod fisheries also are of growing importance.

The mild character of the southern coast strip of Alaska seems to justify the belief that a variety of vegetables might be grown for local consumption. Live stock raising might also prove successful on a small scale, as there is a supply of grass in many places. The introduction of reindeer from Siberia, for food and transportation purposes, has so far met with fair success, and some 3000 head have been distributed in the northwestern section. Valuable timber exists, especially in the southeast; this can be made available for local consumption, and might also furnish a small export.

The fur seal has suffered a decrease in recent years as a result of reckless slaughter. The breeding grounds of the herd are on the Pribyloff Islands, which lie to the north of the Aleutian chain. It is estimated that the total value of seal skins from this region since the purchase of Alaska by the United States amounts to about $35,000,000. The value of furs, other than the seal, which were taken in Alaska during the same period, is estimated at some $17,000,000.

The gold output of Alaska for 1901 is estimated at $3,460,000. The chief gold districts are the Seward Peninsula (including Cape Nome), the Yukon River, southeastern Alaska, Cook Inlet, and the Copper River.[1]

SUGGESTED QUESTIONS AND TOPICS

107. Make a study of the Ordinance of 1787 as a basis for the colonial policy of the United States.

108. What were the occasion and the terms under which the United States secured the Philippine Islands?

109. What will be the results of the American cable in the Pacific, upon the political and commercial union of the United States and her dominion?

110. Take a map of the Pacific and draw the trade routes from Vancouver to Australia, from San Francisco to the Philippines, and from the Isthmus of Panama to Japan. What do you discover about the Hawaiian Islands? What can you say of the importance of these islands in the trade of the Pacific?

111. Should the Chinese Exclusion Act of the United States be retained for the Philippines and Hawaii? Why? (See Jenks, *Economic Questions in Colonies*, etc., Bureau of Insular Affairs, War Department.)

112. Consider the strategic and commercial importance of Porto Rico. Are these likely to increase or diminish? Why?

113. What are the advantages of nations situated in temperate regions holding tropical colonies? Consider this statement, "It is as impossible to establish republican institutions in the tropics as it would be to plow the sea." Is republican form of government most largely a matter of climate or of race?

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[1] *Commercial Alaska in 1901*, Summary of Commerce and Finance for May, 1902, Treasury Department. For 1899 the estimated value of Alaskan gold production was $5,459,500. *Mineral Resources of the United States* (1901), p. 124.

114. Why is a stable government in colonies a requisite for commercial prosperity?

115. Compare the development in Alaska following the incoming for gold with the development in California. Why the difference?

116. Contrast the climate and natural productions of Alaska with those of the other outlying possessions of the United States. How does the United States herself compare with the regions contrasted?

Books to be Consulted

*Articles on Porto Rico, Hawaii, Alaska, Philippine Islands, Samoa, Ladrone Islands, in *The International Geography.*

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*R. T. Hill, *Cuba and Porto Rico with Other Islands of the West Indies.* New York and London, 1898.

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Conant, *The United States in the Orient.* Boston, Houghton, Mifflin & Co.; 1900.

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PART III

TRADE OF THE WESTERN HEMISPHERE OTHER THAN UNITED STATES

CHAPTER XII

THE DOMINION OF CANADA

122. Regional Geography. — The Dominion of Canada embraces the region from the United States northward, and from the Atlantic westward to the Pacific and the boundary of Alaska. The territory thus included covers an area somewhat greater than that of the United States (including Alaska) and a little smaller than that of Europe as a whole. Four physical regions are included in this area: (1) the hills and lowlands of the eastern part of the country which are a continuation of the Appalachian Highlands; (2) a low V-shaped plateau of crystalline rocks inclosing Hudson Bay in its center and extending southward to the Great Lakes. The Lake Superior hill region in Michigan, Wisconsin, and Minnesota, and the Adirondacks in New York, are outlying portions of this in the United States; (3) the inland plains and prairies, a northward extension of the Great Plains of the United States; and (4) the Cordilleran Highland of the western part, similar in features to the same area in the United States, and reaching northward along the boundary of Alaska, where it rises into the highest summits of the system.

The entire area is drained into four basins: (1) the Atlantic drainage, mainly through the St. Lawrence; (2) the Hudson Bay drainage through the Saskatchewan and Nelson rivers; (3) the

Arctic drainage through the Mackenzie and smaller streams; and (4) the Pacific drainage mainly through the Frazer River. The St. Lawrence system is a vast navigable waterway through the lakes into the heart of southern Canada. Beyond the lakes the Winnipeg waters connect with the Saskatchewan, leading to the eastern foothills of the Rocky Mountains. These waterways, both in eastern Canada and in the Northwest, played a very important part in the early history of the fur trade of the interior.

The entire Dominion presents three climatic areas : (1) eastern, characterized by abundant rainfall ; (2) central, characterized by a wide range of yearly temperature, and slight rainfall; and (3) western or Pacific coast region, of slight temperature range and abundant rainfall.

Canada lies in the zone of coniferous forests which stretch northward to the tree limit on the southern edge of the Barren Grounds. The limit of tree growth is determined by the relative length of the summer. The tree line in the interior bends to the south, owing to the continental character of the climate and the immediate influence of the cold waters of Hudson Bay. On the western side it reaches into Alaska as the result of the warmer oceanic influence of the Pacific, while on the eastern side it is much farther south. This vast forest area has fostered two industries which have been foremost in the history and development of Canada, — the fur trade and lumbering.

The characteristic trees of the region are the two species of spruce, — the balsam fir, and the larch or tamarack. Among hardwoods, the birches and aspens are the prevailing forms. The sable, ermine, marten, otter, beaver, and other fur-bearing mammals have their home throughout this forest region.

123. The Provinces. — Politically the Dominion of Canada is a federation of seven provinces and nine districts or territories. Nova Scotia, Prince Edward Island, and New Brunswick form the Maritime Provinces, bordering on the Atlantic. The Province of

Quebec lies between the southeastern end of Hudson Bay and Labrador, extending southward to the northeastern border of the United States. West of this, the Province of Ontario extends along the northern shores of the Great Lakes for about a thousand miles, reaching northward to the 52d parallel. West of this, again, lies the Province of Manitoba, occupying the center of the continent. British Columbia is the western province, bordering on the Pacific and includes Vancouver Island. Between British Columbia and Manitoba are the organized districts, embracing the interior constituting the treeless plains of the eastern Rocky Mountain slopes. Other unorganized territories comprise fully one-third the entire area of Canada.

UNITED STATES	$2,282	– 73¾%
CANADA	$386	– 12%
MEXICO	$135	– 4%
CUBA	$115	– 3¾%
OTHER COUNTRIES	$183	– 6½%

TOTAL COMMERCE OF NORTH AMERICA BY COUNTRIES (1900), APPROXIMATED IN MILLIONS OF DOLLARS

Total for all, $3,101,000,000

124. Resources and Industries. — Of the vast area of Canada (the total land area being over 3,000,000 square miles) less than one-seventh is improved land. The average density of the population throughout the Dominion is less than two to the square mile. One reason for this, aside from the vast area of unprofitable land, is the proximity of the United States. A percentage of the population of Canada is attracted to the more lucrative centers of trade in the latter country. The area covered by forests is a little less than one-third of the entire region. Lumbering, agriculture, mining, and fisheries are the principal industries. The value of forest products in 1891 amounted to upward of $80,000,000, nearly one-third of which was exported.[1] Wood pulp is

[1] *Statesman's Yearbook*, 1903.

of growing commercial importance, the United States and Great Britain taking the surplus, which amounts in recent years to more than a million dollars annually. The forests are controlled by the several provincial governments, except the forty-mile wide "Railway Belt" in British Columbia, and the Manitoba and Northwest Territory forest tracts, which belong to the Dominion. In New Brunswick lumbering was earlier the chief industry, but has declined with the growing scarcity of pine timber; the spruce is at present the chief forest tree. In British Columbia the Douglas fir is prominent in the lumber trade, supplying the saw mills along the Pacific coast and entering largely into export.

The fur trade, once the main source of Canada's wealth, is still carried on in the forest region of the North, where the Hudson Bay Company has old established posts at various points; to these the Indian and other trappers, still bring their pelts for barter. Edmonton on the Saskatchewan, and also connected by a branch line with the main Canadian Pacific Railway, is the centralizing point of the fur trade and the disbursing town for the traders' supplies.

The largest percentage of the population of Canada is engaged in agriculture. This is carried on throughout all the provinces, but especially so in Quebec and Ontario, where it is the chief occupation of the people. Ontario is essentially a region of farms, being known as the "Garden of Canada." Fruit culture is largely carried on in this district. Corn, wheat, barley, oats, potatoes, and hay form staple crops. Stock raising and dairying are carried on to a large extent, and in the latter industry cheese making is of growing importance. Canada is at present the largest cheese-exporting country in the world. Farther west, on the plains of Manitoba and beyond, spring wheat is the great crop, similar conditions prevailing as in the contiguous spring wheat belt of the United States. In the drier western portion of the plains region are the great live stock ranches, the raising of horses, cattle, and sheep there being a prominent industry. Fruit culture, agriculture, and the raising of live stock are largely carried on in British Columbia.

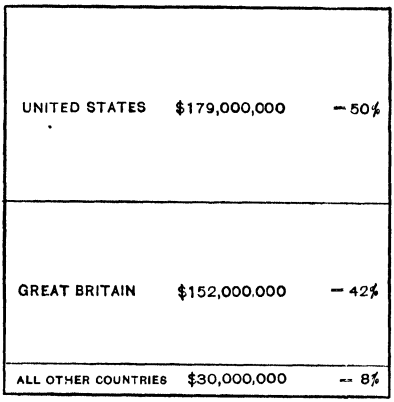
The mineral wealth of Canada is largely in coal and gold. The estimated output of each in 1900 was upwards of 5,000,000 tons of coal, and gold to the value of nearly $28,000,000. Copper, silver, lead, nickel, iron, petroleum, and asbestos are also produced. Coal occurs in Nova Scotia (Cape Breton), in British Columbia, and in an immense undeveloped area in the Northwest Territory. Copper and nickel are found associated in the Superior region of Ontario, but petroleum forms the most considerable mineral product of this province. Gold occurs in Nova Scotia, in the Chaudière River alluvium of Quebec, in British Columbia, and throughout the Northwest Territory and the Yukon district (Klondike). The value of the mineral products of the Dominion in 1901 is given at upwards of $69,000,000.

The fisheries of Canada form a very prominent feature in the industrial returns of the country; they are centered in the Maritime Provinces, on the Pacific coast, and to a smaller extent on the interior lakes and rivers. Deep sea and coastwise fisheries, and the catching of lobsters are the principal features in the economic life of Nova Scotia and New Brunswick. The oyster trade is prominent in Prince Edward Island. The total value of the fisheries in 1900 amounted to $11,557,639. Many native Nova Scotians sail in the fishing fleet from Gloucester, Massachusetts; but the captains of the vessels are naturalized citizens of the United States. A large bulk of the catch of the Maritime Provinces goes to the canning factories of the United States, there being no duty on fresh fish, though the canned goods are dutiable.

The fisheries of British Columbia are a very important source of wealth, especially the salmon fishery. Under the general head of fisheries is included the pelagic sealing in North Pacific waters; the fleet for this is largely owned in British Columbia.

The manufacturing interests of Canada are of minor importance when compared with the production of raw materials; though various manufacturing industries are carried on, their products are chiefly for domestic consumption.

125. Commerce. — The United States shares largely in Canadian trade, chiefly because of the close geographical relation of the two countries. There can be no better illustration of the result of proximity of countries in trade than that afforded by the commerce between the United States and its next-door neighbor. Both are large producers of raw material, but one is distinctly a manufacturing country as well, while the other is not. This is clearly shown in the summary of countries entering into trade with Canada, where the United States heads the list of imports (chiefly manufactures) which enter the Dominion for consumption, while it stands second in the list of countries to which Canadian products are exported, though a considerable amount of raw material, lumber, and wheat are regularly drawn from Canada for use in manufacturing in the United States. Great Britain heads the export list because of a commercial policy whereby Canadian goods are allowed to enter British ports free of duty. Canada imposes a duty of one-third less on imports from Great Britain than from any other country ("preferential tariff"), yet the nearness of the United States gives its goods a precedence, and more than half the imports of Canada come from the United States.



COMBINED IMPORTS AND EXPORTS OF CANADA (1900), APPROXIMATED IN MILLIONS OF DOLLARS

Total, $361,000,000

The Dominion is well equipped in the ways and means of internal communication. The rivers and lakes are great natural highways of commerce, which have been made available for sea-going ships from the head of navigation on Lake Superior to the ocean, a distance of

over 2700 miles. This has been effected by the building of ship canals — the most famous of which are around the Lachine rapids just above Montreal, the Welland Canal between Lakes Erie and Ontario, and the St. Mary's Canal at Sault Ste. Marie. The Canadian Pacific Railway from Montreal to Vancouver, a distance of 2906 miles, is a main artery of trade through the most productive districts, and handles enormous quantities of Canadian wheat and live stock. A subsidized line of steamers in connection with this great railway, gives regular communication between Montreal and Yokohama. An Australian line also connects with the road at Vancouver. The Grand Trunk Railway traverses the rich agricultural region of southern Ontario and has extensions of the line into United States territory with a terminus at Chicago and one at Portland, Maine. Through this road the latter city becomes the winter port of Montreal when the ice has closed the St. Lawrence to navigation. Trade through Portland is by passing goods through customs under seals, known as bonds. Upwards of 18,000 miles of railway are in operation throughout the Dominion (1901).

Ottawa is the seat of government. Montreal, at the confluence of the Ottawa River with the St. Lawrence, is at the head of ocean navigation, above which begins the extensive system of ship canals and natural waterways leading to the interior. Montreal is the chief seaport and the largest city of the Dominion. Quebec, nearer the ocean, commands a fine harbor, but has never attained the commercial importance of Montreal; the situation of the latter at the head of navigation and in relation to the Ottawa country in the days of the fur trade, made it the most important disbursing and receiving center of the entire region. It has, furthermore, closer connections with the United States by rail than has Quebec. Toronto is an important Lake port on the north shore of Ontario. Halifax, in Nova Scotia, is the main seaport of the Maritime Provinces and is, moreover, a center of British military and naval power. It has an open winter harbor, but the distance by rail to the interior provinces is too great to make it of

commanding commercial importance. Winnipeg, Manitoba, on the line of the Canadian Pacific Railway, is the great disbursing center of the Northwest, and is connected by rail with the United States. Vancouver and Victoria are the chief cities of British Columbia and important centers of the Pacific trade.

126. Newfoundland. — The island of Newfoundland, lying at the north of the Gulf of St. Lawrence, is not a part of the Dominion of Canada, the government being administered by a governor appointed by the British crown and by an executive council. Under this government is included also the eastern portion of Labrador which is separated from Newfoundland by the narrow strait of Belle Isle. Newfoundland covers some 42,000 square miles, is mountainous and forested, with a rugged coast line forming many bays which afford good harbors. The climate is influenced by the Labrador ice current, the southern and eastern coasts being frequently enveloped in dense fogs, which, however, do not reach inland to any great distance. Fishing is the chief industry; the value of dried cod exported in 1900 was upwards of $5,000,000. Cod-liver oil, canned lobster and pickled herring are important items of the export trade. St. John's, commanding a fine land-locked harbor on the southeast coast, is the capital and the headquarters of the Arctic sealing fleet; seal oil and seal skins are exported from this port. Copper and iron ore, and iron pyrites are mined and exported, the latter going mainly to Great Britain. Coal, lead, and nickel are said to exist. Manufactures and food-stuffs form the bulk of the imports; the United States is third, ranking after Great Britain and Canada, as a source of supply.

SUGGESTED QUESTIONS AND TOPICS

117. Compare the climate on the east and west coasts of British America. Why the difference in the same latitude?

118. What is a "port of entry"? What port of the United States is a port of entry for Canadian commerce during a part of the year? Why?

119. What are "bonded goods" in customs regulations? How does the arrangement operate in the trade of the United States through Canada, and of Canada through the United States?

120. Consider the advantages of free trade between Canada and the United States. Which country would probably realize the greater advantage, and why?

121. What is a "preferential tariff" and how does it operate in the trade of Canada?

122. Give the meaning of the following terms: "general tariff system," "general and conventional tariff system," and "maximum and minimum tariff system." (See "Modern Tariff Systems," published by Bureau of Statistics, Treasury Department.)

123. The imports and exports of Canada have increased ninety-six per cent within ten years' time. What does this indicate about the present trade outlook in that Dominion?

124. Make a study of the governmental relations of Canada to the British Empire.

125. What is the prevailing language in Quebec?

126. Discuss this statement from the London *Chronicle*, "There is room on the North American continent for two great nationalities, of which Canada may well be one."

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*Dawson, *Canada and Newfoundland*, in Stanford's Compendium. London; 1897.

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COMMERCE OF THE WORLD IN 1902

The following table shows the imports and exports of the countries for which statistics were received at the United States Bureau of Foreign Commerce: —

Country	Imports	Exports
United States	$ 969,270,000	$ 1,360,696,400
United Kingdom	2,573,698,600	*a* 1,379,847,300
Germany	1,359,448,100	1,191,597,200
France	852,234,900	817,725,200
Russia (9 months)	199,538,000	303,152,200
Belgium (11 months) *a*	402,099,000	321,381,000
Spain (10 months) *b*	98,309,000	89,882,000
Italy (10 months) *a*	288,147,000	222,948,000
Austria-Hungary (10 months) *a*	381,600,000	423,699,000
Switzerland (6 months)	93,007,300	77,815,300
Canada *c*	202,791,600	211,725,800
Mexico *c*	64,656,000	78,070,000
Argentina (9 months)	75,152,900	131,923,000
British India *c*	323,581,400	425,367,600
Japan (10 months)	109,604,600	101,059,000
Cape Colony (9 months)	99,476,100	50,738,100

a Special commerce. *b* Principal articles only. *c* Fiscal years 1901–1902.

CHAPTER XIII

MEXICO AND CENTRAL AMERICA

I. MEXICO

127. The Region. — The Republic of Mexico, which occupies the narrowing southward extension of North America, has an area of over 767,000 square miles, or is nearly equal to the area of the United States east of the Mississippi River. The surface of the country appears as a continuation of the Cordilleran Highland of western United States, and presents a vast elevated plateau, from 4000 to 8000 feet above sea level. This plateau rises in a series of terraces from the low tropical coast strips on either side. The plateau is flanked by two great mountain ranges, one trending along the Pacific border (Sierra Madre Occidental) and the other along the Gulf of Mexico (Sierra Madre Oriental). From these primary axes numerous secondary ranges branch, separating the broad, elevated valleys of the plateau surface. Besides the mountain topography, numerous large volcanoes produce characteristic features of relief in certain portions, some of them reaching above 17,000 feet. The soil over wide areas of the volcanic districts is a deep accumulation of material that has been poured out from numerous volcanic vents.

A number of rivers drain the various portions of the Republic, but they are of little value to navigation. Numerous lakes also occur, but none of them are of large size. The coast line is nowhere deeply indented, though there are several large bays and a number of offshore islands on both the Pacific coast and that of the Gulf of Mexico.

From the tropical position of the country, and the altitude of the plateau region, the Republic of Mexico enjoys a remarkable range of

climate. The narrow coast lands are entirely tropical, and the same is true of the interior valleys below 3000 feet elevation. A mild temperate climate prevails on the lands lying from 3000 to 5000 feet above the sea, and this embraces the larger area of the plateau. This portion of Mexico is said to enjoy one of the finest climates in the world. The lands that lie at an altitude of over 7000 feet are in a zone of cold temperature. With such a range of climate, characteristic zones of vegetation exist in the direction of altitude, corresponding to a similar change over wide extent of latitude. Palms, rubber trees, and other forms of tropical growth, flourish in the torrid belt of the low coast lands and on the lower terrace slopes. These gradually give way on the upper slopes and the higher valleys of the plateau, to a subtropical and temperate vegetation. In the latter region, numerous species of oaks are characteristic. These in turn are succeeded by the coniferous forests of pine, spruce, and fir as representatives of the higher and colder regions. These zones of climate are recognized by the native Mexicans as three distinct belts: the lower hot zone (*tierra caliente*), the middle or temperate zone (*tierra templada*), and the upper cold zone (*tierra fria.*)

In general two well-marked seasons characterize the climate of Mexico: a *rainy season* from about May to October, and a *dry season* during the other half of the year. Throughout the wet season downpours of rain are of almost daily occurrence. When good drainage is secured, the mild temperate region of the Mexican plateau is one of the most healthful in the world.

128. Resources. — Mexico presents three agricultural zones, corresponding in a general way to the three climatic zones referred to above. The lowland tropical belt comprises the sugar cane and rubber region. The terrace slopes of the *tierra templada* include the zone of coffee cultivation, while in the upper valleys of the plateau in the same belt, Indian corn and the more northern cereals are grown. Mexico stands third as a corn-producing country, the United States and Austria-Hungary outranking it in this respect.

MEXICAN MAGUEY PLANTS

MEXICAN PULQUE SHOP

The production of cacao is an industry of growing importance, as is also that of tobacco ; Mexican tobacco holds a prominent place in the world's markets. Cotton is raised to some extent, but the Republic has to import a considerable quantity to meet the increased demand of its factories. There are several distinct cotton belts in the country. Alfalfa is an important forage crop. The forests, which cover about one-fourth of the territory, yield a great variety of products among which may be mentioned mahogany, cedar, oak, walnut, rosewood, ebony, and other woods, besides tanning barks, dyestuffs, medicinal substances, etc. A wide range of fruit culture prevails, from the tropical pineapples, bananas, mangoes, oranges, limes, etc., to subtropical and temperate species as apples, pears, peaches, apricots, and figs. The orange is the only fruit exported to any extent. Among important fiber plants may be mentioned jute, sisal hemp, and ixtle (from a kind of wild pineapple). Sisal hemp is the fiber from the agave or maguey; this plant also furnishes a variety of other products among which are "pulque" and "mescal" — fermented juices largely used by natives as alcoholic beverages. The production of the vanilla bean is an important Mexican industry. The aggregate value of agricultural exports for 1899–1900 amounted to upwards of $50,000,000, more than double that of 1892–1893.

The northern and drier portions of the plateau are adapted to grazing, especially to the raising of sheep; sheep raised here produce a fine grade of wool. Upwards of 80,000 head of cattle were exported during the first six months of 1900. Horses and mules, sheep, goats, and hogs are also a source of profit.

The mountainous nature of Mexico makes it an abundant source of mineral wealth. For a distance of 1600 miles along the western chain there are rich mineral deposits. Both gold and silver are mined, but the value of the latter exceeds that of the former on account of the larger profits involved. Of late years the output of gold has shown a marked increase. The silver production is approximately

one-third of the total world output of that metal; the great producing mines are centered in Guanajuato, Zacatecas, and Catorce. Rich and extensive deposits of iron occur, and copper, lead, tin, and cinnabar are mined with profit. Coal, petroleum, and asphalt occur in several localities, but have not been exploited to any extent. Rock salt occurs in crystalline form, and there are abundant stores of marble and other building stones. Jasper and the justly celebrated Mexican onyx are important products, besides gems of various sorts — agate, topaz, opal, amethyst, emerald, etc. — which occur in rich deposits.

129. The People. — The population of the Republic is made up of whites, chiefly of Spanish descent, native Indians, and an admixture known under the general name of native Mexicans. The entire population is upwards of 12,000,000, representing a density of about 16 persons to the square mile. The people are largely engaged in agriculture or are employed in the mines. Manufacturing is carried on to some extent, chiefly in the production of woolen and cotton fabrics, leather goods, hats, and pottery; the bulk of the manufactures are for domestic uses.

130. Commerce. — Mexico enters more largely into trade with the United States than does any other American country excepting Canada. The facilities for trade are well developed in each, but Canada purchases a larger proportion of her imports from the United States than does Mexico. This is undoubtedly due in part to a difference in language (Spanish being the language of Mexico) which acts, in many cases, as a barrier to the establishment of the fullest trade relations. In the decade from 1888 to 1898 there was an increase of 114 per cent in the exports from the United States into Mexico. During the same period Great Britain increased her exports in this direction only 26.12 per cent, and France 39.37 per cent; while Germany, with commendable push and energy, and an intelligent regard for the demands of the country, reached an increase of 163 per cent. These facts speak for themselves as to the need of studying foreign countries in every detail, both as to language, manners and customs,

MEXICO
AND
CENTRAL AMERICA
Scale of Miles.
0 100 200 300 400 500
Cities with over 200,000:.....Mexico
Cities with 50,000 to 200,000:....Puebla
Smaller places:.....Saltillo
Capitals:...◎ Other Cities:. •
Longitude West from Greenwich
Comparative Area
PENN.
45,215 Square Miles.
ROUTE OF PROPOSED NICARAGUA CANAL
Scale of Miles.
UNITED STATES
MEXICO
GULF OF MEXICO
PACIFIC OCEAN
CARIBBEAN SEA
CENTRAL AMERICA
CUBA
Havana
Santiago de Cuba
JAMAICA (Br.)
Kingston
BAHAMA ISLANDS (Br.)
Miami
Key West
Florida Straits
Tampa
Jacksonville
New Orleans
Galveston
Houston
San Antonio
Austin
Dallas
Fort Worth
Shreveport
Vicksburg
Montgomery
Tallahassee
Mobile
Eagle Pass
Laredo
Matamoros
Monterrey
Saltillo
Caderevta
Jimenez
Linares
Galeana
Ciudad Victoria
Tampico
Chihuahua
Ciudad Juarez
El Paso
Hermosillo
Guaymas
Lerdo
Durango
Mazatlan
Culiacan
La Paz
C. San Lucas
C. San Lazaro
Pt. Eugenia
I. DEL TIBURON
Gulf of California
LOWER CALIFORNIA
Fresnillo
Zacatecas
Doctor Arroyo
Aguascalientes
San Luis Potosi
Lagos
Leon
Ameca
Tepic
I. TRES MARIAS
Guadalajara
L. Chapala
Guzman
Celaya
Queretaro
Morelia
Colima (Vol.)
Colima
Manzanillo
Pachuca
Puebla
Jalapa
Vera Cruz
Mexico
Popocatepetl (Vol.)
Orizaba (Vol.)
Orizaba
Chilpancingo
Chilapa
Oaxaca
ISTHMUS OF TEHUANTEPEC
Tehuantepec
Acapulco
R. Balsas
REVILLA GIGEDO ISLANDS
C. Corrientes
Bay of Campeche
Campeche
Campeche Bank
Progreso
Merida
YUCATAN PENINSULA
Yucatan Channel
C. Catoche
I. COZUMEL
ISLA DE PINOS
TROPIC OF CANCER
Belize
BRITISH HONDURAS (BELIZE)
BAY ISLANDS
Gulf of Honduras
San Juan Bautista
San Cristobal
Laguna de Terminos
Gulf of Tehuantepec
Barrolome
GUATEMALA
Guatemala
Sta. Ana
HONDURAS
Puerto Cortes
Truxillo
Tegucigalpa
C. Gracias á Dios
NICARAGUA
Bluefields
Lake Nicaragua
San Juan del Norte
Leon
Managua
Bay of Fonseca
San Salvador
SALVADOR
COSTA RICA
Limon
Punta Arenas
San Jose
Mosquito Gulf
Colon
PANAMA
Panama
Bay of Panama
ISTHMUS OF PANAMA
PROPOSED NICARAGUA CANAL
PROPOSED PANAMA CANAL UNDER CONSTRUCTION
THE M-N. CO
Lake Managua
Bluefields R.
Managua
Masaya
Granada
Brito
San Juan del Sur
Pacific Ocean
San Juan del Norte
Caribbean Sea
San Juan R.
COSTA RICA
110°
100°
90°
80°
30°
20°
10°

and the wants of the people. The United States' exports are chiefly iron and steel manufactures (including locomotives), cotton (both raw and manufactured), gunpowder and other explosives, and lumber and wood manufactures (furniture, etc.). Of the exports from Mexico into the United States, the chief items of value are gold and silver (the latter in both coin, bullion, and ore), sisal hemp, coffee, cattle, tobacco, hides, and wool, with some lead and copper. The imports from the United States nearly balance the exports.

Railroad, telegraph, and telephone communications connect the principal centers of Mexico with one another and with the United States. There were upwards of 9600 miles of railway in the Republic in 1901. A large coasting trade is carried on between Mexico and the United States' ports. On the Gulf coast the chief ports are Vera Cruz and Tampico; the latter furnishes a much safer anchorage than the former. The ports of Progreso and Campeche are in Yucatan. On the Pacific coast are Mazatlan, Acapulco, San Blas, and Manzanillo. The City of Mexico, the capital of the Republic, with a population of some 300,000, lies at an elevation of over 7000 feet above the sea. It is a progressive city, equipped with the comforts and conveniences of modern life.

II. CENTRAL AMERICA

131. Natural Features. — The narrow mountainous stretch of the continent from Mexico to the Isthmus of Panama, includes the five Central American Republics, — Guatemala, Salvador, Honduras, Nicaragua, and Costa Rica. In addition to these there is the colony of Belize or British Honduras. The climate and productions of these countries are essentially the same, being almost entirely tropical. The surface is volcanic, and the eruptive deposits which cover wide areas produce a remarkably fertile soil. The highest mountain range lies near the Pacific, forming the main watershed and producing a bolder coast line than that on the Caribbean side. On the latter the land is comparatively low and the climate is unhealthy. In a general

way similar zones of altitude occur as in Mexico, though they are not so high, and the conditions are much more tropical. Of the five Republics, Guatemala is about equal in size to the state of Georgia, Honduras to Virginia, Salvador to New Jersey, Nicaragua to Louisiana, and Costa Rica to West Virginia. Belize is a trifle larger than Salvador. The entire area covered by these countries is considerably larger than that covered by the New England and Middle States as a whole.

132. Productions and Commerce. — Agriculture is the chief source of livelihood among the people of the several Republics. A very important industry is the gathering of forest products. The character of the products, both wild and cultivated, depends upon the altitude of the districts. Cacao and indigo are cultivated in the torrid lowlands, the former in the more moist districts. Coffee, sugar cane, rice, tobacco, and cotton grow throughout the torrid and temperate belts. In the colder regions of the higher altitudes, the more northern grains and the potato and apple flourish. Sheep and cattle raising are important industries on the high plateaus. The Guatemala highlands are good sheep pastures, while cattle raising is carried on most extensively in Nicaragua and Honduras. Rubber, mahogany, logwood, vanilla, sarsaparilla, and the balsam of Peru are among the chief forest products and form considerable items in the export trade of the several countries. Bananas and other tropical fruits are also produced. Maize and beans form the staple food of the people and are grown throughout all three of the climatic belts. Coffee is the largest export, chiefly from Guatemala and Salvador; coffee plantations are characteristic of the warm temperate slopes. The plantations of Guatemala are under the control of Germans, and Germany is the largest importer of Guatemala coffee. Hides are exported in considerable quantities. As yet the mineral resources of the region are but little exploited.

Manufacturing is done on a small scale in a few localities, chiefly in cotton, wool, and silk weaving. The principal imports are cotton

goods, breadstuffs, provisions, and beverages. In catering to the trade of these Central American countries and to South American countries as well, it should be borne in mind that the manufacturer needs to consider the peculiar demands of each country in regard to the use of articles, styles of dress, etc. A study of the people with a view to supplying their demands is a step in the right direction in establishing trade relations.

133. Population and Chief Towns. — The white population of the Central American Republics is mainly of Spanish descent with an infusion of other European stocks. Native Indians and negroes, and the general mixture resulting from these three types, form the larger proportion of the population. Spanish is the prevailing language of the different countries.

The best harbors are on the Pacific coast. San José, Champereco, and Ocós, in Guatemala, are Pacific ports carrying on a considerable trade in coffee. Acajutla, Triumfo, and La Union are Salvador ports on the Pacific, and Amapala is on the Pacific coast of Honduras. Punta Arenas is the Pacific port of Costa Rica, and Corinto and San Juan del Sur of Nicaragua. On the Atlantic (Caribbean) side are Belize (British Honduras), Livingston and Puerto Barrios in Guatemala; Puerto Cortez in Honduras; Bluefields and Greytown in Nicaragua, and Puerto Limon in Costa Rica. The trade of the Pacific ports will be greatly developed when the proposed ship canal is completed, for it will bring these fine harbors on the most healthful side of the country into closer relation with the eastern United States and European ports. Railroads are contemplated and some partially built between the Atlantic and Pacific seaports, and to the principal centers of coffee production.

134. Trade Relations. — Notwithstanding the great natural advantages which the Central American Republics possess in the way of productions, their trade is backward, owing to the rugged and densely forested character of the region, and also to the comparative sparseness of the population. What the region needs is the

development of its resources through enterprises from the outside. This is shown in the case of the Guatemala coffee trade with Germany already alluded to. The native Central American lacks the initiative that is needed to develop the land. The country needs good roads, and only a small area is under cultivation. In the main, the country is a vast extent of virgin forest. The average of population through the entire region is 16 to the square mile, but this varies greatly in different localities. In the salubrious highlands it reaches a density, in some instances, of 285 per square mile, while in the lower torrid belts, it falls to scarcely more than one or two individuals per square mile.

Statistics involving the decade from 1887 to 1897 show that during that time the United States increased its total amount of exports to Central American countries nearly 200 per cent, while the increase of British exports was less than 7 per cent. Germany appears to have held her own during this decade, but France and Spain have lost.[1] The higher slopes of the templada belt are healthful, and Europeans have established plantations here on which they reside. One of the chief drawbacks to placing capital in the region is the unstable political condition of these Republics.

SUGGESTED QUESTIONS AND TOPICS

127. Is "Middle America" a suitable name for the territory lying between the United States and South America?

128. Trace the correspondences of altitude, climate, and productions in Mexico and Central America.

129. Study the mineral resources of Mexico indicating the probable future of mining in that country.

130. What has been the influence of railroads in the commercial union of Mexico and the United States?

131. What is the relation of cattle raising in Mexico to meat-packing industries in the United States? (See p. 144.)

[1] See Summary of Commerce and Finance for August, 1901, page 507.

132. With Canada, Mexico, and Central America as examples, what can you say about nearness of a country as a factor in trade? Summarize this under the head, Trade with Neighboring Countries.

133. What were the chief reasons that led to the abandonment of the Nicaraguan route for an Isthmian Canal (1903)?

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CHAPTER XIV

THE WEST INDIES

135. Cuba.—A close commercial relation exists between Cuba and the United States, tending to mutual advantage. This advantage is a natural result of differences in geographical position. Cuba, the largest of the West India Islands, is situated just within the tropics. It has an area of 36,000 square miles and a population of over a million and a half, made up of mixed races and different nationalities, though people of Spanish descent, and negroes, predominate. Three physical areas characterize the surface of the island: (1) an eastern mountainous region; (2) a central plain region, with scattered hills; and (3) a mountain axis in the western part, the sides of which slope into valleys. The coast line is irregular and in many parts bold, descending steeply to a narrow strip or beach of fringing coral. The irregularity and boldness produce many land-locked harbors which have played an important part in the military defence of the island. Cuba is watered by numerous rivers which are remarkable for their volume. Areas of swamp land exist in which many streams disappear, the most notable being the Zapata, a brackish swamp covering some 600 square miles along the southern coast. The tropical character of the climate produces fairly uniform conditions, and there is an abundant rainfall, a rainy season prevailing from May to October. The island lies in the northern trade-wind zone, and these winds cause heavy downfalls of rain on the higher windward mountain slopes. The island, like others of the West Indies, is in the pathway of tropical hurricanes which are liable to do much damage

along the coasts. The rich soil and the abundance of heat and moisture sustain a luxuriant tropical vegetation. It is estimated that about one-tenth of the entire area of Cuba is under cultivation and that about one-fourth is covered with forests.

The chief vegetable products are sugar cane, tobacco, coffee, bananas, maize, oranges, and pineapples, named in the order of their importance. Cuba stands first among all countries of the world as a producer of cane sugar; the great crop of 1893–1894 amounted to over a million tons, the vast bulk of which was exported. In 1901 the crop reached 600,000 tons. The upland soils of Cuba are peculiarly adapted to the growth of sugar cane, being exceedingly fertile and producing a sugar of very superior quality. A single planting yields a crop for successive years, and no fertilizers are used.

Tobacco, though not so large a crop as sugar, is more profitable for the extent of land cultivated. Though grown throughout the island, the chief center of tobacco cultivation is the Vuelta Abajo district on the southern slopes of the Sierra de los Organos, in the Province of Pinar del Rio. The peculiar aroma of this tobacco has created a market without competition. The tobacco export of the island (1900–1901) amounted to $16,055,295. Besides this the manufactures of tobacco amounted to over $12,000,000. Upwards of 300,000 bales of tobacco are exported, and the remainder made into cigars and cigarettes in the factories of Havana.

Besides the great sugar and tobacco estates there are many small farm holdings, devoted to the raising of fruit, mainly pineapples, bananas, and oranges. Coffee production has declined under the competition with other coffee-producing countries. Horses and cattle are raised to some extent on the grazing lands of the central and southeastern provinces. The forests of Cuba contain valuable timber trees, also fiber plants, with dye, resin, gum, and oil-yielding species. Mahogany, lignum-vitæ, cedar, cocus wood (used in the manufacture of reed instruments), and Cedrela (used in cabinet ware and cigar boxes) are among the timber trees. Logwood and fustic are important

dyewoods. Aside from the forests included in private estates, the government controls over a million acres of forest land.

Iron ores, manganese, copper, asphaltum, and salt are the chief minerals which have been developed, though in earlier times some silver and gold were mined. Iron ores, chiefly red and brown hematite, are the most important metallic products. Salt deposits occur in pans or shallows along the northern keys where large quantities of the substance are prepared. Limestone is the chief building material used throughout the island; it is widely distributed as an ancient coral base and forms the capping of extensive plateaus. Lime products, as cement and plaster, are also extensively used.

Politically, Cuba is divided into six provinces, — Pinar del Rio, in the extreme west, Havana, Matanzas, Santa Clara, Puerto Principe, and Santiago de Cuba, the last forming the southeastern portion of the island. Upwards of a thousand miles of railroad connect the principal cities of the island and reach through the great sugar and tobacco districts. Many of the large sugar estates have private railways, and the cane is thus carried to the mills on the estates, where it is crushed, the juice pressed out and converted into crystalline sugar and molasses by the most improved methods. The numerous good harbors have developed an extensive sea-going trade.

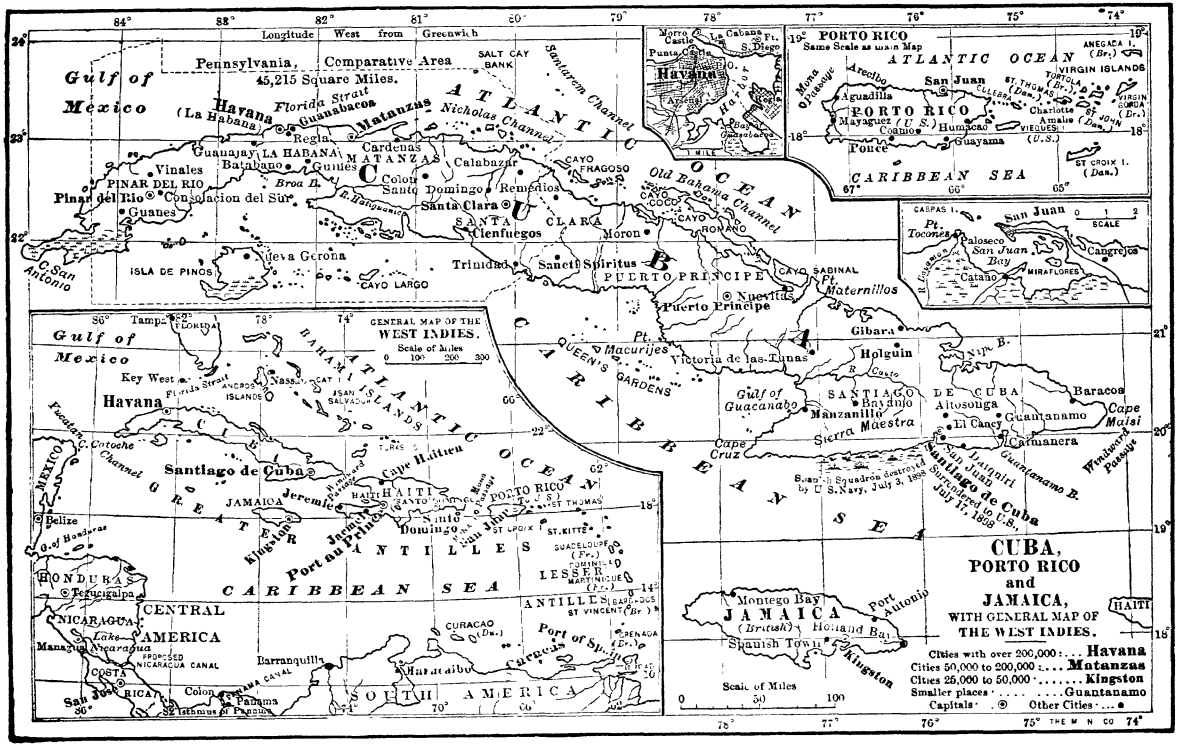
Havana (Habana), the capital, on the northern coast in the western part of the island, is the commercial center of the West Indies. It has a population of upwards of 235,000. Matanzas and Cardenas are ports of some note on the northern coast. Santiago is on the southern coast near the eastern end of the island. It is connected by rail with Havana. Farther west, on the northern shore, is Cienfuegos. Puerto Principe is an important interior town in the province of the same name. Many smaller seaports are scattered along the coasts of the island.

Cuba holds a peculiar position in regard to trade from the fact that though an agricultural country of remarkable fertility, it yet draws its food supplies mainly from without. Food-stuffs formed 51 per cent

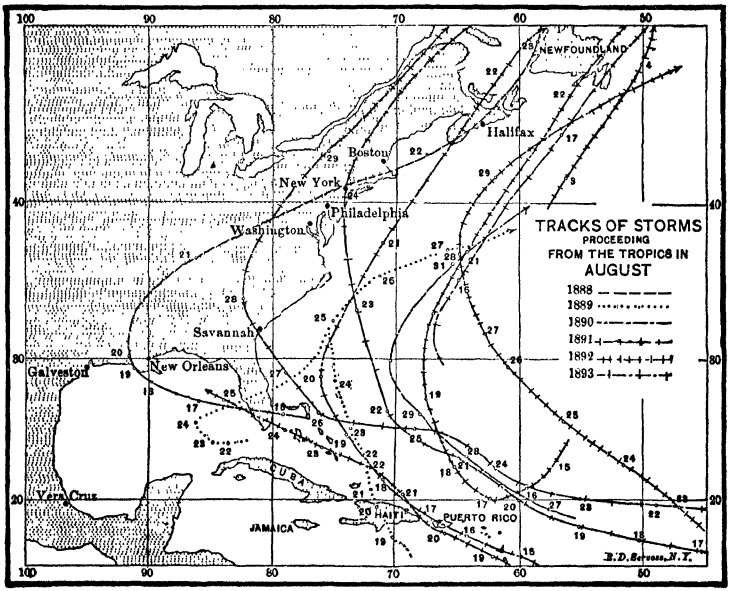
of the total imports into Havana in 1899. This is undoubtedly owing largely to the long years of its dependency when sugar was grown to the exclusion of food crops, to replenish the coffers of Spain. The future welfare of the island probably lies in the direction of increasing the productive area devoted to maize and other food plants.

The bulk of Cuban trade is with the United States. More than half of the combined value of imports and exports are with this country. The United States furnished a little less than half of the Cuban imports (1900–1901). England and Spain each furnished a little over 15 per cent of the value of imports for the fiscal year of 1899–1900. England received over 10 per cent of the value of exports, and Germany and France each about 5 per cent. A considerable number of cattle are imported from Colombia, and dried beef from Uruguay. Porto Rico supplied the bulk of the coffee. Being a purely agricultural country, Cuba imports nearly all manufactured products. The bulk of the cotton and linen manufactures comes from England, woolens from both England and France, silk goods from France, engines, machinery, and wheat flour from the United States. The United States takes nearly a third of the cigars exported, while Spain takes over a third of the cigarettes. A large amount of Cuban leaf tobacco is made up into cigars at Key West, Florida. The bulk of the sugar finds its way to the United States. Fruits, honey, wax, wood, cacao, and iron ores form minor exports. With enterprise and capital directed to the developing of resources, the outlook for Cuba in the world's trade is most promising.

136. The Caribbean and its Islands. — The Caribbean Sea has been not inaptly termed, the "American Mediterranean." From the coast of Florida to the mouth of the Orinoco there stretches a rampart of island clusters, volcanic and coral in formation, which shuts this almost land-locked sea from the deeper waters of the Atlantic. The great island of Cuba stretches across its northern border, nearly shutting off the waters of the Gulf of Mexico. This island and that of Haiti, Porto Rico, and Jamaica are collectively


Longitude West from Greenwich
Pennsylvania, Comparative Area
45,215 Square Miles.
Gulf of Mexico
ATLANTIC OCEAN
CARIBBEAN SEA
Havana
Florida Strait
Matanzas
Nicholas Channel
Santaren Channel
Old Bahama Channel
SALT CAY BANK
CAYO FRAGOSO
CAYO COCO
CAYO ROMANO
CAYO SABINAL
CAYO LARGO
ISLA DE PINOS
C. San Antonio
Pinar del Rio
Consolacion del Sur
Guanes
Vinales
Batabano
Guanajay
Cardenas
Calabazar
Colon
Santo Domingo
Remedios
Santa Clara
Cienfuegos
Sagua la Grande
Caibarien
Moron
Trinidad
Sancti Spiritus
Nuevitas
Puerto Principe
Maternillos
Gibara
Holguin
Victoria de las Tunas
Pt. Macurijes
QUEEN'S GARDENS
Gulf of Guacanayabo
Manzanillo
Bayamo
SANTIAGO DE CUBA
Altosonga
Baracoa
Cape Maisi
Guantanamo
Caimanera
Guantanamo B.
Sierra Maestra
Cape Cruz
Windward Passage
Santiago de Cuba
San Juan Hill
Daiquiri
Surrendered to U.S. July 17, 1898
Spanish Squadron destroyed by U.S.Navy, July 3, 1898
Cape Haitien
HAITI
SANTO DOMINGO
PORTO RICO (U.S.)
JAMAICA
Jeremie
Port au Prince
Kingston
Jacmel
Nimes
Mona Passage
ST. THOMAS
ST. CROIX
ST. KITTS
GUADELOUPE (Fr.)
DOMINICA
MARTINIQUE (Fr.)
ST. VINCENT (Br.)
GRENADA (Br.)
CURACAO (Dut.)
Port of Spain
Barranquilla
Maracaibo
Cartagena
SOUTH AMERICA
Belize
HONDURAS
Tegucigalpa
CENTRAL AMERICA
NICARAGUA
Lake Managua
Nicaragua
PROPOSED NICARAGUA CANAL
COSTA RICA
San Jose
Colon
Panama
PANAMA CANAL
St. Isthmus of Panama
Key West
Florida Keys
Tampa
FLORIDA
Yucatan
C. Catoche
Channel
MEXICO
G. of Honduras
Jamaica Channel
Windward Passage
Mona Passage
Anegada I. (Br.)
VIRGIN ISLANDS
Arecibo
Aguadilla
San Juan
PORTO RICO
Mayaguez (U.S.)
Coamo
Humacao
Ponce
Guayama (U.S.)
Fajardo
Culebra (Dep.)
Vieques (Dep.)
Charlotte Amalie (Dep.)
Tortola (Br.)
Virgin Gorda (Br.)
St. John (Dep.)
St. Croix I. (Dan.)
CARIBBEAN SEA
ATLANTIC OCEAN
Same Scale as main Map
Morro Castle
La Cabana
Ft. Cabanas
Punta Castle
S. Diego
Havana
Regla
Guanabacoa
Ft. Atares
Ft. Principe
Ft. Cerro
Ft. Aguila
Ft. Principe
MILE
CAPPAS I.
Pt. Tocones
Palosecco
San Juan Bay
Catano
San Juan
Cangrejos
MIRAFLORES
SCALE
GENERAL MAP OF THE WEST INDIES.
Scale of Miles
Key West
Havana
Nassau
CAT I. SAN SALVADOR
BAHAMA ISLANDS
ANCROS ISLANDS
Florida Strait
Yucatan
C. Catoche
Channel
Santiago de Cuba
Jamaica
Jeremie
Port au Prince
Kingston
Cape Haitien
HAITI
SANTO DOMINGO
PORTO RICO (U.S.)
ST. THOMAS
ST. CROIX
ST. KITTS
GUADELOUPE (Fr.)
DOMINICA
MARTINIQUE (Fr.)
ST. VINCENT (Br.)
GRENADA (Br.)
CURACAO (Dut.)
Port of Spain
Barranquilla
Maracaibo
Cartagena
SOUTH AMERICA
Belize
HONDURAS
Tegucigalpa
CENTRAL AMERICA
NICARAGUA
Lake Managua
Nicaragua
PROPOSED NICARAGUA CANAL
COSTA RICA
San Jose
Colon
Panama
PANAMA CANAL
St. Isthmus of Panama
Gulf of Mexico
GREATER ANTILLES
LESSER ANTILLES
CARIBBEAN SEA
ATLANTIC OCEAN
CUBA,
PORTO RICO
and
JAMAICA,
WITH GENERAL MAP OF THE WEST INDIES.
Montego Bay
JAMAICA (British)
Port Antonio
Holland Bay
Spanish Town
Kingston
HAITI
Scale of Miles
Cities with over 200,000 : . . . Havana
Cities 50,000 to 200,000 : . . . Matanzas
Cities 25,000 to 50,000 . . . . . Kingston
Smaller places . . . . . Guantanamo
Capitals . ◉ Other Cities . . . ●
THE M N CO

known as the Greater Antilles. North of them and approaching the Florida coast is the Bahama group, while to the eastward, strung like a bent bow toward the Atlantic, is the chain of the Lesser Antilles, comprising the Danish West Indies of the Virgin group; Curaçao and others of the Dutch West Indies; the Leeward chain (including the Virgins and other British islands, Antigua,



PATHS OF WEST INDIA HURRICANES

Dominica, Montserrat, St. Kitts, and others); the French islands of Guadeloupe and Martinique; the Windward chain (including St. Lucia, St. Vincent, and Grenada); the Barbados (the most eastern of the West Indies); Tobago, and Trinidad. Many smaller members of the group are mere rocky islets or cays (keys). All are mountainous, and some intensely volcanic. The whole world was horrified at the recent destruction of life in Martinique. The

JAMAICA PINEAPPLE PLANTATION

TRINIDAD ASPHALT LAKE

entire archipelago represents the highest ridges of a sunken mountain axis that once rose from an extended land surface.

The climate is altogether tropical, tempered by the northeast trade winds which blow continuously and with force from October to March, falling away somewhat through the summer months. The trades hurl the surf against the windward coasts of the islands, while the western or leeward coasts are protected and calm. All the islands of the West Indies lie in the hurricane track and are frequently devastated by fierce storms.

137. Productions and Trade. — Tropical fruits, cacao, coffee, spices, tobacco, woods, and various other products are abundant, but the culture of the sugar cane is the most important enterprise in all the islands. As Rodway remarks, "The future of the West Indies is bound up with the future of cane sugar; other tropical products seem likely always to remain of secondary importance." Depending so largely upon the cane, it is not surprising that the commercial life of the West Indies received a setback from the bounties offered by several European governments to encourage the development of beet sugar production. This, together with civil strife and misgovernment, has brought many of the islands to a very low financial status.

The chief imports of the West Indies are food-stuffs, beverages, and general manufactures, including hardware, machinery, cotton goods, and furniture. The United States' share in the trade is considerable. The West Indian imports in 1897 amounted to upwards of $137,000,000, of which the United States contributed about 23 per cent.

The volume of trade with the Bahamas amounts to more than $1,000,000 annually; the principal imports into the United States from these islands are pineapples and other tropical fruits, preserved fruits, sisal hemp, sponges, and tortoise shell. A great variety of manufactured products are exported there from the United States. More than one-half of the entire products of

Jamaica is exported to the United States. Coal and a variety of manufactured products are imported from this country, and there has lately been a marked increase in the imports of raw materials of various sorts. All this is in the face of direct competition with Great Britain which has a subsidized line of steamships in the trade with her own colony.

The United States sends a variety of manufactures and food-stuffs (including canned goods) to the Leeward Islands. With Haiti our trade for the fiscal year of 1899 exceeded $2,000,000 worth of goods, the exports to this country in the same year amounting to little more than half this sum. A vast field is open for the introduction of American machinery in the sugar industry of the island. Trinidad, aside from sugar and cacao, is commercially important from its great lake of asphalt, the material being an export of importance. (See illustration opposite p. 202.)

There has been a decline in the trade between the West Indies and the United States, especially in the exports from the islands, during the past few years, owing undoubtedly to the reduction in the price of sugar (as a result of the growth of the beet sugar industry) and also to the long period of war in Cuba which resulted in the destruction of vast areas of sugar cane and other products.

The West Indies as a whole are densely populated, the islands being peopled by some 6,000,000 inhabitants, representing an average of 647 persons to the square mile. The various islands are connected by telegraph with one another and with North and South America. Numerous steamship lines are in operation between the important ports of the islands and those of the United States and Europe. A large number of sailing vessels are also engaged in the trade. The islands are divided up as colonial possessions of several European countries with the exception of Cuba and Haiti; the latter contains the two negro Republics of Haiti and Santo Domingo.

138. Bermudas. — The Bermuda Islands are situated on a coral

bank 580 miles off the eastern coast of the United States. The islands are of coral formation; and they are well to the north in the surface drift of warm water known as the Gulf Stream. The Bermudas have an area of 20 square miles with a population of some 15,000 souls; they form a colony of Great Britain. Hamilton, the capital and chief seaport, is a British garrison and naval station. Owing to the mild oceanic influences, even though the soil is poor, the islands have developed an important industry in the growing of early vegetables and the cultivation of various subtropical products. The exports are potatoes, onions, and lily bulbs, which are shipped mostly to New York. The Bermuda trade, both export and import, is almost altogether with the United States and Canada. A regular line of steamers runs between New York and Hamilton, a distance of 677 miles, and the islands are connected by telegraph with Nova Scotia and with Turks Island and Jamaica.

THE WORLD'S PRODUCTION OF BEET AND CANE SUGAR

Years	Beet	Cane
	Tons	Tons
1871–1872	1,020,000	1,599,000
1879–1880	1,402,000	1,852,000
1889–1890	3,633,000	2,069,000
1899–1900	5,510,000	2,904,000

SUGGESTED QUESTIONS AND TOPICS

134. Why should there be special reciprocal advantages in trade between Cuba and the United States?

135. What is the total consumption of sugar per capita in the United States, and what proportion of this is imported? How much is imported from Cuba?

136. What advantages does Cuba enjoy in the raising of sugar as compared with Louisiana?

137. Show how better sanitary conditions in Havana have largely eliminated the dangers from yellow fever. What does this indicate about the occupation of the tropics?

138. What proportion of the trade of the British West Indies is with the Mother Country, and what proportion is with the United States? What deduction can you make?

139. Compare the Caribbean with the Mediterranean as a trade center. What will be the effect of an Isthmian Canal upon trade in the Caribbean region?

140. What are the special qualities of Cuban tobacco, and can these be secured in tobacco raised in other parts of the world?

141. Make a comparison of the volcanic nature of the West Indies with that of the neighboring regions of Mexico with Central America.

142. Make a study of Asphalt; its Uses and Sources of Supply.

Books to be Consulted

****Statesman's Yearbook.**

*Clark, *Commercial Cuba.*

****Cuba** in *The International Geography.*

Porter, *Industrial and Commercial Cuba.* Washington; 1899.

*R. T. Hill, *Cuba, Porto Rico,* etc. New York and London; 1898.

Rodway, *The West Indies and the Spanish Main.* London; 1896.

Heilprin, *The Bermuda Islands.* Philadelphia; 1889.

* *World's Sugar Production and Consumption.* (1800–1900.) Monthly Summary of Commerce and Finance, Treasury Department; November, 1902.

****American Commerce.** Monthly Summary, etc.; August, 1901.

CHAPTER XV

SOUTH AMERICAN COUNTRIES

139. General Features of South American Trade. — It is a noticeable fact that at present, commercial relations between the United States and other American countries become less satisfactory the farther we proceed southward. Our trade with Mexico is growing on a firmly established basis, and a tolerably close connection exists between the two Republics through the medium of the railroad and the telegraph. With the Central American Republics, commercial relations, though by no means unsatisfactory, are still open to improvement, and the same is true of the West Indies. In the case of South American countries, however, there is a marked falling off in trade with us as compared with that with European countries. The explanation of this is in the failure of the United States to meet a geographical fact by proper means of communication, and, likewise, a failure to become more generally acquainted with the needs, languages, and customs of South American peoples.

As to the geographical fact, it will be noticed that the eastern portion of South America juts out like a huge elbow, with Cape St. Roque at its extremity. This point is at least 2600 miles east of the meridian of New York, and renders the distance traversed by steamers between New York and the South American trade centers beyond this projection only a trifle less than the distance between them and the ports of Germany and England. In the absence of any direct communication across the Isthmus, the countries on the western side of South America are practically as far removed from the eastern manufacturing portion of the United States as they are from Europe. This renders necessary the long and arduous Cape Horn route, or the

vastly more expensive railroad transportation to the Pacific coast, and reshipment from thence to western South American ports. The bare fact of being located in the same hemisphere is thus offset by geographical barriers, and puts the United States, so far as distance is concerned, on practically the same footing as are the countries of western

Europe. With the countries that border on the Caribbean Sea — Colombia, Venezuela, and Guiana — our trade relations are more favorable, showing clearly the effects of the barrier of greater distance in trade. Yet even with Caribbean countries, our trade is far from satisfactory.

This unsatisfactory relation is due in part to the failure of the United States to meet the conditions by putting into operation lines of steamships between our ports and those of South America, and, in part, to the neglect of merchants in not studying the requirements on which South American trade is based. The United States turns out manufactures which for excellence of quality, and abundance and variety are unsurpassed. The things needful are to get the goods to the markets and to create a demand for them. The exports of the United States to European countries are far in excess of the imports from those countries. To offset this disadvantage, many steamers, after discharging goods of the United States at European ports, bring out full cargoes of English, German, and other European manufactures for South America, where they reload with tropical products for the United States, thus making the triangular voyage with full cargoes and consequent profit to the owners. Again, ships that have carried our goods to Europe bring back return cargoes of South American products that have formerly been imported. Thus we lose the best market for our manufactured goods and buy South American products at the greatest disadvantage. It is readily seen that by this method the United States' manufactures tend to be excluded from South American markets or to reach them only through foreign hands.

What is needed for South American trade is regular steamer service coupled with an intelligent understanding on the part of our merchants and manufacturers, as to the life and needs of the different peoples. It is only by such means that we may hope to gain a fair share of the South American trade, and to increase our exports to this continent; they now amount to only about one-third of our imports from the same territory.

140. Regional Geography of South America. — The continent of South America has an area of 7,000,000 square miles, being somewhat smaller than North America. The greater portion lies within the tropics; the narrowing southward extension only is in the temperate zone. The coast line is remarkably even, there being

nowhere any deep inlets or gulfs, excepting the Darien and Venezuelan gulfs on the northern coast, a few baylike indentations on the eastern coast, and the Gulf of Guayaquil on the western side.

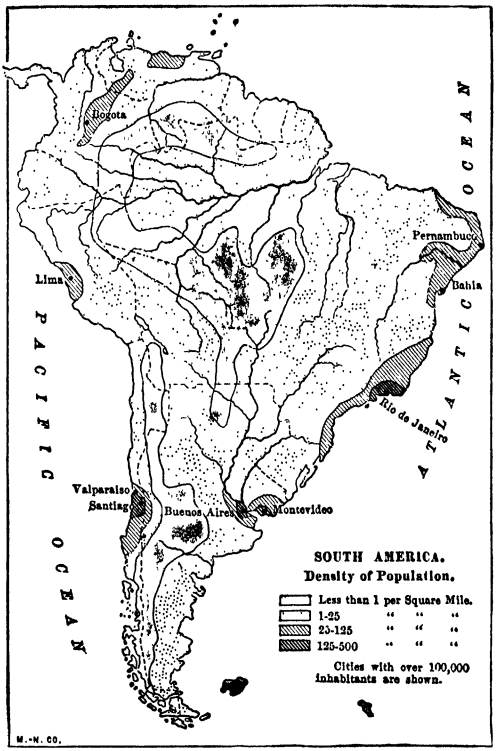
The entire continent presents three well-marked physical areas: (1) the Eastern Highlands; (2) the Central Lowlands; and (3) the Andes Highland or Western Cordillera.

(1) The Eastern Highlands form two comparatively low plateaus, — the Guiana Highland and the Brazil Highland; these are separated by the valley of the lower Amazon. They consist of ancient crystalline and stratified rocks, representing a very old land surface which has been much denuded. The average elevation is between 1000 and 5000 feet above sea level.

(2) The Central Lowlands, except the Pampas and Patagonia to the south, are occupied by the three great river basins, — the Orinoco, the Amazon, and the La Plata. These three rivers and their tributaries form a remarkable series of waterways, flowing through the interior of the continent and across its long eastern or Atlantic Slope. The Orinoco rises in the higher western portion of the Guiana Highland, receiving tributaries also from the eastern and southern slopes of the Cordillera in Colombia and Venezuela, and skirting the western and northern base of the highland, empties into the Atlantic through a vast delta. One of its upper tributaries, the Cassiquiare, is remarkable for its connection with the Rio Negro, a tributary of the Amazon. The Amazon Basin, the largest in the world, occupies a vast area in the equatorial portion of the continent. The main river is formed by the union of two large rivers which flow from the Peruvian Cordillera. It is joined along its course by numerous other streams almost as large as itself, which swell its waters into a mighty flood that rolls seaward through a dense forest tract, known as the selvas, and empties into the Atlantic by an enormous delta at the equator.

South of the Brazil Highland, and lying between it and the Western Cordillera, is the La Plata Basin, drained by two rivers,

the Uruguay and the Parana. The former drains the southern part of the Brazil Highland, while the Parana and its tributary, the Paraguay, rise in the central part of the Highland and the Matto Grosso heights (the water parting of the La Plata and the Amazon basins) at no great distance from the head streams of the Madeira and other southern tributaries of the Amazon.



(3) The Andes or Cordilleran Highland may be divided into two portions, — the Southern or Main Cordillera of the Andes, extending from the southern extremity of the continent to the Gulf of Guayaquil, and the Northern Cordillera beyond this. The Main Cordillera consists of two ranges, an eastern and a western, between which runs a great parallel valley. Toward the south, a depression of the land has given entry to the sea at various points, producing a rugged coast line, with many fjord-like inlets. A complete severance of the continental land mass at one place forms the Strait of Magellan. The Northern Cordillera, in the Andes of Ecuador, consists of two parallel ranges, inclosing a lofty plateau-like valley. These two ranges

divide into four ranges with deep valleys between them. In Colombia one range flanks the Gulf of Maracaibo, and the other trends eastward as the Caribbean Highland. This latter, submerged, forms the chain of the West India Islands. The entire extent of the Cordillera is lofty and of a volcanic nature; numerous high volcanoes rise from the ranges.[1]

The countries of South America may be grouped, roughly, into two main divisions, — those of the Atlantic Slope and those of the Andes Highland. The former includes Venezuela, Guiana, Brazil, Paraguay, Uruguay, and Argentina; the latter, Colombia, Ecuador, Peru, Bolivia, and Chile.

I. COUNTRIES OF THE ATLANTIC SLOPE

141. Venezuela. — Venezuela borders on the Caribbean Sea and presents three physical regions, — the ranges of the Cordillera and Caribbean Highland on the west and north, the llanos or plains of the Orinoco, and the Guiana Highland. The climate is tropical, though the mountain slopes furnish the conditions of higher latitude, as in Mexico and Central America, and produce vegetation of the temperate regions. The entire area is a little larger than Texas, Indian Territory, Oklahoma, New Mexico, and Arizona combined. The country is for the greater part covered by a virgin tropical forest. The population consists of native Indians, whites and negroes, with an average density of about four to the square mile. Spanish is the language spoken. According to the natural features of the different districts, the industries are either agricultural, pastoral, or the gathering of the forest products. Of the agricultural industries, coffee forms the chief product; the area under coffee cultivation is about 200,000 acres (divided into some 33,000 estates). The yearly export of coffee is about 100,000,000 pounds. Cacao is also an important item, both in cultivation and shipment; there are about 5000 estates which grow this product. Sugar cane

[1] *International Geography*, pp. 813–818.

is cultivated to a considerable extent, but the removal of a prohibition on sugar importation has reduced the output. Cereals are grown in the higher districts. The llanos of the Orinoco and the grassy savannas throughout the region, furnish an abundant pasturage for vast herds of cattle and horses. Sheep, goats, and pigs are also raised. This stock-raising industry, together with the agricultural pursuits in general, employ about one-fifth of the population. The chief of the wild forest products which are gathered by the natives, are vanilla, tonga beans, caoutchouc (India rubber), and copaiba.

The mineral wealth of Venezuela is considerable. Gold is worked in certain districts, and silver, copper, and iron occur abundantly. Other metals, as lead and tin, also exist, as well as several important non-metallic substances, — as sulphur, petroleum, coal, asphalt, salt, kaolin, etc. Most of these mineral resources are undeveloped. This is especially the case with petroleum and the great lakes of asphalt. Salt mining is at present a government monopoly. An American company is engaged in opening up iron mines on the lower Orinoco. On the north coast the natives are engaged in pearl fishing and in the gathering of sponges and tortoise shells. There are no manufacturing industries worthy of note, manufactures being almost altogether imported; the exception to this is in the making of hats, garments, and the like, for local consumption, but these articles are of inferior quality.

Coffee, cacao, and hides form the chief exports. Coffee is the staple. Other exports are goat and deer skins, rubber, copra, tobacco, copaiba, fustic, sugar, cattle, etc. Iron and textile manufactures, machinery, timber, cement, coal, and coal oil are the chief articles of import. The volume of Venezuela's trade is divided between the United States, France, Germany, England, and Spain. Of this 27 per cent of the imports are from the United States, the larger proportion of the remainder are from France. This percentage of import trade with the United States is larger than that of any other South American country excepting Colombia.

Like all other South American countries, Venezuela is poorly equipped with highways; the roads are mostly primitive, and goods must be transported into the interior on pack animals. Upwards of 500 miles of railroad are in operation, mainly between the productive agricultural districts and the ports on the Caribbean. Only Venezuelan vessels are allowed to engage in the coasting trade.

Caracas, the capital, and Valencia are situated on the slopes of the Caribbean range in the midst of the most productive agricultural districts. La Guaira (the port of Caracas), Maracaibo (on Lake Maracaibo), and Puerto Cabello are the chief seaports. Ciudad Bolivar is the only important town on the Orinoco. The Orinoco offers a magnificent highway for traffic into the interior. The future prosperity of Venezuela probably depends on the development of the country and its resources, by outside capital and enterprise.

142. Guiana. — Guiana, with an area of about 200,000 square miles, is divided into the three colonies of British, French, and Dutch Guiana. Though not bordering directly on the Caribbean Sea (its coast being to the eastward of the chain of the Windward and Leeward islands) it is essentially within the domain of West Indian commerce.

The boundaries of the three Guiana colonies, both among themselves and with neighboring countries, have been the subject of controversy, which seems to have been largely based on the location of the gold deposits. Of this nature, was the recent so-called "Venezuelan Boundary Dispute" between Venezuela and British Guiana.

British Guiana has an area of 104,000 square miles (almost as large as Great Britain and Ireland), only about the one-hundredth of which is cleared for cultivation; the rest is virgin forest. The climate is hot and moist, the country being situated but a very few degrees north of the equator. A belt of low alluvial coast land is succeeded by a white sandy strip which passes into the

rough and hilly back country, forest-covered, with here and there open savannas in the interior. To a marked degree the productions are dependent upon the physical features of the regions. Only the low coast strip (which was reclaimed by dikes at the hands of the early settlers) is under cultivation, and the chief crop is sugar cane. The main exports are sugar, molasses, rum, balata gum, charcoal, and woods. The country has rich gold deposits, and there are also diamonds, both of which form items of export. The gold export is valued at upwards of $2,000,000. The imports are foodstuffs, machinery, tobacco, coal, etc. More than half the imports are from England, and 12 per cent from British colonies; the United States contributes about 25 per cent of the imports into British Guiana. Somewhat less than half the value of exports goes to the United States. Georgetown is the capital of the colony and the most important town.

Dutch Guiana, or Surinam, borders British Guiana on the east, and possesses similar physical features. Sugar, cacao, and coffee form the chief agricultural products, and gold is mined to some extent. The capital and chief town of the colony is Paramaribo at the junction of two small rivers ten miles inland.

French Guiana, or Cayenne, is the most eastern of the Guiana colonies. Cacao is the principal crop grown, but rum, coffee, phosphates (from the near-by islands), anatto (a plant material used for coloring butter), various woods and gums are also items of export. Gold is the most important mineral, and its mining is a prominent industry of the colony. The capital and chief town of French Guiana is St. Louis, on an island just off the coast.

The United States takes more than half the value of the exports of Dutch Guiana, but only contributes about 17 per cent of the imports. French Guiana trades largely with the Mother Country, but England sends cotton and woolen goods, and the United States foodstuffs, petroleum, and lumber; the imports from the United States are about 6 per cent of the whole. The trade between the United

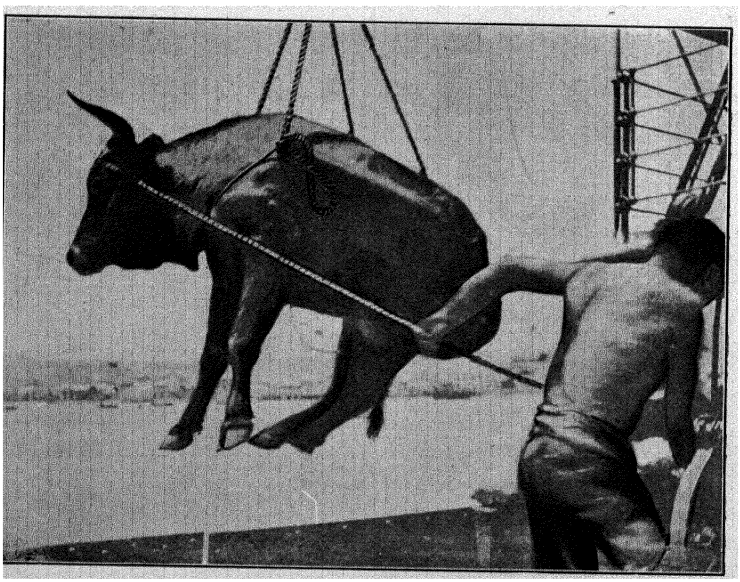
States and the Guiana colonies is, like that of Venezuela, relatively larger than is the case with other South American countries from the fact of their position, fronting north, and being practically, as already pointed out, within the area of the West Indian trade.

II. BRAZIL

143. Physical Features. — The vast domain of the United States of Brazil covers an area of 3,218,130 square miles, including one-half the area of the entire continent of South America, and greater than that of Europe as a whole, or of the entire United States. Of this enormous territory, but a small fraction is improved land; the greater part of the Republic is a trackless and almost uninhabited wilderness, consisting of mountains and river valleys largely covered by dense and impenetrable primeval forests. The mountainous region is that island-like portion of the Eastern Highlands of the continent, fronting on the Atlantic and lying between the Amazon Valley on the north and the valleys of the Paraguay and the Parana on the south and west. The river valleys of Brazil belong to two great systems, the Amazon, and the Parana and Uruguay drainage of the La Plata Basin. The Amazon Basin (including its tributary drainage) includes an area of 1,900,000 square miles, more than one-half of the entire territory of Brazil.

144. Population. — The population of the Brazilian Republic is upwards of 14,000,000 (about equal to the population of New York, Massachusetts, and Pennsylvania combined), representing an average density of about 4.5 inhabitants to the square mile. Of this population, 38 per cent are Europeans of relatively pure blood, descendants of the original Portuguese settlers; another 38 per cent are of mixed Indian, negro, and white blood; 4 per cent are pure Indian and 20 per cent negro. Portuguese is the language spoken throughout Brazil, while in all other South American countries, Spanish is the prevailing language. The sparseness of the population of Brazil, when compared with the population of the United States, is *c*

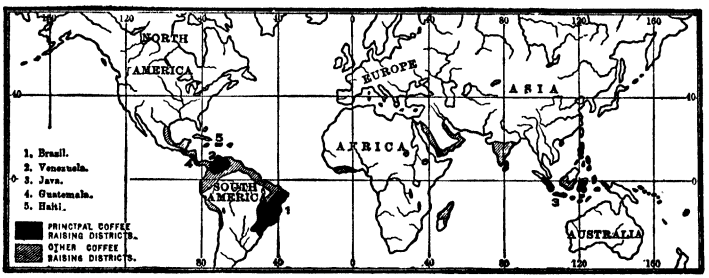
CURING RUBBER, AMAZON VALLEY



LOADING CATTLE, SOUTH AMERICA

forcible illustration of differences between tropical and temperate regions.

145. Resources and Industries. — The resources of Brazil are numerous and varied, almost every variety of tropical cultivation being possible and the forests yielding an unlimited supply of useful products. Brazil is the greatest coffee-producing country in the world, representing about 60 per cent of the entire world supply. Fully one-half of the Brazilian coffee export comes to the United States; the remaining half is distributed to European countries. In the twenty years following 1880 the export of coffee from Brazil amounted to over 100,000,000 bags (averaging 132 pounds).[1] More



DISTRIBUTION OF COFFEE

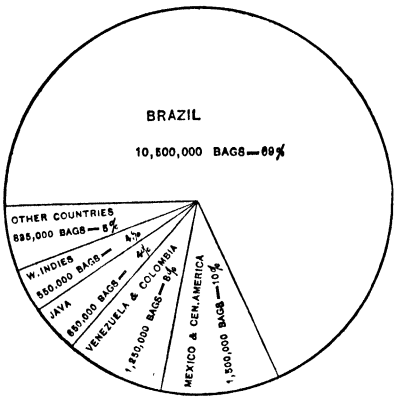
recently the average annual export of coffee is from 10,000,000 to 16,000,000 bags.

Next to coffee, rubber is the most important export of Brazil; the export of rubber increases constantly. The increase of the latter exceeds the relative increase of the coffee export in value, though less in actual amount. Of this product, the United States purchases the larger portion; the export of rubber in 1895 from Brazil to this country amounted to upwards of 11,000,000 kilograms (24,000,000 pounds), while that to Europe was 9,000,000 kilograms.

Tobacco, hides, and cacao are other items of considerable importance in the list of Brazilian exports. Sugar, cotton, and maté or

[1] Monthly Summary of Commerce and Finance; August, 1901, page 511.

Paraguay tea are also extensively cultivated. The different districts are characterized by the production of certain commodities. Thus in the state of Rio Grande do Sul, the cattle industry is a prominent feature, incident to the elevated grass lands bordering on the Uruguay frontier. In this district, also, the preserving of fruit, tanning, and brewing are among the more important industries. In the Rio de Janeiro district and the neighboring states of São Paulo and Minas Geraes, coffee is the main product, there being upwards of 15,000 plantations in the former state and 2000 in the latter with an average of over 170,000 trees for each plantation. In 1901–1902 the estimated yield of export coffee in the Rio de Janeiro district was upwards of 12,000,000 bags. In the Amazon Valley, rubber production is the characteristic industry; the 1900 export of this district was estimated at upwards of 26,600 tons. In Pernambuco the manufacture of raw sugar is a prominent industry; the total output of Brazilian sugar for 1900–1901 was estimated at 250,000 tons. Cotton is likewise grown in this state, the yield in 1899–1900 being upwards of 289,000 bales. There is a noticeable increase of late in Brazilian cotton manufacture, 155 mills being in operation. The milling industry has likewise extended to wool, silk, and flour, the supplies for the latter being mainly drawn from Uruguay and Argentina.



THE WORLD'S PRODUCTION OF COFFEE (1900), APPROXIMATED IN BAGS OF 132 POUNDS EACH

Total, 15,285,000 bags

The vast mineral and forest resources of Brazil are comparatively undeveloped. Gold and diamonds are worked in the states of Minas Geraes and Bahia, and a variety of mineral products are found,

notably lead, zinc, silver, copper, mercury, iron, and manganese. The great bulk of the metal deposits occur in the mountain region of the Eastern Highlands. Some coal mines are being operated in the state of Rio Grande do Sul, but the product is mostly of the nature of lignite. Scarcity of fuel operates against the development of the vast iron deposits of the country.

146. Commercial Features. — In 1899 there was a total length of 8718 miles of railroad in operation, and in addition nearly 5000 miles under construction. The government is acquiring control of several lines, and likewise controls the telegraph system. A large coasting trade is carried on by Brazilian vessels between the various ports.

The Indian population is chiefly in the Amazon Valley and the northern provinces, while the white population (a number of them immigrants from Germany, Italy, and other European countries) is largely centered about the seaports and in the agricultural districts of the southern portion. As a consequence of this, the most productive region of Brazil is in the southern half, with Rio (Rio de Janeiro) as its seaport and commercial center. This city, with a population of 750,000, is the capital, and the second largest city in South America. It is the greatest coffee market in the world. Rio is situated on a bay of the same name which affords a splendid harbor. Its situation south of the projecting portion of the continent places it at practically the same distance from the United States as from the ports of western Europe. On the other hand, the city of Para (Belem), commanding the trade of the Amazon Valley, and holding the first place in the world's rubber markets, is, by its situation north of the above mentioned projection, brought into much closer connection with the United States. As a result, the purchases of Para from the United States are relatively much greater than are those of the ports farther south. The more productive centers, however, being in the southern part, call for direct steamship communication between this part of Brazil and the United States. Pernambuco, or Recife, south

of Cape St. Roque, is another port, doing a large trade in sugar, coffee, and cotton. There are numerous other more or less important commercial towns throughout the settled parts of the Republic.

Brazil imports cotton and woolen textiles, iron and hardware, machinery, coal, petroleum, provisions, cattle and dried beef, breadstuffs, codfish, pork, lard, olive oil, butter, tea, candles, salt, timber, wines, etc. Of the total imports at Rio for 1900, which amounted to upwards of $45,000,000, Great Britain furnished about 35 per cent, Germany 10 per cent, and the United States nearly 9 per cent. The yearly imports of the United States from Brazil represent an excess over our exports to that country of upwards of $46,000,000.

SUGGESTED QUESTIONS AND TOPICS

143. What are the explanations of the failure of the United States to develop favorable trade relations with South America? (See Emory, noted below.)

144. Why has Europe been more successful than the United States in securing and holding South American trade? (See Schoff, below.)

145. With a sketch map of South America, show the prevailing winds, distribution of rainfall, and the characteristic vegetation of the different regions of the continent.

146. Does it seem better in the long run to educate foreign countries into the use of a better grade of goods and improved methods of trade, or servilely to supply the things they demand and in the ways they demand them? What nation generally follows the first method? What one the second?

147. Find the distance from Rio Janeiro to London and from Rio Janeiro to New York. What are the advantages of location?

148. What is the per capita consumption of coffee in the United States? What in Great Britain?

149. Great Britain is considered a free trade country and the United States a high tariff country. What are the facts for the import duty on coffee in the two countries? How do you account for the facts, and how do the policies affect trade of the two nations with Brazil?

150. What part of Brazil is best suited for settlement by people from the United States and Europe? Why?

151. What is the present commercial "sphere of influence" of the United States in South America?

152. Compare the commercial advantages of a navigable river flowing north and south with one flowing east and west. Illustrate this, using the Amazon and the Mississippi.

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CHAPTER XVI

SOUTH AMERICAN COUNTRIES (*continued*)

III. COUNTRIES OF THE LA PLATA BASIN

147. Argentina. — The Argentine Republic is the second in size of the South American countries, and is somewhat more than half as large as the United States. Argentina has a population of nearly 4,000,000 (about equal to that of Illinois). The country is almost wholly within the south temperate zone, only the northern portion possessing a tropical climate.

Four climatic regions are recognized: (1) the northern low plains, tropical in character; (2) the central plains region, warm temperate, and temperate; (3) the Patagonian plains, south of the Rio Negro, a cold and inhospitable desert of loose stones and shingle; and (4) the Andes region, embracing the eastern slopes and foothills of the Cordillera up to the Chilian frontier on the crest line, the climate varying according to the latitude, altitude, and time of year.

Possessing a vast expanse of grassy plains (the pampas), Argentina has turned its attention mainly to stock raising and grain growing. Sheep and wheat are the most important products of the country. In 1897 there were 105,000,000 sheep in Argentina, and they produced an average of 4.5 pounds of wool each. During the last forty years the number of sheep has increased eleven-fold, while the wool clip has increased fifteen fold, showing a steady improvement in the wool-producing qualities of the stock.[1] Cattle are second only to sheep in their importance, though their increase has not been so marked. In connection with this production of

[1] Monthly Summary of Commerce and Finance; August, 1901, p. 510.

live stock, is the freezing of meat; large packing-houses for this purpose have been established by a company of British capitalists. The shipping of frozen meat is an important branch of Argentine trade.

Wheat is grown extensively; the area under wheat in 1899 was estimated at 5,500,000 acres, with a yield of upwards of 82,500,000 bushels. More than two-thirds of the wheat is exported. Other productions are flax, corn, and sugar (in the northern warmer regions). Fruits of various sorts are also largely cultivated, grape culture and wine making being important agricultural features.

Argentina is rich in economic mineral deposits which await exploitation. Copper, gold, and silver ores are abundant in the Andes provinces of the Republic; alluvial deposits of gold occur along the coast as far south as Tierra del Fuego. Other metals and non-metallic substances are more or less abundant, among which may be mentioned coal (chiefly lignite), petroleum, salt, nitrates, iron, sulphur, borax, etc.

GREAT BRITAIN	63	— 31%
GERMANY	37	— 18%
FRANCE	30	— 14%
BELGIUM	26	— 13%
UNITED STATES	20	— 10%
ITALY	19	— 9%
BRAZIL	10	— 5%

COMBINED IMPORTS AND EXPORTS OF ARGENTINA (1900), APPROXIMATED IN MILLIONS OF DOLLARS

Total, $205,000,000

The country is covered in parts with extensive forests which yield a variety of valuable products, — timber of various kinds (including the heavy quebracho wood), maté or Paraguay tea, etc.

There is little done in the line of manufacturing, though there is some flour milling, wine making, distilling, and brewing. Nearly all the needful manufactures are imported. The chief exports are live animals and animal products (including wool, frozen meat, cheese, butter, hides, tallow, etc.), wheat, corn, linseed, mineral products,

and native woods. Of the imports Great Britain supplies about 29 per cent and the United States only about 10 per cent; Germany, France, Italy, Brazil, and Belgium make up most of the remainder. The exports from Argentina were over $200,000 in excess of the imports in 1901. Over 2,500,000 sheep are now slaughtered in a year and the carcasses shipped frozen, representing a value of about $2,000,000 in gold.[1] The bulk of exports go to European countries.

Buenos Aires, on the right bank of the La Plata estuary, is the capital and largest city of the Republic. It commands a fine harbor, which has been greatly improved by engineering skill. It is connected by rail with various towns of the interior. The railway system of Argentina is being rapidly extended, and the union of this with the Chilian system, now about being effected, will make a transcontinental line across the pampas and the Andes from Buenos Aires on the Atlantic, to Valparaiso on the Pacific coast. About 10,000 miles of railroad are in operation throughout the Republic. No other South American country is more progressive — a fact due to climatic influences and the preponderance of Europeans in the population. Many Italian immigrants have come into the country in recent years. Argentina is a magnificent country with a great future; but what it needs most is capital and enterprise rather than further colonization by unskilled laborers, cheap labor being already at hand. As in most other South American countries, the language is Spanish and the state and church Roman Catholic.

148. Uruguay. — The Republic of Uruguay, lying between Brazil on the north and Argentina on the south and west (from which latter it is separated by the La Plata estuary and the Uruguay River), is similar in physical features to its southern neighbor. It lies entirely within the south temperate zone, covering an area about equal to that of Ohio and Indiana together. It has a scant population of 964,600; seventy per cent of the population are native-born white persons—the rest are immigrants from southern Europe. The

[1] Monthly Summary of Commerce and Finance; August, 1901, p. 510.

climate is mild and healthful, and the surface of the country a well-watered, undulating plain of grass land, affording a wonderfully luxuriant pasture. There is but little timber throughout the country. Like Argentina, the chief industries are stock raising and grain growing. Besides these, grape and olive culture and the growing of tobacco are important occupations. The value of live stock (including sheep, cattle, horses, and mules) is estimated at upwards of $73,000,000. The wool clip in 1901 amounted to over 96,000,000 pounds. In 1900 the yield of the wheat crop was 33,000,000 bushels. Over 740,000 head of cattle were slaughtered in the same year. The chief exports are wool, hides, dried beef, beef extracts, and tallow. The mineral resources are developed to some extent. The imports are proportionally larger per individual than is the case with Argentina. The Republic has a considerable trade with both Brazil and Argentina; but Great Britain furnishes the bulk of the manufactures imported, the United States standing sixth in the list from which imports are received (1901).

Montevideo is the capital and chief city, situated on the north bank of the La Plata; it is the commercial rival of Buenos Ayres. Railroads connect it with the principal towns in the interior.

149. Paraguay. — The Republic of Paraguay is entirely inland, having no communication with the sea except through the La Plata system. It covers a territory about as large as New York and Pennsylvania taken together, and has a population of only 600,000, not counting the Indian peoples. The northern portion of the Republic is tropical, and the northwest section embraces a part of the Gran Chaco, a wild, undeveloped region. The forests of Paraguay yield a variety of products, — timber, gums, dyewoods, etc. The chief industries are the cultivation of the yerba maté (a species of holly from which Paraguay tea is made) and oranges. The cultivation of the rubber tree is being attempted. Sugar cane, tobacco, coffee, indigo, cotton, and other tropical products grow well wherever the attempt has been made to cultivate them.

Cattle and sheep raising is an industry of some importance in the open plains of the Chaco region. The chief exports are Paraguay tea, oranges, tobacco, timber, and hides. Many valuable mineral deposits occur throughout the region, but as yet they are comparatively undeveloped. The imports are chiefly manufactured goods (cotton and machinery) and provisions. Being entirely inland, the trade of Paraguay with outside countries is small; that with the United States in recent years has been less than $1000 a year. Asuncion, the capital, is situated on the left bank of the Paraguay River. It commands the steamboat traffic of the La Plata, and is regularly visited by steamboats of several lines. The city is connected by rail with the most important interior towns. Telegraph lines connect it with other more important centers, and with the world at large.

IV. THE ANDES REPUBLICS

150. Colombia. — The United States of Colombia lies in the northern portion of the Northern Cordillera, bordering the Republic of Panama on the north. It has a seacoast fronting on both oceans, and as a consequence, and because of its relation to the Caribbean trade, it does a relatively larger business with the United States than is the case with most South American countries. The area of the Republic is about equal to that of all the southern States east of the Mississippi. It has a population of some 4,000,000. The country presents a surface of lofty mountain ranges in the western part, the eastern part being grass-covered plains or llanos. Four zones characterize the mountain slopes, the *tierra caliente*, *templada*, and *fria*, and above these, the *paramos* from 10,000 to 13,000 feet altitude — a bleak and uninhabited region. In the first zone the purely tropical products, as cacao, bananas, and sugar cane, are grown; in the *templada*, coffee and maize are important crops; in the cold temperate (*fria*), the cereals, potatoes, and northern fruits are raised. Large herds of cattle are pastured on the llanos. In certain districts tobacco

is an important crop. A large area of the Republic is forested, especially the low, hot plains, the forests abounding in a great variety of wild products, including vegetable ivory, divi-divi wood, rubber, tolu, and other gums and dyestuffs. Palms of many sorts, including the cocoanut, flourish in the hot, moist districts, while the cinchona tree, the bark of which yields quinine, grows on the mountain slopes. Valuable mineral deposits abound, — gold, silver, copper, iron, coal, salt, and emeralds, — but as yet little has been done in the way of developing these resources. The business of the country is in a very backward state, owing to the frequent civil wars, and the primitive means of internal communication. In the main, the roads are only mule tracks. The chief highway of commerce is the Magdalena River, which flows northward from the mountainous interior into the Caribbean Sea. Steamers ascend the river for about 900 miles, and the tributary streams are likewise navigable for some distance along their courses. The work of building canals and clearing the river channels is now under way.

The industries are almost altogether agricultural, although but a small portion of the fertile soil is under cultivation. Mining is carried on to a slight extent in certain districts.

Bogota, the capital of the Republic, is situated on a lofty portion of the Cordillera. Two seaports are on the Caribbean coast, — Cartagena and Barranquilla on the Magdalena River with Puerto Colombia as its entry port. The population of Colombia is chiefly centered about the towns and seaports.[1]

Of the import trade of Colombia, the United States supplies about 30 per cent, principally textile manufactures, petroleum, breadstuffs, and beverages. Coffee forms the export of largest value. Forest products, minerals, cattle, hides, tobacco, and rubber are also ex-

[1] The Republic of Panama was, until 1903, a part of Colombia. Its capital, Panama, on the Pacific, and its chief city, Colon, on the Caribbean, are connected by the Panama railroad. A great ship canal is here under process of construction by the United States. It will join the waters of the two oceans.

ported. In the past ten years the United States and Great Britain have held their own in Colombian trade; Germany has shown an increase, while France has fallen off.

151. Ecuador. — The Republic of Ecuador consists of a lofty mountain-rimmed plateau which is divided by mountain knots or spurs into a series of "basins." On the east the Cordilleran slopes embrace the Amazon watershed, while on the west the slopes descend more steeply to the Pacific coast strip. Though located on the equator the great altitudes produce a moderate climate throughout a considerable area of the country. The low coast lands are hot and unhealthy; the eastern slopes are subject to a heavy rainfall, a wet and dry season being the characteristic feature of the lower portions. Ecuador is about equal in area to the states of Ohio, Indiana, and Illinois taken together; it has a population of over a million. The region is volcanic, earthquakes being frequent; numerous giant volcanoes rise from the Cordilleran ranges. The eastern slopes are heavily forested as the result of the abundant rainfall. A great variety of tropical products are found on these forest slopes, both on the eastern and western side. Among the many kinds of forest trees are the "red bark" cinchona trees (rich in quinine), the Castilloa rubber, and much valuable timber, besides gum and dye-yielding trees and plants. In the drier Andean basins of the plateau, the vegetation is scanty, being chiefly cactus forms. Agriculture of various kinds is the chief industry, but it is in a backward state. Cacao is the staple product, the number of trees being upwards of 40,000,000. Coffee, sugar, and cotton are also grown. Ivory nuts, Peruvian bark, sarsaparilla, orchilla, and rubber are among the wild forest products gathered and exported. Attention is now being directed to the cultivation of rubber trees, as the original supply is being rapidly exhausted. Wheat, barley, and maize are grown in the Andean basins for local consumption only; in some districts a considerable number of cattle are raised. Ecuador is rich in gold deposits,

some of which are worked, and many other ores and minerals are abundant throughout the region, though little has been done in the way of their development. Insufficient population and want of good roads are the chief causes of the Republic's backward state.

Quito, the capital, at an elevation of over 9000 feet, is about 115 miles from Guayaquil, the seaport of the country, and is connected with it only by an indifferent highway. Most of the transportation is done on pack animals. A region of such natural wealth needs but the influence of outside enterprise and capital to develop its resources and open up the means of communication. The population of Ecuador is largely Indian. One of the chief industries of the country has been the manufacture of "Panama hats," so called from the fact that they entered into commerce through the hands of Panama merchants. They were made by hand, the grass being plaited under water. Cacao is the chief export, and cinchona bark, Panama hats, sarsaparilla, rubber, coffee, sugar, and hides are items of some importance. Fronting on the Pacific, the trade with manufacturing sections of the United States is small, and the purchases are mainly from European countries. The share of the United States in the import trade has never reached a million dollars a year.

152. Peru. — The Republic of Peru lies south of Ecuador in the main Cordillera. It covers an area about the same as the three Pacific states, — Washington, Oregon, and California, — and contains a population of 4,609,000 souls. More than 50 per cent of the population are native Indian peoples; 20 per cent are of mixed blood, while the remainder is made up of white persons of Spanish descent, and immigrants from Europe, China, and the United States. Spanish is the language spoken, and the state and church, as in other South American countries, are Roman Catholic.

The Peruvian Andes consist of three parallel ranges: — The Maritime, the Central, and the Eastern Cordilleras. The first two are volcanic in nature and inclose between them a lofty and cold tract of country known as the Puna lands. The Eastern Cordillera or the

Andes proper is separated from the Central Cordillera by a wide plateau called the Sierra, the surface of which is diversified by lofty mountain spurs and broad plains and valleys. The land rises in height toward the southward, and on the Bolivian frontier is the basin of Lake Titicaca, covering an area of 16,000 square miles, at an elevation of over 12,500 feet above the sea. The eastern slopes of the Cordilleras embrace the upper Amazon Basin and are heavily forested and deeply cut by numerous ravines in which flow the feeders of the upper Amazon. The narrow coast strip is some 20 miles in width. The western slopes are dry in contrast with the eastern or Andean slopes. The prevailing winds are from the east, and are deprived of moisture in crossing the lofty ranges. The Puna lands extend from 12,500 to over 14,000 feet altitude, and are practically uninhabited.

The staple products of Peru are cotton, sugar, and coffee. In 1901 the value of the cotton export reached $1,630,000, and that of coffee over $327,000. Cinchona bark, coca leaves (cocaine) and other medicinal plants, dyestuffs, and rubber also figure prominently in Peruvian commerce; cacao, rice, and tobacco, are also of more or less importance. Wool forms a leading item of export, and is obtained both from sheep and from the native alpaca and llama. Cattle are raised and hides exported to some extent. From the offshore rocky islands, guano is collected and exported in considerable quantities. Peru is rich in valuable minerals; gold, silver, lead, zinc, copper, and mercury among metals, and coal, petroleum, salt, borax, and sulphur among non-metallic substances. Gold mining has declined. The shipment of ores, especially of silver and copper, forms a considerable item in Peruvian trade.

Like other South American countries, Peru needs capital. The means for internal communication are still imperfect, though upwards of a thousand miles of railroad are in operation, involving some remarkable feats of engineering in overcoming mountain obstacles. Much of the trade on the eastern side, especially the rubber output,

finds its way by boat down the Amazon. Manufacturing is carried on to some extent, chiefly in the making of straw hats, coarse woolen fabrics, beverages, shoes, soap, candles, and cigars.

Lima is the capital and chief city, and is connected by rail with the near-by seaport of Callao. The trade of Peru is mainly with Great Britain. In 1899 there were entered and cleared at the port of Callao 306 British vessels, 90 German, and 17 from the United States. Textile manufactures, iron, and machinery form the bulk of imports, Great Britain supplying over one-third, Germany one-sixth, and the United States about 9 per cent, the latter country showing a slight increase in recent years. A considerable trade is carried on between Peru and the neighboring countries.

153. Bolivia. — The Republic of Bolivia borders Peru on the south and east, and is entirely an inland country, having no seacoast and no outlet except through other countries. It is larger than the southern States east of the Mississippi, with a population of about four per square mile; one-half of the population is Indian, one-quarter mixed blood, and the other quarter whites of Spanish descent. The country, though rich in resources, is in a very backward state. Agricultural pursuits form the chief occupation, but mining is carried on in certain parts, notably in the famous Potosi district; silver, tin, and copper are the most important ores produced. Coffee and rubber form the chief vegetable products. Sugar is produced mainly for the purpose of distillation. The northern grains and vegetables are grown on the lofty table-lands, and cattle, sheep, and llamas are also raised in large numbers on the high pasture lands. The wool of the two latter animals is woven into coarse native cloth. Most of the transportation is done on the backs of llamas and mules. The eastern part of Bolivia embraces the upper watersheds of the Amazon and La Plata basins. The fertile slopes and valleys of these districts are heavily forested, producing a luxuriant tropical vegetation. This region is the home of several varieties of cinchona trees, which produce the famous Bolivian bark, rich in quinine. Coffee and cacao of

fine quality are cultivated here, and the production of India rubber is a growing industry.

The river valleys afford highways of trade toward the east. Railroad construction is being carried forward to connect with the Argentine system and also with that of Peru. About 500 miles of road are now in operation, by which the chief city, La Paz, is connected with the Chilian port of Antofagasta. Sucre is the capital of the Republic, but La Paz is the largest city and most important commercial center. A steamer service maintained on Lake Titicaca brings La Paz in communication with the Pacific at Mollendo.

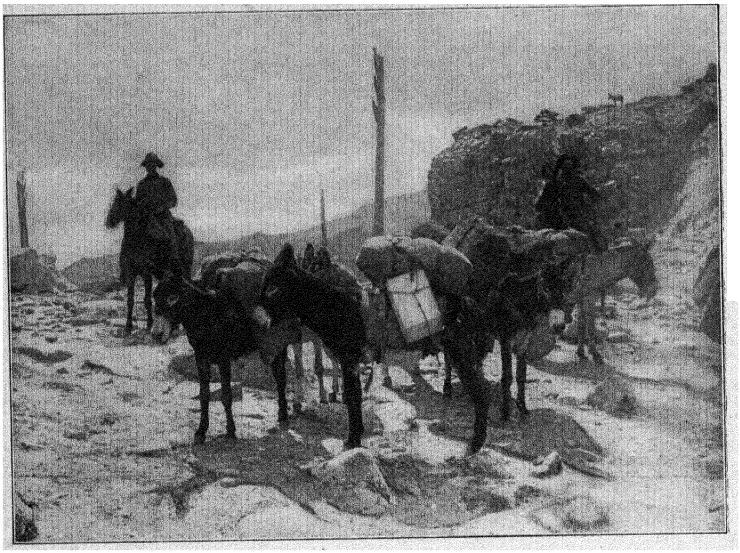
Bolivian trade is largely with neighboring countries, though some trade with the outside world is carried on. Coffee, cacao, rubber, silver, tin, and copper form the chief exports. The imports consist of clothing, textiles, hardware, provisions, and liquors.

GREAT BRITAIN	166	—	61%
GERMANY	55	—	20%
UNITED STATES	18	—	6.5%
FRANCE	17	—	6%
PERU	8	—	3%
ALL OTHER COUNTRIES	9	—	3.5%

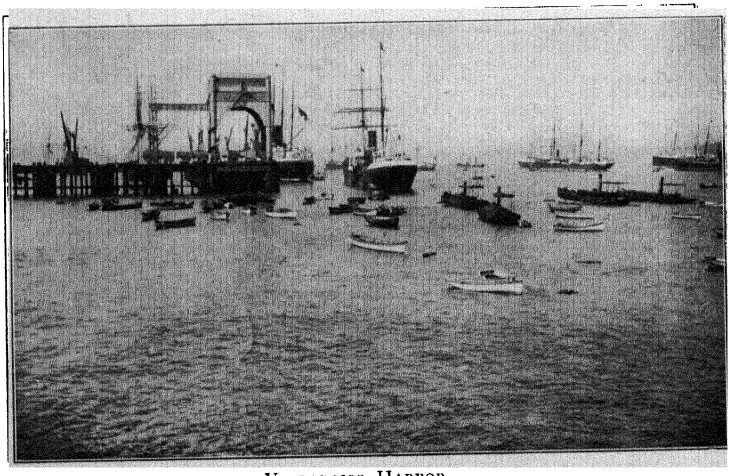
COMMERCE OF CHILE FOR 1900, APPROXIMATED IN MILLIONS OF PESOS

Total, 273,000,000 pesos

154. Chile. — The Republic of Chile occupies a narrow strip along the western side of the continent from Peru to Cape Horn. It embraces the Strait of Magellan and the western portion of Tierra del Fuego. Chile borders the Argentine frontier along the high crest line of the Cordillera. The Republic lies almost wholly within the south temperate zone. It is about equal to California, Oregon, and Washington in size, and supports about 3,000,000 people, an average density of about ten to the square mile. More than one-third of the people are engaged in agricultural pursuits. Wheat is the most important crop raised; the annual yield of wheat is about



MOUNTAIN PACK TRAIN



VALPARAISO HARBOR

28,000,000 bushels. Other cereal crops amount to over 8,500,000 bushels. Fruits and vegetables are also largely grown. Sheep, goat, and cattle raising form a very important branch of Chilian agriculture. The foremost industry of the country, however, is the extraction of nitrate of soda (saltpeter), which occurs in great abundance in the northern portion of the rainless region. This material is largely used as a fertilizer, and more than 400,000,000 tons have been extracted and shipped, for the most part to European countries. More than two-thirds of the exports of Chile are nitrate of soda. Chile is rich in mineral deposits. Copper is the most important metallic ore produced, but gold, silver, zinc, tin, nickel, cobalt, and manganese ore are also worked. Coal deposits occur, the output in 1900 amounting to upwards of 325,000 tons. The gathering and shipment of guano, from the neighboring rocky islands, is another important feature of Chilian industry.

The country is mountainous throughout; it is sparsely wooded in the dry northern sections. The agricultural lands are the coast strip and the mountain valleys and slopes of the middle and southern portions. The climate of the middle region is one of the finest in the world, and the good drainage secured by the slopes makes the country exceedingly healthful. The people are largely a mixture of whites with the aboriginal inhabitants. They are fairly progressive, the temperate climate undoubtedly exerting an important influence in this direction.

Chile possesses nearly a thousand miles of navigable rivers and upwards of 14,000 miles of public highways. About 3000 miles of railroad are in operation. This was the earliest of the South American countries to build railroads.

Santiago, the capital, is beautifully located at the western base of the Andes. It is connected by rail with the chief city and commercial seaport, Valparaiso. The latter city commands a fine harbor and roadstead, a comparatively uncommon feature on this portion of the coast. Valparaiso is in fact the most important commercial center

on the western side of South America, being the terminal port for several steamship lines from Europe. Other ports are located at favorable points; Punta Arenas commands the Magellan passage.

Chile is more forward in manufactures than is the case with other South American countries. Among the more important of the manufactures are the products of machine works, saw mills, carriage factories, sugar refineries, breweries, etc. The principal exports are nitrate, metallic ores, minerals, guano, wool, hides, leather, wheat, and barley. The chief imports are coal, sugar, dress goods, hardware, illuminating oil, etc. Chile has considerable trade with neighboring countries, but Great Britain has the bulk of the foreign trade. During 1898, for example, 239 British vessels, 99 German, 68 Chilian, and 7 vessels from the United States entered and cleared at the port of Valparaiso. The United States has less than 7 per cent of the import trade of Chile.

ARGENTINA	264	—	32%
BRAZIL	246	—	29.7%
CHILE	107	—	13%
URUGUAY	52	—	6.3%
PERU	32		4%
OTHER COUNTRIES	121	—	15%

COMMERCE OF SOUTH AMERICA BY COUNTRIES (1900), APPROXIMATED IN MILLIONS OF DOLLARS

Total, $821,000,000

SUGGESTED QUESTIONS AND TOPICS

153. What was the "line of demarcation" (1493)? (American Colonial History.) What was the influence of this on colonizing in South America?

154. What language is spoken in Brazil? What in the rest of South America?

155. In what month is Argentina "waiting for the harvest"?

156. Compare the soil of Argentina with that of the Mississippi Valley; compare the climate of the two regions. What are the chief products of each?

157. At a recent Trade Congress, the representatives of Argentina seemed less solicitous for the trade of the United States than did the representatives of other

Latin American countries. How do you account for this? Why should there be less advantage in trade between the United States and Argentina than between the United States and other regions of South America?

158. How do you explain the comparative coolness of South America, considering its position in the torrid zone?

159. A project of the Pan-American Congress, proposed in 1889 (Washington) and re-affirmed in 1901 (Mexico), is to connect the three Americas by rail. The total distance from New York to Buenos Ayres is 10,229 miles, of which 6500 miles of railroad are already in operation or in course of construction. What will be the commercial effect of the completion of this connection?

160. What will be the effects of the Isthmian Canal upon trade relations of the United States and western South America? (See Smith noted below.)

161. What is the special packing of goods that are to be unloaded by "lighterage"? What when they are to be transshipped by "pack train"?

162. Make an investigation into the Resources of Chile.

163. Write a short essay on The Trade Outlook of the United States in South America.

Books to be Consulted

****** *The International Geography*, Chapters XLIV and XLV.

****** *American Commerce.* Monthly Summary of Commerce and Finance, Treasury Department; August, 1901.

Hudson, *The Naturalist in La Plata.* London; 1892.

*Markham, *Peru.* London, 1880.

*Smith, *Western South America and its Relation to American Trade.* Annals of American Academy; November, 1901.

****** *Statesman's Yearbook.*

PART IV

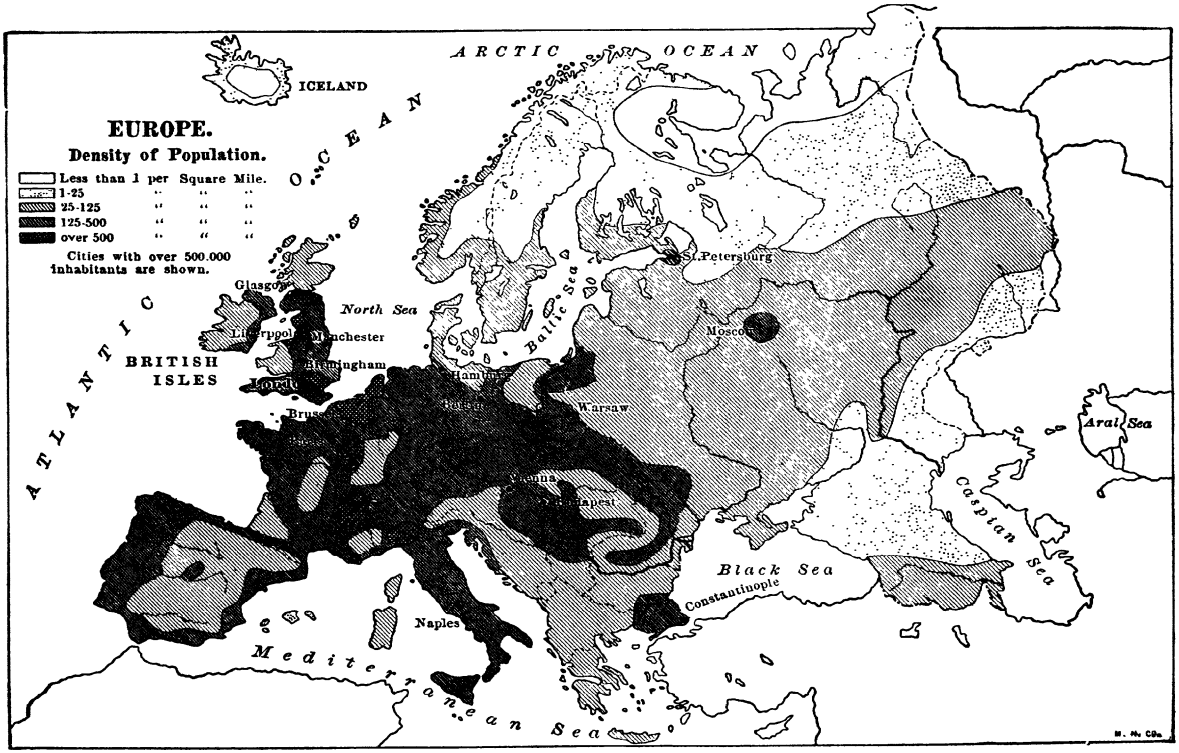
TRADE OF THE EASTERN HEMISPHERE

CHAPTER XVII

THE CONTINENT OF EURASIA: EUROPE AND ASIA

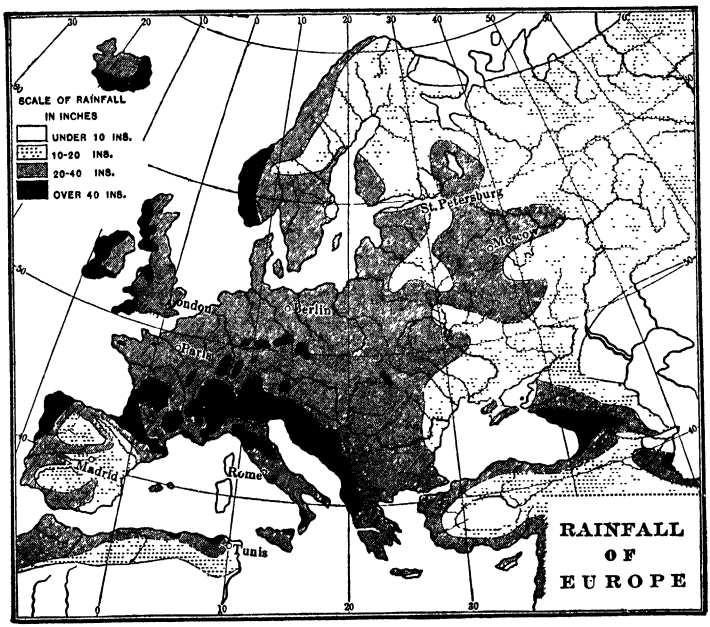
155. Physical Features. — The continent of Europe appears as a peninsular extension of the greater Asiatic land mass, and as such the two grand divisions are frequently referred to under the single comprehensive term "Eurasia." The geographical boundary between the two was recognized by the early historic peoples in the Mediterranean region as the straits which connect the Black Sea with the Mediterranean. These straits — the Dardanelles, the Sea of Marmora, and the narrow Bosporus — have always defined an Occidental civilization from an Oriental one, and have made Europe and Asia separate political units. North of the Black Sea, the sparsely inhabited steppes of the Caspian region and the low ranges of the Ural Mountain system formerly existed as a barrier which has been overcome in recent times by the eastward expansion of the Russian Empire and the two lines of railroad, — the Siberian and the Transcaspian.

The most conspicuous feature in the physical geography of Europe, and the one that has played a prominent part in the economic development of western European peoples, is the deeply indented shoreline, whereby almost every portion of the continent is brought within comparatively easy reach of some inland sea — the highway of communication. The greater land mass of Asia, on the other


EUROPE.
Density of Population.
Less than 1 per Square Mile.
1-25 " " "
25-125 " " "
125-500 " " "
over 500 " " "
Cities with over 500.000 inhabitants are shown.
ARCTIC OCEAN
ICELAND
ATLANTIC OCEAN
North Sea
Baltic Sea
BRITISH ISLES
Glasgow
Liverpool
Manchester
Birmingham
London
Hamburg
Berlin
Warsaw
Moscow
St. Petersburg
Vienna
Black Sea
Constantinople
Caspian Sea
Aral Sea
Naples
Mediterranean Sea

hand, is strikingly devoid of these inland-reaching bodies of water. The central bulk of Asia is fringed with peninsulas and flanked with chains of offshore volcanic islands; but it is nowhere deeply penetrated by the ocean as is the case with Europe.

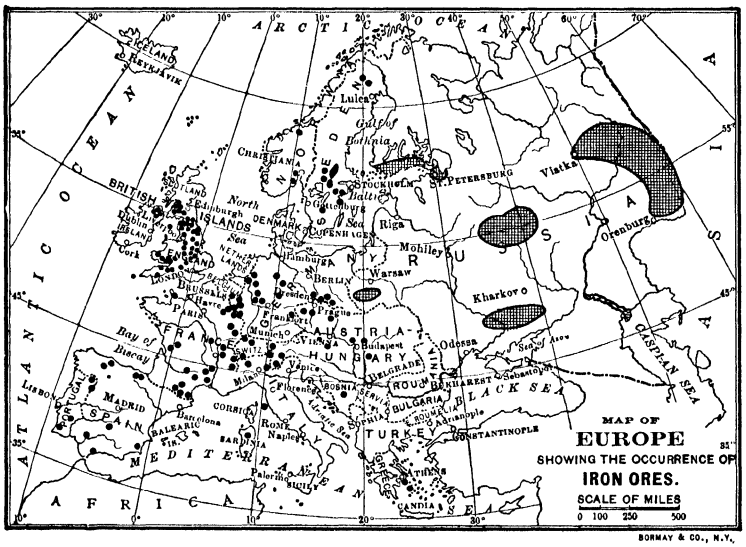
The relief features of Eurasia as a whole are (1) a broad northern lowland which slopes gently toward the basins of the North Atlantic and Arctic oceans from (2) a southern highland mass. This



northern lowland forms the so-called Central Plain of Europe, which is continuous with the Siberian Plain of Asia. Its surface is much broken by groups of low mountain ranges. The drainage features of the continent conform in the main to the broad features of relief.

The southern highland mass in Europe is broken by several depressions which have played a very prominent part in the history and commercial development of European peoples. These are: (1) the

basin of the Danube River between the Alps and the Carpathians, reaching eastward to the Black Sea ; (2) the Rhone and Saone Valley, affording a highway from the Mediterranean into the heart of Europe ; (3) the Middle Rhine Valley, opening into the Rhone-Saone Valley across a low divide — the so-called Burgundy Gate ; (4) the valley of the Po in northern Italy ; and (5) the low divide separating the Garonne and Aude basins, and making an easy high-



way of communication across southern France between the Mediterranean and the Atlantic.[1]

The Asiatic portion of the continent is again contrasted with the European portion by the greater elevation of its few mountain passes. This has made communication between the peoples dwelling on either side of the lofty ranges extremely difficult, and has hindered commercial development.

156. Climate. — Western Europe is dominated by the prevailing

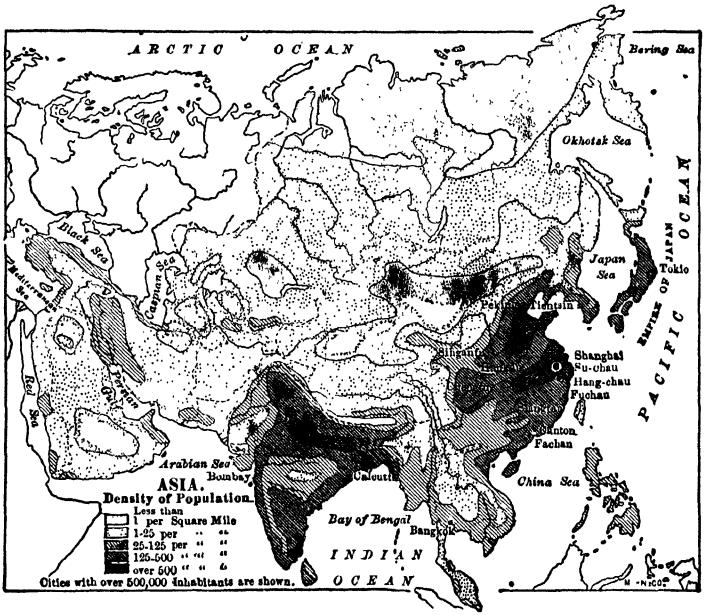
[1] *The International Geography*, pp. 124–125.

southwesterly winds which come from the Atlantic and are therefore laden with moisture. No great north and south mountain barrier exists to deprive these winds of moisture, and the rainfall is abundant, decreasing with remarkable regularity toward the east as the continental character of the climate becomes more and more pronounced. The temperature is relatively high from this oceanic influence, and the various crops are grown farther north than in similar latitudes in regions where a more continental climate prevails. The southern portions are dry from the influence of the Sahara and also from the fact that the region is in the northern trade-wind belt which tends to draw northeasterly winds from a land area toward the ocean.[1]

The greater portion of Asia is dominated by a continental climate, characterized by wide annual ranges of temperature. The vast area of land, together with the extraordinary altitude of wide areas in its central part, produces characteristic pressure changes which determine the direction of the prevailing winds at different seasons. Thus, the intense cold of the winter produces a condition of high pressure over the Mongolian Plateau and the central Asian land mass in general, with dry winds blowing outward from this area. In summer a low pressure area is developed over the land from the effects of increased insolation, and winds blow into this from the surrounding regions of higher pressure. This low pressure summer area is most marked in the desert regions of the Indus and Arabia. These seasonal variations of pressure and change in the direction of the winds determine the matter of rainfall. In winter the winds are dry from their anti-cyclone source, and but little rain falls over wide areas. In summer, on the other hand, the winds, especially those coming from the ocean, are moisture-laden, and cause heavy rainfall on the windward slopes of mountains. The *monsoon region* lies on the south and southeastern coast lands and peninsulas. Its climatic features result from the periodic winds above noted.

[1] *The International Geography*, pp. 130–131.

157. Economic Features. — The present economic life of Europe is a necessary result of the segregation of peoples into separate states under the influence of geographical conditions. An Alpine barrier long shut off Italy from France, and nurtured the republic of Switzerland in its fastnesses. The Iberian Peninsula, isolated from the rest of Europe by the Pyrenees, fostered the outlying civilization of Spain. The Middle Rhine Valley was a frontier of



Roman power and a line of demarcation between primitive Frank and German; these primitive tribes developed into the modern nations of France and Germany. The Rhine delta fostered the kingdom of the Netherlands. Great Britain was insular, and Scandinavia and Italy peninsular. Slavonic peoples occupied the Central Plain and developed into the Russian Empire. The kingdom of Austria-Hungary became a political unit in the Danube

Basin. Diversity of language grew out of this geographical segregation of peoples, and helped still further to augment national differences.

One striking characteristic of European civilization is the development of dense populations as separate political units, in comparatively limited areas. As a result, the struggle for existence has been greatly intensified, and the nations of western Europe have held their own only through a spirit of commercial activity that was the necessary outcome of their environment. By virtue of commercial enterprise these nations have become great powers. To-day the most commercially aggressive nations are the English-speaking peoples, the Germans, the French, the Swiss, the Italians, the Belgians, the Dutch, and the Russians.

GREAT BRITIAN	8,910	27.5%
GERMANY	2,608	19%
FRANCE	1,714	12%
NETHERLANDS	1,485	10%
BELGIUM	805	6%
AUSTRIA HUNGARY	736	5.5%
RUSSIA	612	4%
ITALY	590	4%
OTHER COUNTRIES	1,774	13%

COMMERCE OF EUROPE (1900), APPROXIMATED IN MILLIONS OF DOLLARS

Total, $14,234,000

A belt of territory between the 45th and the 55th parallels of north latitude, and extending from the Atlantic eastward to southern Russia, is the most intensely industrial region in the world. This industrial zone includes England (the Clyde coal field lies just outside of its northern limit), Germany, central and northern France, Belgium, Holland, Switzerland, northern Italy, Austria, and Poland. On either side of this belt lie regions like southern France, Spain, the Italian and Balkan peninsulas to the south, and the Scotch Highlands, Denmark, Scandinavia, and the greater area of Russia on the north. The latter are eminently agricultural in contrast to the manufacturing activity of the central zone. The concentration of population

within this central zone has focused commerce from all parts of the world. Of the materials poured into this region, breadstuffs form by far the most important item. In exchange for food, a great variety of manufactured goods are sent abroad to the more purely agricultural regions, both near and remote. The underlying explanation for this concentration of the manufacturing industry and population within such narrow limits, is the presence of coal and iron. Coupled with this is the facility for internal communication and oversea shipping, due to the numerous river systems (the low relief over a wide area enabling their easy connection by canals), and the many excellent harbors of a sunken shore line. Next to breadstuffs the raw materials for textile manufacture form a large item in the European import list. Without them the coal and iron would be of less value.

Notwithstanding the increased facilities for wage earning as a result of the intense industrial activity, large numbers of the population in this densely crowded zone of Middle Europe are forced to emigrate into lands of larger area where the conditions of life are more favorable.

The geographical barriers to inter-European commerce have been largely overcome by means of the extensive system of railways that now exists throughout the continent, and that connects the various countries with one another and with the Orient. Paris, Berlin, Vienna, and St. Petersburg have become great centers of railroad lines. (See map opposite.) Conspicuous among these is the Russian system, leading to the great Siberian railroad. Rapid communication is secured by the Indian mail from London *via* Dover and Calais or Boulogne to Paris and from thence through the Mont Cenis tunnel to Turin and Brindisi, at which point a connection is made with steamers for India *via* the Suez Canal. This makes the time from London to Bombay less than two weeks. The Northern Express route runs from Paris, through Berlin, to St. Petersburg, and the Orient Express from Paris *via* Vienna,

MAP OF THE
PRINCIPAL
RAILROAD LINES
OF
EUROPE.
SCALE OF MILES
0 100 200 300
BRITISH ISLES
NORTH SEA
NORWAY
SWEDEN
BALTIC SEA
RUSSIA
GERMANY
AUSTRIA
HUNGARY
FRANCE
SWITZERLAND
ITALY
SPAIN
PORTUGAL
MEDITERRANEAN SEA
BLACK SEA
ATLANTIC OCEAN
AFRICA
Christiania
St. Petersburg
Moscow
Riga
Dünaburg
Vilna
Vitebsk
Königsberg
Danzig
Minsk
Warsaw
Berlin
Hamburg
Bremen
London
Dublin
Liverpool
Manchester
Aberdeen
Edinburgh
Newcastle
Belfast
Cork
Amsterdam
Rotterdam
The Hague
Antwerp
Brussels
Calais
Dover
Southampton
Cherbourg
Brest
Le Havre
Paris
St. Nazaire
Dijon
Strassburg
Munich
Leipzig
Dresden
Breslau
Cologne
Frankfort
Prague
Vienna
Budapest
Kiev
Odessa
Bern
Lyons
Bordeaux
Toulouse
Marseilles
Milan
Turin
Genoa
Bologna
Florence
Verona
Trieste
Steinbruck
Belgrade
Bukharest
Varna
Sebastopol
Constantinople
Salonika
Brindisi
Naples
Rome
Corsica
Sardinia
Sicily
Balearic Is.
Barcelona
Valencia
Madrid
Seville
Cartagena
Cadiz
Gibraltar
Lisbon
Santander
Oporto
Athens
Greece
Montenegro
Roumania
Servia
Bulgaria
Eastern Roumelia
Longitude East from Greenwich

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Budapest, and Belgrade to Constantinople. The once almost insurmountable barrier of the Alps is pierced by tunnels, among them being those at Mont Cenis, the Brenner, the St. Gotthard Pass, and the Arlberg. The continent of Europe is a network of railroads and telegraph lines, a fact which in itself indicates the marvelous commercial development of the last century.[1] The United States is one of the countries that furnish industrial Europe with food-stuffs and raw products for manufacture, though her European export trade is by no means limited to these commodities. She draws from Europe a large amount of manufactured goods. In variety and volume of trade from the United States, Europe surpasses any other part of the world or all other parts of the world combined.

INDIA	737	–	37%
STRAIT SETTLEMENTS	279	–	14%
CHINA	259	–	13%
JAPAN	250	–	12½%
DUTCH INDIES	182	–	9¼%
CEYLON	64	–	3¼%
OTHER ASIA	217	–	11%

TOTAL IMPORTS AND EXPORTS OF ASIA (1900), APPROXIMATED IN MILLIONS OF DOLLARS

Total, $1,988,000,000

The configuration of Asia, as we have seen, has opposed commercial development by isolating its centers of civilization. Its vast areas of plateaus, walled in by mountain ranges which are embraced in the central highlands, and the barrier zone of mountain desert and brackish steppe, extending through Baluchistan and Afghanistan into the Siberian Plain, for long centuries shut the Oriental civilizations from one another and from the commercial centers of Europe.

Many Asiatic peoples are nomadic, leading a pastoral life, the conditions of which necessitate a frequent change of residence. Only on the alluvial flood plains of the southern and southeastern rivers, and

[1] Chisholm, *The International Geography*, p. 137.

on the islands of the Japanese Archipelago, have civilizations worthy the name, with their attendant train of commercial activities, been developed. Until within very recent times Asiatic commerce may be said to have been confined almost entirely to the peninsulas, fertile delta lands, and the islands of the south and east; the vast interior area, with its untold wealth of natural resources, was practically beyond the reach of the newer civilization. Where European power has gained a foothold, as in India, and where the railroad has found its way, as in Siberia and the Transcaspian region, there commerce has prospered. Asia with its records of antiquity is only beginning to feel the quickening influence of the modern commercial spirit.

SUGGESTED QUESTIONS AND TOPICS

164. What are the natural geographical divisions of Europe and Asia, and what trade areas result from these?

165. Trace the mountain wall of the Old World from western Spain to the Bering Sea. How is this continued in the New World?

166. The Rhine and the Danube are called "international rivers." Why? Do you think rivers tend to become more or less common, as boundaries of countries?

167. Show the influence of monsoons in southern Asia.

168. Account for the difference between isotherms and parallels across Eurasia. (See Map, p. 12.)

169. In many parts, the climate of Europe changes more from west to east than from south to north for the same distance. Why is this?

170. What historic event made the Mediterranean Sea less important commercially? What later event increased its importance?

171. Locate on a map the principal passages from the Mediterranean Basin into Middle Europe. What commercial cities have developed as a result of these passages?

172. Contrast the following features of Europe and North America, keeping in mind the commercial effects: (*a*) contour and inland seas; (*b*) height and direction of mountains and position of passes; (*c*) position and direction of great plains; and (*d*) location and direction of the principal navigable rivers.

Books to be Consulted

** Chisholm, *The Continent of Europe*, Chapter XI. The International Geography; also *Europe* in Stanford's Compendium.

Freeman, *Historical Geography of Europe.* 2 volumes. London, 1881.

* Sime, *Geography of Europe*, Chapter I. Macmillan's Geographical Series.

** Herbertson, *The Continent of Asia.* The International Geography, Chapter XXIII.

* Keane, *Asia.* 2 volumes. Stanford's Compendium. London; 1896.

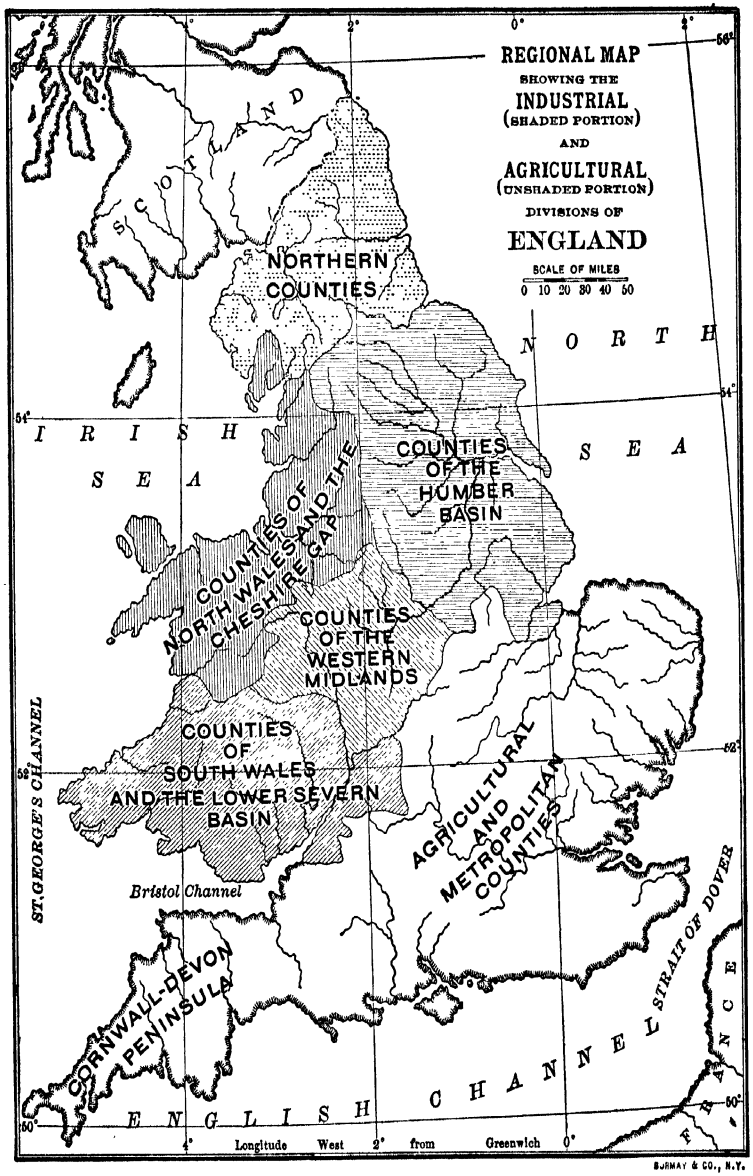
CHAPTER XVIII

GREAT BRITAIN AND IRELAND: THE UNITED KINGDOM

158. Physical Features. — The dependence of the activities of a people upon the physical surroundings is well exemplified in the industrial history of Great Britain. England, the most important division of Great Britain, presents two strongly contrasted natural divisions, — a lower eastern and southern and a higher and more rugged western and northern portion, separated by a well marked line of heights which forms the watershed of the main river systems.

Eastern England presents a broad, undulating surface, sloping gently toward the southeast and broken by numerous low hills and rolling uplands or "downs." It includes several districts, the distinctions being based upon the different land formation of each. The western division is more broken and rugged in character, and embraces all that part of England north of the Tees' mouth. It includes several distinct physical areas — the Pennine Ridge in the north, the Central Plain, the Lake District in the northwest, Wales, and the Devon-Cornwall Peninsula.

The distribution of industries in England is mainly determined by the character of these two contrasted divisions and their included districts. The eastern division has always been an agricultural and pastoral region, the clay soils of many parts making excellent crop-growing lands (especially for wheat), while the rolling, treeless "downs" of the Chalk District have long been sheep pastures. The western division, on the other hand, was earlier a wilderness of moorlands and hills, sparsely inhabited by a purely pastoral population. It was thus in strong contrast with the more densely settled eastern agricultural


REGIONAL MAP
SHOWING THE
INDUSTRIAL
(SHADED PORTION)
AND
AGRICULTURAL
(UNSHADED PORTION)
DIVISIONS OF
ENGLAND
SCALE OF MILES
0 10 20 30 40 50
SCOTLAND
NORTHERN COUNTIES
NORTH SEA
IRISH SEA
COUNTIES OF THE HUMBER BASIN
COUNTIES OF NORTH WALES AND THE CHESHIRE GAP
COUNTIES OF THE WESTERN MIDLANDS
COUNTIES OF SOUTH WALES AND THE LOWER SEVERN BASIN
AGRICULTURAL AND METROPOLITAN COUNTIES
ST. GEORGE'S CHANNEL
Bristol Channel
CORNWALL-DEVON PENINSULA
ENGLISH CHANNEL
STRAIT OF DOVER
FRANCE
Longitude West 2° from Greenwich 0°
54°
52°
50°

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portion, its surface being too broken and the climate too moist to make crop growing at all profitable. Beneath its rugged surface, however, was a vast store of mineral wealth in the shape of coal and iron, the discovery and utilization of which at the close of the eighteenth century, began to revolutionize the industrial and agricultural life of England. To-day, the densely populated areas are the districts situated upon, or contiguous to, the coal fields, and the smoke of great manufacturing cities now rises over what was once a thinly peopled moorland.

Scotland presents three well-marked physical areas: (1) the Highlands of the north, a bleak and sparsely inhabited waste of moorlands; (2) the Central Lowland Plain, the most densely populated; and (3) the Southern Uplands.

159. Coal Fields and Centers of Manufacture. — Coal is the most important product of Great Britain, and the only natural product the supply of which more than meets the demands of home consumption. It is the basis of the purchasing power in British economy, for as a fuel in the reduction of ores, notably iron, and in general manufacture, coal creates the means that enables the population to buy their necessary food supplies from abroad. The output of the British mines (1900) was over 252,000,000 short tons, of which slightly over 53,000,000 tons were exported.

The coal fields of Great Britain may be grouped in four areas: (1) those on the flanks of the Pennine ranges and in the river basins draining either side of these; (2) the small Cumberland coal field; (3) the coal fields of Wales; and (4) those of the Clyde and Forth in Scotland.[1]

(1) In Northumberland and Durham is an important coal area which has developed a variety of industries, but chiefly those industries which are in relation to the iron ores of the district. The river Tyne flows through this coal field, forming a highway to the North Sea. The chief towns and manufacturing centers are Newcastle-on-Tyne, North Shields, Tynemouth, and Hexam, located on the river.

[1] Green, *A Short Geography of the British Islands*, pp. 212–213.

In Durham are the busy centers of Gateshead and South Shields at the mouth of the Tyne, Sunderland at the mouth of the Wear, Hartlepool, Darlington, and Stockton-on-Tees in the southern part of the county. Among the chief manufactures of the district are machinery, iron and steel, cannon, chemicals, soda, and glass. Ship building is carried on at the seaports, the Elswick works being especially noteworthy.

In the southwestern part of Yorkshire, and extending into Derbyshire, is the West Riding coal field. Here are located the greatest cloth and woolen manufacturing centers in England, and among the most important in the world. Leeds, Wakefield, Bradford, Huddersfield, and Halifax are among the chief industrial towns of the region. The woolen industry was developed long before the discovery of the coal fields, because of the nearness of the sheep pastures of the Pennine ranges and the presence of the water power of the Aire and the Don. On the southern border of the coal field is Sheffield, a noted center of steel and cutlery manufacture. The industry is said to be due originally to the presence of fine grindstone quarries in the district.[1] The rivers of this region flow into the Humber estuary, with Hull as the chief seaport and center for European trade.

The Lancashire coal field lies between the basins of the Ribble and the Mersey, which empty into the Irish Sea. Liverpool, on the estuary of the Mersey, is, next to London, the largest city in England. It has developed because of its nearness to the coal field, its harbor facilities, and its situation in relation to American trade. Originally this district was, like its Yorkshire neighbor on the other side of the Pennines, a region of woolen industry, from the nearness of the sheep pastures, but with the importation of cotton it has become the greatest center of the world for cotton trade and manufacture. The moist climate is especially favorable to cotton spinning by keeping the fiber pliable.[2] A number of important industrial centers have

[1] *The International Geography*, p. 170.

[2] Chisholm, *Handbook of Commercial Geography*, pp. 219–220.

developed in this neighborhood. Manchester, connected with Liverpool by a ship canal, is especially famous for its cotton factories. Other noteworthy manufacturing towns are Burnley, Oldham, Rochdale, Preston, Bolton, and Wigan. Liverpool is the center of the export and import trade of a wide region. Among English seaports it has a trade movement second only to that of London.

Two coal fields occur in Staffordshire, one in the north and the other in the south. Between these is the Midland Plain, an agricultural region. Among the principal manufacturing towns are Wolverhampton, celebrated for its iron works, and Burton-on-Trent, noted for its breweries. In the Cheshire Plain, in the northern part of the county, the coal furnishes fuel for the famous "Potteries" which are directly dependent upon a fine quality of clay found in the locality. Burslem, Hanley, and Stoke-on-Trent are the chief towns of this district.

COAL FIELDS OF GREAT BRITAIN

A small coal field occurs in Leicestershire with Leicester and Loughborough as the most important centers, noted for woolens, cotton goods, hosiery, boots and shoes. The country is mainly agri-

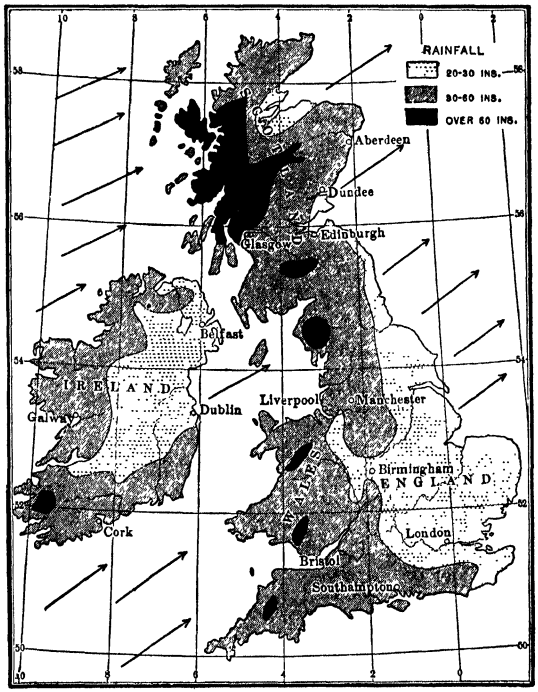
cultural. In the adjoining county of Warwickshire, in the West Midlands, is another small coal field, with Birmingham as the chief town and a noted center of iron and steel manufacture. Coventry and other neighboring towns likewise produce a variety of goods, watches, bicycles, and silks being among the more prominent.

(2) In Cumberland there is a small coal field between the base of the Cumbrian Hills and the sea, with Whitehaven as the center and seaport of the district. The coal is mainly used in export trade.

(3) A number of scattered coal fields of small area occur in Wales; there is also one large field, that of South Wales. Iron is also found in considerable quantities in this region. The coal is an anthracite and is largely used in the smelting of ores and for steamships. The tin ore smelted in this region formerly came from Cornwall, but it is now mainly imported from the Straits Settlements. The principal centers of the smelting industry and of tin plate manufacture are Cardiff, Swansea, and other towns of the district. Cardiff (with Barry Dock) is the seaport with a large shipping movement, chiefly in coal export.

(4) The Scotch coal fields are in the Central Lowland Plain in the valleys of the Clyde and Forth, which form the transit west and east for the coal and manufactured products. This is the most densely populated region in Scotland and the seat of many great industries, notably the building of steel ships on the Clyde at Glasgow. This city, the largest in Scotland, supports a variety of manufactures and commands a large ocean-going commerce, chiefly with America. Paisley is another important manufacturing center of the Clyde coal field, noted especially for cotton, wool, and silk goods, threads, muslins, shawls, etc. A large portion of the cotton used in the Clyde factories is imported from America. Ship building is extensively carried on at the great yards of Greenock and Port Glasgow. The trade of the entire western portion of the Lowland Plain has developed largely as a result of its frontage on the Atlantic, giving it prominence in world trade, especially with the United States.

In the Lower Forth Basin is an extensive area of coal, and the region is the seat of many great manufacturing industries. Notable among these are woolen, linen, and jute manufactures. Edinburgh and its seaport Leith on the southern shore of the Firth of Forth, are important shipping centers for the European trade. Dundee, on the



RAINFALL OF THE BRITISH ISLES

Tay estuary, though not directly located on any coal field, is an important manufacturing center and seaport. It is especially noted for its jute manufactures, its fruit jams, and as being the headquarters for the Arctic whaling fleet. The great railway bridges built across the Tay and the Forth are of vast importance in the traffic of this district.[1]

[1] *The International Geography*, pp. 152–161.

160. Other Industries and Centers of Trade. — Tin and copper mining have long characterized the Cornwall peninsula, but the copper mines are now closed and much of the tin used in manufacture is imported. The iron deposits of Great Britain are inadequate for the manufacturing demands, and large quantities are brought in. Notable in this import is red hematite from northern Spain. The British iron deposits are mainly the Cleveland ores (a clay ironstone) in Yorkshire, the ore of the coal measures, and the red hematite of the Lake District.[1] Iron is by far the most valuable of all the British metals.

The fisheries of Great Britain are an important item in the economy of the Kingdom, the export of salted herring being notable. The fisheries of greatest value are those of the North Sea. Steam communication has revolutionized the fishing and centered the industry at various ports commanding good harbors and railroad facilities, as Aberdeen and other places of less note.

A large part of the territory of Great Britain is still given over to pasturing. Sheep are raised in the hill country and cattle and horses on the more fertile lower lands. Dairying and the raising of pigs are also prominent industries in the lowlands. Oats are the chief grain crop, though wheat is grown to a considerable extent, especially in the clay soils of the London Basin and the surrounding country. Hops are an important crop in Kent. Potatoes and turnips are the chief root crops, and truck gardening is a prominent industry in the neighborhood of the large towns and cities.

London is the greatest trade center in the world. Its position on the Thames, fronting the continent, very early gave it a strategic importance which has passed into commercial supremacy. As a disburser of food-stuffs and of raw and manufactured material, it has become the focal point of all the railway lines of the Kingdom, as it originally was of the wagon roads. London has a shipping movement of some sixteen million tons annually.

[1] *The International Geography*, p. 149.

The means of internal communication, both canal and railway, have greatly developed the commercial life of Great Britain by rendering access easy to every part of the Kingdom. Ports formerly of small movement have risen into importance by this means. Thus Southampton has become a prominent port in the American and African passenger service because of its short rail connection with London.

161. Ireland. — The surface of Ireland is, broadly speaking, a central plain surrounded by a rim of low mountains which are broken at various places. The coal measures occur in a few scattered basins and are relatively unimportant, being in most instances not adapted for manufacturing purposes. The industries are, therefore, in the main agricultural; flax is the most important crop in the north. The chief linen manufacturing centers are located on the favorable harbors of the northeastern coast, within easy carrying distance of the coal of the Clyde basin and the coal fields of western England. Irish linen is world renowned. Belfast is the center of linen manufacture; it is in close proximity to the flax-growing districts and to the coal of Great Britain. Belfast is also an important ship building center.

Stock raising is a much more important industry in Ireland than is crop growing, and a large area is given over to grazing. The potato crop is of first importance as a source of food supply, but the liability to a fungous disease, which in the past has caused disastrous famines, renders it of uncertain value and failure of the crop at various times has been one of the causes of emigration of the poorer classes. Among manufactures that of brewing holds an important place.

The chief ports of Ireland are Belfast and Dublin (the capital) on the east coast; Londonderry and its seaport Moville on the north with a considerable agricultural export; Galway and Sligo on the west coast are important fishing centers; Cork, Queenstown, and Waterford are on the south coast. Queenstown is a calling port for the transatlantic mails. Limerick is an agricultural center on the river

Shannon. All of the Irish seaports are situated on favorable inlets of the various bays and are also within easy reach of the interior agricultural districts by rivers or through breaks in the mountain rim.

162. British Sea Power and Commercial Expansion. — The average density of population in England and Wales is upwards of 500 to the square mile, that of Scotland 150, and that of Ireland slightly more than 130. The entire area of Great Britain and Ireland is upwards of 120,000 square miles. About 17 per cent of this area is uncultivated (mountainous country, inland waters, etc.), some 3 per cent is woodland, 30 per cent pasture land, and over 48 per cent under grain and forage crops. The yield of food crops, however, is far below the amount necessary to support so dense a population, and the United Kingdom is now forced to import the great bulk of its breadstuffs. Within the last half century there has been a steady abandonment of agricultural pursuits on the part of the population, incident to the greater wage-earning opportunities offered by the increase of manufacturing industries. This is the result of the manifold inventions and applications of machinery. Until the advent of machinery, the home food supply was almost equal to the demand. The British policy of free trade and commercial expansion is thus the direct outcome of economic conditions, and England is dependent upon outside sources for food. This food supply is paid for by the manufactures which, as we have seen, are primarily dependent upon coal.

The insular nature of the Kingdom made Great Britain originally a seafaring nation. Her interest in the sea has been further augmented by the conditions above noted, until now the British merchant marine is the largest in the world, and the trade of the Kingdom is extended to every part of the earth. Emigration of the surplus population built up colonies in distant lands with the consequent extension of the Empire. In order to protect her trade England has developed her naval power, thus strengthening her position in the securing of a food supply.

163. Trade. — The chief imports upon which Great Britain imposes a tariff duty are tea, cacao, coffee, tobacco, spirituous liquors, chicory, and dried fruits. Most other articles are duty free. England's largest trade is with her colonies and dependencies. Next to these the United States holds the largest share in British commerce, followed in order by France, Germany, Holland, Belgium, and Russia. Out of a total value of imports amounting to over $2,500,000,000 in 1900, the United States furnished over 26 per cent, mostly food-stuffs and raw materials. One hundred and twenty-eight million bushels of wheat were imported in 1900 of which the United States furnished 48 per cent, the remainder coming from Argentina, Australia, Canada, India, Russia, and other countries. Of wheat flour imported in 1900 83 per cent (10,000,000 barrels) was from the United States. The United States supplied Great Britain with 74 per cent (1900) of her raw cotton.

BRITISH POSSESSIONS	204	— 25%
UNITED STATES	158	— 19%
FRANCE	73	— 9%
GERMANY	59	— 7%
HOLLAND	42	— 5%
BELGIUM	34	— 4%
RUSSIA	33	— 4%
ALL OTHER COUNTRIES	218	— 27%

COMBINED IMPORTS AND EXPORTS OF GREAT BRITAIN (1900), APPROXIMATED IN MILLIONS OF POUNDS STERLING

Total, £821,000,000

(See p. 285)

The exports of Great Britain are principally manufactured products — cotton and woolen goods, machinery, and coal forming a very large proportion of the export trade. The share of the United States in British exports is only about 6 per cent of the whole as against 26 per cent of American products imported by the United Kingdom.

The total number of British vessels in 1900 was over 30,000, representing over 10,000,000 tons (both steam and sail). This is more than half of all the ships afloat, and a tonnage greater than that of all other nations combined.

SUGGESTED QUESTIONS AND TOPICS

173. What have been the political and economic effects of England's separation from the continent?

174. Explain the statement, "Ireland is the Achilles' heel of England."

175. Upon what do you think the prosperity of Great Britain rests as the chief foundation stone? What of her future?

176. Explain the change in the location of industries, from the east and south of England to the west and north.

177. Explain the phrase, "Like carrying coals to Newcastle."

178. What do the English mean by "the black country"?

179. What geographical facts have contributed to making Great Britain a carrier for other nations' trade?

180. Explain the statement, "London is the clearing house of the world." Why is this true? (See p. 371.)

181. Investigate the "Made in Germany" discussion in England a few years ago, and the more recent "American peril" and "American bogie." What about the alleged decline of the British economic system? (Williams, *Made in Germany.*)

182. Prepare a statement on England's Interest in the Mediterranean Sea.

183. What are the chief industries of Ireland, and why?

184. What is a "port of call"? What city of Ireland is an important port of call for American commerce?

185. It is said that if England were cut off from the outside world, her available food supply would be exhausted inside of a month. What is the effect of such a condition on the defence and foreign policy of Great Britain?

186. In 1901 Great Britain imported $925,000,000 worth of agricultural products, of which 52 per cent came from the United States. What did we get in return?

187. What would be the effects on England if an embargo were laid on the cotton and food products of the United States?

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**Mill, *The United Kingdom of Great Britain and Ireland. The International Geography.*

*Mackinder, *Britain and the British Seas.* Appleton & Co.

*Dilke, *The British Empire.* London; 1899.

*Geikie, *Geography of the British Isles.* Macmillan's Geographical Series.

*Green, *A Short Geography of the British Islands.* Macmillans.

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***Agricultural Imports of the United Kingdom.* Department of Agriculture, Washington, D.C.; 1902.

CHAPTER XIX

FRANCE

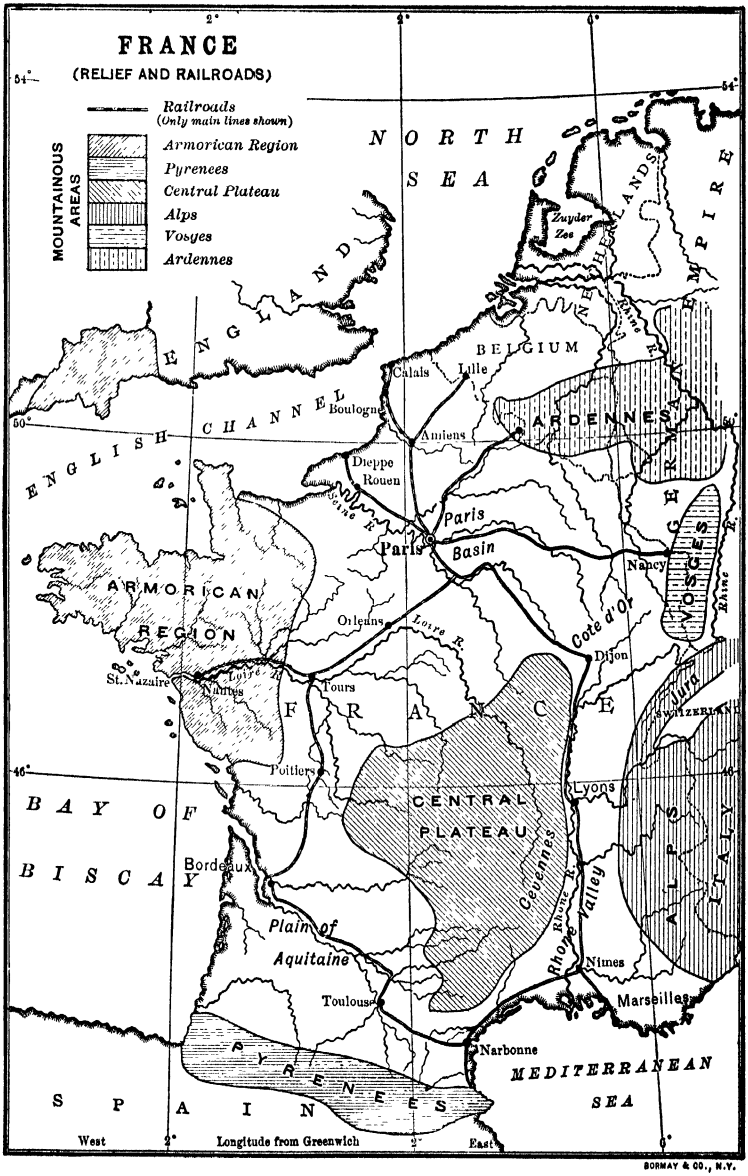
164. Physical Features. — In the south central part of France is a region known as the *Central Plateau*, which represents a nucleus about which the surrounding land seems to have been formed. It is tilted toward the northwest, its southeastern border forming the somewhat steep escarpment of the Cevennes Mountains. To the east of this Plateau are the ranges of the Alps, and between these two is a depression occupied by the Rhone Valley which opens out into the coastal plain of the Mediterranean. The wall of the Pyrenees stretches across the southern border of France from the Mediterranean to the Atlantic. The northwestern part of France forms a peninsula of low highlands of the same nature as Cornwall in England and geologically continuous with it. It embraces Brittany and Normandy, a region long isolated from the rest of France by virtue of its rugged nature, and harboring the remnants of an ancient stock of people. West of the Central Plateau the land slopes as a plain to the low Atlantic shores along the Bay of Biscay, while to the north is the low land of the Paris Basin which extends to the English Channel. These two lowland areas — the Paris Basin on the north, and the Plain of Aquitaine on the south — are connected by a narrow belt of lowland which lies between the Central Plateau and the western highland region. On the northern or Belgian frontier of France is the low range of the Ardennes Mountains, while the ranges of the Jura and the Vosges front along its eastern border, north of the Alps.

These physical features have had an important effect on the

economic development of the country; the movements of the population from the remotest times, have in large measure been governed by them. The Mediterranean border of France has long attracted an Eastern trade, and the Rhone Valley has served as an artery of commerce into the interior, communicating with the Paris Basin through the Côte-d'Or, north of the Central Plateau. The Seine has drawn population and commerce into the Paris Basin, largely from the fact of its emptying into the English Channel at no great distance from England's coast. Of the numerous railway lines which radiate from Paris, the two carrying the greatest volume of traffic toward the south, pass on either side of the Central Plateau, the one through the old route of the Côte-d'Or and Rhone Valley to Marseilles, the other passing through the historic Poitiers (where the northern and southern plains are connected between the two highland masses) on its way to Bordeaux.[1]

165. Population and Agriculture. — The average density of population in France is 189 to the square mile. About one-half of the people are engaged in agricultural pursuits, and nearly 70 per cent of the total area is farming land, either under grain crops, grass, or temporarily lying fallow. About 15 per cent of the land is under wheat, which is the largest cereal crop grown. This, however, is insufficient, and over 30,000,000 bushels of wheat are imported yearly; this is secured mainly from Russia and the United States. Next to wheat, oats is the most important crop. Maize is grown in the warm and moist region of the southern lowland plain (Aquitaine). The beet is cultivated on a large scale for distilling purposes and sugar manufacture. Hops and barley are grown for the extensive brewing industry. Tobacco is raised in certain sections of the country. Market gardening and fruit growing are important occupations in many parts of France. Farming in general has been greatly stimulated through the spread of scientific methods, and the natural productivity of the soil in many districts has been wonder-

[1] Professor L. Raveneau, *The International Geography*, p. 234.


FRANCE
(RELIEF AND RAILROADS)
Railroads
(Only main lines shown)
MOUNTAINOUS AREAS
Armorican Region
Pyrenees
Central Plateau
Alps
Vosges
Ardennes
NORTH SEA
ENGLAND
ENGLISH CHANNEL
BELGIUM
NETHERLANDS
Zuyder Zee
Rhine R.
GERMAN EMPIRE
Calais
Lille
Boulogne
Amiens
ARDENNES
Dieppe
Rouen
Seine R.
Paris
Paris Basin
Nancy
VOSGES
Meuse R.
Moselle R.
Rhine R.
ARMORICAN REGION
Orleans
Loire R.
Côte d'Or
Dijon
St. Nazaire
Nantes
Tours
FRANCE
Jura
SWITZERLAND
Poitiers
Lyons
BAY OF BISCAY
CENTRAL PLATEAU
Bordeaux
Cevennes
Rhone R.
Rhone Valley
ALPS
ITALY
Plain of Aquitaine
Nimes
Toulouse
Marseilles
Narbonne
PYRENEES
MEDITERRANEAN SEA
SPAIN
West
Longitude from Greenwich
East
2°
0°
54°
50°
46°

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fully increased by the use of fertilizers. Horses, cattle, and sheep are raised in large numbers in many parts, and the dairying industry, especially cheese-making, is a notable feature of certain districts.

In wine making and viniculture France leads the world, and certain districts have long been famous for their fine brands of wines. Among the wines are champagne, from the district of the same name in the northeastern part, claret and the Bordeaux wines from the south, Burgundy wines, and those from the Rhone Valley. Over a thousand million gallons of wine are produced annually in France.

France extends over such a wide range of latitude (from the 43d to beyond the 50th parallel) that a decided contrast is seen in the productions of the northern and southern regions. In the valley of the Rhone and on the Mediterranean slopes, such semi-tropical products as the olive and the orange are largely cultivated. The mulberry tree is grown in the Rhone Valley and is the basis of the silk industry. Chestnuts, walnuts, lemons, and, in the north, cider apples, are products of importance.

166. Manufacturing Industries. — Of the many scattered coal fields those of the northern part (Nord, and Pas-de-Calais) yield some 60 per cent of the entire output. Other fields occur in the Loire Basin, Burgundy, and in Tarn, Gard, and Aveyron in the south.[1] More than 32,000,000 tons of coal are produced annually, but this amount is insufficient and a considerable quantity is imported. Iron ores are somewhat distributed, though 90 per cent of the productive ores come from the departments of Meurthe-et-Moselle on the German frontier. The annual production of pig iron reaches upwards of 2,000,000 tons and that of steel over 1,000,000 tons. About one-fourth of the French population is supported by the mineral and textile industries.

France is well supplied with building stones, natural cements, and fertilizing materials. Among the more important of these are the

[1] *The International Geography*, p. 244.

marbles of the Pyrenees, the plaster from the Paris region, phosphates, the Ardeche hydraulic cement, etc. Fine clays are found in the weathered feldspar rocks of the Central Plateau and give rise to the porcelain and pottery industry. Notable among the cities for this is Limoges. The precious metals, on the whole, are poorly represented in France.

The textile industries are centered about the coal fields and in the vicinity of raw material supplies. The northern departments are conspicuously industrial from the nearness of the coal, and cotton, linen, hemp, and jute manufactures are extensively carried on. The silk industry flourishes in the valleys of the Rhone and Saone; Lyons, at the confluence of these two rivers, leads the world in silk production. The centering of the silk industry in this region was due to the early introduction of the silkworm from Italy into the Rhone Valley and the cultivation of the mulberry tree (the leaves of which are the food of the silkworm). The water at Lyons is also peculiarly adapted to dyeing.[1] The situation of Lyons was likewise advantageous to the trade of the Rhone-Saone Valley and to Paris via the Côte-d'Or. The water power of streams flowing down the slopes of the Vosges has been utilized in cotton weaving. The manufacture of woolen goods is largely centered in the north in proximity to the coal fields, and also convenient to the raw material which comes from the native sheep pastured on the Ardennes slopes, or is imported from Great Britain and South America through the nearby ports of Havre, Dunkirk, and Antwerp (Belgium).

167. Centers of Trade and Manufacture. — Paris, centrally situated in the great northern plain (Paris Basin), has developed largely as a result of certain geographical features, notably its position on the waterway of the Seine, which empties into the English Channel; this river also affords a natural highway into the interior. Historical conditions, aside from purely geographical influences, have played a dominant part in the development of Paris as they have

[1] Chisholm, *Handbook of Commercial Geography*, page 237.

with many other cities. To-day it is the focus of a vast trade, not only of France, but of the entire continent of Europe. As all roads once led to Rome, now it may be said, all continental railroads lead to Paris. It has become a great disbursing mart for the luxuries of the civilized world, and is famous for the manufacture of costly dresses, gloves, perfumery, porcelain ware, and jewelry.

Of the northern cities, Lille is especially famous for its textile industries, notably linen goods from its proximity to the district producing the best flax in Europe.[1] Rouen, on the lower Seine, is the great center of the cotton industry, incident to the near-by coal and likewise its nearness to the ocean. St. Quentin to the north and other towns to the east, are cotton centers of some importance. Amiens, Roubaix, Tourcoing, Reims, Fourmies, and other towns are all noted centers of woolen manufactures. Lyons and St. Etienne (the latter in a coal field) are the centers for silks and ribbons. Machinery of various kinds, locomotives, and railway supplies are manufactured in a number of towns on and near the coal fields. Glassware and paper are produced at various places in the north, east, and west. Contrasted with northern France, southern France presents a comparatively small proportion of the manufacturing industries, being largely an agricultural region.

The chief seaports of France are Marseilles, commanding the Rhone Valley and the Mediterranean trade, though now of relatively less importance than formerly, owing to the Mont Cenis and other tunnels which connect central Europe with Genoa and other more eastern ports. The chief industries of the city are the refining of olive oil, the making of soap, and of macaroni from Italian wheat. Narbonne and Cette are other ports on the western side of the Gulf of Lyons. Of the Atlantic ports, Bordeaux, at a point where the Garonne flows into the Gironde estuary, has long been famous for its wine export. St. Nazaire is the Loire seaport, the former port of Nance farther inland, having been cut off from the sea by

[1] Chisholm, *Handbook of Commercial Geography*, p. 237.

the silting up of the river. Havre, at the mouth of the Seine, is the seaport of Paris and is important in the United States and South American trade. By extensive work in deepening the channel of the Seine, the city of Rouen, further inland, has been made a seaport.[1] Dunkirk, at the southern end of the North Sea, is one of the chief centers for the wool imports and for the export of manufactures from the neighboring industrial sections of the northern coal fields.

168. Internal Communications. — Paris is the center of a very extensive railroad system. The northern railway lines diverge to the great industrial sections of northern France and carry an enormous volume of traffic over comparatively short distances. The heavier volume of traffic is between Paris and Marseilles, via Lyons by the road which follows the old natural highway of the Côte-d'Or into the Rhone Valley. The main line of the Orleans system passes along the western side of the Central Plateau through Poitiers to Bordeaux, where it connects with the Southern system, and thus traverses the old historic route through the narrow plain that connects the northern with the southern lowland. There are in France upwards of 23,000 miles of railroad, representing a yearly freight volume of over 120,000,000 tons.

The river navigation of France is extensively improved and the various basins are connected by canals. The entire country, especially the northern portion, is a network of waterways. The Marne, a tributary of the Seine, is thus connected with the Saone-Rhone system. Another canal — the Burgundy — connects the two systems through the Côte-d'Or. The basins of the Rhine and the Seine are joined by several canals; similarly the Rhine and the Rhone are connected by a canal through the natural gap or "Burgundy Gate," between the Vosges and the Jura mountains. An extensive system of canals connects the rivers of northern France with those of Belgium. The Loire is connected with the Seine and with the

[1] *Ibid.*, p. 239.

Saone, and in the south the Canal du Midi opens up a through waterway between the Garonne and the Mediterranean. Steam and electricity are in use as means of transportation on many of the canals. Heavy materials, both raw products and manufactures, are transferred by water; a large amount of coal and iron is handled in this way. About 70 per cent of the volume of traffic in France is carried by the railway and the balance by inland waterways.

UNITED KINGDOM	1903	— 28 1/2 %
BELGIUM	1020	— 15 %
GERMANY	892	— 13 1/2 %
UNITED STATES	765	— 11 1/2 %
ALGERIA	425	— 6 1/2 %
SPAIN	355	— 5 1/2 %
ARGENTINA	335	— 5 %
ITALY	305	— 4 1/2 %
ALL OTHER COUNTRIES	634	— 10 %

COMMERCE OF FRANCE (1900), APPROXIMATED IN MILLIONS OF FRANCS
Total, 6,634,000,000 Francs [1]

169. Trade. — The chief export trade of France is in textile manufactures, especially woolens and silks. Wine also forms a considerable item of export. Of the imports, raw textile materials, breadstuffs, coal, and coke (from neighboring coal fields) form a large proportion; wool and coal represent the articles of greatest import value (1901). The largest trade is with Great Britain, Belgium being second. Germany stands third in the export, and fourth in the import trade of France; the United States holds second place among the countries from which imports are received (1901). About 5 per cent of the United States exports are sent to France, and about 9 per cent of our total imports are of French origin.

SUGGESTED QUESTIONS AND TOPICS

188. What are the mountains on the boundaries of France? What highland area divides the country?

189. Trace the river systems of France and show why they are well located for navigation.

[1] For table of values see p. 285.

190. What are the chief productions and industries of the Rhone Valley?

191. What are the physical conditions favorable to producing the vine? What are the "fruits of the vine"?

192. What are some of the social and economic characteristics of the French people? What forms of manufacture do they engage in most largely?

193. Why does France deem it necessary to keep up an extensive military system? What are the effects of militarism upon the economic prosperity of the nations of Europe?

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*Jones, *Economic Life of France*, Popular Science Monthly, Volume LV.

Guyot, *Commerce and Manufactures of France*, Chautauquan, Volume XXV.

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***The Statesman's Yearbook.*

***French Colonies.* British Diplomatic and Consular Reports, Miscellaneous Series No. 520.

CHAPTER XX

SPAIN AND PORTUGAL

170. The Iberian Peninsula. — The larger part of the Iberian Peninsula is a table-land of moderate elevation with mountain ranges in the north and the south; the entire plateau ends rather abruptly along a coast line which has but few indentations. The peninsula is shut off from the rest of Europe by the Pyrenees; its even shore line tends further toward its isolation. These physical features have had a marked effect on the development of the two countries embraced within its borders. The peninsula lies out of the main lines of European traffic, — a huge block of land thrust like a barrier between the Mediterranean and the Atlantic, broken at the strait of Gibraltar where it approaches Africa.

The climate is characterized by a wide range of yearly temperature. In the northern and northwestern portions the climate is of the oceanic type, with abundant rainfall. The interior and the southeastern provinces, shut off from the rain-bearing winds by the mountain ranges, have an arid climate; the date palm, a tree of the African desert region, grows in some localities. Here agriculture can be carried on only by means of irrigation. Tropical forms of vegetation, as the banana and sugar cane, are grown on the Mediterranean coast lands, while temperate fruits, like the apple, are cultivated in the north.

There are very few good harbors, the estuaries of the Duero and the Tagus in Portugal being among the best. Portugal owes its independence largely to certain natural features, deep river gorges separating its territory from the interior table-land of Spain.[1] The

[1] Fischer, *The International Geography*, p. 368.

Portuguese, from their maritime position, have always been a seafaring people.

171. Resources and Industries. — The total area of the peninsula is over 232,000 square miles. The average density of population is low when compared with that of most European countries (Spain about 90, Portugal 145.4 to the square mile). Sparseness of population is due largely to lack of communication and to government and physical conditions, adverse to the centralizing of great industries and to the best development of agriculture. Where irrigation is practiced, many varieties of fruits and vegetables are raised. In the southern provinces oranges, almonds, figs, and other tropical and subtropical fruits are grown. Chick peas are largely used as a food. Wheat and maize are grown in certain localities, the former being an important crop of the more fertile soils of the interior table-land. Raisins and wines, the olive and olive oil, the mulberry, and raw silk are products of the coast lands, especially along the Mediterranean. Cork is obtained from the bark of a species of oak. Esparto, used in the manufacture of paper, is likewise a Spanish production. The famous merino breed of sheep, producing the finest variety of wool, are pastured on the table-lands of the interior, but these sheep have been introduced into other parts of the world and Spain has lost the monopoly of merino wool.

The Iberian Peninsula is exceedingly rich in mineral resources, but owing to the unfavorable conditions already cited, and to the general indifference of the population toward the development of industries, they are only partially exploited. Iron ore is abundant in many places, and high grade ores form an important shipment from the Viscayan port of Bilboa (this port ships a larger amount of iron ore than any other continental seaport).[1] A high quality of ore is also produced from the mines of the province of Murcia in the southeast. Coal is found in large quantities, but is unfavorably located and therefore largely undeveloped. Copper, silver, lead, zinc, and cinnabar (mercury) are all important minerals; the quicksilver

[1] Chisholm, *Handbook of Commercial Geography*, pp. 287–288.

(mercury) mines of Almaden are among the most noted in the world, the only other quicksilver mines of importance being in California (New Almaden). Phosphorite (used as a fertilizer), rock salt, and bay salt are other valuable mineral products.

The manufacturing industries are comparatively unimportant and they have not been developed in relation to coal and iron as they have in other industrial countries.

Barcelona, in the province of Catalonia, is the most densely populated city in Spain, and the center of the most important manufacturing industries. Its supremacy is due to its fine natural harbor. In the Basque provinces of the north, manufacturing is carried on to some extent, the water from the streams of the Cantabrian Mountains being used as a source of power. Toledo is still noted for its sword blades; silk-spinning and the plaiting of esparto grass are carried on as local industries in certain places.

172. Trade Centers and Commercial Relations. — Recent years have witnessed a further decline of Spain's commercial interests, with the loss of her colonies in America and the Far East. A faulty colonial system, and the attempted exploitation of her colonies led to the cutting off of such rich possessions as Cuba, Porto Rico and the Philippine Islands. Cartagena and Malaga, as well as Barcelona, are Mediterranean ports. The port of Bilboa on the north coast, already mentioned, has been made available by dredging and the deepening of the river on which it is located. Other Spanish ports of some importance are Seville, Tarragona, Santander, Huelva, Palos, Cadiz, etc. Lisbon, on the Tagus, and Oporto, on the Duero, are the chief Portuguese seaports. Oporto gave its name to the famous "port wine." Madrid, the capital of Spain, is an important trade center of the interior. The Azores (chief port Fayal) and the Madeira Islands (chief port Funchal) belong to Portugal, as do also the Cape Verde Islands. The Canary Islands belong to Spain. The Azores grow large quantities of oranges and pineapples. The Madeira Islands produce a variety of tropical fruits and

are likewise famous for their wine production and export. The Canaries produce wine, fruit, and vegetables; the export of early vegetables to the London market is of some importance.

The greatest amount of Spanish trade is with Great Britain, France being second; imports from the United States amount to about twice the exports, but the trade either way is inconsiderable.

SUGGESTED QUESTIONS AND TOPICS

194. When Napoleon established a branch of his empire in Spain, he said, "The Pyrenees have ceased to exist." Discuss this.

195. How can you account for a region once so prosperous as the Iberian Peninsula being reduced to its present state?

196. Make a statement of the importance of Gibraltar as a strategic post.

197. On which shore of the Iberian Peninsula are there the best harbors?

198. Explain the recent decline of the Spanish colonial system.

199. A French proverb says, "Africa begins at the Pyrenees." Explain this.

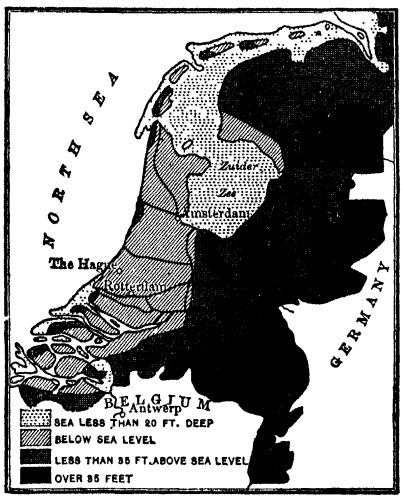
Books to be Consulted

** *The Iberian Peninsula*, Chapter XXI, in *The International Geography.*
Sime, *Geography of Europe*, Chapter IV. Macmillan's Geographical Series.
* Chisholm, *Handbook of Commercial Geography*, pp. 284–290.
** Jones, *Resources and Industries of Spain*, North American Review, Volume CLXVII.
** *Commercial Relations of the United States.* Bureau of Foreign Commerce.

CHAPTER XXI

BELGIUM AND HOLLAND

173. Physical Features. — Belgium and Holland are grouped under the general head of the Low Countries. They occupy, for the most part, the low flat land that fronts the southeastern border of the North Sea and which in many places is below sea level. In the southeastern portion of Belgium the country rises into a plateau of worn-down mountains, the Ardennes, in which occur deposits of coal and a great variety of building stones (limestones, sandstones, and slates). Two large and important rivers — the Meuse and the Scheldt — cross Belgium from the southern highland, flowing northward to the sea; and these have been improved in various places to permit of navigation. Canals have been extensively built throughout Belgium with the threefold purpose of promoting inland navigation, draining marshy tracts, and irrigating sandy stretches of country.



RELIEF OF THE LOW COUNTRIES

Holland is virtually the delta formed by the Rhine and the Meuse (Maas of the Dutch), and is a low tract of dunes and extensive

marshes, a large part of which is below the level of the neighboring sea. Land has been reclaimed by the building of dikes or embankments along the exposed shores and also around low inland tracts known as "polders"; from the latter water is pumped by windmills into the numerous canals that form a vast network of waterways. These features give to Holland its characteristic scenery. There are no highland tracts in Holland, and therefore no important mineral deposits, the population depending almost entirely upon agricultural industries, manufactures, and external commerce.

174. Industrial Belgium. — With an area of only a little more than 11,000 square miles, Belgium supports a population of upwards of 6,000,000 (an average density of 588 per square mile). This she is able to do chiefly through the high development of her agricultural and industrial resources. The coal fields and iron deposits of the southeast have given rise to a great variety of manufactures. Steel work and machinery construction are carried on at Liège and Charleroi; the former town is also the center of firearms manufacture. Cutlery is manufactured on a large scale, notably at Liège, Hainaut, and Namur. Woolen and cotton textiles form a leading feature of Belgian industry, and are largely centered about Verviers and Ghent. Verviers is a very ancient seat of the weaving industry, being especially noted for its woolen yarns. A small stream in its vicinity, the water of which contains no lime salts, has been dammed and utilized.[1] Belgium has long been noted for its flax fields, and for the high quality of its linens and lace manufactures, more particularly in the Flemish districts of the western part. The manufacture of glassware, pottery, and chemicals is extensively carried on in the coal regions. Ghent is the principal seat of the cotton manufacture and favorably located for trade, at the union of the Lys and the Scheldt. A ship canal has been built to Ghent to enable vessels of deeper draught to reach it from the Scheldt estuary.

Though the mineral resources of Belgium — coal, iron, building

[1] Chisholm, *Handbook of Commercial Geography*, p. 241.

stones, zinc, etc. — are leading factors of wealth and prosperity, the agricultural resources are by no means unimportant. As already mentioned, Belgian flax is famous. It is produced mainly in the Lys Basin; the waters of this river contain a minimum of lime salts, which, as in the case of wool, act injuriously in the cleansing of the fiber. The sheep pastures of the Ardennes have long been sources of raw material for the woolen mills of the region, though a vast quantity of wool is now imported from Argentina and Uruguay. Cereal crops and grass land cover about two-thirds of the country. The beet is largely raised, both for sugar manufacture and distilling purposes. On the plains of the northeastern section (Campine) cattle raising is extensively carried on. Belgium is noted for its heavy draught horses of Flemish, Brabant, and Ardennes stock.

175. Commercial Relations. — Belgium is small in area, but has numerous and varied resources (especially coal and iron); these features, with the density and high efficiency of the population, have given it a prominent place among the industrial and commercial countries of the world. It is a typical industrial state; with a sea front of forty-two miles, and an extensive system of railroads and canals, it has developed a large and varied trade with neighboring countries and with those at a distance. Its imports are breadstuffs and raw materials for textile manufactures, as well as a great variety of needful products from tropical and other lands. Of the exports, coal heads the list in value, followed by woolen yarns, linen and various other raw and manufactured products. France is first in the countries from which goods are imported, followed by the United States, Germany, and Great Britain, in the order named (1901). Belgian exports go most largely to Germany, followed by France, Great Britain, Holland, and the United States. Of the United States' exports as a whole, about 3 per cent go to Belgium, and of the imports a little over 1.5 per cent come from Belgium (1901).

Brussels, the capital, has numerous industries, and is a commercial center of importance. It is especially noted for its laces.

Antwerp, on the Scheldt estuary, some sixty miles inland, is the chief Belgian port, and one of the largest and most important shipping points of Europe. It carries on an extensive trade with all parts of the world, and has a trade movement of millions of tons annually.

176. Holland. — Lacking the mineral wealth of its neighbors, Holland has turned its attention largely to agricultural pursuits, and the industries dependent thereon. More than 60 per cent of the land is under crops, gardens, and pasture grass; a small area is forest-planted, and about 20 per cent is unreclaimed. The alluvial soil of the rivers and the clay deposits of the sea are exceptionally fertile, and the richness and abundance of the grass has given prominence to grazing and dairying industries, stock raising (both horses and cattle), and butter and cheese making being characteristic Dutch industries.

FRANCE	801	— 20.5%
GERMANY	749	— 19.5%
GREAT BRITAIN	660	— 17%
NETHERLANDS	414	— 10.5%
UNITED STATES	343	— 8.5%
RUSSIA	157	— 4%
ALL OTHER COUNTRIES	757	— 20%

COMMERCE OF BELGIUM (1900), APPROXIMATED IN MILLIONS OF FRANCS

Total, 3,881,000,000 Francs

The sand and clay soils of various sections affect the nature of the grass, producing differences in the breeds of horses, sheep, and cattle in the different parts.[1] Market gardening, fruit culture, and the growing of flowers (tulips and other justly celebrated Dutch bulbs) are notable occupations. Rye, buckwheat, and potatoes are staple crops of the sandy lands; beet root, wheat, hops, and tobacco are staples of the more loamy soils.

A certain amount of manufacturing is carried on, notably in cotton, woolen, and linen textiles, sugar, margarine, quinine and various chemicals, metal work, agricultural implements, etc. Brick making, from the abundance of good brick clay, quarrying of sandstone, and

[1] Kan, *The International Geography*, p. 219.

the mining of bog iron ore and a very small amount of coal (the Limburg mines near the German-Belgian frontier) are other industries of some prominence. The density of the population varies with the character of the soil in different sections, being highest in the productive districts of the river valleys, in the southeastern industrial section, and near the large cities. In the former districts it is upwards of 250 per square mile. In the vicinity of the large commercial centers it averages from 500 to 1000 per square mile.[1]

177. Trade. — The Dutch have long been a seafaring people; Holland was among the foremost nations in taking advantage of the regions opened up by the era of discovery. It is natural, therefore, that external commerce should largely engage their attention, since products, both raw and manufactured, must come from abroad. Great expense and labor have been expended in keeping the harbors free of silt, and in the building of ship canals to ports which are naturally blocked by river and sea deposits. Amsterdam and Rotterdam have thus come to be among the foremost commercial seaports of the world, especially in the transient trade (ports of entry and exit with trade of other countries). Amsterdam is on the Zuider Zee, fifteen miles across the peninsula by the North Sea Ship Canal. Rotterdam, on the Maas (Meuse), is likewise rendered available as a seaport by the ship canal that reaches to the mouth of the river. Other ports of less note are Flushing

PRUSSIA	1231.4	— 37.5%
GREAT BRITAIN	670.9	— 20%
BELGIUM	348.6	— 12%
UNITED STATES	348.1	— 10.5%
DUTCH E. INDIES	336.3	— 10%
RUSSIA	155.0	— 5%
ALL OTHER COUNTRIES	155.0	— 5%

COMBINED IMPORTS FOR HOME CONSUMPTION AND EXPORTS OF NETHERLANDS (1900), APPROXIMATED IN MILLIONS OF GUILDERS

Total, 3,280,300,000 Guilders

[1] Kan, *The International Geography*, pp. 221–223

(Vlissingen), Schiedam, Groningen, Dordrecht, and Harlingen. Natural communication is facilitated by the extensive system of canals, by good roads, and by railways.

Holland is a free-trade country. It imports food-stuffs, coal, raw and manufactured products in general. Among the more important of the exports are butter, cheese, margarine, vegetables, sugar, flax, etc. The merchant marine numbers upwards of 3000 vessels. Its largest trade in imports for home consumption, is with Germany, the Dutch East Indies, the United States, Great Britain, and Belgium, in the order named. It exports goods chiefly to Germany, Great Britain, and Belgium, the United States having a little over 4.5 per cent of the total amount. Holland's share in the United States' trade amounts to a little over 2 per cent of the total amount imported and about 5.5 per cent of the entire value of exports (1901).

SUGGESTED QUESTIONS AND TOPICS

200. How much is included by the "Low Countries"? What are the other names by which this region is called? Why?

201. Why should canals be so common in Holland? Why so many windmills?

202. What is the chief commercial city of the Low Countries, and what is the nature of its trade?

203. What has been the influence of the Rhine on the commercial development of Holland? What is a "buffer state"?

204. How can you account for the raising of flax so extensively in Belgium?

205. Locate the agricultural and industrial regions of Belgium; notice the relations of the latter to similar regions in France and Germany.

206. What are some of the striking national traits of the Dutch people, and how are these shown in the productions of Holland?

Books to be Consulted

*Special Reports of British Foreign Office, Miscellaneous Series.

**Chapter XIV, *The Low Countries*, in *The International Geography*.

Sime, *Geography of Europe*, Chapter X. Macmillan's Geographical Series.

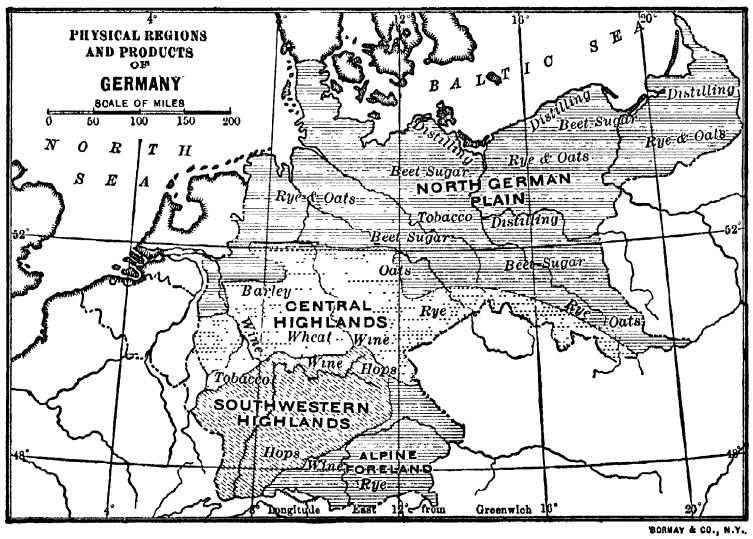
*Chisholm, *Handbook of Commercial Geography*, pp. 240–245. London and New York.

***Commercial Relations of the United States.* Bureau of Foreign Commerce.

CHAPTER XXII

THE GERMAN EMPIRE

178. Physical Features. — The German Empire embraces four physical regions: (1) on the southeast border of Bavaria the northern Alpine ranges are just included within German territory; (2) northwest of this is the Alpine Foreland, and the Southwestern Highlands forming the Plateau of Bavaria; (3) to the north-



ward is the Central Highland Region, reaching from the Carpathian range to west of the Rhine Valley; and (4) beyond this again, the flat expanse of the North German Plain (a portion of the Great Plain of Europe) extends to the shores of the Baltic and North Seas.

The Rhine is essentially the great natural highway of Germany, from the frontier of Switzerland to Holland. East of the Black Forest the Danube drains the Bavarian Plateau. The Vistula, Oder, Elbe, and Weser drain the Central Highland and flow across the North German Plain, — the two former into the Baltic Sea, the two latter into the North Sea.

179. Population and Industrial Life. — The average density of the German population is about 270 to the square mile. Where coal, iron, and other mineral ore deposits occur, however, the density is increased considerably higher. The Kingdom of Saxony is among the most densely populated regions in the world, with an average of over 650 per square mile; this is in part a result of the intense industrial activity developed in the coal fields of the district.[1]

Though the manufacturing industries and mining have assumed a vast importance, Germany is still largely an agricultural country, over 40 per cent of the population being engaged in some agricultural pursuit. Available land is under a high state of cultivation; and upwards of 90 per cent of the area is productive. Nearly 4,000,000 acres are under wheat and about 14,000,000 acres under rye, the latter being the staple breadstuff of the country (the "black bread" of the peasant class). Barley and oats are also raised to a considerable extent, and the potato has become a food crop of great importance, over 8,000,000 acres being given to potato cultivation (1901). The distillation of spirits from potatoes is carried on in the northeastern sections. Potatoes are so largely grown in Germany, that a surplus of the product is exported. Beet raising and the production of beet sugar have assumed a place of vast importance in German economy. The refuse in the process of sugar manufacture is fed to hogs, which are raised in large numbers as a consequence. Hops are grown extensively, especially in the southwestern portion of the Empire. The brewing industry is very prominent in Germany. Tobacco is grown in the district southwest of the Middle

[1] Kirchhoff, *The International Geography*, p. 279.

Rhine. The vine is cultivated in the valley of the Middle Rhine, the climate being suitable and the soil well adapted to its growth. Several fine varieties of wines are produced in the valleys of the Rhine and its tributaries. The Rhine district is the most northern region of the world, in which the vine is successfully cultivated. As regards the general distribution of agricultural products, the sugar beet and the potato are the crops of the sandy soil and the cold, damp climate of the North German Plain. In the same region rye and oats are grown, as are some flax and hemp. In the warmer southwestern portions (the basin of the Middle Rhine) hops, wine, fruits, tobacco, and wheat are the chief productions.

Richly productive meadows and grass lands, form pasturage for large numbers of cattle and horses; dairying is a leading industry in many parts of the country. The raising of sheep has largely fallen off, owing to the importation of foreign wool, which has caused a reduction in the price of the home product. The raising of swine, as already mentioned, has been greatly increased by the beet sugar industry.

Mining and the manufacturing industries dependent thereon, are mostly centered in the coal and iron districts. A considerable amount of copper, silver, lead, and zinc are mined in the Harz region and in Silesia. Germany furnishes nearly one-half of the European silver output, the metal being obtained chiefly from silver-lead ores.[1] German miners are far advanced in methods of extracting metals from ore and in general mining operations. Germany leads every other country on the continent in the production of coal and iron, and stands third in the coal-producing countries of the world, being exceeded only by Great Britain and the United States. The chief coal fields (mostly associated with iron ore) are the Rhur Valley in Westphalia, the Saar coal basin in Lorraine, the coal fields of Saxony at the base of the Erzgebirge, the coal basins in upper and lower Silesia, and the lignite area in Saxony and

[1] Kirchhoff, *The International Geography*, p. 282.

Thuringia. Although iron ores of excellent quality are found widely distributed throughout the Empire, iron is extensively worked only when found with coal. Beneath the surface of the North German Plain are immense deposits of rock salt associated with potassium salts, which latter are of great value in various chemical and industrial processes.

Forestry has reached a very high state of development in Germany, and the returns from forest productions yield an important revenue. Along the shores of the Baltic and North Seas, fisheries are carried on to some extent. In the mountainous parts of the country, where agriculture is not profitable, many of the people are still engaged in various primitive home industries, as weaving and spinning, wood carving, brewing, lace work, etc.; but these hand manufactures are giving way before the modern industrial development.

180. Manufacturing and Commercial Centers. — Essen, in the Rhur coal basin, is the site of the great Krupp manufacturing plant, where the large pieces of ordnance are cast for use throughout the world. Some twenty miles south of this are Solingen and Remscheid, noted for their cutlery and other steel work. In the same district are Barmen, Elberfeld, and other towns, engaged in the textile manufactures, especially in woolen and silk goods. On the western side of the Rhine is Krefeld, next to Lyons, the most noted center of silk and velvet manufacture in Europe. The centering of this industry here is due largely to the character of the water, which aids in the dyeing process.[1] Cotton manufacture has reached a remarkable development in the Alsace-Lorraine district, where Kolmer, Gebweiler, and Mulhausen are noted centers. Other textile industries are also carried on in towns of this region, which though not situated on any coal field are near enough for easy transportation, and besides have the advantage of water power from the tributary streams which flow into the Middle Rhine from the Vosges Mountains. Aachen (Aix-la-Chapelle) is a center of woolen manufacture on

[1] Chisholm, *Handbook of Commercial Geography*, p. 251.

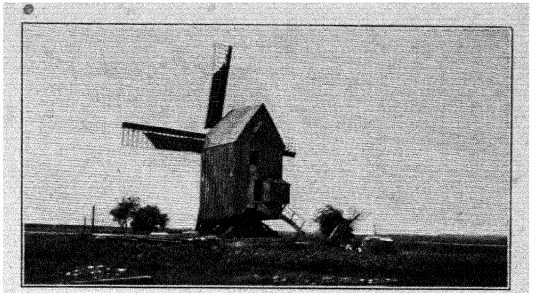
the edge of the Belgian coal and iron field. In the Saxony coal fields, Chemnitz is the great center of textile industry, and in Silesia Görlitz, Breslau, and Liegnitz are noted for their woolen manufactures. In Wurtemburg, Stuttgart is the chief center of hosiery manufacture.

Many towns in Germany are famous for their chemical manufactures: Dresden, for fine porcelain and chinaware, and Munich, for the manufacture of scientific and musical instruments, notably pianos. In the Black Forest region, clock-making has reached a high state of perfection.

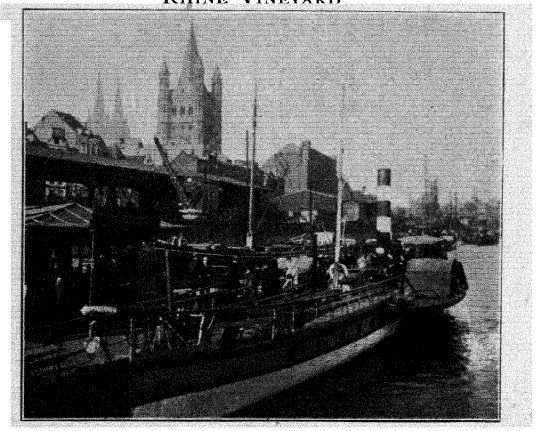
Aside from distinctively manufacturing and mining centers, the chief commercial cities of Germany are the seaports, the river ports, and the cities located on through railway lines. Hamburg, near the mouth of the Elbe River (with the adjoining city of Altona) and Cuxhaven as the outport, is by far the largest and most important seaport of the continent, having gained this position by its favorable location in relation to the Elbe and its tributaries (the Havel and the Spree) as natural highways of communication with the interior. Bremen and its outport Bremerhaven at the mouth of the Weser, is also a notable North Sea port. Stettin, on the Oder, and Danzig, Königsberg, and Memel are Baltic ports, which are under the disadvantage of being closed by ice during the winter.

Many of the interior towns of Germany owe their present commercial importance to historical conditions, which established them as capitals of originally independent states and which, by the centering of population, directed the currents of trade to these points. In several instances, however, geographical conditions have also played a very important part in the commercial development of places. Berlin, the capital of the German Empire, has arisen largely through historical influences, but its central position in the North German Plain, and its location on the Spree, a tributary of the Elbe, has greatly added to its commercial importance. Munich has developed into a great railroad center, largely from its relation to the traffic

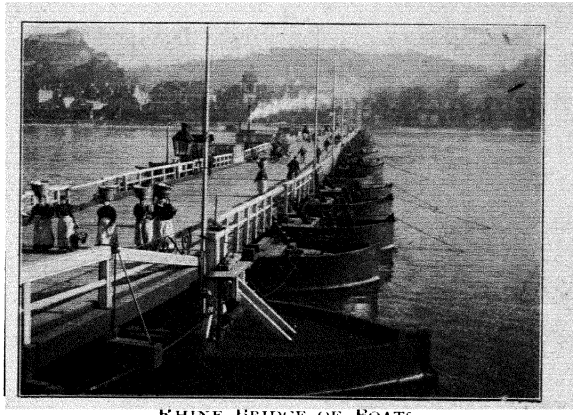
RHINE VINEYARD



WINDMILL AND PLAIN OF NORTH GERMANY



DOCK AT COLOGNE



RHINE BRIDGE OF BOATS

across the Alps. Breslau was in early times a point of crossing of the Oder, and currents of trade centered there. In later times the presence of coal increased its importance as a manufacturing and commercial center. The navigability of the Elbe for a long distance inland, has given Dresden a commercial prominence. Leipzig, by its geographical position on the boundary between the North German Plain and the Central Highlands, has long been a strategic point and a trade center, — a point of movement from the higher to the lower land, and *vice versa*. It stands second to Berlin in its importance in the inland trade, and has become the chief book-publishing center of the Empire.[1]

181. Internal Communications. — The system of internal communication in Germany has reached a high state of perfection through the building of canals and railways, added to the natural advantages offered by the navigable rivers. This has unified the industrial life and made Germany one vast workshop. The original thrift of the German, and the steady-going habits of the nation as a whole, so well illustrated in the primitive home industries, have been potent factors in the modern industrial and commercial expansion of Germany. Germany's progress has come through the development of natural resources and furnishing the means of communication. These are the potential agencies in any country, and the Germans possess, to a marked degree, the intelligence and perseverance to convert these powers into active working forces.

Upwards of 32,000 miles of railroad are in operation in Germany, with a yearly carrying trade of over 350,000,000 tons (metric). The railway system of Germany is second only to that of the United States in equipment and general importance. Germany has nearly 6000 miles of navigable rivers for vessels of deep draught, upwards of 1000 miles of canalized rivers, and more than 1000 miles of canals which connect the various river basins. The entire territory presents a vast network of navigable waterways, which, coupled with the railway

[1] See Chisholm, *Handbook of Commercial Geography*, pp. 254–258.

system, affords a ready means of transportation to every part of the Empire. The Kaiser Wilhelm Ship Canal, cut sixty-one miles across the peninsula of Schleswig-Holstein from Kiel Bay to the Elbe estuary, has had a very marked effect in stimulating trade between the Baltic and the North Sea ports. Outside nations like Russia also share advantages of this canal.

182. Trade. — The commerce of Germany is supervised by a Customs League (Zollverein) which embraces practically all the states of the Empire. The foreign trade is carried on with all parts of the world, but Great Britain has the largest share of this, followed in order by the United States, Austria-Hungary, and Russia. Germany gets a considerable amount of raw cotton from the United States, though South American cotton is also used in German manufactures. Austria-Hungary and Russia are important sources of grain supply, as the home production of food-stuffs is insufficient. Like Great Britain, Germany is a typical industrial country, its imports being mainly raw materials and food-stuffs and its exports mostly manufactured goods. Of food-stuffs over 28 per cent is imported, against about 9 per cent of special food products exported. Live stock is not exported, and a considerable amount is imported. The total external trade of Germany is over $2,000,000,000 yearly, representing nearly $40 per head of population (1901). Next to that of Great Britain the German merchant marine is the largest afloat, having nearly 4000 vessels (steam and sail) with a net tonnage of more than two million tons.

GREAT BRITAIN	1,755,000,000	— 16%
NORTH & CEN. AMERICA	1,562,000,000	— 14½%
AUSTRIA HUNGARY	1,235,000,000	— 11½%
RUSSIA	1,089,000,000	— 10%
S. AMERICA & W. INDIES	735,000,000	— 7%
NETHERLANDS	611,000,000	— 5¾%
FRANCE	593,000,000	— 5½%
BELGIUM	474,000,000	— 4½%
SWITZERLAND	462,000,000	— 4¼%
ALL OTHER COUNTRIES	2,279,000,000	— 21%

COMBINED IMPORTS AND EXPORTS OF GERMANY (1900), IN MILLIONS OF MARKS
Total, 10,795,000,000 Marks

Germany is next to Great Britain the most important country doing business with the United States, buying largely of food-stuffs and raw materials for manufacture. Its share in the export trade of the United States amounts to some 12 per cent of the whole, while the imports from Germany into this country amount to about 11 per cent of the entire import trade (1901).

SUGGESTED QUESTIONS AND TOPICS

207. From the physical features of Germany, show why there developed several small states.

208. Compare the agricultural products of Germany with those of the United States.

209. What are the termini of the Kaiser Wilhelm Canal, and what is its commercial importance?

210. Contrast the characteristics of German business men with the traits of English and American business men.

211. Write an essay on The Development of Manufactures and Trade in Germany since 1870, also one on Germany's Consular and Colonial System. (British Consular Report noted below.)

212. What have schools and universities had to do with the progress noted in the preceding topic?

213. Investigate the introduction of the beet sugar industry into Germany.

Books to be Consulted — Miscellaneous Series

*Kirchhoff, *The German Empire*, *The International Geography*, Chapter XVII.
**Germany*. British Diplomatic and Consular Reports, No. 490. London; 1899.
**Pogson, *Germany and its Trade*. New York and London; 1902.
Sime, *Geography of Europe*, Chapter VII. Macmillan's Geographical Series.
*Chisholm, *Handbook of Commercial Geography*, pp. 246–258.
*Arndt, *Germany in International Commerce*, International Monthly, May 1902.
***Commercial Relations of the United States*. Bureau of Foreign Commerce.
**The Statesman's Yearbook*.

CHAPTER XXIII

SWITZERLAND AND ITALY

183. Industrial Switzerland. — The Republic of Switzerland lies wholly within the Alpine Highland, covering an area of 15,976 square miles, with an average density of population of about 207 to the square mile. Though scarcely twice the area of New Jersey, with practically no coal and iron within its limits, and for the most part with a thin, barren soil, the country presents a remarkable picture of industrial development. Two features of environment lie at the foundation of Switzerland's industrial life — lack of home-grown foodstuffs and raw material, and the presence of an abundant water power. The latter was early taken advantage of, and numerous industries were developed. Work in Switzerland was specialized to a remarkable extent by division of labor. The water power is further turned to account in the generation of electricity for various purposes. Switzerland lies in the gateway of traffic between the populous centers of Middle Europe and the productive lands of Italy and the Mediterranean region. The piercing of the Alps by several tunnels, and the passage of the railroads through Swiss territory, have stimulated the industries of the country to a marked degree. Raw materials are now brought in with comparative ease as against the old laborious and costly method of wagon transportation over the Alpine passes.

184. Resources and Manufactures. — Notwithstanding the difficulty under which agriculture is pursued because of the disadvantages of soil and climate, certain crops are raised, though they are insufficient to meet the demands of home consumption. Wheat is grown

in the Alpine valleys as high as 2500 feet, and wine grapes are raised on the lower slopes; but the chief agricultural wealth of Switzerland is in its pastures. The manufacture of cheese and condensed milk are characteristic Swiss industries, and these commodities form the leading agricultural exports. Among the more prominent occupations are cotton and silk weaving, the manufacture of embroideries, buttons, various trimmings, and watch making. Zurich and Basel are the centers of the silk industry, the raw material coming in from Italy. Watch making is carried on largely in the valleys of the Alpine Jura, where the soil is poor; a comparatively large portion of the people turn their attention to the making of different parts, each specializing along certain lines of work. The cost of manufacture is thus greatly reduced, and Swiss hand-made watches have competed successfully with the machine-made watches of other countries.

185. Trade. — Switzerland is forced to send out her manufactures to obtain food-stuffs and raw materials. As a consequence, the Republic maintains an active trade with the outside world. Germany holds the largest share of Swiss trade, both in exports and imports. France is second on the import list, while Great Britain is second in the value of the export trade. Of the total imports of the United States less than two per cent are of Swiss origin; the exports of the United States to Switzerland are inconsiderable.

186. Agricultural and Industrial Resources of Italy. — The area of Italy is less than half that of the state of Texas, and the average density of population is upwards of 293 to the square mile. The northern portion embraces the southern ranges of the Alps, while the peninsular portion is formed by the ranges of the Apennines and their coastal forelands. The Alps and the Apennines are separated from each other (except in a narrow mountainous neck at the head of the Gulf of Genoa) by the deep, alluvial Plain of Lombardy, which extends westward from the Adriatic shores to beyond the locality of Turin. At the southwestern end of the peninsula, and separated from it by the narrow Strait of Messina, is the mountainous island of

Sicily, while to the west lie the two islands of Sardinia and Corsica, the latter of which belongs to France. The Plain of Lombardy lies in the basin of the Po, and is one of the most densely populated portions of the Kingdom.

Italy occupies a unique position among European countries in its relations to the Mediterranean trade, and to the commerce of the Suez Canal. The peninsula has a shore line that fronts east, west, and south. With such an extensive coast line and the advantages presented by foreign traffic, a considerable proportion of the people naturally follow the sea. Venice, near the head of the Adriatic, was once the commercial center of the world, and is to-day a seaport of note.[1]

The climate is of the Mediterranean type, with hot and dry summers; the rainfall is variable, being influenced locally by the position of mountain ranges and the prevailing winds. Irrigation is extensively practiced, the abundant water supply of the numerous mountain streams being utilized for this purpose.

Italy is a remarkably productive region, as the climate and soil support a great variety of growth, from tropical to temperate forms; but agriculture is in a backward state, owing to primitive methods. The population, however, depends mainly upon agricultural resources. Wheat is the chief cereal crop; the hard-grained wheat of Apulia, in the southeastern part, furnishes the material out of which the characteristic Italian food — macaroni — is made. Next to wheat, Indian corn is the most important grain crop. Quantities of hard wheat are now imported from India to meet the deficiency caused by the poor methods generally practiced in the country. In the Plain of Lombardy, rice is grown extensively in the irrigated fields, and in all areas under irrigation grass and forage crops grow in remarkable luxuriance. Cattle raising and dairying are relatively important industries; the manufactures of cheese form a considerable item of export. Other important Italian exports are poultry and

[1] Fischer, *The International Geography*, pp. 353-354.

eggs. Sheep are raised in some districts, the wool of Apulia being especially noted. Oranges, figs, almonds, and olives are grown in great abundance ; viniculture and wine-making are also characteristic Italian occupations, though the wine is of inferior quality. Italy produces more olive oil than any other country in the world, and though the home consumption is very large, a considerable export goes to other countries, particularly to France. The chief fiber crops are flax and hemp. Silk culture is extensively carried on, especially in the northern portion, and the reeling of silk is an Italian industry of considerable importance. Silk, raw and "thrown," *i.e.* made into yarn, is by far the most valuable single item of Italian export. Another industry of commercial importance is the plaiting of straw ; the Leghorn product of this industry is especially famous.

187. Manufacture and Commerce. — Most of the Italian textile industries are of the domestic type, and they are carried on locally throughout the country, yet certain sections are distinguished by the development of the modern factory and the centering of industries at special points. A factor in the industrial life of Italy is the cheapness of labor, which enables the country to carry on certain manufactures to advantage. Italy lacks fuel ; beds of lignite form the only material of this nature. The water power of the mountain streams, however, is made available in many places, and various textile industries have developed in the valleys of the Piedmont. Iron ore of good quality is abundant, and under government encouragement the iron industry has of late been developed in various sections.[1] Some iron ore is shipped to the United States. The most important mineral product exported from Italy is sulphur, obtained chiefly from Sicily, where it occurs as a volcanic deposit. Boracic acid is also prepared in the volcanic districts. Italy is famous for its statuary marbles, particularly those quarried at Carrara and Massa. Lead and zinc are also of some commercial importance. A feature of Italian industry is the production of artistic wood work, earthen-

[1] Chisholm, *Handbook of Commercial Geography*, p. 294.

ware, tiles, coral, cameos, mosaics, leather, alabaster, etc., for all of which the city of Florence is a noted center.

Notwithstanding Italy's extensive seacoast and excellent harbors, most of the export trade is carried on by rail. Since the completion of the Alpine tunnels, the nature of the material handled (oil, eggs, wine, etc., produced in the northern provinces) makes it cheaper and easier to ship overland than to transship the goods both at home and in foreign ports.

Venice and Genoa are the two most important seaports of the Kingdom, the former doing the largest export trade to the Mediterranean, while Genoa stands first in the value of imports from its nearness to other European ports. The export trade from Genoa is comparatively small. Naples has a fine harbor and commands a large import trade; the chief exports from Naples are raw materials (flax and hemp), live stock, etc. Palermo, Messina, and Catania are Sicilian ports, prominent in the shipment of oranges, wines, and sulphur. Brindisi, on the Adriatic, is the port of transshipment for the Indian mail. Turin is the Italian terminus of the Mont Cenis Railroad. Milan is the most important inland trade center of northern Italy. It is situated in the fertile Plain of Lombardy, and was the focal point of the earlier trans-Alpine roads and is now a terminus of the St. Gotthard Railroad. A canal is projected from the mouth of the Tiber in order to make Rome a seaport.

UNITED KINGDOM	513	— 18%
GERMANY	425	— 15%
UNITED STATES & CAN.	350	— 12%
FRANCE	336	— 12%
AUSTRIA	336	— 12%
SWITZERLAND	264	— 10%
RUSSIA	145	= 5%
ARGENTINA	103	= 4%
BRITISH ASIA	91	= 3%
ALL OTHER COUNTRIES	254	= 9%

COMMERCE OF ITALY (1900), APPROXIMATED IN MILLIONS OF LIRE

Italy is mainly an exporter of raw materials, little if any manu-

factured goods (except those of an artistic nature) being sent out of the country. It thus holds a somewhat unique position. It is an important source of supply for the Swiss silk industry. Its largest imports are wheat, raw cotton, and coal. The largest import trade is from Great Britain, the United States being second, Germany third, and France fourth. The greatest value of exports goes to Germany, Switzerland being second (silk), and France third, followed by Great Britain and United States (1901). The total of United States' trade to Italy is small, amounting to little more than two per cent of the whole trade of this country. In the diagram opposite the commerce of the United States and Canada are taken together.

SUGGESTED QUESTIONS AND TOPICS

214. What language is spoken in Geneva? What in Zurich? What are the official languages of Switzerland?

215. Mention the principal "Gates of Italy." What are the railroads passing through them?

216. What are the climatic conditions on the Mediterranean that make it so well suited to the production of the olive?

217. What uses does the olive serve in the economy of Mediterranean peoples?

218. With a map, show the peculiar appropriateness of the following: "Greece looks toward the rising and Italy toward the setting sun."

219. Note the diversity of natural features in Italy and see how this is reflected in the products.

220. A reported difficulty in the securing of Mediterranean trade is to get a return cargo. Discuss this.

221. Trace the parallel of Rome across the United States. What dissimilarities in the regions?

Books to be Consulted

**Chaix, *Switzerland*, Chapter XVI, Fischer, *Italy and Malta*, Chapter XX, *The International Geography*.

Sime, *Geography of Europe*, Chapters III and VIII. Macmillan's Geographical Series.

*Chisholm, *Handbook of Commercial Geography*. London and New York.

** *The Statesman's Yearbook*.

**Foreign Commercial Relations of the United States*.

CHAPTER XXIV

AUSTRIA-HUNGARY

188. Physical Features. — Two distinct physical areas are united under the name of Austria-Hungary. These correspond fairly to the divisions of the compound name. Each is, moreover, a separate political unit, but under a single Monarchy. The boundaries of the Monarchy embrace for the larger part, the basin of the Middle Danube, and the entire area presents a great variety of surface features. The western or Austrian portion, is largely mountainous, including the Tyrol, the rugged region of Carinthia and Styria, the ranges of Upper and Lower Austria, the Plateaus of Bohemia and Moravia, the Carpathian ranges to the north and east, and the Dinaric Mountains along the narrow Adriatic strip. The eastern or Hungarian portion, consists for the most part, of a vast expanse of grass-covered plains or steppes, which belong in the same physical area with the plains of Russia and western Asia.

The climate of the two areas is in contrast, that of Hungary being decidedly continental in character with great yearly extremes of heat and cold, while the Austrian section has the more oceanic climate of western Europe with a larger rainfall.

189. Resources and Industries. — As a result of this difference in physical conditions, the two sections of the kingdom present a decided contrast in their resources and in the resulting activities of the population. Austria, from its mountainous nature, holds a vast store of mineral wealth which has given rise to great manufacturing industries. Hungary, on the other hand, is eminently an agricultural region, its extensive plains being given over to crop growing and stock raising.

The area of the Austrian Empire is upwards of 115,000 square miles, with an average density of 226 persons to the square mile. The Kingdom of Hungary has an area of about 125,000 square miles, with an average density of 153 per square mile. The difference in the density of population in the two sections is the difference between a purely agricultural region and one of manufactures. As in the neighboring German states, rye and oats form the principal grain crops of Austria, while on the Hungarian plains, wheat and maize are the chief crops. Hungarian wheat enters commerce largely in the form of flour of a high quality, milling methods being far advanced; the dryness of the climate is favorable to the manufacturing of flour. Agriculture in Hungary has made rapid strides in the use of machinery, fertilizers, etc., with a resulting increase in the yield per acre. The sugar beet is grown, particularly in northern Bohemia. In the same region hops are also grown. The production of silk and wine is carried on in western Hungary, and in the Alpine provinces of Austria.

Nearly 28 per cent of the area of Hungary and over 34 per cent of the area of Austria are forest-covered, the forests yielding a variety of valuable timber. Over 23 per cent of Hungary is in meadow and pasture land, stock raising being an important feature of the country's economy. Cattle are also largely raised in the Alpine provinces of Austria.

Coal and iron are the most important mineral deposits, but though abundant, are not associated together; coal is found chiefly in Bohemia and Moravia (contiguous to the Silesian and Saxony coal fields of Germany), while iron occurs in the Alpine districts. In the latter region lignite is found. Rich salt deposits are mined in the Alpine provinces, in western Galicia, and also in the Hungarian province of Transylvania. Austria-Hungary is prominent among European countries as a gold producer; silver and mercury (quicksilver) also occur in deposits of some value.

190. Manufacturing Centers and Internal Communications. — The chief centers of manufacture are the coal areas in Bohemia, Moravia,

and the Austrian province of Silesia. Various textiles, as woolen, linen, cotton, and jute fabrics, are manufactured here. Iron and steel making is carried on chiefly in the iron-ore districts. Glass making is a characteristic Bohemian industry of considerable antiquity and prominence. The glass industry became prominent because the potash of the forests of Bohemia and the silica of the soil were contiguous to the coal fields. Porcelain ware is also made at places where kaolin occurs (Karlsbad, etc.[1]). Sugar refining and brewing are prominent industries of Bohemia.

GERMANY	1672	— 47.4%
GREAT BRITAIN	352	— 10%
ITALY	261	— 7.4%
UNITES STATES	191	— 5.4%
RUSSIA	161	— 4.5%
BRITISH INDIES	130	— 4 %
SWITZERLAND	125	— 3.6%
FRANCE	122	— 3.4%
ALL OTHER COUNTRIES	511	— 14.4%

COMBINED IMPORTS AND EXPORTS OF AUSTRIA-HUNGARY (1900), APPROXIMATED IN MILLIONS OF CROWNS

Total, 3,525,000,000 Crowns

Vienna, the capital of the Monarchy, is the most important industrial and commercial center. It is situated on the Danube, in Lower Austria, at a point where natural features have made it a center of European traffic. The series of gaps between the Carpathian and Alpine ranges, where the Danube enters the Plain of Hungary (the Hungarian Gate), lie just to the east. North of it the Moravian Gap opens a way to the great European Plain. The Southern Railway carries trade over the Semmering Pass into Italy. Through the narrow depression between the Alps and the Plateau of Bohemia, known as the Austrian Gap, there is a trade route into southern Germany. All together, Vienna stands at the crossing of trade routes and owes its importance as one of the first cities of Europe, largely to this fact.[2]

[1] Chisholm, *Handbook of Commercial Geography*, pp. 267–268.

[2] Penck, *The International Geography*, pp. 309–310.

CENTRAL EUROPE.
Scale of Miles.
100
200
Cities with over 1,000,000 Berlin
Cities with 200,000 to 1,000,000 Rome
Cities with 100,000 to 200,000 Venice
Smaller Places Larissa
Capitals with less than 100,000 Belgrade
Capitals of Countries Other Places
Longitude East 20 from Greenwich
10
15
30
NORWAY
Skager Rack
Gothenburg
Jonkoping
Linkoping
SWEDEN
GOTLAND
Gulf of Riga
Riga
RUSSIA
Aarhus
Kjoriskrona
DENMARK
Copenhagen
Lund
Malmo
BORNHOLM
To Den.
NORTH SEA
Kaiser Wilhelm Canal
Kiel
Konigsberg
Danzig
Lubeck
Hamburg
Stettin
Bremen
Hanover
Charlottenburg
Berlin
GERMAN EMPIRE
Magdeburg
Halle
Leipzig
Dresden
Posen
Warsaw
Lodz
Gorlitz
Breslau
POLAND
Dortmund
Krefeld
Dusseldorf
Barmen
Elberfeld
Aachen
Cologne
Frankfort on Main
Chemnitz
Erfurt
Reichenberg
Prague
Carlsbad
Wurzburg
Mannheim
Nurnberg
Pilsen
Budweis
Brunn
Krakau
Lemberg
Carpathian Mts.
Luxemburg
Metz
Karlsruhe
Stuttgart
Baden Baden
Strassburg
Mulhausen
Augsburg
Munich
Linz
Salzburg
Vienna
Presburg
Kaschau
Debreczen
Budapest
Basel
Zurich
Berne
Lucerne
St. Gothard
Innsbruck
AUSTRIA HUNGARY
Grats
Laibach
Trieste
Fiume
Agram
Maria Theresiopel
Szegedin
Klausenburg
Temesvar
Kronstadt
Galatz
Odessa
Danube R.
Mont Blanc
Turin
Milan
Padua
Verona
Venice
Mt. Cenis
Genoa
Ravenna
Bologna
Pisa
Leghorn
Florence
Ancona
San Marino
Adriatic Sea
Bagnaluka
Belgrade
Kragujevatz
RO Bucharest
SERVIA
Rustchuk
Varna
BULGARIA
Sofia
Balkan Mts.
Philippopolis
Adrianople
Constantinople
Sea of Marmora
Black Sea
MONTE NEGRO
Cettinje
Prisrend
Scutari
Ipek
Nish
CORSICA
(To France)
Ajaccio
Rome
Foggia
Naples
Mt. Vesuvius
Bari
Brindisi
Monastir
Salonica
Gallipoli
Tyrrhenian Sea
SARDINIA
(To Italy)
Cagliari
Gulf of Taranto
Otranto
Corfu
Janina
Larissa
Trikala
Dardanelles
Aegean Sea
Strait of Messina
Palermo
Messina
Ionian Sea
IONIAN ISLANDS
GREECE
Athens
Patras
Gorthe (Corinth)
Kalamata
SICILY
Mt Etna
Catania
AFRICA
MEDITERRANEAN SEA
C. Matapan

The twin cities of Budapest, on both banks of the Danube, are the center of a great flour-milling district. Prague, the capital of Bohemia, is in one of the most densely populated districts of the Kingdom. It is situated on the Moldau, a tributary of the Elbe, at the head of navigation, and is thus in communication with the port of Hamburg. Just where the Danube leaves the Kingdom of Hungary to enter Rumania, it passes close to the southwestern bend of the Carpathians, known as the Transylvanian Alps, in a series of rapids — the famous Iron Gates — which long obstructed navigation, but more recently they have been passed by canals.

191. Commerce. — Austria-Hungary has but two seaports of note,— Trieste and Fiume on the Adriatic. These handle together scarcely a third of the entire trade of the Empire, the bulk of it going by rail, river, and canal to the adjoining countries. Sugar, eggs, wood, and woodwork are among the exports of greatest value, while cotton, wool, coal, and silk are among the noteworthy items of import. The largest trade of the Empire is with Germany, followed by Great Britain and Italy.

SUGGESTED QUESTIONS AND TOPICS

222. With what other European country are both the people and the industries of Austria most closely related ?

223. Make a statement of the commercial advantages enjoyed by Vienna.

224. Show how natural features have determined the manufactures of Bohemia.

225. Find the place of Austria-Hungary in the world's supply of timber.

226. Contrast the industries of Austria and Hungary. What is the physical basis of this contrast ?

Books to be Consulted

* *The Austro-Hungarian Monarchy. The International Geography*, Chapter XVII.

Sime, *Geography of Europe*, Chapter IX. Macmillan's Geographical Series.

*Chisholm, *Handbook of Commercial Geography*, pp. 262–269.

** *The Statesman's Yearbook.*

CHAPTER XXV

THE DANUBE COUNTRIES AND THE BALKAN PENINSULA

192. Rumania. — The Carpathian Mountains sweep in a broad arc along the northern border of Hungary and bending southward, then westward (the Transylvanian Alps), and again southward, enter the Balkan Peninsula beyond the "Iron Gates" of the Danube. They likewise form the Hungarian frontier on the east. Extending eastward from the Transylvanian Alps to the Black Sea and from the borders of Russia on the north to the Balkan Mountains on the south, is the Kingdom of Rumania, covering an area of some 50,000 square miles. It lies in the basin of the Lower Danube from the point where the river breaks through the Carpathian wall in the rapids of the "Iron Gates" to its delta on the western shore of the Black Sea. The eastern slopes of the Carpathians are wooded and pass into the Rumanian Plain, a steppe covered by the rich "black earth," fertile and similar in nature to the soil of southern Russia. In fact, the Rumanian Plain is a southward continuation of the steppe region and is of the same aspect and climate. Here, as in Russia, the annual extremes of temperature are very great.

Rumania is one of the chief grain-producing countries of the world. Wheat and corn are extensively grown on the black earth lands of the plains. As a corn growing country it stands next to the United States; the production of corn in 1900 amounted to upwards of 80,000,000 bushels. Of the entire population, 70 per cent are engaged in agriculture. Other crops are sugar beets, colza, flax, hemp, tobacco, fruits, and wine. Stock raising is carried on in the higher elevations. Timber is a valuable commodity on the slopes of

the mountains; there is also much mineral wealth in the mountain districts. Coal and petroleum are worked, and the latter is exported to some extent. Salt mining is also an important industry, being a state monopoly. Various manufactures are carried on, notably paper making, sugar refining, manufacture in woolen textiles, cement, leather, wooden work, etc.

The Danube is the main highway of traffic, and the channels of its delta are kept free from silt at a considerable expense. By international treaty the deep-sea vessels of all nations are free to navigate its waters. Several railroad lines traverse the country. The chief centers of trade are Bukharest, the capital, located in the Wallachian Plain; Jassy, in Moldavia; Krajova, Ployeti, etc. Galatz and Braïla are Danube ports. Constantsa, a port of the Dobrudja marsh districts, has an important trade with Turkey. The chief trade of Rumania is in the export of grain. A large part goes to Belgium, Austria-Hungary, Germany, and Great Britain. The United States trade with Rumania is very slight.

193. The Balkan Peninsula. — The Balkan region is the rugged, mountainous peninsula which extends southward from the lower Danube Basin between the Adriatic and Ionian seas on the west and the Black Sea, the Sea of Marmora with its narrow straits, and the Ægean Sea on the east. Its southward termination is broken into a group of islands included within the Kingdom of Greece. The Kingdom of Servia occupies the northwestern portion. European Turkey, and its principality Bulgaria, lie in the central and eastern part of the peninsula. The narrow Dinarc region along the coast of the Adriatic, is occupied by the Austrian province of Dalmatia, Bosnia, and Herzegovina (under Austrian dominion), and the small principality of Montenegro. A variety of climates and productions characterizes the Balkan region. The central and eastern portions have a decidedly continental climate with marked yearly extremes. The Mediterranean climate dominates the Ægean shores and islands, with mild winters and slight rainfall. The rainfall is heavy on the Adriatic side through-

out the year. The features of vegetation vary with the climatic differences. Along the entire western coast of the peninsula it is essentially Mediterranean in character, while in the interior the climate is similar to the forest region of central Europe; on the east is a steppe region like that of Asia.

The Balkan Mountains contain some valuable mineral deposits, among which are coal, iron, lead, copper, etc., but little if anything has been done in the way of their development.

194. Servia. — The Kingdom of Servia lies mainly in the basin of the Morava River, a tributary of the Danube, which affords one of the few natural highways of traffic into the interior of the Balkan Peninsula. The chief productions of the country are agricultural, maize being the most important crop. Forage grass and plums are also grown. Live stock raising is an important industry and numbers of cattle, sheep, and pigs are exported, the latter being fattened on "mast" in the forests. Silver-lead ores, with copper, iron, and coal, are worked to some extent. Belgrade, the capital, and chief commercial center, is located at the confluence of the Morava and the Danube. The principal trade of the country is with Austria-Hungary.

195. European Turkey. — The Ottoman Empire in Europe is very backward, and the resources of the country are comparatively undeveloped. Agriculture is little developed, and the manufacturing industries are mainly local in character. The famous attar of roses is a characteristic Turkish production; the manufacture of carpets is a leading industry. Among other articles produced and exported are tobacco, wine, wool, beans, grain, fruits, honey, and wax, besides leather and metal manufactures. Of the latter commodities, there should be mentioned arms and saddles. The chief Turkish port and great center for the commerce of eastern Europe is the city of Constantinople on the narrow strait (Bosporus) connecting the Black Sea with the Sea of Marmora. The city is a center for the trade of a wide region throughout western Asia and most of the exports are

Asiatic productions. Mohair (from the fleece of the Angora goat) is one of the chief articles of export. Other special items besides those mentioned above are galls, various seeds, yellow berries, and gum tragacanth. The Turkish carpet and rug export from Constantinople is largely of Persian and Syrian manufacture. The importance of Constantinople is due to its location on the southeastern confines of Europe, being thus in touch with the trade of Asia Minor; it also has advantages from its commanding position at the entrance of the Black Sea (the sea route for the commerce of southern Russia). A through line of railroad connects Constantinople with western Europe, from Vienna via Belgrade, Nish, Sofia (Bulgaria), and Adrianople. At Nish (Servia) a line branches off, running south to the Turkish port of Salonica. Other lines reach Varna on the Black Sea, via Bukharest and Rustchuk (Bulgaria); railroads also reach Bourgas (a Black Sea port), and Dede-Agach (a seaport on the Ægean).

196. Bulgaria. — The principality of Bulgaria, including eastern Rumelia, has an autonomous government but under Turkish suzerainty. The country is traversed by the Balkan Mountains which form a watershed between the Danube Basin on the north and the rivers flowing into the Ægean Sea on the south. The soil of many parts is extremely fertile, and wheat, maize, rice, cotton, fruits of different sorts, and wine grapes are largely cultivated. The production of raw silk and the growing of roses (for the manufacture of attar of roses) are leading industries. Bulgaria has made more progress in its outside trade, than have the other Balkan countries. Sofia (capital), Philippopolis, Rustchuk, Plevna, etc., are towns of some commercial importance.

197. Greece. — The Kingdom of Greece occupies the southern end of the Balkan Peninsula and part of the adjacent archipelago of the Ægean. The most important agricultural products are figs, olives, currants, honey (the celebrated honey of Hymettus), wines, silks, tobacco, gall nuts, etc. Of these, currants are by far the most important

CARAVAN — CONSTANTINOPLE

item in the export trade. Next to currants, various ores form the export of most value, the deposits being worked comparatively close to the sea and near the points of shipment.[1] The principal Greek ports are Piræus (the ancient and modern port of Athens), Patras, Syra (Hermopolis), and Corfu.

The commercial relations of Greece are chiefly with Great Britain, Russia, Turkey, Egypt, Austria-Hungary, France, Germany, and Belgium. The United States holds a very small fraction of the trade.

SUGGESTED QUESTIONS AND TOPICS

227. Locate the "Iron Gates of the Danube," and show their influence on commerce.

228. Mention the advantages in situation enjoyed by Constantinople. What is the "Golden Horn"?

229. Notice the geographic relation of Greece to Europe and to Asia. Professor Mahaffy says the Greeks still talk of "going to Europe." Why is this?

230. Investigate the importance of insularity in Greek history. Explain the statement applied to physical features, "Greece is the most European of European lands."

231. Give an account of the history and commercial importance of the Corinthian Canal. (Consular Reports, June, 1903.)

Books to be Consulted

**Philippson, *The Danubian and Balkan States. The International Geography*, Chapter XIX

Sime, *Geography of Europe*, Chapters II and XIV. Macmillan's Geographical Series.

*Hogarth, *The Nearer East.* New York; 1902.

*Chisholm, *Handbook of Commercial Geography*, pp. 297–301.

The Statesman's Yearbook.

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1 Chisholm, *Handbook of Commercial Geography*, p. 299.

CHAPTER XXVI

SCANDINAVIAN COUNTRIES

198. The Scandinavian Peninsula. — Sweden and Norway occupy the Scandinavian Peninsula, which is a plateau of 1000 to 3000 feet elevation, dissected by numerous rivers into a rugged, mountainous land. The valleys of the rivers are flooded by the sea for long distances inland, forming the characteristic "fjords." Many of the rivers are not navigable for commercial purposes because of the numerous rapids which occur in their courses, but in many cases the fjords form excellent harbors. Except for the southeastern part, the elevation of the land increases toward the south; this offsets the conditions of latitude and produces a general uniformity in the vegetation which is essentially boreal in character. A considerable area of level land is formed by the southern and eastern slopes of the plateau. In a general sense, Norway occupies the higher and more mountainous western portion of the peninsula, and Sweden the lower more plain-like portion of the east and south. The northern part of the peninsula lies within the Arctic circle. The climate along the coast of Norway is subject to a heavy rainfall and frequent fogs, but it is tempered by the warm oceanic influence. In the interior the climate is more severe; the high valleys of Norway and a large portion of Sweden are dominated by the northern continental type of climate.

A considerable part of the peninsula is covered with forests of spruce, fir, and pine. Over 22 per cent of the area of Norway, and nearly 50 per cent of that of Sweden, is under forest, timber being the most important product of the two countries and the chief item of

export (the largest European timber export is from these countries) Scandinavian timber is especially valuable because of its hardness, resulting from the short summers which produce close annual rings.[1] In both countries wood pulp is a prominent timber product, being produced in large quantities and exported for the manufacture of paper. The manufacture of matches is also a very important branch of the timber industry in both Norway and Sweden.

The two countries are similar in productions and industries, and both are united under the same political rule, yet certain features give to each a distinctive commercial prominence.

199. Sweden. — Upwards of 8 per cent of the entire area of Sweden is under cultivation, and some 3 per cent is natural meadow land. The chief crops raised are oats, rye, barley, and potatoes, with a small portion of wheat. Oats and barley form a considerable item of export. Stock raising is carried on, and dairying is a very prominent industry, butter being one of the principal exports of the country. The mining industry is extensively pursued, especially in iron ore and the production of pig iron. Silver-lead ores, copper, zinc, and manganese are also produced. Coal is found in some sections, but is not mined to any extent. Comparatively little textile manufacturing is carried on.

Stockholm, the capital, commanding a harbor on the Baltic, is the chief industrial center. Gothenburg and Halmstad on the Cattegat are prominent seaports, and Malmö, at the southern end of the peninsula, is important from its close relation to Denmark and the north German ports. Other Baltic ports are Norrköping, Gefle, Christianstad, Hernösane, etc.

Swedish trade is largely with Great Britain, Germany, and Denmark, the trade with the United States being small. Timber, butter, and iron products are the leading items of export.

200. Norway. — The chief characteristics of Norwegian industry are the fisheries and the timber products. The former are

[1] Chisholm, *Handbook of Commercial Geography*, p. 279.

carried on extensively along the coasts and islands; cod and herring are the fish most largely taken. Whale fishing is also followed to some extent. Cod-liver oil and train oil are items of export. The population of Norway has always turned largely to the sea as a means of subsistence, since the barren, rocky soil and forbidding climate, render extensive agriculture well-nigh impossible. The open winter harbors and the abundance of timber naturally led to the building of wooden vessels, and the following of the deep-sea commerce by a large proportion of the people. The Norwegian bark and the Norwegian sailor are common in the merchant service of other nations. Various mineral deposits abound in Norway, but they are little developed; copper, silver, rock phosphate, and infusorial earth are among the minerals most exploited. Norway depends far more than Sweden on the importation of food products for home consumption.

The chief commercial towns which are all seaports are: Christiania, the capital, at the head of the Skager-Rack, Stavanger, Bergen, Christiansund, and beyond the Arctic circle, Tromsö and Hammerfest. The trade of the country is mostly with Great Britain, Sweden, Denmark, and Iceland, Germany, Russia, Holland, and Belgium.

Upwards of seven thousand miles of railroad are in operation in the Scandinavian Peninsula, and lines are being still further developed where the mineral wealth gives good prospects of return. One road in Norway traverses the mining district of the Glommen River Valley with a terminus at Christiania. Another crosses the plateau and terminates at Stockholm, while another, within the Arctic circle, has opened up a rich iron-ore district.

201. Denmark. — The Kingdom of Denmark occupies the northern portion of the Peninsula of Jutland and the adjoining islands. The eastern part is the most fertile, and the best harbors are located along the Baltic side. The chief industries of the country are agriculture, live stock raising, and dairying. Home manufactures are encouraged by the government. Among the manufactured products

exported are gloves made from the skins of the animals raised in the country.

Copenhagen, on the strait between the Cattegat and the Baltic, is the capital, and the chief commercial center. Denmark carries on a considerable trade with her colonies in Iceland and the Faroe Islands, and on the west coast of Greenland. From there she gets chiefly fish, whale and seal oil, etc. In both Iceland and the Faroes, sheep raising is carried on, also the gathering of sea birds' eggs and eider down. Denmark's largest trade is with Great Britain and Germany; the bulk of her exports consists of butter, pork, lard, eggs, etc.

SUGGESTED QUESTIONS AND TOPICS

232. Compare the climate and productions of Scandinavia with those of Russia and British America in the same latitude.

233. What is indicated by the prominence of the manufacture of matches in Sweden?

234. Investigate the metal supplies of the Scandinavian Peninsula.

235. Why should shipping be so important an interest in Norway?

236. What are the political relations of Norway and Sweden?

Books to be Consulted

**Chapter XIII, *The Scandinavian Kingdoms. The International Geography.*
Sime, *Geography of Europe*, Chapter XII. Macmillan's Geographical Series.
**Chisholm, *Handbook of Commercial Geography*, pp. 278–283.
*Louis, *Iron Industry in Sweden.* Engineering Magazine, Vol. XVII.
The Statesman's Yearbook.

CHAPTER XXVII

RUSSIA IN EUROPE

202. Physical Features. — Russia proper, or European Russia, is but a small fraction of the vast territory which the entire Empire now embraces. Out of a grand total of 8,660,395 square miles, only some 25 per cent is included within European territory, and this inclusive of Poland and Finland. No physical barrier of moment intervenes between Asiatic and European Russia. The climate grows more and more continental in character from the shores of the Baltic eastward into Siberia, where the greatest annual extremes are met with. Physically, European Russia is the great Northern Plain of Europe, continuous with the Siberian Plain, and broken only by the low ranges of the Ural Mountain system. In the direction of latitude, it reaches from the shores of the Arctic Ocean to the Black Sea and the borders of Asia Minor.

The river basins form the most conspicuous feature of Russian topography, and have to a large extent determined the movements of commerce. The great rivers of central Russia take their rise in an elevation of the plain in the district about Moscow, a region of peat swamps and lakes; from this elevation the rivers flow westward, eastward, and southward. Certain conditions, however, offset the advantages of these natural highways. Ice blocks the river navigation in many parts, for certain months of the year. The Dnieper, the chief waterway from the Black Sea, is barred by numerous rapids, and the same is true of the Bug and the Dneister. The Volga, the largest river of Europe, is navigable for steam craft for upwards of 1600 miles (with its tributaries affording all

together some 7000 miles of navigable waterway). This empties into the land-locked Caspian Sea, and goods for oversea trade must be transshipped at Tsarit(syn) across the short divide to the Don navigation. For the greater part of their course the Russian rivers are too shallow to permit of anything but barges and vessels of light draught. Extensive canalization has overcome many difficulties in the passage of rapids and shallows; the low divides, separating contiguous river basins, have favored the construction of a widespread system of canals which unite virtually all the Russian rivers, forming a vast network of continuous waterways, by which the Black Sea, the Baltic, and the Caspian are united. This extensive river and canal traffic, though possessing many advantages, has retarded the development of railroads in European Russia until a comparatively recent period.

203. Resources and Industries. — The northern portion of European Russia is a waste of frozen marshes, the "tundra," supporting only reindeer moss and stunted vegetation. South of this is the great forest belt, a tree-line zone of scrub forests in the north, further to the south are the fully developed forests of conifers, beeches, and other hardwoods. In central Russia the forests gradually give place to the more open lands of the black earth region, where agriculture reaches its highest development. To the eastward this black earth region passes into the arid steppes.

Of the total area of European Russia, amounting to upwards of a billion acres, over 28 per cent is under cultivation, some 14 per cent is in orchard, meadow, and pasture land, 37 per cent is forest covered, and 19 per cent unavailable for tillage. The average density of population throughout European Russia proper, is about 51 to the square mile, varying from one person per square mile in the Arctic province of Archangel to 189 per square mile in the province of Moscow.

Rye is the most important cereal crop of Russia, followed by oats, wheat, and barley. Next to rye, potatoes are the chief

source of food supply. Flax and hemp are largely cultivated, and the beet root and tobacco are extensively grown. Fruit and vine culture are among the chief features of agriculture in the Crimea. Stock raising is also very largely followed.

The production of iron has assumed a foremost place in southern Russia, notably in the province of Yekaterinoslaff; nearly three million tons of pig iron were produced in 1901. Coal is also found in several localities, notably in southwestern Poland, in the lower Don Basin, west of the Urals, and to the south of Moscow. (For petroleum, etc., see Chapter XXVIII, Russia in Asia.)

Though Russia is essentially an agricultural country, industrial activity has been marked in recent years. Reasons for this are, exploitation of the mineral resources, the abolition of serfdom, the vast and rapid expansion of territory, and the introduction of railroad systems. The primitive conditions of economy, where each family was at once producer and consumer, held in Russia up to within a comparatively recent period. This system survived much longer in Russia than in other European countries. The example of other nations has undoubtedly been an important factor in Russia's industrial advance. Russia now carries on most kinds of manufacture and in many lines is a leading competitor in the world's markets.

Important textile industries have developed in Poland and about Moscow, incident to the coal fields of these regions. The Russian flax fields have given a prominence to linen manufacture. Warsaw and Lodz (Poland), Moscow and St. Petersburg are all great centers of industrial activity where a variety of manufactures are carried on. Cotton and woolen textiles are the leading manufactures in the Polish and Baltic provinces, the moist climate being especially favorable to the cotton industry. The iron and steel industry has been advanced rapidly in Poland. Flour milling, brewing, distilling, and sugar refining are among the more notable industries carried on at different centers throughout European Russia. The chief seaports of European Russia are at St. Petersburg and Riga (Baltic ports),

Onega and Archangel (on the White Sea), and Odessa and Sebastopol (Black Sea).

Russian commerce, railways, etc., will be further treated in the next chapter, Russia in Asia.

SUGGESTED QUESTIONS AND TOPICS

237. Explain the increasing extremes of temperature as you go east in Russia.

238. Why are there more canals in Russia than in the countries of central and southern Europe ?

239. What has favored the formation of the great Russian Empire ?

240. Why was Nizni-Novgorod the site of a great fair ? Has this fair been of increased or lessened importance of late years ? Why?

241. Give an account of the great Russian public works, beginning with the work of Peter the Great.

Books to be Consulted

*D. Aitoff, *The Russian Empire. The International Geography*, Chapter XXII.
Sime, *Geography of Europe*, Chapter XIII. Macmillan's Geographical Series.
*Chisholm, *Handbook of Commercial Geography*, pp. 270–275.
**The Statesman's Yearbook.* (See also at the close of Chapter XXVIII.)

CHAPTER XXVIII

RUSSIA IN ASIA

204. Siberia. — Asiatic Russia embraces four vast territorial domains — Siberia, Transcaucasia, Transcaspia, and Turkestan. Under the general name of Siberia are included several so-called "governments," each of which represents a somewhat distinct geographical area. As thus described Siberia covers an area of 4,833,000 square miles (more than half of the total area of the entire Russian Empire) and contains a population of over 5,000,000 souls, representing an average density of little more than one person per square mile.

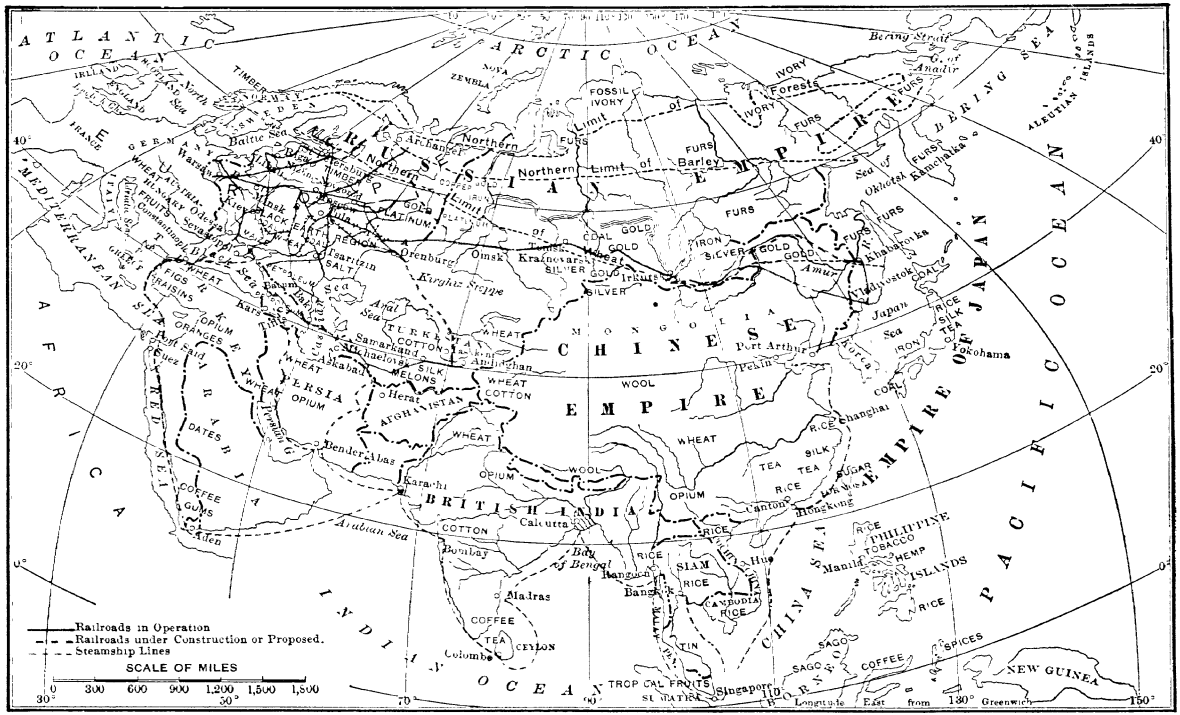
Siberia, as a whole, consists of three primary zones, corresponding, in a general way, to the tundras, the forest zone, and the steppes. According to Russian geographers, these are designated the polar, the forest, and the agricultural zones. The agricultural zone (the northern limit of which is based on the assumption that the temperature under which agriculture can profitably be pursued, is above the lowest yearly average of 57° F.) may be defined as lying south of a line which starting in the western part at about the 60th parallel passes across the continent to the 50th parallel on the east coast, cutting the northern portion of Lake Baikal in its course.[1] In the western part of this agricultural zone, two distinct portions are recognized — a northern belt of rather arid steppe land, and a southern and more fertile belt which lies in a hilly region among the slopes of the Altai and other mountain ranges. The area of the agricultural zone is variously estimated at from 500,000 to 1,000,000 square miles.

[1] See *The Russian Empire.* Summary of Commerce and Finance; April, 1899. Treasury Department.

It is the most densely populated of the three zones. Its southern portion enjoys a remarkably mild climate, being protected on the north by a range of lofty mountains. It is the chief region of cereal crop growth, and vegetable and forest cultivation. The northern, and more arid portion, affords splendid grazing land, and is also suited to the growth of hard-grained wheat and other cereals, as oats. The inland fisheries of the northern portion of the agricultural zone are destined to be of increasing importance.

The forest zone to the north, with an area of upwards of 2,000,000 square miles (43 per cent of the whole), but with a population of hardly more than 800,000, is a region of unknown mineral and timber wealth. This, under the influence of capital and industry, will probably become one of the great producing regions of the world. The forest zone is the home of many varieties of fur-bearing animals, the trapping and hunting of which has long been an important occupation. Securing fur was the pioneer pursuit that led to the exploration of vast tracts of wilderness. This is still a prominent industry, but another value of the forest zone in Siberian commerce is beginning to be realized. Its rich supply of minerals, and its immense timber resources, will afford material and fuel for future industries, many of which are already being developed.

Some thirty gold mines are in operation in the territory of Semipalatinsk alone, and placer mining is carried on in the Amur province. Gold, silver, lead, and iron mines, have long been in operation in the mountainous districts of Tomsk. The Ural Mountains abound in rich metalliferous deposits, gold mining being there carried on extensively. The production of platinum in this region should be especially noted; the great bulk of the world's supply of platinum is obtained from the Ural mines. In the Altai region, there is building stone of wonderful variety. Coal, iron, graphite, sulphur, copper, lead, tin, mercury, gold, silver, salt, and naphtha are among the most important metals and mineral substances produced. Sakhalin Island has coal fields producing coal of fine quality; the



MAP OF RUSSIAN EMPIRE AND SIBERIAN RAILROAD

mines at this place are at present worked solely for the government to coal the Pacific naval fleet. Kamchatka, the Yakutsk province (which includes the Lena Basin and the Stanovi Mountains), and other districts are supplied with coal, iron ores, and other varieties of minerals. Fossil ivory (the tusks of the mammoth, a prehistoric elephant) is also found in great abundance in the forest zone and to the north.

Notwithstanding the abundance of the minerals and the natural resources of the forest, agriculture is still the leading occupation in Siberia. The Russian peasant is essentially an agriculturist, and it is these peasants that have most largely settled Siberia. Farming methods are still primitive, but a new order of things already begins to assert itself, and the yield of the virgin soil will be vastly increased.

The great Siberian railroad, connecting St. Petersburg with Vladivostok on the Pacific coast (a distance of 6000 miles), has opened up the most productive portion of Siberian territory. Its line through the Chinese territory of Manchuria to Port Arthur on the Gulf of Petchili, reaches another region destined to contribute largely to the world's markets. The chief towns on the route of the Siberian road are Omsk, on the Irtysh, a commercial center of the steppe region; Krasnoyarsk on the Yenisei, the center of a rich mining district; Irkutsk on the Angara tributary of the Yenisei where it leaves Lake Baikal; Chita and Nertchinsk, important trading centers of the mining region of Transbaikalia.

205. Transcaucasia. — The Asiatic provinces of the Caucasus, or Transcaucasia, is a fertile region of valleys between the Caucasus range and the table-lands of Persia and Armenia. It is mainly agricultural, but contains rich supplies of minerals, among which is petroleum. Baku, a Caspian seaport, is in the center of the petroleum district. Deposits of rock salt are found on the Armenian table-land, and copper, iron, coal, and manganese in various localities. A fine grade of wool is produced from the sheep pastures of the

region. A railroad line has opened up the productive areas and brought the region into communication with surrounding countries. Tiflis is the capital and chief town of the country.

206. Transcaspia and Turkestan. — The Transcaspian railroad has opened up a wide tract of promising country in central Asia. This region, which includes the territory generally known as Turkestan, is in large part a desert; its agricultural possibilities depend upon the presence of streams which flow from the neighboring mountain ranges. The chief rivers are the Amu Daria or Oxus, and the Sir Daria or Jaxartes, which flow into the Sea of Aral and afford routes for the interior trade. Many of the smaller rivers lose themselves in the desert sands. The principal towns along the line of the railroad are Askabad, the capital of the Transcaspian province, near the northern frontier of Persia; Merv, on an oasis of the same name; Bokhara and Samarckand, important centers of trade for a wide surrounding region; and Tashkend on the Sir Daria river, the present terminus of the railroad. The chief manufactures of the region are in cotton and silk materials and leather work. The locomotives of the Transcaspian road are petroleum burners, from the great abundance of this sort of fuel. The steamers of the Caspian Sea also use petroleum. A line of steamers connects Baku on the west coast with the western terminus of the Transcaspian road on the opposite shore of the sea. (See p. 79 for petroleum produced.)

By means of the Transcaspian road, Russia is bidding for the trade of a vast region, much of which formerly went into India by various caravan routes. The establishment of this railroad was an important move in obtaining a sphere of influence. The road is in close touch with Persia (through which country a branch road is projected to the Gulf of Oman), with Afghanistan, and with the western domains of the Chinese Empire.

207. The Trade of Russia. — The Russian Empire, as a whole, is a country of vast raw material production; more than 90 per cent of the value of exports are food materials, raw products, and

partially manufactured articles. Of the entire amount of grain produced, rye, oats, and wheat are the most important. Live animals form a considerable item in the export trade. Corn and buckwheat, eggs, dairy products, beet sugar, fruits, potatoes and other vegetables, tobacco, fish and caviare, meats, alcohol, and gin are among the more important articles classed as food exports. Of the goods classed as raw and partially manufactured are, timber and wooden materials, flax, naphtha and naphtha oils, oil grains and oil cakes, leather and furs, hemp, bristles, hair and feathers, wool, manganese ores, and metals (chiefly platinum). Of manufactured goods, the chief exports are metallic products, gutta-percha goods, and cotton and woolen textiles. The food imports are chiefly tea (29 per cent of the entire value of imported foodstuffs), fish, spirituous liquors, fruits, nuts, vegetables, coffee, rice, and tobacco. Of imported raw and partly manufactured products, the principal ones are, raw cotton, raw metals, coal and coke, raw wool and woolen yarn, resin and gum, leather and hides, raw silk and silk yarns, chemicals and pigments. Machinery, metal goods, cotton and other textiles are among the chief manufactured articles imported.

GERMANY	403	— 35.5%
UNITED KINGDOM	274	— 24.5%
FRANCE	89	— 7.5%
NETHERLANDS	69	— 6.5%
FINLAND	61	— 5.5%
AUSTRIA HUNGARY	54	— 4.5%
UNITED STATES	43	— 4%
ITALY	36	— 3%
BELGIUM	33	— 3%
ALL OTHER COUNTRIES	63	— 6%

TOTAL COMMERCE FOR ALL THE RUSSIAS (1900), APPROXIMATED IN MILLIONS OF RUBLES

Total, 1,125,000,000 Rubles

The bulk of Russia's trade is with Germany and Great Britain. The United States' share in the trade is small, but there are vast possibilities of a market for American manufactures in Russia, more especially in Siberia. Russia is frequently compared with the United States in extent of territory and richness of resources. But Russia's

manufacturing industries are not comparable to those of this country. Russia is still a large importer of manufactured goods and offers a good field for products of this kind. Several European countries are already active to place their goods on this market, but the United States, with its advantages of position in regard to Siberia, should be a foremost competitor. American locomotives, mining and mill machinery, hardware, harvesting machinery and other farm implements, textiles, and other lines of goods can compete successfully in the Siberian and Russian markets. The Siberian railroad promises to be a factor of great importance in the trade of the far East, not only in Russian territory, but in China and other countries as well.

SUGGESTED QUESTIONS AND TOPICS.

242. Compare the physical features of Siberia with those of the Dominion of Canada.

243. Trace the passage by rail from Paris to Port Arthur, noting the chief cities and principal regions. (See maps p. 245 and opposite p. 315.)

244. Compare the petroleum region of the Caspian with that of the United States.

245. What is the strategic and commercial importance of a railroad across Siberia?

246. A recent writer terms the Siberian railroad "a costly toy, with slight chances of proving a paying investment for many years to come." What is your opinion of this statement?

247. What is the probable future influence of the Siberian railroad on the Suez Canal?

Books to be Consulted

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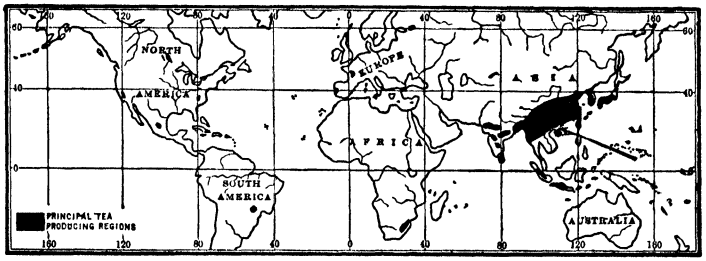
CHAPTER XXIX

THE CHINESE EMPIRE

208. Physical Features. — The Chinese Empire covers an area of upwards of 4,000,000 square miles, and includes the greater part of the lofty highland region of central Asia. Aside from China proper, the Empire embraces the countries of Manchuria, Mongolia, Tibet, and Eastern Turkestan. These outlying dependencies are for the most part elevated plateaus and desert regions, and with the exception of Manchuria are at present of little commercial importance. Manchuria is a mountainous country, forest clad in some portions and with numerous fertile river valleys, especially in the northern provinces. Though still reckoned as a part of China, it is practically under the Russian sphere of influence.

China proper covers an area of 1,300,000 square miles and has a population of 383,000,000, representing an average density of 283 per square mile. The western portion is mountainous while the eastern consists of the delta plain of the two great rivers — the Yang-tse-Kiang and Hoangho. In the northern provinces a large tract of country is deeply covered with a fine yellow soil of great fertility; this soil is known as loess. In the southeastern part, the country is more undulating than in the southwest, and in the upper Yangtse Basin there occurs an exceedingly rich red soil. The conservatism of the Chinese people has been largely fostered by the peculiar topography of the country; China is a region of remarkably fertile soils and favorable climate, fronting eastward on the ocean and shut off from the countries to the north, west, and south by high mountain ranges. The economic conditions have long maintained a balance, undisturbed by outside influences.

209. Resources and Industries. — Extending through more than twenty degrees of latitude, China presents a wide range of climate with a corresponding diversity in the vegetable productions. The whole of China proper (with the exception of the western higher portions) may be divided into three zones, each of which is distinguished by certain features of climate and products. The Northern Zone, corresponding in a general way to the basin of the Hoangho, has dry climate with little rainfall, the winters are long and severe, the summers short and hot. The Middle Zone embraces the Yangtse Basin, and is characterized by a moist climate with some frost and snow during the winter, — a climate resembling in many respects that of our South Atlantic States. The Southern Zone, or the basin of the



DISTRIBUTION OF TEA

Canton River, is a subtropical region with excessive heat and moisture ; it has a climate which the European emigrant finds oppressive.[1]

Agriculture is the basis of China's industry and commerce. The land is held mainly in small holdings and is everywhere under a high state of cultivation. Methods of tillage are, however, of the most primitive kind. Irrigation is extensively practiced, especially in the loess region, the porous soil of which drains so rapidly that a fairly copious rainfall has little effect upon the ground. Maize, wheat, barley, millet, sorghum, beans, and peas are the chief food crops of the Northern Zone.

[1] Journal of the Manchester Geographical Society ; April to June, 1898.

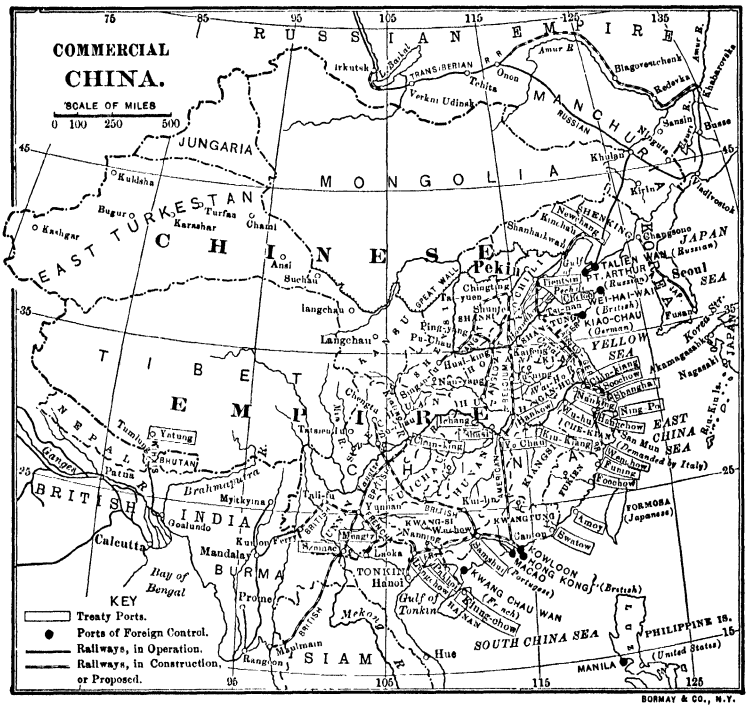
Rice is the principal food crop of the Southern and Middle Zones, though almost unknown in the north. Cotton, sugar cane, and indigo are also extensively cultivated in the provinces of the Middle and Southern Zones. Tea is the chief crop grown on the hill slopes of the south and west. The opium poppy is a crop of importance throughout China. The mulberry tree flourishes in both the Middle and Southern Zones, and in these districts silk culture is a leading industry; silk and tea rank as the most important of Chinese products.

The textile and manufacturing industries are almost entirely of a domestic character, factories (mostly under foreign management) having been developed in only a few places. Some of these are for the reeling of silk and others for cotton spinning. Cotton garments (padded in winter) form the chief clothing of a vast population. Among the characteristic Chinese industries is the manufacture of chinaware and porcelain from the peculiar clays found in certain parts. China grass supplies rhea fiber; the weaving of this for light garments is a domestic industry.

China has enormous mineral wealth, the extent of which is scarcely realized as yet. The Chinese coal fields are estimated to cover an area twenty times greater than that of all the European coal fields combined. The coal is both anthracite and bituminous, and where worked under foreign supervision is highly productive. Iron ores of excellent quality are also abundant and occur with coal in many places. Copper, tin, lead, and silver are also plentiful and have already been mined. The manufacture of arms and ammunition is actively carried on as a result of the act prohibiting the importation of such articles.

210. Commercial China and the Treaty Ports. — China carries on an extensive river and coastwise traffic. The Yangtse is navigable by steamers for at least 1000 miles from its mouth (to the town of Ichang). The Hoangho has too many bars and rapids to permit of extensive navigation. Canals are numerous, but the wagon

roads are poor and only a comparatively small mileage of railroad is in operation. The waterways are open to both foreign and native steamers, and the freight rates by water are remarkably cheap. The coastwise trade is carried on by native junks and British and other foreign vessels. The telegraph is under government control, and lines are being rapidly extended throughout the Empire.



Tea and silk (both raw and manufactured) form by far the largest value of the export trade, while opium and cotton goods are the chief imports of value. Kerosene oil, sugar, metals, and rice are also largely imported. Of the tea export in 1900 about 9 per cent went to Great Britain, about 18 per cent came to the United States, and

nearly 50 per cent went to Russia. Russia imports tea from China largely in the form of "brick" and "tablet" tea, *i.e.* pressed into blocks, the latter being a finer variety.

Of the total trade of China (both export and import) some 15 per cent of the value is with Great Britain, about 8 per cent with the United States, 4 per cent with Russia, 12 per cent with Japan, 6 per cent with India, 10 per cent with the continent of Europe, exclusive of Russia, and 44 per cent with the British colony of Hong-Kong (1900).

HONG-KONG	159	— 44%
GREAT BRITAIN	55	— 15%
JAPAN	42	— 12%
EUROPE (RUSSIA EXCLUDED)	35	— 10%
UNITED STATES	31	— 8.5%
INDIA	20	— 6%
RUSSIA	17	— 4.5%

COMBINED IMPORTS AND EXPORTS OF CHINA (1900), APPROXIMATED IN MILLIONS OF TAELS

Total, 359,000,000 Taels

Not all of the Chinese ports are open to foreign trade, but a number of treaty ports have been established where foreign commerce is actively prosecuted (see map). Of these treaty ports (exclusive of the British crown colony of Hong-Kong and the Portuguese treaty port of Macao) that of Shanghai does the largest foreign trade, followed by Canton, and others of less importance. There were thirty-four treaty ports in 1901.

China offers a vast field for commercial enterprise. Her enormous mineral resources, especially coal, and the great variety and abundance of her productions, invite foreign capital. Add to these facts, a population of 400,000,000 souls throughout the Empire, and it is evident that a share in the commerce of China is a golden opportunity for the peoples of Europe and the United States. Spheres of influence are being extended for the furthering of trade, notably by Russia, Germany, and England.

The rigid conservatism of the Chinese is gradually giving way to

European methods of work. Considerable coal is being mined and factories of various kinds are being built and operated successfully. At the same time, railroad lines are being laid to reach the productive areas, and are projected to connect the numerous populous centers of the Empire. From the facts as they exist, it is fair to predict a brilliant future for Chinese commerce.

211. Korea. — Korea, on a peninsula of the same name, obtained its independence in 1895 as a result of the Chinese-Japanese War. It is largely an agricultural country, and exports considerable quantities of rice, beans, and ginseng. Korea raises grain crops and tobacco. Coal, iron, and copper abound also in the country, and several foreign companies are working gold mines. The trade is largely with China, Russia, and Japan.

212. Hong-Kong. — The British crown colony of Hong-Kong is an island of about thirty square miles in area, situated at the mouth of the Canton River. With the island is included a neighboring peninsula, which is a part of the mainland of China. Victoria is the chief city, commanding a fine harbor on the northern shore of the island. The population of the colony amounts to upwards of 221,000 souls, the largest proportion of which are Chinese; about one-third of the Chinese are British subjects. Nearly one-half of the white population is of Portuguese origin.

The chief trade of the colony is with Great Britain, which holds fully one-half of the total value of exports and imports. The remaining half is chiefly in the hands of India, Australia, the United States, and Germany. Hong-Kong is a free port, and is one of the most important naval and coaling stations in the East.

The export trade is mainly in tropical products — tea, silk, sugar, hemp, and opium, being among the more prominent items. Commerce is largely transient, the bulk of the silk and tea trade of China being in the hands of Hong-Kong houses. Cotton manufactures for China form a large proportion of the imports.

SUGGESTED QUESTIONS AND TOPICS

248. Compare the area of the Chinese Empire with that of the United States; with that of Germany.

249. Compare the total population of China with that of Great Britain and Ireland; of Russia; of the United States.

250. What is meant by "the Eastern question"?

251. What is a "treaty port"? What relation do these sustain to the commerce of China?

252. What is meant by "the dismemberment of China"? What by "the integrity of the Chinese Empire"? What has been the attitude of the United States to these respective policies?

253. Brooks Adams said that the Chinese trouble of 1900 began in the city of Pittsburg in 1897. Can you explain this?

254. How do you account for the very large proportion of Chinese trade which is with Hong-Kong? What is a "crown colony"?

255. What natural features have tended to the isolation of China, and how has that country been able to sustain herself so long without dependence on other nations? Can China have much development while her people live chiefly on rice?

256. What is "the hermit nation"?

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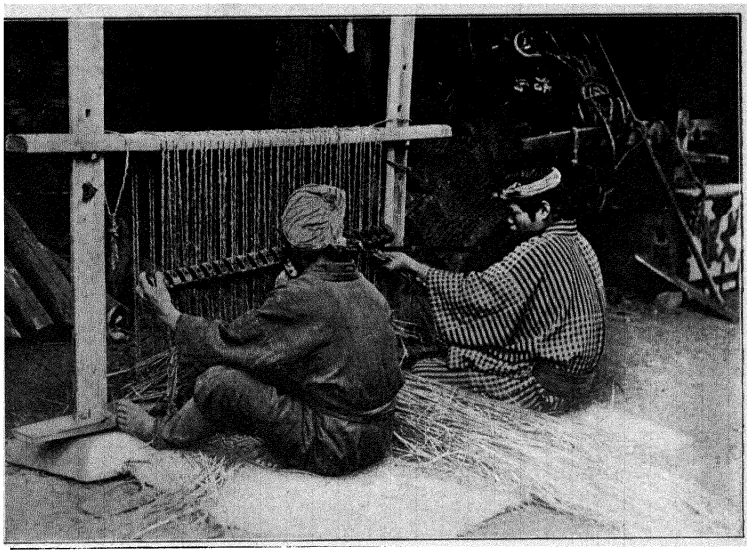
CHAPTER XXX

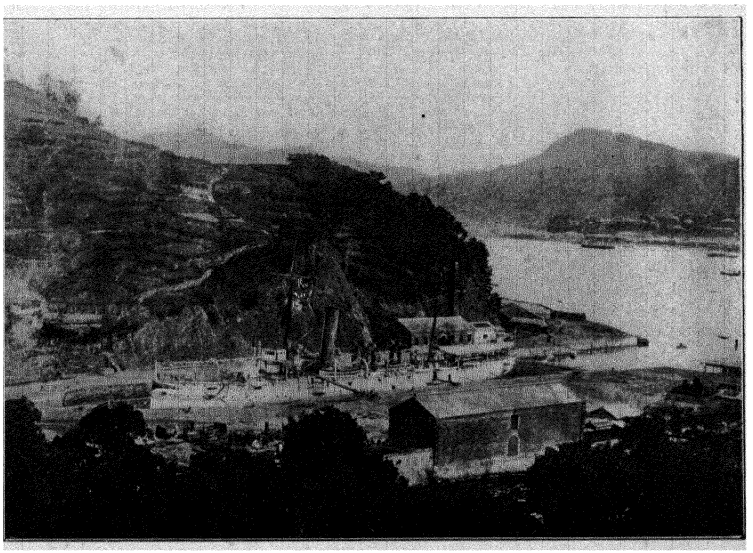
JAPAN

213. The Japanese Islands. — The Japanese Archipelago forms the largest group of islands in the volcanic mountain chain that rises from the submarine platform of the eastern coast of Asia. The group consists of four main islands and a number of smaller ones. The largest island is Honshu. Yezo, the next in size, lies just north of it, while Shikoku and Kiusiu are to the southeast and south. The islands are separated from one another by narrow straits. Between the islands and the mainland of Asia is the Japan Sea, opening into the Sea of Okhotsk on the north, and on the south through the Strait of Korea into the Tung Hai or Eastern Sea. Besides the archipelago proper, the island of Formosa, the Loochoo Islands, and the Kuriles, also belong to Japan. The surface of the islands is mountainous and the entire group is volcanic, subject to frequent earthquakes, and with numerous active volcanoes. The soil of the valleys and lowlands is fertile, and the climate excessively moist, the rainfall being abundant as a result of the influence of the mountain ranges. The streams are mostly torrents and unnavigable, but there are many excellent harbors. The southern portion of the archipelago lies on the edge of the tropics, while the northern portion reaches beyond the parallel of 45° and is subject to severe winters.

214. Resources and Industries. — The area of Japan (exclusive of Formosa) is 147,655 square miles, with an average density of population of nearly 300 per square mile. Less than 16 per cent of the land is under cultivation, owing mainly to the mountainous nature of the surface. The cultivated area, however, is highly



WEAVING RICE-STRAW MATS (JAPAN)



DRY DOCK AT NAGASAKI

productive as a result of careful fertilizing with fish refuse, etc. The area under cultivation is well tilled, though the methods used are primitive.

Rice is the chief food crop raised, both for home consumption and export. Wheat, rye, barley, and beans (soy-bean) are of considerable importance. The mulberry tree is widely cultivated, and silk is the export of greatest value. Tea is raised largely in the southern provinces. The lacquer tree is also grown extensively; lacquering or "japanning" is a celebrated Japanese industry. Gum camphor (from the camphor tree) is a product of importance. Live stock raising forms an unimportant feature of Japanese agriculture.

Of the mineral products, coal, iron, and copper are the most abundant, and of the greatest value; the two former are only partially developed, though the output is steadily increasing. The mining of coal was formerly under government control, but is now in the hands of a private corporation, and improved methods in the raising and transporting of the output have been introduced. The most important mines are in Yezo and Kiusiu; stations for the Japanese coal trade have been established in China, the Philippines, Burma, and the Straits Settlements. Antimony is mined, and the output of the Shikoku mines is of considerable value. Copper mining in Japan is an important industry, the metal being remarkably pure.

The manufacturing industries, especially of textiles, have of late years advanced quite rapidly. Fifty-nine cotton mills were in operation in 1900, with an annual output of 260,000,000 pounds of cotton yarn. Silk manufactures are also well advanced. Some $50,000,000 worth of silk, raw and manufactured, are exported annually. A few woolen mills are in operation, though Japan has no home supply of wool. The Japanese artisans have long been famous for their design and execution, both in wood and metal. Their work in paper is also of a high quality. These, however, are all domestic industries, and are probably destined to play but a small part in the future commercial development of the country.

215. Commerce. — Japan is a large importer of manufactured goods and of certain raw materials for manufacture. Iron and steel, raw cotton and cotton seed, wool, flax, hemp, and jute textiles, machinery, fire-arms, sugar, and petroleum are among the imports of greatest value. The chief exports are raw silk and silk manufactures, cotton yarn, tea, coal, and copper. The manufacture of matches is a growing industry; already these have displaced Swedish matches in neighboring countries. Porcelains and earthenware, matting, straw plaits, pigments, and rice are among the export articles of minor importance.

Great Britain heads the Japanese import list, with the United States a good second, followed by British India, Germany and China. In the export nations the United States stands first, tea forming the larger proportion of the value. The Japanese are wide-awake to the advantages of foreign trade, and have established an Imperial Commercial Museum for forwarding the interests of Japanese commerce. The Empire offers a wide field for the introduction of foreign goods, and since the Japanese are favorable to United States' materials and manufactures, there is every reason why American merchants may hope to introduce their goods, especially by catering to native taste. For instance, by the placing of durable labels of fancy design on all small wares, the foreign merchant takes an important step in securing trade. American goods are finding a growing market in Japan. The American locomotive has proved its superiority, and has been introduced successfully. Raw cotton from the United States has gained an important place in Japanese manufacture, and there is an increasing use of American flour, railroad iron, hardware (nails, bolts, and screws), and machinery for cotton spinning, mining, paper making, and dynamos for electric purposes. All together, Japan is a thoroughly progressive nation; the population is thrifty and industrious, and labor is cheap. The resources of the country are sufficient to insure future notable industrial and commercial development. The United States' trade with Japan will be greatly stimulated by the opening of an Isthmian Canal.

The roads and means of conveyance are still somewhat primitive. Railroads are in operation in certain parts, amounting to a total length of 3915 miles. The coastwise traffic is still largely carried on by junks. Oversea trade is from the treaty ports of which there are several. Yokohama and Kobe hold the largest volume of foreign trade. Tokio, the capital, is also a treaty port. Nagasaki, commanding a fine harbor on the southwest of Kiusiu Island, is near the coal fields, and is an important coaling port. Osaka is another open port. Hakodate, on the island of Yezo, is the chief trade center of the north, especially in fishing and coal. There are also a number of other minor treaty ports.

In 1901, 7489 vessels traded at different Japanese ports, 2998 of which were foreign steamships, and 3042 Japanese steamships. Of the total number of foreign vessels entering Japanese ports in 1901, only about 6 per cent were American, while 53 per cent were British, and more than 12 per cent German. These facts are significant, and indicate the need of establishing trade in American ships.

COMMERCE OF JAPAN (1900)

Approximated in Millions of Yen

	Import and Export	Percentage of Total
United States	115,000,000	23.7
Great Britain	83,000,000	17.1
China	62,000,000	12.7
Hong-Kong	50,000,000	10.3
British India	32,000,000	6.6
Germany	32,000,000	6.6
France	27,000,000	5.5
Korea	19,000,000	4.0
Russian Asia	9,000,000	2.0
All other countries	56,000,000	11.5
Total	485,000,000	

The island of Formosa produces a variety of tropical products, chief among which are camphor, tea, rice, sugar, and hemp. The oversea trade is carried on mainly by the British.

SUGGESTED QUESTIONS AND TOPICS

257. What is the total extent of the Japanese Empire (including Formosa) from north to south?

258. Compare the Japanese Islands with the British Isles with regard to their relation to the continent. Has the separation been of advantage? Why?

259. What is meant by "the occidentalizing of Japan," and how have its results been manifested?

260. Give an account of the industrial and commercial development of Japan during the past thirty years.

261. What are the present relations existing between the United States and Japan?

262. What are some of the distinctive industries of the Japanese? What is the nature of their workmanship?

263. What has been one favorite and successful method by which Japan has introduced western civilization?

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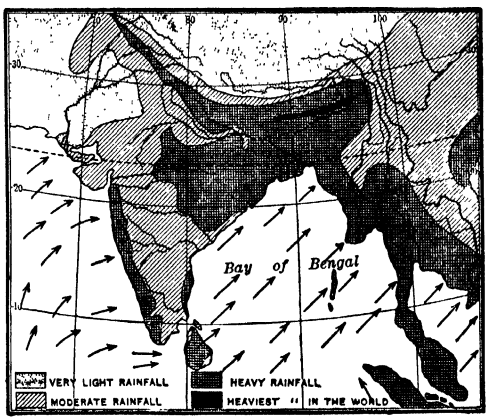
CHAPTER XXXI

INDIA

216. Physical Features. — The Peninsula of Hindustan, is a well-defined physical region. The great Himalaya range, and the mountainous frontier of Afghanistan, wall it off from the rest of the Asiatic continent on the north, northeast, and northwest; the Assam-Burmese ranges define its boundary in the extreme east, while the mountain border of Baluchistan, beyond the Indus Valley, marks its western limit. Everywhere else it is peninsular and encompassed by the sea. Within the area three well-marked physical regions are recognized: (1) the hill country and mountain slopes of the north; (2) the Deccan table-land of the peninsula proper; and (3) between these two, the plains formed by the Ganges-Brahmaputra system in the east, and the Indus in the west. The Deccan table-land is a rugged country flanked by mountain ranges.



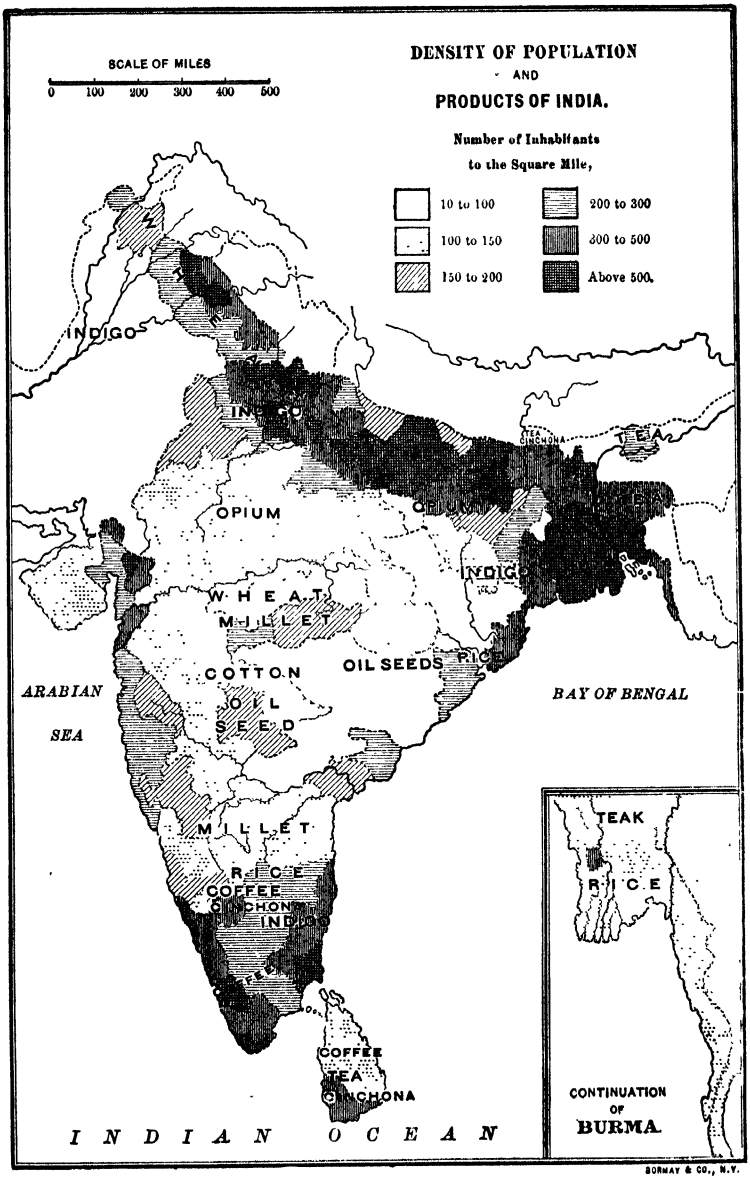
RAINFALL OF INDIA, SHOWING THE EFFECTS OF THE SOUTHWEST MONSOON

The climate, except in the extreme northwest, is essentially tropical in character, and is dominated by the monsoon. (See p. 14.) The southwest monsoon (May to October) causes a

heavy rainfall on the western side, and generally throughout Bengal, central India, and the Ganges Plain. The heaviest rainfall in the world occurs in this region. India is entirely dependent for its rain upon the southwest monsoon, the failure of which causes the most appalling famines, with far-reaching economic effects. A desert region exists in the northwest as a result of the great mass of continental highland which deprives the winds of their moisture.

217. Resources and Industries. — India is essentially an agricultural country, the vast population being engaged mainly in cultivating the soil. As a result of the uncertain nature of the monsoon, and the dryness of the land when not under its influence, irrigation is resorted to over wide areas. The rain water is collected in tanks for future distribution, and in many districts canals have been built for taking the water from rivers. The average density of population throughout India is upwards of 180 per square mile. The land is mainly in small holdings; the British government has been active in its endeavors to promote agriculture by the establishment of experimental farms, schools of agriculture, etc.

Millet, rice, and peas (chick peas) are the staple food crops of India. Oil seeds of several kinds are also largely raised, and wheat forms an important crop, especially in the Punjab and the northwest Provinces. Other leading crops are cotton, tea, jute, sugar cane, indigo, and tobacco. Coffee is extensively cultivated, and the cinchona tree is grown successfully on the mountain slopes, and quinine forms an item in the export list. Pepper, lac, and silk are also produced. The opium poppy is grown in the Ganges Valley and in central India. Cattle are also raised extensively in the drier regions of the northwestern part. Many valuable products are obtained from the forests, which are under careful government supervision. Teak is the most widely used tree for timber purposes. Oak is found in the Punjab, and the deodar cedar and other conifers on the Himalaya slopes. The cocoanut palm and the bamboo, supply a great variety of useful materials for the


SCALE OF MILES
0 100 200 300 400 500
DENSITY OF POPULATION
AND
PRODUCTS OF INDIA.
Number of Inhabitants
to the Square Mile,
10 to 100
100 to 150
150 to 200
200 to 300
300 to 500
Above 500.
INDIGO
OPIUM
WHEAT
MILLET
COTTON
OIL SEEDS
RICE
OIL SEED
MILLET
RICE
COFFEE
CINCHONA
INDIGO
COFFEE
TEA
CINCHONA
ARABIAN SEA
BAY OF BENGAL
INDIAN OCEAN
TEAK
RICE
CONTINUATION OF BURMA.

BORMAY & CO., N.Y.

native peoples, and the mango and other tropical fruits are largely used as food.

India possesses valuable mineral resources. Coal is abundant, especially in Bengal and central India, but is only partially developed. Iron is also found in large quantities throughout the mountainous districts, and the smelting of the ores with charcoal is a native industry. Gold and copper are also abundant. Pure saltpeter (nitrate of potash) is found in the plains region and rock salt in the Punjab, where it forms vast hills.

The native manufacturing industries of India are mostly handicrafts, but these have greatly declined, owing to the introduction of cheap factory goods, especially certain textiles from Europe; modern factories have also been established in many parts where hand-weaving and spinning were formerly practiced. Modern methods are now employed on a large scale, in silk, jute, and cotton manufacture. Carpets, rugs, and shawls are still exported, many of the latter (the celebrated cashmere shawls) coming from Kashmir and the Punjab. Indian artisans have long been famous for exquisite work in metals and ivory.

218. Commerce. — India is a British dependency, under the rule of a Viceroy or Governor General. The commerce of the country has prospered in the past half century, the oversea trade showing a remarkably steady increase since 1834. Great Britain holds the largest share of the trade both in exports and imports. China and Germany each take a larger proportion of Indian produce than do other countries outside of Great Britain. The imports of India from the United States amount to only about one-seventh of the value of the exports which the Empire sends to this country. Of the total imports of India in 1902, 70 per cent was from Great Britain and the British colonies, while the United States stood eighth in the list with only 1.4 per cent. Of Indian exports in the same year 6.9 per cent went to the United States.

Among the chief items of value on the Indian export list may

be mentioned rice, raw cotton, oil seeds, opium, hides, raw jute, tea, indigo, coffee, lac, woods, etc. Cotton manufactures form a large proportion of the value of imports, which include also a variety of raw and manufactured articles. The bulk of the rice shipment is from the provinces of Bombay and Madras, that of wheat from Bengal, Bombay, and Sind, opium mainly from Bengal and Bombay, indigo from Bengal and Madras, cotton from Madras and Sind, and seeds from Bombay and Bengal.

Calcutta, on the Húgli branch of the Ganges delta some thirty miles from its mouth, is the largest city in India, with a population of over a million; it is the chief trade center of the eastern portion of the Empire. About 41.5 per cent of the total imports of India enter at Calcutta. Bombay, the second city in size, located on an island close to the mainland on the western side of the peninsula and commanding a fine harbor, is the chief port for the oversea trade with Europe via the Suez Canal; 34 per cent of the import trade is through this port.[1] Bombay ships a large quantity of wheat from the Punjab and Northwest Provinces. Karachi, a seaport near the northwestern border of the peninsula, does a large trade in exporting wheat. Madras, on the east coast, is also a port of considerable importance in the oversea trade of India. An overland trade of considerable value is carried on with neighboring countries, principally through the northwestern mountain passes.

UNITED KINGDOM	801	—	47.5%
CHINA	142	—	8.5%
GERMANY	118	—	6.5%
STRAIT SETTLEMENTS	91	—	5.5%
UNITED STATES	84	—	5%
FRANCE	71	—	4%
BELGIUM	59	—	3.5%
AUSTRIA-HUNGARY	58	—	3.5%
CEYLON	55	—	3.5%
OTHER COUNTRIES	210	—	12.5%

COMMERCE OF INDIA (1900), APPROXIMATED IN MILLIONS OF RUPEES

Total, 1,689,000,000 Rupees

[1] Monthly Summary of Commerce and Finance; December, 1902, p. 1680.

There are about 26,000 miles of railroad in operation throughout the Empire, all the important productive districts and trade centers being thus connected with the large cities on the coast. Canals afford lines of communication, especially in the southern part of the peninsula. The Ganges, Brahmaputra, and Indus form natural highways for commerce, though on the latter river navigation is somewhat difficult, owing to shallows and rapids.

219. Burma. — Burma is a British province in Indo-China or Farther India, and lies mainly in the basin of the Irrawaddy. It is largely forest-covered and supplies the bulk of the Indian teak export. Rice and rubber are other important products. There are in Burma several good coal fields, and a supply of petroleum which has considerable value. Jade, rubies, and gold are mined in upper Burma.

Rangoon, near the mouth of the Irrawaddy, is the chief port of Burma. Mandalay, on the same river in the interior, is also a trade center of some importance. The country is in a backward state as regards means of communication.

220. Ceylon. — Ceylon is a crown colony of Great Britain, with an area of 25,000 square miles, and an average density of population of about 140 to the square mile. The southern portion of the island is mountainous, while the northern portion is a heavily wooded plain. The rainfall is abundant under the influence of the monsoons; those from the northeast and southwest both bringing rain to Ceylon. Rice and cocoanuts are grown extensively on the lower mountain slopes and in the level plain country. On the upper slopes and terraces, European residents have established large tea, coffee, cinnamon, cinchona, cacao, and tobacco plantations. Live stock is also raised. Of the mineral products, graphite (which occurs in a remarkably pure state) is the most important. There are also mines of precious stones, and the pearl fishery has been extensively carried on along the coast. Colombo is the chief seaport and trade center.

SUGGESTED QUESTIONS AND TOPICS

264. Consider the geographical relations of India to the rest of Asia.

265. Compare the native people of India with those of China.

266. Why are famines so disastrous in India? (See p. 149, Question 92.)

267. Consider the introduction and present status of tea culture in India and Ceylon.

268. Compare the total population of India with that of Great Britain and Ireland.

269. In what direction does the best commercial development of India lie? What is the "caste" system, and why does it persist in India?

270. What influence have the monsoons had on the trade of India?

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**Foreign Commercial Relations of the United States.*

** *The Statesman's Yearbook.*

CHAPTER XXXII

OTHER ASIATIC COUNTRIES

221. Asiatic Turkey. — Under Asiatic Turkey are embraced the countries of Anatolia, Syria, and Mesopotamia. Anatolia (Asia Minor) is the western peninsular extension of the Iranian Plateau, between the Black and Mediterranean Seas. The surface is rugged and mountainous and there are few rivers. A railroad runs from the Bosporus into the interior, and another from the seaport of Smyrna. Syria (including Palestine) lies south of Anatolia, bordering on the eastern Mediterranean, and consists of a coastal strip backed by mountain ranges. Mesopotamia (literally the land between the rivers) is the basin of the Euphrates-Tigris drainage, the waters of which rise in the Anatolian Plateau.

Asiatic Turkey has in general a remarkably fertile soil, and the people are mainly engaged in agriculture; but methods of agriculture and means of communication are in a backward state. The most important products of the country are various cereal crops, tobacco, cotton, olives, figs, almonds and various other fruits, wine, grapes, valonia, opium, coffee, madder, and gums. Fishing is extensively carried on, the Mediterranean sponge fisheries yielding a large return. Mother-of-pearl is obtained on the Red Sea coast and in the Persian Gulf. There are many valuable mineral deposits throughout the dependent provinces, but as yet little has been done in the way of their development. Chrome, silver-lead, zinc, manganese, antimony and copper ores, corundum (emery), asphalt, meerschaum, borax, coal, and lignite are among the more important mineral products. The manufacturing industries are mainly domestic in character

and are carried on by hand. The celebrated "mohair" cloth is woven from the fleece of the Angora goat. Carpets and rugs woven on hand looms are prominent in Turkish industry and commerce. The much prized Oriental rugs are manufactured almost exclusively in Turkey, and the names by which rugs are known to the connoisseurs, are the names of cities and provinces in the Ottoman Empire. Constantinople is the great Oriental rug market of the world. Various domestic articles of beaten copper and turned brass are also manufactured. Silk production was at one time a prominent industry, but has fallen off, owing to a disease which destroyed the silk worms.

Smyrna is the chief port of Asiatic Turkey, and next to Constantinople the largest city of the Empire. It is the great opium mart of the world, and is also noted for its shipments of carpets, rugs, tobacco, etc. Beirut is another Mediterranean port of some prominence. Aleppo is an important inland trade center. Trebizond and Samsun are Black Sea ports. Mosul and Bagdad, on the Tigris (with a large transit trade) and Bassora (the point of transshipment between river and sea traffic), above the head of the Persian Gulf, are prominent trade centers of the Mesopotamian region. The last-named town is noted for its shipment of dates.

The island of Cyprus produces cotton, cereals, olive oil, wines, leather, sponges, salt, etc. It was formerly an important source of copper supply, and from this was derived its name. The government of Cyprus is administered by Great Britain.

The trade of Turkey as a whole (both European and Asiatic Turkey) is largely with Great Britain, Austria, France, and Russia. The United States holds a very small share in the import trade of Turkey; the proportion of Turkish goods imported by this country is much greater. Our purchases from Turkey are mainly Oriental rugs and carpets, with other textile, metal, and leather goods that are handmade.

222. Arabia. — The peninsula of Arabia is mainly a desert tableland surrounded by a broken rim of mountain ranges and fringed by

a narrow strip of low-lying coast land. The surface of the table-land is rather rugged; in the central part (Nedjed) is a pasture region, the deep valleys between the ridges being covered with gardens and plantations made fruitful by irrigation. The country is supplied with wells, but there are no rivers of any size. The narrow western portion of Arabia along the Red Sea includes the two Turkish provinces of Hedjaz and Yemen. Aden, on the southwest coast, and the island of Perim in the Strait of Bab-el-Mandeb are British settlements. Oman is an independent state in the southeastern extremity of Arabia. The chief products of the different sections are coffee (from the fertile Yemen district), cereals, vegetables and fruits, senna, indigo, dates, balsam, henna, incense, betel, etc. Goats, sheep, cattle, camels, horses (the celebrated Arabian stock), and asses are raised on the pasture lands. Hodeida is the chief port of Yemen and is noted for its coffee shipment. Mocha, a seaport farther south, has given its name to the Yemen coffee export. Muscat is the chief port and trade center of Oman, its exports being dates, pearls, and mother-of-pearl, fruits, fish, salt, etc. The town is in weekly communication with Bombay.

223. Persia. — The Plateau of Iran is embraced by modern Persia. It forms a mountainous table-land, about one-third of the surface being desert. The higher mountain ranges increase the rainfall which is favorable to agriculture. Of the two principal rivers, one flows from the central mountain ranges into the Persian Gulf and the other into the Caspian Sea. These have an important bearing on the existing commerce with India and Russia. The latter country is projecting a line of railroad through Persia to connect with its Transcaspian road. Several telegraph lines which operate in the interests of the Indian government, run across Persia.

Among the chief productions may be mentioned silk (southwest of the Caspian), gum tragacanth, wheat, barley, rice, fruits, cotton, wool, tobacco, and opium. The coastwise fisheries, notably the pearl fisheries of the Persian Gulf, are important. There are many valuable

mineral deposits which lack development, owing to the absence of near-by markets and difficulty of transportation in the present backward state of the country. Salt is found abundantly in pits; naphtha also occurs in the western part. Precious stones are mined to a considerable extent in Persia.

Tabriz is the chief commercial center of the country, in the northwestern part. Bushire and Bendar-Abbassi are ports on the Persian Gulf. There are also several Caspian ports of some commercial prominence. The principal trade of Persia is with Russia and Great Britain, both in exports and imports; the former country has one-half of the total value of Persian commerce.

224. Afghanistan. — This mountainous country is an independent state, lying between the frontiers of British India and Russia. The population consists of numerous partially civilized tribes, and the commerce of the country is an overland traffic carried on between neighboring countries. Being entirely an inland country and hemmed in by high mountain ranges, transportation is difficult; communication is principally by wagon road over high mountain passes, such as the Khyber and Gomul passes into the Punjab, the Bolan Pass into the Sind Province of India, and the Bamian Pass through the Hindu Kush range.[1] The cereals are raised, also peas, beans, rice, and a great variety of temperate zone fruits. Castor oil, madder, and assafœtida are also produced in large quantities, the latter forming a considerable item of export. Sheep-skin goods, silks, felts, carpets, and textiles of camel's and goat's hair are among the chief industries. The country is said to be rich in mineral deposits and precious stones, notably lapis lazuli. Kabul and Herat are the chief towns and trade centers.

Baluchistan, a wild, sparsely inhabited desert tract, is under British control and is unimportant commercially.

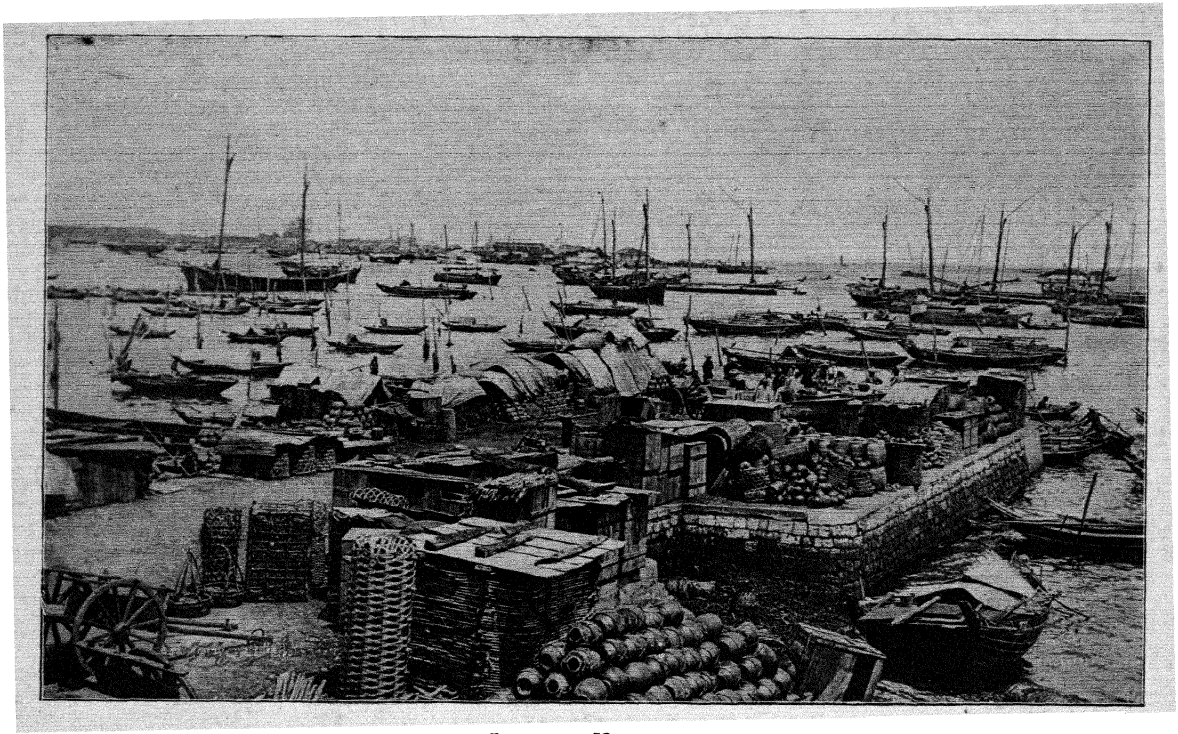
225. Indo-Chinese Countries. — The Indo-Chinese Peninsula, or

[1] The Bolan and Nari passes are traversed by railroads; see Chisholm, *Handbook of Commercial Geography*, p. 316.

Farther India, lies wholly within the tropics in the monsoon region. Besides Burma, already considered, the peninsula embraces the Kingdom of Siam, the French possessions of Tongking, Annam, Cambodia, and Lower Cochin China, and the Shan states (under British influence). The two main river basins of the peninsula are the Menam and the Mekong. Rice, pepper, fish (both salt and dried), teak (the cutting of which is under British control), sesame, cattle, and various tropical fruits are among the important Siamese products. Bangkok, near the mouth of the Menam River where it empties into the Gulf of Siam, is the port of the country, but is under the disadvantage of having to "lighter" all goods by flat, shallow draught boats, owing to a bar at the mouth of the river. The commerce of the country is mostly in the hands of foreigners, chiefly Chinese immigrants. A considerable trade is carried on with China (Province of Yunnan) through the Shan states in the north. Siam is rich in mineral deposits, including copper, gold, tin, coal and iron, antimony, zinc, quicksilver, manganese, and in certain localities, diamonds, rubies, and sapphires. Numerous concessions have been granted to foreign mining companies.

The productions of French Indo-China are varied, and include raw silk, pepper, cinnamon, rice, betel, indigo, coffee, tobacco, cotton, salt fish, metals, etc. Coal is mined in some parts, and factories for cotton manufacture have been established at certain places. Tourane (Annam), Hanoi, and Hongay (Tongking) are the chief ports of French Indo-China.

226. Straits Settlements. — This is a British crown colony at the end of the Malay Peninsula and includes Singapore (island and town of the same name), the island of Penang, Malacca, Wellesley Province, and three territories under British protection on the mainland of the peninsula. Singapore is the commercial center and has a large transit trade. The chief agricultural products of the territory are pepper, rice, sugar, and tapioca. Tin is the most important commercial product, vast deposits being found in the mountains of the peninsula,



SINGAPORE HARBOR

and in adjacent islands. The metal forms 50 per cent of the exports from Singapore. Other exports of value are spices, gums, gambier, rattans, tapioca, sago, copra, etc. Singapore is a port of call, and upwards of 8900 vessels (not including native shipping) entered and cleared at the Straits Settlements in 1901. Rice, cotton goods, opium, fish, coal, tobacco, and petroleum are among the chief items of import. A railway and steam ferries connect Singapore with near-by districts.

227. The Malay Archipelago. — This region includes the islands of Sumatra, Java, Borneo, Celebes, the Moluccas or Spice Islands, and other smaller islands of the group. The larger number belong to Holland and are known as the Dutch East Indies. Java and the near-by island of Madura are the most important commercially. All of the islands are intensely volcanic, which feature adds greatly to the fertility of the soil. They are all essentially tropical in character and lie within the monsoon region. Coffee is the chief product of Java, though tea, cinchona, indigo, tobacco, rice, and sugar cane are also cultivated. Coal is mined in some localities, and there are valuable tin mines on the islands of Banka and Billiton, the bulk of the product being sent to Singapore. The productive lands and the commerce of the islands are largely in the hands of the Dutch government. Batavia, on the northwest coast of Java, is the chief commercial center. Surabaya, a port in the northeast, is in the center of a large sugar cane district. Outside of the government possessions the land is largely in the hands of Europeans and Chinese.

Sumatra has large tobacco and coffee plantations, the former product being prominent in the world's markets. The volcanic soil of certain districts is especially adapted to its cultivation. Bencoolen and Padang are the chief ports of the island. The Moluccas or Spice Islands (one of the objective points in the era of discovery) are noted for the production of spices, especially cloves and nutmeg; the latter are grown chiefly in Amboyna and the Banda Islands.

British North Borneo furnishes a variety of forest products which

are important commercially. Sago is the chief product cultivated, though considerable tobacco is grown; coal and gold deposits are found in the region. The peculiar edible bird's nest (a species of swift that builds in caves), which is esteemed a great luxury by the Chinese, is found in large numbers in a cave in this region and is an important export. The chief trade center and port is Sandakan, which commands a fine harbor on the east.

SUGGESTED QUESTIONS AND TOPICS

271. Account for the decadence of the regions that have come under the control of Turkey.

272. Why are the products of the looms of southwest Asia so famous?

273. What are the characteristic features of the Mesopotamian Valley? Compare the present of this region with its past.

274. Is Cyprus a European or Asiatic island? Trace the successive changes in its colonial history. Why so many changes?

275. What part of Arabia was long known as "Happy Arabia"? Why?

276. What position does Singapore occupy in the trade between Europe and eastern Asia?

277. What is meant by the "Levant trade"? What is the character of this trade?

278. Compare the coffee-producing regions of Arabia with those of Brazil.

279. What is the commercial importance of the date palm, and what regions are suited to its cultivation?

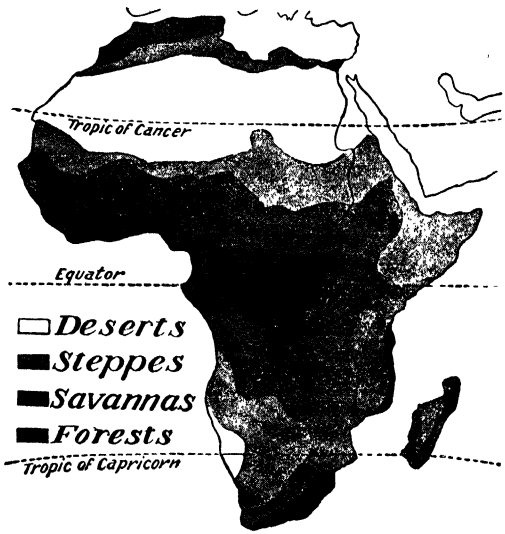
Books to be Consulted

****** *The International Geography*, Chapters XXIV, XXV, XXVII, and XXX.
*Wallace, *The Malay Archipelago.* London; New Edition, 1890.
James Bryce, *Transcaucasia and Ararat.* London; Fourth Edition, 1896.
Murray's *Handbook for Asia Minor.* London; 1895.
*Norman, *Peoples and Politics of the Far East.*
****** *The Statesman's Yearbook.*

CHAPTER XXXIII

COMMERCIAL AFRICA

228. Regional Geography. — Africa is peninsular rather than continental; its fundamental structural feature is that of a large tableland with a narrow coastal margin like that of Arabia and the Deccan. The coast line is strikingly even, presenting no great inlets, and the large rivers, in their descent from the higher plateau to the lower coastplain region, form a series of dangerous rapids which impede navigation. The determining feature in African drainage is the presence of a line of elevation along the eastern side of the continent, extending from the Isthmus of Suez southward to beyond latitude 10° S., where it turns westward across the narrower portion of the land mass. This line of water parting throws the drainage into two primary areas, — that of the northern-central (by far the larger of the two) with such great rivers as the Nile and the Kongo, flowing into the Atlantic drainage, and the smaller southern part,



VEGETATION FEATURES OF AFRICA

with rivers like the Zambesi and the Limpopo, flowing into the Indian Ocean.[1] The Niger basin results from a secondary line of elevation in the west.

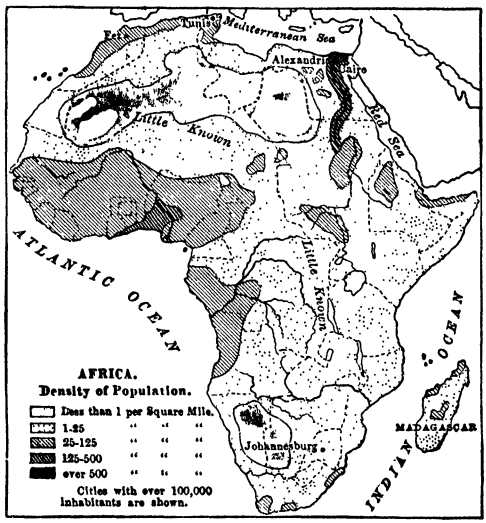
Africa extends thirty degrees on either side of the equator. It therefore presents a central tropical climatic zone with smaller northern and southern regions of temperate conditions. The most striking feature of the northern portion of the continent is the vast stretch of deserts (the Sahara and Libyan) which belongs to the great desert belt of the Old World (including Arabia and the Central Asian deserts). The cause of this arid waste of shifting sands, loose rocks, and scanty vegetation, is the fact that in winter it is a high pressure area, while in summer, though a low pressure prevails, the incoming winds are dried, and thus rendered practically rainless by the intensely high temperature. The small amount of rain that actually does fall throughout the year sinks deeply into the thirsty soil and reappears, often at a distance, in desert wells or springs, marked amid the surrounding barren waste by spots of verdure (oases).

The topography of Africa determines, in the main, its peculiar vegetation features. On the north the desert passes into the steppe region which is characteristic of the Mediterranean or Barbary States, except in the region of the Atlas Mountains. On the south the desert likewise passes into a steppe which gradually merges into the grass lands of the Sudan and East African Highlands; this is a region of broad savannas with thickets and clumps of trees giving to the landscape a park-like appearance. Among the more characteristic forms of vegetation in this region, are the baobab tree, numerous varieties of acacia, tree lobelias, and giant groundsels. Among animals, the elephant is still found in the wooded districts and throughout the great equatorial forest; herds of zebra, giraffe, antelopes of many kinds, and other big game animals wander over the open pasture lands. In the western part

[1] Heawood, *The International Geography*, pp. 890–891.

of the continent the equatorial rains produce a zone of dense tropical forests which extends ten degrees north and south of the equator and disappears toward the east with the increasing elevation of the land. The heavy rainfall of this region is a result of the enormous condensation of moisture on the Ruwenzori range and the high plateaus of East Central Africa. South Africa is essentially a region of grass lands and steppes, with areas of decided aridity (the Kalahari Desert). The southeast trades bring rain along the eastern border where the land is sufficiently elevated.

229. The Division of Africa. — The future development of the continent is in the hands of several of the great European Powers. British dominion is established over a wide area in South and Central Africa (Cape Colony, Natal, the recently acquired Boer Republics, Bechuanaland, Rhodesia, and the Uganda, British East Africa, and Somali coast protectorates), the Niger territories in the western Sudan, and districts on the west coast. Germany claims territorial rights in German East Africa, German Southwest Africa, Kameruns, and Togoland. French control is confined mainly to districts on the west coast, in the western Sudan, in Obok on the Gulf of Aden, and in Algeria. Italy claims dominion over two districts in the northeast, while Portuguese influence extends along the east coast for some distance on either side of



the Zambesi, and in Angola in the southwest. The Kongo Free State occupies the immense area of the Kongo Basin in the equatorial forest region. Liberia is a negro Republic (founded with freed American slaves) on the west coast. The island of Zanzibar on the east coast is under the rule of a sultan, though practically within the sphere of British influence. Abyssinia is a small native kingdom in the northeast. Egypt controls a large area of the Nile drainage, including the eastern or Egyptian Sudan. Northern Africa is divided into several states (the so-called Barbary States), of which Morocco has an independent sultanate, Algiers and Tunisia are French colonies, and Tripoli is a Turkish protectorate.

230. Productions. — The wide variations of climate throughout the African continent, incident to the extension of the land mass on either side of the equator, and to the high plateaus of the eastern and southern portions, give rise to a remarkable variety in vegetable productions. In the equatorial forests there are numerous kinds of rubber-producing trees and vines. The crude rubber is collected by the natives and brought to the river stations, where it is bought by the dealers at a low price. This African rubber is of the finest quality, and the supply is practically unlimited, since the gathering of the product does not destroy the plant. The profit of the African rubber trade is said to be higher than is the profit of South African gold mining. Palm oil is obtained from the nut of a species of palm that grows throughout the continent. The oil is exported chiefly for use in soap manufacture, as a cheap lubricant, and for culinary purposes. Each tree yields an average of about twenty pounds of oil yearly and a square mile of savanna land supports upwards of a thousand trees yielding annually ten tons of oil.

Africa is destined to be an important source of the future lumber supply of the world. More than a million square miles in the heart of the continent are heavily forested. Among the more important timber-producing trees are the African teak and the African mahogany, ebony, acacia, ironwood, bamboo, redwood, etc. On

TRADE MAP OF AFRICA

the higher slopes and plateaus, junipers, yews, and other conifers occur. There are numerous dyewoods; also drug, gum, and resin-yielding plants in the African forests. Among gums may be mentioned copal, shellac, acacia, and incense. A vast number of fiber plants are found native throughout the continent, many of them being suitable for rope-making. Oil seeds of various sorts abound, including sesame, castor oil, and ground nuts.

Many varieties of spices are abundant. Coffee grows wild in many parts, and tobacco has spread widely by native cultivation. Perennial cotton grows in some localities, and the sugar cane flourishes in the lower valleys and coast lands. The soil and climate over wide areas are well adapted for cereals and other temperate zone food plants. Maize has spread by cultivation throughout the parts of the continent where there is sufficient rainfall. The soils over wide regions are remarkably fertile and this, together with the abundant moisture, insures enormous crops, 100 bushels of corn per acre being an ordinary yield. At least two crops are gathered in a year. Sorghum, millet, and eleusine (a grass, the grains of which are used for food) grow in like profusion. The higher plateau lands of East Central and South Africa are adapted to the growth of wheat and oats.

Various root plants, like the manioc or mandioca (which yields cassava meal and tapioca), grow abundantly in the tropical parts. The potato likewise produces indefinitely without the need of replanting. Bananas, plantains, and other fruits grow in rank profusion. It is probable that tea, coffee, cacao, rice, beans and many other plants will form an increasingly important feature of African agriculture.

Animal products are abundant and of various kinds. The African elephant, both male and female, furnish tusks of valuable ivory. The teeth of the hippopotamus are likewise of considerable value and form an item of export. Zebras and a variety of antelopes give hides of value. The recent efforts toward the preservation of big game in the central African States will greatly enhance the trade in native animal products by allowing the animals to increase under

normal conditions. As Sir Harry Johnston has remarked, there is no reason why the African elephant (at least the females) and the several varieties of zebra, should not be domesticated. Ostrich farming and the export of feathers is a growing African industry. Wild bees produce quantities of honey and wax; in some instances the bees are practically domesticated about the native villages.

The grass lands of East Central and South Africa afford one of the most magnificent pasture regions in the world, and sheep and cattle raising are destined to be among the most important industries in the development of the continent.

The immensity of the mineral wealth of Africa is as yet scarcely realized. The resources of vast areas are practically untouched and in many parts unexplored. In the upper Zambesi basin there is an enormous coal field, sometimes reckoned the largest in the world. Undoubtedly this coal field will be reached by the railroad within the next few years. Petroleum is obtained from mineral springs in several localities. Iron ore deposits (chiefly hematite and black magnetic ore) are of wide extent, and the natives in many regions have long been famous as primitive iron workers. A recent writer records the discovery of a solid mountain of black magnetic iron ore which deflected the compass at the distance of a quarter of a mile.[1] Copper is very abundant throughout Africa and is in wide use among the native peoples. Gold has been exploited in South Africa, but there still exists an enormous extent of territory in which the precious metal will probably be found in rich abundance. The African gold output now reaches a large yearly total. Diamonds and other precious stones are also found in great abundance in various localities.

231. Commercial Outlook. — Railroad development is one of the factors upon which the commercial future of the continent must rely, for the rivers as already observed, are not continuously navigable to the sea. A railroad is in operation around the rapids of the Kongo,

[1] S. P. Verner, *Forum;* November, 1901, p. 366.

from Matadi to Leopoldville, 250 miles in length, thus connecting the lower waters with a navigable highway to the interior. The Kongo Free State, with an area of nearly 870,000 square miles and an estimated population of 30,000,000 persons, and lying as it does in one of the greatest regions of tropical production in the world, with the advantages of a great natural highway of transportation to the seacoast, is destined to hold a place of first importance as a source of raw material supply. The Nile Valley, the ancient trade route into eastern Equatorial Africa, is now the site of a railroad from Cairo to beyond Khartum in the Egyptian Sudan, about 1200 miles. The railroad system of South Africa extends as a trunk line from Cape Town to Bulawayo in Rhodesia, a distance of some 1500 miles, with numerous side branches to the eastern seaboard at such terminal points as Port Elizabeth, Port Alfred, East London, Durban, and Lorenzo Marquez. The Bulawayo line has already opened up a vast productive territory on the plateaus of Rhodesia (Matabeleland), where such towns as Bulawayo, Salisbury, Victoria, Umtali, etc., are already in a flourishing condition; here the climate is favorable to European residence and the growth of cereal crops. The proposed extension of this railroad northward across the Zambesi basin to Lake Tanganyika, and from thence by the Victoria Nyanza to the upper Nile to meet the line that is projected from Khartum southward, is the scheme that when accomplished will complete the "Cape-to-Cairo" railroad, and will open up a vast interior territory of agricultural and mineral wealth. Already a line has been built from the coast town of Mombasa (British East Africa) to the Victoria Nyanza in the Uganda protectorate, which will form an important branch line connecting the "Cape-to-Cairo" route with the east coast at that point. The Portuguese are operating a railroad in Angola which extends for upwards of 200 miles through a rich agricultural region from St. Paul de Loanda on the west coast, to Ambaca in the interior. This line, along with others to be built, will be extended ultimately to connect with the "Cape-to-Cairo" route

when the latter is completed. Steamers already ply the navigable portions of many of the African rivers and are on the lakes of East Africa. The Postal Union has effected arrangements by which regular post offices are established in the interior, and mail is carried from New York to the heart of Africa in twenty-five days.

Until very recent years the interior of Africa has been practically inaccessible, owing to the cataracts, the deadly climate of the lower valleys and coast lands, and the hostility of the native peoples. These barriers have been in part overcome by the building of railroads and the pacification of the various tribes. As Mr. S. P. Verner has said in a very suggestive article: "Scores of steamboats ply the waters of the rivers, railways are being built in every part, commercial companies operate all over the land, the natives have turned from eating each other to working on the railways and in the mines and buying Armour's beef; and the men who chased Stanley down the Kongo are now piloting steamboats up." The overcoming of the climatic barrier must be met to a great extent by modern hygienic methods. The writer above cited further says: "With ice factories, electric fans, waterworks, scientific plumbing and sanitation, and all the accompanying means of making life comfortable which will follow the development of Africa's natural riches, the Caucasian will be able to live and prosper in the wisely selected parts of the continent not only in safety, but in great comfort and happiness, and from these central stations, to operate the whole of Africa."[1] The healthful stations here meant are the elevated plateaus of the interior.

Africa is still, for the greater part, an undeveloped continent. Only the northern and southern portions may be regarded as of present commercial importance. Three-fourths of the import trade is through the seaports of the Mediterranean, Natal, and Cape Colony. As a result of this, the trade is largely in British hands; Egypt in the northeast is mainly under British influence. Large areas in the densely populated Sudan are still reached only by the trans-Saharan caravans.

[1] Verner, *Forum;* November, 1901.

In the Mediterranean countries the imports are mainly cotton textiles, tobacco, spirituous liquors, clocks, and minor articles of trade (trinkets, etc.); in South Africa the mining interests demand a much greater variety and a higher class of manufactures, as machinery and tools, explosives, clothing, meat, and flour.

From the predominating character of the exports, Africa may be divided into three commercial areas: the northern, the tropical, and the southern. In the former, agricultural products, as cotton, coffee, dates, cacao, spices, etc., predominate. The resources of the tropical area are largely native forest products, as rubber, gums of various sorts, palm nuts, palm oil, and ivory. In South Africa, live stock raising and crop growing are of increasing importance, and are destined to be among the chief factors in the region's future development; up to the present, however, the mining resources, chiefly gold and diamonds, form the largest value in the export trade from South Africa.

232. Commercial Centers. — Certain sections lying within these three areas of production stand out prominently as centers of African trade. Egypt is the most important commercial region of the north, controlling the trade of the eastern Sudan and the Nile Valley. Zanzibar is a prominent east coast trade center. French Senegal, Liberia, the British and German West African colonies, and the stations on the Lower Kongo are the leading trade points of the west coast. Beyond the Zambesi, British South Africa is fast assuming the position of the most important commercial unit of the continent.

Africa holds a position of strategic importance in the political and commercial affairs of the world at large. The strait of Gibraltar has the northwestern corner of the continent on one side. Egypt and the Suez Canal at the northeastern, and Cape Colony at the southern end of the continent, control the commercial routes from the Atlantic to the Indian Ocean and Australia. The recent efforts of Great Britain to extend her sphere of influence throughout South Africa,

and to connect the Cape with Cairo, is a recognition of the strategic importance of Africa.

233. Egypt. — Egypt is essentially an agricultural country, the rich alluvial deposit from the Nile overflow rendering the land extremely fertile. The country is a tributary state of Turkey, governed by the Khedive; but the commercial and financial affairs are mainly in the hands of Great Britain. Cotton forms the bulk of the value of Egyptian exports, cereals and vegetables holding a second place. Cairo, at the head of the Nile delta, is the capital of Egypt and the largest city on the African continent. Alexandria is the most important commercial center, and the chief port of the country. The Suez Canal, eighty-seven miles in length, connects the Mediterranean with the Red Sea and has been an important factor in the commercial development of the East and of Australia. Port Said and Suez are towns at either end of the canal. On an average ten vessels a day pass through the canal, seven out of which are British. The canal is neutral and is governed by an international commission; each vessel pays a toll for transit. Khartum, at the junction of the Blue and the White Nile, is the chief commercial center of the Egyptian Sudan, and is connected by rail and telegraph with Cairo.

234. South Africa. — The vast area of South Africa (Africa south of the Zambesi), offers an inviting field for future commercial enterprise. Rich deposits of coal have been discovered in the Zambesi basin, iron and other metals undoubtedly exist in great quantities, and the Victoria Falls of the Zambesi are scarcely second to Niagara as a source of power. The temperate parts, on the higher plateaus of Rhodesia and the land farther to the south (in Cape Colony, etc.), are adapted to stock raising and grain growing. The gold and diamond mining interests already form leading industries in several sections of South Africa. Kimberley is the center of the greatest diamond-producing region yet discovered (furnishing 98 per cent of the diamonds of commerce). Johannesburg and other towns are in a gold field (the Witwatersrand, or more commonly

called the "Rand"), the output of which since 1884 is upwards of $300,000,000, and with "gold in sight" amounting probably to $3,500,000,000.[1] This is to say nothing of the gold fields of Rhodesia. The South African gold is in vein quartz or "reef," and requires costly machinery for its extraction.

Cape Town (Cape Colony), by virtue of its position at the southern end of the continent, is destined to play much the same part in the commercial development of the interior as New York has done in the United States. It will undoubtedly always be the chief commercial and disbursing center of the region. Other British ports of importance (all on the eastern coast) are Durban (the port of Natal), Port Elizabeth, Port Alfred, and East London. Lorenzo Marquez, on Delagoa Bay, is a Portuguese port of some prominence. Owing to the general aridity of the western portion of South Africa, there are comparatively few settlements along the Atlantic seaboard.

CAPE COLONY	$135	— 18%
OTHER BRITISH AFRICA	$177	— 24%
EGYPT	$153	— 21%
ALGERIA	$104	— 14%
OTHER FRENCH AFRICA	$72	— 10%
PORTUGUESE AFRICA	$42	— 6%
OTHER AFRICA	$55	— 7%

COMMERCE OF AFRICA (1900) APPROXIMATED IN MILLIONS OF DOLLARS
Total, $738,000,000

235. Other Commercial Centers.—Of the several divisions of North Africa lying outside of Egypt, Tangier, on the northwest coast of Morocco, Algiers, Tunis, and Tripoli are the most important commercially. Tripoli is the terminus of a large caravan trade across the Sahara. Zanzibar, on the island of the same name lying off the coast of German East Africa, carries on a considerable trade with the interior region of eastern Equatorial Africa. It was at one time a center of the Arab trade in slaves and ivory. Banana and Boma are ports

[1] Summary of Commerce and Finance, *Commercial Africa.*

of the Kongo Free State. Other West African ports are St. Paul de Loanda (Angola), Libreville and Loango (French Kongo), Lagos (Niger Territories), Monrovia (Liberia), Free Town (Sierra Leone) which commands the best harbor on the west coast, Bathurst (Gambia), and St. Louis at the mouth of the Senegal River. Timbuctu is an important center of the caravan trade. It is situated on the upper Niger in the French Sudan.

236. Trade Relations. — Of the total import trade of Africa, the United States furnishes about five per cent. The latest reports show a marked increase, in part a result of the growing demand for American mining and agricultural machinery.

SUGGESTED QUESTIONS AND TOPICS

280. Why has Africa, which was the seat of a civilization among the earliest, remained the "dark continent"?

281. Compare the physical features of Africa with those of South America.

282. Make a contrast between Europe and Africa with regard to natural advantages for trade.

283. What European nations have possessions on the north cost of Africa? What on the west coast? What on the east coast? (See map opposite p. 367.)

284. "There are three regions in Africa; the region of firearms, of cotton, and of slaves." Explain this and try to locate the regions.

285. What is meant by "the partition of Africa"? What are the interested nations?

286. Give an account of the irrigation methods used in Egypt. What is the influence of irrigation on this region?

287. Trace the "Cape-to-Cairo" railroad.

288. What is the importance of South African possessions to the British Empire?

289. Compare the advantages of England's communication with India via the Suez Canal, and via South Africa.

290. Write a brief essay on The Commerical Future of Africa.

Books to be Consulted

* *The International Geography*, Chapters XLVIII to LIII.
Bryce, *Impressions of South Africa.* London; 1897.
Drummond, *Tropical Africa.* London; 1888.

*Keltie, *Partition of Africa*. London, Second Edition, 1895 (especially Chapter XXII on the Economic Value of Africa).

***Commercial Africa in 1900*. Monthly Summary of Commerce and Finance for April, 1902.

Johnston, *The Uganda Protectorate*. London and New York ; 1902.

**Verner, *The Development of Africa*. Forum; November, 1901.

***The Statesman's Yearbook*.

CHAPTER XXXIV

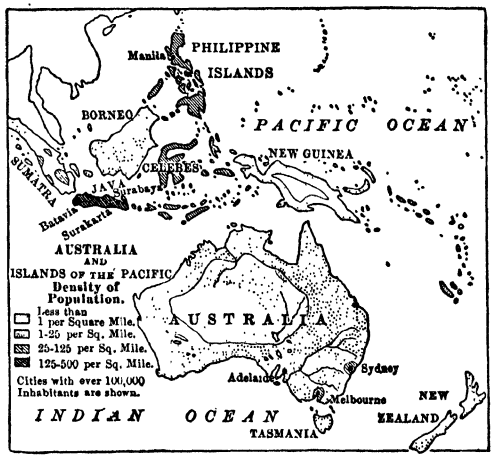
AUSTRALIA AND THE PACIFIC ISLANDS

237. Australian Geography. — The Australian continent is an isolated land mass lying in the southern or ocean hemisphere, with an area a little less than that of the United States exclusive of Alaska. About three-fifths of Australia lies within the south temperate zone; the remainder (lesser northern portion) is within the tropics. Australia represents the largest exposed portion of an old sunken land mass that was once continuous with the continent of Asia. Its fundamental physical feature is that of a vast central plain of uneven surface surrounded by a rim of highlands, the slopes of which determine a drainage towards an interior area of depression occupied by a system of salt lakes. This central Australian plain, cut off from the rain-bearing winds by the surrounding mountain ranges, has the characteristics of a desert. As a result of the comparatively short seaward slopes of the mountain ranges, there are no long inland rivers that open to the sea; the Murray-Darling river system in the southeast is the only one of any extent.

The peculiar life features of Australia are a result of long isolation. The vegetation has many ancient types, which have long since passed away in other parts of the earth. Notable among these are the tree myrtles (including the giant eucalyptus or "gum tree"), ferns, and numerous other groups, many of which have become adapted to the excessive evaporation of a dry climate by the development of oils and leathery leaves which tend to retain moisture; other plants have a twist of the stalk whereby the leaf is turned edgewise, the surface being thus shielded from the effects of direct sun's rays. A great variety of native grasses are

found throughout many parts of Australia, and this fact largely determined the pastoral occupation of the early settlers.

238. The Australian Commonwealth. — The five original colonies of Australia and the adjacent island colony of Tasmania, have recently been federated into a single commonwealth by an act of the British Parliament. The six political divisions include Victoria (about one-third larger than the entire New England group of states), New South Wales (nearly twice the size of the Middle Atlantic and New England States taken together), Queensland (equal to the combined area of Washington, Oregon, Idaho, Colorado, Utah, Nevada, and Arizona), South Australia (larger than the whole United States east of the Mississippi), West Australia (somewhat larger than the last-named division), and Tasmania (about equal to the area of West Virginia). The last named is an island lying about 150 miles south of Australia. The government of British Australasia is termed "self-responsible," and it is laid on similar lines to that of the Dominion of Canada. A system of uniform customs has been established which will greatly facilitate commerce.



239. Production and Commerce. — Stock raising and agriculture are the chief industries of Australia. The agricultural returns from each section of the Commonwealth show that out of the total value of production, Victoria contributes upwards of 25 per cent, New South Wales upwards of 22 per cent, South Australia over 10

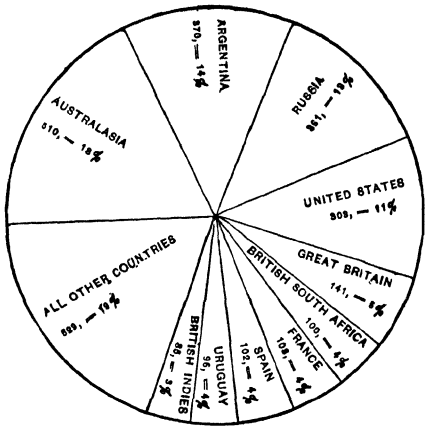
per cent; Queensland, Tasmania, and West Australia upwards of 7, 3, and 1 per cent, respectively, while New Zealand, which is included in the returns, being a part of British Australia, contributes nearly 29 per cent of the whole. Of the crops raised, wheat forms the largest proportion (some 25 per cent), hay being the next in order (over 23 per cent). Maize, barley, oats, potatoes, grapes, fruits (orchard and garden), garden vegetables, hops, tobacco, sugar cane, etc., are other crops of importance. Root crops, such as turnips, are largely raised for feeding stock, especially in New Zealand where more than half a million acres are under turnips, which are fed to sheep.

Stock raising has always been the most important feature of Australian industry, since the climate and the pasture are in every way conducive to its best development. Sheep raising and the production of wool lead all other forms of live stock industry. The introduction of the merino sheep into Australia more than half a century ago, greatly increased the value of the wool, and Australian wool now ranks with the best in the world. Australia (including New Zealand) is to-day the greatest wool-producing country in the world; the product for 1901 was upwards of 510,000,000 pounds, while that of Argentina, the second wool-producing country, was some 370,000,000 pounds. The perfecting of methods in the freezing and chilling of meat has greatly stimulated the Australian live stock industry; the exports of meat from British Australia, including New Zealand, amount to more than $18,000,000 annually.

The mining interests of Australia are of very great importance, especially in the production of gold and copper. Victoria is by far the greatest gold-producing state in the commonwealth. Tin and silver also occur, and coal is found in New South Wales and in New Zealand. Iron ores abound but are comparatively unworked, owing to the expense of extraction and transportation.

The value of goods imported by Australia from the United States amounts to something over $30,000,000 annually. Great Britain

holds the largest share of trade with her great southern colony, but the United States has had a marked increase in the export of goods to Australia during the last twenty years. Iron and steel manufactures are the leading items, and the raw and manufactured products of tobacco, wood, paper, leather, also cars, coal oil, cotton goods, instruments, and implements of various sorts, watches and clocks, are among the important articles which Australia imports from the United States.



THE WORLD'S PRODUCTION OF WOOL (1901), APPROXIMATED IN MILLIONS OF POUNDS

Total production, 2,699,884,704 pounds

Of the total value of pastoral products, including the wool clip, New South Wales and Queensland each furnishes about 30 per cent; Victoria about 12 per cent, and South Australia about 11 per cent. Of the total value of mine products, New South Wales and West Australia each furnishes about 28 per cent, Victoria about 15 per cent, and Queensland 14 per cent.

The largest cities and chief commercial centers of the commonwealth are: Melbourne (Victoria), Sydney (New South Wales), Adelaide (South Australia), Brisbane (Queensland), Perth (West

Australia), and Hobart (Tasmania). All command excellent harbors and are connected with one another and with the productive centers by railroads and steamship lines.

240. New Zealand. — The British colony of New Zealand, consisting of two large islands and a number of smaller ones, is about equal in area to New York, New Jersey, Pennsylvania, and Delaware combined. It lies in the South Pacific Ocean, 1100 miles southeast of Australia. The surface is mountainous and well watered, but the numerous rivers are not generally navigable. The land was originally heavily forested over half its area, but it is now largely cleared. The eastern part of the islands is natural open land, covered with native grasses, one species of which is known as New Zealand flax. The great kauri pine yields valuable timber and resin (kauri gum). A considerable quantity of the gum is obtained from old forests that have fallen and been buried beneath the soil. The chief industries are connected with cattle and sheep raising; large quantities of frozen mutton are shipped to England. Tanning, the manufacture of shoes, woolen textiles, etc., are among the important pursuits dependent upon the pastoral occupation. Tillage is second to stock raising in commercial importance. Considerable coal and gold are mined, and manufactures of various sorts are carried on. The agricultural and pastoral products form upwards of 80 per cent of the total value of productions. The yield of the mining industries amounts to about 12 per cent of the total value, while the remainder is divided between the forest and the fisheries. The trade is mainly with Great Britain and the British colonies. The United States' share in New Zealand trade amounts to about 8 per cent of the total value of the island's commerce, being second to that of Great Britain and the British colonies. New Zealand has a well-organized system of railroad and telegraph communication. Auckland and Wellington (North Island) and Dunedin and Christchurch (South Island) are the chief commercial centers of the colony. All but Christchurch, which is inland, command good harbors.

241. Madagascar and Mauritius. — The large island of Madagascar, lying off the east coast of Africa, is a French protectorate. Its commerce is small, the chief productions being cattle, hides, wax, and rubber. The interior of the island is mountainous and well watered, and affords abundant pasturage.

Mauritius, with its dependency the Seychelles, is a British colony, the chief productions of which are sugar and cocoanuts. The island of Socotra, in the Indian Ocean near the eastern extremity of Africa, is a British possession and is chiefly noted for its export of aloes, which are used in medicine.

242. Oceanica. — The area of the Pacific Ocean exceeds by some 4,000,000 square miles the entire land surface of the earth. Throughout this vast expanse are scattered some 600 island groups or clusters, aggregating at least 5000 islands. These islands collectively (exclusive of Hawaii) equal an area larger than the combined area of the New England States, New York, New Jersey, Pennsylvania, Delaware, Maryland, West Virginia, Ohio, Virginia, and both of the Carolinas. The native peoples of the islands belong to the Pacific group and number upwards of 1,600,000 individuals; they are separated into the different island communities, isolated from one another by wide stretches of sea. A large number of the islands are under the control of European nations. Great Britain controls 19 islands and island clusters (111,500 square miles with 650,000 population), Germany holds possession in 8 islands and island groups (100,000 square miles, with 645,000 population), France controls 7 islands and groups (12,200 square miles, with 120,000 population), Holland possesses one colony on the island of New Guinea (152,000 square miles with 200,000 population); the United States' possessions have already been considered in Chapter XI.

Aside from the large island of New Guinea or Papua, which belongs in part to the Australian and in part to the Malay region, the Pacific islands are divided into three main groups, based largely on the affinities of the native peoples. These are known as: (1) Micro-

nesia, which embraces all of the small island clusters of the western Pacific north of New Guinea; (2) Melanesia, or the island groups that lie between New Guinea and the Fiji Islands; and (3) Polynesia, which includes all the rest of the widely scattered archipelagoes. These islands are of volcanic and coral formation, and are wholly tropical in character; the banana, breadfruit, taro, yam, sugar cane, and cocoanut are the staple native products. Heretofore the islands have been of slight commercial value, though a number of the larger groups have been made of some value to the powers which control them. Their importance in world commerce will be greatly increased with the opening of an Isthmian Canal.

The Fiji Islands (British) produce various tropical crops; the commerce is mainly with Great Britain, the annual imports amounting to more than $1,700,000. Viti Levu is the largest island of the group, the chief port and capital of which is Suva. Levuka is another port on a smaller island. Among the chief crops raised are sugar cane, coffee, maize, tobacco, cotton, and cocoanuts. Copra is an important article of commerce.

Gold constitutes a large item in the value of New Guinea's exports; the other items are pearl shell, sandalwood, copra, India rubber, tortoise shells, orchids, and pearls. The island is capable of development in the production of a variety of tropical goods.

New Caledonia (French) holds the largest portion of its commerce with France and Australia. The United States supplies hardware, tools, cutlery, petroleum, wooden wares, furniture, and provisions.

Samoa has already been considered under the United States' outlying possessions. Pago Pago is the port of call for the American-Australian steamers. There is a regular steamer service between San Francisco and Pago Pago. Great Britain, Germany, and the United States hold the principal trade of the islands.

The Tonga or Friendly Islands (British) produce a variety of fiber plants and the natives distill an oil from flowers. Sperm whales are found in the neighborhood of these islands, and pearl fishing

is also largely carried on in the near-by waters. Copra is the chief article produced, forming 75 per cent of the export.

Tahiti, or the Society Islands, are a French possession and are in direct connection with San Francisco by steamer; the United States holds the largest share of the trade. The chief exports are copra, mother-of-pearl, vanilla, and cotton.

SUGGESTED QUESTIONS AND TOPICS

291. Have continents an "individuality"? If so, what is that of Australia?

292. What are the peculiarities of Australian animals and plants, and what do they indicate about the relation between this continent and the Old World land mass?

293. What is the relation of the Australian government to the British Empire?

294. Where are the Australian gold fields and how have they influenced in the development of Australia?

295. Give an account of the British "penal system." Show its effects on colonizing in Australia and Tasmania.

296. What is "the country without strikes"? Give some account of its economic organization. (Henry Demarest Lloyd.)

297. What do you understand by colonies with "responsible government"? By colonies for "exploitation"?

298. Is Humboldt's prediction that the Pacific of the twentieth century would be an ocean dotted with commercial fleets likely to be realized?

299. Is there likelihood that the center of maritime operations will shift from the Atlantic to the Pacific as it once shifted from the Mediterranean to the Atlantic? Why?

300. The steamships *Minnesota* and *Dakota* (building for the Pacific trade, 1903) have the largest carrying capacity of any afloat. They require for a cargo, the freight of one hundred trains of twenty-five cars each. What will be the probable effects of ships of this size in the Pacific trade?

Books to be Consulted

**Australia and Polynesia.* Chapters XXXI to XXXVI, inclusive, *The International Geography.*

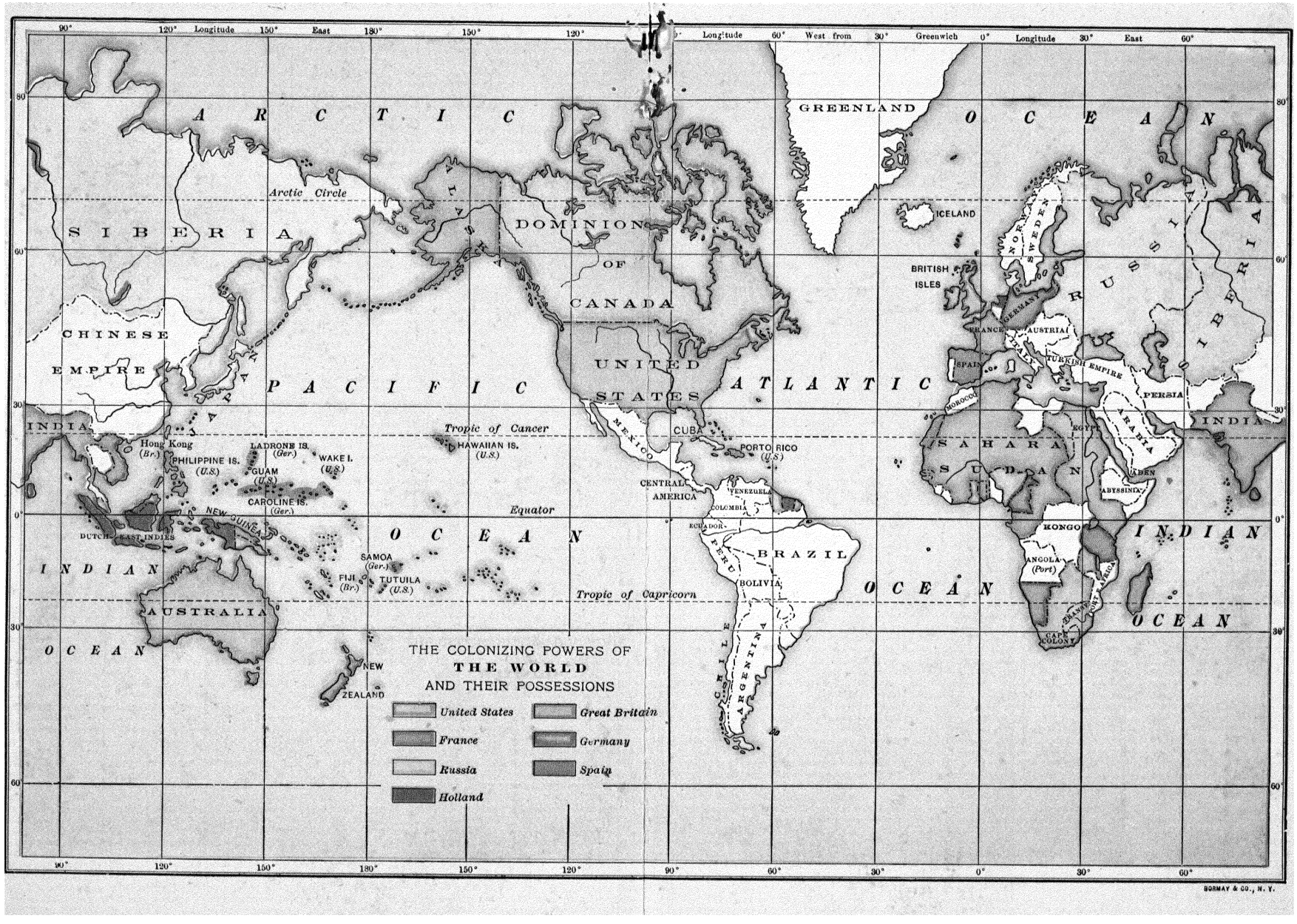
***Commercial Australia in 1900.* Monthly Summary of Commerce and Finance; November, 1901. Treasury Department. Washington, D.C.

Bates, *Australian Experiments in Industry.* Publications of American Academy of Political and Social Science.

Philadelphia Commercial Museum, *Foreign Trade Lists and Commercial Guides.* (Furnished to subscribers only.)

***The Statesman's Yearbook.*

Lloyd, *Newest England.* New York, 1900.


Longitude
East
West from
Greenwich
ARCTIC OCEAN
Arctic Circle
GREENLAND
ICELAND
SIBERIA
DOMINION OF CANADA
CHINESE EMPIRE
PACIFIC OCEAN
UNITED STATES
ATLANTIC OCEAN
BRITISH ISLES
NORWAY
SWEDEN
RUSSIA
GERMANY
FRANCE
AUSTRIA
SPAIN
TURKISH EMPIRE
MOROCCO
PERSIA
ARABIA
INDIA
EGYPT
SAHARA
SUDAN
ABYSSINIA
ADEN
Tropic of Cancer
Equator
Tropic of Capricorn
MEXICO
CUBA
PORTO RICO (U.S.)
HAWAIIAN IS. (U.S.)
CENTRAL AMERICA
VENEZUELA
COLOMBIA
ECUADOR
PERU
BRAZIL
BOLIVIA
CHILE
ARGENTINA
Hong Kong (Br.)
PHILIPPINE IS. (U.S.)
LADRONE IS. (Ger.)
GUAM (U.S.)
WAKE I. (U.S.)
CAROLINE IS. (Ger.)
NEW GUINEA
DUTCH EAST INDIES
SAMOA (Ger.)
FIJI (Br.)
TUTUILA (U.S.)
AUSTRALIA
NEW ZEALAND
KONGO
ANGOLA (Port.)
GERM. S.W. AFRICA
CAPE COLONY
INDIAN OCEAN
THE COLONIZING POWERS OF THE WORLD AND THEIR POSSESSIONS
United States
Great Britain
France
Germany
Russia
Spain
Holland

BORMAY & CO., N. Y.

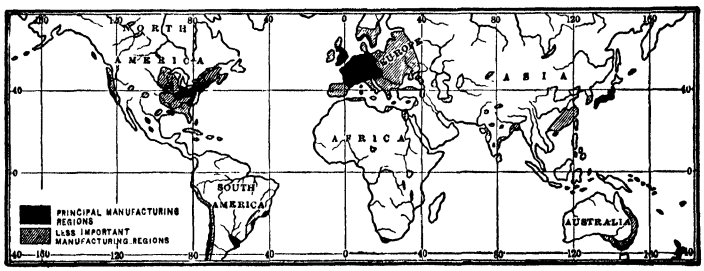
PART V (Conclusion)

REVIEW OF WORLD COMMERCE

CHAPTER XXXV

WORLD COMMERCE

243. General Principles of World Trade. — The division of labor that exists among the members of a community exists also among the nations of the world at large. The people of one country usually produce something, either raw or manufactured, which the peoples of other countries need. Interchange of commodities results in part



WORLD'S DISTRIBUTION OF MANUFACTURES

from different geographical environments. The greatest contrast lies between temperate and tropical regions, and one object in acquiring territorial control in the tropics is to secure tropical products. Speaking broadly, the manufacturing industries may be said to characterize the nations of the temperate zone, while the production of raw materials is a leading interest of the tropical peoples. The presence of water power, and of coal and iron, determines

a manufacturing population, especially when coupled with favorable conditions of climate and soil. The raw material produced in the immediate vicinity is at first utilized, but the increasing capacity for manufacture, sooner or later draws upon raw material from more remote regions, and commercial interchange is thus established. Illustrations of this fact have already been presented. (See Chapter IX.)

The aptitudes of different peoples for different kinds of industrial activities is another factor in promoting world commerce. This again is largely a question of environment. Generations of men living under the same conditions, and engaged in the same occupations throughout long periods, become adapted to special lines of work. This principle may be so effective as to give industrial character to a nation. The agricultural Dutch, the weaving and lace-making populations of northern France and Belgium, the silk and tea producers of China, the silk weavers of France and Italy, are a few illustrations of this principle of aptitude, native or acquired.

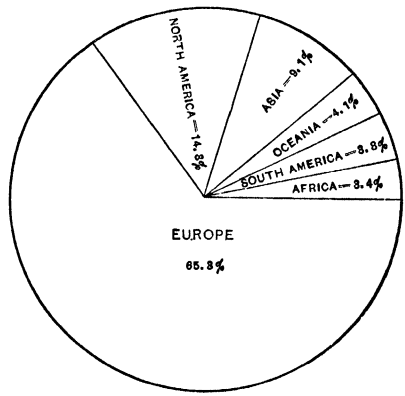
The foreign trade of a country may be simply the expansion of its internal or domestic trade. The surplus of production, in either raw materials or manufactures, becomes an export. The exchange of this surplus for the needed commodities produced by a foreign country, lies at the basis of world commerce.

244. Factors in the Interchange of Commodities. — To exchange surplus for the products of other nations, is the chief end of commercial intercourse. The means by which this intercourse is accomplished is through a system of exchange of goods based on their respective values. Value in exchange, as here used, is the quantity of one thing that can be had for a certain quantity of some other thing. The proportion of these quantities is the measure of the value of the thing in question. Commodities have two very different sorts of value. One of these is the relative or proportional value of a thing in the system of exchange; the other is the absolute value of a thing in its practical use. We might purchase many tons of anthracite coal for the price of a

single diamond, and yet the absolute value of the coal for use is vastly greater than that of the gem.

Money is the measure of value under the laws of supply and demand. In international trade, actual cash payments are comparatively small, most of the business being done by an extensive system of credit and bills of exchange. Trade between nations is, after all, only the barter of primitive peoples on an extended scale, and the same laws apply alike to nations and individuals.

The system of banking and credit involves the establishment of financial houses throughout the world; the business of foreign exchange is largely centered in certain cities. Geographical conditions are in many cases responsible for the prominence of cities as great financial centers. Thus, New York, Chicago, San Francisco, London, Paris, Berlin, Vienna, Bombay, Hong-Kong, Canton, Cape Town, Melbourne, Sydney, Rio de Janeiro, Buenos Ayres, Valparaiso, and other cities have become the chief financial centers of their respective countries, largely by reason of their location in relation to productive areas, with reference to river and rail facilities, and the command of ocean-going traffic. These conditions have focused trade, and financial interests have developed as a matter of course.



TOTAL COMMERCE OF THE WORLD (1900), REPRESENTED BY CONTINENTS

Other factors in the growth of international commerce are the establishment of a definite system of weights and measures, the transportation of goods by ship and rail, and the facilities for communication by telegraph (both land and submarine).

245. The Decimal System. — A uniform system of weights and measures upon which all nations should agree would be an important gain for international trade. Probably the most logical system yet devised, is that known as the metric. It is in use in almost all the continental countries of Europe, throughout the Spanish-American countries, and in Japan and Java. Unfortunately neither the United States nor Great Britain has as yet adopted the metric system, though generally acknowledging its superiority over what is actually in use.

1000th milli	100th centi	10th deci	Standard	10 times deka	100 times hecto	1000 times kilo
millimeter	centimeter	decimeter	**Meter**	dekameter	hectometer	kilometer
miligram	centigram	decigram	**Gram**	dekagram	hectogram	kilogram
mililiter	centiliter	deciliter	**Liter**	dekaliter	hectoliter	kiloliter

Not all of the above terms, however, are in everyday use. Those most commonly used are the meter, centimeter, decimeter, and kilometer; the gram, decigram, and kilogram; the liter and hectoliter.

It is to be hoped that a decimal system will ultimately supersede the old and irregular methods still practiced in the United States and Great Britain, for this would facilitate the trade of these countries with the world at large.

246. Ocean Trade Routes. — Navigation to-day follows regular routes which are clearly marked out. The steamship is the chief ocean carrier and follows these highways of traffic around the world from port to port. A large number of sailing vessels are also engaged in world commerce.

The five great ocean thoroughfares of the world are: (1) *The Trans-Atlantic Route* between European and United States ports. The Atlantic Liners follow different paths on the western and the eastern passage, the western route lying to the north of the eastern. This

is to prevent the danger of collision, and sailing vessels are warned to avoid the great steamer highways. (See Pilot Chart, p. 373.)

(2) *The Mediterranean Route* to the East from European ports, and across the Atlantic from United States ports to Gibraltar, thence through the Mediterranean to the Red Sea via Suez Canal and to India, China, Australia, and East African ports.

(3) *The Pacific Ocean Route* between western North America and Hawaii, the Philippines, Japan, China, New Zealand, and Australia.

(4) *The Cape Horn Route* by the east coast of South America around Cape Horn (or in the case of steamers through the Strait of Magellan) to the ports of western America (both South and North) and also to Australia.

(5) *The Cape of Good Hope Route* down the west coast of Africa and around the Cape of Good Hope to the ports of East Africa, Australia, and the East.

Several lines of steamers regularly traverse the two last-named routes, each vessel in its passage making a complete circuit of the world. Starting from London or Plymouth, for example, with the average steamship a run of over 1400 miles is made in five days to Teneriffe (Canary Islands). From this point to Cape Town, a run of 4450 miles is made in fifteen days. The next calling port is Hobart, Tasmania, a distance of more than 5000 miles which is made in seventeen days. From Hobart the longest continuous run is made by the eastward across the South Pacific, around Cape Horn, and up the South American coast to Rio de Janeiro, the distance covered being 6820 miles and the time twenty-two days. The homeward run from Rio to London or Plymouth is made in seventeen days, calling at Teneriffe (3000 miles distant from Rio). A total distance of over 25,000 miles is thus covered by these steamers in eighty-one days.

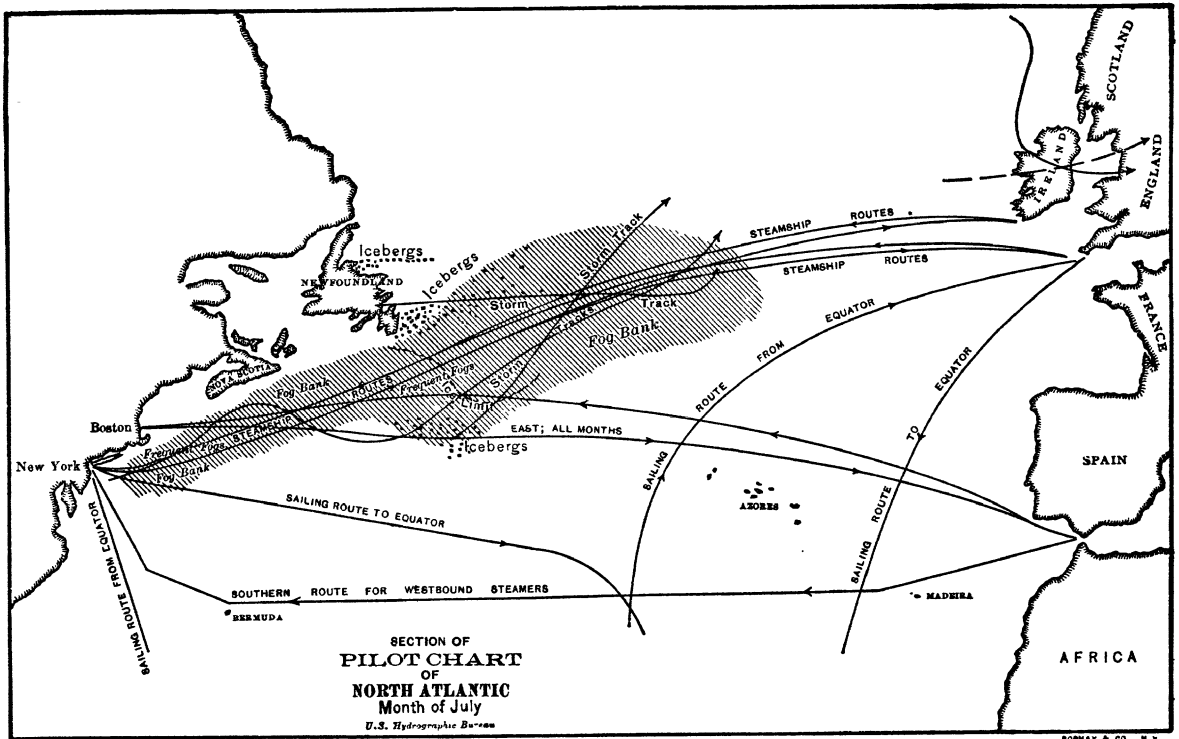
A large number of freighters or "tramp" steamers are also engaged in carrying on the commerce of the world between various countries. These take cargoes from a port in any direction. They

are either owned or chartered by business houses in different parts of the world, but they follow for the most part the five great trade routes.

The dangers incident to ocean commerce are vastly lessened by the careful charting of the coasts and the establishment of light-houses, buoys, etc., by the governments of the different maritime nations. A number of different governments also issue at regular intervals, pilot charts which contain information for the masters of vessels, relative to the weather conditions likely to be met with at the time of year for which they are issued, the presence of ice-bergs and field ice, the drift of currents, the position of derelicts, and other objects that have gone adrift. The information is largely based on the data received from the reports of the masters of steamers and other vessels that regularly traverse the commercial routes of the ocean highway. The United States Pilot Charts are issued monthly for the North Atlantic and North Pacific oceans, under the direction of the Hydrographic Office in the Bureau of Navigation of the Navy Department.

247. Ocean Cables. — Business between different countries is now carried on mainly by means of the submarine telegraph. A house orders goods from a foreign house by using the system of telegraph codes, either words or figures, each word or figure in the code standing for a sentence or portion of a sentence. This greatly reduces the cost of sending messages by minimizing the number of words or characters.

There are now upwards of 1750 submarine telegraph lines throughout the world, aggregating a total length of nearly 200,000 miles. More than 6,000,000 messages are sent over these lines in a year. The coast of every continent, outside the Arctic and Antarctic regions, and the southern end of South America, is looped by cables, and with the Pacific cable completed between the United States and the Philippines, via Hawaii, Wake Island, and Guam, there is continuous telegraph communication around the earth. (See map, p. 375.)

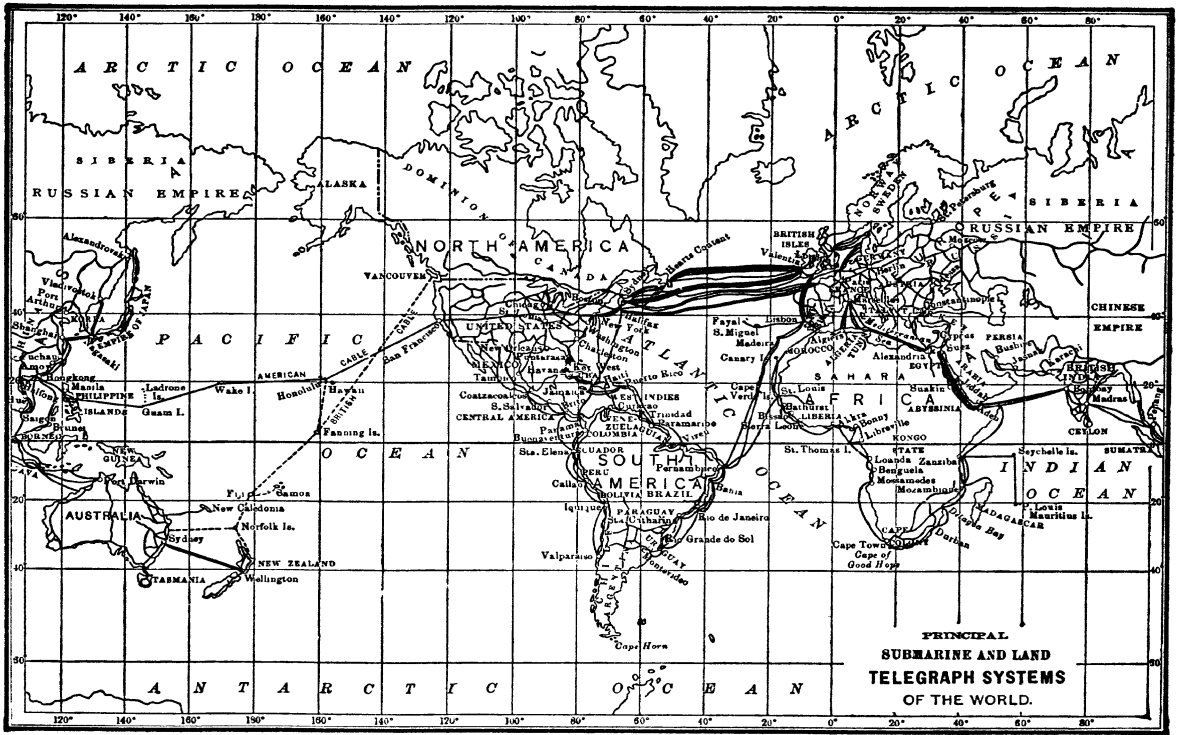

Icebergs
NEWFOUNDLAND
Icebergs
Storm Track
Storm Track
Fog Bank
STEAMSHIP ROUTES
STEAMSHIP ROUTES
SCOTLAND
IRELAND
ENGLAND
FRANCE
EQUATOR
ROUTE FROM EQUATOR
NOVA SCOTIA
Fog Bank
Boston
New York
Fog Bank
Fog Bank
STEAMSHIP ROUTES
Preferred Track Fog Limit
Storm Track
EAST; ALL MONTHS
Icebergs
SAILING ROUTE TO EQUATOR
SAILING ROUTE FROM EQUATOR
AZORES
SAILING ROUTE TO EQUATOR
SPAIN
SOUTHERN ROUTE FOR WESTBOUND STEAMERS
BERMUDA
MADEIRA
AFRICA
SECTION OF
PILOT CHART
OF
NORTH ATLANTIC
Month of July
U.S. Hydrographic Bureau
BORMAY & CO., N.Y.

Of the commerce of the great eastern markets the United States now holds less than six per cent. With the Pacific submarine telegraph already completed, the enlargement of the merchant marine, and the future opening of an Isthmian Canal, our trade with the Pacific lands will be materially increased.

It is impossible to calculate the advantages arising from the discovery of the use of telegraphy and its effects upon the commerce of nations. Without this instantaneous transmission of messages to almost every corner of the habitable earth, trade as we know it to-day would be impossible. The vast system of land telegraphs throughout the world, added to the submarine cables, brings up the total length of the world's telegraph lines to the enormous figure of 1,180,000 miles, the total length of single wires amounting to 3,800,000 miles. Over these lines 400,000,000 messages are sent annually, or an average of more than 1,000,000 messages per day.[1]

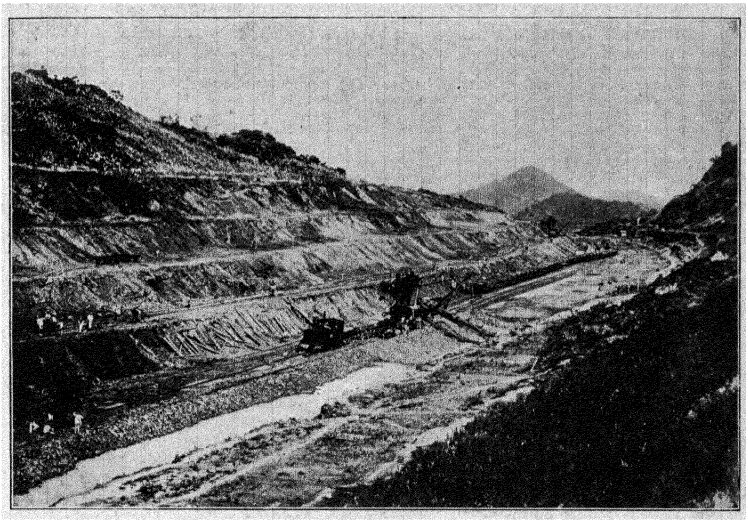
248. International Date Line. — The twenty-four hours of the day are reckoned from twelve o'clock midnight to twelve o'clock the following midnight. The change of day is constantly taking place to the westward because of the eastward rotation of the earth; the new day begins earlier at a given place than at places west of it. Thus, for example, when it is just past twelve o'clock midnight at London on a Monday morning, it is seven o'clock Sunday evening (the day before) at New York. On the other hand, in Bombay, for example, east of London, midnight comes about seven hours earlier, so that when it is midnight at London on the Monday morning in question, it is about seven o'clock of the morning of the same day at Bombay. From the earth's form and motion there can be no one natural point on its surface where the day can truly be said to begin or end. It has been found convenient to fix upon some line as marking the beginning of each day for the whole earth, without reference to the local day of any one place. The line chosen is the

[1] Monthly Summary of Commerce and Finance. Bureau of Statistics, Treasury Department; July, 1902, p. 19.

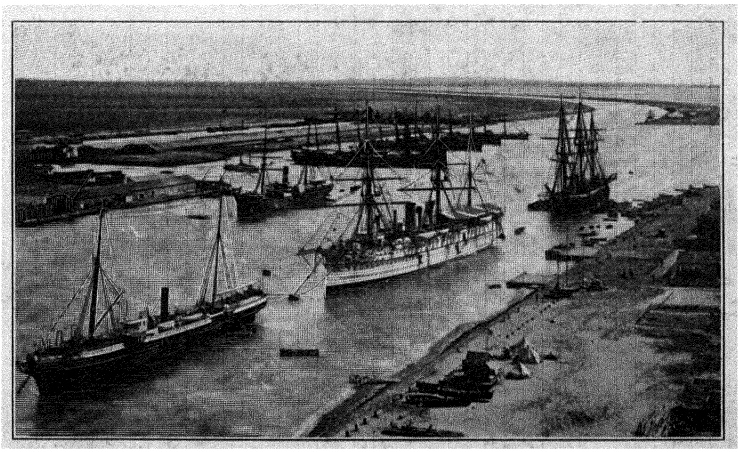

ARCTIC OCEAN
SIBERIA
RUSSIAN EMPIRE
ALASKA
DOMINION OF CANADA
NORTH AMERICA
VANCOUVER
UNITED STATES
MEXICO
CENTRAL AMERICA
WEST INDIES
PACIFIC OCEAN
ATLANTIC OCEAN
SOUTH AMERICA
PERU
BRAZIL
BOLIVIA
PARAGUAY
URUGUAY
ARGENTINE REPUBLIC
Cape Horn
AUSTRALIA
NEW ZEALAND
TASMANIA
NEW GUINEA
Port Darwin
Sydney
Wellington
New Caledonia
Norfolk Is.
Fiji
Samoa
Wake I.
Honolulu
Hawaii
Fanning Is.
Ladrone Is.
Guam I.
PHILIPPINE ISLANDS
Manila
Hongkong
Shanghai
Yokohama
Port Arthur
Vladivostock
Alexandrovsk
KOREA
EMPIRE OF JAPAN
CHINESE EMPIRE
AMERICAN
CABLE
BRITISH
San Francisco
Valparaiso
Rio de Janeiro
Rio Grande do Sul
Montevideo
Pernambuco
Bahia
Iquique
Callao
Panama
Jamaica
Cuba
Havana
Tampico
Vera Cruz
Galveston
New Orleans
Charleston
Boston
New York
Halifax
Harris Contract
Newfoundland
Labrador
Greenland
BRITISH ISLES
Valentia
Liverpool
London
Paris
Brest
Lisbon
Madeira
Canary Is.
Azores
S. Miguel
Faial
MOROCCO
Tangier
Algiers
Tunis
Malta
Gibraltar
Cape Verde Is.
Sierra Leone
LIBERIA
Bissao
Accra
Lagos
Benin
Libreville
CONGO STATE
Loanda
Benguela
Mossamedes
Zanzibar
Mozambique
Delagoa Bay
Cape Town
Cape of Good Hope
Port Elizabeth
Durban
MADAGASCAR
Louis
Mauritius Is.
Seychelle Is.
St. Thomas I.
St. Louis
SAHARA
AFRICA
ABYSSINIA
Suakim
Massowah
Aden
Berbera
Zanzibar
Mombas
Zanzibar
Bushire
Jask
Karachi
Bombay
Madras
CEYLON
PERSIA
ARABIA
HINDOSTAN
SUMATRA
INDIAN OCEAN
Odessa
Constantinople
Smyrna
Alexandria
EGYPT
Suez
Cairo
Alexandria
Malta
Corfu
Gibraltar
Lisbon
Madeira
Canary Is.
Azores
Faial
S. Miguel
Valentia
Liverpool
Brest
Paris
London
Copenhagen
Stockholm
Gothenburg
Helsingborg
Malmo
Wisby
Memel
Petersburg
Moscow
Archangel
Tornea
Hernosand
Gefle
Stockholm
Gothenburg
Helsingborg
Malmo
Wisby
Memel
Petersburg
Moscow
Archangel
Tornea
Hernosand
Gefle
SWEDEN
NORWAY
RUSSIAN EMPIRE
EUROPEAN SIBERIA
PRINCIPAL
SUBMARINE AND LAND
TELEGRAPH SYSTEMS
OF THE WORLD.
BORMAY & CO., N.Y.

180th meridian, the other half of the great circle that passes through Greenwich, England, and is known as the zero meridian. The 180th meridian forms the so-called International Date Line which runs north and south across the middle of the Pacific Ocean. The date line as observed, however, does not follow the meridian exactly, but bends once to the west and once to the east to suit certain political conditions. The actual date line passes through the middle of Bering Strait, then turns to the southwest until it reaches the meridian of 170° east longitude. By this arrangement the Aleutian Islands are all on the American side of the line. Then it sweeps eastward again to the 180th meridian, which it follows to the Fiji Islands. As these islands and many others near by belong to Great Britain, and are commercially connected with Australia and New Zealand, the line again swings to the east, giving the British possessions the same calendar day. After this deflection, the line returns to the 180th meridian, which it follows to the frozen regions of the Antarctic Ocean. For ships, however, the 180th meridian throughout its length is the date line. A ship in sailing eastward, when crossing the date line, always drops a day out of her calendar, because she passes from the area of the new day into that of the day before. For the same reason a ship sailing westward, when crossing the date line, adds another day, because she leaves the region of the day she was in and enters the area of the new day. If a ship crosses the date line eastward on Monday she drops that day out of her calendar, going back to Sunday again. When crossing to the westward on Monday she immediately takes up the next day ahead, or Tuesday.

249. Inter-oceanic Canals. — The Suez Canal was the natural outcome of the trade between western Europe and the Orient. It reëstablished the old trade to the Farther East, — a trade which in successive eras had enriched the lands lying about the Mediterranean. The volume of traffic through the Suez Canal amounts to a value of some $700,000,000 annually, or approximately one-half the value of the exports of the United States. One striking effect of the Suez



PANAMA CANAL IN CONSTRUCTION

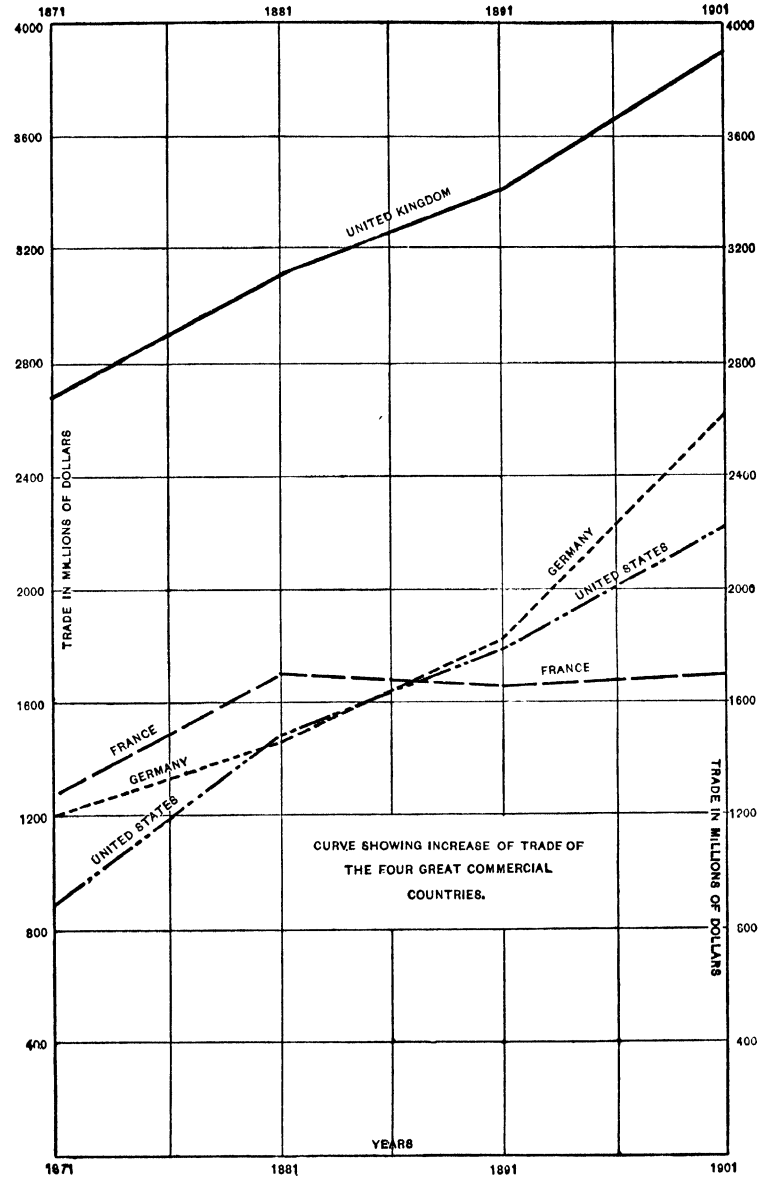


THE SUEZ CANAL AT PORT SAID

Canal was the increase of the steamship at the expense of the sailing vessel. Some 2,000,000 tons of sailing vessels were thus thrown out of employment. The long Cape route to India offered poor opportunity for frequent coaling, and the steamer was forced to carry a supply of coal that greatly reduced her cargo capacity. By the Suez Canal a steamer can coal at Gibraltar, Malta, Port Said, and Aden. On the other hand, the sailing vessel did not find it of advantage to pay the toll and towage of the canal and so held to the longer voyage around the Cape of Good Hope, and was at a considerable disadvantage. Improvements in steamer construction and in marine engines make longer steamer voyages possible; but it is quite certain that the opening of the Suez Canal caused a rapid change in the development of the merchant marine and of world commerce in general.

With the industrial and commercial ascendency of the United States, and the consequent shifting of so large a part of the financial interests of the world to the western side of the Atlantic, the opening of an Isthmian Canal to connect the Atlantic with the Pacific becomes a question of vital importance, not only to the United States but to the world at large. This projected canal when completed will open a short and direct trade route between the great industrial areas on both sides of the Atlantic and western South America and eastern Asia.

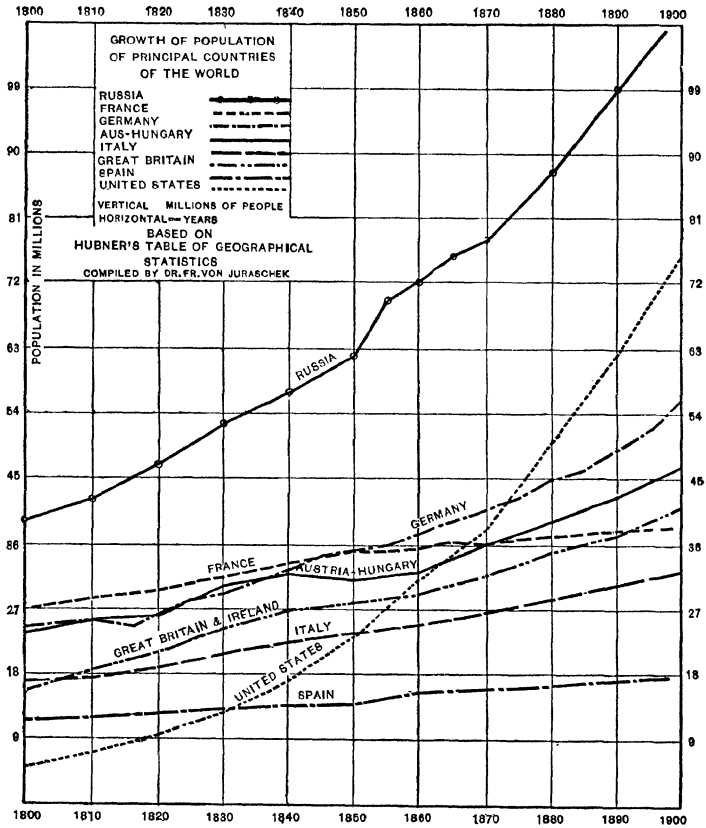
250. Trade Outlook of the Great Nations. — The United States, Great Britain, and Germany are to-day the chief rivals in world trade. The two latter countries have the largest merchant marine afloat, while the United States has by far the greatest producing and exporting capacity. In the last decade (1891–1901) the growth of Germany's foreign trade increased upwards of 36 per cent for imports, and upwards of 47 per cent for exports. The United States during the same period showed an increase in her foreign trade amounting to upwards of 9 per cent for imports and over 33 per cent for exports. Great Britain's foreign trade in the same interval increased nearly 20 per cent for imports, and over 13 per cent for exports.


1871
1881
1891
1901
4000
3600
3200
2800
2400
2000
1600
1200
800
400
TRADE IN MILLIONS OF DOLLARS
UNITED KINGDOM
GERMANY
UNITED STATES
FRANCE
FRANCE
GERMANY
UNITED STATES
CURVE SHOWING INCREASE OF TRADE OF
THE FOUR GREAT COMMERCIAL
COUNTRIES.
YEARS

These figures reveal the fact that while in the case of Germany and Great Britain the exports and imports have nearly balanced each other (in Great Britain the enormous importation of breadstuffs producing an excess over the export trade of the country), the difference between the exports and imports is very marked in the case of the United States. This is in large measure the result of a vast territory the productiveness of which has been steadily increased. The comparative sizes of certain European countries and the United States may be seen by a glance at the map on page 53. England and Germany, by utilizing all available territory, by the abundance of coal and iron, and by intelligent development of resources, have made their manufacturing industries so efficient that much of the raw material used in their factories must be imported. Manufactures give to England and Germany the power to purchase a foreign food supply. In order to place their wares in the world's markets and import food-stuffs and raw material from abroad, each has developed its great merchant marine, and exploited and colonized distant lands. This has offset in large measure the smallness of the home territory.

With the enormous production of raw materials and manufactures, that characterizes the recent economic development of the United States, there is a demand for an increased merchant marine to have the advantages that will come when American goods shall be carried in American ships. With this adjunct, and with a more widespread knowledge of foreign lands and of the customs, language, and needs of their inhabitants, the future place of the United States in the world's commerce is assured. European countries rely on the United States to a great extent for their food supply, and for much raw material for manufactures. Many lines of American goods are universally successful in the world's markets. These facts in themselves indicate the importance of America in international commerce. The expansion of the United States beyond its own vast territory into the newly acquired lands in the Pacific and the Caribbean is of

the utmost significance. We have placed ourselves before the gates of Asia on the one hand, and in closer touch with tropical America on the other, and are thus bidding for a large share in



the trade of the Orient and the western tropics. Attention has already been called to the great disparity in numbers of our vessels in South American ports as compared with those of England and Germany. In the keen rivalry for the world's trade we must

look to American shipping, and maintain that spirit of commercial activity abroad that has played such an important part in the internal development of the United States. With proper attention to the adjuncts of trade; with a utilization of her boundless natural resources; with the education and stimulation of the industrial and commercial genius of her people, who can undertake to set a limit to the future greatness of the United States? This country is entering a larger field. A knowledge of her native riches, an account of the part she is already playing in world trade, and familiarity with ways in which she may play a larger part, may well claim a place in the education of her citizens.

SUGGESTED QUESTIONS AND TOPICS

301. What are the general industrial and trade relations of temperate and tropical regions?

302. Describe in detail the methods of international settlement of trade balances.

303. Give an account of the origin and use of the metric system.

304. Investigate the work of the National Bureau of Standards.

305. Get pilot charts of the North Atlantic and North Pacific and trace the great highways of trade.

306. Give an account of the great ship canals of the world and show the relations of these to the principal branches of trade. (See monograph, *Great Canals of the World*, Bureau of Statistics, Treasury Department.)

307. Contrast the probable advantages of a canal across the American isthmus with those of the Suez Canal.

308. What is the difference between an "active" and a "passive" trade?

309. Trace the chief cables reaching from the United States to important regions of the world. Get a cable code and practice the condensation of messages. What about the commercial importance of "wireless telegraphy"? (See Report of Treasury Department's Bureau of Statistics, on *Submarine and Land Telephone Systems.*)

310. What will be the influence of an Isthmian Canal upon the transcontinental railroads of North America?

311. It is noon at Chicago: What time is it at Boston? at San Francisco? at London? at Constantinople? at Manila? at Honolulu?

312. What is a "liner"? What is a "tramp ship"?

313. On a map, indicate the great natural world divisions for trade. Summarize the descriptions of some of them as follows: (a) What countries included? (b) What products are characteristic? (c) What are the means of transportation?

314. Take the three great commercial nations mentioned on p. 377, show the whole value of the foreign trade, the principal productions, and exports and imports of each. Compare Russia with these.

315. Contrast the advantages of foreign and domestic commerce. How do the relative advantages differ with different nations?

316. What are the most promising fields for the surplus raw materials of the United States? What for its surplus manufactures?

Books to be Consulted

*Lawson, *American Industrial Problems*, Chapter XXX, Problem of the Future.

**_Commercial Relations of the United States._ Bureau of Foreign Commerce. Washington, D.C.

*Monthly Summaries of Commerce and Finance, Treasury Department. Washington, D.C. See especially Summary for February, 1903, containing *Statistical Abstract of the World.*

Bancroft, *The New Pacific.* New York; 1900.

*Marvin, *The American Merchant Marine.* New York; 1902.

Colquhoun, *The Mastery of the Pacific.* New York; 1902.

Sub-Marine and Land Telegraph Systems of the World. Summary of Commerce and Finance; July, 1902.

Adams, *America's Economic Supremacy.* Macmillan Co.; 1900.

**Proceedings of the International Commercial Congress. Philadelphia Commercial Museum; 1899.

**_Exports of Domestic Manufactures and their Distribution._ Monthly Summary of Bureau of Statistics; April and May, 1903.

APPENDIX

CURRENCIES OF PRINCIPAL NATIONS[1]

A. — *Countries with fixed currencies*

The valuations are those of the United States Treasury and do not include "rates of exchange."

COUNTRIES	STANDARD	MONETARY UNIT	VALUE IN UNITED STATES GOLD
Argentine Republic	Gold and silver	Peso	$0.96, 5
Austria-Hungary	Gold	Crown	.20, 3
Belgium	Gold and silver	Franc	.19, 3
Brazil	Gold	Milreis	.54, 6
Chile	do	Peso	.36, 5
Cuba	Gold and silver	Peso	.92, 6
Denmark	Gold	Crown	.26, 8
Ecuador	do	Sucre	.48, 7
Egypt	do	Pounds (100 piasters.)	4.94, 3
France	Gold and silver	Franc	.19, 3
Germany	Gold	Mark	.23, 8
Great Britain	do	Pound sterling	4.86, 6½
India	do	Rupee	.32, 4
Italy	Gold and silver	Lira	.19, 3
Japan	Gold	Yen	.49, 8
Netherlands	Gold and silver	Florin	.40, 2
Peru	Gold	Sol	.48, 7
Portugal	do	Milreis	1.08
Russia	do	Ruble	.51, 5
Spain	Gold and silver	Peseta	.19, 3
Sweden and Norway	Gold	Crown	.26, 8
Switzerland	Gold and silver	Franc	.19, 3
Turkey	Gold	Piaster	.04, 4
Uruguay	do	Peso	1.03, 4
Venezuela	Gold and silver	Bolivar	.19, 3

[1] *Commercial Relations of the United States*; 1902. Vol. I.

B. — *Countries with fluctuating currencies*

Countries	Standard	Jan. 1, 1903
China	Haikwan tael	$0.59,4
Bolivia	Silver Boliviano	.36, 1

RAILROAD MILEAGE OF THE WORLD (1900)

Miles of completed railroad in —

United States	193,452
Europe	176,174
Asia	37,469
Africa	12,501
Australasia	14,922
North America other than United States	28,245
South America	28,357
The total world's railroad mileage	491,120

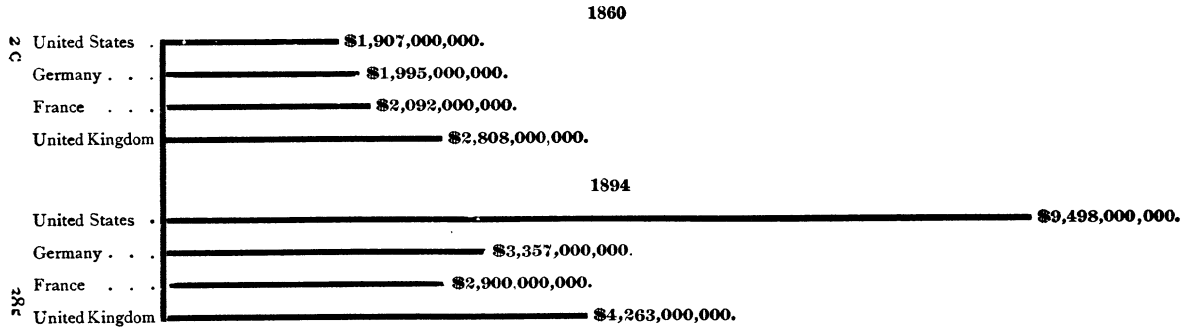
— Bureau of Statistics, Treasury Department.

WORLD'S SHIPPING OUTPUT[1]

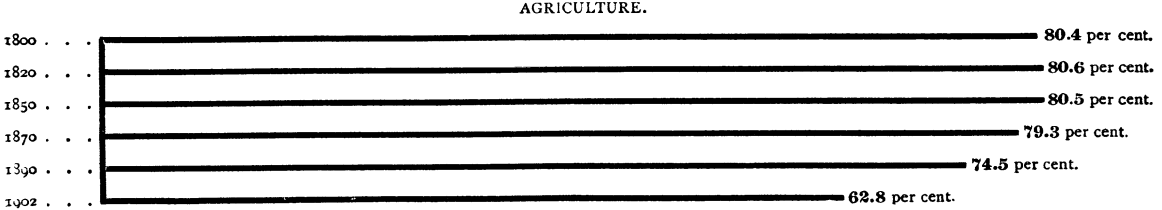
	1902	1901
	Tons	Tons
United Kingdom	1,644,654	1,820,368
British Colonies	24,700	7,738
United States	317,775	324,791
Germany	272,719	266,860
France	189,931	85,971
Holland	95,794	57,989
Italy	49,020	27,715
Japan	35,557	20,993
Norway and Sweden	34,314	50,666
Denmark	22,430	20,934
Austria	20,911	30,162
Belgium	15,933	13,700
China	6,281	9,888
Spain	2,040	327
Russia	965	3,399
Greece	. . . .	200
	2,733,024	2,741,701

[1] The "*Shipping World*" *Year Book*, 1903, p. 744.

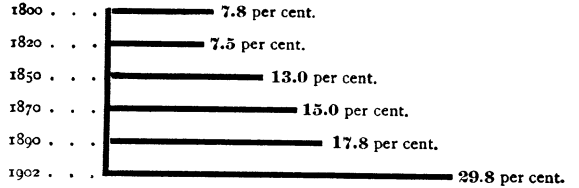
VALUE OF MANUFACTURES PRODUCED IN THE UNITED STATES, GERMANY, FRANCE, AND THE UNITED KINGDOM, RESPECTIVELY, IN 1860 AND IN 1894



SHARE WHICH PRODUCTS OF AGRICULTURE AND MANUFACTURES FORMED, RESPECTIVELY, OF THE TOTAL DOMESTIC EXPORTS OF THE UNITED STATES, 1800 TO 1902

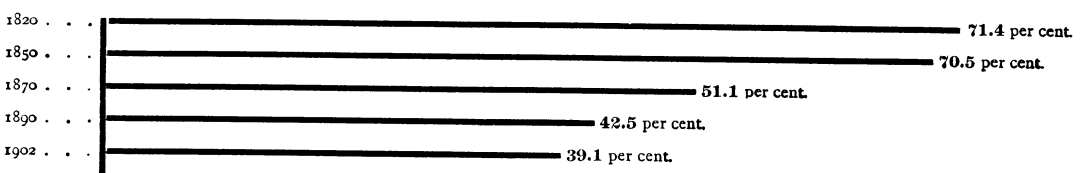


MANUFACTURES

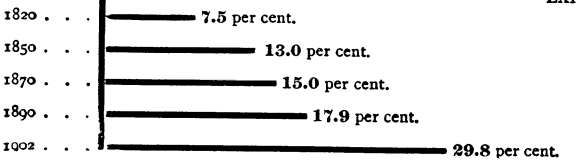


SHARE WHICH MANUFACTURES FORMED OF IMPORTS AND DOMESTIC EXPORTS, RESPECTIVELY, IN 1820, 1850, 1870, 1890, AND 1902.

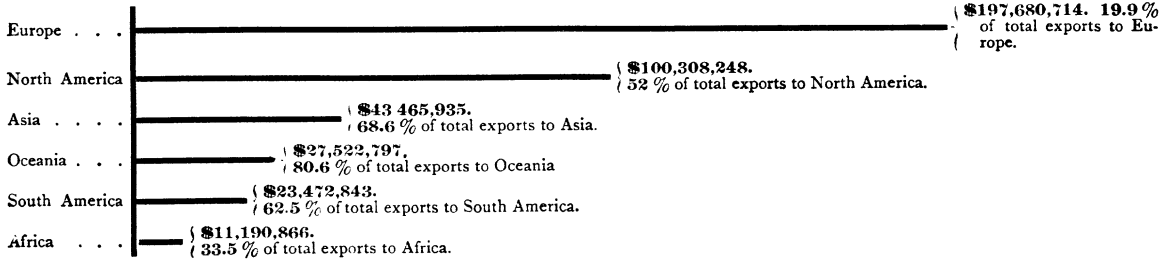
IMPORTS



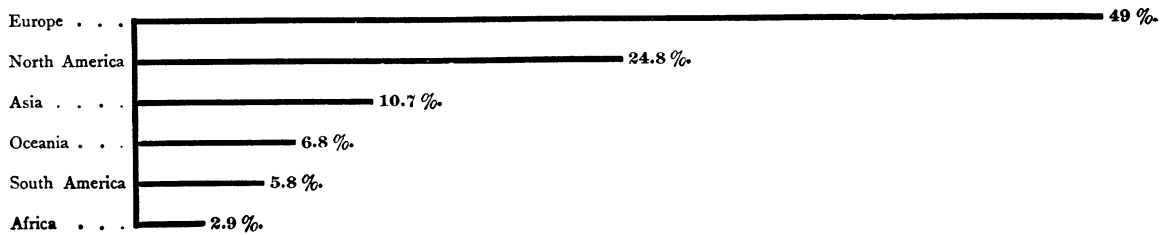
EXPORTS



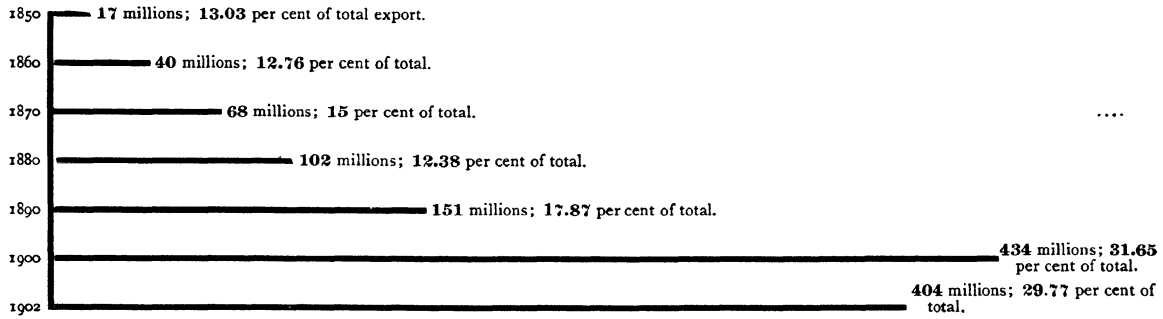
VALUE OF DOMESTIC MANUFACTURES OF THE UNITED STATES EXPORTED TO THE GRAND DIVISIONS OF THE WORLD IN THE FISCAL YEAR 1902 AND SHARE WHICH MANUFACTURES FORMED OF TOTAL EXPORTS TO EACH DIVISION



SHARE OF EXPORTS OF UNITED STATES' DOMESTIC MANUFACTURES SENT TO EACH GRAND DIVISION OF THE WORLD IN 1902



VALUE OF DOMESTIC MANUFACTURES EXPORTED FROM THE UNITED STATES IN DECENNIAL YEARS 1850 TO 1900, AND IN 1902



PERCENTAGE OF INCREASE IN PRODUCTION AND EXPORTATION OF MANUFACTURES AND AGRICULTURAL PRODUCTS FROM THE UNITED STATES IN 1870 AND 1900

CLASSES	1870	1900	PER CENT OF INCREASE
	Dollars	*Dollars*	
Agricultural productions	1,958,030,927	3,764,172,706	92.1
Agricultural exports	361,188,483	835,858,123	131.5
Manufactures produced	4,232,325,442	13,039,279,566	208.1
Manufactures exported	68,226,061	433,851,756	535.9

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