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ECONOMIC AND COMMERCIAL GEOGRAPHY

[*With a Detailed Treatment of India*]

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PREFACE

ECONOMIC AND COMMERCIAL GEOGRAPHY has been written mainly to provide, in a small compass, the essentials of World Economic Geography upon a topical-regional basis for students of Commercial Geography in India. The book naturally divides itself into two parts. The first part deals with an outline of the principles of Economic Geography ; the second part describes the world, region by region. The book does not lay any claim to originality and I must gratefully acknowledge my obligations to numerous periodicals and publications dealing with Geographical matters for much of material in the preparation of this book.

Dr. S. P. Chatterjee, M.Sc., Ph.D., D.Litt., F.G.S., Head of the Department of Geography, Calcutta University, read the manuscript and offered most helpful suggestions for which I am extremely grateful. For the critical reading of certain Chapters and valuable suggestions made, I am greatly indebted to my former colleagues, Prof. S. N. Chatterjee, B.Sc., Econ. (London), Prof. S. Roy, M.A. and Prof. S. K. Kar, B.Sc., A.S.A.A. (London) ; to Prof. R. B. Bose, M.A., B.Com., A.S.A.A. (London) of City College, Calcutta ; and to Prof. P. Guha of the Jagannath College, Dacca. I must also express my gratitude to my friend, Mr. R. K. Chaudhury, Director of the Hindusthan Cotton Mills Ltd., and the Calcutta National Bank Ltd., without whose encouragement I could not have prepared this volume.

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INTRODUCTION

Economic Geography is the study of natural environment and its influence on man's economic activities. It shows how the economic activities of man, so far as they relate to production, transport and distribution of commodities, and settlement of lands, are influenced by physical environment. It embraces those physical conditions which affect production, transport and exchange of commodities.

Economic Geography has two functions. In the first place, it gives a correct account of the existing economic resources of the world ; and in the second, it suggests ways in which the latter may be utilised for the benefit of mankind.*

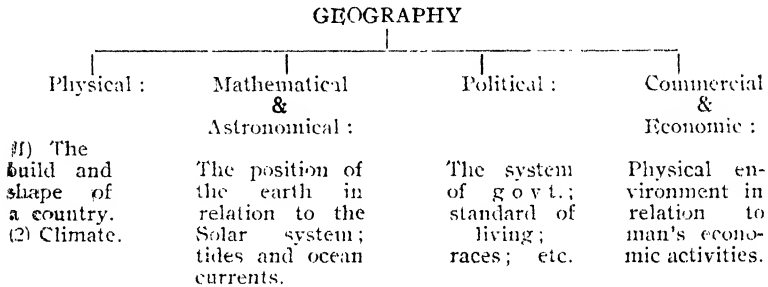
As a branch of knowledge, Economic Geography does not stand by itself. It is related to several other branches of Geography, like Physical Geography, Mathematical Geography, and Political Geography. It is also related to allied subjects like Astronomy and Geology. A proper grasp of these subjects, if not an essential preliminary, is at least very helpful to the understanding of Economic Geography.

The industry and commerce of a country are influenced by geographical features like the build, climate, and surroundings of lands—the subject-matter of Physical Geography, which is thus related to Economic Geography. It is difficult to study the economic conditions of a region without the aid of Political Geography, which deals with the inhabitants, government, institutions and laws. Geology studies the structure and formation of the surface of the earth and primarily deals with minerals, rocks and soils that exert a great influence on man. Mathematical Geography is concerned with the study of the earth as

* Properly understood and appreciated, Economic Geography is a help in the solution of the many of the political problems of the time."

a planet, its size, shape and movements, and also its tides and ocean currents which greatly affect shipping, climate and vegetation.

Economic Geography is, therefore, a part of the study of Geography.



The mathematical facts of Geography are fixed, unalterable and fundamental ; so also those of Physical Geography when measured by the term of human life. Political Geography alters rapidly and, therefore, observations often pass out of date. But the practical aspects of Commercial Geography change more rapidly. Hence dates are mentioned whenever any statement is made as regards production, trade and economic progress of a country.

Political Economy, Anthropology, Sociology, History, Botany, Biology and Chemistry also help the study of Economic Geography by supplying it with useful information.

CHAPTER I

MAN AND HIS ENVIRONMENT

“*The mode of life of a people in any region is not an accident but the result of environment.*” It is one of the most important factors in determining man’s needs, productions, habits and mode of life and his degree of progress in civilisation. To-day different countries are at different stages of economic development. In some regions people are active, progressive, industrious and highly commercialized, while in others people are backward and indolent. Some countries are noted for manufactures and others for agriculture. These differences in economic activities may be partly explained by an analysis of the co-relation between man and his environment. The same type of environment may not necessarily produce a common mode of life. Environment offers certain opportunities which men may or may not utilise. Men’s ability in exploiting the resources of the environment will depend upon their knowledge, intelligence and culture.

Environment may be physical or non-physical. Economic Geography is mainly concerned with the former. Physical environment includes within its scope the situation, climate, coast-line, topography, natural resources and rivers of a country.

Physical Factors Affecting Commerce

Situation (i.e., location) is a matter of fundamental importance in the commercial development of a region. The situation of a place or a country may be of any of the following types—continental, littoral, isthmian, insular and peninsular.

Russia, Poland, Bolivia and Czechoslovakia afford examples of *continental* location. The important trade routes of the world are far off from these countries. In short, continental locations are remote and isolated from the standpoint of accessibility. A *littoral* location is enjoyed by Norway, Sweden and the Baltic States, from where the world’s routes are marginally accessible.

The British Isles, Japan, Italy, India and Newfoundland possess *insular-peninsular* locations. The principal trade routes of the world are openly accessible to them. Situation is favourable when a country possesses natural frontiers and mild climate and is in close proximity to the world markets with proper facilities for the movement of goods and persons. Frontiers are important from the point of view of defence, commerce and nationality. There are two types of frontiers—natural and artificial. Natural frontiers are seas, mountains, deserts, swamps and rivers, which make foreign aggression difficult and breed a spirit of independence. The frontiers of the British Isles, being seas on all sides, are not liable to changes due to wars and political revolutions. Hence the economic conditions of this country are free from changes due to alterations of boundary. In Europe, where desert frontiers are absent, the use of the river as a political frontier is very common. The following are some of the examples: (i) the Middle Rhine separates France from Germany, (ii) the Middle Danube separates Hungary from Czechoslovakia, (iii) the Drave separates Hungary from Yugoslavia, and (iv) the Lower Danube separates Rumania from Bulgaria. Artificial frontier means land frontier when it is not marked by clear-cut geographical features like mountains, deserts, etc. It is determined by historical circumstances, agreements, treaties or wars. The frontiers of Poland, Czechoslovakia, Rumania, etc., are artificial and therefore these are frequently affected by political changes. The result is that the trade and industry of these countries are sometimes favourably or adversely affected by changes of boundary. Britain furnishes an example of a country whose position in the centre of the world has greatly contributed to the growth of her foreign trade. No part of the commercial world is too far from her and she is provided with proper facilities for the movement of goods and persons. Similarly, India, at the centre of the Eastern Hemisphere and with her three sides open for sea navigation, is situated admirably for commerce. The location of Japan in the Pacific Ocean is also an ideal one.

It is easy for a country, situated in the vicinity of industrial

areas, to develop trade and commerce. Italy was once a backward country ; but in the nineteenth century she borrowed industrial ideas, inspiration and technical processes from the neighbouring industrial countries. To-day she has become a powerful industrial country. Commerce suffers heavily when the situation is such that physical obstacles are many, boundaries are artificial and water transport is not possible. The locations of Siberia, Greenland, Chile and Alaska discourage a ready interchange of ideas and the growth of commercial relations.

Nature of the coast-line is another geographical factor which influences man in his economic activities. Only a few countries possess no coast-line. Afghanistan, Switzerland, and Bolivia are examples of the kind. The coast-line, which plays an important part in promoting or retarding the development of an area, may be of various types—smooth, high, low and broken. To be of commercial service, it must be irregular, that is, broken, so that the sea may reach far inland. By minimizing the violence of the waves, affording protection to vessels and allowing them to reach far into the interior, a broken coast-line makes possible the development of harbours and ports, and consequently contributes to the easy exchange of commodities and the growth of industry and commerce. In Great Britain, which has a largely indented coast-line and where no part of the country is more than a hundred miles off from the sea, the cost of getting exports to the sea is reduced to the minimum and the expense of shipping imports from one port of the island to any other is correspondingly small. The commercial greatness of Holland was partly the result of her broken coasts. It has been said that “the character of the coasts has made the Dutch essentially a commercial nation.” By their constant association with the sea, the Dutch have become sea-faring, adventurous and enterprising. It must be admitted, however, that other factors may spoil the advantages which a country usually derives from a broken coast-line. Greece has a broken coast-line and in ancient times the Greeks were a sea-faring and commercial people. The modern Greeks, however, have so far failed to utilise the

advantage that Nature has given them ; they are neither sea-faring nor commercial.

When the coast-line of a country is regular or high, it is very difficult to construct ports and harbours. Trade and commerce consequently suffer. The coast-line of India is not generally favourable to the construction of numerous ports and harbours, inasmuch as the western margin is regular and open to the violence of the monsoon and the eastern side is surfbound. Consequently there are only a few major ports like Karachi, Bombay, Calcutta, Madras and Rangoon along the entire coast-line of India. The vast continent of Africa is equally unfortunate in this respect. The coast-line of Norway, though very much broken, consists in many places of high and steep mountain walls and, therefore, it does not present "opportunities for collecting produce for shipment or for disposing of incoming cargoes."

Of all the factors of physical environment, none has played a more important role than rivers in helping man's progress and civilisation. The four great river-valleys—the valleys of the Nile, the Tigris and the Euphrates, the Indus and the Ganges, and the Hwang-ho—are the cradles of civilisation. Rivers are natural transporting agents ; they are essential for the distribution and exchange of goods. Rivers flowing to the wrong directions are, however, of little commercial value. Most of the rivers of Canada and Russia are flowing either to the inland seas or polar regions. To be useful as transporting agents, rivers should possess certain physical characteristics : (1) They should be free from ice. (When they are ice-bound during winter, like the rivers of Canada and Russia, continuous traffic is impossible). (2) They should be deep enough to allow steamers and barges to ply. The Congo, Zambesi and Amazon have insufficient depth at places which hinder navigation. (3) They should not have rapids and falls. (4) They should not get dry during summer.

A distinction may be made between snow-fed rivers and rivers fed by rainfall. The snow-fed rivers have, in general,

constant flow of water, whereas rain-fed rivers have water during the rainy season only. The rivers of Northern India—the Indus, the Ganges and the Brahmaputra—possess most of the attributes of good navigation. Naturally, they provide highways of carriage and add to the wealth of the vast plain intersected by them. Several thousand miles of canals and channels have been constructed by building dams across these rivers to supply water to millions of acres of land. The rivers of Southern India, on the other hand, not only dry up during summer ; they also have rapids and falls. They are all useless for navigation. Brazil, China, Columbia and Russia have poor railway facilities and depend mainly upon rivers for transport. In advanced countries, as in France, Germany and the U. S. A., the rivers are used side by side with railways.



FIG. NO. 1. The cradles of civilisation. The valleys of the Nile, Ganges, Hwang-ho and Tigris present favourable geographical conditions for the growth of civilisation. These conditions are the fertility of soil, natural protection and climate.

Apart from their importance as transporting agents, rivers have other uses too. They fertilise the valleys through which they flow. All kinds of vegetation and economic products grow on the river plains. "The three great rivers of Hindustan supply soil, manure, moisture and highways of carriage for all

the wealth of the plain." Many countries would have remained agriculturally backward for want of serviceable rivers. "Egypt is the gift of the Nile," so goes the saying. Without it, Egypt

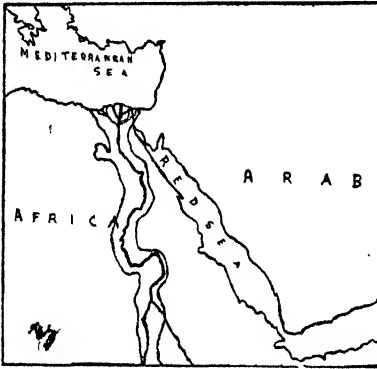


FIG. No. 2. The valley of the Nile invited a settled life in the midst of desert.

would have been a desert.

The Nile has made the country the granary of Africa, where wheat, cotton, fruits, barley, etc. are cultivated extensively. The Nile brings down from Abyssinia fertilising mud and provides the means of irrigation. During the rainy season the Nile rises up by many feet ; embankments have been constructed to check flood.

The water is distributed throughout the region by

canals to provide perennial irrigation. Water is stored at Aswan to be utilised for the cultivation of summer crops.

Mountains, as a rule, restrict settlement greatly. High, rugged mountains impose tremendous handicaps upon the movement of people, the spread of population and the building of roads and railways. The population in a mountainous region is sparse, poor and backward. Agriculture is difficult because of the scarcity of level land, erosion of soil, difficulty of using large-scale machinery and the scattered location of the fields. Manufacturing is beset by many obstacles like poor facilities for transportation, dearth of skilled labour and great distance from consuming markets. No wonder, then, that the mountaineers have standards of living lower than those of the people of the plains. Yet mountains offer great benefits in many ways. First, in many countries they are responsible for causing rainfall ; they influence the climate by keeping off winds or by condensing them. The Himalayas protect India from the severe cold winds of the North during winter, and during summer they cause

rainfall by capturing moisture-bearing South-West winds. Secondly, mountains are usually sources of rivers. The rivers of India flow from the mountains. Thirdly, they afford valuable pastoral grounds. Practically in all mountainous regions of the temperate zone, grazing and stock raising are the mainstay of thousands of people dealing in dairy products. Fourthly, they are responsible for the growth of forests on the slopes which offer varieties of raw materials for many industries. The great forest region of India is situated on the lower slope of the Himalayas. Fifthly, they are sometimes great store-houses of mineral wealth. In Canada, U. S. A., Mexico and U. S. S. R. many productive mines lie in mountainous regions. In these areas, aerial ropeways are often used. Sixthly, in the tropics the mountains make excellent pleasure and health resorts, particularly during the hottest months. The refreshing air and the beautiful scenery of mountains attract a large number of people from the plains in summer. Lastly, mountains cause waterfalls from which water-power is obtained for the generation of electricity for industrial purposes. Norway, Sweden, Austria, Spain, Switzerland and Italy afford examples where hydro-electricity has been developed because of the existence of many hill-streams and falls. It is, therefore, no exaggeration to say that "the influence which mountains exert on man and his activities is one of the most positive of geographical forces." The water and air in the mountains being pure and wholesome, the mountain people have better health and more energy than the inhabitants of the plains. The mountain people are generally conservative and lead a very hard life. Being detached from outside influences, these people adhere to their old customs and practices. By nature they are honest and industrious. In recent years the development of communications has to a large extent removed the isolation of many mountain regions and brought the inhabitants into close touch with the world outside.

Though plains occupy about one-half of the earth's surface, they are the home of more than 90 p.c. of the people of the world. Plains, when they are not deserts or swamp lands, are

densely populated, and people usually settle in them as long as space is available. People do not like to settle on lowlands which have bad climate, poor drainage and unproductive soil. The economic activities of man are the greatest on the plains, due to many advantages enjoyed there. The levelness of relief facilitates agriculture and transportation. The principal agricultural belts of the world are all confined to plains where temperature and soil do not vary suddenly. Plains are convenient for transport. Railway lines are easily constructed, and more than 85 p.c. of the world's railway mileage is found in the plains. The rivers in the plains have slow current essential for navigation. The Rhine, Elbe, Rhone, Danube, Dneiper and Don in Europe, the Mississippi in the U. S. A. and the Ganges, Brahmaputra and Indus in India flow through gentle gradients of the plains, and are, therefore, easily navigable. In the temperate zone, timber is an important product of the plains. The ease of mobility on plains facilitates the exchange of goods and ideas. It is no wonder, therefore, that in agriculture, manufacturing, transportation and trade the greatest development has taken place on plains. Nearly all the great cities of the world are on plains.

But all plains are not equally hospitable for human settlement. Adverse climate may negate all other advantages of the plains. "Some plains are too dry, others, too hot, while still others are too cold for human occupation." The Belgian Congo, the Amazon basin, the Sahara and the Tundra are thinly populated, although these are plains.

↳ *Minerals, forests and fisheries are the chief and natural resources of a region.* The important role played by natural resources in determining the economic life of a nation can hardly be exaggerated. Mineral wealth generally changes the mode of living. Mining is the chief industry of the mineral areas. Many regions have been industrially developed in course of exploiting mineral products: South Africa is a prominent example. Gold is abundant there and its development has given rise to many other subsidiary industries in the country. "Gold mines are

the backbone of South Africa." Similarly, Australia owes its industrial progress to her mineral products.

In the forest regions, the main industry of the people, as a rule, is lumbering ; other occupations also depend largely on the products of the forest. The forest areas of Norway and Sweden are large ; boat-building, paper and match-making and furniture industries have grown out of the plentiful trees available there. The animals of forest regions supply hide, skin and wool to the world markets. The fur-bearing animals of Canada are abundant in the forest region of the Hudson Bay ; they are trapped and killed for their pelts. The influence of forests on climate is also far-reaching. They arrest the moisture-bearing winds and cause rainfall and as such they are very important in countries where agriculture is the chief industry.

Countries surrounded by oceans and seas in the temperate zone are generally noted for fishing industry. Great Britain, Norway, Nova Scotia, New Zealand and Japan have greatly developed this industry. Fishing in the high seas is the best training ground for shipping. The maritime supremacy of Great Britain is partly due to training and courage acquired by her sons through centuries of fishing in the surrounding seas.

Climate exercises a great influence on man. It is everywhere a factor which affects man and his activities. The two fundamental necessities of man are food and shelter and they are determined by climate. Natural vegetation is directly dependent on it and "this in its turn is a guide to the kind of activities which will be found suitable to a particular region." Some regions are practically ruled out of account as possible homes of man. The deserts and snow caps of the world are of this nature ; human life can exist there but only with considerable difficulty.

Climate can influence the development and localisation of certain manufacturing industries. The cotton industry requires humid atmosphere for its localisation. The fibres of cotton will break, if they are spun in dry atmosphere. The localisation of the cotton industries in Manchester, Bombay, Ahmedabad and

Osaka has been determined by the moist climate of these places. Flour-milling requires dry climate, and is, therefore, localised in Budapest, St. Paul, Minneapolis and Karachi. Even Cinematography is dependent on climate because it requires bright, sunny weather. In like manner, rope-making, printing and paper-making depend on the conditions of weather. Climate also decides the type of manufactures. The climate of India, being hot and moist, favours the development of cotton industry, because the people require a material which must be light to wear. The severe cold during the winter months in Kashmir has directed the growth of woollen industry which can be carried on "indoor". In the present age, however, the localisation of manufacturing industries is not to any great extent controlled by climatic conditions. Science has made it possible to make arrangements for creating necessary air conditions in mills and factories.

Transport is affected by winds, temperature and rainfall. Heavy snowfall may render railway routes and roads temporarily impassable, and low temperature may block rivers and seas with ice. The Baltic Sea is ice-bound during winter and traffic is suspended for that period. The severe winter of North Russia and Canada freezes all the rivers. Air transport also greatly depends on climate inasmuch as it is dangerous to fly in stormy and foggy weather. In the hot deserts, the construction of railways is interrupted by sand-dunes.

The activity of mind and body largely depends on temperature. This is why dwellers in certain regions are most active in body and mind and dominate the world. In the active life of the temperate zone, climate incites man to employ all his faculties for the betterment of his conditions. But the climatic conditions of the tropical zone are not favourable to the development of body and mind ; so progress is slow in these regions. Climate, therefore, is the main factor in determining the health, energy, productivity and civilisation of the people in any region.

One of the most indispensable natural assets is soil. Our food and clothing and much of our shelter are derived directly

or indirectly from soil. Population is always dense where the soil is fertile because of agricultural possibilities. Agriculture is always the basic industry in fertile regions. Quality of the soil has made agriculture an important source of wealth in India, China and the U. S. A. Soil is considered fertile when it contains an abundance of plant food in such a state that the plants can appropriate it as needed. There are different kinds of soil. A sandy soil is one whose composition is nearly three-fourths sand. A clay soil is about half clay, while a lime soil is about one-fifth lime. A peaty or vegetable soil is made up of peat or vegetable matter. Loams are soils containing a mixture of clay, sand, lime and decayed vegetable matter known as humus.

The form and size of a country also play a significant part in the national economy. Form may be compact, fragmented or attenuated. A *compact form* like that of U. S. S. R. or Rumania or India or China presents excellent transport facilities and opportunities for political unification. A *fragmented form*, as in the case of Greece, imposes barriers against the movement of goods and ideas. An *attenuated form* like that of Chile (long but not wide) hinders farming operations.

The size of a country may be small, large or gigantic. A small country with an increasing population cannot depend on agriculture as the main industry. As the land is limited, agricultural produce cannot be large. Intensive cultivation may be practised, scientific manuring and other improvements may be introduced ; but there is a limit beyond which the produce will not increase. Hence people are compelled to develop other industries, and ultimately foreign trade becomes more important than internal trade and agriculture. Great Britain, Belgium and Japan are small countries with vast populations, where there has been great development of manufacture and foreign trade. A large country, on the other hand, like China or India, with dense population will cause both agricultural and manufacturing industries to develop. But it may not have a large volume of international trade, because the bulk of its products may be

required for the consumption of, its people. Scanty population in a large country gives rise to stock raising, as for example in Central Asia, Argentina and Uruguay.

The increasing pressure of population in smaller countries necessitates migration. Emigration from European countries to foreign lands became frequent after the beginning of the Industrial Revolution (which led to a rapid increase in population) in the eighteenth century. It is interesting to note that the European peoples have always migrated to temperate lands or to regions having temperate climates. Thus, Canada, U. S. A. Mexico, Brazil, Argentine, South Africa, Patagonia, Temperate Australia and New Zealand have been colonised by the Europeans.

The term *colony* must be distinguished from dwelling or settlement. A colony is a possession "in which definite settlement takes place wholly or mainly by people from the home country."

Non-Physical Factors Affecting Commerce

The economic activities of man are to a great extent determined by the character of the race, religion and government. These constitute the social (*i.e.*, non-physical) factors affecting commerce.

The economic importance of race is very great. The human race is divided into three principal colours—Black, White, and Yellow. These great races of mankind share the world's commerce unequally. The characteristics of the white peoples are an oval face, regular features, straight eyes, a finely-cut nose and white or light skin. It is generally found that the regions inhabited by the white people are commercially and politically developed to a high degree and that the control of the world trade is entirely in their hands. Their commercial and political supremacy is largely due to climate, which has made the race persevering, energetic and intelligent. "This race has exercised a great influence on the development of civilisation, in the

establishment of sound social institutions, the free regulation of political and economic life and in the domains of Science, Technology and Art." The White Race includes the greater part of the inhabitants of Europe, North America, India, Middle and Near-East including Egypt and North Africa. The Yellow Race inhabits chiefly Northern-Eastern and Central Asia and has its greatest concentration in China and Japan. It is advanced in civilisation and takes an important part in trade.* The peoples have short statures, yellow skins, flat faces and narrow slanting eyes. The Black Race occupies the tropical regions ; it is the least civilised and takes a small part in trade. It shows in the most pronounced way the enervating and degrading effect of tropical heat and luxuriance. "In the case of the Negro, climatic influences—acting direct and through the tropical food—lead to the early closing of the 'seams' between the bones of the skull ; and thus the development of the brain is arrested, and the adult is essentially unintellectual." These peoples have dark skins, flat faces, broad noses and coarse and projecting lips.

These races are sometimes called (a) the Caucasic, (b) the Mongolian, and (c) the Negro.

DIVISION OF THE RACES AND THEIR NUMBER

Caucasians	...	...	...	726,000,000
Mongolians	...	...	...	665,000,000
Negro	...	...	...	190,000,000
Malayan	...	...	...	52,000,000
Red Indians	...	...	...	23,000,000
				1,656,000,000

* China, India, and Japan are fast developing industries and manufactures; production, in both raw materials and finished goods, is increasing rapidly. New shipping routes are being established and new markets are growing. The importance of the Pacific is growing more and more and already much of the trade of the Atlantic has come to it.

The four main religions of the world are :—(1) Christianity, (2) Buddhism, (3) Islam, (4) Hinduism.

Influence of religion on man's economic life cannot be ignored. By prohibiting certain activities and restricting others, the injunctions of religion not only regulate man's philosophy of life but also formulate the nature of his economic activities and ideals. Buddhism, with its doctrine of *Ahimsa*, has made its followers in China and Japan averse to stock raising for meat and wool.

The eastern regions of the Mediterranean, which are favourable for the vine, have not developed any wine industry because the population is predominantly Muslim, to whom wine is prohibited by religion.* Among the Muslims banking institutions have not developed because Muhammad prohibited acceptance of interest from borrowers. There are more than 300 millions of Muslims in the world. North Africa, Western and Central Asia, North-West Frontier Province, the Punjab and Bengal in India, North-Western China, Dutch Guiana in South America, Albania, Turkey and Kirghizia (U. S. S. R.) contain a large Muslim population. For religious reasons these lands have hardly any pigs. 135L

The Hindu society, whose numerical strength exceeds 215 millions, is divided into different castes to each of which occupations and duties are prescribed by religion. People of one group or caste are not generally permitted to follow the profession of other groups. Supply of labour for each group is thus fixed, and it is difficult to develop large-scale production. The pressure of Western ideas and the requirements of modern economic organisation have to some extent relaxed the rigidity of the caste system, so far as its economic aspect is concerned.

Christianity admits of no such peculiar restrictions. To the liberality of its principles the progress of Europe and America

* But there is much demand for coffee in place of alcohol in these countries.

can be partly traced. Christianity includes three different varieties: Roman Catholic, Protestant and Greek Apostolic. The number of Roman Catholics is the largest and is estimated at more than 330 millions. They predominate in South, West and Central Europe, South America (excluding Brazil and Argentine), Mexico and the north-east of the U. S. A. The increasing domination of the Christian peoples over the earth, the gradual acceptance in all countries of their civilisation and the progress of modern education and culture are all weakening the influence of religion on the economic activities of man. But in the backward countries religion still remains a vital factor in economic organisation.

The commercial progress of a country is largely affected by the character of its government. Bad government always retards industry and trade; good government promotes them. In Mexico the natural wealth is vast, but as the government is not stable, revolutions and banditry are frequent, commerce is unprogressive. The absence of a strong and powerful government has made China a poor country in spite of her vast natural resources. Japan has industrialized herself completely with the help of the state which took the initiative in starting model factories and mills. Before the last World War the German Empire extended her commerce with the active support of the state.

The extent and density of population in any area influence commerce to a certain degree. The population of the world is generally distributed according to the possibility of obtaining food directly or indirectly. The largest volume of commerce can grow in densely peopled areas, since sparsely peopled regions need little to purchase and have little to sell. An area may be rich in natural resources but unless it is well populated, the resources will not be exploited because scarcity of population means lack of capital and labour. The most densely populated parts of the world are usually (a) in the neighbourhood of coal and iron mines which form the basis of the manufacturing industry, (b) along some sea coasts where the

FACTORS AFFECTING COMMERCE

Physical.							Non-Physical.			
Climate	Situation & Size	Topography	Soil	Rivers	Natural resources	Coast-line	Race	Religion	Govt.	Density of population
(a) Production. (b) Transport. (c) Labour. (d) Industry.	Determine commercial intercourse.	(a) Plain favours settlement, develops agriculture, transport & commerce. (b) Mountain : sparse population ; minerals found ; forests abundant ; water-power available.	Vegetation.	(1) Natural transporting agents. (2) Fertilizers of valleys. (3) Develop hydro-electricity. (4) Favour growth of towns and cities.	Fishing, Mining, Lumbering.	(a) Regular : unfit for ports. (b) Irregular : excellent for ports.	White—prominent in industry ; Black—least civilized ; Yellow—progressive.	Encourages or discourages certain occupations & consumption of certain goods.	Good govt. promotes commerce ; bad govt. hinders it.	Sparse population—Stock raising ; Dense Population—Agriculture and Manufactures.

cheapest commercial routes are at hand, and (c) in the monsoon lands of South-East Asia.

The great deserts of North Africa, Arabia and Australia, parts of the arid interior plains and the basins of Asia and North America, the extensive coniferous forests and the Tundras of the North, together with the Savannahs and forests of the monsoon region of Australia and a large proportion of the Savannahs and equatorial forests of South America are practically uninhabited.

QUESTIONS

1. "The mode of life in any given region is not an accident but is a product of environment." Explain this statement. (I. P. S. 1931).
2. "The nature of coast-line of a country affects its commercial and industrial development to a great extent." Discuss this statement with at least two examples. —(Cal. Inter. 1926).
3. Write a short essay on the effect of climate on manufacturing industries. —(Cal. Inter. 1933, 1937).
4. Write a short essay on the effect of climate, both direct and indirect, on the industries of a country. Illustrate your answer with some conspicuous examples. —(Cal. Inter. 1926, 1942).
5. "The race, government and religion influence the commerce of a country to a certain degree." Support this statement by illustrations. —(Cal. B. Com. 1923).
6. "The three great rivers of Hindustan supply manure and moisture and highways of carriage for all the wealth of the plain." Explain this statement and name the three rivers. —(Cal. B. Com. 1923).
7. Give an account of the chief factors which determine climate. Illustrate your answer with reference to the continents of the world.
8. "Man's character and occupation have been decided by the geographical conditions under which he lives." Illustrate this remark with reference to Japan and India. —(Indian Institute of Bankers, 1939).
9. "The general configuration of a country affects her agriculture and commerce in many ways." Discuss this statement. —(I. I. B. 1940).
10. Write a short essay on any one of the following: (i) Land configuration as a factor in economic geography, (ii) geographical location. —(I. I. B. 1941).

11. "No factor of his environment exercises a wider influence on man and his economy than climate." How far is this remark true? Give precise illustrations. —(Indian Institute of Bankers, 1940).

12. "The human habitat is influenced largely, if not wholly, by the soil and the climate in which man lives." Illustrate this statement with reference to examples. —(Dacca Inter. 1941).

CHAPTER II

THE CLIMATIC AND NATURAL REGIONS

The same type of climate does not prevail all the world over. Some countries have hot climate, some possess mild climate and others have extreme or cold climate. Economic products the standard of economic progress generally vary with differences in climate. The world may be classified into certain natural and climatic regions according to the similarities of climate, products and degree of economic progress.

Prof. Herbertson defines *natural region* as "an area of the earth's surface which is essentially homogeneous with respect to the conditions that affect human life." Within each natural region climate, vegetation and general methods of living are similar.

In speaking of natural regions, the following considerations should be noted: The physical conditions are never fully identical in any two widely separated areas and, therefore, it must not be supposed that because they are classified as belonging to some particular type of natural region, they have all conditions in common. Secondly, the classification of natural regions, primarily on a climatic basis, is at best an approximation and the placing of regions in a particular category means that they have more resemblances than differences in common. Thirdly, the limits of any natural region are also approximate. The change from one natural region to another is often very gradual and not abrupt. Fourthly, natural regions do not conform to political boundaries.

A study of natural regions is important from the point of view of industries, because the character of a natural region enables the inhabitants of that region to solve the problem of industrial development to a great extent. The East Indies, Brazil and Belgian Congo belong to a common natural region. If rubber can be grown in Brazil and Congo, there is no reason

why this plant cannot be raised in the East Indies. As a matter of fact, thirty years ago, Brazil and Congo had monopoly in rubber supply. But subsequently, rubber plantations were opened in the East Indies and Malaya from where more than 90 p.c. of the world's rubber was put in the market before the occupation of those countries by Japan.

1. *Types of Tropical Hot Lands.*

(a) Wet Equatorial Forest Region or Amazon Type.

(b) Monsoon and Sudan Regions.

(c) Western Desert or Sahara Type.

(d) High Plateau or Bolivian Type.

2. *Types of Warm Temperate Lands.*

(a) Western Marginal Region or Mediterranean Type.

(b) Eastern Marginal Region or China Type.

(c) Interior Lowland or Turan Type.

(d) Interior Highlands or Iranian Plateau.

3. *Types of Cool Temperate Lands.*

(a) West European Regions or Temperate Oceanic Region.

(b) Eastern Region or St. Lawrence Type.

(c) Interior Lowland or Siberian Type.

(d) Interior Highland or Altai Type.

4. *Polar Region.*

1(a). Wet Equatorial Forest Region or Amazon Type

The climatic features of this region include high temperature, very slight seasonal changes and heavy rainfall throughout the year. Temperature is high because the sun always shines from a very high position in the sky. Again, the constant excessive heat keeps the air warm and makes it expand and rise. On reaching higher levels, it cools so much that its moisture is condensed and then falls as rain. Equatorial areas are, therefore, wet as well as hot. The chief areas belonging to this region are the Amazon basin, the Congo basin, Malaya Islands, East Indies and the coastal plains of Columbia in South America. In these areas dense vegetation covers everything. Huge trees of great variety spread out their branches and make the lower

part of the forest half dark. *So the equatorial regions are sometimes described as regions of twilight.*

PENANG (S. E. ASIA), HEIGHT 23 FT.

	J	F	M	A	M	J	J	A	S	O	N	D
T° F	79.7	80.1	81.3	81.7	81.5	80.6	80.2	79.9	79.5	79.7	79.2	78.8
Rain	3.9	3.0	4.7	7.0	11.0	7.2	8.9	12.8	19.0	16.1	10.9	4.8

“Human life in such a region has altered little since the earliest days of man’s occupation of the Earth. The climate encourages indolence, and needs are few, for an abundance of food is obtainable without effort and the requirements as to clothings and shelter are at a minimum.”

Some parts of the equatorial region contain valuable minerals: tin in Malaya Peninsula and the East Indies, graphite in Madagascar and Ceylon, bauxite and manganese in the Gold

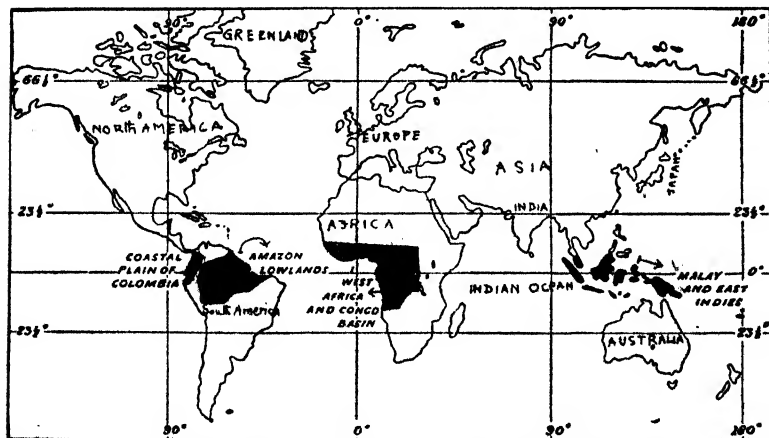


FIG. NO. 3. Distribution of equatorial lowlands—the Amazon basin is the most typical.

Coast. The region also enjoys monopoly in the production of bananas, cabinet-woods, spices, rubber, cocoa, dye woods and ivory—all of which are in great demand in Europe and America. Bamboo is a typical product of these regions. Important com-

mercial products of wild growth are spices, guttapercha, palm, oil-nuts, coffee, cocoanuts, sago, bananas, resins, lac, myrobalans and chiele (chewing gum). The animals of the equatorial region have developed wonderful flying or climbing abilities. Birds, insects, reptiles and monkeys are abundant here. Elephants, tigers, leopards, and rhinoceroses are also found. Fur-bearing animals are practically absent.

There are certain serious obstacles in developing these regions. Of them the most prominent are odious climate, diseases, poor soil, dense forest, paucity of food and the difficulty of using animals. In the Congo basin the natives are indolent, dwarfish in size and mentally unfit for any original work. They wear little or no clothing, worship spirits and practise *head hunting* even to-day. It is not possible for white people to work in these areas because of high temperature. The means of communication are practically absent; the swampy nature of the lands and the forests make the building of roads and railroads difficult. The rivers and streams serve as the only methods of inter-communication. The East Indies has developed commerce and industry to a great extent. Its favourable situation has offset the difficulty of communication and labour. It has become a great producer of sugar-cane and the largest supplier of rubber.

1(b). Monsoon and Sudan Regions

The chief areas are India (excepting the North-West), Burma, Siam, Indo-China, Philippine Islands, Southern China, Central America, West Indies, Caribbean Sea board (Venezuela and Columbia), East Africa Coast Lands, Madagascar, Queensland and North Australia Coast Lands. The monsoon regions mostly occupy the eastern margin of the continents.

High temperature-throughout the year and heavy rainfall during summer are the main characteristics of this region. In summer, these areas become so hot that the air becomes thin and rises higher up; the cool air from the sea comes in to take its place, thus causing rainfall. "Monsoon lands are dominated

by winds from the sea to land in summer—the wet season, and by winds from land to sea in winter—the dry season.”

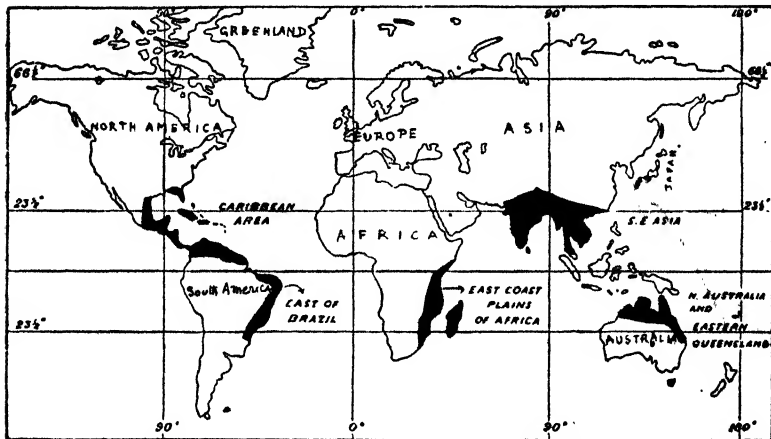


FIG. No. 4. Distribution of the monsoon lands. Note that Japan and N. E. China are not classified with the monsoon countries, though they are subject to monsoon winds. Winters are too cold in N. E. China and Japan.

The distribution of rainfall in the monsoon lands depends upon relief features. Lands having mountains opposite sea receive heavy rainfall. Cherrapunji at the foot of the shillong plateau in Assam has about 500" rainfall—heaviest in the world.

TYPICAL MONSOON TYPE (ALLAHABAD)

(Inland, Altitude 309 feet : Lat. 25° 28' North, Long. 81° 54' East)

Month		Jan.	Feb.	March	April	May	June	
T°F	...	59.5	64.9	76.8	87.6	92.5	90.8	
Rain (inches)	...	.7	.5	.3	.1	.3	4.5	
Month		July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
T°F	...	84.5	85.2	83.3	77.6	67.5	59.8	77.3
Rain (inches)	...	11.4	11.1	6.0	2.2	.2	.2	37.5

The climate is not generally conducive to physical or mental vigour, but it is more healthy and less enervating than the Amazon climate.

The products of natural vegetation are teak, sal, sandal-wood, lac, bamboos, gum and camphor. Sal and teak are found in Burma, Indo-China, Thailand and Java. Sandal-wood and lac are the products of the Indian forests. Bamboos and gum are found all over the monsoon lands, but are especially obtainable in China and Japan.

Agriculture is the main occupation of the inhabitants of all the monsoon lands. Palm, bamboos, hard woods, rice, maize, millèt, sugar-cane and cotton are grown nearly all over the region. Coffee, tea, cocoa, tobacco, indigo, cinchona, jute, rubber, oil-seed and pulses are other important crops which grow in these areas.

In monsoon regions man's well-being depends largely on rainfall. "Probably there is no other single group of weather phenomena which is so far-reaching in its effect on man's economic life as the rain in these areas". If the monsoon fails the agricultural products will not grow, and as a result, famine will break out. So complete is the dependence of the people on monsoon for agriculture, and so utterly unable are they to cope with its uncertainty, *that they have become fatalists of the most extreme kind.* The density of population being the highest in these regions, the pastoral industry has not developed, for it requires extensive lands. Mining is receiving attention now-a-days in Japan, India and China. Northern Australia produces cocoanuts, rice, bananas and cotton. That region is capable of further agricultural development ; but the unfavourable climate does not permit white labour to settle here. Nor is Asiatic labour used because of the *White Australia* policy of the Commonwealth Government.

1(c). Western Desert or Sahara Type

The hot deserts of the world are generally situated near the tropics and only on the western sides of the land masses. These areas are Sahara in Africa, Arabia, Thar in India, Colorado in the U. S. A., Peruvian and Atacama deserts in South

America and the Great Sandy Desert of West Australia. Deserts occupy about one-fourth of the land surface of the earth.

Rainfall is scanty throughout the year, the mean annual rainfall being less than 3 inches. Clouds are few ; sun-shine is abundant. The summer is very hot, but nights are usually cooler than days, and in winter the temperature is very low. The climate is not, however, unhealthy in these regions. Travel in these areas is often disturbed by clouds of dust swept along by strong winds. In Sahara the dust storm is known as *Simoom*.

The deserts have little economic value and hinder the development of the lands near them because of the difficulty of crossing them.

The characteristic date palm and fig tree provide man's material needs in the deserts. Wheat, millet, Mediterranean

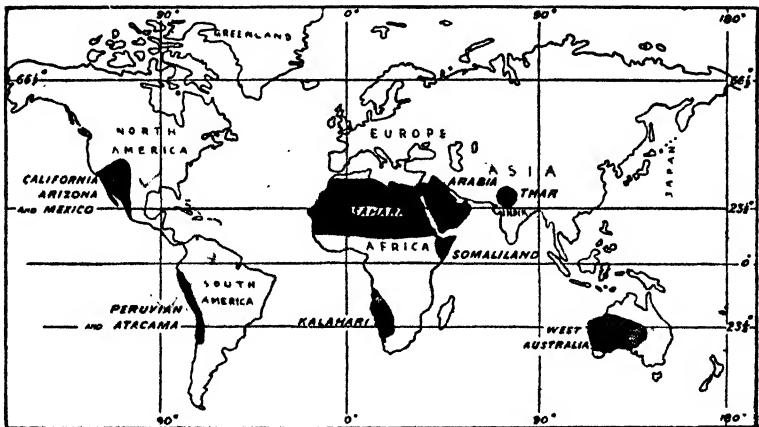


FIG. NO. 5. Distribution of tropical hot deserts. Note the absence of hot deserts on the eastern margins of the continents.

fruits, cotton and sugar-cane are grown in the irrigated areas of deserts. Cattle-rearing and trade in dates, salt and leather goods are carried on. Hot deserts are all regions of privations or of lasting difficulty. Frequently a small and isolated oasis

supports a scanty population. Camels, sheep and goats are reared by the desert people. They are generally fearless and reckless, but faithful and hospitable.

Some of the deserts possess useful minerals, although, curiously enough, their concentrations are found mostly in the Southern Hemisphere—oil in Peru ; nitrate and copper in the Atacama desert of Chile ; diamond in the Kalahari desert of Africa ; gold in West Australia ; lead and zinc in the desert region of New South Wales. In the Northern Hemisphere the important mineral-bearing deserts are Sahara for salt, Colorado for gold, Iraq for oil etc. These deserts are being developed and worked with capital from England and the U. S. A.

1(d). High Plateau or Bolivian Type

The highlands of the tropics include the Bolivian Plateau, Himalayas and Tibet. Different grades of climate are found in these areas according to height, which accounts for the difference in cultivated products. Sugar, wheat, maize and fruits flourish on the hill-slopes of the Andes, and tea on the slopes of the Himalayas. Tibet is largely a land of ice and snow, but agriculture is carried on in the valleys and fruits are cultivated. Yak, asses, cattle and sheep are reared in the lowest areas.

2(a). Western Marginal Region or Mediterranean Type

It includes the Mediterranean lands (comprising Spain, Portugal, Southern France, Italy, Yugoslavia, Balkan countries, Syria and North Africa), the Pacific sea board of North and South America (California and Central Chile) and the south-western extremity of South Africa and Australia (the south-west of Western Australia, the south of South Australia and North New Zealand). As opposed to the monsoon regions, the Mediterranean lands are mostly situated on the Western margins of the continents.

The distinguishing climatic features are the following :

(a) Most of the rain fall in winter and there is drought in summer, (b) winters are mild, and (c) skies are very sunny, being almost cloudless in summer.

The Mediterranean lands have rainfall between 20" to 30". These lands have mostly seas on one side and mountains on the opposite. In areas where mountains are absent, the rainfall is scanty and desert conditions prevail.

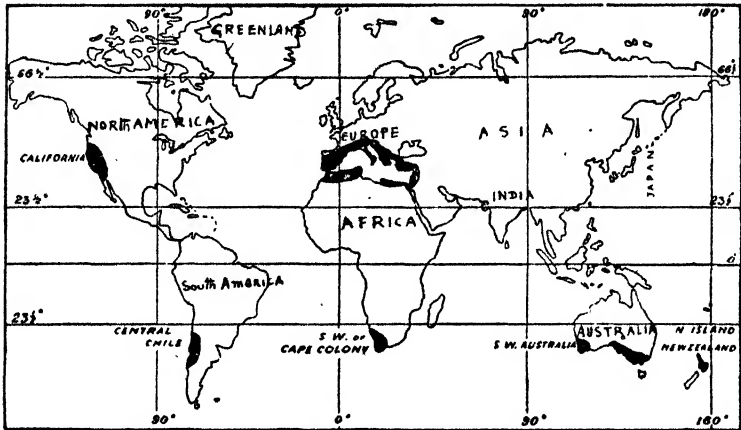


FIG. NO. 6. Distribution of the principal Mediterranean lands. These lands are also known as 'Winter rain' regions.

GIBRALTAR (MEDITERRANEAN TYPE) COAST. HEIGHT 53 FT.

Month	Jan.	Feb.	Mar.	Apr.	May	June	
T°F ...	...	55	55.9	57.4	60.6	64.7	69.5
Rain (inches)	...	5.1	4.2	4.8	2.7	1.7	.5
Month	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
T°F ...	...	73.4	74.9	72.0	65.7	60.5	56.1
Rain (inches)	...	.0	.1	1.4	3.3	6.4	5.5
							35.7

The pleasant climatic conditions of these lands invite tourist-traffic, specially during the winter.

Vegetation grows almost all the year round. The best known characteristic plant is the olive which grows throughout the year. The cork oak, the sweet chestnut and mulberry are other useful trees. The region is mainly noted for fruits like orange, lemon, peach, apricot and fig, which are in great demand in other parts of the world. Cereals like wheat and barley are grown as winter crops. Though grapes are extensively

grown all over the Mediterranean region, only a few countries specialise in wine-manufacture. France, Portugal, Italy and Spain produce wine.

Fresh grapes are exported from Spain and California and dried grapes in the form of raisins from Asia Minor and California. Figs are famous in Asia Minor.

Where conditions are suitable, horses, cattle, sheep and pigs are reared. Asses, mules and goats are typical animals.

Manufactures have greatly developed in France, Spain, Portugal and Italy. The silkworm of mulberry trees has made the Mediterranean region noted for fine silk fabric. Man's struggle for existence is not severe, because the climate of these lands is highly suitable for crop production. Moderate effort is needed to gain a living from the land.

2(b). Eastern Marginal Region or China Type

The chief sections of the region are North and Central China, Western Korea, Southern Japan, eastern side of the

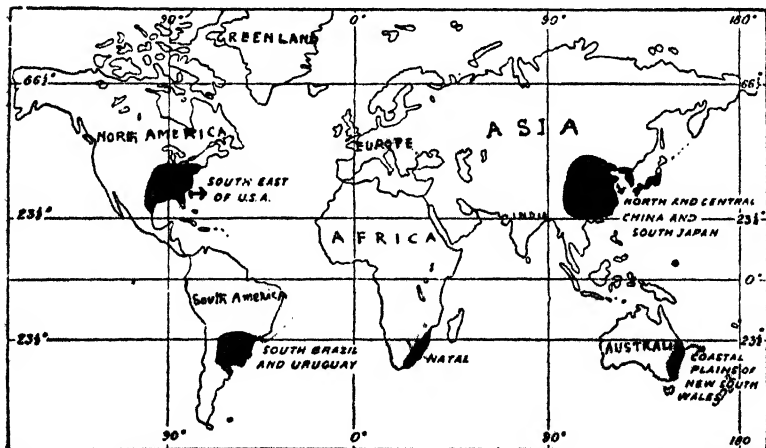


FIG. NO. 7. Distribution of lands with Warm Temperate East Coast climate.

U. S. A. (approximately Iowa, Missouri, Arkansas, Eastern Texas and Gulf Coast), South-Eastern Brazil, Uruguay, South-

Eastern coast land of the Union of South Africa, sea board of New South Wales and Southern Queensland.

These areas get summer rains. Very hot summer and very cold winter are the peculiar climatic features in these areas.

HANKOW (CHINA). INLAND HEIGHT 118 FT.

Month	Jan.	Feb.	Mar.	Apl.	May	June	
T°F. ...	... 39'6	41'5	48'2	61'2	70'9	77'9	
Rain (inches)	... 2'1	1'1	2'8	4'8	5'0	7'0	
Month	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
T°F. ...	... 82'9	83'3	74'8	65'1	53'1	42'6	61'9
Rain (inches)	... 8'6	4'6	2'2	3'9	1'1	0'6	43'8

The valuable trees are yellow pines, walnut, chestnut, beech, magnolia and oak. The important crops are maize, millet, pulses, rice, indigo, tobacco, cotton, camphor, tea, banana, orange and coffee.

Population being very dense in the Asiatic lands, domestic animals are few; but not so in Uruguay, Brazil and South Africa where cattle-rearing has developed greatly. Manufactures are well developed in southern U. S. A. and Japan.

2(c). Interior Lowlands or Turan Type

The major sections are Turan, Trans-Caspian and Caspian districts in Russia, Danubian Plains (Rumania and Hungary), Manchuria, West-Central States of the U. S. A., North Argentina, interior parts of New South Wales, Victoria and South Australia.

These lowlands have extreme climate and scanty rainfall. Cattle, sheep, horses, camel and goat are reared. With the help of irrigation maize, barley, fruits and cotton are grown.

2(d). Interior Highlands or Iranian Plateau

The chief areas are Iran, interior of Asia Minor, Afghanistan, interior lands of the Southern States of the U. S. A., Mexico and interior lands of South Africa.

The climate of these highlands is extreme. The rainfall is very small and lands are either poor grass-lands or actual deserts. Generally agriculture is impossible ; but not so in areas where mountain streams and oases are found, and irrigation methods are pursued. The chief agricultural products are cereals, fruits, cotton, tobacco, sugar-cane, beet and roses. Cattle, sheep, horses and camel feed on the richer grass-lands. Though mineral wealth is great, it is not exploited for lack of labour and capital. Manufactures are carried on a small scale.

3(a). West European Regions or Temperate Oceanic Region

The typical sections are British Isles, South-Western Scandinavia, Denmark, Western Germany, Holland, Belgium, France, Northern Spain, South-West Canada, North-Western States of U. S. A., Southern Chile, Tasmania and New Zealand.

These regions have moderate rainfall throughout the year, as well as mild temperature. The mild climate is primarily the result of oceanic influence. Warm ocean currents flowing to the west of these regions make the winds warm and supply them with moisture.

LONDON (INLAND) LAT. $51^{\circ} 28'$, $0^{\circ} 19'$ W. HEIGHT 18 FT.
ABOVE SEA LEVEL

Month	Jan.	Feb.	Mar.	Apr.	May	June	
T ^o F ...	... 38'9	40'1	42'4	47'3	53'4	59'2	
Rain (inches)	... 1'8	1'5	1'7	1'5	1'7	2'1	
Month	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
T ^o F. ...	... 62'7	61'6	57'1	49'9	44	40'3	49'7
Rain (inches)	... 2'2	2'2	1'9	2'7	2'2	2'3	23'8

Maple, oak, elm, and beech flourish in the warm lowlands. Coniferous trees like pines and firs grow luxuriantly in the cooler and damper up-lands. Oats, rye, potatoes, beet and vegetables are the chief crops. Wheat grows best in the drier parts with sunny summers. Cattle, horses and sheep are also reared. Easy access to markets has helped the growth of dairy farming.

In the western part of Scandinavia and British Columbia fishing is more important than agriculture.

These areas are highly developed in commerce and industry. The development is particularly great in Western Europe where mineral resources are vast, transport facilities excellent, climate best suited to human energy and situation ideal for trade. "Britain leads in commerce and colonisation, France in romantic thought and taste, Germany in technical research. Agriculture is highly scientific and manufactures and commerce have reached the highest degree of development and progress yet known." Canada, U. S. A., Australia and New Zealand are making rapid progress in manufactures and transport.

3(b). Eastern Margin of Cool Temperate or St. Lawrence Type

The main areas are the Amur Valley, Armenia, Korea, Northern Japan, St. Lawrence basin (Eastern Canada, and Labrador, South of the Tundras, East of the Prairies), New-

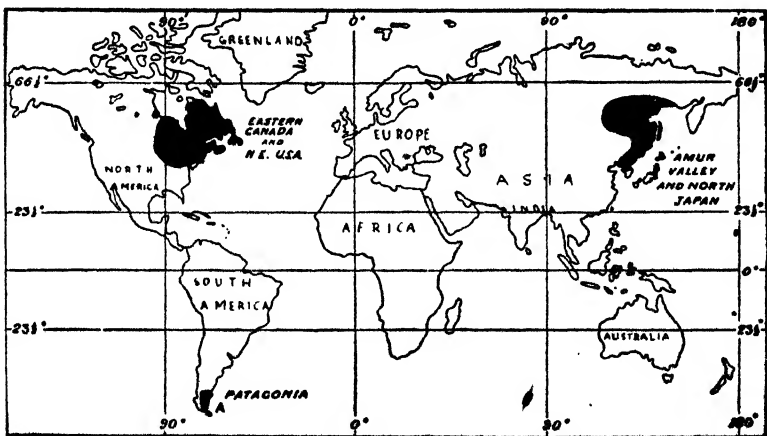


FIG. NO. 8. The eastern margins of the cool temperate regions. Note the absence of such lands in Africa and Australia.

foundland, U. S. A. (North-East and higher Appalachian slopes) and South-East Argentina.

These areas receive a small amount of rainfall which comes mostly in summer. Temperature is low during summer and very low during winter. The rivers and harbours are generally ice-bound in winter.

Forests of commercial value are abundant in this region. North-East America and Asia have coniferous and deciduous trees, which are important for fur-bearing animals. In the cleared areas, agriculture and dairying are practised. Lumbering is important in North America. In Canada and the U. S. A. fishing, mining, agriculture and manufacture have developed. In Asia, Japan occupies the premier position in manufactures. In Manchuria, agriculture and mining are developing rapidly under Japanese guidance and patronage.

3(c). Interior Lowland or Siberian Type

The conspicuous areas are Central lowlands of Asia, Poland, European Russia, Western Siberia, parts of Germany and Sweden and Northern Prairie lands of North America. There is no region of the Siberian type in the Southern Hemisphere.

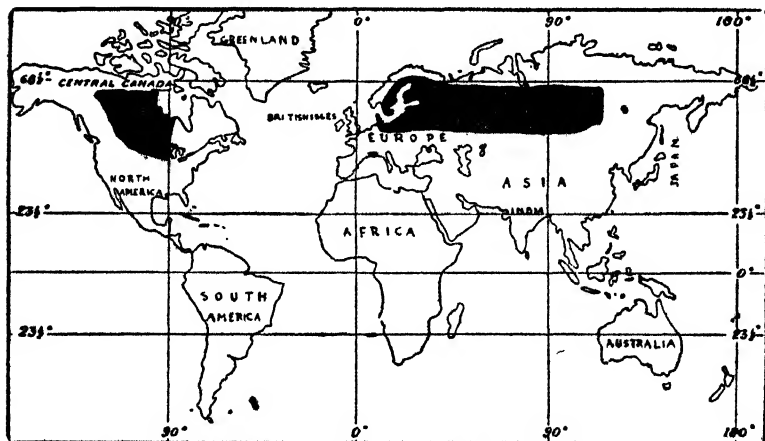


FIG. NO. 9. Distribution of interior lowlands of cool temperature regions. Note there is no region of Siberian type in the Southern Hemisphere.

These sections have extreme climate, the winter being low and severe, and summer short. The rainfall is never heavy and generally abundant in summer.

In the northern side of the region, coniferous forests of pine, spruce, firs, etc., are abundant and in the southern side trees are rare and vast grass-lands stretch in all directions. These grass-lands are called 'Prairie' in North America and 'Steppe'* in Asia. Agriculture is the chief occupation in these areas. In the arid areas stock raising is prominent. The Western Steppes of Eurasia are very productive but the Eastern Steppes are handicapped by their remoteness from the more advanced parts of Europe. Nevertheless, some progress has been made since the construction of the Trans-Siberian Railway.

3(d). Interior Highland or Altai Type

The important areas in this category are the Altai Range and adjacent lands of Asia, northern parts of the western mountain region of North America, British Columbia in Canada and the North-Western States of the U. S. A.

Climatic conditions vary in accordance with elevation. Generally the climate of these areas is very extreme. Forests are abundant and spruces, firs, douglas and larches are the prominent trees.

Although these highlands are rich in minerals, mining has not developed much, except in British Columbia. Agriculture is practised in the valleys with the help of irrigation. Hunting in Asia and lumbering in North America are the main occupations of the people.

4. Polar Region

The Polar regions occupy the vast areas to the north of the Cool Temperate Zone. The regions may be conveniently divided into three parts: (a) Taiga or Forest region, (b) Tundra or plain, (c) Ice caps or Highlands.

* "Steppe" is a Russian word applied to all treeless districts except deserts.

POLAR TYPE. SPITSBERGEN. LAT. $28^{\circ}2'N.$; LONG. $14^{\circ}14'E.$

		HEIGHT 37 FT.					
Month		Jan.	Feb.	Mar.	Apr.	May	June
T ^o F.	..	3.7	-2.4	-1.5	7.5	23.2	35.4
Rain (inches)	..	1.4	1.3	1.1	0.9	0.5	0.6
Month		July	Aug.	Sept.	Oct.	Nov.	Dec.
T ^o F.	..	41.7	40.1	32.2	21.6	10.9	6.1
Rain (inches)	..	0.6	0.9	1.0	1.2	1.0	1.5

(a) Immediately to the north of the Cool Temperate Zone stretches the forest region or Taiga. Winters are long and severe with short days and long nights, while summers are short and cool with very long days and short nights. Pines, firs, larch, and other coniferous trees are abundant. The timber resources of these forests have not been exploited because of transport and climatic difficulties. In these forests fur-bearing animals are numerous. The bulk of the world's valuable pelts are collected from these regions. In Canada the Hudson Bay Company handles almost the entire trade in pelts. Agriculture, though not impossible, has not developed and the main occupation of the people is hunting and trapping. Population is consequently sparse.

Of domestic animals reindeer is the most important and is extensively reared in Alaska.

(b) The Tundras lie to the north of Taiga in Northern Eurasia and America within the Arctic circle. These lowlands have lower temperature than Taiga. With the exception of two months in the year lands are always covered with snow; consequently agriculture is impossible. In summer, when the snow melts for a few months, plants like mosses, lichens and grasses grow rapidly. Reindeer, caribou and the musk ox are numerous in the "Arctic prairies" of Northern Canada and Alaska. Fish, seals, walrus and whales are also plentiful.

The Tundras are the most desolate deserts of the world, having a very sparse population. The density of population does not exceed anywhere one person per square mile.

The means of livelihood being few, people are mostly nomads. Food and clothing are mainly derived from the Tundra

animals—meat supplies the food, and skin the clothing. The people are simple and primitive, and their life is hard ; so they have little time for intellectual pursuits. The Tundras are called the regions of privation. In winter, work is impossible. The only domestic animal is the dog, useful generally for transport purposes. Though the Tundra has little economic importance, it contains some minerals which remain still unexplored.

(c) The Polar highlands.—N. Alaska, N. Greenland, Antarctica, Kamschatka and other adjacent lands have no vegetation because temperature is mostly below freezing point throughout the year and lands lie covered under a thick sheet of ice and snow over 1 to 3 thousand feet in depth. Only in Greenland peaks of mountains come out of the snow sheet. Icebergs originate from these lands.

QUESTIONS

1. What is meant by Mediterranean type of climate? Account for it and compare it with monsoonal type. Also give the chief products in each of them. —(Cal. Inter. 1925, 33, 35, 40, 42; B. Com. 1929, 33).

2. What are the monsoons? Describe briefly their effect on the economic conditions of India. —(Cal. Inter. 1931).

3. What do you understand by "a natural region"? Into how many natural regions can the world be divided? Name them and indicate their position in a map. —(I. P. S. 1931, 32).

4. Explain the following phenomena :—

(i) In the Mediterranean region most of the rain fall in winter months.

(ii) Civilised man is found mostly in the low land regions of the temperate zone. —(I. P. S. 1932).

5. Describe and account for the position of the chief hot desert regions of the tropical zone. Mention any articles of commerce that have been obtained from them.

6. "Probably there is no other single group of weather phenomena which is so far-reaching in its effects as the Indian Monsoon." Explain.

—(Cal. B. Com. 1925).

CHAPTER III

AGRICULTURE

Agriculture is the art of raising plant life from the soil for the use of humanity. *The object of agriculture is to raise stronger and more fruitful crops and plants, and to help their growth by improving the soil and supplying water, when necessary, by irrigation works.* It is sometimes practised along with stock raising, when it is termed mixed agriculture. It is the most important of all the industries in which climate and soil are the deciding factors.

Even when conditions are favourable, agriculture may not be worth adoption unless associated with certain other conditions. If a region is far from markets and is without any facilities for transport, it is not profitable to raise crops there unless it is for local consumption. Nearness to the market and transport facilities are essential to give agriculture a place in any system of national economy. By nearness to the market it must not be understood that the market should be always near at hand. A market may remain hundreds and thousands of miles away from the area of production. Argentina raises wheat for Europe: Bengal grows jute for Europe and America. Nearness to the market simply means that all the facilities are present to put agricultural products in certain markets at a reasonable price. Cost of labour is another important economic factor. Certain crops requiring a great amount of manual labour and attention cannot be profitably grown unless labour is cheap.

One special feature in connection with agricultural products is that the fertility of the soil diminishes after each cultivation. Consequently production decreases year after year. This tendency towards diminishing returns may be checked to a certain extent by the application of manures and the introduction of the rotation of crops. Secondly, the yield of the same crop per acre may vary in different countries because of difference

in skill of the cultivators, application of scientific appliances of cultivation and other causes.

Cultivation of land may be done by intensive and extensive methods. Extensive cultivation is necessary where the population is small, manufactures undeveloped, trade inconsiderable and the demand for the products of the soil very limited. In intensive cultivation, capital and labour are so applied as to produce the largest possible yield. The soil is carefully drained, and fertilisers are used to render the area more productive. This system is only possible where there is a great demand for agricultural products and it exists chiefly in progressive states.

Methods of farming are not similar in every country. At present, three different methods of farming are widely used—(a) humid farming, (b) dry farming and (c) irrigation farming. Irrigation farming is practised in those parts of the hot lands where rainfall is seasonal. In India and China irrigation farming is the rule. Canals, tanks and wells have been constructed to supply water to the agricultural fields. Irrigation has converted millions of acres of deserts into smiling fields in many monsoon lands.

There are regions which are beyond the reach of irrigation facilities and which are frequently subject to drought. Neither canals nor tube-wells can supply water to them. They depend wholly on whatever little rain they receive. Here comes in the importance of dry farming. Dry farming methods were first discovered in the U. S. A. where there are extensive areas receiving less than 20 inches rainfall per annum and having poor irrigation facilities. The following are the prominent features of dry farming: (i) ploughing the land in deep soil, (ii) terracing the land and division into compartments to allow rain-water to move only under controlled conditions, (iii) repeated harrowings before sowing, which conserve soil moisture and destroy weeds.

Humid farming means the production of crops in regions of moderate rainfall without the help of irrigation.

While studying agriculture, one frequently comes across the term "plantation". Plantation ordinarily means tropical or sub-tropical agriculture which is engaged in producing "planted" trees or bushes. It is at present used in a narrow sense to denote those farms of the tropical lands where white men employ coloured labour. Thus tea grown by Europeans with the help of coloured labour in Bengal and Assam for foreign markets is a *plantation crop*; but when it is grown by Indians for the inland market, it is said to be a product of *garden*.

There is often maladjustment between demand and supply of many raw materials, for which it is necessary to regulate production of raw materials. The object and effect of regulation of any raw material is to raise the price to a fair level and then to stabilise its price when the fair level is attained.

Chief Agricultural Products

FOOD CROPS

1. *Cereals*.
Wheat, rice, maize, rye,
oats, millets and barley.
2. *Beverages and Drugs*.
Tea, Coffee, cocoa, tobacco.
3. *Other Food Crops*.
Sugar, spices and fruits.

INDUSTRIAL CROPS

1. *Fibre Crops*.
Cotton, jute, hemp & flax.
2. *Miscellaneous*.
Rubber, oil seeds.

FOOD CROPS

Wheat :—Wheat is the staple food of the white race. The greatest portion of the wheat crop is manufactured into flour. Large quantities of starch are also made from it. The straw is used for fodder, for bedding in stables and also in the manufactures of straw board and the cheaper grades of wrapping paper.

Wheat plant belongs to the order of grasses and grows usually to a height of three feet. Several erect stems rise from the root of the plant, and the grains grow at the end of each such stem.

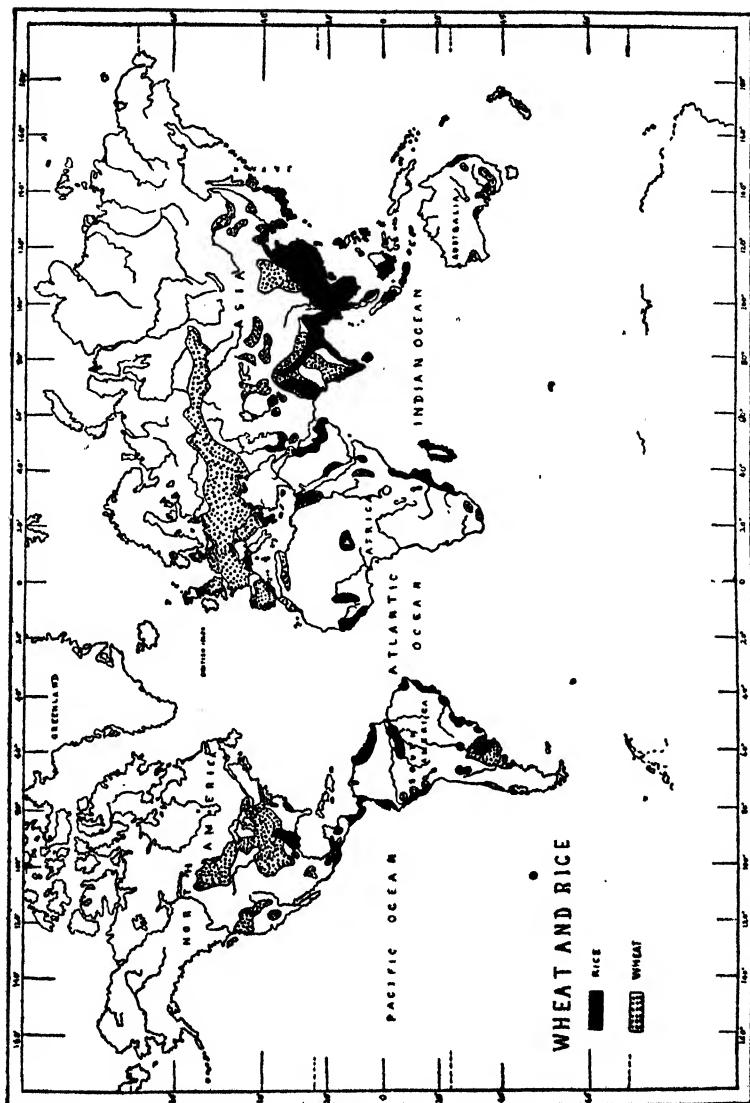


FIG. NO. 10. Distribution of wheat and rice production. Note the rice-growing region from India to Japan including the East Indies.

Generally speaking, wheat is a product of the temperate zone. Climatic conditions are very important for its production. In the early stages of growth it requires a fair amount of moisture with cool weather to be followed by warm and sunny weather without any rain. Just before the ripening of the

grains, a little rain is helpful, but when it is ripening, clear and bright days are required. Most of the world's wheat regions have an annual precipitation not exceeding 30".

In general the best wheat soils of the world are heavy and dark in colour and of high fertility. Level land is highly favourable to extensive farming, as it permits the use of machinery necessary for modern wheat farming on a large scale.

Other factors are not less important than suitable climate and soil. Economic factors in wheat production have wrought great changes in a few decades. Introduction of farm machinery, adoption of scientific methods and improvement in transport have caused rapid expansion of wheat farming in the sparsely populated plains of Central North America, South America and Australia. Economic factors have not reached the same standard and do not work on the same basis in all countries.

AVERAGE YIELDS OF WHEAT PER ACRE IN
CERTAIN IMPORTANT COUNTRIES

(Yield per acre in bushels)

Holland	..	..	45	Italy	..	..	..	21
Denmark	..	..	43	Canada	..	..	..	19
U. K.	..	..	33	U. S. A.	..	..	..	15
Germany	..	..	32	Argentina	..	..	..	13
New Zealand	..	..	30	U. S. S. R.	..	..	..	11
Japan	..	..	28	Australia	..	..	..	11
France	..	..	24	India	..	..	..	10

Because of the geographical situation of the different countries wheat is harvested in every month of the year. This factor, along with the remarkable development of transportation facilities, has resulted in an equalisation of prices in the wheat markets of the world.

PERIODS OF HARVEST

November, December and		
January .. ..	.. ..	Argentina, Chile, Australia, South Africa, and New Zealand.
February, March	.. ..	Egypt and India.
April, May .. ..	.. ..	Mexico, Iran, China, Japan.
June, July .. ..	.. ..	Southern and Central U. S. A., Western & Mediterranean Europe.
August .. .. ..	.. ..	Poland, Central Russia, Northern U. S. A., Canada.
September, October	.. ..	Scotland, Sweden, Norway.

The following is the relative position of the different countries in respect of wheat production.

CHIEF WHEAT-PRODUCING COUNTRIES

IN MILLIONS OF METRIC QUINTALS IN 1935.

(1 metric quintal equals 3·6743 bushels)

U. S. S. R. .. ..	.. ..	313'3	Germany .. ..	.. ..	46'7
China .. .. ..	.. ..	213'0	Spain .. .. ..	.. ..	41'9
U. S. A. .. .. .	.. ..	164'2	Argentina .. ..	.. ..	39'2
India .. .. .. .	.. ..	98'8	Australia .. ..	.. ..	38'1
Italy .. .. .. .	.. ..	77'1	Rumania .. .. .	.. ..	26'2
France .. .. ..	.. ..	75'9	Turkey .. .. ..	.. ..	24'5
Canada .. .. ..	.. ..	75'5	Hungary .. .. .	.. ..	20'1
			Poland .. .. ..	.. ..	20'1

The wheat-producing regions of the world are divided into two groups: those producing only for domestic consumption, and those producing for domestic consumption as well as export.

The most densely populated countries of the world like U. S. S. R., China, U. S. A. and India are the greatest wheat-producers. Home consumption being great, these countries cannot export wheat in large quantities. Canada, Australia and Argentina, which are all sparsely populated states, handle as much as 82 per cent. of the international wheat trade. It is

interesting to note that these three countries produce only 12 per cent. of the world's wheat.

Great Britain is the greatest importer of wheat, consuming as she does more than 40 per cent. of the wheat offered to the world market.

U. S. A. is a great wheat-producing country and the raising of this crop is carried on in Kansas, North Dakota, Nebraska, Oklahoma, Illinois, Washington, Missouri, Minnesota, Ohio and some other states. Between North Dakota and Minnesota, extending into Canada, is the Red River Valley, which is such a prolific wheat country that it is known as the 'Bread basket of the world'. The great wheat centres are Minneapolis, Duluth, Chicago and Buffalo. The Pacific States were once the important producers of wheat. In recent years the production has decreased because fruit-farming has proved more profitable in these areas. One-sixth of the world's total is grown in the U. S. A. Though the area under wheat in the U. S. A. is double that in Canada, the country has to support a population thirteen times as numerous. U. S. A. is, therefore, rather an importer than an exporter of wheat. She has to draw a fairly large quantity of wheat from Canada.

Soviet Russia is the largest wheat-producing country in the world. Cultivation is no longer confined to the "Black-earth" region of the Ukraine. The cultivation of wheat has extended to Northern Russia, West Siberia, East Siberia and Orenburg region. In spite of the rapid extension of wheat cultivation, the Ukraine is still the largest producer. Kherson and Odessa on the Black Sea handle the bulk of the export trade in wheat. The other important wheat centres are Moscow, Gorki and Orenburg.

Canada has become one of the great wheat-producing countries of the world. Her wheat lands are Manitoba, Saskatchewan, Alberta and Ontario. Winnipeg and Port Arthur are great centres of wheat production in the Dominion. Decreasing fertility of land in Manitoba and Saskatchewan, and the opening of railways in the west are factors responsible for the shifting of wheat cultivation to further west, *i.e.*, Alberta.

Canadian wheat is exported through New York (40 p.c.), Vancouver (25 p.c.), Montreal (15 p.c.), Halifax, St. John and Portland.

In India wheat is cultivated in the Punjab, U. P., C. P. and Berar, Central India States, Bombay and Bihar. India produces about one-tenth of the world's total crop and occupies the fourth place. Indian wheat, though produced almost wholly for domestic consumption, is frequently a factor in the export market. When the price of wheat is high in the international market or when there is a surplus in India, a portion of it may be exported and in such cases India may influence the world price of wheat.

Canada is now definitely the largest exporter of wheat in the world. Argentina comes next. Canada and Argentina at present export about 60% of their total production of wheat, while in the case of the U. S. A. only 14% is exported.

The position of the British Empire in respect of wheat supply is very satisfactory, although it supplies only 16% of the world output of wheat. The Empire is a net exporter of wheat. Even two decades ago, the British Empire was not self-sufficient in this commodity.

Although the population of the world is growing and the consumption is increasing, the improved methods of production and the utilization of available areas in Australia, Siberia, China and in some parts of South America have increased the supply of wheat more rapidly than the demand.

Rye :—It ranks next to wheat in importance. It originated in Siberia and is raised further north than any other grain crop. It has been cultivated in Asia and Europe from time immemorial and for centuries it has been one of the most important food plants. It is also used for the preparation of Gin. The straw is used for making horse-collars, mattresses, baskets and straw hats.

Rye is distinctly a crop of cool and moist climates. It thrives in fertile as well as in poor lands. The principal rye-producing countries are the U. S. S. R., Germany, Poland,

Rumania, Holland, Scandinavia, Hungary, British Isles, U. S. A., Argentina and Canada.

AVERAGE ANNUAL PRODUCTION OF RYE

(In millions of metric tons)

U. S. S. R.	..	..	21'0	Czechoslovakia	..	..	1'4
Germany	..	..	7'5	World's total	..	..	46'0
Poland	..	..	6'4				-

In Russia nearly 50 per cent. of the total crop of the world is raised. Germany raises about one-sixth of the world production. Rye is essentially a crop grown for home consumption, and the international trade in the commodity is very small. U. S. A., Canada and Argentina export a considerable portion of their limited crops and there is some movement from the greater producers of Scandinavia and other European countries.

Barley :—It is one of the cereal grains. It is a bread grain and is also a common ration for horses, cattle and pigs. Barley is used for thickening soups and also for the manufacture of beer and whisky.

In general appearance and manner of growth, barley resembles wheat. Among its many varieties some thrive best in the warm temperate lands and some are cultivated further north than any other cereal crop. Barley grows best in the Mediterranean climate.

The world's barley crop is about one-third of wheat. Europe raises approximately one-half and Russia alone about one-third of the world's supply.

AVERAGE ANNUAL PRODUCTION OF BARLEY

(In millions of metric tons)

U. S. A.	..	..	6'6	Spain	..	..	2'9
U. S. S. R.	..	..	5'0	N. Africa	..	..	2'1
Germany	..	..	3'2	Rumania	..	..	1'5
Japan	..	..	2'6	Poland	..	..	1'4
India	..	..	2'4	Czechoslovakia	..	..	1'5
Canada	..	..	1'8	World Production	..	..	40'8

U. S. A. and Russia head the list in the production of barley. Methods of cultivation are not the same in every producing country. The average yields of barley per acre are 44 bushels in Belgium, 24 in Canada, 21 in U. S. S. R. and 14 in the U. S. A. Barley is grown in every province of Canada, but Manitoba and Ontario are the leaders.

Barley is exported from Rumania, U. S. A., Russia, Argentina, Poland, Canada, Australia and India. The principal importing countries are U. K., Germany, Holland, Belgium and Switzerland. The principal features of the British Empire trade in barley are exports from Canada and imports into U. K.

Oats :—It is the largest cereal crop of the world, but the grain is usually grown for home consumption and is less important in commerce than wheat. Though it is chiefly used as food for cattle and horses, it is also used for human consumption.

Oats thrive well in a cool, moist climate and are, therefore, grown in the northern parts of Europe and North America. The annual production is approximately equal to that of wheat.

AVERAGE ANNUAL PRODUCTION OF OATS

(In millions of metric tons)

U. S. A.	..	..	18'1	France	..	..	4'8
U. S. S. R.	..	..	11'2	Poland	..	..	2'4
Germany	..	..	6'6	U. K.	..	..	2'3
Canada	..	..	6'0	World production	..	..	64'4

U. S. A. and Russia produce about half the world's oats. The international trade in oats is extremely small as the chief producers (with the exception of Argentina and Chile) grow it mainly for home consumption. Nevertheless, in recent years Germany and Russia and in some years the U. S. A., Canada and the Danubian countries have placed considerable quantities in the foreign markets. The chief importing countries are U. K., Italy, Switzerland, Belgium, Holland, France and Denmark.

Rice :—It forms the principal food of one half of the population of the world. A kind of distilled liquor in India

and a number of intoxicating drinks in China and Japan are also made from it. Sandals, hats and various other articles are made from the straw ; the husk is used for filling mattresses and in packing goods. It is also mixed with cement for building *sound-proof* walls.

Rice is grown on a variety of soils, but a free loam allowing root development with a heavy clay sub-soil to retain water is the most productive. It thrives in regions of high temperature and heavy rainfall. During the growing season, temperature should not be less than 75 degrees. It is seldom raised where the annual rainfall is less than 45 inches. It demands swamp conditions and during a considerable part of its growth it must be flooded. Level lands are, therefore, essential for rice cultivation, especially of the alluvial soils of the river valleys and deltas.

Rice may be grouped into two general classes—"hill rice" and "swamp rice". 'Hill rice' requires much less water than 'swamp rice', being frequently grown without irrigation where rainfall is abundant. 'Swamp rice' requires frequent flooding, and must be raised on level ground suitable for irrigation. The yield of 'hill rice' per acre is normally less than one half of that of 'swamp rice' and so it is much less cultivated.

The upland or 'hill rice' is raised largely by the primitive peoples of the Malaya Peninsula and near-by islands, of tropical America and Equatorial Africa. The great monsoon regions of southern and eastern Asia are favourable to the raising of lowland or 'swamp rice'.

PRODUCTION OF RICE, 1939-40

(In millions of quintals)

China	480	Siam	51
India	385	Korea	27
Japan	128	Philippines	23
Indo-China	71	U. S. A.	11
Burma	71	Italy	8

Rice is produced in India, China, Burma, Malaya, Ceylon, British Guiana, North Borneo, Indo-China, Siam, Korea, U. S. A., Formosa, Japan, Italy, Spain, Egypt.

Philippines, and the East Indies. Owing to physical limitations Europe lags far behind Asia in rice production. Only in the warm, moist lowlands of the Mediterranean are conditions suitable for the cultivation of rice, and even there irrigation is necessary. The share of Italy in the world's production of rice is insignificant ; but she maintains a very high yield per acre. Rice in Italy is grown in the valleys of the northern provinces of Piedmont, Lombardy, Venetia, Emilia and Tuscany.

India and China are the world's greatest producers of rice. The output is generally high in all the Asiatic monsoon areas including Japan, Indo-China, the Dutch East Indies, Siam and Korea.

EXPORT OF RICE

AVERAGE 1926—30

(In thousand tons)

India including Burma	2,224	Italy	198
Indo-China	1,375	U. S. A.	101
Siam	1,185	Spain	54
Korea	809	British Guiana	22
Formosa	333		

The enormous home consumption of rice in India, China, Japan, Java and the Philippines prevents these countries from having a surplus of rice for export. The surplus to the world market comes from the less densely populated sections of Burma, Siam and Indo-China. The British Empire raises about 44 per cent of the world's rice.

Maize :—Maize is a native of America, and is one of the most valuable food plants of the world. It is largely employed in distilleries and in the manufacture of starch and glucose. Its peculiarly high fattening properties and its prolific yield have caused its large employment in the rearing and fattening of live-stock. Maize is also an important food grain for man.

Maize requires higher temperature and much more summer rain than wheat. The soil should be rich and well drained.

Much sunshine is beneficial and frost is harmful. Very little maize is grown in areas having a rainfall of less than 8 inches and most of the maize is grown in regions with an annual rainfall at least of 20 inches.

U. S. A. raises four-fifths of the corn produced in the world. The other important producers are Argentina, Russia, Rumania, Brazil, Yugoslavia, India, Mexico and Italy.

Both in production and export, the U. S. A. is easily the leading country in the world. It is mainly grown as an animal food in Missouri, Indiana, Nebraska and Ohio. The entire meat-packing industry of the country is concentrated in these areas with Chicago, St. Louis, Indianapolis and Cincinnati as the chief centres. The second largest producer of maize is Argentina. South Africa is also raising maize extensively. In India the production of maize for food is quite considerable.

AVERAGE ANNUAL PRODUCTION OF MAIZE

(In million tons)

U. S. A.	..	..	73·8	U. S. S. R.	..	..	3·4
Argentina	..	..	6·7	Italy	..	..	3
Rumania	..	..	6·0	Mexico	..	..	2
Brazil	..	..	5·1				

The chief exporting countries are the U. S. A., Argentina, Rumania, Yugoslavia and South Africa. The United Kingdom takes considerable quantities of maize from the U. S. A., Argentina and Rumania.

Millet :—It is a very important cereal crop of the monsoon region and is grown for fodder or for food.

Millet flourishes best in those hot lands where rainfall is scanty and unreliable. It can be grown without irrigation even in areas which are fairly dry. The important millet-producing countries are India, China, Japan, U. S. A., and the Sudan. There is very little trade in millet, nearly all of it being grown for local food. In India millet constitutes an important food crop for Madras, Bombay and Hyderabad.

Tea :—It is the name given to the dried leaves of an ever-green tree. Tea has become so universal in use among the civilised peoples that it is now looked upon more or less as a necessity. The greatest tea drinkers are the Chinese, British, Russians, Dutch, Australians and South Americans.

Tea requires a deep fertile soil, which must be exceptionally well drained, so that there can never be stagnant water in the soil. It is, therefore, generally grown on hill sides, although it flourishes in well-drained valleys also. High temperature is absolutely necessary in summer.

An economic factor that restricts tea-growing is the need for a large supply of cheap labour. All the picking of the leaves is done by hand and it involves a great deal of manual work. It is, therefore, grown in those sub-tropical lands which have abundant cheap labour, and in those lands it is a productive crop.

The important tea-producing countries are China, India, Ceylon, Java and Japan. In Natal and Fiji some tea is grown. The chief exporting countries are India, Ceylon, China, Japan and Formosa.

CHIEF TEA-PRODUCING COUNTRIES

IN METRIC QUINTALS (000 OMITTED) IN 1935

(1 metric quintal equals 220.46 lb.)

China	..	..	4,000	Dutch East Indies	..	713
India	..	..	1,808	Japan	..	442
Ceylon	..	..	964			

In the production of tea, China ranks first, but in export India leads all others. Most of the tea acreage of India is in the north-eastern part of the country—in Northern Bengal and in Assam. In fact, about four-fifths of the tea acreage of India is in this north-eastern area, the remaining acreage being in the southern part of the Peninsula, in the Nilgiri Hills. One special feature of the tea plantation of India is that the majority of tea plantations is in the hands of the Europeans. The large consumers of Indian tea are the United Kingdom, Russia, France, U. S. A., Canada and Australia.

London is the largest tea-distributing centre in the world and Great Britain consumes more than half of the world's imports. Russia consumes about one-quarter of the tea exported from Asia. Attempts are being made in Russia to produce tea, and if she comes out successful, the tea industry of Asia will be affected adversely.

AVERAGE ANNUAL EXPORTS OF TEA

(In thousands of metric tons)

India	166	Dutch East Indies ..	77
Ceylon	115	Japan	12
China	77	Formosa	6

After 1929 there was a great over-production in the tea-growing areas and as a result there was a heavy fall in prices ; many concerns collapsed and the industry faced precarious conditions. An international scheme was, therefore, worked out in 1932 for regulating the volume of export and cultivation of tea from 1933 (April 1) to 1938 (for five years). A second restriction scheme was put into operation on the same principles in 1938.

One of the main drawbacks of the scheme of 1932 was that all the producing countries did not join in the agreement. India, Ceylon and the East Indies were parties to the scheme and they were tied as to their exportable output. In 1932 the non-participating countries exported one-sixth of the world's total tea trade ; but in 1937 they handled more than one-fourth of the world's tea export.

Cocoa :—The cocoa tree is a native of South America. It has been transplanted to other parts of the wet equatorial region and has become a profitable plantation crop.

The cocoa tree requires constantly high temperature and an abundance of moisture. "Much moisture and deep fertile

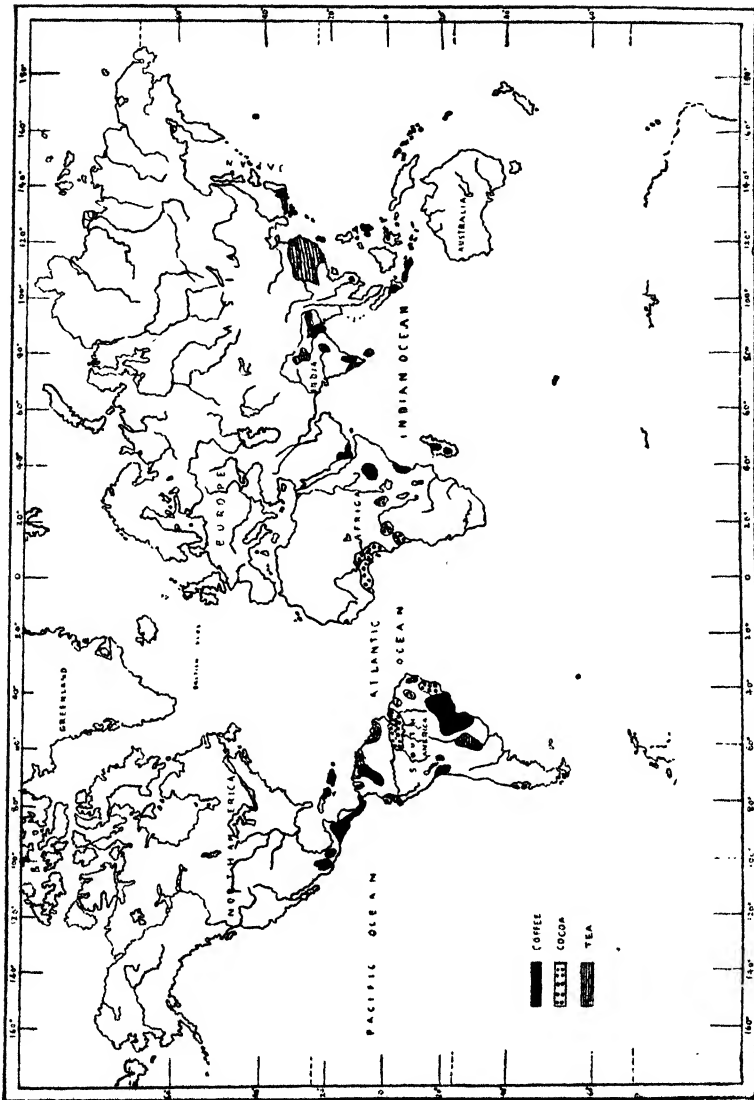


FIG. NO. 11. Distribution of tea, coffee and cocoa production. Note the great cocoa belt in equatorial Africa.

soil are essential to a good yield." A prolonged and excessive drought is very harmful and too much rain is also a disadvantage. The plant requires shade from sun and shelter from wind. Regions of equatorial climate are best suited to cocoa plantation.

Gold Coast, Nigeria, Brazil, British West Indies and Ceylon are the chief producers. Thus the distribution of cocoa is limited to within 20 degrees of the equator.

CHIEF COCOA-PRODUCING COUNTRIES

AVERAGE PRODUCTION IN METRIC QUINTALS (000 OMITTED)

(1 metric quintal equals 1.968 cwt.)

Gold Coast	2,747	French Cameroons ..	237
Brazil	1,100	Trinidad	201
Nigeria	695	Ecuador	197
French West Africa ..	518	Spanish Guiana ..	149
Dominican Republic ..	283	Venezuela	142

The cocoa plantations are mostly managed by the Europeans, though in West Africa the natives have developed their own plantations.

Gold Coast provides almost the whole of the world's supply. "Having equal facilities with other producing countries as regards climate and soil, it has outstripped its competitors by its more skilful exploitation of the land, by experienced administration on the part of white men and by keeping cocoa as the only important money crop. Other factors are that the Gold Coast lies on an old established shipping route, and that the development of railways and roads has made communication between the plantations and the ports very much superior to those existing in the older producing countries such as Ecuador."

At present the U. S. A. leads the world's consumers of cocoa. Forty per cent. of the world's annual crop goes to the U. S. A., the countries of North-West Europe consuming most of the remainder. Spain is the only European country where cocoa is regarded as a necessity. Switzerland and Holland import large quantities for making chocolate.

AVERAGE ANNUAL EXPORTS AND IMPORTS OF COCOA

(000 metric tons)

<i>Exporters</i>			<i>Importers</i>		
Gold Coast	..	240	U. S. A.	..	220
Brazil	..	100	Germany	..	80
Nigeria	..	70	U. K.	..	70
Ecuador	..	15	Holland	..	40
Dominica	..	20	France	..	50
Trinidad	..	30			
Venezuela	..	20			

Coffee :—It is grown in many countries and has become a regular commodity of consumption in several parts of the world. Coffee plant requires a rich well-drained soil, a warm climate and a moderate supply of moisture ; so plantations are generally limited to the tropics. The plant, when young, must be sheltered from strong sunshine and with this end in view banana and other shady trees are planted on coffee estates. As the soil must be rich and well-drained, the plant grows usually on hills and highlands where the streams have rapid falls to give the necessary drainage. Three to five years are required for the plant to mature after which it bears fruit for some thirty years. The pulp of the fruit is removed to obtain cherry-stones inside. The inner kernels of these cherry-stones are the coffee.

Coffee is a tropical product and is grown almost exclusively for export. One economic factor on which large output depends in most lands is the supply of abundant cheap labour, because a large amount of hand work has to be performed in preparing the product for the market.

The important coffee-producing countries are Brazil, West Indies, Mexico, Central America, Venezuela, Columbia, Andean Highlands, India (South), Ceylon, Dutch East Indies and Arabia.

In Yemen, on the southern side of Arabia, the best coffee in the world is grown.* But though the soil and climatic condi-

* Yemen coffee is erroneously called "Mocha Coffee". There is no "mocha coffee". Mocha is a port on the Red Sea through which the coffee of Yemen is exported.

tions are excellent there, inadequate irrigation, poor roads, high taxes and bad government have kept the yield per acre low. Consequently the export is small.

Brazil alone grows more than half of the world's coffee and the prosperity of the country depends on the coffee trade.* The state of Sao Paulo, with its rich volcanic soils, is particularly suited to coffee-growing.

In India the principal coffee regions are Mysore, Madras, Coorg, Cochin, Travancore and Bombay. In some of the growing areas coffee has been replaced by tea. Indian coffee is exported to the United Kingdom and France.

CHIEF COFFEE-PRODUCING COUNTRIES
IN METRIC QUINTALS (000 OMITTED) IN 1939-40
(1 metric quintal equals 1.968 cwt.)

Brazil	12,500	British East Africa ..	383
Columbia	2,670	Haiti	250
N. E. Indies	1,071	Cuba	320
Mexico	500	Costa Rica	240
Venezuela	650	Madagascar	300
Salvador	540	Belgian Congo	230
Guatemala	550	World production—22 million.	

✓ **Tobacco** :—It is exceedingly important in international trade. Tobacco is prepared from the leaves of plants which are native to tropical America. But although it is a tropical plant, it has a very wide range, being grown in all parts of

* The danger of depending on one crop for the economic welfare of the people of a country is best seen from the Brazilian coffee industry. In 1897 there was a great over-production of coffee in Brazil and in consequence the prices fell heavily, bringing miseries in its wake to innumerable Brazilian coffee growers. In its effort to restore prices the Brazilian Government resorted to valorization, which consisted in buying up large stocks of coffee, holding them until the prices improved and then releasing them gradually. Since then valorization measures have become a regular part of the Brazilian coffee-marketing programme.

the world. It is raised in the equatorial region and also as far as Canada, Scotland and Northern Poland.

Tobacco plant thrives in light soil that is rich in lime, humus and potash. It is sensitive to frost. As regards economic factors, a considerable amount of cheap labour is necessary for the cultivation and preparation of tobacco.

The leading producers of tobacco are the U. S. A., India, China, Russia and Japan ; the Philippines, East Indies, Brazil and most of the countries of Central and Western Europe also account for large quantities. The leading exporters are the U. S. A., Sumatra, Cuba, Brazil, Bulgaria and Turkey. Western Europe is the chief importing area, specially U. K., Germany and France.

CHIEF TOBACCO-PRODUCING COUNTRIES

IN METRIC QUINTALS (000 OMITTED) IN 1939-40

(1 metric quintal equals 220.46 lb.)

China	7,733	Greece	550
U. S. A.	8,027	France	336
India	4,958	Germany	335
U. S. S. R.	2,500	Turkey	565
Japan	820	Bulgaria	353
Dutch East Indies	519	World Production—25 million.	
Italy	421		

U. S. A. is a great producer of tobacco: it is grown in Kentucky, North Carolina, Virginia, Tennessee, South Carolina and Ohio. In these areas the climate is warm and moist and the soil is light sandy. Coloured labour is employed in the plantations because it is very cheap. The important tobacco centres are Louisville, Richmond, Petersburg and Winston-Salem.

Cuba tobacco is famous throughout the world for its fine flavour, being much prized for cigar: Havana is the great cigar-manufacturing centre of the island.

A considerable quantity of tobacco is grown in Java, Sumatra and the Dutch East Indies, where the plantations are

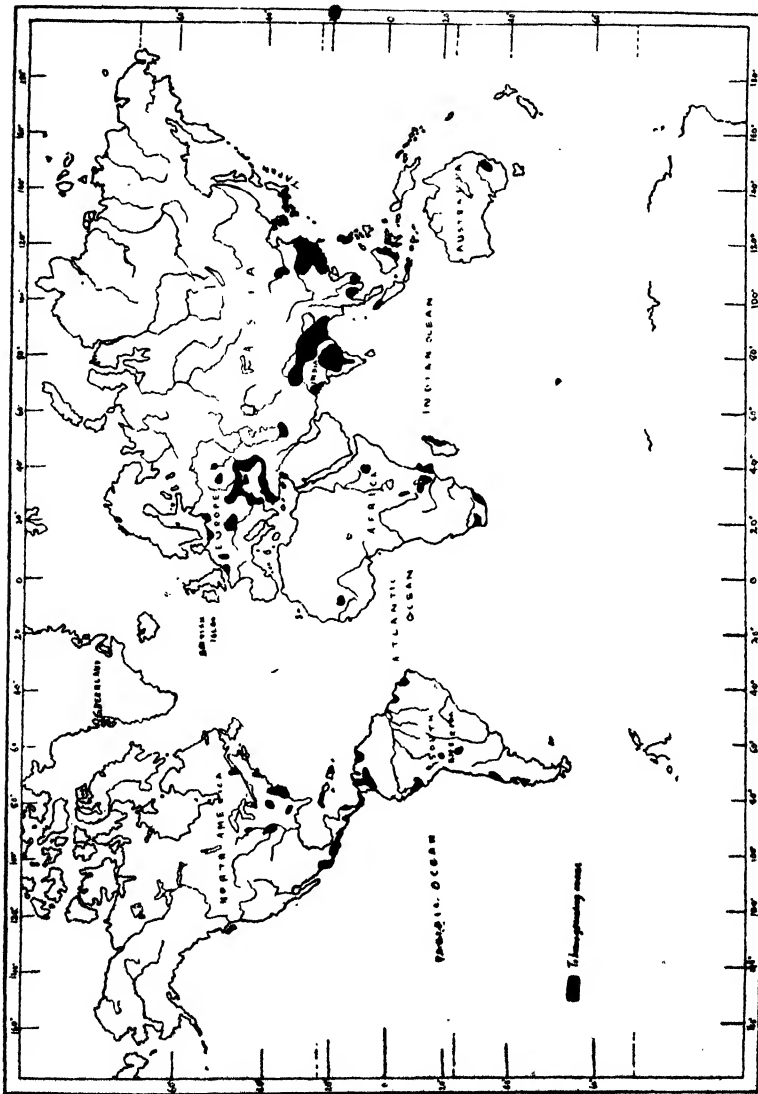


FIG. No. 12. Distribution of tobacco production. Note the wide climatic range over which tobacco is cultivated.

mostly managed by Europeans with Chinese labour. In recent years splendid progress has been made in the Dutch East Indies,

which has become second only to the U. S. A. as a tobacco-exporter.

Tobacco is one of the most valuable crops grown in India, which produces about as much tobacco as the U. S. A. Brazil is the third tobacco-exporter in the world. Bahia is the principal port of Brazil which does considerable trade in tobacco. In Europe tobacco is grown extensively in Hungary, Bulgaria, Yugoslavia and Greece.

In Great Britain supplies of tobacco are drawn from the U. S. A., India, Sumatra and the Philippines.

Sugar :—It is probably the most widely used of all food products. Nearly all sugar is obtained from the juice of two plants, the sugar-cane which is essentially tropical or sub-tropical, and the sugar-beet which is temperate.

Sugar-cane belongs to the tropical and sub-tropical regions and it requires for its successful cultivation a high temperature and ample rainfall. The soil must be well drained and should have salt and lime in it ; so it grows best along the sea-coast. The plant requires little attention during its growth but an abundance of cheap labour is necessary in harvesting the crop and preparing the material for export.

The important sugar-cane-producing countries are India, Cuba, East Indies, Brazil, Hawaii, Mauritius, the Philippine Islands, Dominica, British Guiana, Formosa, Porto Rico and Australia. The chief importers are the U. S. A. and the United Kingdom. Although India is one of the greatest producers of cane sugar, it is also the third greatest importer.

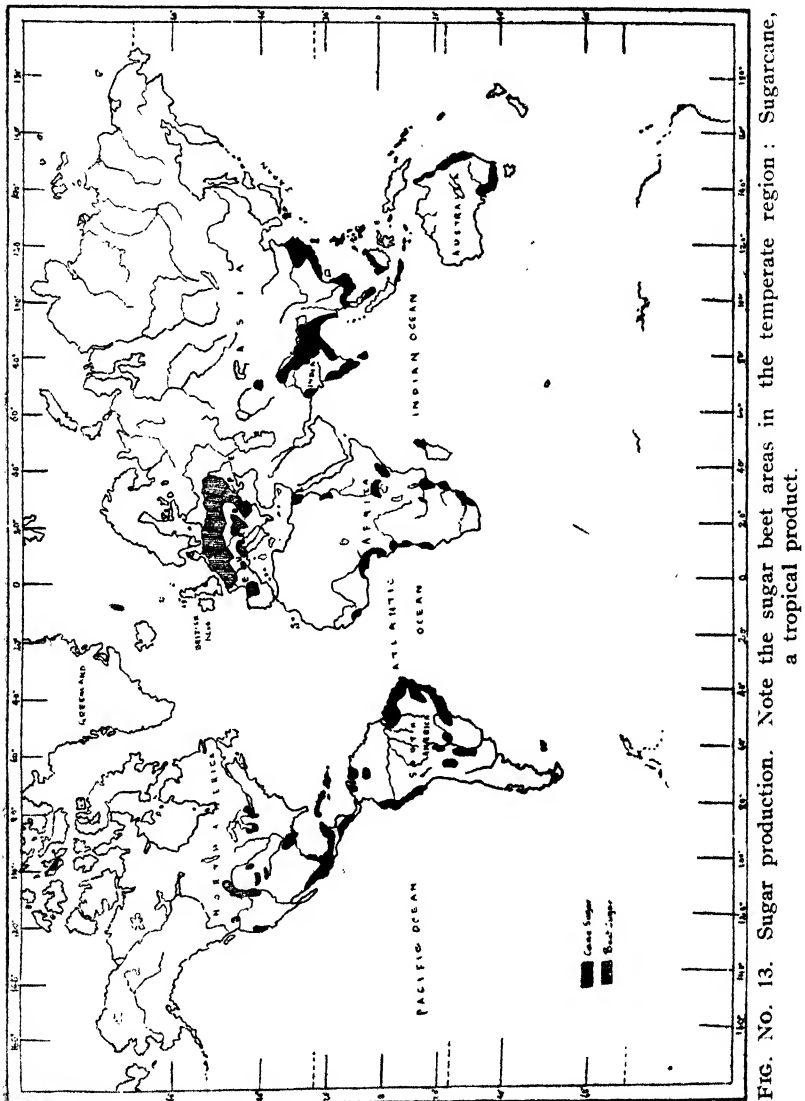
PRODUCTION OF SUGAR-CANE

1939-40

(In million quintals)

India	..	..	..	28	Formosa	..	..	..	12
Cuba	..	..	..	27	Philippines	..	..	..	9
Java	..	..	..	16	World Production	..	..	..	175.
Brazil	..	..	..	12					

Sugar constitutes the chief source of wealth to Cuba. Cuba supplies one-eighth of the world's sugar, both cane and beet. This means the development of enormous plantations and an



immense investment of capital, binding up the prosperity and well-being of the people to a single crop.

India ranks first in sugar production. Although the crop is grown throughout Northern India, the chief area of production embraces the middle and the upper regions of the Gangetic plain. Owing to the density of the population most of the produce is consumed at home, and, what is more, a large quantity of sugar is required to be imported from other countries.

Before the occupation of Java by Japan the sugar industry had an important place in the national economy of that island. High profits arising out of the industry induced the growers to cultivate sugar extensively. Its cultivation largely replaced rice. Then the Government took strict measures to see that not more than a third of the land in any given area was devoted to sugar-production.

Beet sugar forms about one-third of the total sugar produced in the world. Sugar beet is a temperate crop and requires well-drained fertile loamy soil and is such an exhausting crop that heavy manuring is constantly necessary. Sugar beet seems to thrive best in a region with a continental type of climate, provided the rainfall is not too small.

The chief producers are Germany, U. S. S. R., France, U. S. A., Czechoslovakia and Poland. The important exporters are Germany, Czechoslovakia and Poland.

PRODUCTION OF SUGAR-BEET

(In million quintals)

1939-40

U. S. S. R.	..	..	24	Italy	..	..	..	4
Germany	..	..	21	Poland	..	..	..	4
France	..	..	9	U. S. A.	..	..	..	15
Czechoslovakia	..	..	5	World Production			..	105
U. K.	..	..	5					

Soviet Russia is the leading sugar-beet-producing country in the world. It raises about one-fourth of the world's total supply of beet sugar. Transcaucasia, West Siberia and south and central European Russia are the cultivated areas.

Till 1914 Germany was the greatest producer of sugar-beet. Before the present war it contributed only one-fifth of the world's supply.

Not many years ago beet sugar controlled the world market ; but, to-day, it is the privilege of cane sugar to supply more than two-thirds of the total requirement of sugar. Sugar-cane has certain advantages over sugar-beet inasmuch as its cultivation is easier and the yield per acre is richer. Moreover, it is grown in tropical and sub-tropical areas where labour is very cheap. But there are certain advantages on the side of beet production also. Sugar-beets are grown where the population is dense, capital is easily obtained and good machinery can easily be used. Furthermore, the refuse materials and by-products have great commercial value.

At present the production of sugar-beet is continued for economic and political reasons. Many countries of the temperate zone (like Germany and France) feel that it is unsafe to depend on the tropical countries for the supply of sugar. Besides, the development of beet-sugar industry provides employment for many at home. They have, therefore, encouraged the growth of sugar-beet by subsidies or bounties and protective tariffs.

In the British Empire more than a third and less than half of the world's total crop of cane-sugar is produced. One half of the British total is produced and consumed in India alone. In spite of such huge production the Empire has not yet become entirely independent of foreign supplies of sugar. But with further development in Queensland, India, Mauritius and British East Indies, the Empire will become self-sufficient and may also be able to export a considerable quantity of sugar to other countries.

Fruit :—Fruit, an important article of commerce, is grown all over the world. Formerly the demand for fruit was confined to the outlying areas as it could not stand distance and time, and, therefore, it was not an important item of foreign trade. But the invention of cold storage methods and the introduction of fast transportation system have greatly helped the movement of fruits from place to place. For commercial purposes, fruits of tropical and temperate regions are important.

Tropical fruits :—Banana, mango, date, guava, pine-apple and melon are some of the chief fruits of the tropics.

Of all tropical fruits banana is the most important. It is not only one of the staple articles of food in many equatorial regions where it is grown but it is in great demand in the temperate regions also. Banana tree requires warm climate and abundant rain. Consequently it is grown in the West Indies, Central America, north of South America, Jamaica, Costa Rica, Columbia, Honduras and Guatemala, from where it is mainly exported to the U. S. A. and Europe.

Pine-apple is cultivated in the Str. Settlements, West Indies, Florida and Siam. As a plant it requires high summer temperature with no frost. The rich exporting countries are Porto Rico, Siam and Str. Settlements. Mango is a very delicious fruit of the tropics but up till now its export is small. Attempts are being made in India to open markets in the U. K. for Indian mango. Date is essentially a product of the desert ; it grows extensively in North Africa, Iran and North-West India. It is an important article of commerce, and it is in great demand in Europe and the U. S. A. Another widely used tropical fruit is cocoanut, but the general demand is more for copra than for the fruit.

Temperate fruits :—Temperate fruits may be divided into two groups—(1) Warm temperate fruits, (2) Cool temperate fruits.

The coast-lands of the Mediterranean fall within the warm temperate zone. The climate is distinguished by warm summers, mild winters and winter rain. In these areas olive, figs, grapes, apricots, oranges, lemons and almonds grow abundantly. These fruits are known as citrus fruits.

Olive is important as a fruit and also for its oil. It is a native of Asia Minor and is strictly limited to the Mediterranean climatic regions. Plenty of cheap labour is necessary for picking olives by hand. The important olive-producing regions are Spain, Italy, Greece, Portugal and Tunis. Olive oil is used for the manufacture of soaps. It is also employed for cooking, lighting and medicine preparations. The olive-exporting countries are Italy, Greece, Tunis and Algeria.

For successful cultivation grapes require well-drained land with a sunny warm season and, therefore, the Mediterranean regions are the best. The chief grape-producing countries are France, Italy, Spain, Southern Russia, Algeria, Greece, Western Asia, California, parts of Argentina, Cape of Good Hope, Chile and South Australia. Grapes are marketed in three forms, e.g., fresh for table consumption, dried as currants, and juice as wine.

The apple is mostly found in the U. S. A., Canada, North Africa, South Australia, Chile and England. But the U. S. A. is the leading country both in production and export. The orange is another important fruit of the Mediterranean region though it can be grown both in the tropics and sub-tropics. Spain is the leading producer of orange, closely followed by California and Italy. Lemons are grown in all the continents ; but their cultivation is the greatest in the Mediterranean region.

Other warm temperate fruits, such as apricots, almonds, figs, etc., are in considerable demand outside the growing areas.

The cool temperate fruits :—In the cool temperate zone apples, pears, cherries and plums are the noted fruits. Apples are grown best in Canada, Tasmania, New Zealand, Australia and Nova Scotia. British Isles also grow apple of high quality, but the quantity is too small for foreign trade. British Columbia, California and Tasmania have a large production of pears. Plums are found in large quantities in Siberia.

For the export of temperate fruits the U. S. A., Italy, Turkey, Spain, Greece, Iran and Algeria are prominent. Recently Rumania and Tasmania are also exporting fruits in considerable quantity.

Spices :—From very early times there has been trading in spices, which are important not only for improving the palatability of food, but also for the preparation of flavouring oils. Spices are mostly the products of the tropics. Generally high temperature and heavy rainfall are required for the cultivation of most of the varieties.

Of innumerable spices of the tropics, pepper, ginger, cloves and cinnamon are important for foreign trade.

Pepper is the berry of a vine-like climbing plant which is grown extensively in Java, Sumatra, Malaya, Borneo, Siam and the Malabar Coast of India. It is put in the market in two varieties—black pepper and white pepper. It is called black pepper when the whole berry is ground, and white pepper when it is powdered after the removal of the outer skin. The United Kingdom is the leading pepper-importing country in the world from where it is re-exported to other countries.

Chillie is the product of an entirely different plant which originated in tropical America. It is a small pod which is dried in the sun before putting in the market. It is extensively grown in the tropics of Asia, Africa and America.

Ginger is the underground stem of a red-dyed plant indigenous to South Asia and is put in the market in fresh as well as sun-dried conditions. The large scale cultivation of ginger is confined to South America, West Africa, China, India and West Indies.

Cloves are dried, unopened flower buds of "*eugenia caryophyllata*" and are used not only in cooking confectionery and liquors but also as a source of oil which is largely used in perfumery. Zanzibar and Pemba (on the eastern coast of Africa) contribute four-fifths of the world's supply of cloves. The other countries producing cloves are Penang and India. In India it is cultivated in the Madras Presidency.

Cinnamon is the dried bark of a small evergreen tree, native of Ceylon. The cultivation has spread to Java, Brazil, West Indies, East Indies and China. Apart from its use as a spice, it is also important for its oil which has medicinal properties. Southern India produces considerable quantities of cinnamon.

The other minor spices are nutmegs, mace, vanilla, all-spice and cardamoms.

Though the tropics are noted for the production of many kinds of spices, a number of plants furnish spices in the temperate regions as well. Among these are mustard, soya, caraway seeds, coriander seeds and aniseed.

Mustard is obtained from the ground seeds of mustard plants which grow in many parts of Europe. Coriander seed is in demand for its use as a flavouring element in confectionery.

Soya sauce is in much demand in Japan and Manchuria to improve tasteless food like rice.

Sago :—It is a very nutritious and easily digestible food. The Sago-palm requires heavy rain and high temperature, and is grown in swampy places. It grows to a height of nearly thirty feet, and has enormous long leaves. The East Indies and the Malaya Peninsula contain extensive Sago plantations.

Arrowroot :—It is obtained from the tubers of a plant which grows from two to three feet in height. The plant is cultivated in the West Indies, the East Indies, Bengal and other tropical countries.

*THE DEGREE OF SELF-SUFFICIENCY IN FOODSTUFFS OF
CERTAIN IMPORTANT COUNTRIES

Let us now examine the degree of self-sufficiency in foodstuffs of the various countries of the world. As a rule, the highly industrialised countries are not self-sufficient, and they depend for foodstuffs on agricultural countries where the population is generally thin. The following figures relate to the pre-war period.

Country.	Per cent.	Country.	Per cent.
Great Britain	25	Brazil	96
Norway	43	Spain	99
Switzerland	47	India	100
Belgium	51	China	100
Holland	67	U. S. S. R.	101
Finland	78	Denmark	103
Greece	80	Poland	105
Germany	83	Bulgaria	109
France	83	Rumania	110
Sweden	91	Hungary	121
U. S. A.	91	New Zealand	123
Chile	93	Canada	192
Portugal	94	Australia	214
Italy	95	Argentina	264
Japan	95		

* Kuczynski, R. R., *Living Space and Population Problems* (1939).

INDUSTRIAL CROPS

Cotton :—It provides the civilised world with a large portion of its clothing. There is no other plant that comes so close to the civilised man and none which we use so much every day.

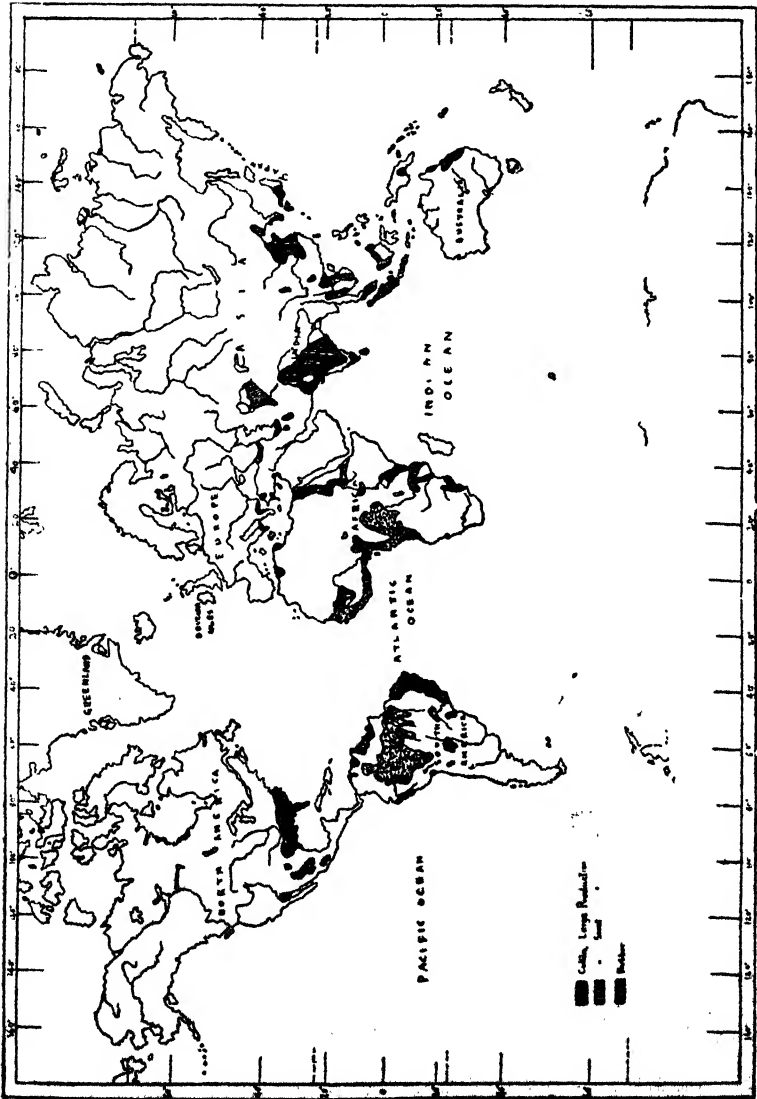


FIG. No. 14. The dotted areas in the Amazon basin, Belgian Congo, the East Indies and S. India indicate rubber plantations. Cotton production is indicated by lined and shaded areas.

It has a considerable climatic range ; but it grows well in warm, moist and even climates where the summer is long and where there is salt in the soil. Sea breeze is beneficial for the quality of the fibre. So the ideal situation for a cotton plantation is on lowlands near the sea or preferably on islands in tropical or semi-tropical latitudes.

U. S. A. is by far the greatest producer of raw cotton. Next in order are India, China and U. S. S. R. These four countries together produce the bulk of the world's crop. The other important producing countries are Brazil, the Sudan, Iran, Mexico, Peru, West Africa, Uganda and Japan.

CHIEF COTTON-PRODUCING COUNTRIES IN 1936.

(In millions of metric quintals)
(1 metric quintal equals 1.968 cwt.)

U. S. A.	..	..	23'3	Brazil	..	..	..	3'0
India	..	..	10'3	Peru	..	..	..	0'7
China	..	..	7'2	Mexico	..	..	..	0'5
U. S. S. R.	..	..	5'4	East Africa	..	..	..	0'5
Egypt	..	..	3'8	Sudan	..	..	..	0'4

Of the several varieties cultivated for market, four stand out prominent : *the Sea Island, the Egyptian, the Peruvian, the Upland*. The first named has the largest, finest and silkiest fibres. The plant can be grown only upon lowlands and it takes its name from the fact that it was first raised on islands off the coasts of South Carolina, Florida and Georgia (in the U. S. A.). It is sometimes known as long staple cotton. Egyptian cotton, also called medium staple cotton, is specially suited to the manufacture of goods requiring a smooth finish and is less expensive than sea island cotton. Peruvian cotton possesses a rough, strong fibre, similar to that of wool. It is well adapted to mixing with wool and is used in the manufacture of underwear and hosiery. Upland cotton is the most widely used and the most abundant of all varieties.

U. S. A. grows nearly 50 per cent of the world's commercial crop. The cotton area stretches in one big belt from North Carolina to Texas. U. S. A. cotton consists of two varieties—the Sea Island and the Upland. Much of the produce goes to

the U. K. The principal cotton ports are Galveston, New Orleans and Savannah.

Indian cotton is mainly produced in the fertile volcanic black-lands of the Deccan and in the Punjab. It is coarse and of short staple. Egyptian cotton is grown in the Nile Valley. The chief port from which it is exported outside is Alexandria. Brazilian cotton is cultivated on the coastal lowlands and is exported from Bahia and Pernambuco. With the exception of India, Uganda is the largest cotton-growing country within the British Empire. The prosperity of Uganda has been closely bound up with the cotton crop ; the extension of roads and railways and the expansion of towns are due to the rapid progress made in this industry during the last twenty years. At present Uganda supplies about 2 p.c. of the world's total output of cotton.

Cotton is a very important article in international trade. The principal importers of cotton are the U. K., Japan, Germany, France, Italy and China. Before 1942 Japan was the largest importer of cotton in the world.

U. S. A., India and Egypt are the three principal cotton-exporting countries of the world. U. S. A. sends annually more than 1·5 million metric tons of cotton.

In the matter of cotton the British Empire is not at present self-supporting, although it raises 34 p.c. of the world's total. The demand for cotton in the British Empire is far in excess of the actual needs of the people of the Empire. This is because the United Kingdom manufactures cotton goods largely for foreign markets. Cotton grown in the British Empire mostly comes from India and Uganda, and it is generally inferior in quality. Therefore, it finds little favour with Lancashire which has to import this raw material from the U. S. A. and Egypt. About three-quarters of the cotton used in Lancashire consists of the finer varieties from the U. S. A.

Measures are being taken to make the British Empire self-supporting, and the British Empire Cotton Growing Association is actively engaged in this direction. Northern Nigeria, Nyasa-

land and the British East African Colonies of Tanganyika and Kenya can grow huge quantities of cotton. Already the Sudan has made much progress in cotton cultivation. A great dam at Sennar on the Blue Nile has been constructed to irrigate the Gezira district which raises cotton in increasing amount and of improving quality. Recently Sind and the Punjab have begun to raise American cotton with improved seeds and better irrigation facilities.

The spread of civilisation and the rise in the standard of comfort are increasing the demand for cotton and, therefore, there is need for increasing the areas of cotton production. Fortunately there are immense possibilities of increasing such areas. Outside the British Empire, the West Indies can grow more long staple cotton of Sea Island type than they do now. Before 1941 Russia, with fairly cheap labour and vast land, was becoming more and more important as a cotton exporter and relieving the pressure on the ordinary American upland. Her chief difficulties were defective transport and deficient rainfall. Formerly cotton cultivation in Russia was confined to Transcaucasia and Turkistan. In recent times it was extended to the Crimea, Black Sea coast, the coastal region of the Sea of Azov, and the Ukraine. It is interesting to note that while the production was 215 thousands of tons in 1929, it increased to 407 thousands of tons in 1935. There are also great possibilities of cotton cultivation in Mexico, Korea and Manchuria.

Jute :—Next to cotton, jute is the most important tropical fibre crop. It is mainly used for the manufacture of cordage, carpet, coarse gunny cloth and sacking. "The demand for jute in the world's market is based upon the fact that no cheaper fibre is procurable for bagging agricultural produce." Although many fibres are now available for commercial use, Bengal jute still continues to hold the field as a fibre which can be produced at an exceptionally low cost and is consequently suitable for the production of a wider range of articles.

Jute is a tropical plant. It requires rich alluvial soil, high temperature and heavy rainfall. The plant generally grows to

a height of 5 to 10 ft. Although jute is a tropical plant, its cultivation is confined almost exclusively to the Lower Gangetic plain of India. The successful cultivation of the crop in this area is due to a combination of factors such as good soil, abundance of rain during the season, suitable water for retting purposes and cheap labour. The quality of the fibre and the yield per acre depend in a large measure upon the preparation of the soil. The other jute-growing areas outside India are Ceylon, Formosa, China and Malaya.

Indian jute is mainly exported to the United Kingdom, Germany, the U. S. A. and France. Canada, Japan, Italy and Argentina also import large quantities of jute.

Jute manufactures may be divided into four classes :
(a) gunny bags, used for packing rice, wheat, oil-seeds, etc.,
(b) gunny cloth or hessians ; (c) coarse carpets and rugs ;
(d) cordage.

In India the jute manufacturing industry is highly localised in a small area on the banks of the Hooghly, near Calcutta. This area is ideally situated for the centralization of jute industry because of the proximity to the raw material, plentiful supply of cheap labour, moist climate, nearness to the port of Calcutta and navigability of the river.

Outside India, the most important jute manufacturing centre is Dundee in Scotland. Calcutta and Dundee supply the world's requirements for manufactured jute and there is a keen competition between these two centres. It was the privilege of Dundee to control the world market for manufactured jute up till 1908 : since then Calcutta has been enjoying the leadership of this industry.

Jute cultivation has largely displaced rice in many tracts of Bengal and given rise to the danger of depending too much on one crop. The falling demand for jute has been followed by a severe economic depression in the province. The fall in the price of jute is due to over-production and the introduction of substitutes in many countries.

Many substitutes have been discovered in several countries to compete with jute in the world market. Russian hemp has

found considerable room in the markets of Indian jute. Paper bags are now-a-days used in the cement trade of the U. S. A. to the exclusion of jute bags. Jute bags are also being displaced by the use of elevators and bulk shipment in transit in many countries. In the U. S. A., Germany, and other continental countries textile yarn made from woodpulp was offering a certain amount of competition to the jute textiles inside electric cables. At present attempts to grow jute are being made everywhere. Experiments are being conducted by Italy to cultivate real jute in Abyssinia. A jute-like fibre called Rosella is being extensively grown in Java. It is reported that Java will be self-supporting so far as sugar bags are concerned in near future.

Egypt, Iran, Siam, Indo-China, Japan, Brazil, Mexico, Paraguay and Formosa are also producing jute.

Hemp :—It is a plant grown both for fibre and for seed. The fibre is manufactured into cordage, sacking, sail cloth, twine and ropes. The seed is used principally for poultry food and the oil is an important constituent of certain paints and varnishes.

Hemp has a wide range of cultivation, for it is grown in tropical and temperate parts of the world. The plants after flowering are removed from the fields, dried in the sun and soaked in water for two weeks. The fibre is then separated from the wood by constant beating. Russia, Italy, China, Hungary, India and the U. S. A. are the leading producers.

In Europe, Russia is the principal producer. In other parts the cultivation of hemp is small. Italy produces the best quality hemp though it ranks far below Russian hemp in quantity. In the U. S. A., the important hemp-growing areas are Ohio, Wisconsin and Kentucky. Philippine Islands produce fine quality hemp known as Manila hemp, which is mainly used for ropes and cordage.

Mexico, Tanganyika and Kenya raise Sisal hemp which is noted for its hard fibre. Sisal hemp is mainly used for making binder-twine.

India is a great producer of hemp and it is grown in

Madras, Bombay, C. P. and U. P. Indian hemp is exported to the U. K., Belgium, Italy, France, Germany and Denmark.

Flax :—It is cultivated both for fibre and for seed. The seed is of importance for the extraction of oil which is used in the manufacture of paints and varnishes, while the fibre is used for twine and canvas as well as for various types of linen cloth.

The two products—fibre and seed—rarely come from the same plant. In tropical and sub-tropical areas flax is grown for seed, while in cool temperate areas it is raised for fibre. The cultivation of flax is largely confined to those lands where there is a dense population with a low standard of living, for heavy manual labour is required in pulling up the plant by the roots, removing the seeds with comb and wetting the straw to cause soft parts to rot, when fibre will be separated from them. Consequently it is raised in India, Russia, Italy, Ireland and Argentina.

The crop is raised for fibre in Western Russia, Poland, Holland, France, Ireland and Belgium. In India, U. S. A. and Argentina it is cultivated for seed. The important exporting countries are Russia, Belgium, Argentina and India.

Silk :—Although silk is a fibre of animal origin, its production depends on the cultivation of certain trees of which the mulberry tree is the most important. The silkworms thrive on the leaves of these trees. The silkworms or caterpillars spin cocoons from which silk is collected. The principal silk-producing countries are China, Japan and Italy. Small quantities are also produced in India, France, Spain and Asia Minor. China is the greatest silk-producing country and exports 18 p.c. of the world's silk supply. It is a household industry in China. Before the war Japan was the greatest silk-exporting country. Nearly 90 p.c. of Europe's silk comes from the Po Valley in Italy.

The most important markets for raw silk in the world are France and the U. S. A. ✓

Artificial silk or Rayon has acquired in a brief span of years world-wide importance. "The cellulose in cotton waste

or wood is reduced to liquid pulp by a chemical process and then forced through capillary tubes which change it into a fibre". It is possible to spin and weave this fibre without changing the existing equipment of silk mills. Rayon is in great demand among the manufacturers, for it may be used with cotton, silk, linen and wool. Although natural silk is lighter in weight, softer, finer, more lustrous and elastic than rayon, the price of the former has been affected to a great extent by the large scale use of the latter. The rayon-producing countries are Japan, Italy, Germany and the U. S. A.

WORLD OUTPUT OF RAYON

(In millions of kilos)

	1935	1937		1935	1937
Japan	102	175	Germany	68	107
U. S. A.	115	145	U. K.	50	68
Italy	74	120	World total	493	750

Rubber :—It has become the foremost plantation crop of the Wet Equatorial region and the most valuable plantation crop in the world. Fifty years ago it was not an important item in commerce or industry ; to-day it is a major commodity.

Rubber is obtained either from plantation or from wild rubber trees. The rubber tree is found in areas having a heavy rainfall and a rich, deep, loamy soil which is well-drained. It is, therefore, grown in the equatorial areas like the Congo basin, the Amazon basin and the East Indies.

Plantation rubber is now an important industry and the output is increasing with tremendous strides. As late as 1910 the output of the wild rubber was more than 10 times as large as that of plantation rubber. To-day plantation rubber comprises nearly 90 per cent of the world's rubber.

There are many difficulties in collecting wild rubber. The rubber gatherer must laboriously open long paths from tree to tree and must trudge for miles each day through mosquito-infested swamps to gather a few pounds of latex. Moreover, the wild rubber areas like the Amazon and Congo basins are hundreds or thousands of miles inland and some of the districts are remote from the trade routes. On the other hand, almost

all the important rubber plantations are conveniently situated near the sea coasts of Asiatic tropics and along one of the world's greatest sea routes. Plantation rubber has made it possible (i) to reduce the labour of gathering latex, (ii) to take advantage of the cheap and abundant labour supply of more densely populated parts of the tropics, and (iii) to locate the industry near good and convenient trade routes.

Most of the rubber plantations are found on or near the coast of the East Indies and of Malaya Peninsula and 90 per cent. of the world's total output comes from this region. The other important areas are Ceylon, India, Brazil and Congo.

PRODUCTION OF RUBBER IN 1935

(In 000 metric tons)

British Malaya	475	British Borneo	29
Dutch Indies	384	India	12
Ceylon	80	World	1031
Plantation Rubber	869		
Wild Rubber	162		

More than 60 per cent. of plantation rubber is produced in the British Empire and most of the remainder comes from plantations managed or controlled by the Dutch. Although the U. S. A. consumes nearly two-fifth of the world's crop, her part in the production of rubber is practically insignificant.

In the early days of the rubber industry, there was no correlation between supply and demand, and this was responsible for violent fluctuations in the price of rubber to the prejudice of planters. The degree of maladjustment was increased by the fact that whenever there was a rise in price, there was immediately an expansion of cultivation, despite the fact that there was no real increase in demand. The result was an excess of supply over demand and a great fall in prices. Therefore, a scheme was made to control production. It was known as 'Stevenson Scheme'. The scheme urged the "producers to restrict their output to a definite percentage of their full capacity, the percentage fluctuating according to demand and resulting price levels." The great defect of the Scheme was that it was applicable only to the British plantations. The non-

participating countries did not curtail their production and as a result the Scheme failed to produce satisfactory results.

An international rubber restriction agreement was then reached in which all the territories of South-East Asia producing rubber joined. The scheme began to operate on 1st April, 1934, with the object of regulating the production and export of rubber in order to reduce the existing world stock and maintain an equitable price level, reasonably remunerative to efficient producers. Production and export of rubber were prohibited beyond the agreed quotas.*

The principal importers of rubber are the U. S. A., U. K., France, Germany, Canada, Japan and U. S. S. R. U. S. A. has recently acquired some control over the rubber plantations of Brazil and Mexico.

Oil-Seeds (Vegetable Oil) :—Almost all vegetable oils are extracted from fruits or seeds. Vegetable oils are in demand not only for salads and other food, but also for preparing perfumery, varnishes, lubricants, candles, soaps etc., as well as for various other purposes.

The sources of vegetable oil are cotton-seeds, cocoanuts (copra), palm-nuts, olives, rape-seeds, sesame, peanuts or groundnuts; linseed, soya beans and castor-seed, most of which are found in the tropics and sub-tropics.

Olive is a product of the Mediterranean region. The oil is extracted for cooking and salads and for use in spinning, weaving and soap-making. Spain, Italy, Greece, North Africa, Portugal and Southern France are noted for olive oil. Cotton-seed-oil is a good substitute for olive-oil, whose demand for industrial purposes is greater than any other seed-oil. U. S. A., India, Egypt and Uganda are the large producers of cotton seed. Though the U. S. A. is the largest producer, it does not export it in considerable quantities because of internal demand.

The cocoonut-palm makes four principal contributions to commerce, *viz.*, (a) copra, the dried kernel of the nut, (b) cocoa-

*The operation of this agreement is now under suspension due to the War.

nut oil, (c) residual cake, and (d) the fibre derived from the husk surrounding the nut. The oil which is extracted from copra is in demand not only for food but also for soap-making. Cocoanuts are largely found in the Philippines, the East Indies, Ceylon, Southern India and other islands of the Pacific. In some cases oil is extracted and exported from producing countries ; in other cases, the trade is in the form of copra. The largest importer of copra is the U. S. A.

The groundnut, also known as peanut, is cultivated in India, Brazil, East Africa, China, the Philippines and Korea. India is by far the largest exporter of groundnuts. The chief importing countries are France and Germany.

GROUNDNUTS

(In millions of *meric quintals*) 1937

China	22'5	Nigeria	3'6
India	19'7	East Indies	2'0
French West Africa	7'1	Manchukuo	1'5
U. S. A.	5'7		

Linseed is merely another name of flax-seed, which is chiefly used in the preparation of paints and varnishes and oil-cloth. Linseed is largely grown in Argentina, Italy, Russia, India, China, U. S. A. and the Netherlands. Four-fifths of the entire quantity of linseed that enters into foreign commerce come from Argentina.

LINSEED

(In millions of *meric quintals*) 1937

Argentina	12'8	India	4'2
U. S. S. R.	6'3	U. S. A.	3'8

The seed of sesamum is an annual plant thriving in the tropical and sub-tropical parts of the world. It is an important source of oil in India and China. Palm-oil is obtained from palm fruit and is used for soap, candles and lubricants and also for making edible butter and fats. The palm fruits are found

in West Africa and the East Indies. In India its cultivation for oil is practically unknown.

Castor-oil plant is cultivated in India, Brazil, Java, Indo-China and Manchukuo. The oil is extracted from the bean and is very useful for medicinal purposes and soap-making and also as a lubricant. The exports of castor-seed for oil from India go to U. K., France, U. S. A., Belgium and Germany.

Rape seeds and mustard seeds are extensively found in Europe as well as in India.

SOYA BEANS

(In millions of metric quintals)

China	50·2	Korea	4·9
Manchukuo	33·5	Japan	2·8
U. S. A.	10·8	East Indies	2·0

Soya beans grow in soils where cotton and maize are cultivated. Generally it grows best on rich loamy soils. It is sown in summer and harvesting begins from December.

Manchukuo is the largest producer of soya beans in the world. Other producers are Japan, China, India and the U. S. A.

At the present time, soya bean has acquired a great commercial importance. Beans supply meal, oil, green beans and dried beans.

USES OF SOYA BEANS

Meal—Breakfast foods, flour, soya milk, soya sauce, cakes, pastry, etc.

Oil—Glycerine, enamels, varnish, linoleum, celluloid, lubricating, candles, rubber substitutes, etc.

Green beans—Green vegetables, salads, etc.

Dried beans—Soup, vegetable milk, coffee substitutes, boiled beans, etc.

QUESTIONS

1. What are the necessary conditions for the production of the following—(a) Rubber and (b) Beet? Name the principal countries in which these are produced. —(Cal. Inter. 1927).

2. Describe the geographical circumstances favouring the growth and the world distribution of sugar-beet and sugar-cane. —(Cal. Inter. 1931, 1933, 1941).

3. What are the necessary conditions for the successful cultivation of cotton? Describe carefully the regions where it is produced in India and the measures adopted for improving the quality and quantity. —(Cal. Inter. 1931).

4. Who are the principal buyers of Indian Cotton? What are the chief sources of supply of cotton to the Lancashire Cotton Industry? Do you think that the British Empire can be self-supporting in this commodity? —(Cal. B. Com. 1934).

5. Into how many classes is cotton divided? Give a short account of the chief sources of supply of the principal varieties of cotton. —(Cal. Inter. 1936).

6. What are the climatic conditions favouring the growth of coffee and tea? What are the principal countries of production and export? —(Cal. Inter. 1934).

7. Examine the importance of any four of the following crops in India: (a) Cotton, (b) groundnut, (c) jute, (d) linseed, (e) rice and (f) wheat. —(Cal. Inter. 1934).

8. What are the main sources of supply of rubber and what countries control these sources? What are the possibilities of India becoming an important rubber producing country? —(Cal. B. Com. 1926).

9. Name the most important rice importing countries of the world. From what sources is rice imported into Great Britain and to countries of Northern Europe? What is the present position of India including Burma in this trade? —(Cal. B. Com. 1930).

10. Name the places where the following are grown: (a) sugar, (b) coffee, (c) flax, (d) Indian rubber and (e) tobacco. —(Cal. Inter. 1924).

11. What are the natural conditions required for the cultivation of cotton? What countries export cotton and to what destination? —(Cal. Inter. 1925).

12. Compare and contrast the physical and economic factors associated with the production of rice and wheat. Mention the chief countries and ports engaged in the foreign trade in these commodities. —(I. P. S. 1934).

13. What conditions are necessary for the successful cultivation of beet and sugar-cane? State accurately the areas in which sugar is manufactured. India produces large quantities of sugar-cane, but still imports sugar from other countries. Why? —(I. P. S. 1930).

14. Discuss the conditions favouring the growth of (a) jute, (b) oil seeds, (c) coffee and (d) sugar-cane. —(Cal. Inter. 1935).

15. What climatic conditions are favourable or unfavourable to the cultivation of rice, cotton and sugar-cane? Explain fully the reasons. —(Cal. Inter. 1940).

16. Explain the geographical distribution of and trade in wheat, rubber and silk. —(I. I. B. 1940).

17. State the essential features of the distribution of wheat, rice and sugar-cane in the British Empire. Examine the position of each one of them in international trade. —(I. I. B. 1940).

18. Since 1933 the declining tendency of the prices of tea has been arrested and at present the tea market is ruling quiet. What factors happened to be responsible for this improved position of the industry? What steps, in your opinion, should be taken by the industry so that the improvement now visible may be of a lasting character? —(Cal. B.A. Hons. 1941).

19. Name the principal silk producing countries of the world. Do you think that artificial silk is seriously competing with natural silk? —(Cal. B. Com. 1937).

20. Describe and account for the location and importance of sugar-beet producing regions of Europe. —(Cal. B.A. 1942).

21. Discuss the supply and demand position of the principal cereals in the world to-day. What is the main cause for the maldistribution of these commodities over the consuming countries, and how can it be removed? —(Cal. B. Com. 1943).

CHAPTER IV

MINING

Mining is an industry in which minerals are extracted from the womb of the earth for the use of man. Minerals are used as raw materials for various industries. Modern civilisation is in many respects dependent on mineral products. Machines, ships, armaments, buildings, coins, nay, everything connected with modern civilised life is more or less associated with minerals. This is why when a mine is discovered, there is a scramble for its exploitation.* No part of the world can be inhospitable for the seekers of minerals. The hot deserts of Australia and South Africa and the cold desert of Alaska have developed along with the discovery of minerals. When the gold-mine of the Servard Peninsula, near the Arctic Circle (Alaska), had been discovered in 1897, a regular goldrush began. Unlike agricultural crops, mineral product is fixed in quantity ; it cannot be increased or replaced. Once the minerals are extracted from the earth, they are gone for ever. Mining is, therefore, a kind of robbery, because it takes away something which it cannot give back. It robs Nature of her products. Minerals are decreasing rapidly and in future, civilisation may be threatened by their shortage.

Minerals may be classified into—

(a) *Metallic minerals.*

Iron, copper, lead, tin, zinc, aluminium, silver, gold, mercury, antimony, platinum, manganese, nickel, chromium, cobalt, tungsten and vanadium.

(b) *Minerals used as fuel.*

Coal, petroleum and natural gas.

* No nation has within its borders all the various minerals required by its industries. Hence all are bound together by a chain of economic dependence on each other in respect of various minerals.

(c) *Structural materials.*

Cement, stones, lime, asbestos, asphalt, gypsum, clay, and sand and gravel.

(d) *Minerals used chemically.*

Salt, sulphur, potash, magnesite, dolomite, etc.

(e) *Minerals of miscellaneous uses.*

Talc (soap-stone), mica, precious stones, graphite, quartz, fuller's earth, etc.

Gold :—It is used mainly for coinage and for the manufacture of jewellery, and as such it is exceedingly valuable. The influence of gold on human life is great. The hunger for gold has led to the great development of South Africa and Alaska and in each of these areas marked movements of population followed the discovery of gold.

Gold is widely distributed throughout the world, but a few countries produce it in great bulk.

CHIEF GOLD-PRODUCING COUNTRIES IN 1935

(In 000 kilogram : a kilogram equals 32.1507 troy ounces)

Union of South Africa ..	335	Japan	18
U. S. S. R.	170	Philippines	13
Canada	102	Korea	12
U. S. A.	98	Gold Coast	11
Australia	28	Columbia	10
South Rhodesia ..	23	India	10
Mexico	21	Chile	9

More than 50 p.c. of the total production of gold in the world comes from the Union of South Africa,* which is undoubtedly the greatest producer in the world. The region in which it is mined is the ridge of the northern rim of the hills that separate the basins of the Orange and Limpopo. This

* The development of South Africa is mainly due to the discovery of gold fields. The construction of the lines of communication and the planning of many towns and cities have been mainly aimed at the exploitation of this product. It is, therefore, said that, "Gold mines are the backbones of South Africa".

ridge is called the *Witwatersrand* (or simply Rand). The Rand gold fields were discovered in 1885.

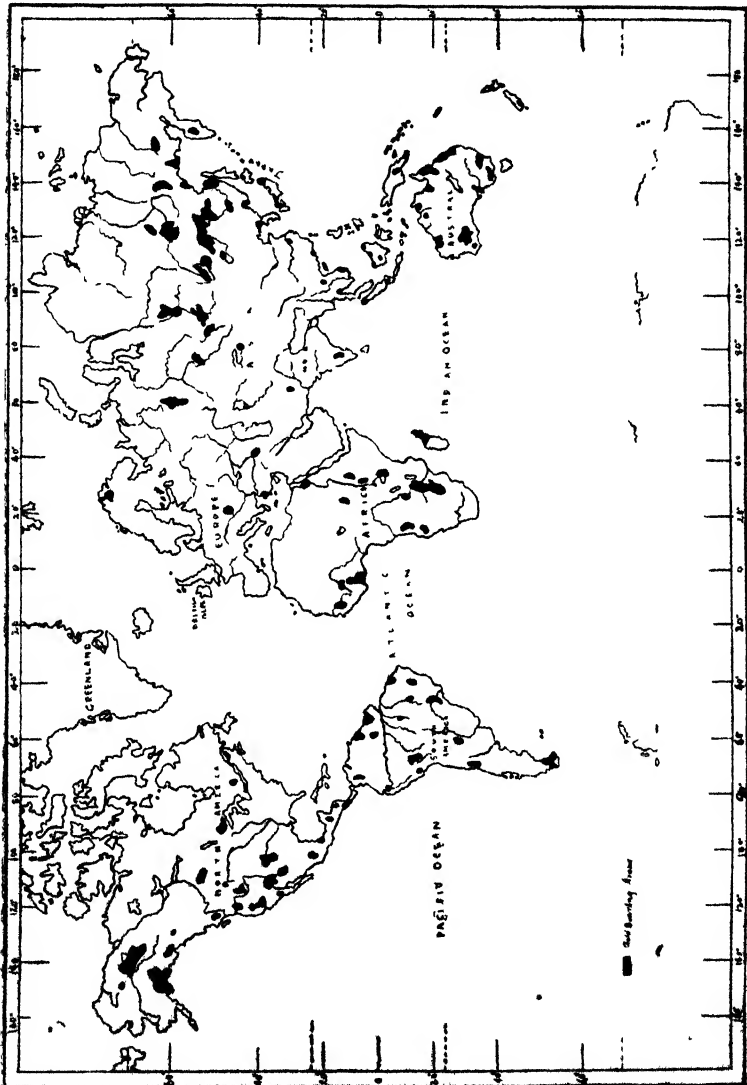


FIG. NO. 15. Distribution of gold production. Note the gold-bearing region in North America from Alaska to Mexico.

The Rand industrial zone of S. Africa mainly depends on gold. The largest Rand towns are Johannesburg, Germiston, Benoni, Booksburg and Krugersdrop. All these towns are connected by railways and are situated within 70 miles of Johannesburg, east and west. Nearly one-sixth of the Europeans of the Union or one-half of those of the Transvaal have settled in the "City of Rand".

To the west of Johannesburg, gold is found in the rocks of the ridge. The rocks have to be crushed to obtain the gold. The gold mines are worked there with considerable difficulties ; for labour is scarce, transportation facilities are inadequate and the climate is hot. At present a large number of labourers is brought from India and China to work the mines on the *compound system*. Under this system, the labourers sign on for definite periods during which they live in compounds where they are fed and housed by the mining companies.

Gold is found in many parts of North America. The whole region from Alaska in the far north to Mexico in the south is rich in gold. The chief gold areas of North America are—

1. The Yukon basin of Alaska (the centre is Klondike).
2. British Columbia (the Fraser and Columbia basins).
3. California.
4. The plateau of Idaho.
5. The Eastern Rocky field (the Montana and Dekota).
6. The plateau of Colorado and Arizona.
7. Eloro in Mexico.

More than one-fourth of the world's gold supply is raised in North America. Recently a few gold fields have been discovered in Ontario in Canada and there are still many to be discovered.

Gold is the most important mineral product of Australia where it is found practically in all the States. The richest deposits are, however, found in Western Australia, Queensland and Victoria. Ballarat and Bendigo are the two chief gold-producing districts of Victoria. In Queensland the chief mining centres are Charlestown and Mt. Morgan. Western Australia has rich supplies of gold in Coolgardie and Kalgoorlie.

In India the greater portion of the gold produced comes from the Kolar fields in Mysore. Burma produces a small quantity of gold, mostly extracted from alluvial deposits.

The position of the British Empire as a producer of gold is unassailable. It controls territorially and financially more than 60 p.c. of the gold resources of the world.

✓ **Silver** :—It is obtained native, and also in combination with other metals the chief of which are gold, lead and copper. Now-a-days most of the silver produced is a by-product of some other metals, and, therefore, its output is an index of the mining of those metals. Silver is used in the manufacture of ornaments, table utensils and coinage and also for plating base metals.

CHIEF SILVER-PRODUCING COUNTRIES

(In 000 kilogram : a kilogram equals 32.1507 troy ounces)

Mexico	..	..	2,400	India (including Burma)	186
U. S. A.	..	..	1,872	U. S. S. R.	.. .. 121
Peru	..	..	582	Belgian Congo	.. .. 90
Canada	..	..	576	Yugoslavia	.. .. 56
Australia	..	..	360	Spain	.. .. 45
Bolivia	..	..	318	Chile	.. .. 44
Japan	..	..	299	Korea	.. .. 39
Germany	..	..	195		

The position of the British Empire in respect of silver production is not very satisfactory. Only a little more than one-sixth of the world's silver resources is controlled by it.

North America produces more than two-thirds of the world production. The whole mountainous range of the west from the U. S. A. to Chile in South America is rich in silver. Mexico is the leading producer of silver and she mines nearly more than one-third of all the world's output of new silver. In the U. S. A. silver mines are worked in Idaho, Montana, California, Utah, Texas, Colorado and Arizona. Canada is the fourth greatest producer. More than half of the silver produced in Canada is

obtained from Ontario, and the rest from British Columbia. In Peru the working of mines frequently suffers from political disturbances. With the restoration of stable government, it is expected that production will increase in that country. At present it contributes about 8 p.c. of the world's total supply.

Australia is very rich in silver ; large deposits are found in New South Wales and Western Australia. In Europe a small output is obtained from Germany and Spain.

Japan and India are also producers of silver. In India there are no silver mines ; it can only be found as a by-product in the mining of gold, lead, tin, etc. Almost the entire silver supply of India is obtained from the Kolar Gold Fields of Mysore.

As the production of silver is increasing rapidly, the price-level of the metal is going down. In 1933 Mexico, U. S. A., Canada, Australia and Peru made an agreement to restrict the output of silver with the object of stabilising its price.

Platinum :—It is a valuable metal used in photography, dentistry, in the electrical and jewellery business and in X-ray works. It is also used in the manufacture of handbags, cigarette cases, pocket lighters and knives. During recent years its use in the setting of diamond has increased considerably. Russia has long been the chief producer, and though recently surpassed in production by Canada, it still has a reserve of many million ounces.

CHIEF PLATINUM-PRODUCING COUNTRIES IN 1937

(In troy ounces)

Canada	..	..	140	Union of South Africa	..	31
U. S. S. R.	..	..	133	U. S. A.	..	9
Columbia	..	..	29	World Production	..	382

Canada is the leading producer of platinum and contributes more than one-third of the world-production. Most of the Canadian output is raised in British Columbia and Ontario.

Russia has rich deposits of platinum in the Ural mountains. In South Africa, the principal deposits are in the Waterberg, Lydenberg and Rustenberg districts of the Transvaal.

Osmium and iridium are metals akin to platinum. These are produced mainly in Canada. U. S. A. and Australia also produce platinum.

Lead :—It is very commonly found in association with zinc or silver, and is used for a variety of purposes in industries. Lead commands demand for paints, glassware, typewriter, automobiles, aeroplanes, locomotives, printing industries, musical instruments and bullets.

WORLD PRODUCTION OF LEAD IN 1935

(In 000 metric tons)

U. S. A.	..	..	300	U. K.	..	..	..	42
Australia	..	..	225	Newfoundland	..	..	..	38
Mexico	..	..	184	Italy	..	..	..	21
Canada	..	..	154	Sweden	..	..	..	9
India	..	..	79	Japan	..	..	..	7
Yugoslavia	..	..	64	Tunis	..	..	..	5
Germany	..	..	57	France	..	..	..	1
U. S. S. R.	..	..	45					

The leading producer is the U. S. A. where it is found in Missouri, Idaho, Oklahoma, Colorado, Montana, Nevada, Utah, New Orleans and New Mexico. In spite of the fact that production in the U. S. A. is much larger than in any other country in the world, her domestic requirements are so great that supplies are often drawn from other producing countries, e.g., Mexico, Canada, Spain and Australia.

The British Empire controls nearly one-fourth of the total supply.

Zinc :—Zinc-ore is generally associated with lead and copper ores and is used to coat or galvanise iron in order to prevent rusting. It is also used in the manufacture of paints.

CHIEF ZINC-ORE-PRODUCING COUNTRIES IN 1935

(In 000 metric tons)

U. S. A.	..	..	469	Poland	..	..	..	45
Australia	..	..	151	India	..	..	..	45
Canada	..	..	145	Spain	..	..	..	33
Germany	..	..	136	Sweden	..	..	..	30
Mexico	..	..	136	N. Rhodesia	..	..	..	21
Newfoundland	..	..	67	Japan	..	..	..	18
Italy	..	..	50	Norway	..	..	..	6
Yugoslavia	..	..	47	Belgium	..	..	..	3
U.S.S.R.	..	..	46	U. K.	..	..	..	1

U. S. A. surpasses every other country in zinc production and contributes about 40 per cent of the world's supply. Oklahoma, New Jersey, Kansas and Utah are the principal sources of supply. As a result of some recent discoveries of zinc mines, Australia has become the second largest producer. Canada is a close rival of Australia. Northern Rhodesia contains large deposits of zinc ore.

Copper :—Copper usually occurs in combination with silver, gold, iron, lead and sulphur. The demand for this metal is considerable, for it is largely used in the electrical industry. Mixed with zinc, it produces brass ; with tin, bronze ; and with nickel, German silver.

CHIEF COPPER-ORE-PRODUCING COUNTRIES IN 1935

(In thousands of metric tons)

U. S. A.	..	..	335	U.S.S.R.	..	..	60
Chile	..	..	267	Mexico	..	..	39
Canada	..	..	190	Yugoslavia	..	..	39
N. Rhodesia (Brit.)	..	..	160	Peru	..	..	30
Belgian Congo	..	..	145	Germany	..	..	30
Japan	..	..	70	Spain	..	..	30

World's total production .. 1,491'7

In the U. S. A. the copper ores are found in Montana, Arizona, Nevada, Colorado, Utah and Lake Superior Coast.

The greatest copper-producing area in the world is the Butte district (Montana) in the U. S. A. The second largest copper-producing district in the U. S. A. is the Lake Superior district where the mines are located in the vicinity of Houghton. U. S. A. produces more than 20 p.c. of the world's total. In 1930 it contributed more than 47 p.c. of the world production.

Chile is the world's second largest producer of copper. In Asia the position of Japan in respect of this metal is very enviable. India also produces a small quantity of copper.

The production of copper in Europe being insufficient for her requirements, import from overseas is of considerable magnitude. The principal copper-producing countries of Europe are Spain, Germany and Norway.

Although the British Empire has increased her production enormously within recent years, her contribution is only 8 p.c. of the world's total. This quantity is not sufficient to meet the requirements of the Empire. Canada ranks second in copper production. Northern Rhodesia raises an appreciable quantity.

Recent explorations have proved that the Katanga deposit in Belgian Congo is one of the richest in the world. What gold and diamonds have been to South Africa, copper promises to be for Congo. The difficulty of securing labour and the excessive cost of transportation tend to check rapid development. The other important producers are Mexico, Japan and Peru.

From 1935 to the outbreak of the War the world market of copper was controlled by an International Copper Export Cartel, whose members included the U. S. A., Canada, Peru, Mexico, Chile, Belgian Congo and Rhodesia.

Aluminium :—It has become very important in these days of aviation. Fifty years ago, its importance was practically nil. It is also used in motor cars, railway carriages, electrical and armament industries.

Aluminium is extracted from bauxite and cryolite. France, Hungary and the U. S. A. produce bauxite. Cryolite is found only in Greenland. Cheap power is necessary for smelting aluminium ore.

ALUMINIUM-PRODUCING COUNTRIES IN 1937

(In 000 metric tons)

U. S. A.	..	132	France	..	34	Norway	..	23
Germany	..	128	Canada	..	42	Switzerland	..	25
U. S. S. R.	..	45	U. K.	..	19	Italy	..	23
			World production	..	490			

The United States is the largest producer of aluminium and aluminium products in the world. It raises more than 25 per cent. of the world's total output of the aluminium ore.

The modern method of extraction has greatly increased the output of this metal, and consequently prices have been reduced. As a metal it is light, tough and non-corrosive. Aluminium can be easily manufactured where power is cheap. In France, Germany, Norway and Italy it is worked very advantageously because water-power is available at a low cost.

Tin :—This metal is useful in manufacturing packing cases, tin roofing and many other articles. Tin has considerable demand in fish and meat packing centres. The principal countries noted for tin production are Malaya, Bolivia, Great Britain, East Indies, China, Germany, U. S. A., Australia, Nigeria and Belgian Congo.

WORLD PRODUCTION OF TIN ORE IN 1937

(In 000 long tons)

Malaya	..	..	78	China	..	..	10
Bolivia	..	..	25	Australia	..	..	3
East Indies	..	..	40	U. K.	..	..	2
Siam	..	..	16	Burma	..	..	5
Nigeria	..	..	10				
Belgian Congo	..	..	9	Total .. 208			

In Malaya, the deposits have been worked at Perak, Selanger, Pahang and Negri Sembilan, the first two furnishing 90 per cent. of the total. Small deposits are also located in Johore, Kedah, Kelantan, Perlis, and Trengganu. The tin

deposits of the East Indies are of considerable importance. Most of the deposits are in Banca, Sumatra, Singkep and Billiton.

About 60 per cent. of the world's total tin supply is obtained from Malaya and the East Indies. In Bolivia the proper development of this metal is subject to many handicaps, specially the absence of communications. British Empire is in a very strong position so far as this metal is concerned, as it controls more than 50 per cent. of the total supply. The Empire produces more tin than it actually needs for its own requirements.

The greatest consumer of tin in the world is the U. S. A. where the meat packing industry is practically dependent on the supply of tin imported from foreign countries.

Mercury or Quicksilver :—The chief use of this ore lies in the fact that it is employed in the extraction of gold and silver from the ore. It is also used in the manufacture of thermometers and barometers, for medicine and ointment, and for the silvering of mirrors.

WORLD PRODUCTION OF MERCURY IN 1937

Italy	..	..	37 p.c.	Mexico	..	..	3 p.c.
Spain	..	..	32 „	Czechoslovakia	..	..	1.5 „
U. S. A.	..	..	16 „				

Although mercury is found widely distributed throughout Italy, the principal deposits are in Tuscany, the Idria and Trieste. In Spain, the deposits are found in the Almedan mine in the province of Ciudad Real and in Granada and Oviedo. The chief States of the U. S. A. supplying mercury are, in order of importance, California, Oregon, Texas, Nevada, Washington and Arkansas. In Russia, mercury is mined at Nikitova in the Donetz basin. There are a number of small mercury mines in Mexico, but the production is very small, because of political disturbances and labour troubles.

Iron :—Iron is by far the most useful of all the metals. “The success of almost every industrial enterprise depends upon the extensive and efficient use of machinery and other economic equipments made wholly or in part from iron and its alloys. “Leadership in industry and trade demands an abundant and efficient use of mechanical equipment which in turn necessitates a plentiful supply of iron and coal.”

The value of an iron ore deposit depends not only upon its richness in iron, but also upon its location and the ease or difficulty of mining. Some of the richest iron ore deposits of the world are at present of little economic value because of their remoteness from the great industrial centres and the resultant expense in transporting them to the places where they may be utilised. This is specially true of the great iron ore deposits of Southern Brazil which contains the largest reserves of iron ever discovered. Many impurities occur in combination with iron ore which are to be removed from the ore. Usually coke and limestone are mixed with iron ore and heated to high temperature. Limestone absorbs the impurities of the ore. The metal thus obtained is known as pig iron. The pig iron is smelted in areas where coke is much available. From pig iron is manufactured steel of various kinds by mixing with it chromium, manganese, tungsten, vanadium, nickel etc., either for hardness or brightness.

Iron ore deposits are scattered all over the world, but the important ones are found in the U. S. A., France, U. S. S. R., Great Britain, Germany and Luxemburg.

U. S. A. raises nearly one-third of the total production of iron ore of the world. There are three principal belts in the U. S. A. producing iron ore—(a) the Mesabi range in Minnesota, (b) peninsular Michigan and (c) the Appalachians. The Alabama district in the Appalachians, though it produces a large quantity, suffers from its situation at a great distance from the ports. Despite its enormous production the U. S. A. imports considerable quantities of iron ore from Chile, Cuba, Sweden, Spain and French Africa.

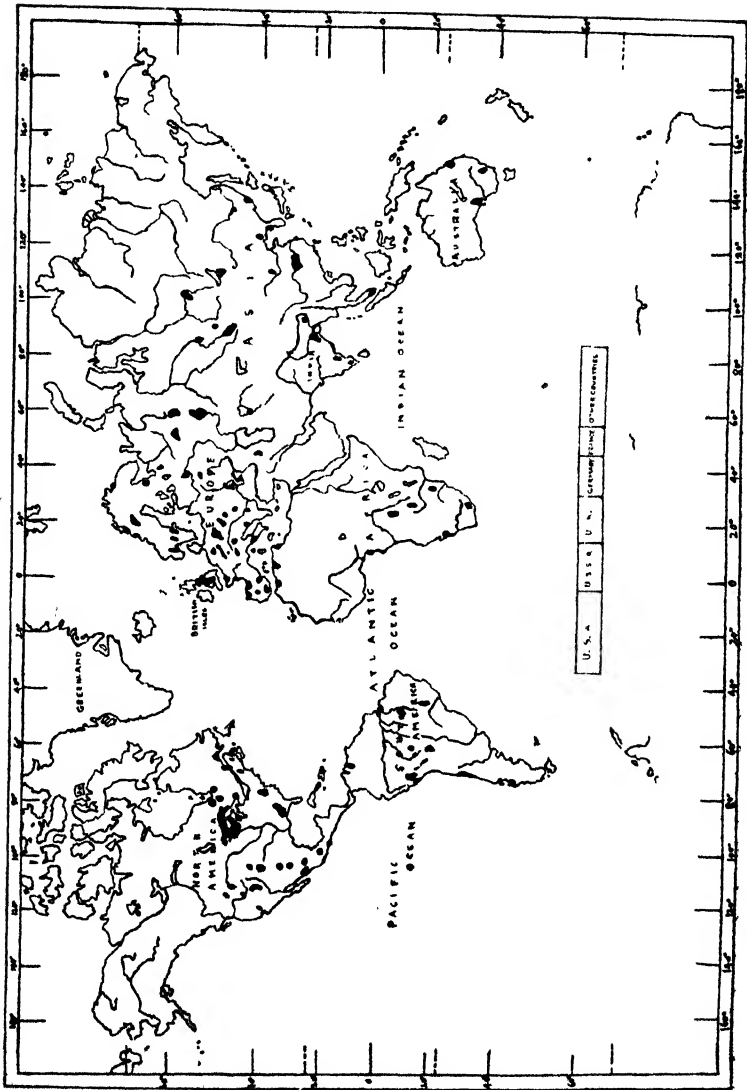


FIG. NO. 16. Distribution of iron-ore production. Note the chief iron-ore-producing regions in the U. S. A. and Western Europe.

CHIEF IRON-ORE-PRODUCING COUNTRIES IN 1938

(In millions of metric tons)

U. S. A.	..	..	26	British Malaya ..	..	1'3
U. S. S. R.	..	..	14'6	Australia ..	..	1'5
France	..	..	10	Italy ..	..	0'5
U. K.	..	..	3'6	China ..	..	1'3
Sweden	..	..	8'4	Manchuria ..	..	1'3
Spain ..	..	..	1'2	Austria ..	..	0'8
Germany	..	..	3'1	Czechoslovakia ..	..	0'6
India ..	..	..	1'3	Poland ..	..	0'5
Norway	..	..	1	World production	..	75
Japan ..	..	..	5			

In Great Britain the bulk of iron-ore supply comes from Yorkshire, Lincolnshire, Northamptonshire, Cumberland and North Lancashire, which provide the country with two-thirds of her requirements of ore. France obtains the bulk of her iron ore from the Lorraine Fields, which is the richest area in iron-ore in all Europe. Normandy and the Pyrenees are the two other areas of France noted for iron-ore. Before 1919 Germany was the leading producer of iron-ore in Europe. The loss of Lorraine and Luxemburg was a staggering blow to Germany because these two places used to supply 75 per cent. of the country's total output. At present Germany obtains her supplies from Vogelsburg, Sudetan lands, south-east of Silesia, northern slopes of the Erzgebirge (Saxony), Westphalia, the extreme east of the Alpine zone in the province of Styria and Austria. Norway has a considerable production of iron-ore in the north—almost on the Arctic Circle. Large deposits are also available in Central and Southern Norway. In Sweden, valuable deposits are found at Kiruna and Gellivare in the north and at Dennemora in the centre. Spain is fortunate in having large deposits of iron-ore. But the ore is little used in the country and is mostly sent to Germany and Britain.

Recent surveys of iron resources have revealed new supplies in Soviet Russia ; the Donetz basin and Tula are no longer the only suppliers. The principal iron-ore regions are :

1. In the neighbourhood of Kursk.
2. Near Orsk in the Southern Urals.
3. At Telbes in the Kuzbas region.
4. The Murmansk peninsula.
5. The Magnet mountain near Magnitogorsk in the Urals.
6. At Krivoi Rog in the Ukraine. This was the principal iron-ore region before the Revolution.

All these regions are being developed rapidly as industrial areas because of the great demand for armaments in the war-fronts.

In Asia iron-ore is found in India, China and Japan. Though iron-ores are vast in China, the development is very small. The instability of government and the lack of railways and roads have hindered the working so long. The iron-ore of Japan is not sufficient to meet the requirements of her steel industry. There are only two important fields—one at Sendai on the east coast of Honshu and the other at Muroran in Hokkaido. Some iron-ore is found in Korea and Formosa, but still Japan imports large quantities of iron ore from China. The present economic control over Manchuria has greatly benefited the iron and steel industry of Japan, because iron-ore is abundant there. In India the most important iron deposits are in Singhbhum, Keonjhar, Bonai and Mayurbhanj States of Orissa, where recent discoveries include what appears to be a range of iron-ore running almost continuously for forty miles. The most important steel production centre is Tatanagar.

Although iron-ore is found all over the world, only two areas are important for the manufacture of iron and steel—U. S. A. and Western Europe.

CHIEF STEEL-PRODUCING COUNTRIES

(In millions of metric tons)

	1938	1935		1938	1935
U. S. A.	.. 48	34'6	Italy ..	.. 2'3	1'8
Germany	.. 23	16'4	Czechoslovakia	2	1'2
U. S. S. R.	.. 19	12'5	Canada	.. 1'1	1'0
U. K.	.. 10	10'0	Poland	.. 1'5	0'9
France	.. 6	6'3	Sweden	.. 1	0'9
Belgium	.. 3	4'9	Spain ..	.. ?	0'6
Japan ..	.. 5'8	4'5	Australia	.. 1'1	0'6

In the U. S. A. the noted steel production areas are Minnesota, Michigan, Pennsylvania and Alabama. In Europe the chief belt lies from Northern France through Luxemburg and Belgium into the Westphalia district of Germany. This belt produces most of the iron and steel output of Western Europe. The area is centrally located in one of the finest market regions of the world ; it is served by an excellent network of railways, canals and rivers and much of the area is *undertaken* with coal.

In the production of iron and steel, Great Britain is one of the leading countries of the world. Here iron-ores are found in close proximity to coal. Moreover, nearness to coasts gives her iron easy access to sea. Limestone, which is necessary for smelting, is also found near-by.

Czechoslovakia, Poland, Spain and Italy manufacture some iron and steel. Northern Sweden contains the largest deposits of the high grade iron-ore of Europe.

Coal :—It is an equally important for commercial and industrial purposes. It is the greatest source of power for manufacturing, mining and transportation. Its by-products are equally important for industries. The principal by-products are tar, ammonia, gas, coke, crude oil, benzol, naphtha, sulphur etc. The production of liquid fuel from coal is becoming increasingly important, and Germany heads the list in this

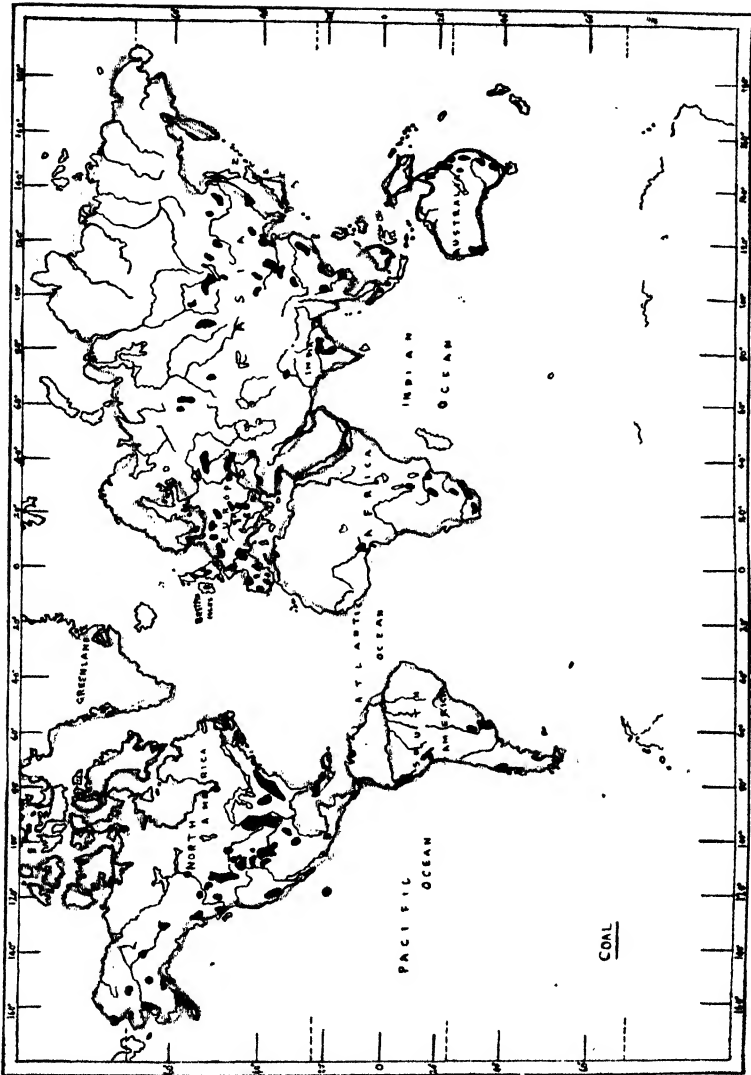


FIG. No. 17. The principal coal-producing areas. Germany, U. S. A., and U. K. produce nearly 75 per cent. of the world's total coal.

direction. Coal is mined in its perfect state and is thus ready for use immediately on its extraction from the ground.*

The principal coal-producing countries are U. S. A., Germany, U. K., France, Poland, Russia, Japan, Czechoslovakia, Belgium, China, India and Australia.

PRODUCTION OF COAL BY COUNTRIES IN 1935

(In millions of metric tons)

U. S. A.	..	..	375'3	Poland	..	..	28'1
Germany	..	..	287'5	Czechoslovakia	..	..	25'8
U. K.	..	..	222'3	India	..	..	23
U. S. S. R.	..	..	102'2	World Production	..	..	1,290
France	..	..	49'3				

At present the bulk of the coal production of the world is concentrated in a few of the great industrial countries. U. S. A., Germany and U. K. are the leaders in the industry. Although these three countries support 12 per cent. of the world's population, they produce approximately 75 per cent. of the world's total output of coal.

U. S. A. is the leading coal-producing country in the world and supplies more than 43 per cent. of the world's total. There are three important coal fields in the U. S. A. : (i) the Appalachian coal-fields, (ii) the Rocky fields and (iii) the interior coal-fields. The Appalachian coal-fields, beginning from Pennsylvania to Alabama, contain the finest bituminous coal in the world. Pennsylvania alone contributes nearly half of the total supply of the U. S. A. The interior field includes Iowa, Kansas, Illinois, Indiana, Missouri, Dekota and Nebraska. The Rocky fields have not yet been fully explored because population is sparse there.

* The value of coal depends upon the degree of its heating power. There are three kinds of coal—lignite, anthracite and bituminous. Lignite is a woody kind of coal, sometimes of a brown colour, and hence known as *Brown Coal*. It contains generally 70 per cent. of carbon. This coal is of inferior type. *Anthracite* is difficult to light, burns with little flame but produces great heat when it burns. It is of the best variety. *Bituminous* coal contains more than 80 per cent. of carbon. It is mostly used as fuel for domestic purposes.

Great Britain occupies the third position in coal production. The coal-fields of Great Britain have three great advantages :—

- (a) Coal and iron are found together.
- (b) Coal-fields are within easy reach of the sea.
- (c) Limestone, useful for smelting, is often found with them.

In Great Britain there are four important coal-fields : (i) Scotland area, (ii) Pennine Range area, (iii) Midland area, (iv) Wales area. In Scotland rich deposits of coal are found in the Clyde basin, in Ayrshire and along the bank of the Firth of Forth. These areas have exceptional transportation facilities by sea, canal and rail. The Clyde basin is the most important ship-building centre of the world. On either side of the Pennine Range there are large deposits of coal. Lancashire and Yorkshire are the two important centres in this area. Cotton textile industry has developed in Lancashire and woollen industry in Yorkshire. In the Midland area the important districts are North Staffordshire, Leicestershire, Warwickshire and South Staffordshire, where many important industries (like motor car, cycle, boot, lace, tobacco, iron and steel and watch) have developed. South Wales coal is worked more for export than for use as power in the local industries.

Till 1914 the United Kingdom was the leading coal exporting country in the world. "The proximity of British coal measures to the sea, together with the special quality of the coal, had favoured the development of coal exports to European markets ; so that even Germany, with an export trade of her own, found it cheaper to obtain coal from England for the districts served by her Baltic ports, than to bring it overland from Silesia and Westphalia." Since 1921 the conditions are highly unfavourable to the British coal industry. The advance of oil and of hydro-electric power, the increased use of lignite, economies in combustion and the development of new coal resources in her former markets have affected adversely her coal exports.

In respect of coal production Germany occupies the second place. The Ruhr basin, Westphalia, Saxony, Silesia, and

Bavaria are the important areas. The Ruhr basin produces about 80 per cent of Germany's coal. Germany has no anthracite coal ; her coal is either bituminous or lignite.

France has considerable deposits of coal, but the coal-fields are scattered over the country. There are two important fields—North Coal-fields and St. Etienne Coal-fields.

Soviet Russia is the fourth largest coal producer. The annual output of coal is more than 100 millions of metric tons. In 1913 the output was only 29 millions of tons. Before the Revolution of 1917 the Donetz coal-field alone supplied more than 90 per cent. of the Russian output. To-day the Donetz field is no longer an important producer. The principal coal-fields of Soviet Russia are Kuzbus (West Siberia), Tunguz (Yenesei basin), Irkutsk, Donbas, Pechora (north of European Russia—in the Tundra), Burein (in the Amur basin), Karaganda (Steppe region of Asiatic Russia), Moscow, Ural and Transcaucasus (near Batum).

Africa has large deposits of coal in Natal, the Cape of Good Hope and the Transvaal. The coal of Africa is of poor quality, with the exception of that of Natal.

China is very rich in coal but its development is slow. Chinese coal is chiefly of anthracite type, and is found practically in every province. In the Yang-tsi-kiang basin, the mountains of Shanshi, near the great Northern bend of the Hoang-Ho and in Shantung peninsula, coal-fields are prominent. In near future China may become one of the leading coal producers of the world.

India occupies the eighth place in the list of the coal-producing countries of the world. The average annual production is a little above 23 millions of metric tons. But the coal-fields are very unevenly distributed. More than 83 p.c. coal of India comes from the two fields of Raniganj in Bengal and Jharia in Bihar. Other fields are found in C. P., Hyderabad, Central India, Assam, the Punjab and Rajputana. The fuel properties of Indian coal are generally lower than those of American or European coal.

Petroleum :—It is a general name given to oils, which

flow freely or are pumped from holes or bores in the earth. It stands second among the minerals in the value of output, surpassed only by coal. Its products are essential to the progress of many industries.

U. S. A., Venezuela, Russia, Persia, Rumania, East Indies, Mexico, India and Burma are the principal oil-producing countries.

PETROLEUM PRODUCTION

1938

				long tons.	P.C.
U. S. A.	...	...	...	167,705,000	60·81
U. S. S. R.	...	...	...	29,630,000	10·75
Venezuela	...	...	...	27,657,000	10·03
Iran	...	...	...	10,192,000	3·70
(Dutch) East Indies—(British) Borneo & Sarawak				8,194,000	2·97
Rumania	...	...	...	6,761,000	2·45
Mexico	...	...	...	5,434,000	1·97
Iraq	...	...	...	4,298,000	1·56
Columbia	...	...	...	3,068,000	1·11
Trinidad	...	...	...	2,541,000	0·92
Argentina	...	...	...	2,386,000	0·87
Peru	...	...	...	2,186,000	0·79
India and Burma	...	...	...	1,435,000	0·52
Bahrein	...	...	...	1,117,000	0·42
Canada	...	...	...	883,000	3·32
Germany	...	...	...	599,000	0·22
Poland	...	...	...	541,000	0·20
Japan and Taiwan	...	...	...	344,000	0·12
Equador	...	...	...	291,000	0·11
Egypt	...	...	...	222,000	0·08
Albania	...	...	...	93,000	0·03
France	...	...	...	71,000	0·03
Saudi Arabia	...	...	...	66,000	0·02
Hungary	...	...	...	43,000	0·02
Other countries	...	...	...	48,000	0·02
World Production	...	...	...	275,805,000	
North America	...	...	...	...	63·1
(U. S. A.	...	...	...	...	60·81)
Europe	...	...	...	...	13·7
(U. S. S. R.	...	...	...	...	10·75)
Asia	...	...	...	...	9·4
South America	...	...	...	...	13·8

The chief products of petroleum are gasoline or petrol, fuel oil, kerosene and lubricants. These are used in steamships, railroads, manufacturing and commercial heating and domestic

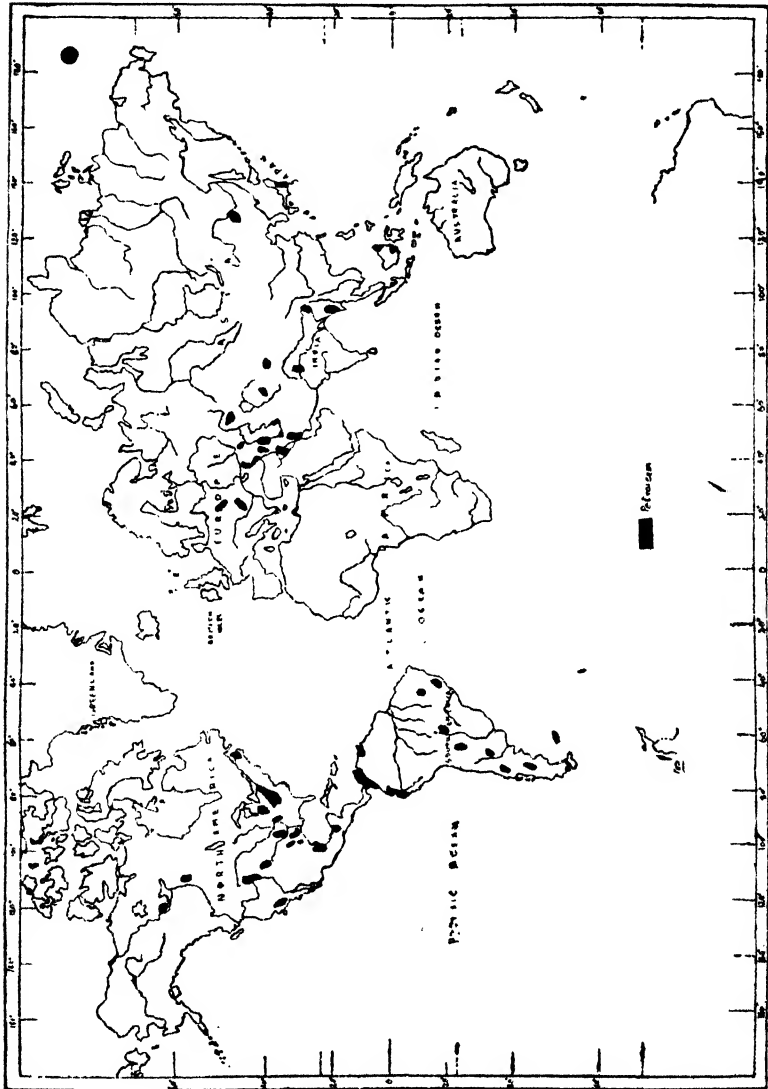


FIG. NO. 18. Distribution of petroleum fields. Notice the great concentration of oil-fields in the Americas.

heating. Vaseline and medical paraffin oil are also obtained from petroleum.*

U. S. A. is the largest petroleum producer of the world ; it raises more than 60 per cent. of the world's output. The important states are Oklahoma, California, Texas, Kansas, Louisiana, Illinois, Pennsylvania, Ohio, West Virginia and Kentucky. "A large proportion of the refined oil produced in the U. S. A. is exported and the markets are scattered all over the world, as is only natural in the case of a commodity having such important uses. Despite the enormous increase in output the demand has kept up with the expansion of motor transport and the conversion of many steamships to burn oil fuel instead of coal."

The largest oil-field is found in East Texas. It has a length of about 40 miles and an average breadth of about 7 miles ; 25,800 wells have been drilled. The oil-fields of California are very deep.

Russia takes the second place and her two main fields, Baku and Grozny, on opposite side of the Caucasus, are connected by pipe-lines with the Black Sea. The oil belt extends along the whole length of the Urals on their western side from Ukhta in the north to Sterlitamak in the south. Ufa in the south-western slopes of the Urals has become so important in recent years that it has come to be known as "Second Baku".

U. S. S. R. OIL PRODUCTION IN 1933

(000 tons)

				Far East	..	..	197
				Central Asia	..	..	206
Ural	..	..	234				

The third great oil centre is around the gulf of Maracaibo in Venezuela,* where the oil-fields extend into Columbia.

* The products of petroleum are so essential to industrial progress that all the major powers of the world are seeking to gain control of oil-fields and are searching diligently for possible reservoirs not yet discovered. During the last few years the struggle for the possession of petroleum has been so keen that the control of major oil-fields has caused more international concern than that of any other mineral.

* In 1939 Venezuela produced a little more oil than U. S. S. R.

Mexico, once the only rival of the U. S. A. in production, has dropped to the seventh place. In Iraq, the oil-fields are situated at Baba Gagur, a few miles north of Kirkuk. These oil-fields are being exploited by a British Company. A pipe-line has been constructed to join these fields with the Mediterranean sea board. The pipe-line carries annually four million tons of crude oil to Haifa, 620 miles away, and to Tripoli, 540 miles away. At Haifa and Tripoli the oil is loaded into sea-going tankers and transported to the world's markets.

There are two oil-bearing areas in India on either side of the Himalayan arc. The one on the east and by far the most important, includes Assam and Burma contributing ninety-five per cent. of the total output ; the other, on the west, includes the Punjab and Baluchistan. The most prolific oil-fields are found in the Irrawady valley in Burma from which nine-tenths of the indigenous petroleum is obtained. Very little petroleum is exported outside the country.

The Americans and the British are making investigations to find out new fields. Just before the war exploration was most active in Egypt, Sinai, Palestine, Syria, Arabia, Iraq, Iran, Afghanistan, Asiatic U. S. S. R., India, Burma, Dutch East Indies, Borneo, Sarawak, Australia and New Zealand. Exploration is being undertaken in Gold Coast, Nigeria and Equatorial Africa. The British Empire has never been self-supporting with regard to petroleum and is dependent on supplies from outside countries. Before, 1942 the Empire controlled only 5 p.c. of the world's petroleum output. The figure has come down to 3 p.c. by the loss of Burma, Borneo and Sarawak in the present war. This figure also includes the production of the Anglo-Persian oil-fields. Very recently the U. K. has extended her financial interest to the oil-fields of Mexico and Venezuela. She lost her financial control over the Rumanian oil-fields in 1940 when Rumania joined the Axis Powers.

Petroleum is very easily and economically transported and the usual method of movement is by tank steamer or by pipe-line. As a source of power, petroleum competes with coal. Formerly all steamers used coal as fuel ; but to-day nearly

50 p.c. of these vessels use oil. Oil enjoys certain advantages as steamship fuel inasmuch as it conserves space and also because oil-driven ships can be handled with a smaller crew.

It is apprehended that after a hundred years the petroleum fields will be exhausted. Great care is being taken to effect economy in the use of oil. In many countries of Europe, alcohol is mixed with petroleum to the extent of 20 p.c. for motor vehicles. The sources of ethyl alcohol are oil-seeds, sugarcane, potatoes and timber. In the utilisation of vegetable oil contents, the British Empire enjoys unique advantages. Germany produces synthetic oils by the hydrogenation of coal and tar.

Natural gas :—It is found in association with petroleum. Nearly 98 p.c. of the world's natural gas is raised in the U. S. A. where it is exploited in the Appalachians, Gulf Coast and the central region. Natural gas has tremendous heating power and is very economical.

~~Imp.~~ **Water-Power** :—Water-power is a major source of mechanical energy which has revealed a new phase of industrial usefulness. Unlike coal, hydro-electricity is inexhaustible. Its introduction has freed many countries from the great drawbacks arising out of the absence of coal. Norway, Switzerland, Finland, Canada and Sweden now-a-days use water-power both for industrial and illuminating purposes. In regions where both coal and water-power are available, their comparative importance will depend upon the relative ease and cost of generating electricity. Italy, Spain, France and Germany use both water-power and coal advantageously.

“Certain geographical conditions are necessary before water-power can be utilised. They are—

- (i) abundant precipitation,
- (ii) fairly uniform discharge of water through streams resulting from (a) uniformly distributed precipitation or (b) regulation of stream flowing through natural lakes, forested watershed or artificial storage behind dams, and
- (iii) a slope or gradient which permits the water of a stream to be used and re-used for power development.”

If a river with these ideal conditions is located near an area of dense population, the transmission of power becomes comparatively cheap. Generally the power is not transmitted beyond 300 miles from any station.

At present the development of water-power is almost confined to regions of high economic standing, of which two great areas stand out prominently. These are (i) Eastern U. S. A. with the adjacent parts of Canada, and (ii) Western and Central Europe. More than 60 per cent. of the world's output of hydro-electric power is produced in these areas.

WATER-POWER OF THE WORLD BY COUNTRIES

(in 000 KW.)

U. S. A.	..	..	..	..	11,110
Canada	..	..	..	..	4,580
Italy	..	..	..	..	3,600
Japan	..	..	..	..	3,050
France	..	..	..	..	2,250
Germany	..	..	..	..	1,490
Others	..	..	..	..	7,430
Total					.. 33,510

In the U. S. A., the Niagara Falls provide energy for a large number of hydro-electric installations. California, New England States and the Rocky Mountain States are all well supplied with water-power. A remarkable development in water-power has also taken place in Canada, where "practically every large industrial centre is now served with it." The success of the pulp paper industry of Canada almost depends on it. The water-power resources are well distributed throughout the country. But during winter, when the rivers and streams of the north are ice bound, utilisation is greatly hindered.

France offers unique opportunities for great development of hydro-electricity along the Alps, the Pyrenees and the Cevennes. The manufacturing industries and transport of the

southern side can be best served by water-power. France is rich in iron-ore but deficient in coal. So it is possible that further development in water-power will take place in France in the near future for the utilisation of her iron-ore. Italy and Switzerland have developed water-power to a great extent. In spite of the absence of coal and oil, Switzerland is essentially a manufacturing country where water-power is utilised not only in factories but also in railways. In Norway and Sweden the streams are of major importance as sources of water-power. The abundant precipitation, snow-fields, glaciers and lakes in the highlands of Scandinavia, and the number of falls and rapids make these rivers the most important sources of water-power in Europe. Germany has certain important installations in the south and south-west, but her resources of water-power are limited.

Japan is rich in water-power. The rugged surface of the islands, the swift flowing streams and the heavy, well distributed, uniform rainfall provide ideal conditions for developing hydro-electricity. Most of the larger power sites are located on the eastern and southern slopes of the mountains of Central Honshiu. The first hydro-electric plant in Japan was established in 1892 in Kyoto on a stream flowing from Lake Biwa.

There are fair prospects for the development of water-power in India. But the great difficulty lies in the fact that in India rainfall is seasonal and, therefore, costly storage works are indispensable. The Western Ghats of the Bombay Presidency, Kashmir, the Punjab and Mysore have developed water-power to a certain extent. "The rivers of the northern highlands and of Burma are capable of generating much power, but it has got to be sent distances varying from 500 to 1000 miles before it could reach dense populations and so it must await further improvements in the transmission of electricity over long distances."

Manganese-Ore:—It is used for the hardening of iron and steel, in the manufacture of block enamel, in the chemical industry for the manufacture of bleaching powder and in

electrical and glass industries. About 95 p.c. of manganese is consumed in the metallurgical, and 5 p.c. in the chemical industry.

Russia, India, Brazil, Gold Coast, Egypt and Czechoslovakia are the chief producers of manganese.

CHIEF MANGANESE-ORE—PRODUCING COUNTRIES IN 1937

(In 1000 metric tons)

U. S. S. R.	2,700	Egypt	188
India	994	Brazil	228
Gold Coast	536	Czechoslovakia	106
Cuba	135	U. S. A.	40
Total	6,100		

Russia is the largest producer of manganese in the world. The two important manganese-producing areas in U. S. S. R. are the Georgian Republic and the Ukraine. In Georgia the deposits are located at Tchiaturi in the province of Kutais. The Ukraine supplies manganese from Nikopol to the north of the Black Sea. India, which ranked first till 1929 in the production of this ore, has deposits in Madras, C. P., Bihar, Orissa, Bombay and Mysore. The third great producer is Gold Coast, where further progress in the output of manganese will take place with the improvement of transport and labour conditions. Brazil has many manganese deposits, but the major production comes from the Lafayette district in Minas Geraes and the U. S. A., Great Britain, Germany, France, Belgium and Italy.

Sulphur :—Sulphur is used in the manufacture of gunpowder and medicine, in vulcanising rubber and in drying fruits. Sulphuric acid is used in the manufacture of glass, matches, alum and many other things.

Sulphur is not widely distributed. It is generally found in volcanic regions in combination with other mineral products, specially with iron, lead, zinc and antimony.

Production of sulphur is mainly confined to Japan, the U. S. A. and Spain.

CHIEF SULPHUR-PRODUCING COUNTRIES IN 1935.

(In millions of metric tons)

U. S. A.	..	..	1'9	|	Japan	..	..	..	0'7
Spain	..	..	0'9	|	Norway	..	..	..	0'4
Italy	..	..	0'7	|					

U. S. A. is the largest producer and exporter. It dominates the world market.

Salt :—Common salt is one of the necessities of life. It is found in the crust of the earth in a solid form known as rock salt. The sea is also one of the chief sources of this material, for it is obtained by evaporating sea water. In addition to the universal use of salt in food, great quantities are used in packing and preserving fish, meat, hides and butter. Salt is used in the manufacture of soda, glass, bleaching powder etc.

The production of salt is widely distributed. The principal countries are the U. S. A., British Isles, Germany, India, France, Japan, Austria, Italy and Spain.

SALT PRODUCTION IN 1938

(In 1000 metric tons)

China	..	..	4,000	|	India	..	..	..	1,878
U. S. A.	..	..	7,281	|	Italy	..	..	..	1,555
Germany	..	..	4,651	|	U. K.	..	..	..	3,133
France	..	..	2,337	|					
World				..	..	..	..	..	37,000

About 60 per cent. of the Indian salt is obtained by evaporating sea water on the coasts of Bombay, Madras and Burma. Another source of salt is the Salt Range and the Kohat mines in the Punjab. The other two sources are brine salt from the Sambhar Lake in Rajputana and Salt brine condensed on the border of the Rann of Cutch.

Graphite :—It is widely used in the manufacture of crucibles, lubricants and lead pencils. Germany is the leading producer, where more than one-third of the world's total is found. The next important producer is Korea, though her production is much smaller than that of the former.

PRODUCTION OF GRAPHITE.

(In 1000 metric tons)

	p.c.		p.c.
Germany	31	Madagascar	9
Korea	15	Ceylon	8
Austria	14	Italy	6
Czechoslovakia	12		

Mica :—This mineral is chiefly used in electrical industries. Mica assumed a position of great importance during the last War in connection with the development of Wireless Telegraphy, aeronautical science and motor transport.

The chief producers are India, U. S. A., and South Africa.

India has for many years been the leading producer of mica with an output of more than three-fifths of the world's total supply. Mica is found in Bihar, in the Nellore, Salem and the Malabar districts of the Madras Presidency, Travancore, Ajmer-Merwara and other parts of Rajputana.

In South Africa, the bulk of the output is from the Lomagundi district of Southern Rhodesia. Rich deposits also exist in the Transvaal, Cape Province and Natal. India and South Africa are the only exporters. Although the U. S. A. is the second largest producer of mica, it is a rather poor second, with India at 75 p.c. of the total and the U. S. A. having only 10 p.c. In the U. S. A. mica is found in North Carolina and New Hampshire. It is also found in small quantities in Australia, France, Germany, Norway, Spain, Portugal, Russia, Japan, Canada and Argentina.

Asbestos :—It is a fibrous rock. Its fibres can withstand weather, water and fire. It is a non-conductor of both heat and electricity. This non-metallic mineral is used for making fire-

proof safes and vaults. The fibre can be woven into curtain for roofs and floors.

The principal producers are Canada, U. S. A., Italy and South Africa. It is also found in India in the provinces of Bihar, Orissa, C. P. and Mysore.

ASBESTOS PRODUCTION BY COUNTRIES

(In 1000 metric tons)

Canada	..	..	..	..	200
U. S. S. R.	..	..	..	..	100
Southern Rhodesia	..	..	..	..	40
Union of South Africa	..	..	..	..	20
Cyprus	..	..	..	..	10
World	..	..	..	..	400

Precious Stones :—Search for precious stones is responsible to a large extent for stimulating human activity in trade and commerce. Diamond, ruby, sapphire, emerald, pearls and garnets are the chief precious stones scattered all over the globe. Most of the world's supply of diamond comes from the Kimberly mines of South Africa. Diamonds are also found in Brazil, India, New South Wales and British Guiana.

CHIEF DIAMOND-PRODUCING COUNTRIES.

(In millions of carat)

Belgian Congo	..	..	4'3	Angola	..	..	0'5
Gold Coast	..	..	1'3	South-West Africa	..	..	0'1
South Africa	..	..	0'7				

Ruby and sapphires are obtained chiefly from Ceylon, Burma and Siam. Emeralds are worked in Columbia, Siberia and New South Wales. Pearls in the Gulf of Manner, Gulf of California and Australia are being exhausted as a result of excessive exploitation. Garnets occur in Saxony, Bohemia, Burma, Ceylon and the Urals.

Building Stones :—The most widely used of all building materials are limestone, traprock, marble, sandstone and slate.

The heavy weight and cheap price do not generally permit the working of the building materials far from their markets. *Clay* is used for making bricks, tiles and pottery. *Granite* is found chiefly in England, Sweden, France and Canada. Italy supplies the finest *marble* of the world. Marble is also quarried in England and the U. S. A. *Slate* mining is carried on in England, Ireland and the U. S. A. Slate has a long life, being hard, dense and insoluble in acids. It is chiefly used for roofing, black boards and bulletin boards. Other uses are for table tops, school slates, refrigerator shelves, etc. *Cement* is generally prepared by mixing clay with limestones. When cement is mixed with sand, gravel or crushed stone, the product is "concrete". Cement is extensively used in building roads, houses, streets and also in the construction of bridges, harbours and sea walls. There are few countries which do not possess limestone and clay for the manufacture of cement.

QUESTIONS

1. What are the most important uses of (a) Petroleum and (b) Platinum? Where are they found? (Cal. Inter. 1927).
2. Examine and estimate the coal and petroleum resources of U. S. A. —(Cal. Inter. 1932).
3. Name any four countries where water-power is principally used. Explain the special circumstances in each country favouring its use in preference to other forms of power. —(Cal. Inter. 1933).
4. Describe the eight principal British Coal-fields and their connection with the British manufactures. —(Cal. B. Com. 1923, 29, 31).
5. Name the countries from which the following minerals are exported—coal, iron and petroleum. —(Cal. B. Com. 1924).
6. Discuss the present distributions of steel industry in the Continent of Europe. —(Cal. B. Com. 1927).
7. What are the principal steel exporting countries of the world? What are the principal consuming markets of steel? —(Cal. B. Com. 1934).
8. Examine the resources of the British Empire in oil. —(I. I. B. 1940).
9. "In modern age coal and iron are more valuable than gold and diamond." Support or criticise the statement.

10. In what conditions may a coal mine be of greater value than a gold mine? Illustrate your answer with reference to the coal mines of (a) Great Britain, (b) Germany. —(Cal. Inter. 1927).
11. Briefly describe the world distribution of coal and iron with special reference to their economic importance. —(I. P. S. 1932).
12. Discuss the distribution of non-ferrous metals in the British Empire with special reference to the sources of supply within India. —(Cal. B. Com. 1934).
13. "The discovery of minerals and precious metals has often given great impetus to the development of a country." Discuss this statement with special reference to North America and South Africa. —(I. P. 1930).
14. Give an account of the world distribution and present production of mineral oil. —(Cal. Inter. 1940).
15. Write short notes on the use of any four of the following minerals, and also state the sources of their supply (a) Platinum, (b) Mica, (c) Zinc, (d) Copper, (e) Manganese and (f) Graphite. —(Cal. Inter. 1938).
16. Name the most important producers of pig iron having surplus for export. —(B. Com. 1938).
17. What are the liquid fuel producing countries? —(B. Com. 1940).
18. Where are the principal oil-fields of the world located? Explain the petroleum policy of any two of the following countries: Great Britain, France, Germany, U. S. S. R. and Italy. —(Cal. M. Com. 1941).
19. Discuss the importance of mineral oil in modern warfare and industrial development and examine the resources in this respect of the leading world powers. —(The Indian Institute of Bankers, 1935).
20. What are the chief sources of industrial power? Examine the sources of the different parts of the British Empire with regard to each one of these.
21. Give a geographical account of the principal oil-fields of the Near East bringing out the political and strategic significance of their situation. —(Cal. B. A. 1942).
22. Name the important sources of supply of non-ferrous metals outside Europe. How and where are these supplies being consumed to-day? —(Cal. B. Com. 1943).

CHAPTER V

FISHING

Fishing is an important commercial industry. The sources of fish are—(a) Fresh water and (b) Sea water. Fresh-water fish is found in rivers, lakes, ponds, etc. and it is important only for local consumption. Sea-water fish is important both for local areas and also for wider demand outside.

At present in many countries fishing is carried on with the help of drifters and trawlers. These vessels can go very far and are less dependent on weather ; so they can handle bigger catches. The average annual catch of sea fish is 13·5 million tons, of which Japan contributes 37 p.c. The production is about 18 p.c. in the British Empire.

Fish lives either in the sea bottom or at various depths not far below the surface. Inshore fishing is practised by trawling and deep sea fishing by drifting.

The important fishing areas are found within a few hundred miles of the coast. They lie partly on the shore-belt of shallow water which covers the continental shelf or the submerged platform surrounding the continents. Others are located in the elevated parts of the sea floor at some distance from the shore, as the Dogger Bank in the North Sea. The shallowness of the water permits an abundant growth of small organisms which serve as food for many small animals of the sea. These small animals in turn are eaten up by fish. Again, the refuse materials deposited by rivers in the shallow water near the coast are excellent food for fish. Moreover, shallow water is the best spawning ground for fish.

Another particular feature of fishing is that *all the important grounds are confined to the temperate zone.* This is because the warmth of the tropical water appears to favour the growth of innumerable kinds of fish, including poisonous and inedible varieties. But the physical conditions of the cooler waters of

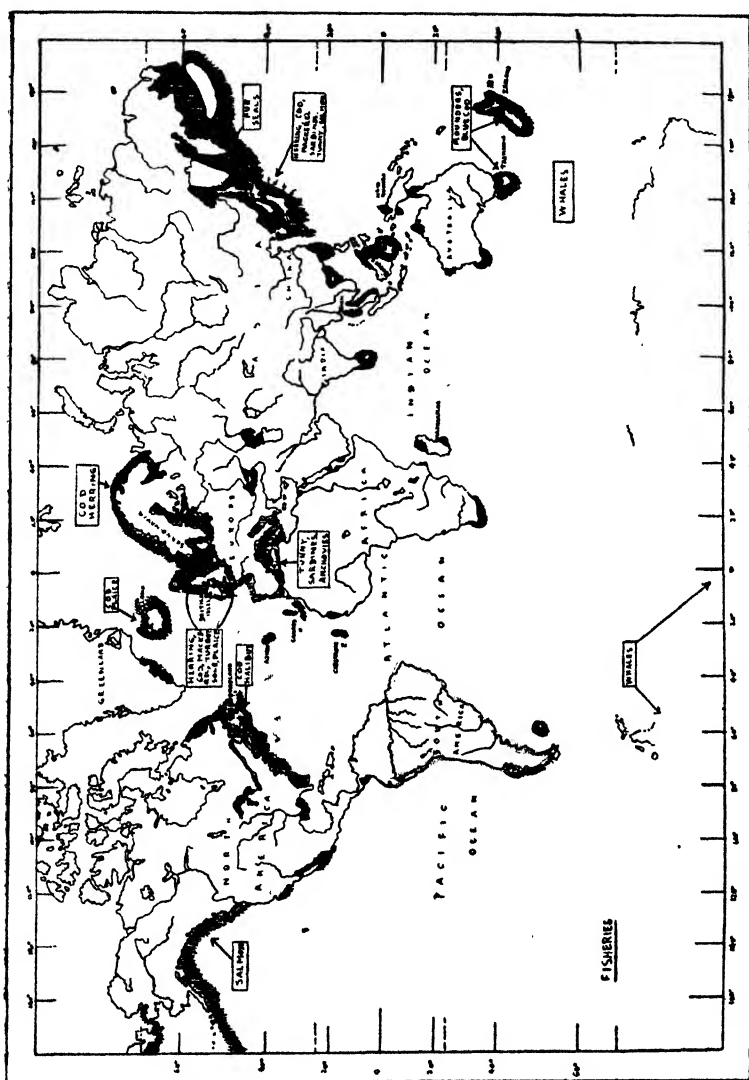


FIG. NO. 19. Distribution of the principal fishing grounds. The North Sea is the greatest fishing ground in the world.

the temperate seas favour the individual abundance of fewer species of fishes, many of which are valuable for human consumption.

It must be noted that trade in fish is easier in the temperate zone, for it is less difficult to preserve fish in warm weather.

There are four principal fishing grounds in the world :

- (i) The North Atlantic coast of Newfoundland, Maritime, Canada and New England.
- (ii) The coast of North-West Europe.
- (iii) The coast of Japan.
- (iv) The North Pacific coast of North America.

The fisheries of the north-eastern sides of North America are based on a rich combination of rivers, bays and shallow off-shore banks. From New England to Newfoundland, along the coast, herring and halibut are extensively found. Newfoundland and Labrador offer one of the best modern examples of people living from one resource—so great is the dependence upon fish. Two-thirds of the exports are fish products. Fishing is equally important for Nova Scotia. In the North Atlantic coast of North America the chief fishing centres are Boston, Halifax, St. John, Montreal and Portland (Maine).

The deep sea-fisheries are confined to the Grand Banks and the south of Newfoundland.

The North Sea is the largest fishing ground in the world. It is very shallow and abounds in fishing banks. It is surrounded by populous countries like Great Britain, Norway, Holland, Germany, France, Denmark and Belgium. Each of these countries takes an active part in the fishing industry.

Great Britain ranks second in fishing industry in the world, being surpassed only by Japan. It is the sixth largest industry in the U. K., where more than a million people are engaged in it. It is the leading country both for the import and export of fish. South-east England and the coastal towns of northern Scotland are the fishing centres. Wick, Thurso, Fraserburg, Peterhead and Aberdeen are the important fishing centres of Northern Scotland. In south-east England the important fishing centres are Yarmouth and Lowestoft. Here large quantities of herring are packed in salt and dried for export to the Continent. Fifty per cent. of the total catch of Britain is herring. Cod, mackerel, oyster and haddock are also caught. In the west coast of Britain, the lake fisheries are the most important. Fleetwood

and Milford are the leading ports. The greatest fish market is Billingsgate in the city of London. Although large quantities of fish are caught in the U. K., the country imports annually a considerable quantity.

Norway furnishes one of the finest examples of the close relations between geographical conditions and the fishing industry. Numerous harbours, invigorating climate and paucity of agricultural land have compelled the Norwegians to look to the sea as an instrument of their prosperity and progress. The important fishing grounds are confined to the south of the Lofoten islands where large numbers of cod and herring are caught. Cods are caught in Hammerfest and Tromsø. Trondheim and Bergen are the centres of herring fisheries. Norway supplies over 50 per cent. of the whale oil of the world. Fish accounts for one-third of the total value of export of Norway.

The continental-shelf around Japan is one of the major fishing grounds of the world. The fisheries are important in the cool seas around the north of Honshū, Hokkaido and Karafuto. Many varieties of fish are found because of the cold and warm currents washing the west and the east coasts respectively.

Japan consumes fish more than any other country in the world, and the average annual value of Japan's fisheries is greater than that of any other country. Exports of fish to foreign countries are not proportionately large, for the major portion of the catches is consumed in the country. Her fishing industry employs about 1½ million people. The per capita catches in the country are, however, small. Nearly 80 per cent. of the total catch of fish in Japan are obtained from the coast-line of Hokkaido, Korea, Kurile Islands and Sakhalin. Cod, herring, mackerel, salmon and crab are caught in the west coast, while in the east coast the chief catches are bonits, tunny and turtle. Cultured pearls are produced now-a-days in Japan by breeding oysters and inserting in them grains of sand around which pearls are formed.

The fishing area on the North Pacific Coast of North America extends from the Gulf of Alaska to the North Cali-

fornian Coast. Though the region is sparsely populated, the fishing industry has developed greatly.

Salmon fisheries are of the greatest value to Alaska which annually produces more than three-fifths of the enormous salmon catch of Pacific America.

The fiords and skerry coast of British Columbia make it an ideal fishing ground. The Fraser River, Skeena River and the water about Queen Charlotte island abound in salmon fish.

Herring, cod and halibut are also caught for export. Sardines are caught off the Californian Coast. The important fishing centres are Victoria, Sitka, Vancouver, Prince Rupert Island, and Portland.

Fish is caught in many other regions. Along the north and eastern coasts of Australia, the coasts of East Indies and the Mediterranean coasts, fish is caught and consumed. River fish is important for local consumption. The rivers of Russia, Central Europe, North America, India (East) and China provide large quantities of fish.

Whale and seal are non-edible fish. Their chief commercial value lies in the oil obtained from their fat. Whale is generally found in the Arctic waters between Norway and Newfoundland. It is also caught in the Ross Sea in the Southern Hemisphere. Seal oil is used for soap-making. The skins are tanned and used for various kinds of leather goods. As the seals are found in the Arctic waters, the hunting is really very dangerous. Newfoundland, Norway and Russia are the leading producers in respect of seal-hunting.

QUESTIONS

1. Examine the physical conditions that are the characteristics of the great fishing grounds. Illustrate your answer by examples.

—(Cal. Inter. 1933, B. Com. 1933).

2. What are the chief fishing grounds of the world?

3. Write a short essay on the fishing industry of Japan.

4. "All fishing grounds are confined to the temperate zone."

Explain.

5. Describe the economic importance of shallow seas with regard to fishing.

—(Cal. Inter. 1939, 41).

6. Give an account of the principal fisheries of the world. Which of these are of special importance to Great Britain? —(I. I. B. 1931).

CHAPTER VI

PASTORAL AND ANIMAL INDUSTRIES

Animals are domesticated for food, transport, clothing and also for raw materials other than those for clothing. The important domestic animals are cattle, sheep, pig, horse, ass, camel, goat and elephant. Animals supply food in the shape of meat and dairy produce.

Meat is not an essential food. A large portion of the world's population does not take meat. Meat animals are cattle, sheep, goats and pigs. Formerly meat animals were raised near the markets, but to-day, thanks to the introduction of refrigeration and improved means of communication, markets which are thousands of miles away from the pasture lands can be supplied with fresh meat. Meat can also be preserved in air-tight vessels. U. S. A., South America and Australia have developed to a great extent the meat-canning industry. Argentina holds the leading position in the meat trade of the world. The conditions favourable to Argentina are its vast grassy level plain and the nearness of the cattle lands to the sea board.

Beef cattle are reared in the rich grasses of Brazil, Argentina, Uruguay and Paraguay, from where chilled meat and tinned meat are exported. The great American Plains from Texas to Alberta raise beef cattle in large numbers.

Sheep are found practically in all the continents and are bred for wool and mutton. Mutton sheep are best raised in England. Large quantities of mutton come from Australia, New Zealand, South Africa and Uruguay.

Pigs are found in every part of the habitable globe as they are easily adapted to a new environment. They are easily domesticated, and are reared in large numbers in the U. S. A., the countries of Western Europe, Argentina and Brazil. U. S. A. is a large producer of pigs. The Maize districts of Iowa, Illinois, Indiana, Ohio, Kansas, and Nebraska raise more than

one-half of the U. S. A.'s total supply. Chicago, Kansas city, Omaha and Milwaukee are the main centres for *pork packing and bacon curing*. Lard (fat from pigs) is also exported from the U. S. A.

Germany, Holland, Denmark, Spain and Portugal are other important pig-raising areas.

LEADING PIG-PRODUCING COUNTRIES

(000 omitted)

Countries	Number	Countries	Number
China	95,000	U. S. S. R.	12,068
U. S. A.	37,007	France	6,488
Germany	23,890	Poland	5,753
Brazil	21,615	Denmark	4,407

Dairying is an industry which depends entirely on climate. Dairying has developed in lands of moderate coolness where rainfall is sufficient for the heavy growth of grass and other forage required by cows. U. S. A. and North-Western Europe are the two important areas devoted to dairying. Milk, butter and cheese are the main produce. In the U. S. A. the leading areas are Wisconsin and Illinois. More than 20 millions of cows are reared in the dairy farms of the U. S. A.

In Europe, the low countries of the north-western section have rich pastures. Denmark is the pre-eminent dairy farming country in the world. Denmark's success in dairying is due to co-operative societies. At present there are nearly 9000 societies in the country. Eighty per cent. milk is used for making butter, ten per cent. for cheese and condensed milk and the rest is consumed locally. The dairy produce amounts to 76 per cent. of the value of Danish exports. Holland is also famous for dairy produce. The other countries are Switzerland, France, Sweden, Ireland, Germany and Finland.

New Zealand is one of the leading dairy countries in the British Empire. The Government always takes active interest in farming. The butter and cheese of New Zealand have wide markets.

CATTLE IN SOME LEADING COUNTRIES

(000 omitted)

India	200,353	Germany	19,139
U. S. A.	60,667	France	15,643
Brazil	47,492	Australia	12,783
U. S. S. R.	38,400	South Africa	10,751
Argentina	32,313	Mexico	10,083
China	23,000		

Although India leads in cattle production, her dairying and meat industry are insignificant. Denmark, Ireland and France are specially noted for butter. The leading producers and exporters of cheese are Canada, Italy and Holland.

In recent years a considerable development has taken place in poultry-keeping in the U. S. A., Denmark and Russia. Fowls, turkeys, ducks and geese are domesticated and used for meat and eggs.

Wool is an important animal product and holds a high place amongst textile materials. Camel, sheep and goat supply nearly 90 per cent. of the world's total wool.

So far as material for clothing is concerned, no animal can compete with sheep. New Zealand, Australia, South Africa, Uruguay, India and the U. S. S. R. are the large producers of sheep.

SHEEP-REARING COUNTRIES

(000 omitted)

Australia	114,000	New Zealand . ..	27,756
U. S. A.	49,766	China	26,000
U. S. S. R.	45,700	U. K.	25,811
Argentina	44,440	<i>Estimated World</i>	
South Africa . ..	48,700	<i>Supply</i>	742,200
India	43,581		

Sheep yielding best wool require a dry, warm, temperate climate and limestone soil. The great wool-producing areas are found in the thinly populated grass-lands. Australia is the biggest wool producer and supplies more than one-fourth of the

world's total wool production. The main sheep-belt lies on the leeward side of the Eastern Highlands, stretching from the Murray basin northward to Central Queensland. New South Wales has more than half of Australia's sheep. The east coast lands have damp climate and therefore sheep are few there. Other areas in Australia are Queensland (20 p.c.), Victoria (15 p.c.) and West Australia (10 p.c.). The important wool-collecting centres are Sydney, Albury, Melbourne, Geelong, Ballarat and Brisbane.

Next in degree of importance are the U. S. A., Argentina and New Zealand. These four countries supply more than 50 per cent. of the world's total wool. In New Zealand the dry slopes and plains on the coastal sides of the South Islands supply large flocks of sheep.

CHIEF WOOL-PRODUCING COUNTRIES IN 1938.

IN METRIC TONS (000 OMITTED)

(One metric ton equals 19.67 cwt.)

Australia	..	..	515	South Africa	..	..	125
U. S. A.	..	..	210	U. S. S. R.	..	(?)	160
Argentina	..	..	180	India	..	..	45
New Zealand	..	..	145				

Camel-wool is important in Iran, Arabia, Asia Minor, North Africa and Central Asia. Goats are reared in South Africa, Northern India, Mexico and the Mediterranean lands.

The by-products of the animal industry are of great importance. These are bones, horn, hide, fat, hoof, etc. Bones are useful for making buttons, combs, toilet articles and the like. Leather is of great importance to men. Not only boots and shoes are made of it, but also bags, suit-cases, trunks, harnesses, chairs, machine-belts, automobile seats, cases for guns and sundry other things. The demand for leather is increasing. The most valuable supply of leather materials comes from cattle, horses, sheep and goats. Argentina, Uruguay, Central America, Russia, Canada and South Africa supply cattle-hides. Germany and the U. S. A. are the leaders in tanning industry

(cattle-hide). More than 70 per cent. of the U. S. A.'s leather production is accounted for by cattle-hides. Goat skins are important in India, China, Spain and Brazil.

These animal products are mostly raised in those areas where the meat packing industry is important. Furs are obtained from fox, mink, squirrel and ermine of the cool temperate lands.

Animals are of great use for transportation and draft. As beasts of burden elephants, horses and camels are doing great service to man,—without them human beings would hardly have progressed. In the desert areas camels are the beasts of burden and the only means of transport.

Although with the development of mechanical transportation the importance of draft animals has decreased, there are still many countries where animals are the only transporting agents. In the extreme North or South, reindeer and dogs are not only the beasts of burden but also the only means of transport. In India, which is essentially an agricultural country, cattle are employed in the fields. Even in Europe and America, where agriculture is practised on scientific methods, horses are useful in cultivation.

QUESTIONS

1. Describe the industries of (i) Sheep rearing and (ii) Dairy farming as they are carried on in the countries of the British Empire.

—(I. P. S. 1932).

2. What are the conditions of success in the production of commercial wool? Illustrate your answer with reference to countries of the British Empire.

—(I. P. S. 1931).

3. Describe the distribution of sheep in North America, Australia, and New Zealand. Under what conditions does this animal thrive best?

—(Cal. B. Com. 1929).

CHAPTER VII

FOREST AND LUMBER INDUSTRIES

Nearly one-fourth of the land surface of the earth is covered with forests. Their distribution is essentially climatic.

Continents	in million of acres	Percentage of forest to total
Asia .. . . .	.. 2096	22
South America ..	.. 2093	44
North America ..	.. 1444	27
Africa .. . . .	.. 797	11
Europe . . . . .	.. 774	31
Australia .. . . .	.. 283	15

Forests have direct and indirect utilities.

The indirect utilities are the following :—(i) Forests render the climate more equable and contribute to increase rainfall. (ii) They increase the fertility of the soil. (iii) They decrease the velocity of the air current.

The direct utilities of forests relate chiefly to their produce, such as timber and firewood, and the raw materials they afford for various industries. Timber is used for making boxes, crating, house-building materials, furniture, masts and decks of ships, etc. The pulp produced from wood is the most important raw material for the manufacture of paper. The other uses of timber are distillation, dye stuffs, fence posts, etc. Various other forest products are rubber, gutta-percha, quinine, tar, turpentine, resin, cork, etc. Another important use of forests is that they provide scope for the grazing of cattle.

Forests are a source of revenue to the State. They also afford to the villagers who live near-by a ready supply of materials for house-building, fuel, and minor forest products which add to the comforts of their lives.

There are three main classes of forests : (i) Coniferous soft wood, (ii) Temperate hard wood or Deciduous, (iii) Tropical hard woods or Evergreen.

Coniferous soft wood consists of pine, firs, spruces, larches, cypresses and junipers. One-half of all the world's wood is to-day cut from the coniferous forests which are most widespread in cold, snowy regions like Siberia and Canada. The slopes of the Himalayas at an altitude of 5000 to 7000 ft. around Kashmir, certain remote mountains in the Western China near the Tibetan border, the Andean slopes of Southern Chile and New Zealand have many coniferous trees. The pine is the most important soft wood and is the chief timber for commercial purposes. It is used for the masts and decks of ships, for the manufacture of materials for houses, for the making of packing cases and boxes and in the manufacture of matches. It is obtained mostly from the forests of Canada, Norway, and Sweden ; it is also cut in the east of the U. S. A., in Tasmania and in New Zealand.

The temperate hard wood or Deciduous wood like oak, birch, beech, maple, ash, walnut and elm are mostly used in the manufacture of furniture. In the world as a whole, the temperate hard wood furnishes 40 per cent of the total cut and is found best in the Alps, the Pyrenees, Central Russia, the middle region of Siberia, Japan, the Appalachian region in the U. S. A., Patagonia and Southern Chile.

Tropical hard woods or evergreen forests include teak, mahogany, ebony, rose wood and dye wood. The three great regions are the forests of the Amazon, known as Selvas in South America, the forests of the Congo basin and the Upper Guinea Coastlands of Africa, and the forests of the East Indies. The tropical forests contain cabinet timber and dye woods. The chief varieties used for making the best furniture are mahogany, ebony and rose wood which are mainly found in Central America and West Indies. The best quality mahogany is found in Haiti, and the inferior types come from Cuba, Jamaica and Mexico.

EUROPE: Nearly one-third of Europe is forest-covered. The continent produces 10 per cent. of the world's total supply of forests. *Scandinavia, Finland, the Baltic States and Northern*

Russia are covered with coniferous forests. The lumbering and timber industries in these countries have developed to a great extent because rivers provide easy transport and cheap mechanical power.

Sweden is the most important timber-producing country in Europe. Window frames, paper, matches, wood pulp and plywood form nearly 40 per cent. of Swedish exports. In *Norway* the forests cover nearly one-fourth of the total area. The forest products constitute about one-third of the total exports. Norway does not supply much wood to other countries but uses it as the basis of manufacturing industries, such as the manufacture of pulp, newsprint, cellulose, cardboard, matches and paper. As the coast of Norway is ice-free throughout the year, shipping is least inconvenient.

Russia contains more than one-third of the total forest-land of the world. There are vast resources of pine, fir, larch and spruce which are used for timber, paper making and the manufacture of cellulose. The magnitude of the industry can be judged from the fact that while Soviet Russia produced 112 millions of metric tons of timber in 1935, Canada, the second largest producer, raised only 48 millions of metric tons.

NORTH AMERICA: Nearly twenty per cent. of the world's forest areas are confined to North America. *Canada* is known as "*the Empire's storehouse of soft wood supplies.*" British Columbia, Northern Prairie provinces, Ontario, Quebec and New Brunswick have developed lumber industry. There are two important belts of soft wood in the U. S. A. The first, in the east, includes New England, Appalachian Highlands, and the Atlantic coastal plain; the other, on the west, is located in the Rocky mountains and the Pacific slopes. The forests of the U. S. A. cover nearly 30 per cent. of the total area.

ASIA: Asia possesses 28 per cent. of the world's forest. *Siberia* is covered with coniferous forests, but the difficulties of working them as a result of climate and inadequate means of communication are responsible for the slow development of lumbering industry there. Japan, China and India are also liberally gifted with forests.

India is very rich in forests, which cover more than one-fifth of the total area of the country.

Broadly speaking, there are five types of forests in India :

- (i) Arid country forests, extending over Sind, a considerable portion of Rajputana, part of Baluchistan and the south of the Punjab. The most important tree is the babul.
- (ii) Deciduous forests, extending over large areas in the Sub-Himalayan tract and Peninsular India.
- (iii) Evergreen forests, occurring in those areas where the rainfall is heavy. Such regions are the west coast of the Peninsula, the eastern Sub-Himalayan tract and Burma.
- (iv) Hill forest, varying according to elevation and rainfall. In the Eastern Himalayas, Assam and Burma the forests are full of oak and magnolia, while in Assam and Burma pine trees grow abundantly at an elevation of 3,000 to 6,000 ft.
- (v) Littoral forests *i.e.*, forests on the sea coast, the most characteristic trees of which belong to the mangrove family.

It will be seen that almost all the forests in India are located in the hills.

One alarming feature to be noticed in lumber industry of the world is that the consumption is greater than the growth in every country. "At present the amount of timber cut annually in the world is on an average 30 per cent. greater than the growth of young trees." In Europe and America, the conservation of forest is practised, that is to say, only mature trees are cut: young and seed trees are allowed to grow. In *Canada*, the policy of the Government is to encourage the "cultivation" of timber for the obvious fact that saw-mills and paper-mills cannot rely on "forest-trees".

Although the consumption exceeds the growth, it is assuring to note that there are great reserves in South America, Africa, South-Eastern Asia and the East Indies. In these areas,

the forests grow rapidly because of the climatic conditions. But the poor transportation facilities in these areas have made the exploitation of the forest products somewhat slow and halting.

QUESTIONS

1. What are the principal forest regions of the tropical zone? Describe their commercial importance.
2. Describe the forest resources of India and show how far they have been commercially exploited.
3. What are the sources of British timber? Describe the timber-producing areas in the British Empire.
4. Describe the forest regions of the temperate zone. Discuss in this connection the importance of forest-products of Scandinavia and the Baltic States.
5. On a sketch map of India, show the regions with important timber resources. How are these utilised at present? Discuss the prospects of increasing exports of Indian timber to the world's markets.

(—Cal. B. Com. 1940).

CHAPTER VIII

TRANSPORT

Commerce is defined as the sum-total of those activities which are engaged in the removal of hindrances connected with persons, places and time in the exchange of commodities. The hindrances connected with persons and time are removed by traders, while those connected with places are removed by means of transport.

The transportation system was at first very simple. Man and animal were the only means of transport. At present, man calls to his service water, wind, steam and electricity for carrying goods not only in the local areas but also over long distances. A journey which required months a hundred years ago can be completed to-day in a few days. The continuous development of air-service has further shortened the distance between different places. Indeed, we may say that the world has become smaller than what it was fifty years ago.

Generally speaking, *transport means movement of goods from one place to another.* Transportation is an important factor in production and distribution, and as such it may be considered as the life blood of commerce. The growth of domestic and foreign trade is dependent on it. There is no civilised country which is not dependent on other regions for food or raw materials. All the countries of Western Europe look to the Americas and Asia for supplies of food and raw materials. Canada and Argentina would not have raised wheat had there been no provision for rapid and cheap conveyance by land and water, for these two countries cultivate wheat mainly for European markets.

Commodities are manufactured on a large scale, because the problem of distance has been largely solved. Transportation has made possible the colonisation of many new lands. The Americas, Australia, South Africa and New Zealand have been colonised by the European peoples.

KINDS OF TRANSPORTATION SYSTEMS

Land	Water	Air
1. Man	1. Rivers	(a) Aircrafts heavier than air
2. Animal	2. Canals	(b) Aircrafts lighter than air
3. Roads	3. Lakes	
4. Railways	4. Oceans	

The modes of transport are different in different countries, because of relief and climate. In a few countries all the systems are present, while in others only two or three types are employed. In the Tundra Region dogs and reindeer are employed for drawing wheelless vehicles on snow, while camels are the only source of transport in the deserts.

In many countries man himself is the only mode of transport. In Central Africa, China and Japan beasts of burden are few and men are employed to carry loads for short distances. The relief and climate of Africa from the Sudan to the Zambesi are such that it is very difficult to construct roads and railways. Negro porters carry ivory, rubber, palm-nuts and other products of the Savannas. Even in areas where beasts of burden are available, it may not be possible for men to use them. The slopes of the mountains may be too steep for animals, as in some parts of China, Tibet and Chile, or harmful insects may prevent the use of transport animals as in Central Africa, the Middle Amazon basin, etc. In such regions heavy loads are moved by coolies. It should be noted that employment of human labour for carrying loads for long or short distances is found only in the backward countries. This mode of transport is so expensive that the cost of carrying goods to a distance of 150 miles is three times the freight usually charged for a voyage of 8000 miles.

Man employs many animals in his service and also employs them as his beasts of burden. The horse is the common transporting animal in the temperate lands. In the hot deserts of the Old World, camels carry heavy loads and can travel more than thirty miles a day. Elephants are employed in India and Burma and parts of Africa to carry loads and they render valuable

service in the teak forest of tropical Asia. The Yak is the beast of burden in the mountains regions of Northern India and Tibet, and the mule is serviceable in the mountain areas near the Mediterranean Sea and Mexico. In the north-west of Canada and in Siberia, sledges are drawn by hardy dogs over the frozen snow. The reindeer has been introduced in Alaska and parts of Canada.

The most economical way of using the beasts of burden is with wheeled carts which, of course, require some sort of road. A nation's natural resources can best be developed under a system of good roads. Poor roads permit limited intercourse and hinder exchange, and as such keep a country backward.

Roads are a great feature of transport in every commercial country. They are always very useful in the collection and distribution of goods. Wheeled vehicles which use roads may be drawn by animals or mechanical power. Motor vehicles are swift and sure, and have been introduced in every civilised country. When the roads are levelled and macadamised, motor vehicles can be employed with full advantage. Transport operations are now performed by automobiles in the deserts of Sahara and Arabia.

ADVANTAGES OF ROAD TRANSPORT

1. Road transport yields service more easily than the railways or the waterways, because on the roads no transshipment is necessary.

2. The rural areas can best be served by road transport because railways cannot give efficient service to these areas as the traffic is small. Big cities like Calcutta, Bombay etc., generally collect the produce of the adjoining rural areas by road transport.

Countries	Motor-road-mileage (1 km. equals $\frac{1}{2}$ of a mile)	Number of motor vehicles (in millions)
U. S. A.	.. 3,000,000 miles	30.1
France ..	.. 650,000 km.	2.2
Great Britain	.. 177,000 miles	2.6
Germany	.. 274,000 km.	1.9
Canada ..	.. 394,300 miles	1.4

U. S. A. possesses nearly one-third of the total road mileage of the world. There are more than 3,000,000 miles of roads in the country out of a world-total of 9,225,000 miles. Motor traffic in the U. S. A. is the heaviest in the world. It has more than 75 per cent. of the motor vehicles of the world (one vehicle for every four persons).

Road conditions are not favourable to the development of motor transport in Canada. It has a little above 390,000 miles of roads of which nearly 40 per cent. are earth-roads. These earth-roads are closed to traffic during the long winter. The province of Ontario has the largest road mileage and possesses nearly 50 per cent. of Canada's motor vehicles.

India has a little over 300,000 miles of roads of which only 75,000 miles are motorable. Considering the size and the population of the country, the road mileage is very poor indeed. Good road communication is essential in a country like India which is predominantly agricultural. It is now felt that to help the country to continue the development of its potential wealth, roads must be opened and improved.

The other two modes of land transport are tramways and railways. Trams are run by electricity and are used in and near big cities. For long distances tram cars are not suitable, and hence railways are universally used. Speed and capacity for carrying heavy goods account for the great development of railways throughout the world.

Railway is the most important means of inland transport. It has opened up new countries for settlement, which otherwise would have remained sparsely populated. Canada and Siberia are countries where railways have opened up new lands.

The construction of railways is influenced by physical factors like climate and topography. Climate has a considerable influence on railways. Snow may block passes and impede railways, and heavy rainfall may undermine embankments. In the Arctic Zone it is almost impossible to construct railways as the land is always covered with ice and snow. The heavy rainfall of the Equatorial region makes the soil unsuitable for the construction of railroads.

The relief of a country directs the course of railways. Mountain-barriers also exclude or deflect railways. It is easy in plains to construct railways, but the difficulty in mountainous lands is sometimes insuperable. In order to cross the great highlands, tunnels are sometimes used. Deep cuttings and long tunnels are avoided wherever possible, because of their high cost.

RAIL VS. MECHANICAL ROAD TRANSPORT

Roads are very important even in this age of railways, for they are the feeders of railroads. Great Britain, Germany, France and the U. S. A. have excellent roads. At present motor vehicles are competing with rails in many countries. For rapid and short distance service, motor vehicles are very convenient. In the case of railways, much delay is caused by terminal services, shunting operations and collection and delivery of goods. But over long distances railways offer rapid, economical and reliable service, especially in the case of bulky and heavy goods. Road transport is more flexible than railway transport, because motor vehicles, not being tied to rails, can go wherever there are roads. Rural areas can be best served by roads; railway-operations are generally unprofitable in these areas as the volume of traffic is not large.

SOME IMPORTANT TRANS-CONTINENTAL RAILWAYS

1. The Trans-Siberian Railway.
2. The Trans-Caspian Railway.
3. The Cape-Cairo Route.
4. The Canadian Pacific Railway.
5. The Chile-Argentine Railway.

The Trans-Siberian Railway connects Russia with the Far East. It runs from Moscow to Vladivostok on the Pacific, the distance being 5,400 miles. The settlement of Central and Eastern Siberia is largely due to this railway system.* It has additional value as an alternative route between Europe and Asia on the Pacific for passengers and mails. The line was

* This railway is regarded in the Soviet Union more as a political or strategic link than as a trade route.

constructed by the Czarist Government for the purpose of facilitating the work of administration in Asiatic Russia. It is a single track system. From Moscow the line goes to Omsk after crossing the Urals and traversing the agricultural lands of Northern-Steppe provinces where wheat-fields are prominent. From Omsk the line goes directly eastward, crosses the Obi and the Yenisei and soon reaches Irkutsk and Lake Baikal. The distance between Lake Baikal and Moscow is 3,420 miles. The line then goes from Lake Baikal to the Amur valley and passes through Manchuria and finally reaches Vladivostok. In Manchuria, a southern branch has been opened at Harbin which connects Port Arthur *via* Mukden. Mukden is linked up with Peiping by rail.

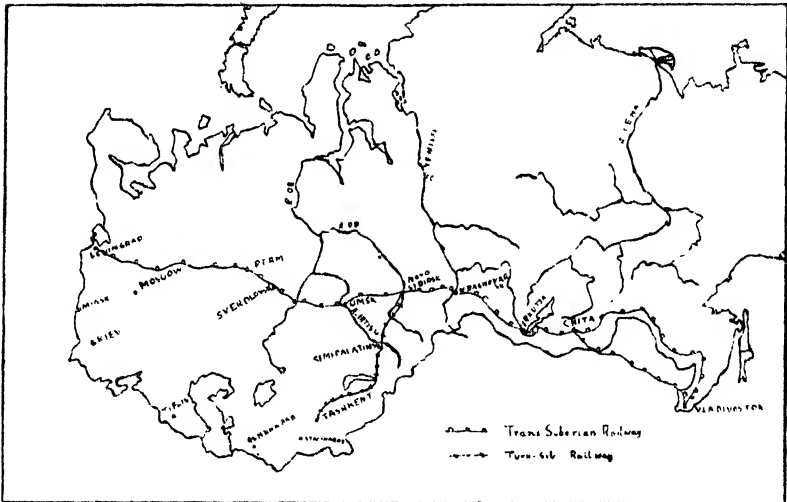


FIG. NO. 20. The Trans-Siberian Railway. Note that Moscow is connected with Leningrad. From Omsk a branch line has gone as far as Tashkent.

The Trans-Caspian Railway connects Central Asia with European Russia. *It is also a part of a possible railway route between Europe and India.* The line runs from Krasnovodsk, on the Caspian Sea, to the heart of the cotton-growing region of Turkestan, throwing off a branch to the Afghan frontier from Merv to Kushk. Krasnovodsk is connected with Moscow *via* Tashkent.

The Canadian-Pacific Railway was built during the years 1882—86. The length of the line is 3,500 miles. This line

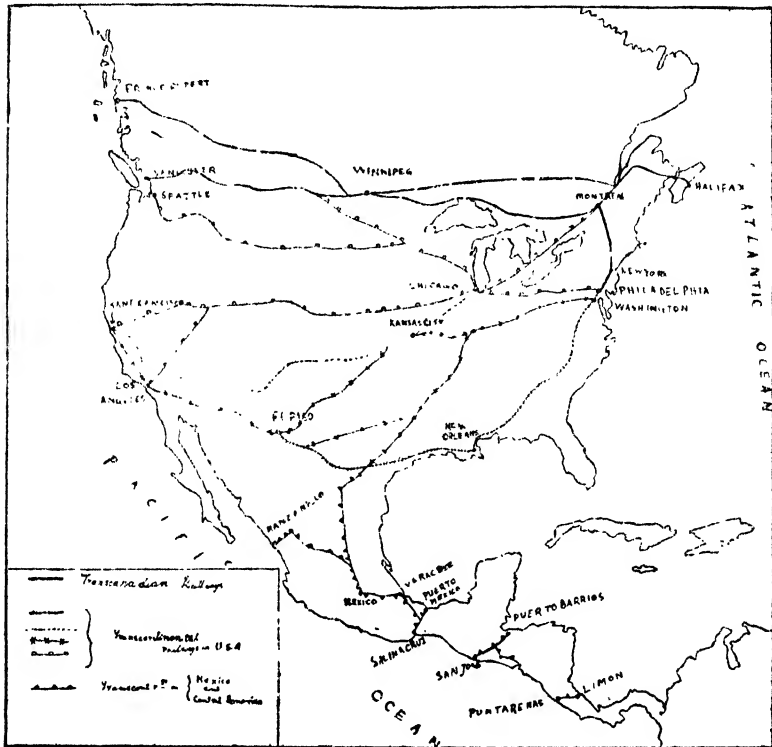


FIG. No. 21. The Canadian Pacific Railway. Note how the Canadian system is connected with the U.S.A. railways at Chicago.

connects the Atlantic coast of Canada with its Pacific coast. This line shortens the journey from Liverpool to China and Japan by 1,200 miles. The line runs from Halifax and St. Johns to Montreal. From Montreal it goes to Winnipeg, the great wheat centre of Canada. The line crosses the plains from Winnipeg *via* Regina and reaches Medicine Hat in the Rockies. Leaving Medicine Hat, it goes through Kicking-Horse-Pass, and ends in Vancouver.

This railway system has played a very important part in the political and economic life of the Dominion. Geographical conditions like distance and climate placed considerable diffi-

culties in the way of colonisation in Canada. Waterways rendered inestimable service no doubt, but they were closed to traffic during the winter months. The Canadian-Pacific Railway now permits the scattered population of the Dominion to maintain constant intercourse.

The Chile-Argentine Railway of South America connects Buenos-Aires with Valparaiso ; the distance is nearly 900 miles. This route was opened for traffic in 1910. As there is a change of gauge both at Mendoza on the Argentine side and at Los Andes on the Chilean, the route is useful only for the carriage of passengers and mails. Of the four trans-continental lines in South America none is more important commercially than the Chile-Argentine line. The interchange of products between the eastern and western zones of the Continent is small.

Cape-to-Cairo Route : The distance from Cape to Cairo is 9,000 miles, which is traversed by rail, river, lake and road. It was a scheme of Cecil Rhodes to connect the Cape with Cairo by an all-British railway system ; but the scheme could not be worked out. A railway line from Cape Town goes upto the border of Belgian Congo *via* Bulaways and Elizabethville. From Elizabethville, the capital of Kantanga, a river-cum-caravan route proceeds to Lake Victoria, from where a motor road runs to the Nile Gorge. From here steamers maintain regular service to Khartoum. From Khartoum a railway line goes to Wadi Haifa, thence by river-transport Shellal is approached. From Shellal a train runs to Cairo.

Water Transport

Water transport may be inland and oceanic. Inland waterways include navigable rivers and canals, while under ocean transport come seas, oceans and sea canals. Water transport is cheaper than land transport because waterways provide ready-made highways, and the right to navigate them is often free. But water transport is attended with a great disadvantage : it is slow and uncertain.

Rivers are the most important highways of commerce. A river in order to be useful for navigation must be deep and

free from ice. Swift currents and falls make a river dangerous for navigation. Rivers should have a constant flow of water. The importance of rivers increases when they flow towards ice-free oceans or seas through regions of rich products and dense population. The rivers flowing towards the Arctic Oceans or inland seas have limited and restricted traffic.

River systems of Europe, Asia, Africa, Australia, North-America and South America

Europe has a large number of rivers suitable for navigation. Among the European countries *Germany is exceptionally fortunate in having large navigable rivers.* What Germany lacks

in coast-line, she makes up by her large navigable rivers. And probably in no other country are such big manufacturing and industrial towns to be found on river banks as in Germany. The Rhine, the largest river in Germany and the most important in Europe, has perhaps the most voluminous traffic in the world.

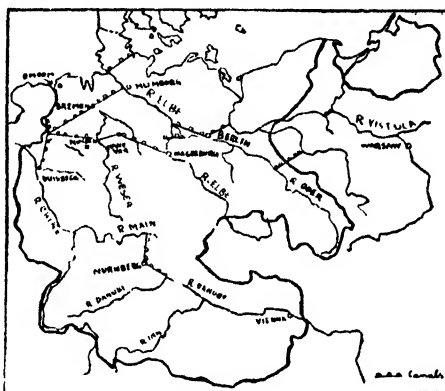


FIG. NO. 22. The waterways of Germany. Note how the rivers are flowing diagonally from south-east to north-west.

Sea-going steamers now

land their goods at the river port of Cologne. It is navigable by steamer as far as Main, Mannheim and Strassburg. The other big rivers of Germany are the Weser, Elbe and Oder. The Elbe is not only navigable within the German boundary but it is also easily navigable from Prague to other parts of Czechoslovakia. There are important towns on the Elbe, such as Dresden, Magdeburg and Hamburg. The Oder is also navigable and flows through the rich mining and manufacturing parts of Silesia. Breslau and Frankfurt are the two important towns on the Oder.

The rivers of Germany mostly flow diagonally from south-east to north-west. They are all connected with one another by canals. The Weser is connected with the Elbe at two points—Magdeburg and Hamburg. The Hansa Canal gives direct water communication from the Ruhr Coal-fields to Hamburg. Ludwigs canal connects the Danube with the Main, a tributary of the Rhine.

France is not far behind Germany in the extent and utility of inland water-ways. To secure the maximum benefit through inland communication by water as far as practicable, the most important rivers have been joined with one another. The rivers are navigable except in their upper courses. The Rhone, which is 500 miles long, is of little importance, but the Saone is a first class waterway. The Seine with its tributaries, the Yonne, Marne and Oise, rises in the hills of Burgundy and flows northward to the English Channel through the Paris region. The river is navigable and provides valuable traffic. The Loire, which flows to the Bay of Biscay, is navigable as a commercial waterway. The Dordogne and Garonne are navigable and have important traffic.

There are many large navigable rivers in Russia. These are the Dvina, Volga, Don, Dnieper and Dneister. They mostly flow either to the Arctic Ocean or to the inland seas like the Caspian, the Baltic or the Black Sea. This is a serious defect because the north is ice-bound during winter and closed to navigation, and the inland seas have no outlet. In spite of such defects the Russian rivers are very important for domestic and foreign trade. The Volga is the second important river in Europe. It binds the trade of the south with that of the north in Russia. But as it flows to the Caspian Sea—a land-locked sea, its navigation is important only between local centres along its course.

Australia is deficient in waterways. Her river-system consists of small streams flowing from the highlands to the coast. Her eastern rivers are navigable for short distances during the wet seasons only. The two most important rivers are the Murray and the Darling. The Murray rises in the Australian Alps and is fed by the melting snow as well as by the copious

rains of that part. The Murray and its tributaries are very important for irrigation, which consists in damming up the rivers at convenient places and holding back the waters for use in channels which lead to the fields.

In the St. Lawrence and the Great Lakes, *Canada has the most magnificent inland waterways in the world.* In addition to this wonderful system, there are many large lakes and thousands of miles of navigable rivers. There are three chief hindrances to navigation on the St. Lawrence and the Lake system: (1) frequent fogs near the mouth, (2) ice in winter, (3) rapids and falls. Searchlights and horns are used to avoid accidents arising out of fogs. During winter ice-breakers keep the river fit for navigation. The obstruction caused by rapids and falls has been successfully removed by deepening the river and constructing canals. The more important of the other navigable waterways of Canada are the Red river, Albany, Saskatchewan, Mackenzie and Yukon. The less important rivers are the Fraser, Skeena and Columbia. With the exception of the St. Lawrence and the Great Lakes, the traffic on the rivers of Canada is rather of a local character.

U. S. A. is well furnished with a network of waterways covering nearly 20,000 miles. The two most important rivers are the Missouri and the Mississippi. The Mississippi is navigable for 2,000 miles from its mouth to the port of St. Paul. The Upper Mississippi carries an immense volume of traffic throughout the year, but the Lower Mississippi is scarcely used. The great defect of the river is that it suffers from heavy floods. The Ohio, a tributary of the Mississippi, is navigable up to Pennsylvania and carries much coal traffic. The Missouri, which joins the Mississippi at St. Louis, can be navigated almost to the foot of the Rockies. It is also subject to great floods. The proximity of the sources of the Mississippi and the St. Lawrence has made it possible to connect them by means of canals.

The rivers of South America are very important for commerce. Almost all the important rivers flow to the eastern coast. The rivers flowing to the west coast are of little use

for navigation. The Amazon is the longest river of the Continent which provides with its tributaries 50,000 miles of safe navigation in the wet season and some 20,000 miles in the dry season. The tributaries of the Amazon are also navigable. Up till now the Amazon system is of relatively little use, because the region through which the river flows is densely forested, scantily populated, undeveloped and largely unexplored. The Orinoco which flows through Venezuela is a long waterway. But the most useful in South America is the Parana system which penetrates the heart of Argentina, Paraguay, Uruguay and South Brazil. In the southern side of South America the river Rio Negro drains the sheep-rearing land of Patagonia.

Rivers are the main highways of commerce in Africa. The Nile is the most important river in north-east Africa, but its great defect is the succession of cataracts. In its upper course the Nile has rapids and falls ; in its middle course there are cataracts. It is navigable in the delta and in its lower course. The rivers of South Africa are of little use for traffic. The Zambesi is navigable for 250 miles, while the Limpopo can be navigated only for a short distance. The Orange is not navigable. In tropical Africa, the Congo provides a magnificent system of waterways. It rises in the highlands between the lakes Tanganyika and Nyasa. But at several places navigation is interrupted by rapids and falls. The Ubangi, the chief tributary of the Congo, can be navigated almost to its head. In West Africa the Niger is easily navigable for 500 miles and in the wet season navigation is continued further. The Gambia is navigable for 200 miles from its mouth. In Africa rivers will continue to be very useful for commerce for sometime more. It is quite likely that in future the great lakes of the Continent will provide valuable waterways.

The most important river systems of Asia are confined to India and China. Northern India is specially endowed with three large navigable rivers which provide more than 26,000 miles of waterways. These rivers are the Ganges, the Brahmaputra and the Indus. The Ganges can be navigated by steamers as far as Cawnpore. This river flows through the most densely

populated and fertile plain of India and naturally commands much traffic. Before the development of railways, the Ganges was of considerable importance for the movement of goods and persons. The development of railways has greatly reduced the importance of steam navigation, specially in the Upper Ganges. The Lower Ganges is, even now, very important, and there is traffic all the year round. The Indus is navigable by steamer up to Dera Ismail Khan in the North-Western Frontier Province, 800 miles inland. The river mostly handles wheat, cotton and wool. The Chenub and the Sutlej, two tributaries of the Indus, are also navigable by small steamers. The frequent shifting of its bed and the formation of sand-bar have caused steam navigation in the Indus to be neglected. The Brahmaputra flows through Assam and Bengal, and is navigable as far as Dibrugarh. Its tributary, the Surma, has made steam navigation possible in Sylhet and Cachar.

The rivers of Southern India are usually shallow and so do not lend themselves to navigation. Navigation is further impeded by the rocky beds and floods of the rivers. The Mahanadi, the Krishna and the Godavari can be navigated in the upper courses, but traffic on them is not considerable.

Burma is very fortunate in having a large number of navigable rivers. The Irrawady, the most important and the largest, is navigable by steamers for more than 500 miles from its mouth and country boats can proceed further.

Rivers are the principal highways in China. Three great rivers, the Hwang-ho, the Yang-tse-kiang and the Sikiang, cross the country from west to east. The Yang-tse-kiang, the most important of them, rises in Tibet, and with its tributaries drains the heart of China. It is navigable by steamers for more than 1,000 miles from the mouth. Sea-going vessels can use the port of Hankow, 680 miles high, for loading tea and other products for Europe and America. The river in its upper course flows by the province of Szechwan, one of the richest areas of China in silk, opium, cotton and minerals. Consequently, the river traffic on this part of the Yang-tse-kiang is very brisk. The Hwang-ho also rises in Tibet. It is of little

use for navigation as it is swift and shallow. Its name (which means 'Yellow') is due to the colour imparted to it by the yellow loess soil over which it flows. The river sometimes causes so much damage by floods that it is called 'China's sorrow'. The Sikiang rises in the highlands of Yunan and has a fairly direct course eastward to its mouth. It is navigable for the greater part of its course. The Pei-ho is important for communication and can be navigated up to Tientsin.

Ocean Transport

Modern international trade is mostly sea-borne. Ocean highways link different countries together and develop foreign commerce. Ocean transport is cheaper than land transport because the long highways on the seas are always ready for use. The countries surrounded or touched by oceans are more favourably placed than those devoid of sea board.

In number and total tonnage of shipping Great Britain is the leader. The following figures give the relative positions of the different countries in respect of number and tonnage of shipping in the period immediately preceding the present War.

MERCANTILE SHIPPING OF THE WORLD

(000 omitted)

Countries.	1934		1938	
	No.	Tons.	No.	Tons.
Great Britain	7,469	17,734	6,722	17,900
British Dominions	2,498	3,106	2,255	3,100
France	1,567	3,298	1,231	2,900
Germany	2,043	3,690	2,459	4,500
Japan	1,949	4,072	2,337	5,600
Norway	1,908	3,981	1,987	4,800
U. S. A.	3,045	10,354	3,000	11,400
World Total	30,997	65,576	29,763	68,400

Ocean steamers may be classified into two classes: (a) liners and (b) tramps. The essence of a liner system is the main-

tenance of regular routes and ports of call, sailing on advertised dates. A liner may be of a passenger liner service or of a cargo service. A passenger liner service is used primarily for the carriage of passengers and mails, and is, therefore, designed both for luxury and speed. A cargo liner, which carries large quantities of merchandise, usually operates on routes where speed is not the main requirement.

Tramp steamers have no regular routes or time of sailing and go wherever cargo is to be had.

Although steamers may cross the oceans in every direction, there are certain definite sea routes which are followed because of their freedom from navigational hazards.

THE PRINCIPAL OCEAN ROUTES OF THE WORLD

I. *The North Atlantic Route* has the greatest traffic of all ocean routes. Nearly one-fourth of the tonnage of the world's

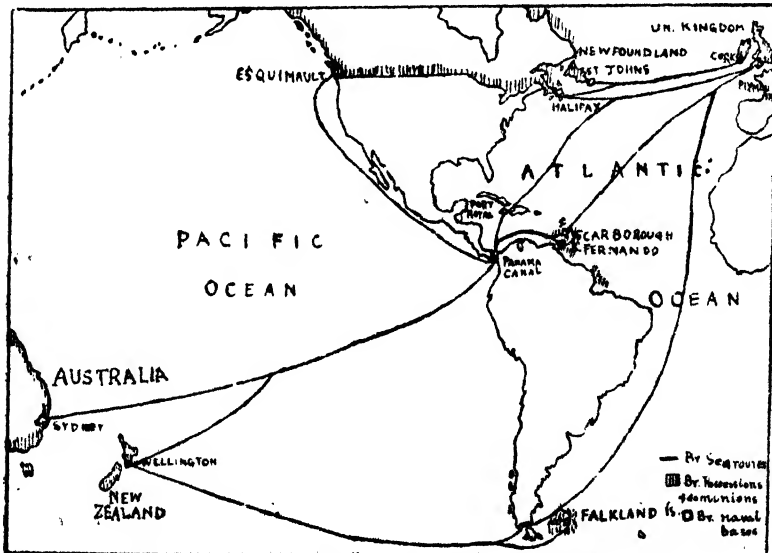


FIG. NO. 23. The Atlantic Routes—one to North America and the other to South America.

merchant vessels serves this route. This route connects the ports of Western Europe with those on the east coast of North America. Ports of departure are Glasgow, Liverpool, Man-

chester, Southampton, London, Rotterdam, Bremen, Bordeaux and Lisbon. Ports of call are Quebec, Montreal, Halifax, St. John, Boston, New York, Baltimore, Charleston, Galveston and New Orleans. The chief steamship services are the Cunard Steamship Co. and the White Star Line.

The exports of Canada and the U. S. A. to Europe are timber, live cattle, fresh meat, dairy produce, leather and hides, fruit, fish, wheat, raw cotton, maize, tobacco, oil, iron and steel, asbestos, etc.

II. *The Panama Route* connects the Pacific with the Atlantic. The important ports of call along this route are Colon, San Diego, Vancouver, Prince Rupert, Callao and Auckland in New Zealand. The chief steamship services are the New Zealand Shipping Co. and the Royal Mail Steam Packet Co.

The Panama Canal has not only opened several new routes ; it has also altered certain old ones. Before the construction of the Canal the only sea route between the eastern and the western sea boards of the Americas was by Cape Horn. The trade relations between the Far East and the eastern coast of the Americas were then maintained by the Suez Canal.

The Panama Canal serves mainly the eastern coast of the U. S. A. in its trade with Australia, New Zealand, Japan, China, and the western parts of South America and North America.

III. *The Suez Canal Route* is second to the North Atlantic in respect of volume of traffic. It commands the markets of Eastern Africa, Persia, Arabia, India, the Far East, Australia and New Zealand. In fact, this route passes through the heart of the world and touches more lands and serves more people than any other route. Through its many ports of call, it reaches about three-quarters of the total population of the globe. After crossing the Red Sea, the route follows two directions—one along the eastern coast of Africa to Durban ; another to the further east—to India, Australia, etc. Ports of departure are London, Liverpool, Southampton, Hamburg, Rotterdam, Lisbon, Marseilles, Genoa and Naples. The ports of call are

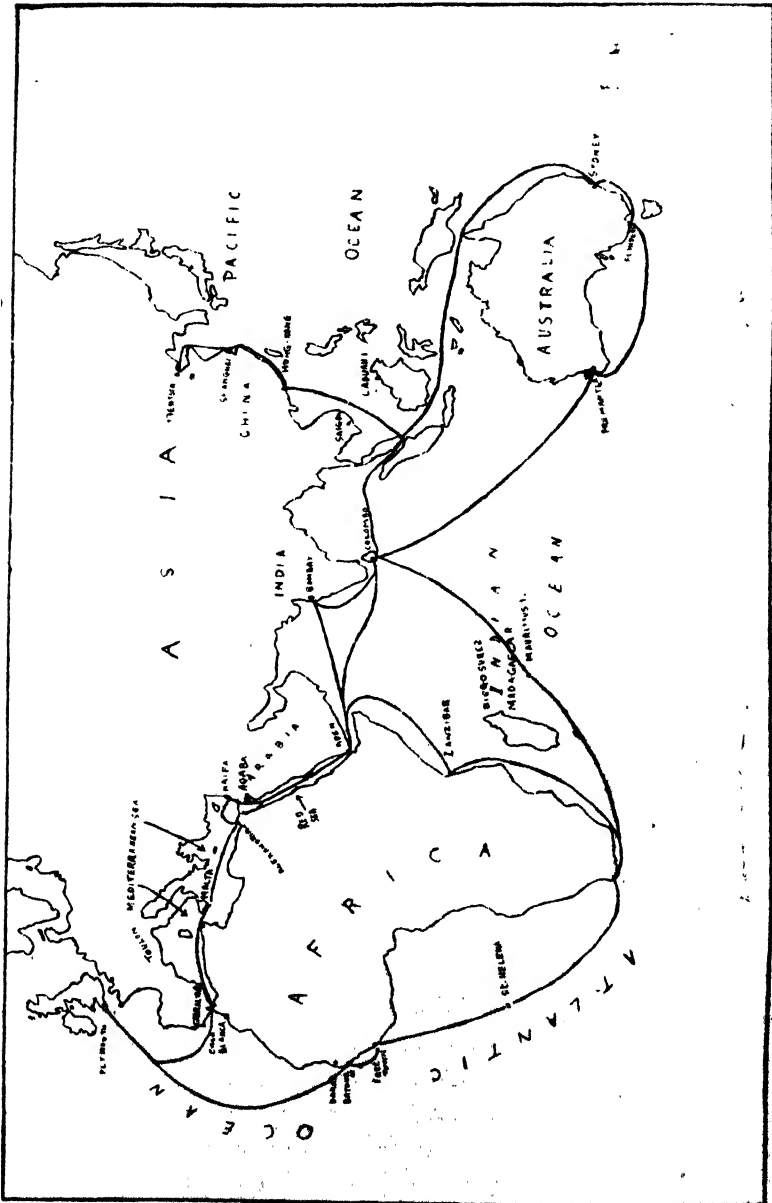


FIG. No. 24. The Suez and the Cape routes. Note that Australia may be approached from Europe by both the routes.

Aden, Bombay, Calcutta, Rangoon, Penang, Singapore, Manila, Hongkong, Perth, Adelaide, Melbourne, Sydney, Mombasa, Zanzibar, Mozambique and Durban.

The Suez Canal Company charges a very high canal tax, for which it is not possible for every steamer to avail of the Suez route. Steamers carrying cheap cargo for Australia and New Zealand generally pass through the Cape route. It is interesting to note that nearly half the exports of Australia for Western Europe goes by the Cape route. Sometimes passengers, from Europe—mostly colonists—who are bound for Australia and New Zealand prefer the Cape route because of low shipping rates.

This route is served by the Peninsular and Oriental S. N. Co. Ltd., the British India Line, the Australia Commonwealth Line and the Japan Mail Steamship Co. Ltd.

Along this great highway the East sends its raw materials and food-products to the western markets and receives in return manufactured articles. The products of China and Japan are rice, tea, sugar and silk ; those of India coffee, tea, rice, wheat, indigo, jute, spices, raw cotton, teak, hemp, silk, skins, leather and oil-seeds. From Australia fresh meat, timber, wheat, flour, fruit, hemp, wool, butter, wine and kauri gum are sent.

IV. *The Cape Route* connects Western Europe with the western and southern parts of Africa. The route also serves Australia and New Zealand. Many European Colonists going to Australia and New Zealand from Europe avail of this route, for it is cheaper than the Suez route. As the western sea board of Africa is economically very backward, the volume of traffic to and from this part is very small. Moreover, the sea is shallow for nearly five to seven miles from the coast. The chief ports on the European Coasts are London, Liverpool, Cardiff, Southampton, Swansea, Lisbon and Ascension. The ports of call are Port Elizabeth, East London, and Cape Town in South Africa and Adelaide, Melbourne, Sydney and Brisbane in Australia.

The important steamship services are the Union Castle Line, Australian Commonwealth Line and P. & O. Line.

The exports of tropical and South Africa are palm oil, ivory, gum, rubber, cabinet wood, hides and ostrich feathers.

V. *The West Indies and South Atlantic Route* leads to West Indies, Brazil and Argentina. The chief ports of call are Kingston (Jamaica), Havana, Vera Cruz, Tampico, Pernambuco, Bahia, Rio-de-Janeiro, Santos, Montevideo, Buenos Aires and Rosario. The exports are sugar, bananas, raw cotton, mahogany, tobacco, silver, rubber, coffee, rose-wood, diamonds, grain, wool and meat.

The chief services are the Royal Mail Steam Packet Co., the Pacific Steam Navigation Co., the Lamport and Holt line, Elders & Fyffes, and the Imperial Direct West Indian Mail Service Co., Ltd.

This route maintains trade connections between Europe on the one hand and West Indies, Carribean Sea board, Brazil, Uruguay and Argentina on the other.

VI. *The Pacific Route.*—The Panama Canal has made the Pacific Ocean prominent as a highway of commerce. This route, which is of growing importance, connects the Pacific coast of America with Asia. It also connects Australia and New Zealand with America. The great development of industries in Japan and China has further increased the importance of the Pacific route. The exports of the Far East to America by this route are tea, silk goods, sugar, tobacco, rice, hemp, and carpet, while the imports from the U. S. A. consist of cotton, wool, oil, metal goods, machinery and railway plants. The chief steamship services are the Peninsular and Oriental Line and the Japan Mail Steamship Co., Ltd.

CANALS AND SHIP CANALS

Canals are artificially constructed water-channels used mainly for navigation. Canals are mainly dug (a) to shorten long voyages by connecting seas, gulfs or oceans, (b) to make inland centre ports, (c) to avoid falls and rapids of rivers, and (d) to enable a country to handle its own traffic within its own borders when its rivers flow through foreign lands. Ship canals are of large dimensions and can admit vessels of great size.

As they are usually cut across isthmuses, they greatly reduce the distance by sea between certain countries. They also place great inland towns in direct communication with the sea.

THE SUEZ CANAL. The idea of cutting a canal between the Red Sea and the Mediterranean occurred to some Frenchmen as early as 1846, as they found the crow-fly distance between these two seas to be only seventy-five miles. The excavation was started in 1859 under De Lesseps, a French Engineer, who took full ten years to construct the canal. It was opened in November, 1869. It is 103 miles long with a minimum width of 150 feet and a depth of 33 feet. The canal is at sea level throughout. The Suez canal is not owned by any Government but by a company, the majority of whose shares are in the hands of the U. K.

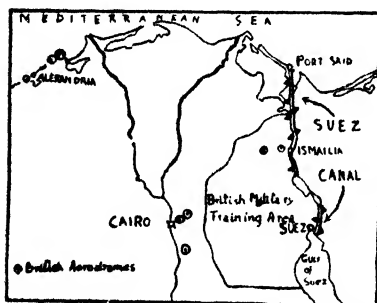


FIG. NO. 25. The Suez Canal. The canal is free and open, in time of war as in time of peace, to every vessel of commerce or of war, without distinction of flag.

Before the opening of the canal, steamers plying between Europe and Asia had to pass round the whole African continent. The canal opened up a new shorter route and effected rapid expansion of trade between these two continents, reducing the distance by 5,000 miles. It must be admitted that the importance of the Cape ports declined considerably after the opening of the Suez.

RELATIVE ADVANTAGES OF THE SUEZ CANAL TO EUROPE, ASIA AND AUSTRALIA

From Liverpool to	Bombay	Batavia	Hongkong	Sydney
via Cape	10,730	11,205	13,195	12,626
via Suez	6,189	8,516	9,785	12,235
Distance saved	4,541	2,689	3,410	391

Before the construction of the Panama Canal, the usual trade route between the eastern coast of North America and the Far East was through the Suez. The Suez Canal saved a great deal of distance by diverting the traffic from the Cape of Good Hope route to itself and thus benefited North America greatly.

RELATIVE ADVANTAGES OF THE SUEZ CANAL BETWEEN THE
EASTERN COAST OF NORTH AMERICA AND THE FAR EAST

From New York to	Bombay	Batavia	Hongkong
<i>via</i> Cape	11,511	11,986	13,966
<i>via</i> Suez	8,102	10,426	11,676
Distance saved	3,409	1,557	2,293

The canal is of utmost importance to the British Empire, for it connects the United Kingdom with her Eastern colonies and dependencies. In order to keep the passage safe through the Mediterranean Sea the British fleet guards the entrance at Gibraltar and the exit at the Suez.

The Suez Canal has provided not only the fastest but also the most economical line of transit between Europe and the East. About 6,000 vessels pass through the canal, and nearly two-thirds of the net tonnage is British. Italy, Germany, Holland, France and Japan are next in importance.

The Suez route passes through the heart of the Old World and touches more lands and serves more people than any other route. Fuel is available at the two ends of the route—oil in Burma and East Indies, and coal in Western Europe.

The Suez Canal has got a new traffic rival since the opening of the Panama Canal. A shorter route is now provided by this canal to the U. S. A. to maintain trade relations with Japan, Hongkong and the Philippines. The Panama Canal also shares with the Suez Canal a small portion of the traffic of Europe bound for New Zealand, Australia and Japan.

There are certain drawbacks of the Suez Canal. It is narrow and shallow, and therefore large types of modern vessels cannot pass through it. This defect is being gradually remedied by widening and deepening the canal. It is now possible for

ships over 40,000 tons to pass through the canal. The canal has the maximum capacity of handling only 24 ships per day.

Another defect lies in the transit time. Formerly, it took nearly 30 hours to reach one end of the canal from the other.* Now the transit time is much shorter—it is slightly over 12 hours. Enlargements at some places and numerous improvements have been made. Search-lights and lighthouses guard the course.

The most serious drawback, however, is the high canal dues levied on ships which pass through the canal. When speed is not essential, many cargo-liners follow the Cape of Good Hope route to avoid the high dues. Recently the canal dues have been reduced.

According to an International Convention (1886), which is a recognised part of International Law, the Suez Canal is *free and open, in time of war as in time of peace, to every vessel of commerce or of war, without distinction of flag.*

THE PANAMA CANAL. The completion of the Suez Canal gave a great impetus to the proposal for a canal to connect the Atlantic and the Pacific

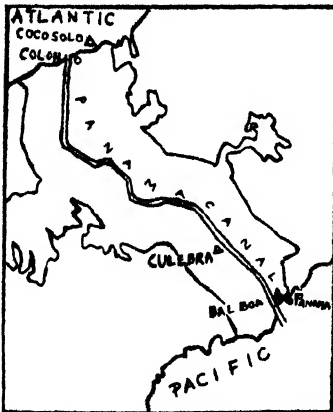


FIG. NO. 26. The Panama Canal. It is 40½ miles from shore to shore.

Oceans across the Central American Isthmus. At first two rival routes were proposed—through Panama Isthmus or through Nicaragua. Panama offered great advantages in respect of length and situation. But the work could not be undertaken before 1907 because of political disturbances in the State of Panama. The region through which the Panama Canal has been constructed is hilly and is composed of hard rocks. The difficulties were removed by cutting the rocks and constructing a series of locks.

* One vessel is tied up to the bank while the other passes through.

The Panama Canal was opened on 15th August, 1914. The canal is owned by the Government of the U. S. A. The length of the canal from shore to shore is 40½ miles, and from deep water on the Atlantic side to deep water on the Pacific side, 50 miles. It has a minimum depth of 41 feet. The passage through the canal takes seven to eight hours. The canal can handle 48 ships per day.

The canal has given rise to many new routes and to certain alterations in the old ones. Formerly the only sea route between the eastern and the western coasts of the Americas was by Cape Horn. The canal has brought the Pacific coast of America in close touch with the Atlantic coast of the same Continent. The canal is a political and strategic link that enables the U. S. A. Navy to function on either side of the country at will, should the occasion arise.

THE PANAMA CANAL AND ITS EFFECT ON COMMERCE

(i) The distance between the Pacific coast of South America and the Atlantic coast of North America has been greatly reduced.

New York to		Valparaiso
<i>via</i> Magellan	.. ..	8,400
<i>via</i> Panama	.. ..	4,600

As a result of the opening of the canal, the volume of trade between these two areas has increased considerably.

(ii) Australia and New Zealand are nearer to the U. S. A. by this route.

New York to	Wellington (New Zealand)	Sydney (Australia)
<i>via</i> Panama	.. 8,500	<i>via</i> Panama .. 9,700
<i>via</i> Magellan	.. 11,300	<i>via</i> Suez .. 13,400

(iii) It has opened up a new route for Europe for going to Australia and New Zealand. There is practically no saving

in distance in using one route in preference to the other, but steamers usually follow the Suez route.

Liverpool to	Sydney	Wellington
<i>via</i> Panama ..	12,400	<i>via</i> Panama ..
<i>via</i> Suez ..	12,200	<i>via</i> Suez ..
		11,100
		12,500

(iv) It has brought the ports of Japan nearer to the Atlantic ports of North America.

New York to	Yokohama
<i>via</i> Panama ..	9,700
<i>via</i> Suez ..	13,100

(v) The Panama has reduced the distance by sea to a considerable extent between the eastern and western coasts of North America. There is a saving of more than 7,000 miles. As a matter of fact, before the opening of the Panama Canal there was practically no sea-borne trade between these two coasts.

(vi) The western sea board of the Americas has been brought nearer to Europe by more than 5,000 miles.

The Panama Canal is essentially an American Canal. Europe is not benefited by this canal in its trade relations with Asia, Africa and Australia.

The opening of the Panama Canal has, no doubt, made many changes in the ocean routes ; but it must be admitted that its effect on the trade and commerce of the world has not been so great as was brought about by the opening of the Suez Canal. China and Japan have increased their trade relations with the U. S. A. with surprising rapidity after the opening of the Panama Canal.

The route does not suffer for want of fuel. American coal and oil are cheaper than those found on the Suez line.

There are certain disadvantages of the Panama Canal. The canal has six duplicated locks as it has a total rise and fall of 85 feet in crossing the Isthmus. The regions along the route are neither densely populated nor commercially very productive. Moreover, the Pacific Ocean itself is a vast one with few points of call.

THE KIEL CANAL. The sea route from the Elbe round Jutland to the Baltic is about 600 miles in length and a voyage through this route is a piece of dangerous navigation. The Kiel Canal connects the Baltic with the North Sea at the mouth of the Elbe and makes the voyage only 61 miles long. It was completed in 1895; it has a depth of 38 feet and 144 feet bottom width. It is capable of allowing passage to large sea-going vessels.

The canal is of great commercial and strategic value to Germany.

THE MANCHESTER SHIP CANAL. It is the most important canal in the British Isles. It was constructed in 1894 from Eastham, on the left bank of the Mersey to Manchester. The canal is 35½ miles long, the minimum depth is 28 feet, and the minimum bottom width is 120 feet. Since its completion the traffic has grown steadily year by year. Before the construction of the canal Manchester had to depend on Liverpool from where raw cotton used to come by railways. To-day steamships can come as far as Manchester.

Other important ship canals are the Amsterdam Ship Canal, the Stalin Canal, etc. *The Amsterdam Canal* permits Amsterdam to maintain a direct route with the North Sea. The canal was originally constructed in 1876. *The Stalin Canal* has created for Soviet Russia a direct sea route from the Baltic to the Arctic Ocean. It connects Leningrad with the White Sea.

Air-Transport

Aviation is the latest development in transport. The last World War gave a great impetus to the development of aerial transport. There are two types of air vessels—airships and aeroplanes. The airship is lighter than air, while the aeroplane is heavier than air. So far much progress has been made in the use of aeroplanes. In spite of the fact that aviation is the quickest method of transport, it will not be able to compete with railways and ships for the movement of cheap and bulky

goods. But aerial transport will be preferred to other modes in moving mails, precious goods, and, to some extent, passengers.

Air-transport is controlled to a great extent by climatic conditions. Heavy rain or snow storms suspend flying operations temporarily. Ground fogs also make safe landing of aeroplanes difficult. Again, the relief of the land over which flying will take place must be taken into consideration. Level lands are favourable for landing grounds. Commercial flying has, therefore, developed greatly in lowland regions like the U. S. A., Germany, Russia, U. K. and Holland.

In Great Britain aerial transport is steadily developing. The Imperial Airways—a combination of different companies—maintain connections not only with Europe but also with the distant countries of the Empire. A regular service is maintained with India, South Africa and Australia.

The amount of air-traffic in the United States exceeds the total of all other countries. The three chief air-lines are the United Airlines, American Airlines and Trans-continental Airlines, which are linked with those of Canada and South America.

MILEAGE OF REGULAR AIR-ROUTES

(civil aviation)

1938

U. S. A.	..	..	..	..	71,200
France	..	..	..	..	41,000
Germany	..	..	..	..	33,000
U. K.	..	..	..	..	25,500
India	..	..	..	..	6,700

THE CHIEF AIR-ROUTES OF THE WORLD

1. Airways between Europe and America. This route is served by French and German aeroplanes. The route follows the Atlantic coast of Africa up to Dakar or Bathurst, and from there it crosses the Atlantic and reaches Pernambuco in Brazil. Pernambuco is connected by airways with Santiago in Chile. The U. S. A. air lines meet Pernambuco along the Atlantic Coast.

2. Airways between Europe, Asia and Australia are maintained by the French, Dutch and British aeroplanes. The British air-routes start from Croydon (London) and end in Melbourne *via* Marseilles, Athens, Alexandria, Cairo, Gaza, Bagdad, Bahrein, Sharjah, Karachi, Jodhpur, Delhi, Allahabad,

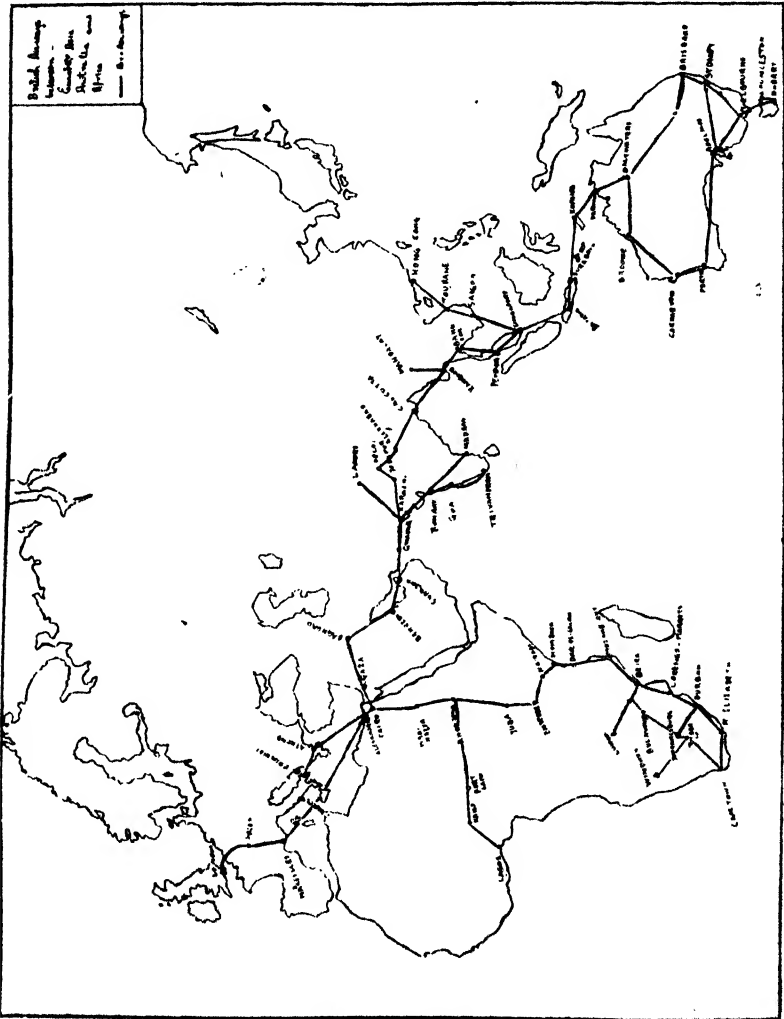


FIG. NO. 27. The British airways between Europe, Asia, Australia and Africa.

Calcutta, Rangoon, Bangkok, Penang, Singapore, Batavia, Darwin, Brisbane and Sydney.

The Dutch and French air lines follow more or less the British route. Recently Soviet Russia has opened a new line which connects Moscow with Vladivostok on the Pacific.

3. *Airways between Europe and Africa.* The air services between Europe and Africa are controlled by the Italian, French and British aeroplanes. The British own the most important airways system in Africa. The British route starts from Southampton and goes to Alexandria across the Mediterranean. From Alexandria the route goes straight to Khartoum, from where the journey is diverted to two different directions—one branch goes to the west at Lagos, and the other to the south at Capetown.

The French have established two air-routes to Africa. One follows the western coast of Africa and goes as far as French

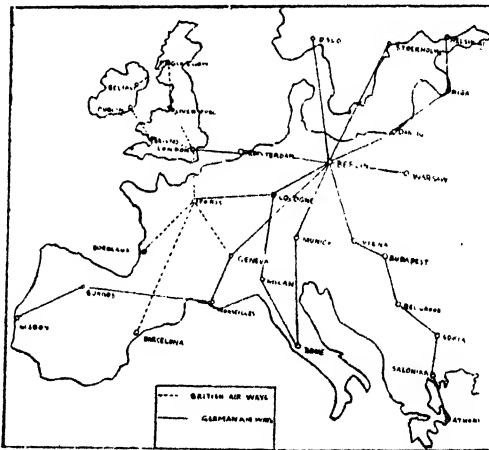


FIG. NO. 28. The German airways. Berlin is the centre.

Equatorial Africa *via* Bathurst. The second route goes across the Sahara and the Congo and ends in Madagascar. The Italian air line goes by way of Tripoli and Cairo to Addis Ababa in Abyssinia.

4. *Airways between America and Asia.* Air-transport across the Pacific is maintained by U. S. A. aeroplanes. The

line starts from San Francisco and goes across the Pacific to Canton *via* Honolulu, Midway Island, Wake Island and Manila.

Germany maintains air service with Norway, Sweden and Finland in the north ; with Poland in the east ; with Czechoslovakia, Yugoslavia and Greece in the south-east ; with Italy in the south ; with Spain and Portugal in the south-west ; and France and the U. K. in the west. The French and Dutch lines compete with the German lines in Western and South-Eastern Europe.

In the development of airways, the U. S. A. leads the world. There are several trans-continental air lines in the country. The important air-ports are Boston, New York and Washington on the east coast, and Seattle, San Francisco and Los Angeles on the west coast. -

QUESTIONS

1. Describe the recent development in transport facilities that have given impetus to agricultural production in Canada. (Cal. B. Com. 1930).
2. What are the principal maritime countries engaged in the carrying of trade in India? What is the place of purely Indian shipping concerns in the sea-borne trade of India? (Cal. B. Com. 1928).
3. What do you know of the British Imperial Air-route to the East? State your opinion about the prospects of Air-Transport in India. (Cal. B. Com. 1927).
4. "The traffic through the Panama Canal has increased with surprising rapidity in recent years." State briefly the factors that have led to the improvement. What are the principal commodities that pass through the canal? What are the main defects of this route to the east and how are these going to be remedied? (Cal. B. Com. 1927).
5. Discuss the present position of mercantile marine in the important maritime countries of the world. What do you know about the recent development in India in this direction? (Cal. B. Com. 1926).
6. "The opening of the Panama Canal has brought about many changes in ocean routes, but by no possibility can it have such an important effect on the commerce of the world and lead to such rapid expansion of trade and traffic as was brought about by the opening of the Suez Canal." Discuss this statement. (Cal. B. Com. 1926).
7. Discuss the importance of the Suez route to India's external trade. How will this trade be affected if the route be temporarily closed? (Cal. B. Com. 1936).

8. Describe the Suez Canal with the object of showing its commercial value. (Cal. B. Com. 1924).

9. "Canada is the making of railways." Explain.

10. Distinguish between a Tramp and a Liner. What are the routes of going from India to the Pacific ports of South America?

11. Discuss the relative advantages and disadvantages of the Suez and Panama routes from Western Europe to Eastern Asia. Large quantities of jute goods are exported from Calcutta to the Pacific ports of South America. What route do the ships follow for this trade, and why? (Cal. B. Com. 1934).

12. State the present distribution of the world's merchant marine. How have the relative positions of the countries in regard to merchant marine changed since the last Great War? Who are the principal carriers of India's sea-borne trade? What are "Tramp" steamers, and what commodities do they carry? (Cal. B. Com. 1934).

13. Compare and contrast the conditions of inland water transport in England and Germany. (Cal. B. Com. 1933).

14. How does the Cape Route compare with the Mediterranean from India to Europe? In what way will India's trade with Western Europe be affected if the latter route is blockaded during a war?

(Cal. B. Com. 1939).

15. Describe the present development of airways in the British Empire. Draw a map of the world and indicate the air routes between Europe and Asia.

16. Discuss the possibilities of opening railway lines between India and Europe.

CHAPTER IX

DEVELOPMENT OF PORTS AND HARBOURS

A port is essentially a gateway to the land from the sea, and also, none the less truly, a gateway to the sea from the land. It is a place on the water route where ships can find accommodation during the process of loading and unloading.

The dual operation of loading and unloading cargo involves two important characteristics in a port, without which its functions cannot be satisfactorily performed. These characteristics are shelter and accommodation.

It is not easy for a ship to load or unload goods in an exposed and unprotected situation on the sea coast. In British West Africa, where the coastal sea is very shallow, ships are compelled to lie at some distance off the shore. If the sea is violent all the year round, it is equally difficult to perform shipping operations.

Thus, in order to perform loading and unloading with ease and safety, ships require shelters on the coast. It is an important requirement. The idea of shelter is closely associated with the term harbour. A harbour is a place of shelter for ships. There are two kinds of harbours—(a) artificial and (b) natural. *A natural harbour is generally an indentation in the coast-line sufficiently enclosed or protected by its environment and topographical features to provide a tranquil water area for shipping.* San Francisco, Liverpool and Cork possess excellent natural harbours.

Artificial harbours are constructed in places where environment and topographical features are unfavourable. *Breakwaters and dredges* are always used. The object of breakwater is to break up and disperse waves for preventing agitation of the water surface within the harbour area so that ships can lie

in safety. Where the water is shallow, dredges keep the outlet deep. Los Angeles and Madras have artificial harbours.

An ideal harbour should be (i) well-protected against storms, (ii) free from ice during winter, (iii) deep enough for vessels, with fairly deep water near the shore, (iv) wide enough to give room for large ships to turn in, (v) sufficiently spacious for docks and wharves, and (vi) accessible to the interior by straight and level routes.

The next important requisite of a port is accommodation. Accommodation means facilities and opportunities for carrying on trading operations. A harbour by itself does not suffice for all the requirements of a port, which must include convenient and continuous accessibility and facilities for the landing and loading of goods, the embarkation and disembarkation of passengers, quays, sheds, warehouses, cranes, service roads and railway tracks, and repairing depots.

The fundamental importance of a port consists in the extent and productiveness of its hinterland. The term hinterland is borrowed from Germany. It means a region to which a port acts as 'door'. The trading operations of the port of Calcutta are performed for Bengal and Bihar; and, therefore, we may say that the hinterland of Calcutta includes these two provinces. The resources of a hinterland should be bountiful, if the port is to develop greatly. A dense population, rich economic products and a good transport system make a hinterland productive. In short, a hinterland should possess inducements for trade. The extent of the hinterland of a port depends on the nature of the means of communication. Communications bring the different parts of the hinterland in close touch with the port. A port is a connecting link between land and water traffic; and, therefore, it must be connected with the surrounding areas by roads, railways, rivers and canals. Hinterlands are generally of two types—distributory and contributory. A *distributory hinterland* imports goods either to feed the dense population, or to supply the inhabitants with the necessities and luxuries of life. Goods are also imported as raw

materials for manufacturing industries. The hinterland is *contributory* when the goods are exported. These goods may be food or raw materials or manufactured articles. The trade of a port reflects the conditions of production, consumption and transport facilities of its hinterland.

There may be several ports in the same hinterland. Traffic will flow to those ports which will offer greater trading facilities. Bombay, Okha, Porbandar and Navalakhi on the western coast of India compete with one another. The ports of Kathiawar are getting more traffic because of lower port charges than those of Bombay.

Ocean ports, river ports, canal ports and estuary ports are so named because of their locations. These ports have different functions to perform; each of them owes a large share of its industrial development to the ease of obtaining raw materials and the existence of assured markets.

OCEAN PORTS may be divided into four classes according to the character of the harbours and their relation to the routes on the lands:

(1) Open roadsteads, *e.g.*, Boulogne: These are usually poor, because they do not afford good and safe harbours with sufficient depth, and protection from winds and waves are absent. They are rarely located near the mouth of large valleys, and, therefore, transportation towards the interior is hampered.

(2) Bay ports, *e.g.*, Boston. Harbours at such places may be safe, commodious and deeper, and there may be plenty of room for docks.

(3) River ports like Calcutta and Chittagong have the advantage of easy communication inland, but they often suffer from lack of depth and space for anchorage, docks and wharves. Room can only be found by extensive digging or by going far or down the river.

(4) Ports with both a bay and a river are commercially most advantageous. They usually combine safe and commodious anchorage with sufficient room for docks and wharves, and with easy access to the interior.

RIVER PORTS.—All navigable rivers have towns situated on their banks, where the products of the immediate neighbourhood are collected, and transported up and down the rivers. The importance of these ports depends upon the navigability of the rivers, the suitability of their situation on the river banks, and also upon the productivity of the neighbouring districts.

For a study of ports a fair knowledge of entrepôts is necessary. *Entrepôts are ports which import commodities for the purpose of re-export.* In short, these ports act as middlemen and their main function is redistribution. These ports collect goods not for the local areas but for certain regions which cannot import directly from the sources. Singapore, a port at the end of the Malaya Peninsula, receives the products of the adjoining islands for exporting them to the different parts of the world.

The commodities which are handled by the entrepôts must possess certain characteristics. "The goods must have high value, small bulk and good keeping quality."

Distance between the place of origin and destination of goods also influences the entrepot trade. The hold on the trade of the entrepôts is great when the origin and destinations of the traffic are remote. Spices, drugs, silks, and other tropical products are consumed in small quantities by the European countries. It is a great economy when these commodities are distributed from some western entrepot. Hamburg, on the Elbe, is the entrepot for Norway, Sweden and the Baltic States, An excellent example of an entrepot is afforded by Port Said, where all the routes from the West meet before passing the Suez. The great entrepôts of the world are London, Colombo, Singapore, Hamburg and Shanghai.

Standard of comparison. The standards by which the importance and prosperity of ports can be measured are various, and hence are not simple and easy. The following are usually employed :

1. The number of ships visiting a port during a year.
2. The tonnage of shipping.

3. The tonnage of goods discharged or handled in and out.
4. The marketable value of the produce dealt with.

The importance of a port cannot be measured simply by the number of ships visiting it every year, because the ships may be very small or big in size. The size and importance of the vessels can be ascertained to a certain extent from the tonnage of shipping. In addition to this, the tonnage of goods handled by a port can also be a very good standard of comparison. But it has one great drawback: it makes no distinction in the nature of goods, whether valuable or merely bulky and cheap.

SOME IMPORTANT PORTS

EUROPE. The important sea ports of Europe are situated on the north-west coasts. The chief of these are Hamburg on the mouth of the Elbe; Rotterdam on the Rhine; Antwerp on the Scheldt and Havre on the Seine. The hinterlands of these ports are very extensive and productive.

The hinterlands of the Mediterranean ports have become important after the opening of the Suez Canal, which has made the Mediterranean Sea one of the most important highways of commerce. The chief sea ports are Marseilles, Genoa, Naples and Trieste. The Baltic and the Black Seas are almost land-locked and, therefore, have no important ports, although Constantinople and Copenhagen occupy very favourable position.

London is situated at the head of the Thames estuary 55 miles from the sea. Dredging operations are not generally necessary, as the tide rises from 16 to 21 feet at London Bridge. "London has for a long time played the role of an immense international warehouse. It receives products from all over the world, which it immediately re-exports." From an entrepot, it has become the greatest money centre in the world. The principal commodities imported are wool, grain, timber, refrigerated meat, tea, coffee, sugar, dairy produce, wines, spirits, tobacco, rubber, fruits, carpets etc.

Trade and industrial activities of London are also great. There are paper mills, chemical plants and factories for rayon. Clothing, furniture, jewellery, hats etc. are also made. London is the most important port of the British Isles. It receives between 30 to 40 p.c. of British imports, and dispatches more than 25 p.c. of the country's exports.

✓ *Glasgow* is the largest ship-building centre in the world. The port is situated on the Clyde, 20 miles east of Greenock.

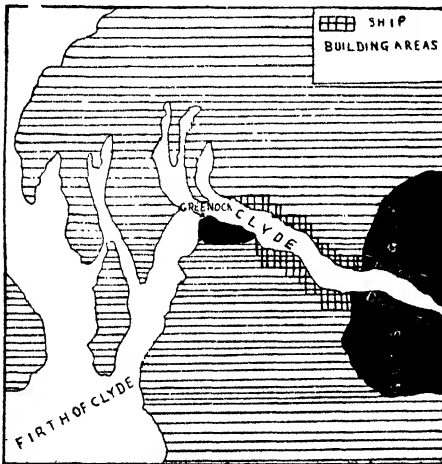


FIG. No. 29. The harbour and port of Glasgow.

The Clyde banks from Greenock to Glasgow are noted as ship-building regions with many docks. The sheltered position of the Clyde, the supplies of iron-ore and coal in the neighbourhood, the depth of the river—these have made the Clyde estuary an ideal ship-building area.

Although Glasgow is an engineering centre, it has developed other industries as well.

Woollen goods, the manufacture of carpets, dye works, glass works, chemical works, oil refineries, paper mills, soap works, the making of confectionery etc. are there not only to meet the needs of its great population but also for markets abroad.

✓ *Liverpool* is situated at the mouth of the Mersey estuary. It competes with London for the premier position. It is the leading port for the importation of raw cotton, grain and provisions. Woollen and steel goods, pottery, chemicals, hardware etc., are exported. The hinterland of Liverpool not only covers South Lancashire, but also Yorkshire, Staffordshire, and Cheshire.

The port of Liverpool handles more than one-third of the passenger traffic of Great Britain. Flour-milling, sugar-refining, chemical, soap-making etc., are the principal industries. Liverpool is also an air port.

Cardiff is the leading port for the shipment of coal, not only in Great Britain, but also in the world. It is not only a coaling port ; it also deals in timber, grain and iron-ore. The densely populated area in the vicinity of the port requires a steady influx of food-stuffs. There are also important iron and steel works in the port area. The prosperity of Cardiff has been threatened recently by the falling off in the demand for coal from abroad, due to various reasons. Oil is now largely used for ship and locomotive engines. Moreover, several countries have developed hydro-electric power. These factors have affected adversely the coal-export trade of Cardiff.

Manchester is situated on the river Irwell, a tributary of the Mersey. It is connected by a ship canal with Liverpool. It is the fifth port in Great Britain. Its central position has made it a collecting centre of raw cotton for dispatch to various towns. It is interesting to note that about 90 per cent. of Lancashire's spindles are confined within 17 miles of Manchester.

Hamburg, the most important port of Germany and principal port of the Continent, is situated on the Elbe at a distance of nearly seventy miles from the open sea. The estuary of the Elbe has been dredged to a sufficient depth. As the port is connected with the plains of Germany by water-ways and railroads, the commerce of the country converges towards it. Hamburg is a great entrepot or warehouse port. It imports coffee, cocoa, sugar, coal, cotton, wool and manufactured goods not only for Germany but also for Scandinavia and the Baltic States. Exports include manufactured goods, salt, sugar, cattle and dairy products. The port competes for traffic with Rotterdam and Antwerp.

Now that the construction of the Ems-Weser and Hansa canals has been completed, Hamburg has got direct water

communication with the industrial Ruhr Valley. Much of the trade which used to pass through Rotterdam and Antwerp is now handled by Hamburg. Cuxhaven is the outport of Hamburg.

Rotterdam is situated on the New Mass, a distributory of the Rhine, and is connected with the sea by a deep canal known as the New Waterway. It is a great transshipment port at which goods are transferred from ocean-going vessels to river crafts for transmission by the channels of the Rhine, and by inland waterways, to the great manufacturing districts of Westphalia and the inland cities of Germany, Holland and Belgium. Although Rotterdam is the natural gateway of the Rhine, Germany has taken elaborate measures to divert the Ruhr traffic to Hamburg through the Hansa canal.

Antwerp, in Belgium, is situated at the mouth of the river Scheldt. It is one of the greatest ports in the world. It has a large entrepot trade. Its hinterland includes Belgium, Eastern France, the Rhine Valley and the Ruhr coal-field. The traffic of Antwerp mainly deals with liners and general cargo. The port competes with Rotterdam and Hamburg.

✓ *Marseilles* is the first port and second city of France. It is situated some 30 miles east of the Rhone mouth. Its position at the head of the Gulf of Lyons and at the entrance of the Rhone Corridor has made it very important. It has been greatly benefited by the opening of the Suez Canal. By a deep-water canal it has recently been connected with the Rhone. It has not only made the trade with the East very convenient, it has also got direct access to the French North African Colonies. Wheat, oil-seeds, sugar, coffee, hides, silk, spices and other Eastern products are imported. Among its local industries may be mentioned particularly the refining of oil and the making of soap.

NORTH AMERICA. The important ports of North America are Montreal, New York, Boston, Halifax, New Orleans, Mobile and Galveston on the Atlantic, and San Francisco, Oakland, Seattle, Vancouver and Portland on the

Pacific. The hinterlands of the Atlantic ports are very extensive and rich in economic resources while those of the Pacific ports are poor.

Baltimore, on Chesapeake Bay, is a great port and distributing centre. It is connected with the Middle Appalachian Region by cheap water transport. Tobacco, iron and steel goods, and artificial fertilizers are manufactured in addition to fruit-canning. It is the biggest city in South-East U. S. A. and contains more than 800,000 people.

✓ *Boston* is the commercial gateway to the great industrial district of New England. Boston harbour is a sheltered bay ; it is well situated with respect to Atlantic routes ; and it is served by railways which reach Portland, New Brunswick, Montreal, New York, etc. Yet Boston deals with less of the traffic of New England than does New York.

It is the nearest port to Europe which has a dense population and a rich hinterland. The port is open all the year round. It has also a big coasting trade. Hides, skins, cotton, wool etc., are imported for the neighbouring districts. Sugar, textiles, paper, leather and iron and steel are manufactured. Harvard University is situated at a distance of three miles from Boston.

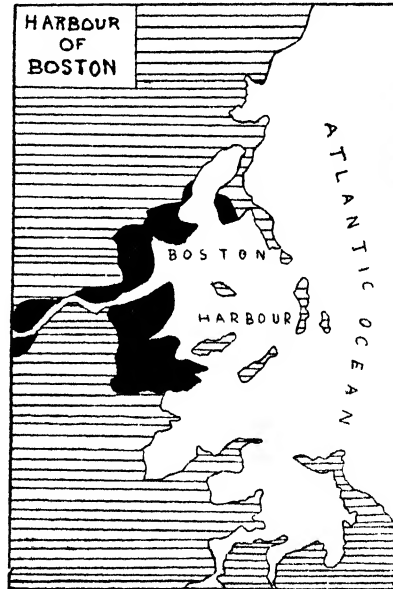


FIG. NO. 30. Boston harbour is a sheltered bay.

Montreal, situated at the confluence of the Ottawa and the St. Lawrence, lies at the limit of ocean navigation. It is the

most important port of Canada. It is 300 miles nearer to Liverpool than New York. Its harbour, in extent and equipment, is one of the finest in the world, but its great drawback is that the navigation is closed by ice during the winter months. Montreal is the largest city of Canada and contains more than 800,000 people.

New Orleans, situated at the mouth of the Mississippi at a distance of 10 miles from the Gulf of Mexico, is the largest city of the Cotton-Belt of the U. S. A. Its hinterland includes the rich Mississippi-Missouri basin. Originally New Orleans was important as an outlet for the fur trade. To-day, it is a great cotton port, and exports cotton, refined petroleum and wheat to North-West Europe in large quantities. Cattle, timber and maize are also exported. *New Orleans is not so well situated as Boston or New York for trade with Europe.*

New York is the greatest commercial gateway to America. Nearly one-half of the total foreign trade of the U. S. A. passes through it, and as such it is supreme in America. It has the heaviest coastwise traffic. It actually handles more wheat, coal and timber than any other port of America, possessing, as it does, special large-scale facilities for handling heavy goods.

Advantages of New York: (a) It has easy access to a large and rich hinterland by canals and railroads. (b) It has an excellent harbour.

SHARE OF PORTS IN THE FOREIGN TRADE OF THE U. S. A.

<i>Imports into U. S. A.</i>		<i>Exports from U. S. A.</i>	
New York ..	.. 34 p.c.	New York ..	.. 34 p.c.
Galveston ..	.. 13 ,,	Boston ..	.. 6 ,,
New Orleans ..	.. 7 ,,	Philadelphia ..	.. 9 ,,
San Francisco ..	.. 5 ,,	New Orleans ..	.. 6 ,,

The important Pacific ports of North America are San Francisco, Los Angeles, Seattle, Portland and Vancouver. These ports have large harbours with good shipping facilities. But

these ports have certain drawbacks: (a) their hinterlands are small and sparsely populated; (b) the Pacific coastal region is industrially less developed; (c) long distances and difficult routes separate these ports from the Continental interior.

San Francisco is the most important port on the Pacific coast. It is on the hilly peninsula to the south of the Golden Gate, and is connected with Oakland by train ferries. It handles lumber, grain, oil and fruits. Tea, silk and sugar are imported from the Far East.

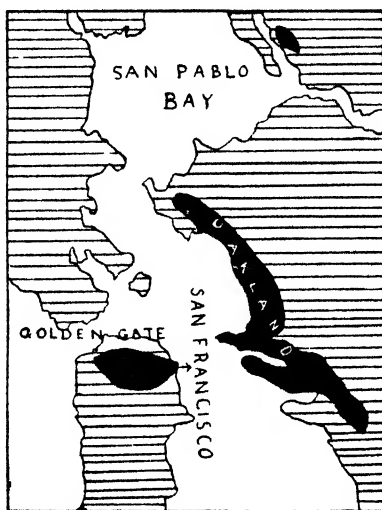


FIG. No. 31. Ports of San Francisco and Oakland.

SOUTH AMERICA.

Although the size of South America is twice that of Europe, its ports are few. The Atlantic ports command greater traffic because of the great extent of their hinterlands. The *Andes* are set close to the Pacific coast, and there the Pacific ports have limited resources. The principal ports of South America are Rio-de-Janeiro, Buenos Aires, Valparaiso, Montevideo, Bahia, Guayaquil and Bahia Blanca.

Rio-de-Janeiro is the capital of Brazil, it is also the chief sea port. The harbour is commodious and safe. The hinterland is extensive, and it includes Sao Paulo, Minas Geraes, Panama and Travessia. The railways connect Rio-de-Janeiro with Sao Paulo, Uberaba, Sta. Maria, Bello, Horizonte and Vigoria.

Buenos Aires is the capital of Argentina and stands on the river Plate. It is also the chief sea port. The river is generally shallow, and therefore, constant dredging operations are carried

on. Recently dock accommodations have been improved. Buenos Aires is the chief outlet for the produce of the agricultural and pastoral districts of the Republic. Wheat, maize and linseed are exported in large quantities. It is also a great railway centre.

Valparaiso is the most important port on the Pacific coast of South America. It is situated on a fine bay and its position is similar to that of San Francisco. Its hinterland includes the rich mineral districts of Chile. Nitrate of soda, copper, silver and gold are exported. The port is connected with Buenos Aires by railways. A new port has been developed at St. Antonio, 43 miles to the south of Valparaiso.

Montevideo is the capital of Uruguay; it is also an important port. It possesses a large harbour, but the water of the shore is very shallow because of the accumulations of silt. Large ships have to anchor two or three miles away from the shore, from where goods are carried to the port by lighters.

Guayaquil is the chief port of Ecuador. It has an excellent harbour at the estuary of the river. The main drawback is the unhealthy climate of the port. Ivory-nuts and coffee are exported.

ASIA. *Karachi* is the port of Sind situated near the mouth of the Indus in Lat. $20^{\circ}47'$ N, Long. $60^{\circ}58'$ East. Karachi cannot be regarded as an industrial centre: it is of importance as the principal market and port of shipment for the surplus produce of North-Western India. Wheat, cotton, barley, rice, gram, oil-seeds, wool, hides and skins and animal bones are the principal exports. The imports include woollen piece-goods, sugar, machinery, iron and steel, mineral oils, coal and coke.

With the introduction of air-mail services between India and foreign countries, Karachi has become the leading air port of India.

Bombay owes its importance to its excellent geographical location and to its magnificent natural harbours. It is situated on an island in the Bombay Presidency in Lat. $18^{\circ}55'$ N, Long. $72^{\circ}54'$ E.

The harbour is safe and spacious and covers some 74 square miles. It affords ample shelter to shipping throughout the year. "The entrance to the harbour is from the South-West ; and the Colaba peninsula, the narrow strip of land which constitutes the southern extremity of Bombay Island, forms a natural breakwater affording protection from the violence of the monsoon."

The hinterland includes the whole of the Deccan and Central India and extends to the Punjab. The port is connected with Northern India by the

B. B. and C. I. Ry. and with the Deccan, Central India and the Gangetic plain by the G. I. P. Ry.

Cotton is the most important commodity which is brought down to the port from the Deccan and Central India for export. Hides, grain, seeds and manganese ore are also exported. The chief imports are machinery, oil, sugar, timber, meat, etc.

It is interesting to note that while Calcutta is served by a magnificent waterway-system, no navigable river connects Bombay with the interior.

Cochin is the most important port between Bombay and Colombo. It is nearly 300 miles nearer to Aden than Bombay. "The system of backwaters running parallel with the coast affords cheap transport and excellent waterways connecting several places of importance in the Cochin and Travancore

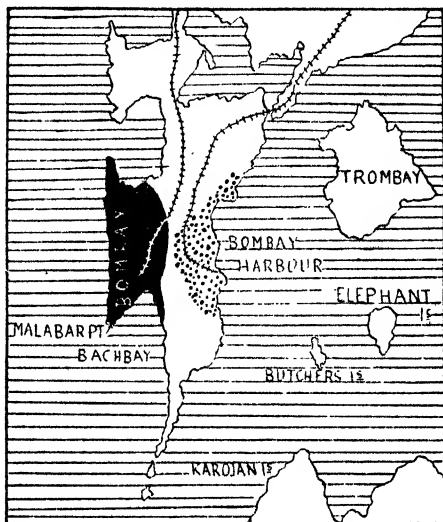


FIG. No. 32. Bombay is an island port. It is connected with the mainland by railway-bridges.

States and when the natural situation of the port has been fully developed, its position should ensure a very great increase in its trade."

Madras is the chief port of the Madras Presidency. Until the construction of an artificial harbour Madras was an open



FIG. NO. 33. Akyab is an excellent harbour. Note the narrow hinterland of the port.

roadstead with a surf-beaten coast-line. The harbour is connected with the different parts of the Deccan and Northern India by railways. The chief imports are coal, oil, manures, paper, timber, sugar, metal, glass and glassware, chemicals, machinery, motor vehicles, etc. The chief exports include groundnuts, tobacco, ores, manures, coffee, onions, etc.

Calcutta is situated in Lat. $22^{\circ}33' N$, Long. $38^{\circ}21' E$ on the river Hooghly. It is a great sea port, although it is 120 miles

distant from the sea. Its hinterland includes Bengal, Behar, U. P., Assam and Orissa, and also extends to the Punjab and the northern part of the Deccan. The port serves the great coal, tea and jute industries of Bengal and Assam and the wheat, rice and seeds traffic of Bihar, U. P. and C. P. It imports cotton piece-goods, metals and ores, oil machinery, hardware, paper, motor vehicle, liquors, etc. The exports are jute, tea, rice, pulses, hides, lac, pig iron, mica, manganese, etc.

The port facilities are excellent. But the river Hooghly is a difficult river to navigate. Sand banks and Bars frequently make the navigation dangerous, specially within 40 miles of Calcutta. Dredging operations are constantly going on.

Akyab is the only sea port on the western coast of Burma. It has a sheltered bay, but as a port it is not very important. Its hinterland is neither extensive nor very productive. Besides, the port has no railway communications with the interior.

Rangoon is the chief port of Burma. It is situated on the Rangoon river, about 24 miles from the sea. Timber is the most important commodity exported from here. Rice and petroleum are also exported.

Singapore is situated on the southern side of the island of Singapore in the Straits Settlement. The island of Singapore is about 27 miles long and 14 miles wide, and is separated from Sumatra by the Strait of Malacca. The population of Singapore is nearly 50,000. It is the chief entrepot for the whole of the Malaya Archipelago. It exports rubber, tin, copra, pineapples, etc. Imports include petroleum, tobacco, sugar, iron and steel, machinery, etc.

Hongkong is situated on the mouth of the Canton river and consists of an island. The Canton river, which is navigable for more than 600 miles, brings down the produce of China in river steamcraft to Hongkong for transhipment. It is equally important as an entrepot port. Its principal trade is rice, which is sold for distribution inland and for re-exportation abroad. After rice come sugar, cotton, tea, coal, flour, oil and opium. The harbour of Hongkong is extensive and spacious; its only drawback is that it is exposed to the influx of heavy seas from the west during the prevalence of typhoons.

Growth of Trade Centres

Trade centres are places carried on, and goods are collected, distributed or transferred from one means of conveyance to another.

Towns and trade centres do not spring up of their own

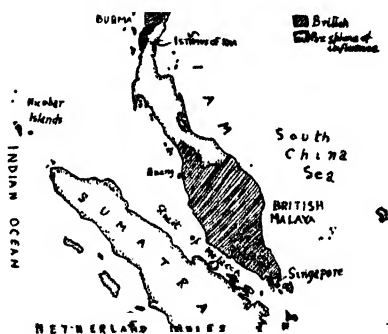


FIG. NO. 34. Singapore.

accord, nor are they just haphazard collections of houses and other buildings. Their origin and growth are the direct consequences of the division of labour, the outcome of the operations of geographical control and the result of man's environment. "A city is not only a place in space, it is also a drama in time."

In early days, when the volume of commerce was very much smaller than what it is today, the interchange of commodities used to take place between individuals at a common meeting place. The growth of trade centres originated from the necessity of such a common meeting place. Before the commodities are interchanged, they are transported to the trade centre. Hence easy transport facility is the most essential condition for the growth of trade centres. The means of transport should also be cheap.

Conditions favouring the growth of cities :

1. Religion and religious foundations had great town-creating powers. The rise and growth of Mecca, Lhasa and Benares should be associated with religion and pilgrimage.

2. Many towns and cities have grown up as health and pleasure resorts to give relief to the distress caused by the smoky manufacturing centres, e.g., Madhupur, Bath, the Riviera towns, etc.

The sea coasts of many countries have assumed great importance to many people as vacation resorts. The sea coast is cool and pleasant, particularly during summer, and thousands of people go there in that season.

3. Natural wealth, especially useful metals and minerals, always attracts people to the mining districts and contributes to the rise and growth of new towns. For example, we may refer to the growth of many towns in the vicinity of Bengal coal-fields. Even when climate and other conditions are remarkably unfavourable, wealth in the concentrated form of precious metals and minerals brings masses of men together, as we find in the case of the hot desert of Australia.

4. Towns tend to grow at the confluence of two regions producing different commodities, because they give the popula-

tion of the two places a meeting ground for the mutual exchange of their goods. Milan, situated at the foot of the Alps, is a good example in point: here products of the plain and of the mountains are exchanged.

5. Water-power and its conversion into electricity have caused and aided the growth of the "Fall towns" like Richmond, St. Paul, Buffalo and Minneapolis in the U. S. A.

6. Towns grow at places which are most convenient for the receipt of goods in bulk and for their distribution. The world's great cities are generally ports and railway centres.

7. Historical and political movements often influence the development of capitals more than the physical conditions under which they have been established. Delhi, Washington and Paris are examples.

8. The origin and growth of many towns are due to the commercial and strategic advantages of their position, *e.g.*, Peshawar and Istanbul.

9. In recent years many cities and towns have sprung up owing to their importance as educational centres. Oxford, Cambridge, etc. are examples.

Oxford and Cambridge sprang up many centuries ago.

10. (a) Junction of valleys, which usually means junction of rivers.

(b) Crossing-places of roads in a plain: *e.g.*, Vienna, Delhi, etc.

There are about 250 cities in the world with a population of 200,000 each. More than 48 p.c. of these towns are in Europe.

QUESTIONS

1. State the necessary conditions for the development of good sea ports. Apply these considerations to any of the following:—

(a) Montreal, (b) Fremantle, (c) Shanghai, (d) Buenos Ayres, (e) Trieste.

(Cal. Inter. 1925-26)

2. Describe the position of any four of the following ports and discuss the parts they play in the commerce and industry of the country they serve: (a) Rotterdam, (b) Yokohama, (c) Genoa, (d) Galveston, (e) Buenos Ayres.

(Cal. Inter. 1928)

3. What factors make for the successful development of a river port? Give a few conspicuous examples.

(Cal. Inter. 1934)

4. What do you understand by the hinterland of a port? Illustrate your answer with reference to a few ports in the different parts of the world. (Cal. Inter. 1934)

5. Account for the importance of any four of the following :—
(a) Harbin, (b) Warsaw, (c) Colombo, (d) Minneapolis, (e) Chicago and (f) Manchester. (Cal. Inter 1933)

6. State the situation and describe the reasons for the importance of any five of the following : (a) Buenos Ayres, (b) Chicago, (c) Danzig, (d) Durham, (e) Hobart, (f) San Francisco, (g) Sydney, (h) Vancouver and (i) Yokohama. (Cal. Inter. 1931)

7. State the situation and describe the reasons for the importance of any five of the following : (a) Alexandria, (b) Durban, (c) Marseilles, (d) New Orleans, (e) Shanghai, (f) Sydney and (g) Vancouver. (Cal. Inter. 1933)

8. State the situation and mention the geographical circumstances giving importance to any five of the following : (a) Glasgow, (b) Winnipeg, (c) Danzig, (d) Mosul, (e) Singapore, (f) Hongkong, (g) Durban, (h) Los Angeles, (i) Buenos Ayres, (f) Brisbane. (Cal. Inter. 1926)

9. What are the most important geographical conditions favouring the growth of commercial towns?

10. "The importance of a port depends mainly upon the extent and the productiveness of its hinterland." Discuss the statement. (Cal. Inter. 1940 ; I.P.S. 1930)

11. What are the important factors in the origin and development of sea ports? Illustrate your answer with reference to Indian ports. (I. I. B. 1940).

12. State the requirements of a good port. On a sketch map of India, locate Chittagong, Karachi and Vizagapatam, and show the hinterlands depending on them. (Cal. M. Com. 1941)

CHAPTER X

EUROPE

Europe is a very small continent : as a matter of fact, with the exception of Australia, it is the smallest of the continents. It has a total area of 3,760,000 square miles. Asia is five times as large as Europe. Physically, Europe is a mere peninsula of the vast continent of Asia.

Europe is the most highly civilised region in the world. Its manufacture and commerce have reached the greatest development yet known. Certain geographical factors have mainly contributed to its greatness.

Europe has the longest sea coast of any continent in proportion to its area. The Baltic, the Mediterranean and the Black Sea have deeply penetrated into the continent and thereby made ocean-transport the most economical form of bulk conveyance. The situation of Europe in higher latitudes has made the climate neither very hot nor very cold. With the exception of the Tundra and Taiga, every part of Europe is habitable. The climate helps the rapid progress of its people.

More than 31 per cent. of the total area of Europe is forested. The principal forest-belt stretches from Scandinavia to the Urals. The forest resources of this belt are best exploited in Sweden, Finland and U. S. S. R. The second important belt extends from the highlands of Southern Germany to Yugoslavia. Europe does not export timber in considerable quantities because the local demand for it is always great.

Nearly one-half of the mineral wealth of the world is raised in Europe. Coal-fields are found in Great Britain, France, Belgium, South Holland, Germany, Southern Russia and North Spain. Europe produces about 50 per cent. of the world's coal. Most of the coal of Europe are of anthracite or good bituminous type. As the coal-fields are mostly located near the seaside or the river-valleys, the cost of transportation is not high.

Europe is also the leading producer of iron-ore. The important iron-ore regions are in North Spain, Eastern France, Northern and Southern Sweden, and in Russia (Krivoi Rog, Kursk and Magnitogorsk). There are large petroleum-deposits in the Caucasus, the Urals, and Rumania. Europe raises 13.7 per cent. oil of the world's total. Lead, zinc, platinum, copper, potash and aluminium ore are also found in large quantities. But deficiency of minerals in Europe is noticeable with regard to petroleum, lead (17 p.c.), tin and manganese. This is a serious disadvantage in view of the fact that Europe consumes each of these minerals to the extent of 50 per cent. of the world's total. Europe also produces small quantities of silver, gold, nickel and tin.

The agricultural lands of Europe are its greatest resources. It exceeds all other continents in the production of wheat, oats, barley, rye and flax.

	World production.	European production.
	(in millions of quintals, for the year 1935)	
Wheat	1,319	640
Barley	426	233
Oats	687	415
Rye	492	470
Potatoes	2,018	1,848
Sugar beet	781	689
Flax	6	6

The Mediterranean region, the lowlands of North-Western and Central Europe and the eastern lowlands are the agricultural regions. Farming is highly intensive and the methods of cultivation are scientific. Yields per acre are also high. Nearly 56 per cent. of all the inhabitants of Europe earn their living by farming. Therefore, the continent may be described as rural. Europe produces, normally, about 50 per cent. of the world's wheat. Wheat is cultivated in a wide belt extending from the Danube basin to the southern Urals. The continent produces, on the average, 62 per cent. oats and 95 per cent. rye

of the world's supply. In the production of potatoes, sugar beet and barley she surpasses all other continents combined. In spite of the tremendous progress in the agricultural production, Europe imports food and agricultural raw materials from all parts of the world because of the dense population and high standard of living.

Europe is the greatest manufacturing region of the world. In the manufacture of chemicals, cement, textile fibres and iron goods, her position is incontestable. She is surpassed only by the U. S. A. in the production of automobiles, electrical equipment and metal wares.

She has developed her means of communication and transport remarkably. The merchant marine of Europe represents more than 70 per cent. of the world's tonnage. It is interesting to note that while the merchant tonnage of Great Britain is decreasing, that of Norway, Italy, Germany and Holland is increasing rapidly.

Europe has more than 2,30,400 miles of railways. It makes approximately 4·8 miles per 10,000 inhabitants, and 2·3 miles of railroads for 40 sq. miles. India has a little over 40,000 miles of railway lines (8,000 inhabitants per mile of line) and 100 sq. miles per 2 miles of railway lines. But Europe does not possess the largest railway mileage. U. S. A. and Canada have more than 270,200 miles of railways. In airways, the supremacy belongs to Europe. It maintains regular air service with Asia, Africa and Australia.

Europe has a little over 500 millions of people. This figure represents more than one-fourth of the total population of the globe. The distribution of population is very uneven. The mountain regions of Iceland, the highlands of Scotland, the largest Scandinavian mountains, the Norrland of Sweden, the north-eastern part of Finland, the boreal forest and the Tundra along the shores of Arctic Ocean are almost uninhabited. The heavy densities with more than 260 people per square mile are found in the Ukraine, Moravia, Silesia, Bohemia, Saxony, Westphalia, the Rhineland, Southern Holland, Belgium, North France and England.

Union of Soviet Socialist Republics

The vast territory of the U. S. S. R. (Russia) extends from the Baltic to the Pacific Ocean. It occupies the whole of the great plain of Eastern Europe and the adjoining Asiatic territories. It is more than twice the size of the whole of Europe and covers nearly one-seventh of the total land surface of the world. It is bounded on the north by the Arctic Ocean and on the west by Rumania, Poland, the Baltic States and Finland. The east is bounded by the Pacific Ocean. Numerous mountains, plateaus, deserts and semi-deserts, inland seas, etc. form the southern boundary of the State.

The coast-line is regular and extremely short in comparison with the size of the country. The northern shores are frozen during winter as they are in the Arctic circle. The Pacific coast also remains closed to navigation during winter. Murmansk is the only ice-free port throughout the length of Russian coast-line. As the port is situated on the extreme north-west it receives the warming influence of the North Atlantic Drift. It has recently been connected by rail with Leningrad.

Throughout the whole of Russia winters are excessively cold except in the extreme south. Rainfall and temperature are not much influenced by the bordering seas. Rainfall is maximum during summer.

The entire region to the west of Yenesei consists more or less of plains and lowlands. The highest point of the plain is a little above 1,000 feet. The regions to the east of the river Yenesei are highlands.

Russia, the largest country in Europe, with a population of about 193,000,000 people, is divided up into a number of Soviet Republics, which have grouped themselves into the Union of Soviet Socialist Republics (U. S. S. R.). Before the Bolshevik Revolution of 1917 the country was a unitary State ruled by autocratic Czars. The present Soviet confederation consists of 11 constituent Republics, *viz.*, Russia (in itself forming a Federation), the Ukraine, White Russia, Azerbaijan,

Armenia, Georgia, Turkmenistan, Uzbekistan, Tadzhikistan and Kirghizia. These members of the Confederation include, moreover, numerous autonomous units (autonomous republics, autonomous territories, autonomous districts) inhabited by small nations.

Russia contains approximately 9 p.c. of the world's population. The greatest concentration of population is found in the Ukraine where more than 20 p.c. of the inhabitants of Soviet Russia live. The average density of population in Russia is only 25 persons per square mile. Although there are more than 150 towns with more than 100,000 population in each, nearly half of the total population live in villages.

Russia was one of the European States whose industrial development became possible with the advent of land-transport. Her vast area, lack of coast-line, the fact that her rivers empty themselves either into inland seas or into the ice-bound Arctic—all these arrested her development until the age of railways. Before the Revolution of 1917 agriculture was the main industry of Russia, the methods of cultivation were primitive and yields were low.

The Soviet Government has brought in a new life to the country. Within a short span of time, the Union has developed its industries remarkably. In 1928-29, the Government devised a five-year economic programme not only for reorganising agricultural economy but also for reorganising the heavy industries. 'The Second Five-Year Plan' (1933-37) was formulated and worked to make the country industrially self-sufficient and to redistribute her industry in such a way as to locate her great industrial enterprises where power was available or where there was an abundant supply of raw material, and also, to utilise to the full the labour resources in the different parts of the country. When the present war broke out the Union was working the Third Five-Year Plan in which provision was made for "(1) increased regional self-sufficiency, especially as regards food stuffs, fertilizers, bricks, cement, etc. and (2) for a further shift of the industrial centre of gravity to the east."

Soviet Russia has widely extended the cultivation of crops. Great attention is paid to the proper regional distribution and increased production of wheat, sugar beet, cotton and rice. Russia is now the greatest wheat-producing country in the world.

The farming activities in Russia are at present carried on under two methods—*Kolkhozes* (large scale collective farms) and *Sovkhozes* (large-scale State farms). Under *Kolkhozes* system, the farmers combine and work collectively with the support of the State which supplies machinery, seeds and tractors. At present 75 per cent. of the Russian farmers work in such collective farms. *Sovkhozes* or State farms are mostly to be found in the south-east of European Russia and in Siberia.

RUSSIA'S CONTRIBUTION TO THE WORLD PRODUCTION OF
CERTAIN AGRICULTURAL CROPS (IN P.C.)

	1913	1939		1913	1939
Grain ..	.. 16	25	Flax ..	.. 30	58
Sugar beet ..	.. 10	25	Cotton ..	.. 3	10

In European Russia, wheat is not only cultivated in the rich black earth lands of the south but also in the more northerly latitudes by clearing the forest and adopting scientific methods. Wheat cultivation has increased rapidly in Siberia as well. Orenburg region, Kazak and Karakalpak are the other principal wheat-producing regions. In spite of the rapid extension of wheat cultivation in other areas, the Ukraine is still the leading wheat-producing region in Russia.

Sugar beet is cultivated in the region between Kiev and Kursk, Transcaucasia, West Siberia and Lake Baikal region. Soviet Russia raises nearly one-fourth of the world production of sugar beet and occupies the first place in the list of producers.

Cotton is cultivated (a) in the Crimea, (b) to the north of the Black Sea, (c) to the north and east of the sea of Azov. Tea and rice are also being raised in considerable quantities.

Russia is very rich in minerals. *She is almost self-sufficient in all strategic minerals essential to modern warfare.* As a world supplier, she takes the fourth place in her output of coal,

the second for oil and iron-ore and the first for manganese and phosphates. Since 1928 many new mining regions have been discovered and exploited.

Coal: U. S. S. R. supplies more than one-tenth of the world production of coal and occupies the fourth place in the list of coal-producing countries. The annual output of coal is more than 93 millions of tons. In 1913 the output was only 29 millions of tons. Before the Revolution of 1917 the Donetz coal-field alone supplied more than 90 per cent. of the Russian output; to-day it supplies about 60 per cent. The principal coal-fields of modern Russia are Kuzbuz (West Siberia), Tunguz (the Yenesei basin), Irkutsk, Donbas, Pechora (in the Tundra region of the north of European Russia), Burein (in the Amur basin), Yakut (the Lena basin), Kansk (brown coal), Karaganda (in the Steppe region of Asiatic Russia), Minusinsk, Moscow, Central Asia (South of Ferghana), Ural (near Sverdlovsk and Chelyabinsk), Far East (near Vladivostok), and Transcaucasus (near Batum). The Asiatic coal-fields of Kuzbuz, Minusinsk, Irkutsk, Burein and Vladivostok supply fuel to the Trans-Siberian Railway.

Petroleum: The U. S. S. R. was until 1939 the second petroleum-producing country in the world, but it has now yielded that place to Venezuela. The producing areas of the U. S. S. R. are:

Region.	In thousand of tons			
	(1933)			
Transcaucasus	15,939
North Caucasus	5,927
Ural Belt	234
Far East (Sakhalin)	197
Central Asia	206
				Total .. 22,503

A number of pipe-lines move the oil to the industrial districts and to the coast for export—(i) From Baku to Batum on the Black Sea, (ii) From Grozny and Maikop to Tuapse on the Black Sea. Oil is found on the western side of the Urals at

Ukhta in the north ; Chussov, to the east of Perm ; Sterlitamak, to the east of Samara. The production increased to 30,000,000 metric tons in 1939. The Third Five-Year Plan provided that Soviet's oil-production should reach 38·5 million tons in 1942.

Iron: Russia is one of the greatest iron producers and ranks third in the world. The principal iron-ore regions are :—

- (1) In the neighbourhood of Kursk.
- (2) Near Orsk in the Southern Urals.
- (3) At Telbes in the Kuzbuz region.
- (4) The Murmansk peninsula.
- (5) The Magnet mountain near Magnitogorsk in the Urals.
- (6) At Krivoi Rog in the Ukraine.

In 1938 Soviet Russia produced more than 14 million tons of iron-ore.

Other important minerals are gold, copper, aluminium-ore, bauxite, nickel, manganese, platinum, lead and zinc. Russia is one of the leading producers of platinum. Gold deposits are found in the Urals, the Lena Basin and the Lake Baikal region. In 1939 Russia produced about 12 per cent. gold, and 22 per cent. chromium of the world total. Chromium deposits are found in the Urals, Orenburg, Bashkirian and Kazaksky.

Russia contains more than one-third of the total forest land of the world. There are vast resources of pine, fir, larch and spruce which are used for timber, paper-making and the manufacture of cellulose. The magnitude of the industry can be judged from the fact, that while in 1935 Russia produced 112 millions of metric tons, Canada, the second largest producer, raised only 48 millions of metric tons. The forest belt of Russia extends from the borders of Finland to the Pacific Ocean.

Within recent years Soviet Russia has made considerable progress in the manufacturing industries. It is the aim of the Soviet Organisation to effect a wide-spread redistribution of industries throughout the country, so that no particular area can have industrial monopoly. The principal manufactures are machinery, farm implements, motor tractors, motor cars, textiles, leather, pottery, chemicals, refining of sugar, etc. The Soviet

industrial organisation thus tries to be dependent on those raw materials which are found only in Russia. Ninety per cent. of the cotton manufactures is concentrated in the *Moscow region*. Moscow and Ivanovo are the two important cotton centres. Metal industries are localized at Tula, Moscow and Gorki. The Moscow area is also responsible for 60 per cent. of the Union's chemical industries.

The next important industrial region is the *Ukraine and its Margins*. The Donetz basin of the Ukraine supplies about 45 per cent. of the Soviet steel and 70 per cent. of the aluminium. The Donetz basin is also important for sugar mills, flour mills and leather factories. The industrial centres are Kiev (grain market), Odessa (agricultural machinery), Krivoi Rog (iron and steel), Dnepropetrovsk (general engineering and thermal power station), Rostov (agricultural machinery), Voroshilovgrad (locomotives), and Stalingrad (iron and steel works).

The *Ural industrial area* is comparatively new. This area includes Perm, Sverdlovsk, Chelyabinsk, Orenburg, and the Bashkir regions. The Ural area produces about 20 per cent. of the pig iron and 25 per cent. of the steel produced in the U. S. S. R. The other industries are chemicals, railway workshops, and armament foundries. The important towns are Magintogorask, Nizhni Tagil, Chelyabinsk, Sverdlovsk and Orsk. The Ural area is served by the Trans-Siberian and the Caspian Railways.

The *Kuzbuz region* in western Siberia has, of late, become an industrial area of great importance. The important industrial towns are Kemerovo (oil refining and metal works), Stalinsk (iron and steel works, locomotives) and Tomask (aeroplanes).

Soviet Central Asia has developed cotton industry, chemicals and iron and steel industry. Taskhent, Bukhara and Stalinabad are the chief towns of Central Asia.

Since the outbreak of the Russo-German War, the *Far Eastern Area* has assumed great importance. As the area is more than 2,000 miles from the Urals, the Soviet Government has made it economically self-sufficient. Yakutask, Vitim,

Komsomolsk, Orlovosk, and Vladivostok are the chief towns of the Far Eastern Area.

Odessa, on the north coast of the Black Sea, is the chief port of Southern Russia. The principal export is wheat. *Kiev*, on the Dneiper, is a grain market of considerable importance. It has nearly half a million population. It is one of the oldest cities in Europe. *Rostov*, on the Don, near the north-eastern coast of the Sea of Azov, is an industrial centre where agricultural machinery is made. *Kharkov*, the capital of the Ukraine, manufactures tractors, motor cars and agricultural machinery. Its population is above half a million. *Dnipropetrovsk*, on the Dneiper, has important engineering works. A great dam has been constructed on the Dneiper to supply hydro-electricity to the industries. The population is about 400,000.

The Union plays relatively a small part in the world-trade as the foreign trade is controlled by the State. Exports consist mainly of raw materials (petroleum, timber, furs, flax ; to the East, cotton as well) and, in a lesser degree, of manufactured articles (to the East) and food-stuffs (wheat, oats, butter, oil-cake). Imports consist mainly of raw materials which the Union is not yet able to produce in sufficient quantity (copper, rubber, wool, cotton) and manufactured goods like cutlery, machinery, etc. Germany, the U. K. and the U. S. A. are the important trade partners of Soviet Russia. The volume of Soviet trade with Asia is increasing from year to year.

Although the rivers are navigable and widely used for transport, it is unfortunate for Russia that these are either flowing to the land-locked seas or to the Arctic sea. Several canals have been constructed to link the rivers and provide through water routes. The rivers are frozen over in winter. In the early part of summer they thaw and receive large quantities of water from the melting of the winter snows. Early summers are, therefore, the periods of floods. In winter sledges are used on the ice.

The principal rivers of European Russia are the Dwina, Dneiper, Don and Volga—the last-named being the greatest river, in the basin of which lies more than half of Russia. The

Obi, Yenesei and Lena are the principal rivers of Siberia and are subject to flooding. Russia's waterways handle about 10 per cent of the total goods traffic. These also provide enormous supplies of hydro-electric power.

For some years the Soviet Union has been trying to open up a northern passage along the coasts of the Polar Sea. Although this passage is only navigable for a few months in the year, it establishes direct maritime communication between Murmansk, Leningrad and Vladivostok.

Russia has about 60,000 miles of railways which serve both economic and strategical purposes. Moscow, the focus of the system, is linked with the Urals, the Ukraine and other parts of industrial Russia to the north and South.

Russia has made wonderful progress in air-transport. All important Russian cities are all linked by regular air services. There are three principal airways, all radiating from Moscow. The one goes to Vladivostok on the Pacific coast *via* Kazan, Sverdlovsk, Omsk, Irkutsk, Chita and Khabarovsk. The second line runs from Moscow to Stockholm *via* Riga. At Riga it is connected with the German airways. The third line goes to Kabul from Moscow *via* Orenburg and Tashkent.

Moscow, the greatest industrial centre of Russia, stands on high ground above the river Moskva. It is not only the capital, but also the great nodal centre of Russian routes: from it railways diverge to different directions. Its manufactures are textiles and metal goods, leather goods, paper, etc. The population is over four millions.

Leningrad, on the mouth of the river Neva, is a great Baltic port. It is the natural outlet of Russia to western Europe. For four months and a half in the year the port remains ice-bound. Ship-building is important, specially the construction of ice-breakers. Paper, cellulose and aluminium are the manufactures. Its population is more than three millions.

Baku, on the Caspian Sea, is one of the most important oil-yielding centres in the world. Oil is carried for export by pipelines to Batum on the Black Sea. Its population is nearly one

million. *Astrakhan*, near the mouth of the Volga, is a fishing port. *Murmansk*, on the north shore of the Kola Peninsula, is the only ice-free port of the north. The port has railway connection with Leningrad.

Switzerland

A continental state with no direct access to the sea, Switzerland is bounded on the west by France, on the north and east by Germany, and by Italy on the south. A series of far-reaching economic and political factors have resulted from this geographical situation.

It is the most mountainous country in Europe. From a territorial point of view, Switzerland is one of the smallest European States. Although her total surface is only 16,000 square miles, her population is more than four millions. There are three important languages in the State. Seventy per cent. of the entire population speak German, twenty-one per cent. French, six per cent. Italian. Far from being a cause of dissension, this diversity of languages constitutes one of the chief reasons of Switzerland's existence in Europe. "*The State has successfully solved the great nationalistic problems which are to-day at the root of so many international difficulties ; the State is thus an amalgamation of distinct ethnical groups.*"

Twenty-two per cent. of the total area of Switzerland is barren land. Cultivated land and Alpine pastures form fifty-six per cent. of the country's productive area and twenty-two per cent. is forest land.

Wheat, rye, oats, barley, maize, potatoes and tobacco are the chief agricultural crops. *Fruits and grapes* are extensively raised. Pasturage constitutes one of the principal features of Swiss husbandry, forming the basis of cattle-breeding and milk production, the development of which ranks among the most important factors of Swiss economy. Besides the production of milk and meat, pedigree cattle-breeding for exportation constitutes one of the principal items. Switzerland's main item of dairy produce is cheese, the consumption of which is considerable both at home and abroad. The cheese trade is conducted at Berne, Lucerne, Zurich and St. Gallen.

The country is poor in minerals. *Coal* is totally absent. *Real marble, asphalt, salt and glass-sand* are found. The handicap due to the want of coal has been removed by developing water-power which is greatly facilitated by the existence of innumerable waterfalls and rapids. Hydro-electric power is used in industries and transport. There are 31 large hydro-electric power-stations in Switzerland, each of which has an output exceeding 20,000 H.P.

The industrial expansion of Switzerland is great. Swiss production is essentially of manufacturing type. "The general tendency of the industry is to seek compensation for the want of fuel and raw material and for inadequate or expensive means of communication by the manufacture of commodities on which skilled labour may be expended ; of this tendency the electric and chemical industries and watch-making are typical." Swiss manufactures have a good reputation in the world market.

Industries :

- (a) Textile industries.
- (b) Machine and metal industries.
- (c) Watch-making and allied industries.
- (d) Chemical industries.
- (e) Food and tobacco industries.

Silk industry occupies a very important position in the textile branch. This industry is geographically limited to southern Switzerland. Four-fifths of the products are destined for exportation. The Swiss silk goods are in great demand throughout the world. The industry is centred at Zurich. Silk ribbon industry is carried on at Basle. A large portion of the world's consumption of ribbon is covered by Switzerland which exports over 95 per cent. of its total production. Embroidery and lace industry, knitting and linen industry and hosiery are the other branches of textiles, which are equally important in Switzerland.

Swiss metal works furnish articles of aluminium, copper, brass, nickel and all kinds of alloys. Aluminium bars are turned out in large quantities. *Watch-making* is one of Switzerland's oldest and most prosperous industries. To-day it is

mainly carried on in the Zura district. The industry occupies about 67,000 hands. About 95 per cent. of the output of the watch-making industry is destined to exportation. This industry ranks first in the world.

Condensed milk, chocolates, cheese, biscuits, etc., are the chief products of the food industry.

The touring and hotel industry of Switzerland is of considerable importance. No other country in the world offers, in so limited an area, such a great variety of natural beauty and picturesque scenery as Switzerland. It is known as the "Playground of Europe". Practically every type of European climate is to be found within her boundaries. Large numbers of people from different parts of the world visit the country and provide a very important source of income to the State.

Switzerland has no direct access to the sea. Her railway system is highly developed, ranking third in Europe, next to Belgium and England. It possesses in all 5400 km. of railways, representing 1.35 km. per 1000 of population. The most striking feature of railway development is the marked progress in electrification. At present more than 70 per cent. of the Swiss railways are electrified.

Berne (10,000) is the seat of the Government and the centre of political and economic life. It is also a route-town. The largest town is *Zurich*. It is not only a great railway centre but a great industrial town also. It manufactures cotton, silk and machinery. *Basle*, situated on the bend of the Rhine, is one of the most important traffic junctions between Switzerland, Germany and France.

Hungary

Hungary is a small State lying in the middle of the Danube area. It has an area of 35,875 square miles with 8,684,000 inhabitants. The Hungarians or Magyars are a people of Asiatic origin. Till 1919 Hungary was united with Austria in the Dual Monarchy of Austria-Hungary. As a result of the last Great War Hungary became an independent Republic, but she lost two-thirds of her territory to Rumania, Czechoslovakia and Yugoslavia.

The relief of Hungary is typically plain and is drained by the Danube and its tributaries like the Drava, Sava, Tisa and Koros. The country is surrounded on all sides by mountains of the Alpine system. The climate is continental with hot summers, cold winters and light summer rainfall. This climate has made Hungary a grassland region, favourable to the growth of cereals.

The plain of Hungary has acted as one of the granaries of Europe for many centuries. Over 80 per cent. of the cultivated land is devoted to wheat and maize. Although Hungary is a large producer of wheat, the yield per acre is mediocre. In all great wheat-producing countries the average yield per acre is 30 bushels, but in Hungary it is never more than 20 bushels. The other important crops are rye, barley, oats, sugar-beet, potatoes, tobacco etc. More than two-thirds of the people is provided for by agriculture. Recently good progress has been made in vineyards and the country produces more than 100 million gallons of wine.

Sheep-rearing, once an important occupation, is declining. There is little mineral wealth. Coal of good quality is found near Pecs in the south-west which supplies nearly 7,000,000 tons of coal. Coal is required to be imported from Germany, Czechoslovakia and Poland. Some iron-ore is found at Salgotarjen, but still a large consignment has to be imported to supply the needs of the metallurgical industry.

The industries are mainly those which are dependent on agriculture. These include flour-milling, sugar-refining and distilling. Budapest is the outstanding centre of flour-mills and is known as the "Minneapolis" of Europe. Cotton textile industry has been established recently. The other industries are tanning and engineering.

Hungary has about 60,000 km. of roads. These roads are quagmires of mud when it rains and of little use for modern transport. The rivers are all navigable and provide important means of transport. The great problem is the difficulty of outlet to the sea. The outlet *via* the lower Danube necessitates passage through Rumania. Hamburg, though convenient for

Hungarian trade, is far off, and its use entails crossing of other countries.

In March, 1939, Hungary annexed Ruthenia (Carpatho-Ukraine) which was formerly a part of Czechoslovakia. Ruthenia is mountainous and its people are very poor. Sheep-rearing is the main occupation.

Budapest, the capital, is the chief manufacturing city. It consists of two towns and is situated on either side of the river Danube—Buda on the right and Pest on the left. It is the greatest flour-milling town in Europe. Electrical machinery is also made here. It is also an important railway junction, and the natural collecting centre of the plain. The population is a little above one million. *Szeged* is a village town. Sugar-refining, distilling and brewing are the industries of the place.

Modern Hungary depends mainly on agriculture. This is a serious drawback. Another disadvantage is the lack of direct outlet to the sea. Hamburg, Fiume and Split—all outside Hungary—handle the foreign trade of the country.

The Balkan States

Yugoslavia, Bulgaria, Albania, and Greece, together with Turkey, are known as the Balkan States. These states are mostly mountainous. Commerce is negligible. Agriculture and animal-rearing are the two main occupations of the people.

Bulgaria

Bulgaria lies to the south of the lower Danube and occupies the eastern part of the Balkan Peninsula. It is bounded by the Danube on the north, Greece on the south, the Black Sea on the east and Yugoslavia on the west. It has an area of 40,000 square miles and a population of five millions and a half. The Bulgarian people are of mixed Slav and Mongol origin.

This country has a great diversity of relief, soil and climate. The climate is, on the whole, of the continental type. In the south the Mediterranean climate prevails. Nearly the whole of the northern half of the country is a highland region. The extreme northern area is a lowland region. The most fertile

and productive lowland of the country lies to the south of the Balkan mountains. This area is drained by the river Maritza. The Rhodope mountains cover the whole of the southern and western regions of the country.

Bulgaria is one of the poorest and most backward countries of Europe. It possesses considerable mineral wealth. Deposits of copper, manganese, coal, lead, zinc, marble and granite exist. But the lack of fuel, inadequate railways and poor capital are responsible for the absence of mining industry. Only a little coal and copper are mined by some foreign companies.

Oak, beech and other deciduous trees, which are extensively found in the mountainous parts of the country, provide timber for export. The production of silk cocoons is an important industry.

Agriculture is the main occupation of the people. More than 80 per cent. of the people depend directly on agriculture. Wheat, maize, barley, tobacco, sugar-beet, vines and fruits are important. In the valley of the south-west fruits grow in abundance. Cotton and oats are also grown. The cultivation of roses for the manufacture of scent is followed on the hill slopes of the Balkan mountains. The vale of Kazanlik is one of the most important rose-growing areas. Attar of roses distilled from the blooms once formed an important and valuable article of export. A small quantity is still produced. Pastoral occupations are also important.

The country has relatively little foreign trade. Tobacco, maize, *attar* of roses and eggs are the chief exports.

<i>Exports</i>		<i>Imports</i>	
Live animals	... 3'9 p.c.	Manufactures	... 61'7 p.c.
Food	... 40'3 p.c.	Raw materials	... 34'3 p.c.
Raw materials	... 52'3 p.c.	Food . . .	... 4'0 p.c.
Manufactures	... 3'5 p.c.		

The railways are not greatly developed. They radiate from Belgrade—one to Budapest on the north and another to Salonika on the south. The sea outlets: (i) Sofia to Varna, on the

Black Sea, along the northern side of the Balkan mountains ; (ii) Philippopolis to Burgas, on the Black Sea, along the southern side of the Balkan mountains ; (iii) Maritza Valley to Dede Agach, the nearest port to Bulgaria.

The principal trade centres are *Burgas, Varna, Sofia and Philippopolis*. Varna and Burgas, on the Black Sea, export tobacco, eggs, *attar* of roses, maize and silk. During winter the traffic is not considerable in view of the fact that the Danube becomes ice-bound. The capital of Bulgaria is *Sofia*. It is the largest town in the country with a population of 280,000.

Albania

This small and rugged country is the poorest and most backward region in the Balkans. The area of the country is about 11,000 square miles. It is situated on the Adriatic, between Yugoslavia and Greece. Excepting the coastal area, the country is mountainous. It has a population of about a million—mostly Muslims. The people are primarily pastoral. They are a brave but revengeful people. The coastal plains have a Mediterranean climate where fruits and cereals are grown. There are no railways in the country ; roads are inadequate and large areas of the country are waste lands.

“The position of Albania opposite and close to the heel of Italy gives the country a strategic importance at the entrance of the Adriatic Sea.” In April, 1939, Albania was conquered by Italy.

The extent of mineral resources of Albania is still unknown. A petroleum field has been discovered and it was being worked by the Italians. *Tirane*, the capital, is centrally situated just on the inland edge of the main coastal plain. Its population is a little over 30,000. *Scutari* is the largest town and stands on the plain surrounding Lake Scutari. It is noted for melons. *Durazzo* is the chief port.

Greece

Greece is the most easterly mountainous peninsula stretching southward into the Mediterranean, together with Crete and numerous islands in the Ægean and Ionian Seas. It is a

mountainous country. The peninsula is so broken and indented that the inhabitants have always been primarily sailors and traders. No part of the country is more than 80 miles away from the sea. The climate is typically Mediterranean, but Greece suffers from a rather low rainfall which makes cultivation difficult for lack of water for irrigation.

There are three natural divisions in Greece—(a) The Peninsula, (b) The Macedonian coast-lands, (c) The islands.

The Peninsula is entirely mountainous. Coast-lands are lowland areas. The main occupation of the people of this area is the rearing of sheep and cattle. Greece has more goats per square mile than any other country in the world. In the coastal lowlands of the Peninsula, the Mediterranean crops are raised. Along the western coast of Morea, in southern Peninsula, grapes are extensively cultivated. These are dried and exported as currants. *Greece is the leading exporter of currants in the world.* Sometimes the production is so great that it becomes necessary by law to restrict the cultivation of grapes.

The Macedonian coast-lands are fertile, and, therefore, important for agriculture. Wheat, cotton, rice, olives and grapes are grown. In Eastern Macedonia the soil and climate are peculiarly suitable for producing the best tobacco leaf.

Although Greece is an agricultural country, only one-fifth of the total area can be cultivated. Methods of cultivation are primitive and yields per acre poor.

Mineral resources are extensive and varied, but these are not fully exploited. The chief minerals are salt, lead, marble and iron-ore. Zinc, copper, silver and antimony are also found. In the present War the magnesite and chromium mines of Greece proved to be a great asset to Germany, which suffers from an acute shortage of these minerals, so vital for armaments.

Manufacturing industries are little developed. Industries include woollen and cotton weaving and spinning, the production of wine, olive oil and chemical products. Cigars and cigarettes are also manufactured. Wine and fruits are exported

in large quantities. As the country is not self-sufficient, she must exchange her wine and fruits for food supplies.

There are now more than 1,500 miles of railways which are all confined to the eastern part of the country. They are absent in the north-western side of the peninsula. Roads are bad and inadequate. Rivers are short and swift-flowing and are of little use for navigation.

As every important town is on the sea, the Greeks are essentially a maritime people. The prosperity of Greece depends on sea commerce. Greece is not self-sufficient in food, and much is to be imported by sea from the south. Sea commerce is, therefore, of vital importance to Greece.

Athens, the capital, has been a famous city for about three thousand years. It has a population of 400,000. Its chief port is the *Piraeus*. *Salonika* is the most important trade centre of Greece. It is also one of the chief ports of southern Europe. It stands on the Gulf of Thessalonika. It is connected by railways with the important towns of the Balkans. It exports grain, animal products and tobacco, and imports textiles and iron goods. Other important trade centres are *Larissa*, *Stavros*, *Alexandroupolis*, *Kalabaka* and *Katakolon*.

The Greek islands—(a) *Crete*—It is a long, narrow, mountainous island and stands across the mouth of the *Ægean* Sea. The climate is warm and wet. Agriculture is the main occupation of the people. Wine and oil are exported.

(b) *Ionian islands*. The group lies off the west coast of Greece and includes small mountainous islands like *Corfu*, *Levkas*, *Kephallonia*, *Ithaca*, *Zante* and *Kythera*. Fruits are important.

(c) *The Ægean islands*.—This group is mostly barren and produces a good deal of wine.

Yugoslavia

Yugoslavia occupies the southern portion of the plain of Hungary and the central and the north-west mountain regions

of the peninsula. Its official name is the Kingdom of the Serbs, Croats and Slovenes. After the Great War of 1914—18, Serbia and Montenegro, together with Bosnia, Dalmatia and Croatia, which were formerly parts of the Austrian Empire, were united to form the Kingdom of Yugoslavia. The word 'Yugoslav' means Southern Slav. The area is about 96,000 square miles and it contains a population of some 14 millions.

A large portion of the country is mountainous: the highlands in the east are part of the Balkan heights, those in the west form the Dinaric Alps. The Dinaric Alps are composed of lime-stones. Low lands are found along the Adriatic coast and on the north-east, which is a continuation of the Hungarian Plain.

There is a paucity of good cultivable land because of the mountainous character of the relief. At the best, not over one-fourth of the land can be cultivated. Wheat, maize, tobacco, rice, etc. are the principal agricultural crops. The methods of farming are crude and the yield per acre is always small. Eighty per cent. of the people are agriculturists. The great majority of the people are, therefore, poor.

Grazing and stock-raising are the mainstay of thousands of people in Yugoslavia. Cattle, sheep, goats and pigs are reared in the eastern part of the country. The country has considerable mineral resources including coal, iron, copper and lead; but they are as yet little developed. Forest produce is an important source of income. About a third of Yugoslavia is clad with forests of oak, beech and pine.

The roads and railways of the country are in a lamentable condition. Yugoslavia has only a little over 10,000 km. of railways in an area of 2,49,000 square km. The railways belong to the state. The principal railway centre is Belgrade, which is connected with Istanbul in the south-east and Budapest in the north. It is also connected with Salonika in the south. The length of roads in Yugoslavia is 40,000 km.; this represents 2.25 km. per 1,000 of population.

With the exception of flour-milling and brewing, the country has practically no other manufacturing industry. The

industrial and commercial backwardness of the country is due to a combination of factors, *e.g.*, (i) want of coal, (ii) inadequate means of communication, (iii) mountainous character of the relief, and (iv) weak government. But the future possibilities of the country are great. Timber, maize, pigs, eggs, meat and cattle are the leading exports. The imports consist of machinery, textiles, iron goods and food-stuffs.

Belgrade is the capital of Yugoslavia and contains a population of 2,40,000. It is situated in the fertile interior plains at the confluence of the Danube and the Save. It is also the principal railway centre. *Zagreb* is the chief manufacturing centre of the country. It is situated on the Save and has a population of 185,000. It is connected by railways with *Belgrade*, *Split* and *Fiume*. *Split* is situated on the Adriatic coastlands and is a very important port. *Kotor* and *Susak* are two other ports. *Fiume*, though under Italy, is the natural outlet for the north-west of Yugoslavia.

Turkey in Europe

European Turkey is about half the size of Scotland, and lies between the river Maritza and the Black Sea. The Straits of Bosphorus and the Dardanelles and the Sea of Marmara separate it from Asiatic Turkey. Its area is only 11,000 square miles and it contains nearly two million people. The situation of Turkey is of immense political and strategic importance, for it provides a route from Russia to the Mediterranean.

During the seventeenth century the Turkish Empire in Europe included the whole of the Balkan peninsula, Rumania and Hungary. Towards the close of that century the power of the Turks began to decline. The Empire was broken to pieces after the last Great War, and to-day European Turkey is but a slice of the Turkish Republic which has its centre in Asia.

The northern and southern sides of Turkey in Europe are bounded by hills, while the east is a plain. Agriculture and sheep-rearing are the two main occupations. The people are conservative and poor.

Istanbul (Constantinople) is the largest town of the Republic. It occupies a very important position "where the shipping routes between the Mediterranean and the Black Sea are crossed by the land route between Europe and Asia Minor." Its importance has declined a great deal since it is no longer the capital of Turkey. The population of Istanbul exceeds 500,000.

Gelibolu (Gallipoli) is a natural naval station, guarding the Dardanelles.

The Netherlands*

The Netherlands is one of the smallest of European countries. It has an area of 12,579 square miles with eight million people. It is a lowland country and one-fourth of the land is actually below sea-level. Its highest point is under 350 feet above sea level. About forty per cent. of Holland consists of reclaimed land. Embankments or dikes have been constructed around the low-lying areas of the coast. Polderland or the reclaimed land is very valuable for agriculture. Before the present War a new project for the reclamation of part of the *Zuider Zee* was under way. This reclamation project was calculated to make available over 8,000 square miles of polders.

The density of population is very great,—more than 659 per square mile. In respect of density per square mile Holland ranks fourth in the world.

THE DUTCH EMPIRE

Unit.	Area in square miles. (000 omitted)	Population (000 omitted)
Netherlands	13'2	8,475
Colonies		
Netherlands Indies	733'7	60,731
Dutch Guiana	54'3	166
Curacao	0'4	87
Dutch Empire	801'6	69,459

* It is generally and wrongly called Holland, for Noord (North) and Zuid (South) Holland are only two of its eleven provinces.

The main drainage of the country consists of the rivers, Waal, Lek and Yessel. The coast-line is greatly indented.

The character of both the coast and the surface has made the Dutch essentially a commercial people. The Dutch migrated

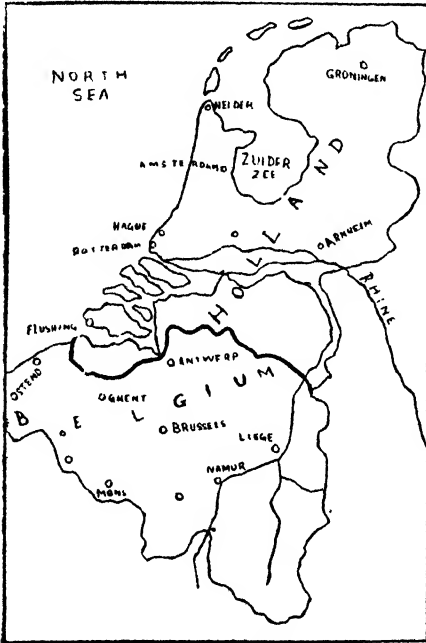


FIG. NO. 35. The Netherlands and Belgium with their trade centres and ports.

to the different parts of the world and acquired rich tropical colonies. Three centuries ago Holland was considered a principal maritime power.

The climate is generally maritime and can be compared with that of eastern England.

Agriculture is highly intensive and more than seventy per cent. of the land is under cultivation. The principal agricultural crops are oats, rye, wheat, barley, flax, sugar-beet and potatoes.

The alluvial origin of the soil accounts to a large extent for the absence of minerals in the country. A little coal is found at Limburg in southern Holland.

The industries of Holland are those which (a) require less raw materials or fuel but much skill, (b) are the direct outcome of agriculture, and (c) are based on colonial imports.

The outstanding industry is dairying and the manufacture of milk products. The fertility of the soil, combined with the humidity of the climate, makes the country an ideal region for dairying. *The Netherlands has more cattle per square mile than any other country in the world.* Cheese, butter, condensed and powdered milk are extensively made. The development of

dairying has led to the neglect of home production of cereals for food. At present there is a large import of bread food for the people and cake for cattle. The Dutch depend to a large extent for their prosperity on dairy industries.

The other industries are fishing, chocolate and tobacco manufacturing and diamond cutting. The flat surface of the country below the sea-level makes it convenient to use wind-power in mills and factories.

Because of the level surface transport is easy in all directions. Water-transport is everywhere more important than transport by rail or road. Holland has more than four thousand miles of waterways provided by the rivers and canals.

The country has a large entrepot trade. Its mercantile marine ranked eighth in the world. The principal exports are condensed milk, cheese, butter etc. and imports consist of coal, textiles, machinery etc. Holland's chief purveyor is Germany, which provides more than 25 per cent. of the total imports, while her chief customers are the United Kingdom and Germany. Other important trade partners are her neighbour Belgium, the United States, the Argentine (as an importer only) and the East Indies.

Amsterdam, the largest city, is the capital of the kingdom. It is situated on the west side of *Zuider Zee* and is linked with North Sea by a canal. The city has a large trade with East Indies and imports rubber, cocoa, tin, rice, spices, tobacco, copra etc. It is famous for diamond cutting and polishing.

Rotterdam is the principal port of Holland. It is situated on a distributory of the Rhine and is connected with the sea at the Hook of Holland by a canal known as the "New-waterway". It is the natural outlet of the Rhine basin. The port handles three-quarters of the Dutch trade. The principal exports are flax, linen, dairy produce and cattle. The imports include rice, sugar, indigo, coal and petroleum. Rotterdam has a large trade with Germany and East Indies. *The Hague* is the seat of the Government. Its principal industry is pottery. It is a city of great international importance. The other centres are *Utrecht*, *Haarlem* and *Flushing*.

Belgium

Belgium is one of the smallest states of Europe. It lies between Holland and France, and has warm summer and cold winter.

Northern Belgium is plain and consists of coastal lands. The coast of Belgium is about 40 miles long and is very regular. A region of about 10 miles wide immediately to the south of the sandy shore is "polder" land (reclaimed marshland) which has become famous for agriculture. Flanders in Northern Belgium is a region of plains with low hills. It has the largest proportion of cattle in Belgium and various industries have developed here. *Central Belgium* is an extension of the fertile plains and coal-fields of Northern France. This area includes the basin of Schelde and the Campine region near the Dutch frontier. Central Belgium is a great agricultural region; mining centres are also growing. *Southern Belgium* is formed of the highlands of the Ardennes which continue into Luxembourg.

Belgium is an extremely densely populated country. The population exceeds 8 millions (686 to the square mile). In Flanders in the north, the density is as high as 990 per square mile. The large population is due to the fact that "the various manufactures are favoured by mineral deposits and by extraordinary facilities for commerce—both foreign and internal". The facility for commerce is great as the country lies near the focus of great ocean trades and touches three leading commercial nations—France, Germany and Holland, and is close to England. It is situated near the mouth of the Rhine, the chief commercial river of the continent.

Agriculture in Belgium is scientific and intensive, but production falls short of demand. Dairying is important in the farm-economy of the country. The country has considerable mineral wealth like coal, iron and zinc. Coal is found in proximity with iron-ore in the north-west of the country, where a great iron and steel industry has developed. The chief centres of the industry are Mons, Charleroi, Namur and Verviers. During recent years a few coal-fields have been discovered in the north-east of the Lys basin.

Belgium is a great manufacturing country where the textiles and iron goods have attained great perfection. Ghent, Antwerp and Courtrai manufacture cotton goods and Verviers woollen goods. Linen manufacturing is very important in Ghent, Courtrai, Roulers and Tournai. The growth of this industry has been helped by the following factors: (i) The inherited skill of the weavers in spinning and weaving, (ii) large supplies of flax in central plains and (iii) supplies of coal from the Belgian coal-field.

The means of communication by land and rivers are excellent and serve commerce extensively. Brussels is the centre of the railway system. The rivers are navigable and connected with one another by canals.

The country has a large trade with the neighbouring countries like France, Germany, Holland, England and Denmark. It has also trade relations with the U. S. A., Canada, Argentine, Australia and Africa. The imports consist of raw material and food-stuff, while manufactured goods account for the bulk of the export.

Brussels is the capital and is situated on the River Senne. Its excellent situation—halfway between the coal-field and the sea—has made it a great trade centre. Lace, carpet, furniture and paper are made. It is connected with Antwerp by a canal and railways.

Antwerp, at the Scheldt estuary, is the greatest port of Belgium. It has a large entrepot trade and competes with Hamburg and Rotterdam. Its hinterland includes part of Eastern France, the Rhine valley and the Ruhr valley, in addition to Belgium proper. It is also a great industrial centre. *Liege* is situated in the heart of the Belgian coal-field. It is noted for chemicals, glasses and metal works. *Ghent* is the great linen-manufacturing centre. *Verviers*, in the Southern Highlands, is noted for woollen goods.

The principal exports of Belgium are iron and steel, glass, cotton goods, zinc manufactures and cement.

EXPORT IN P.C. OF TOTAL VALUE			IMPORT IN P.C. OF TOTAL VALUE		
Manufactures	..	.. 54	Food-stuffs	..	.. 21
Industry	..	.. 39	Raw materials	..	.. 49
Food-stuffs	..	.. 6	Manufactures	..	.. 28

Luxemburg is the smallest independent state in Europe. It has an area of 999 square miles with 295,000 inhabitants. Most of the people of Northern Luxemburg are engaged in agricultural and pastoral occupations. Southern Luxemburg is famous for its iron deposits. It produces annually 3 million tons of iron and 2,500,000 tons of steel. The products are mostly exported to Germany and France. Commercially, it has been united to Belgium since 1921.

Denmark

Seventy miles south from the coast of Norway lies Denmark. It consists of the north-pointing peninsula of Jutland and many islands of which Funen, Zealand and Laaland are the principal ones. It has plains and low hills ; no part of the country has an elevation of more than 550 feet. The situation of the country is particularly important as it controls the natural routes between the North Sea and the Baltic Sea. The west coast of Denmark is a line of dunes with sandy beaches and much surf and therefore this part of the country is very sparsely populated. Harbours are few. But the Baltic side is fertile and more people live here. The total population of Denmark was $3\frac{1}{2}$ millions in 1931.

The resources of Denmark are limited. It has no minerals except the Kaolin which is used for the manufacture of pottery. The rivers are not important either for navigation or for developing hydro-electricity. It has no lumbering industry.

Denmark has always been an agricultural country. At one time it was a great producer and exporter of wheat ; but after 1870 the importation of American wheat into Europe greatly

curbed this activity and caused the Danish peasants to abandon agriculture for stock-raising.

To-day, Denmark is the pre-eminent dairy-farming country of the world. The following factors have given Denmark its pre-eminence as a dairying country: (i) The absence of resources to form the basis of a great manufacturing industry. The country has no coal, no iron, no water-power and no raw materials. (ii) Its climate favours the production of grass and root crops. (iii) "Most of the farms are small so that each family must obtain a large yield from a small area of land." (iv) "Denmark has perfected the system of the utilization of arable land to produce foodstuffs for cattle; by this method more cattle can be kept than on the same area of pasture and meadow-land." But *Denmark's success in dairy-farming is mainly due to co-operation*. 88 per cent. of the dairymen belong to co-operative societies, and 92 per cent. of milk is handled by the same association. The aim of the co-operative dairies of Denmark has been to produce a standard quality good enough to gain the confidence of the buyers. The Government also maintains a strict system of inspection both of the farms and of the export products. At present there are nearly 9,000 co-operative societies in the country. Eighty per cent. of milk is used for making butter and ten per cent. for cheese and condensed milk, the rest is consumed locally. The dairy produce accounts for 76 per cent. of the value of Danish exports. More than two-thirds goes to England. Seventeen per cent. of Danish exports and 28 per cent. of imports are shared by Germany.

EXPORTS IN 1933, IN METRIC TONS

Dairy-produce	..	..	480·7	(the bulk to U. K.)
Vegetable-oil products	..	..	214·0	
Cement and Chalk	..	..	273·1	
Fish	..	..	43·1	
Live animals	..	..	131	thousand head (mostly to Germany)
Eggs	..	..	1,070	thousands (70 p.c. to U. K.)

IMPORTS IN 1933, IN METRIC TONS

Breads	622'2
Cattle foods	1,467'6
Fruit, drinks, sugar	62'1
Pulp and paper	100'9
Chemicals	358'4
Metal goods	281'1
Textile materials	19'2
Manufactured textiles	22'1
Mineral oils	588'4
Coal and Coke	4,907'5

Fishing industry and a large mercantile marine have developed because of the ideal situation of the country. But the prosperity of Denmark will always depend on the ability of supplying provisions to the industrial areas of Western Europe.

Copenhagen is the largest city in the country. It is situated on the east coast of Zealand and contains nearly one-fifth of the population of Denmark. It stands at a crossing place of land and sea-routes. The opening of the Kiel canal has affected its trade adversely. *Copenhagen* is an entrepot for the products that the Baltic lands buy or sell. Textiles, boots and shoes, beer and pottery are the important products. *Esbjerg* is situated on the west coast of Jutland and is an important fishing centre. *Aarhus* and *Odense* are the two other largest towns on the eastern side of the country.

Scandinavia

The Scandinavian peninsula is the largest in Europe and contains Norway and Sweden.

NORWAY is a long narrow country forming the western portion of the Scandinavian peninsula with an area of 125,000 square miles. In spite of its northerly position the coasts of Norway are always ice-free. It is because the warm surface water is drifted across the Atlantic Ocean against the whole Norwegian coast. The coast-line is extensively indented with fjords and fringed with a large number of rocky islands. The

fjords—long, narrow, steep-sided indentations—are drowned valleys. At many places fjords sides rise almost perpendicularly from the sea for several hundred feet. The streams form magnificent waterfalls.

More than two-thirds of the country is entirely unproductive. Lakes and rivers occupy 5,111 square miles more and the forests include 26,600 square miles. Only 3.6 per cent. of the total area of Norway is under cultivation.

The population of the kingdom is nearly three millions (2,814,000) and the average density of population is 23 per square mile. The south-eastern part of the country is densely populated.

The major occupations of the people are concerned with agriculture, fishery, forestry and manufacture.

Cultivation is limited to the sheltered lowlands of the south-east. In spite of this limitation more than 31 per cent. of the population depends on farming, the greatest single industry in the country. Wheat, oats, barley, rye and potatoes are the chief crops. In recent years dairying has developed considerably. More and more the farmers are giving up the growing of cereals for dairying and already some dairy products are being exported.

Fishing is a very important industry of the country. The principal catches are cod and herring. "The greatly indented coast with its long line of protecting islands provides numberless harbours for the fishermen, and good spawning grounds for the fish." Cod is found round the Lofoten islands and Finmark in the north, while in the south of Stavanger and Haugesund herring is abundant. The catches find a ready

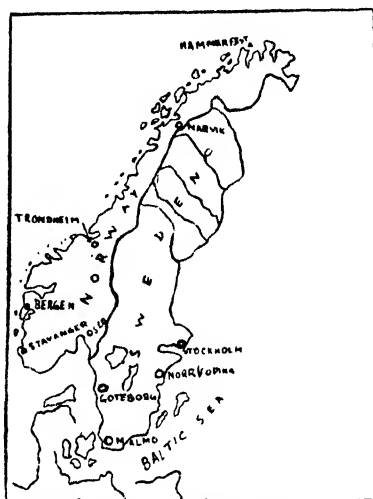


FIG. NO. 36. Scandinavia.

market in those European countries which have no fisheries. Cod-liver oil and other fish oils have a world market. Stavanger engages in canning fish for the export market ; *Kristiansund* is the centre for the dried cod ; *Bergen* is the chief fishing port. *Hammerfest* and *Tromso* are the centres for northern fisheries.

Although forests cover nearly one-fourth of the total area, the most important region is situated in the south-east. The forest products are very important and constitute about one-third of the total exports. "Large quantities of timber are used in Norway for building and for fuel, but there remains a large surplus. This was formerly exported as lumber, but to-day Norway does not supply much wood to other countries but uses it as the basis of manufacturing industries, such as the manufacture of wood-pulp and paper."

Mineral wealth is not inconsiderable. Iron-ore, copper and silver are the chief minerals. Coal is practically absent. *Spitsbergen* in the Arctic has certain coal mines. Iron ore is found in the far north on the border of Finland. The old rocks of the mountains contain fine granite.

"The country has developed shipping greatly and the Norwegians are among the great shippers of the world." Norway's merchant marine ranks fifth in the world and consists chiefly of tramp steamers. "The geographical position of Norway, its numerous good harbours, the facilities for building wooden ships, the ease by water and difficulty by land with which communication is carried on, the exportation of timber and fish and the importation of coal, cereals and manufactured goods, have all contributed to the growth of Norwegian shipping."

Industries in Norway are mainly based on raw materials raised within the country and on water-power. Norway offers unique opportunities for the development of hydro-electric power. There are many waterfalls and rivers are swift-flowing and do not freeze in winter. Wood-pulp, paper and matches are manufactured with the help of hydro-electricity.

Many people from the different parts of the world come to visit the scenery of Norway and the money spent by these visitors is a considerable source of income to the country.

The mountainous nature of the land and the great distances from north to south are responsible for the meagre development of the means of communications. The roads and railways are mostly confined to the south-east of the country. Most of the foreign trade is carried on with the European countries. Timber, paper, fish, matches, dairy produce and tinned provisions are the chief exports. The imports include rye, flour, coal, machinery, sugar, coffee and barley.

Oslo is the capital and has 250,000 people. It is situated at the head of *long fjords* in the south-eastern lowland of Norway. It is connected by railways with Bergen and Trondhjem. *Bergen*, the second largest town, exports large quantities of fish to the European countries. *Trondhjem*, the northerly railway centre, exports herring fish. It was the ancient capital of Norway. *Narvik* is an important port of Norway in the Arctic Ocean. It is connected with the Swedish railway system. During winter the iron-ore of Sweden is sent to Narvik by railway as the Gulf of Bothnia is ice-bound at this time.

SWEDEN occupies the eastern portion of the Scandinavian peninsula. Most of its coast-line faces the Baltic which is frozen during the winter months ; the coast-line is not much indented. The climate is continental. Plains and lowlands cover the southern side, while the north is mountainous.

The area of Sweden is 173,000 square miles ; over half of it is forested. Although it is smaller than Norway in size, the area of its productive land is greater.

Sweden presents four distinct geographical divisions :

- (i) Norrland,
- (ii) The lake district,
- (iii) The plateau of Smaland,
- (iv) Scania.

Norrland is the northern part of Sweden and represents about 60 p.c. of the total area of the country. It is a region of very recent colonisation. Immediately to the south of *Norrland* is a lowland, the *lake district*, which is highly developed both agriculturally and industrially. *Smaland* occupies the central area of Southern Sweden. It is an area of forests, swamps and moorlands, and the population is very sparse. The extreme south-west of Sweden, known as *Scania*, is the richest agricultural region in the country.

The mineral wealth is considerable. The iron deposits of Sweden are the most famous in the world for quality. High grade iron-ores exist at Kiruna and Gellivara in Northern Sweden. Almost the entire production is sent to Germany and England: 33 per cent. *via* Narvik and 65 per cent. by way of Lulea.* It must be noted that Sweden raises only 5 p.c. of the world's total iron-ore.

The country is poor in coal. Recently great progress has been made in water-power. The greatest hydro-electric power station is situated at Porjus, which supplies power to railways and industries. Copper, silver, lead, zinc and sulphur are also found. The gold deposit at Boliden (in *Norrland*) yields some 2 per cent. of the world's output.

In no other country of the world are forests so important for national prosperity as in Sweden. Forests and the existence of sulphur within easy reach give Sweden a prominent place in the match-making industry. Jonkoping in *Smaland* is a great centre for the manufacture of matches, which are produced in immense quantities, and exported to every part of the world.

Only 9 per cent. of the land is under cultivation. The *Scania* peninsula raises wheat, barley and rye. Sugar beet is also cultivated. The country is more or less self-sufficient.

Nearly half a million people are engaged in industries. Mining, lumbering and paper-making are the principal indus-

* During the winter months, when the Baltic is frozen, ores are exported through Narvik in Norway. Narvik is connected with the Swedish railways.

tries. The chief exports are paper and paper-pulp, logs and lumber, metal and ores. The imports include coal, textile goods, food-stuffs and machinery. Sweden receives most of her imports from Germany, and sends most of her exports to the United Kingdom.

Stockholm is the capital of Sweden and contains 500,000 people. It is a great industrial and railway centre. Located as it is on the eastern side of Sweden, it is away from the main trading routes. Moreover, access to Russia is hindered during winter as the Gulf of Finland is ice-bound. *Goteborg* is the great trading centre of the country. It is situated on the west of southern Sweden. It is ice-free and has excellent canal and railway communications with all parts of southern Sweden.

Iberian Peninsula

The Iberian Peninsula, which includes Spain and Portugal, is situated on the south-western side of Europe. Its position is admirable for commerce, but the character of the coast and the shore water have retarded the development. The coast is very regular with few harbours, and the sea currents are violent, making it almost impossible to construct harbours.

SPAIN. It is a backward country in commerce and industry. The excellent situation for commerce, the high fertility of the land and the vast mineral resources are of no use at present to the country because of certain drawbacks.

- (i) Although her iron-deposits are vast, she lacks the fuel to establish her iron industry.
- (ii) Her harbour accommodations are inadequate for shipping. Due to the character of the coast-line, sheltered harbours are practically absent.
- (iii) The country is mountainous ; the difficulty of building roads and railways is considerable. Rivers are swift and have rapids and falls.
- (iv) The climate, though Mediterranean, is not generally conducive to health and efficiency.
- (v) Large estates are owned by the aristocracy, and the common people are very poor.

- (vi) Absence of trade organisations accounts for the decline of export trade in wheat and wool. At one time Spain was a large exporter of these materials.

Spain is essentially an agricultural country. The amount of land devoted to agriculture is less than 40 per cent. of the total area, and only 7 per cent. of the cultivated land is irrigated. Further progress in irrigation works is necessary. Now that the civil war (1936-39) is over, the Government can initiate a new policy for agricultural development.

Nearly one-fourth of the population is engaged in agriculture. Wheat, rice and fruits are extensively raised. Spain ranks first in the world in the production of olive oil and cork, and in the exportation of oranges. Pastoral industry is also important. Cattle, sheep, horses and pigs are reared. Spain has always been famous for the wool of its merino sheep.

In no other country in Europe is the mineral wealth so varied and widely distributed as in Spain. Iron-ore, manganese, zinc, lead, coal, copper, mercury, silver, etc. are found. *It ranks first in Europe in the production of lead and copper, second in mercury and silver, and among the first in zinc, manganese, and iron.* Spain provides about 40 p.c. of the world's output of mercury. Hydro-electric power has been developed in the Pyrenees.

The means of communication are very inadequate. There are only 9,000 miles of rail-roads, yet Belgium has 6,000 miles on an area one-sixteenth as large. Rivers are useless for navigation, nor are they utilised for irrigation.

Spain is the third largest wine-producing country in the world. The chief manufactures are textiles, wine, hides and skins, dairy produce, etc.

The principal exports are fruit, iron, cork, wool and esparto grass. The imports include machinery, textile goods and food products.

Madrid, the capital, has a population of nearly 1 million. It is the principal railway centre. *Barcelona*, on the Mediterranean coast, is the largest city and the premier port of Spain.

It is a great industrial centre. The other trade centres are Valencia, Malaga, Bilbao and Cadiz.

PORTUGAL is a small maritime country on the west of Spain, with a population of nearly 10 millions. The climate is mild and moist. The soil is fertile. The country forms a natural outlet for the Atlantic trade of Spain. The main industry of the country is agriculture and 60 per cent. of the inhabitants are engaged in it. Lemons, figs, oranges, apples, almond, dates and nuts are extensively grown. Wine is made throughout the country.

The country is rich in minerals. Iron-ore is considerable. Tin and wolfram are worked with foreign capital, the deposits of wolfram being the most important in Europe. Copper, lead and salt are also obtained in large quantities.

The forests of Portugal are specially important for oak from which cork is obtained. Lack of fuel is responsible for her slow progress in industries. The country has negligible quantities of coal and the development of hydro-electric power is equally meagre. The manufacturing industries are mostly those connected with the preparation of products obtained from vine and olives. There are also considerable woollen, cotton and linen industries. *A characteristic occupation of the Portuguese is the manufacture of porcelain tiles, an industry inherited from the Moors.* Cork is exported enormously from the country.

Lisbon is the capital and chief port. It has a magnificent harbour. It is connected by rail with Madrid and Oporto. Agricultural products are exported and manufactured goods are imported through Lisbon. Oporto is the chief port through which wine is exported.

British Isles

The United Kingdom is the leading commercial country of the world. *She possesses certain natural and physical advantages which have greatly contributed towards the remarkable growth of her commerce.*

The climate of the British Isles, on the whole, is mild and equable. The mildness of winter causes little or no interrup-

tion to agriculture, and its comparative freedom from heavy snow-fall causes little interruption of communication. "The climate is neither so hot nor so cold as to prevent people from working either in field or factory throughout the year. The British capacity for regular routine work, so necessary in the manufacturing industries, is partly the result of climatic conditions."

The coast-line of Great Britain is broken up by numerous inlets so that no part of the country is far from the sea. The British Isles have one mile of coast for every twenty miles of area. The nearness of the coast, on both sides, places a manufacturing region within easy reach of many markets.

The situation of the country is very important. The English Channel has separated the country from the Continent. The United Kingdom is on the one hand very near to Europe for the purpose of commerce, and, on the other hand, it is too far away from Europe to be invaded easily by land or sea, although it does not enjoy equal immunity from aerial attacks. The country is, moreover, centrally situated—no part of the world is far from her. The great industrial countries of the Continent—Germany, France and Belgium—face her eastern and southern coasts; while the U. S. A. can be easily approached by the Atlantic Ocean.

The country is very fortunate in having large deposits of coal and iron. Coal is of superior quality and is found close to iron-fields. All the principal industries of Great Britain are more or less localised near the coal-fields. Chalk, slate, tin and clay are also found in small quantities. The rivers of the United Kingdom are of little use for navigation; but their estuaries are always important for shipping.

The greatness of the British Isles is also due to economic and human factors. (1) British Labour is efficient. (2) Capital is abundant. (3) Internal communication is perfect. Great Britain has 25,000 miles of railways which serve all the great ports of the country. The road system is also excellent, and motor-transport handles both passenger and goods traffic. The inland waterways are, however, not very important, and they

carry about 4 per cent. of the traffic handled by the railways.
 (4) Population is large in industrial areas. (5) Colonies and

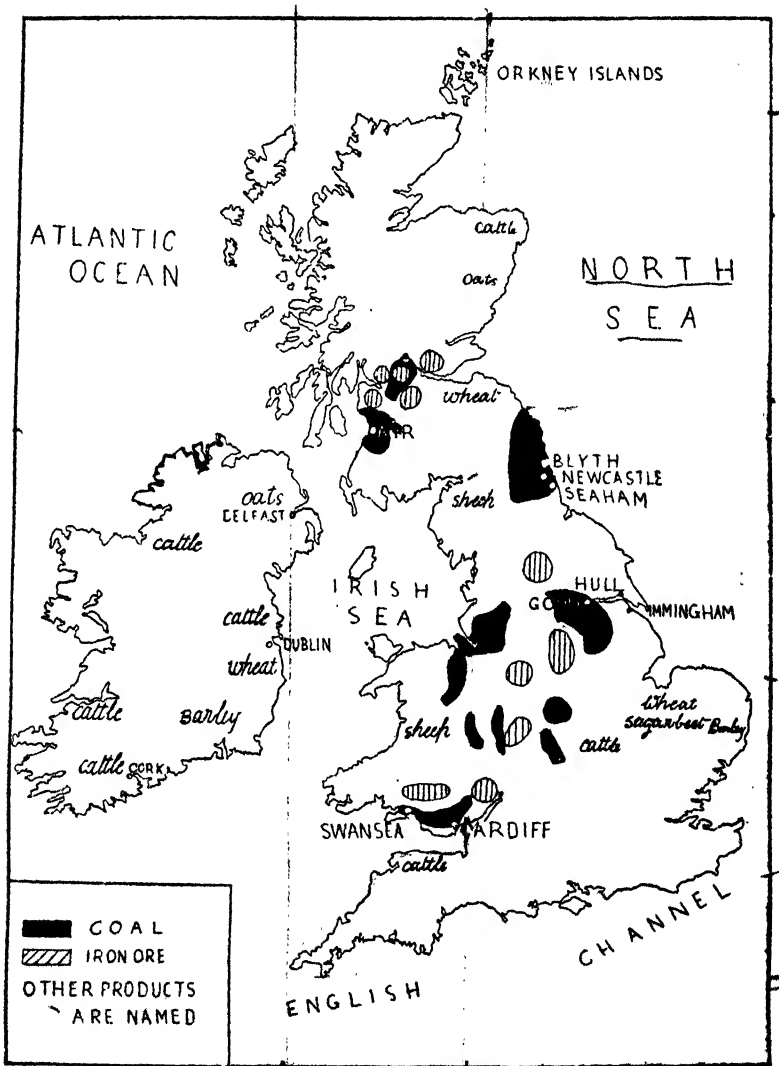


FIG. NO. 37. Economic products of the British Isles.

dependencies are extensive, which provide vast markets for the British goods. The British Empire contains more than 24

per cent. of world population.* (6) Her mercantile marine is the biggest in the world. (7) English language has spread throughout the globe. In addition to these contributory causes, the free trade policy that prevailed in the country in the last century and the great mechanical inventions are also to be taken into consideration.

But there are certain disadvantages as well. The dearness of land arising from the density of population and the great development of industry, high wages of the labourers and the deficiency of water power are giving anxieties to the British industrialists. The high tariff of other countries of the world is affecting adversely the trade of the British Isles to a great extent.

Population. The United Kingdom is a very densely populated country.

Scotland	4,842,554	people
England and Wales	39,947,931	„

The average density of population in England is 685 per square mile. *With the exception of Belgium and Java this is the highest density of population recorded for any country.*

Northern England and South Wales are the centres of the densest population, because these are the industrial areas. Recently population in Southern England, particularly in the suburbs of London, has increased with great rapidity. Lancashire, Glamorgan, Warwickshire, Durham and Staffordshire have more than 1,000 people per square mile. The industrial

* The British Empire includes: (i) Gibraltar, Malta, Gozo and Cyprus in Europe; (ii) Port Said, Aden, Perim and Socotra Islands, India, Burma, Ceylon, Straits Settlements, Borneo and Hongkong in Asia; (iii) Australia, New Zealand, a part of New Guinea, Fiji and Solomon Islands in Oceania; (iv) Zanzibar, Pemba, Kenya, Uganda, Tanganyika, the Sudan, Sierra Leone, the Gold Coast, Nigeria, Gambia, British South-West Africa, Mauritius, Union of South Africa, Rhodesia, Bechuanaland, Basutoland, Swaziland, Nyasaland, etc., in Africa; (v) Canada, Newfoundland, Labrador, the Bermudas, Jamaica, the Bahamas, British Guiana, Trinidad, Falkland Islands etc., in America.

Britain also exercises direct or indirect control over Egypt and the Middle East.

activities of these regions attracted people from other parts of the country. The agricultural districts of Norfolk, Suffolk, Lincolnshire and Cambridge contain less than 500 people per square mile. The mountainous districts are all sparsely populated.

The last trade depression has resulted in changing the present distribution of population. Density of population is decreasing in the industrial areas of Lancashire, Cheshire and Durham. South-East England is fast becoming a region of dense population.

Mining. The minerals of Great Britain are highly important. The two most useful minerals—coal and iron—are found in close proximity. Coal is found throughout the country in large quantities; in the annual production of coal Great Britain occupies the third place. The value of several of the British coal-fields is enhanced by their closeness to the sea. Coal is the principal cargo of the coastal trade and forms one-third of the total. The quality of British coal is fairly good.

CONSUMPTION OF COAL*

(in million tons)

1933

Disposal

1. Gas works	..	..	..	16'2
2. Electricity generating stations belonging to authorized undertakings and to railway and tramway authorities	..	..	..	10'3
3. Railway Companies	..	..	..	11'7
4. Vessels engaged in coastwise trade				1'2
5. Iron works	..	..	..	12'4
6. Collieries	..	..	..	11'6
7. Domestic Coal	..	..	..	40'0
8. General manufactures	..	..	..	44'3

*British Industries and their Organisation by Allen.

The principal **coal-fields** of the United Kingdom are the following :

The Pennine Range

1. Northumberland and Durham. 2. York, Derby and Nottingham. 3. South Lancashire. 4. North Staffordshire.

The Midland Plain

5. Warwick. 6. South Staffordshire. 7. Leicestershire.

The Welsh Mountains

8. North Wales. 9. South Wales.

The Midland Valley of Scotland

10. Ayreshire. 11. Clyde.

Small coalfields are also found in Bristol, Edinburgh and Kilkenny in Ireland.

The South Wales Coal-field is very important in respect of quantity and quality. The coal extracted here is particularly used in steamships. South Wales was the greatest coal-exporting area in the world till 1914. But since 1920 the coal industry of South Wales has been passing through years of great difficulty. The demand for coal has fallen considerably.

Factors responsible for the decline of the Wales coal-fields :

(i) The high price of British coal. The U. S. A. is putting cheaper coal in the markets. (ii) The rapid development of hydro-electricity. France, Italy, Sweden and other former customers have developed hydro-electric power. (iii) The discoveries of new fields. Australia and Natal—once large importers—have discovered many new coal-fields.

THE FIGURES SHOWING THE DECLINE OF THE
BRITISH COAL INDUSTRY.

Year	Output (in million tons)	Exports (in million tons)	Employment (in thousand)
1913	.. 287	98	1,230
1927	.. 251	72	1,037
1933	.. 208	57	797

Though the coalfield of North Wales is not as large as that of the south, yet the former enjoys a direct sea communication.

The York, Derby and Nottingham coal-field is about 70 miles long and 20 miles wide. This coalfield is within easy reach of the iron deposits. Nearness to sea has helped the growth of export trade. Scandinavia, Denmark and the Baltic States import coal from this area. The woollen industries of the West Riding and the iron and steel industries of Sheffield are particularly associated with this coal-field.

The cotton industry is primarily important in the South Lancashire coal-field.

The Midland coal-field developed because of the iron and steel industry. Since 1929, with the decline of the steel industry, the Midland fields are passing through difficulties. To-day these fields contribute only 11 per cent. of the U. K.'s total coal.

The Ayresshire coal-field of Scotland raises coal mostly for export. The Clyde estuary does not actually possess coal, but it can very conveniently use the Lanarkshire coal. The great ship-building industry of the Clyde basin is based on the Lanarkshire coal and iron.

The **iron-ore** deposits are found in North Lancashire, Clyde basin, North Staffordshire and South Wales.

The supplies of South Wales iron-ore have been nearly exhausted and the iron and steel industry of this area now depends on Spain and France for ore. The most important iron-ore field lies in South-East England, which supplies

THE ANNUAL PRODUCTION OF COAL IN U. K.

(In 000 Metric tons)

In Britain :	1914	...	...	...	...	270,000
	1926	...	...	...	...	275,000
	1936	...	...	...	...	217,000
	1938	...	...	...	...	232,000
The Scottish Coal-fields		...	...	...		14 per cent.
„ Yorks, Notts and Derby		...	...	...		31 „ „
„ Lancashire		...	...	...		6 „ „
„ Midlands		...	...	...		11 „ „
„ South Wales		...	...	...		16 „ „

(The British Isles—A. Demangeon)

about 85 p.c. of the iron of Great Britain. The principal ore centres are (a) in the Cleveland Hills ; (b) at Scunthorpe and Frodingham in Lincolnshire ; (c) at Corby and Kettering in Northamptonshire ; and (d) near Banbury in North Oxfordshire. The iron fields of the U. K. cannot meet the requirements of the metal industry. Every year the country has to import a considerable quantity of iron and pig iron from abroad.

The other minerals found in the country are lead, zinc, copper and tin. Limestone, chalk, granite, slates and salt are also quarried. Quarrying is an important occupation in Cornwall, Devon, Somerset, Wales and the Cumbrian peninsula. At one time tin was the most important mineral of England ; now it has almost been exhausted.

In the United Kingdom the production of *strategic minerals* is not large, and many of such minerals are absent. But the country has excellent access to these minerals, because of her empire and world-wide trade.

STRATEGIC MINERAL SUPPLIES IN THE U. K.

(Figures based on 1938 production)

	Home production (million tons)	Empire (million tons)	Other sources (million tons)
Coal	230	75	15
Iron ore	12	10	6
Pig iron	7	3	1
Steel	10	3	...
Oil	...	7	84
		(thousand tons)	(thousand tons)
Manganese	...	950	150
Chrome ore	...	170	130
Tungsten	...	50	100
Copper	...	500	900
Aluminium	...	550	850
Nickel	...	90	30

Access to these minerals has made the position of the United Kingdom strongest in the world, except that of the U. S. A.

Agriculture. The British Isles is a great manufacturing country, yet the farming activities of its people occupy an important place in the national economy. More than 11 per cent. of the total population is engaged in agricultural occupations.

Scotland	...	...	3 per cent.
England	...	...	2 ,,
Ireland	...	...	53 ,,

Land being dear and limited in the U. K., the method of cultivation is always intensive. Wheat, barley, oats, sugar beet and fruits are cultivated in those parts where climatic conditions are suitable. In Eastern England the geographical conditions are exceptionally favourable to the growth of these products. Summers are hot, and, therefore, wheat is cultivated in Lincoln, Norfolk, Suffolk, Essex and Bedfordshire. Barley requires conditions similar to those for wheat, so it is also cultivated in the eastern plains. Oats are raised in the eastern plains of Scotland and in the lowland areas of Northern Ireland. Sugar beet is cultivated in (i) the wheat lands of Eastern England, (ii) North Shropshire and the neighbouring countries, (iii) Fifeshire, and, (iv) the valley of the river Barrow in south-east Ireland.

Fruit-growing is widely distributed all over Great Britain.

Cattle-rearing. Cattle are reared in every part of the United Kingdom. They are mostly domesticated for their milk, meat and hides. The dairy is important in the following regions :

- (i) Cornwall, Devon and Somerset. Cheese and cream are made here.
- (ii) Welsh lowlands. Milk and cheese are produced for the dense population of the South-Wales coal-field.
- (iii) Cheshire. It is the most important dairying area in England. Cheese and milk are important products.
- (iv) The vales of Oxford and Alesbury. Milk is sent to London from here.
- (v) Ireland is particularly noted for dairying which is carried on in the plains of the south-west and in the north.

Beef cattle are mostly reared on the midland plains. In England there are more than 12,000,000 cattle.

Sheep-rearing. At one time England was a great sheep-rearing country and the prosperity of the country depended on the animal industry. But to-day this industry is neglected and is carried on in those parts where either agriculture is unsuitable or population is sparse. Even then, the U. K. contains more sheep than there are in New Zealand. The principal sheep-rearing areas are the following :

(1) The Pennines. (2) The Welsh mountains. (3) Highlands of Scotland. (4) Ireland.

THE FISHING INDUSTRY

The fishing industry of Great Britain supports nearly one-twentieth of the population. It is one of the greatest of the British industries. The shallow waters of the continental shelf are the feeding grounds of a great variety of fish ; so the fishing industry has prospered. Fishing is mostly confined to the eastern coast of the country which faces the North Sea. Haddock, herring, cod and mackerel are the principal catches of the North Sea, and the ports engaged in this industry are Wick, Aberdeen, Peterhead, Stonehaven, Hull, Grimsby and Yarmouth. In the English Channel, near Cornwall, pilchard is caught.

Great Britain leads all countries in the fishing industry in the North Sea. In spite of such enormous catches Great Britain imports fish from countries like the U. S. A., Canada and Norway. Grimsby and Billingsgate (in London) are the two great fish markets of Great Britain.

The rivers of Great Britain supply fish, mostly salmon and trout.

MANUFACTURING INDUSTRIES

The United Kingdom is the most industrialised country in the world. Her industries are mainly concerned with the production of iron and steel goods, textiles and chemicals.

Among the manufacturing industries of the United Kingdom, the textile trades are second only to the iron and

steel industry in the volume of employment which they afford. Of 1·5 million workers engaged, nearly four-fifths are found in the cotton and woollen industries, and all the remainder are in jute, hemp, silk and linen. The majority of the workers in the textiles are women.

The British manufacturing industries are mostly on or near the coalfields. Of late, other areas have developed industries with the use of electric power.

Cotton-mill industry. The leadership of the United Kingdom in the cotton textile industry towards the end of the eighteenth century was due to a variety of causes. (i) "Her mercantile marine and colonial developments placed her in a strong position both for obtaining supplies of raw cotton and for serving foreign customers." (ii) The countries producing raw cotton were not industrially advanced. (iii) Her natural advantages in humid climate, water-power and coal supplies favoured the establishment of cotton industries. (iv) Contemporary engineering and metallurgical developments helped to work out a new technic of production. (v) India and other older cotton manufacturing areas were handicapped by political conditions existed there. (vi) Europe was involved in political troubles and wars.

The cotton industry has been localised mainly in Lancashire and the adjoining areas. 85 per cent of the workers engaged in the cotton industry are to be found in Lancashire, Cheshire and Derbyshire. Most of the remainder are in the West Riding and Scotland.

The localisation of this industry in Lancashire is mainly due to geographical causes. The spinning of cotton demands a moist climate, otherwise the thread breaks.* The moist westerlies give Lancashire the necessary degree of humidity. Secondly, Lancashire faces American ports, thus facilitating the import of raw cotton. Thirdly, the presence of coal, limestone and water-power was important in the early 19th century, when

* To-day moist climate is no longer an important factor, for the air of factories can be moistened by artificial means.

the factory stage of industrial development was on its way. Fourthly, the existence of a first class port in Liverpool is another great advantage. The inherent skill of generations of operatives, the number of inventions of machinery for cotton manufactures in Lancashire, and the foresight and initiative of those citizens who carried out the scheme of the Manchester ship canal are the other vital factors which contributed to the growth of the South Lancashire cotton industry.

Great Britain does not produce raw cotton. She brings this raw material from (i) U. S. A., (ii) India, (iii) Egypt, (iv) Peru, (v) the Sudan, and (vi) Brazil.

Lancashire towns may be divided into two classes according to their activities. Towns on the northern side (Preston, Blackburn and Burnley) are engaged in weaving. The southern towns specialise in spinning. Rochdale, Oldham, Bolton and Bury are the spinning towns around Manchester. The Lancashire industry depends mainly on export trade, 80 per cent. of the produce being exported. There are also some noted centres in Scotland, among which Glasgow and Paisley are important.

Paisley has specialised in the manufacture of thread. Glasgow had all the natural advantages of Lancashire, but the progress of iron and steel industries caused the industrial

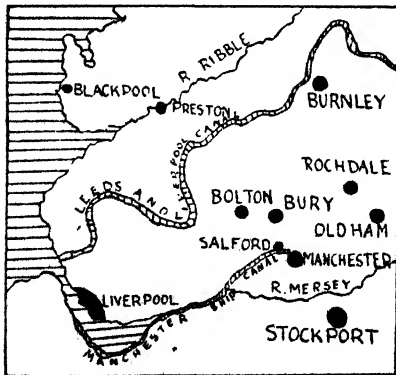


FIG. NO. 38. The cotton-manufacturing towns of South Lancashire.

development to move along other lines.

The principal customers of British cotton goods are India, China, Egypt, Germany, Holland, Turkey, West Indies, South America, Central America, Central Africa, Japan, Australia, Canada, U. S. A., Spain, Italy, France, the Balkan countries and Switzerland.

Great Britain also imports considerable quantities of cotton goods from Japan, France, Germany and Switzerland.

Lancashire had virtual control over the world cotton market till 1913. Since then she has fallen down from that enviable position. Competition of Japan and the U. S. A. has taken much of her Eastern markets. Besides, many countries of Asia and Africa which previously used to import Lancashire cotton piece-goods now-a-days manufacture them. To add to these, protective tariffs and over-production have largely aggravated the depression. It is possible for Japan to manufacture cotton goods at a price far cheaper than what is required by Lancashire. Cheap labour, nearness to vast markets like China and India, and State support are the advantageous factors on the side of Japan.

DECLINE OF COTTON MANUFACTURES IN U. K.

(in million)

1913	1937
Export of cotton goods 7,000 sq. yds.	Export of cotton goods 1,900 sq. yds.
Import of raw cotton 2,100 lbs.	Import of raw cotton 1,200 lbs.
Export to India ... 3,000 sq. yds.	Export to India ... 400 sq. yds.

A strong movement for the amalgamation of different concerns under a central organisation is afoot with a view to bringing about internal economies.

“In the higher and highest qualities of cloth, Lancashire holds her own in free competition ; but as regards coarse cloth she has lost much ground in competition with the East. It is doubtful if she will be able to regain much of the trade she has lost in the commonest qualities, and she may not be able to retain all the trade that she still holds. The future of Lancashire will depend to a great extent on the ability to retain a large share of the trade in high quality cottons and this will demand lower production costs. She must see that methods of organisation are capable of adjustment and if required, of meeting changed and changing conditions and are kept at the highest pitch of efficiency.”

Iron and Steel Industries

In the production of iron goods Great Britain occupies the fourth place in the world. The existence of local coal and

iron in close proximity mostly accounts for the growth of iron and steel centres in the country. There are five important steel areas in the United Kingdom.

(i) *The Black Country.* This has become the chief iron and steel-producing area of Britain. Local supplies of iron, wood, charcoal and limestone gave birth to the industry in this area. The distance of the area from the sea makes cost of transport heavy, and, therefore, goods which are valuable in proportion to their bulk are manufactured here. The important centres are Birmingham, Coventry, Dudley and Redditch. *Birmingham* specialises generally in the production of motors, cycles, railway equipment, machine tools, electrical apparatus and brassware, *Coventry* in cars and cycles, *Redditch* in needles, and *Dudley* in chains.

(ii) *Sheffield.* The manufacture of metal goods in this region owes its origin to the existence of local iron-ore, wood and water-power. The bulk of the iron-ore is now drawn from Lincolnshire and Sweden. Both heavy (*e.g.*, manganese steel, chromium steel and tungsten steel) and light (*e.g.*, cutlery) metal goods are manufactured in Sheffield. Other centres are Rotherham and Chesterfield.

(iii) *The North-east Coast: The Tyne, Wear and Tees region.* Tee-side is the chief iron-smelting centre. Other towns in the locality are Hartlepool, Middlesbrough and Darlington. The advantages of the region for steel industry are: (a) the nearness of the iron-ore, (b) the excellent coking coal of South Durham, (c) the supplies of limestone in the Pennines, and (d) the facilities for importing high grade ore from Sweden and Spain. Hartlepool is noted for ship-building, Darlington is an important centre for railway engines and Middlesbrough is an engineering centre. In Tyne-side the chief centre is New Castle where ships of modern design are built. Wear-side, with Sunderland as the chief centre, builds cargo-boats.

(iv) *The Furness District.* This North-western coastal region produces steel and pig iron. Barrow is the ship-building centre.

(v) *South Wales manufactures tin-plate and galvanised iron.* Iron-ore is imported from Spain and Algeria, and tin is drawn

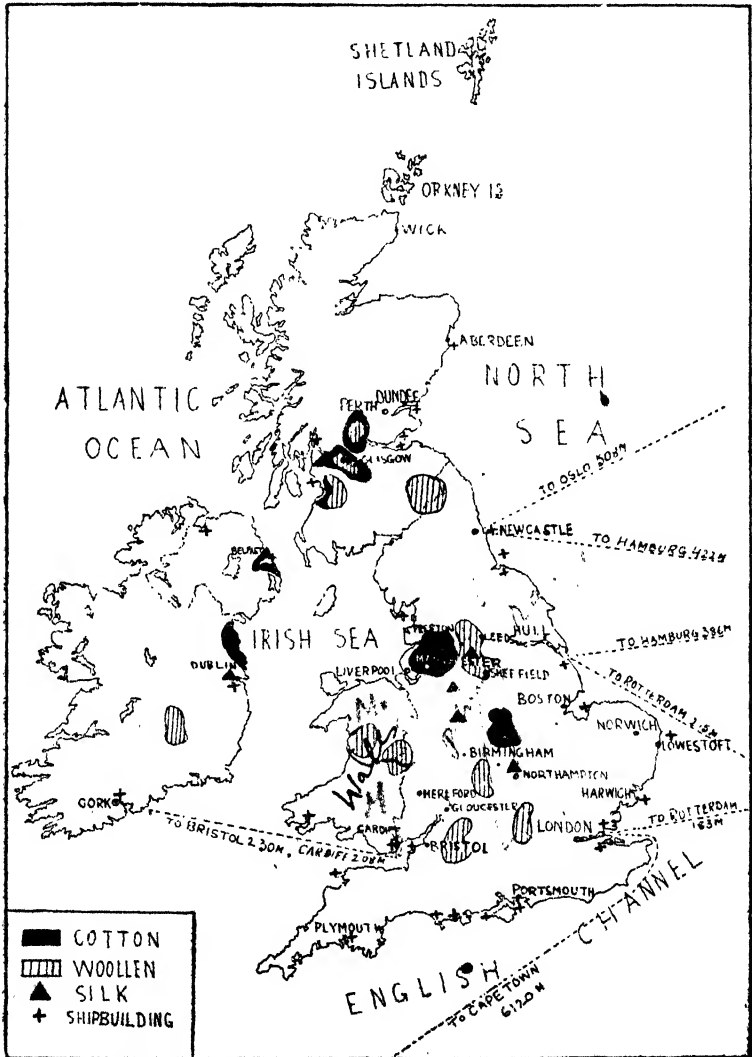


FIG. No. 39. The chief manufacturing regions of the British Isles.

from Malaya, Bolivia and Nigeria. Swansea and Llanelli are the two chief towns of the region.

The *Central valley of Scotland* is becoming increasingly important for general engineering and ship-building (Glasgow, Greenock and Dumberton).

Ship-building is one of the principal industries of the United Kingdom. The reasons for the growth and success of this industry are the following :

- (a) Deep tidal estuaries.
- (b) Coal-fields, with steel industries near the estuaries.
- (c) The increasing demand for ships.

London was the chief centre in ship-building industry before the advent of iron. The change from wood to iron as the material for ship-building shifted the industry from London to the Clyde and other northern rivers. Glasgow, on the Clyde, is the principal ship-building centre in the world. The estuaries of the Tyne, Wear and Tees have also ship-building industries. Other centres of ship-building industry are Belfast, Barrow and Birkenhead.

The woollen industry of Great Britain is older than the cotton industry, but it is now less important and not so highly organised. The industry is centralised in Yorkshire. The geographical causes underlying the localisation of this industry in Yorkshire are many :

- (a) Necessary climatic conditions.
- (b) Water-supply from the Pennines noted for washing and dyeing.
- (c) Sheep-stock of the Pennines.
- (d) Water-power.
- (e) Nearness to the sea coast.

The West Riding of Yorkshire, where coal is found abundantly, is the principal seat of the woollen industry. The towns principally engaged in this industry are Leeds, Bradford, Halifax and Huddersfield. Bradford produces worsted goods, and Halifax manufactures enormous quantities of carpet. The supply of wool from the neighbouring pastures cannot meet the demand of the industry and much of wool is imported from Australia, New Zealand, South Africa, British India, Argentine and Uruguay. England imports more than 60 p.c. of New

Zealand wool, 25 p.c. of Argentine wool, 30 p.c. of South African wool and 35 p.c. of Australian wool. At present England is the largest importer of wool in Europe. The principal customers of British woollen products are Germany, Japan, Sweden, Norway, Russia, Denmark, Italy, Spain and U. S. A.

Other industries include chemicals, glasswares, leather, silk, jute and artificial silk. Chemicals and glasswares are manufactured in South Lancashire and Cheshire where salt deposits are available. Midland towns are important for leather industries. Jute is manufactured at Dundee.

THE COMMERCE OF GREAT BRITAIN

At present the United Kingdom ranks second to the U. S. A. in total value of world trade. Her trade is all sea-borne. The predominance of imports over exports is the most peculiar feature of British Commerce.* The two aspects of her export trade are (1) the exportation of the products of British industries and (2) the re-exportation of imported goods in substantially unchanged form. The first includes the products of British soil, mines, forests, fisheries and factories; the second includes such commodities as rubber, tea, wool, and vegetable oil.

In the total export trade of U. K. the manufactured goods alone account for 80 per cent. or more. The only important export outside manufactured goods is coal. The chief articles of export are cotton goods, iron and steel, woollen goods, chemicals, paper, machinery, leather goods, tobacco, jute, arms and ammunitions.

The principal imports may be divided into three groups :

- (a) Food, drink and tobacco.
- (b) Raw materials.
- (c) Manufactured articles.

* At first sight it might seem that she has an unfavourable balance of trade. But it is not so. Great Britain is a great lending country. She gives services in banking, insurance, shipping, and investments. These are generally known as "invisible exports." When we take into account the figure of earnings from these invisible exports, we find that Great Britain has undoubtedly a favourable balance of trade.

Food, drink and tobacco: wheat, flour, maize, oats, pulse, rice, barley, rye, dairy produce, fish, meat, tropical and sub-tropical fruits, sugar, spices, tea, coffee, cocoa, wine, tobacco, vegetables etc. The foodstuffs constitute the most important item in the import trade because the United Kingdom is self-sufficient to the extent of 25 per cent. only of her needs.

Raw materials: cotton, wool, flax, jute, silk, hemp, rubber, furs, timber, oil-seeds, petroleum, hides and skins, sponges, ivory, tanning materials, iron ore, copper, lead, manganese, zinc, tin, gold, silver, etc.

Manufactured articles: cotton yarn and cotton manufactures, leather goods, iron goods, glass, electrical goods, silk goods, porcelain, etc.

FOREIGN TRADE OF THE UNITED KINGDOM

1938

(In percentage)

IMPORT.				EXPORT			
<i>Food, Drink and Tobacco.</i>				<i>Manufactures.</i>			
Cereals	..	..	8·1	Metal	..	..	11·9
Dairy Produce	..	..	8·7	Machinery	..	..	15·4
Other food stuffs	..	..	12·7	Cotton	..	..	9·3
Meat	..	..	9·9	Woollens	..	..	5·1
Beverages	..	..	5·0	Vehicles	..	..	8·5
Tobacco	..	..	2·5	Other	..	..	24·5
<i>Raw Materials.</i>				<i>Raw Materials.</i>			
Minerals	..	..	2·9	Coal	..	..	7·0
Wood and pulp	..	..	6·4	Other	..	..	9·3
Wool	..	..	4·6	Food	..	..	9·0
Cotton	..	..	3·2				
Veg. Fat	..	..	3·3				
Other	..	..	6·4				
<i>Manufactures.</i>							
Metal	..	..	6·0				
Machinery	..	..	3·5				
Oil	..	..	4·8				
Other	..	..	12·0				

SOURCES OF BRITISH IMPORTS

Food	Non-Food
Wheat: Canada, Argentina, Australia.	Cotton: U. S. A., Sudan, Egypt, India.
Rice: Burma, Siam, Spain.	Jute: Bengal.
Sugar: Cuba, Australia, Mauritius.	Flax: Russia, Belgium, Baltic States.
Tea: India, Ceylon, Java.	Wool: Australia, New Zealand, South Africa, Argentina.
Coffee: British East Africa, Costa Rica, Brazil.	Wood: Sweden, Finland, Canada, Russia.
Cocoa: Gold Coast.	Rubber: Malaya States, Ceylon, Straits Settlements.
Beet: Argentina, Uruguay, Brazil, Ireland.	Iron ore: Spain, Algeria, Sweden.
Mutton: New Zealand, Australia, Argentina.	Tin: Malaya States, Bolivia, Chile, Nigeria.
Butter: New Zealand, Denmark and Australia.	
Cheese: Holland, Canada, New Zealand.	

The principal customers of British goods are India, South Africa, Australia, Irish Free State, Canada, U. S. A., France, Germany, Argentine, Denmark, Holland and New Zealand.

Great Britain has trade relations throughout the world. A brief account is given below:—

(i) North America:—The chief British ports trading with North America are Liverpool, Glasgow, Southampton and London. The products which come from North America to British Isles are timber, meat, dairy produce, leather and hides, furs, fish, wheat, raw cotton, maize, oats, tobacco, machinery, textile, petroleum, copper, zinc, silver, glass, graphite, rubber goods etc. The exports to North America are machinery, chemicals, luxuries, wines, textiles, iron goods, non-ferrous metals, etc.

(ii) Central and South America and West Indies:—The chief articles which come from these countries to Great Britain are rubber, cocoa, coffee, raw cotton, tobacco, sponges, copra,

silver, petroleum, oil-seeds and spices ; and the important items of export to these countries are cotton, machinery, wine and spirit.

(iii) South America :—The chief imports from South America are meat, wheat, maize, hides and skin, timber, copper, wool, coffee, sugar, cocoa, nitrates, rubber, petroleum, etc., and the exports to that continent are machinery, implements, glass, ships, locomotives, non-ferrous metals, motor cars, chemicals, iron-goods, leather goods and coal.

(iv) Tropical East and West Africa :—Cotton goods, tin goods, knives, gun and implements are the main articles of export from British Isles to these countries ; and the chief articles of import from these are palm oil, ivory, rubber, gum, spices, cocoa, coffee, raw cotton, timber, oil-seeds, cane sugar, etc.

(v) South Africa :—Imports to the British Isles from South Africa consist of ostrich feathers, wool, hides, diamonds, gold, copper, tea, wine and fruits. Exports from the British Isles to these places are textiles, chemicals, iron goods, clothing, leather goods, locomotives, motor cars, machinery, implements, arms and ammunitions, etc.

(vi) China and Japan :—Great Britain exports textile goods, iron goods, machinery, tobacco, arms and ammunitions. She imports tea, raw silk and silk goods, rice, sugar, toys and matches from China and Japan.

(vii) South-East and South-West Asia :—The imports are petroleum, tanning materials, wheat, rice, maize, jute, cotton, spices, oil-seeds, coffee, tea, indigo, timber, ivory, wool, gold, tobacco, hides and skins, gutta percha, rubber and pulses. The principal exports of Great Britain are textiles, machinery, leather goods, tobacco, coal, paper, locomotives, cotton goods and iron goods.

(viii) Australasia :—Exports to Australasia consist of locomotives, motor cars, machinery, luxuries, chemicals, non-ferrous metals, ships, etc., and the imports from Australasia are mutton, butter, wheat, flour, wool, silver, gold, copra, wine, skin, etc.

(ix) West and Central Europe and Russia :—Imports of the British Isles are dairy produce, eggs, beet sugar, timber, wheat, forest products, fur, flour, wine, iron goods, hides, chemicals, platinum, etc. Exports of the British Isles are coal, textiles, iron goods, machinery, paper, leather goods, fish, etc.

(x) Baltic countries :—The imports from Baltic countries are dairy products, bacon, fish, eggs, skin, match, etc.; and the exports consist of coal, iron goods, machinery, textile goods, ships, non-ferrous metals, etc.

The United Kingdom depends on the Empire countries for a large percentage of her imports and exports.

Exports.				Imports.			
P.C. in the total				P.C. in the total			
India	..	..	8'5	India	..	..	7'3
S. Africa	..	..	8'5	Canada	..	..	8'3
Australia	..	..	7'3	Australia	..	..	7'3
Total Empire	..	..	49'2	Total Empire	..	..	39'2
Europe	..	..	26'7	Europe	..	..	29'0

The balance of trade with the Empire countries is always favourable to the United Kingdom.

THE IMPORTANT COMMERCIAL AND INDUSTRIAL CENTRES AND SEA PORTS OF GREAT BRITAIN

London is situated on both banks of the river Thames, at the head of its ocean navigation. London is the capital of the United Kingdom and the largest city in the world ; it is also the world's greatest sea port and financial centre. The imports of London are much greater than the exports, because it is the distributing centre for the whole Kingdom. London controls most of the British foreign and colonial trade with the Baltic and the Mediterranean ports. Tea and other products from the

East and wool from Australasian colonies find their chief European market in London. *Birmingham* is the commercial and industrial centre of the Midland. It specialises more particularly in small metal goods of all kinds—steel pens, swords, guns, brass work, and the standardised parts of bicycles and motor cars. *Liverpool* is the most important port on the west coast of Great Britain. The imports are chiefly raw materials and food-stuffs from the U. S. A., Canada, South America, West Africa and West Indies (especially cotton, grain, oils, paint, animal products, tobacco, etc.). The principal exports are manufactured goods of cotton, wool, iron and chemicals. Liverpool itself is not a noted manufacturing city; exports and imports are for the neighbouring towns. *Manchester* is the chief centre of the cotton textile industry of Lancashire and is known throughout the world as the cotton metropolis. *Sheffield* is the chief centre of the heavy steel and cutlery trade. *Leeds* is the centre of a great trade in ready-made clothing, leather and machinery. It commands the largest share of the leather trade of the United Kingdom and has important soap works and oil refineries. *Bristol*, near the estuary of the Severn, is a very old port. It carries on a considerable trade with America, particularly in the import of tobacco. *Hull*, situated on the Humber estuary, has a busy continental trade especially with Hamburg and Bremen. *Bradford* in the West Riding of Yorks, is the chief seat of the worsted manufactures. Silk, velvet and dye are other products of this place. *Southampton*, on the south coast of England, at the head of a deep land-locked inlet, is noted as a terminus for American steamship lines. *Sunderland*, at the mouth of the Wear, is the most important ship-building centre in England. It has glass works, chemical factories and rope works. *Oldham*, a smoky town of South Lancashire, is noted for its cotton yarn and textile machinery. *Cardiff*, the largest town in Wales, carries on an immense coal-trade, sending more coal to foreign countries than any other town. It has chemical industries, ship-building yards, iron foundries, etc.

Swansea, the second town of Wales, does a vast trade in the smelting of iron, copper, silver, zinc, tin and lead. The

iron-ores of northern Spain are received here ; the copper-ores come from the Str. Settlements and the East Indies. *Glasgow*, on the river Clyde, is the largest city of Scotland. As a port on the western coast of Great Britain, it is favourably situated to receive raw materials from America. Glasgow is the centre of one of the busiest industrial areas of the world. Its industries are based on ship-building and its dependent activities. It also supplies many important markets of the world with steel goods. *Edinburgh* is situated on the southern shore of the Firth of Forth. It is an educational and distributing city. *Dunder*, the third city of Scotland, is the chief centre of the jute industry. It is also an important fish market. *Aberdeen* is the fourth city of Scotland. The industries and commerce of this port are in a flourishing condition. Woollen cloths and carpets, linen sheets, chemicals, machinery, and canvas are the leading products. The largest comb factory in the world is established here. *Belfast* is the busiest city of Ireland. It produces linen goods and is a ship-building centre. *Dublin* is the capital of the Irish Free State. The making of poplin, the manufacture of biscuits, dyeing, the brewing of beer and the distilling of whisky are the principal industries. *Limerick* has important manufactures of linen, spirits and liquors.

Germany

Germany is a great industrial and commercial country. Many factors—physical and human—have contributed towards her progress. The physical factors are : (i) situation of the country in the heart of the leading industrial continent, (ii) mineral wealth like coal, iron, potash, zinc, (iii) fertility of land, (iv) perfect water-ways, (v) invigorating climate, and (vi) forest resources. Among human factors Government and race are the most important. The growth of German foreign trade is the outcome of largely Governmental efforts. Besides, Germany is inhabited by the Nordic race famous for its great perseverance, intelligence, honesty and courage. The industrial expansion in Germany really began after 1871, when the German people attained unification in the Empire and inaugurated a com-

prehensive, co-ordinated, national industrial policy. As a result of her victory in the Franco-German War, Germany got 5 billion francs from France as indemnity and acquired the provinces of Alsace and Lorraine. Further impetus to industrial growth was given when Germany in 1888-89 entered upon the role of coloniser and world power and cultivated foreign markets successfully. In 1914 Germany stood next to Britain in industry and commerce.

The climate of Germany is more or less continental everywhere. The southern side of the country is mountainous and full of forests while the north is plain. From the agricultural point of view, Germany is a land of small estates and peasant proprietors in the west and south, and of large estates in the north. Intensive cultivation is practised efficiently and the products are wheat, rye, oats, beet and potatoes.

Communication by land, water and air is well organised. The railway system of Germany is one of the best in the world. At present in Greater Germany the railways exceed 40,000 miles. The topographical features and average altitude are such that it has been possible to extend the railways throughout the country. In air-transport she is equal to any other country of the world.

The plain of Germany has an efficient system of waterways. In no other country has the advance of trade and industry been

The old German Empire was dissolved as a result of her defeat in the last War of 1914—18, and a Republic was formed consisting of 18 Federated states. Through the treaty of Versailles, she lost to France, Alsace and Lorraine, to Poland parts of Posen and Upper Silesia and to Belgium the rich iron fields of Luxemburg. Danzig, which was a very important port of Germany on the Baltic, was made an independent city state under the League of Nations. As a result of these politico-geographical changes Germany lost about 27,000 sq. miles of its territory, besides its colonial possessions. Her vast colonies were distributed among the following :

Great Britain.....German East Africa.

South Africa.....German West Africa.

Japan.....Islands on the Pacific North of the Equator.

Australia.....Islands on the Pacific South of the Equator.

effected more profoundly by the development of water transport than in Germany. The river system is magnificently extensive.

The important rivers are the Rhine, Elbe, Oder and Vistula. The rivers have been deepened and connected with one another by canals so that there is now a complete system of water communication over a large part of the country. The Rhine is connected with the Weser to the

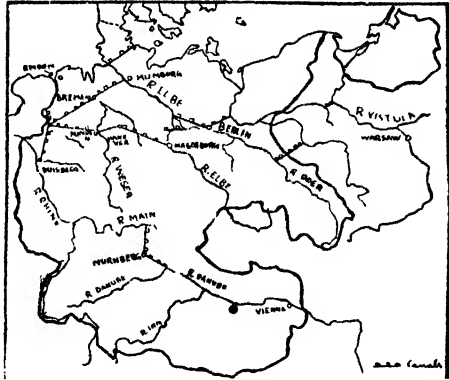


FIG. NO. 40. The waterways of Germany.

east, with the Danube to the south and with the Meuse to the west. The Rhine is also connected with the French waterways through the Rhine-Rhone and the Rhine-Marne canals. The Elbe, Oder and Vistula are joined by canals. The Elbe flows through the most densely populated part of the country and is connected with the Baltic through the Kiel canal. The Oder flows through the agricultural districts and canals have been constructed to join the river with the Elbe. As an artery of trade the Danube is of minor importance to Germany. The Other minor rivers are the Ems, Inn, Spree, Main and Aller. The total length of navigable rivers and canals is approximately 9,000 miles.

Germany takes a very high place in mineral products, among which coal and iron are the most important. Coal and iron-ore, while not located in quite such proximity as in England, are abundant, and, on the whole, are easily brought together. The chief coal-fields are those of the Ruhr, Westphalia, Saar, Upper Silesia, Lower Silesia, Zwickau and Lugan (in Saxony). Iron deposits are found in the fields of Siegerland (Prussia), the Lahn-Dill region, Upper Hesse district and the Peine-Salzgiters district. Before 1918 Germany was the largest

producer of iron-ores in Europe. Lorraine and Luxemburg supplied 75 per cent. of the country's production. These two



FIG. NO. 41. The industrial areas of Greater Germany.

areas were ceded to France and Belgium after the last Great War ; Zinc and lead are obtained from Silesia and the Rhine coal-fields at Aachen. Salt is found abundantly in Saxony and has enabled Germany to improve her agricultural and chemical industry. Germany

raises nearly half a million tons of petroleum every year.

Germany is one of the leading manufacturing countries of the world. *In the application of science to industry, she is still the leader.* Nowhere else in the world scientific and technical education has received greater attention. Another special feature in modern German manufactures is the adoption of rationalisation. *Rationalisation* denotes those methods by which the cost of production may be reduced. "It includes standardisation, simplification of varieties, waste reduction, scientific management, the replacement of hand labour by machinery and economy in selling."

The great drawback of the German industrial system is the location of the principal industrial regions, especially the Ruhr, very close to the frontiers. Her industrial centres are, therefore, liable to aerial attacks during war.

THE CHIEF MANUFACTURES OF GERMANY

1. Iron and steel production.
2. Chemical industries.
3. Electrical goods.
4. Textiles—Cotton, Woollen and Silk.

The basis of the industrial strength of modern Germany is

the manufacture of iron and steel. The iron and steel production of Germany is controlled by Cartels. Till 1918 Germany was easily the leading producer of iron and steel. Much of the iron-ore is imported from France, Sweden and Spain. One great advantage of Germany in the matter of iron and steel production is the abundance of coal near iron-deposits. Moreover, the perfect waterways of the country permit easy transport of goods. The basin of the river Ruhr is the principal iron and steel-producing region of Germany. This area supplies near about 80 p.c. of the total German coal output. Local iron-ore is not enough to support the industry, and, therefore, large supplies are brought from Spain and Sweden. Till 1919 the Ruhr industrial area used the ores of Lorraine and Luxemburg. The great advantage of the Ruhr area is the presence of the Rhine which facilitates the import of raw materials and export of finished products. Essen, Bochum, Dortmund and Dusseldorf specialise in heavy engineering and machinery works.

Other iron and steel-producing areas include the Hartz mountains, Saxony and Upper Silesia. *Stassfurt*, in the Hartz mountains, has metal manufactures, largely based on imported ore. Saxony, with *Chemnitz* and *Zwickaw* as chief centres, makes machinery.

Of late, Germany has made tremendous progress in ship-building industry. In respect of tonnage, she occupies the fifth place in the list of countries having mercantile marine. The possession of tidal estuaries and coal-fields near them have helped the ship-building industry greatly. The ship-building areas are : (a) the Elbe estuary with Hamburg as the centre, (b) Lubeck Bay with Lubeck, (c) the Weser estuary with Bremer-Haven and Bremen, and (d) the mouth of the Oder with Stettin.

Electrical machinery is manufactured in Berlin and Magdeburg.

In chemical industry the supremacy of Germany is indisputable. *The spread of scientific and technical education in Germany is a contributing factor in developing chemical industries.* The results of the researches in the laboratories of the

universities are turned to practical use as nowhere else in the world. The possession of potash salt gave additional impetus to these industries. The chemical industry is carried on in Berlin, Frankfurt, Dresden, and Leipzig.

The German textile industries are concerned with the production of cotton, woollen and silk goods. Although cotton mills are scattered throughout the country, two areas are particularly important—the Ruhr coal-field and Saxony. Raw cotton is imported from the U. S. A., Brazil and Egypt. The chief cotton-manufacturing centres are Munchen-Gladbach, Chemnitz and Zwickaw.

The woollen industry is very widely distributed in Germany and the chief centres are on the coal-fields. Aachen, Chemnitz and Bremen are the woollen centres. The German silk industry is confined to the Ruhr coal-field.

Germany has extensive trade relations with foreign countries and most of the oversea trade of the country passes through Hamburg, Bremen, Rotterdam and Antwerp. The imports consist of food-stuff and raw materials such as coal, coffee, raw cotton, cereal, dairy produce, oil seeds, woods and wool. The electro-technical products, iron and steel goods, machinery, chemicals, sugar and woollen goods are her chief exports.

PORT AND TRADE CENTRES

Berlin, the capital of the Republic, is situated in the centre of the northern plain and is provided with facilities for communication in every direction. It is an important industrial and commercial town and it is also the centre of the railway system of the country. It has the largest population in Europe with the exception of London. *Hamburg* is an important river port situated on the Elbe, sixty miles from the sea, and has large foreign commerce. *Leipzig* has a large book and printing trade. It is also one of the greatest fur markets in the world. *Dresden* is a great commercial and industrial town, situated on the Elbe. It is specially known for machinery and brewery. *Cologne* is a river port situated on the Rhine. Apart from its

importance as a railway centre, the town is noted for wine-making and steel production. It is also a railway centre. *Nuremburg* is famous for toy and pencil factories. *Bremen* is situated on the Weser and is important for ship-building. *Magdeburg* is a great sugar centre.

Germany has recovered from the shock of the last Great War and once more become the most industrialised country in Continental Europe. She has increased her volume of trade so much that it is exceeded only by that of the U. K. and the U. S. A. The balance of trade has been transformed into a favourable one by the restriction of imports and the intensification of exports. The rise in the foreign trade of Germany has been sharp since 1934 when Dr. Schacht applied his "New Plan". Germany has reduced the importation of finished goods and increased that of raw materials and foodstuffs. Moreover, there has been a large increase in the interchange of commodities with the Baltic and Balkan States and with Brazil, Argentina, Paraguay and Uruguay. The aim of the German Government has been to become self-sufficient in food-stuffs. The agricultural acreage has been increased by reclamation in various forms and the yield has been increased, too. In 1939 Germany was self-sufficient to the extent of 83 per cent. of her food requirements.

Germany's industrial weakness : (i) Although Germany is a great iron and steel-producing country, her supplies of iron-ore are very limited. More than two-thirds of Germany's requirements has to be imported from Sweden, Spain, Luxemburg, Algeria, France and the U. S. A. Germany's iron-ore is of low grade. (ii) She is very deficient in copper, tin and bauxite. (iii) Toughening minerals such as manganese, chromium, tungsten, nickel, molybdenum, cobalt and vanadium are practically absent. All these minerals come from Africa, America and China. (iv) Her output of natural oil is negligible. Synthetic oils have been discovered, but their usefulness has not yet been satisfactorily demonstrated. (v) Cotton is entirely lacking, and, even with home-produced wool, flax and synthetic products, the textile industry is only 25 per cent. self-sufficient.

(vi) Germany is very short of vegetable oils and all tropical products.

Her deficiencies in rubber and textile fabrics are partly overcome by the use of buna (Synthetic rubber) and "er satz" (substitute) clothing.

Greater Germany: It includes Germany proper, Austria and the Sudeten lands. Germany proper has 182,000 square miles of area with nearly 66 millions of people. By acquiring Austria and the Sudeten lands, Germany increased her territory by 25 p.c. and population by 15 p.c.

Sudeten lands, formerly a part of Czechoslovakia, were acquired by Germany in October, 1938. It has an area 11,000 square miles with a population of 3½ millions. There are rich deposits of coal, iron-ore, zinc and graphite in the Sudeten lands. The forests yield valuable timber.

In March, 1938, Germany annexed Austria. The Germans and Austrians speak the same language and have the same traditions and culture. Both the countries had been anxious to be united politically since 1920.

Importance of Austria to Germany:

(i) Germany enlarged her area by 32,000 square miles.

Her population increased by 10 per cent.

(ii) Germany came nearer to the Adriatic Sea, the distance being only 60 miles.

(iii) Germany got valuable resources of timber and water-power.

Importance of Czechoslovakia to Germany: Just one year after the acquisition of Austria, Germany annexed Bohemia, Moravia and Slovakia, while Ruthenia was incorporated by Hungary. Germany was greatly benefited as regards agriculture and industries by these political changes.

Bohemia raises wheat, sugar beet, potato, barley and rye. In sugar beet production, it occupies the second place in Europe. Engineering and metallurgical works are highly developed. The world famous *Skoda* works are situated in Pilsen. The glass-making industry is also important. Its minerals and forests are also great economic gains to Germany.

Moravia is a great agricultural region and produces wheat, barley and sugar beet. Boot and shoe industries and the manufacture of cotton and woollen goods are the principal economic activities of the people. Its coal-fields, though small, is famous for quality.

In Slovakia, agriculture and lumbering are the two occupations.

Germany and her Former Colonies.

The German Government demanded the return of former German colonies. The colonies were wanted back not for relieving the pressure of population in the mother country, but for obtaining various raw-materials. The former German colonies could furnish the following to German economy according to German expert opinion :

1. About one-half of the gold needed for industrial purposes could be supplied by German New Guiana, German East Africa and the Cameroons.

2. About one-eighth of the tin requirements from German East Africa and the Cameroons.

3. One-quarter of the lead consumption and almost one-seventh of the necessary copper consumption from German South-West Africa.

4. More vanadium than is required from German South-West Africa.

5. The total amount of mica needed from German East Africa.

6. Diamond in quantities more than enough to satisfy the needs of the German precious stone-cutting industry and the jewellery industry from South-West Africa and German East Africa.

7. The largest part of the iron-ore which Germany lacks from Togo.

8. All the phosphates needed in agriculture might come from Nauru.

But on closer examination we find that the motive behind these demands was more political and strategic than economic. Germany normally imports 23 million tons of iron-ore, and Togo cannot furnish even 1 per cent. of it. Similarly, every other item is exaggerated.

Austria

Austria is a small mountainous state, now under Germany, with a population of 6 millions. The relief of the country does not permit easy cultivation, and much of the food-stuffs is imported. Forests are important for supplying raw materials to the paper, pencil and cellulose industries of the country. Lignite, iron, coal, salt and manganese are found. Metal industry is important. Other industries are connected

with the manufacture of musical instruments, motor cars and leather goods.

The foreign trade is entirely dependent on foreign ports as the country has no coast-lines.

Vienna, the capital, is an important educational, commercial and industrial centre. *Graz* is noted for iron manufactures. *Linz* is a railway centre.

Czechoslovakia

The location of Czechoslovakia is central and favourable for the purpose of commerce. It lies between industrial West Europe and agricultural East Europe and midway between the Baltic and the Asiatic seas. "Its central position in Europe gives it industrial and commercial nodality". The great physical drawback of the country is that it has no sea-board and depends on foreign ports.

The climate is somewhat maritime and somewhat continental. The rainfall is between 20 and 30 inches and falls mostly during summer. The distribution of rain is, on the whole, favourable to agriculture.

Fertile soil, a plentiful supply of streams and rivers and irrigation works permit cultivation of wheat, rye, barley, sugar beet and potato. The forest resources of the country are considerable; industries like matches, paper, toys, packing-case, musical instruments and barrels are dependent on their products.

Coal is found in abundance in Moravia, Bohemia and Slovakia. There is also a small output of zinc, copper, gold and silver. In the mountains of Slovakia, tin, nickel, manganese and copper are found. The oil-fields are also of growing importance.

Czechoslovakia is a great manufacturing country. The economic life and the national prosperity of the country rest on the manufacturing industries.

The manufactures may be broadly divided into three groups :
 (i) Those which obtain their raw materials in the country itself, such as sugar, alcohol, porcelain, glass-making, etc. (ii) Industries which depend partially on raw materials at home, such as metal industries, chemicals and leathers. (iii) Industries which depend entirely on foreign countries for raw materials, such as textiles, etc.

As the country has no sea port of its own the natural lines of communication are by the Danube, Elbe and Oder. Raw cotton and raw wool are the two chief imports. Considerable quantities of food-stuffs are also imported. The chief exports are manufactured goods.

Prague (Praha), the capital, is the chief industrial centre. It is also a great railway town. *Brunn (Brno)* is an important manufacturing town. It has large paper, match and leather works. *Pilsen* has

breweries, engineering and metallurgical works. *Gablonz* is the centre of glass industry. *Zittu* is noted centre of leather works.

Rumania

Before the last Great War Rumania covered an area of 50,700 square miles and had a population of nearly 8,000,000. In 1919 the annexation of Bessarabia, Transylvania and Bukovina increased the area to more than 120,000 square miles and the population to about 20,000,000. Nearly 75 per cent of the population speaks Rumanian.

Rumania is a grain country. Only 10 per cent of the population makes its living from industry. Small supplies of coal and iron, lack of capital and the limited home market have kept the industry in its infancy.

Land is cultivated for wheat and maize in the low plains to the east and west of Transylvania. Although the methods of cultivation are primitive, Rumania is one of the important wheat-producing areas in Europe. Sugar beets, tobacco and grapes are the secondary crops.

Rumania possesses a varied list of minerals of which petroleum, gold, copper, lead, manganese, silver, zinc and antimony are important.

In the hilly region (*Ploetsi*) of the eastern plains, the oil-fields produce annually more than 6,000,000 tons of petroleum and have made Rumania sixth among the oil-producing countries of the world. A pipe-line from these oil-fields goes to the port *Constanza* on the Black Sea. Iron-ore is found in Transylvania, but the output is small.

Forests of beech, resinous trees and oak are confined to the western plateau. The principal manufacturing products are wine, paper, flour and chemicals.

Bucharest is the capital and the chief railway centre. It has a population of 630,000. *Golatz* is the chief river port, situated on the Danube and is engaged in the export of wheat and oil. *Constanza*, on the Black Sea, is the chief port of the country.

France

France is very suitably situated for world trade. It is the only country that faces both the northern and the southern oceanways of Europe. Northern France faces the English Channel, one of the greatest highways of commerce. The ports in the western coast are conveniently located for carrying on trade with America and Africa. The southern ports are nearer to Asia and Australia than the British ports. The area of France is about 215,000 square miles or more than twice that of Great Britain. Her population is 41 millions.

France presents two distinct types of natural regions—Highlands and Lowlands. The highlands are: (i) The Armorican Peninsula (Brittany and Normandy), (ii) The Central Plateau, (iii) Alsace-Lorraine, and (iv) The Alps, the Juras, the Pyrenees. The Lowlands are: (i) The Rhone-Saone Valley, (ii) The Paris Basin, and (iii) The Basin of Aquitaine (the region between the Pyrenees, the Central Plateau and Gatiné). In the north and in the west maritime climate prevails; in the south the climate is Mediterranean. The mean annual rainfall in France is 30 inches.

Economically the most striking thing about France is that she is virtually self-contained. France remains largely an agricultural country and imports little for the subsistence of her people. Nearly half the population of the country is engaged in agriculture. Because of her varied topography and climate, she has the greatest variety of agricultural products. Cereals form the most important crops, and of these wheat stands first. Fruits are important in the southern part of the country where lemons, oranges, grapes, olives and figs are abundant. Silk worms thrive best in the mulberry trees, France being one of the leading producers of silk.

The mineral wealth of France is of considerable importance. *In iron resources, France is the leading country in Europe.* The rich iron deposits of Lorraine gave France an unlimited supply of the mineral. Iron-ore is also found in Normandy and Brittany in the north and in the Pyrenees in the south. *But the country, generally speaking, is poor in coal.* The most

important coal-field lies to north-east near Lille. Another field exists around St. Etienne in the middle.* A little coal is also found at Alais in the south. The total supply of coal cannot meet the requirements of the country. *France offers unique opportunities for the great development of hydro-electricity.* The manufacturing industries and transport of the southern side can be served by water-power. But so far very little has been done in this direction. The inadequate supply of coal and the meagre development of water-power cause much of the iron-ore to be exported. She is the world's largest producer of bauxite from which aluminium is made. Alsace has large deposits of potash.

Although one of the greatest industrial countries of the world, France has not been industrialised to the same extent as Great Britain. *The French manufactures are characterised by richness of quality, elegance of design and artistic finish.* In the manufacture of such goods as beautiful fabrics and laces, porcelains, jewellery, millinery, ladies' gowns, toilet goods France has no superior.

The manufactures of France are (a) textiles, (b) iron and steel goods, (c) wine, (d) luxury goods. Among the textiles, wool, silk and cotton deserve special notice. The northern coal-fields and the Rouen districts, both in the Paris basin, produce cotton goods of superior quality with American raw cotton. The manufacturing centres are Lille, Amiens, St. Quentin and Rouen.

The northern coal-field is also important for woollen industry. In addition to the local supply from Champagne and Picardie, a considerable quantity of raw wool is brought from Argentine, Australia and New Zealand. The woollen centres are Roubaix, Rheims, Amiens and Lille.

* By the discovery of large deposits in Normandy the reserves of iron-ore have been greatly increased, but the coal-fields are still inadequate for the needs of the country. In these circumstances it is not surprising that France should take careful stock of the water-power which it possesses in the Alps, the Pyrenees and the Cevenness.

France is one of the leading silk manufacturing countries of the world. In the Lyons district of the Rhone Valley, where mulberry trees are abundant, the silk industry is highly centralised. Power is obtained from the St. Etienne coal-field and the hydro-electric installations. The great development of the silk industry has necessitated the import of raw silk from China, Japan and Italy.

France is the greatest wine-producing country in the world. The chief centre is Bordeaux.

After the acquisition of Lorraine from Germany in 1918, France developed her iron and steel industry to a great extent. In 1938 she was the third largest producer of pig iron in the world. Coal is imported from the Ruhr area for the Lorraine district. The iron industries are concerned with the production of motor cars in Clermont, locomotives in St. Etienne and textile machinery in Lille.

France has also developed a large ship-building industry, and her shipping tonnage gives her the fifth place in the world. Marseilles and the tidal estuary of the Seine are the two important ship-building centres.

The inland waterways of the country play an important part in the movement of goods from one part to another. The rivers are connected with one another by canals and thus provide a complete system of waterways. The canals and rivers are particularly important in the north-east and in the central region where the traffic includes coal, building materials and agricultural products. The important rivers are the Seine, Oise, Meuse, Saone, Rhone, Rhine and Loire. The combined mileage of canals and navigable rivers is more than 7,000 miles. Many of the rivers of France are quite free from tolls. The Rhone has a rapid current and in many places it reaches 12 miles per hour. A scheme was formulated by the French Government to harness the waters of the Rhone and its tributaries with the followings objects: (a) The generation of hydro-electricity. This will save an annual consumption of six million tons of coal. (b) Irrigation. During the hot and dry summers the Lower Rhone valley would profit by irrigation. The length of

the Rhone is 309 miles. "It is important not so much for navigation as for the fact that its valley forms the best natural highway through the mountains of Southern Europe. Consequently, it has always served as an important avenue of trade between the northern and southern portions of the continent." The Seine with its tributaries provides the best water transport

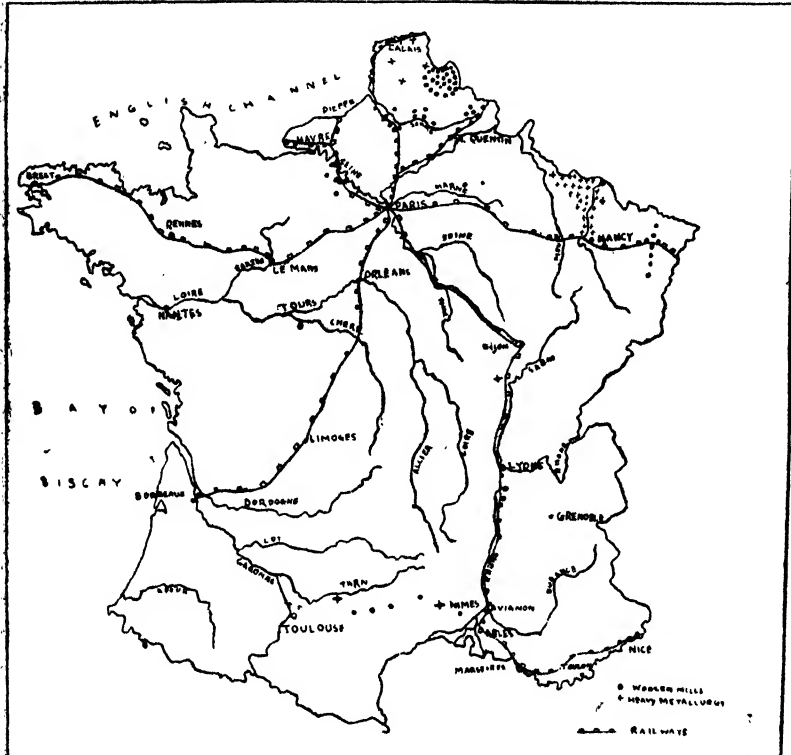


FIG. NO. 42. The industrial centres of France. The rivers are also shown.

system in France. It is 480 miles long. It rises in the highlands west of the Saone valley and takes a westward course to Paris.

The length of the river canals is a little more than 3,000 miles. The important canals are (a) the Est, connecting the Meuse with the Moselle and Saone, (b) the Nantes—Brest canal, and (c) the Loire canal. There are certain drawbacks in the

French waterways. These are (i) want of good inland ports, (ii) slowness of transit, (iii) great length of the journey, and (iv) the inadequate facilities in some of the canals for the transference of goods to or from the railways.

France is the only great manufacturing country in Europe that is almost self-sufficient in food products. Cotton, wool, oilseeds, hides and skins are its chief imports. From the French colonial possessions* sugar, rice, coffee and wild rubber are imported. Its principal exports are wine, dairy produce, bauxite, textiles, iron ore, chemicals, leather, automobiles and sugar.

SHARE OF THE COUNTRIES IN THE IMPORT TRADE OF FRANCE.

U. S. A.	..	..	9'5	Italy	..	..	1'4
England	..	..	8'0	Rest of Europe	..	..	4'2
Scandinavia	..	..	4'0	Iberian Peninsula	..	..	1'3
Holland	..	..	2'5	French N. Africa	..	..	12'8
Belgium	..	..	7'2	Other Colonies	..	..	10'6
Germany	..	..	7'7	Other Oreas countries	..	..	25'6
Switzerland	..	..	2'0				

IMPORTANT PORTS AND TRADE CENTRES

Paris is the political and commercial centre of the Republic. The railways radiate from Paris. *Havre* is situated at the mouth of the Seine and is a great sea port. It has extensive trade with North and South America. *Lyons* is situated on the Rhone and is the largest silk manufacturing city of the world. Raw silk is obtained from the Rhone-Saone

* France has a great *Empire* both in size and population. The area of the Empire is 4 million square miles, and its population over 107 millions. But in comparison to the British Empire, it is far less productive, some parts being barren and only sparsely populated.

French possessions: Syria, Indo-China (Anam, Cambodia, Cochin-China, Tongking, Laos), Africa (Algeria, Tunisia, Senegal, French Sudan, Guinea, Ivory coast, Dahomey, Mauritania, Niger, Equatorial Africa, Cameroon, Togo, Reunion, Madagascar, Mayotee and French Somaliland), America (St. Pierre, Guadeloupe, Martinique, Guiana), Oceania (New Caledonia and Tihiti).

valley, but the greater part is imported from Italy, China and Japan. The silk industry is carried on in cottages and small factories within the city. In the industrial suburbs of Lyons a great development of artificial silk manufacture has taken place. Already Lyons produces about 80 per cent. of the artificial silk manufactured in France. *Marseilles*, on the Mediterranean coast, is the most important port of France. With its local supply of olive oil and easy importation of vegetable oils from the Tropics, Marseilles has become one of the world's chief centres of the manufacture of soap, margarine and candles. *Bordeaux*, on the west coast, is the chief centre for the exportation of wine. Within recent years great development has taken place in ship-building. *Rouen*, situated on the Seine, is a great cotton-manufacturing town. *Lille*, on the North-East coal-field, is a town noted for linen manufactures. Cotton is also manufactured here. *St. Etienne*, near the great coal-field of the middle, is a great industrial town. The chief industries are those of iron and silk ribbon goods. *Dunkirk* is an important port on the northern coast of France. It has extensive trade with South America.

Italy

Italy's position is very favourable to commerce. It has sea on three sides and stands in the centre of the most important inland sea in the world.

Geographically, Italy presents three major divisions, *viz.* :

- (i) The Northern plains and the mountains.
- (ii) Peninsular Italy.
- (iii) The islands.

The Northern plains have more or less the continental type of climate, as these are shut off from sea influences by the encircling mountains. Peninsular Italy has the Mediterranean type of climate.

Although Italy is a densely populated country, the concentration of population is the greatest in the northern plains where the soil and the climatic conditions are highly favourable to the cultivation of a variety of crops. Vine, wheat, maize, rice, flax,

hemp and sugar beet are cultivated with the help of irrigation. Rice is cultivated in the valleys of the northern provinces on large-scale farming. There is no co-operative farming. About two-thirds of the total production of rice in Italy is consumed internally, while one-third is exported mainly to Argentine, Switzerland, Germany and France. A large cultivation of vine throughout the country has placed Italy in the second position among the wine-manufacturing countries. The Mediterranean climate of peninsular Italy favours the growth of fruits. Olive, lemon, orange, apricot and fig are extensively raised. Mulberry trees are also found in the south in large numbers as a result of which Italy has become the largest silk producer in Europe.

Of minerals sulphur is the most important. It is found chiefly in Sicily. Iron-ore is obtained from the island of Elba and Tuscany. Italy is the largest producer of mercury. The chief mercury mines are the Monte Amiati, in Tuscany and the Idria. Marble stones of the best quality are found in the country. Coal is generally scarce; hydro-electricity is developing. The relief of the country and the innumerable streams offer unique opportunity for the development of water-power. Other minerals found in Italy are lead and zinc.

Italian manufactures are developing with remarkable rapidity. Italy has certain advantages. These are (i) cheap labour, (ii) local market, (iii) water-power, (iv) State support, (v) skill and enterprise of the people. *The characteristic manufacturing industries are mainly those of an artistic or semi-artistic nature.* Glass-works, lace goods, earthen wares and mosaics, marble-works, straw plaiting and cutlery are good examples of Italian manufacturing skill. Large-scale manufactures of cotton, woollen and silk goods are important. Wine-making, ship-building and iron and steel production are also important. *Italy holds a very important place for the production of artificial textile fibre, being Europe's largest producer.* In 1937 Italy contributed one-sixth of the world's total output of artificial silk. The rise and growth of the artificial silk industry has been favoured by the following conditions: (a) abundant supply of electric power, (b) cheap raw

materials, (c) skill of the technicians, (d) presence of a large body of workers specialised in silk reeling and manufacturing. The leading markets for Italian rayon are those of Germany, Holland, Denmark, India, Peru, Chile and Brazil.

The railways of Italy are well developed and connect the ports with the interior and Central Europe. The rivers are many ; but those which are navigable are confined mostly to the great northern plain. These are the Po, Ticino, Adda and Adige. In the south the only navigable rivers are the Tiber and Arno.

Italy aspires to become one of the great industrial powers of the world. But there are certain difficulties which stand in the way of her progress.

Italy has a little more than 40 millions of people. As too many people *depend on the present resources of the country*, we cannot but conclude that Italy is over-populated. *Italy is poor in natural resources*. There is practically no fuel. Between 9,000,000 and 10,000,000 tons of coal must be brought from outside, besides oil. Production of iron-ore is not sufficient for the requirements of the country. Nor is she self-sufficient in agricultural products. Cotton, wheat and corn must be imported. Thus, there is widespread poverty in Italy and emigration to African Colonies is always encouraged.

Milan is situated at the foot of the Alps. It is the greatest city of the northern plain. The silk industry, for which Italy is famous throughout Europe, is localised mainly in Milan. It has also engineering industries. *Rome* is the capital of modern Italy and one of the oldest cities of the world. Its population exceeds one million. *Naples* is situated on an excellent bay on the south-western coast of peninsular Italy. It is a great ship-building centre. The industries of the port use hydro-electricity. *Turin*, a city of the northern plain, is famous for the manufacture of motor cars. *Trieste* at the eastern end of the northern plain, is an important port. It carries on considerable entrepot trade for the countries of Central Europe. *Fiume*, on the eastern side of the Iстриan peninsula, is a great port and a collecting centre. *Genoa* is a great sea port of the northern

plain. *Venice* and *Genoa* were once very important trading centres of the world. They acted as entrepôts ; rich products of the East were brought to these places for distribution to Europe. Their importance declined with the opening of the Cape Route.

The principal imports of Italy are cotton, ores, wool, mineral oil, coal, timber, sugar, coffee and tea. The exports include fruits and vegetables, cotton, silk and rayon, motor cars, wine, etc.

Poland

Poland was an independent state for many centuries. It was partitioned by Russia, Prussia and Austria towards the close of the 18th century. She became an independent Republic at the end of the last Great War, when the Polish territories hitherto ruled by Germany, Austria and Russia were liberated and united. Her geographical position practically made her a buffer state between Germany and Russia.

The country is surrounded by land-frontiers. It has access to the sea coast only by the Polish Corridor where Danzig and Gdynia stand on the Baltic coast.

Poland has no natural frontier excepting the Pripet Marshes on the east and the Carpathians on the south. The climate is continental, and the population is nearly 35 millions, of whom 69 per cent. are Polish. The remainder is composed of Ukrainians, White Russians, Jews and Germans.

It is a farming country and over 60 per cent. of the total population are engaged in agriculture, forestry and fishing. Rye and potatoes occupy more than half of the total cultivated area.

Although the country is very rich in minerals, only 15 per cent. of the total population are engaged in mining. Upper Silesia produces annually more than 40 million tons of coal of good quality. The Galician oil-field at the foot of the Carpathians yields about 500,000 tons of petroleum annually. Zinc and salt are also found. Upper Silesia also raises lead and iron-ore. The forests, which are an important source of wealth,

cover more than one-fourth of the land. The manufacturing industries have developed in the area around Lodz, Bydgoszcz, Silesian coal-field, Bialystok, Lwow and Warsaw. *Lodz* is an important cotton-manufacturing centre. Heavy metal industries are mainly concentrated in Upper Silesia. *Warsaw* is one of the oldest and most important towns of Poland. From this great city roads and railways radiate to all directions. *Gdynia* is situated on the Gulf of Danzig, a little west of the mouth of the Vistula. It lies just outside the territory of Danzig and the reason for its development is Poland's dissatisfaction with the establishment of Danzig as a free city which does not meet her requirements. To-day Gdynia is a purely Polish port.

The Baltic States

Immediately after the World War of 1914—1918 four states were created out of the former Russian Empire. These states are *Estonia*, *Latvia*, *Finland* and *Lithuania*. The economic progress in these states is extremely slow. "Roads are poor, railroads few, wages low, poverty widespread and life generally an uphill struggle."

Estonia is the most northerly of the Baltic States. It occupies a very strategic position on the Gulf of Finland. Until 1918 it was one of the Baltic provinces of Russia. In September, 1939, Russia again established military and naval bases at certain ports of Estonia. Agriculture is the main industry. Efforts are being made by the state to develop manufactures and transport. *Tallin* is the chief port and town.

Latvia. Along with agriculture, cattle-rearing and lumbering are carried on. Fishing is an important occupation. *Riga* is the largest city of the state. It is the chief sea port, noted also for manufactures.

Lithuania. Manufacturing industry is developing rapidly side by side with agriculture. The important industries are flour-milling, distilling, breweries, tanning and saw-works which are run by water-power. Forests provide timber and supply raw materials to match-making and paper industry. Rivers are

navigable. *Kaunas* is the seat of the government. *Memel* is the chief port for the outlet of goods.

Finland is bounded by the U. S. S. R. on the east, the Baltic Sea on the south, Sweden and Norway on the west and the Arctic Ocean on the north. It contains a population of about $3\frac{1}{2}$ millions, most of which are concentrated in the southern provinces.

More than half of Finland is covered by forests ; the chief trees are the fir, pine, maple, ash and oak. Her great wealth of timber is the most important factor in her industrial development. Industry is almost entirely based on forest products. There are more than 450 saw mills in the country. The forest products are paper, newsprint, dry cellulose, mechanical pulp and cardboard. Finland, is now the largest supplier of plywood in the world. Forests cover large areas, and provide raw materials for many industries. Agriculture and dairying are the two important occupations. Reindeer supplies milk, meat and clothing. Fishing is of growing importance : it is favoured by the existence of many good harbours and indented coast-lines. The Finns are fairly progressive. The country suffers from lack of communication and minerals. The chief exports are timber, pulp-wood and paper. *Helsinki*, the capital, is a port and also a manufacturing centre. *Viborg* is an important port noted for the export of timber. *Turku* is a shipping centre.

Danzig, at the mouth of the Vistula, is a very important port on the Baltic. After 1918, it was separated from Germany, and was declared a Free City by the League of Nations. It has again been re-occupied by Germany in 1939.

QUESTIONS

1. Point out and account for the chief features of the foreign trade of Britain. Name the four most important commodities of import and export trade respectively and the ports which particularly deal with the same. (Cal. Inter. 1934.)

2. What will be the position of Great Britain's balance of account after the War? Which of her export industries have the best capacity to improve this balance? What will be the principal markets for these industries? (Cal. B.Com. 1944.)

3. Discuss the position of U. S. S. R. as a self-supporting economic unit. What are the commodities that this Union may need after the War, and which of these will India be in a position to supply?

(Cal. B.Com. 1944.)

4. Describe carefully and explain the importance of the inland waterways of France.

(Cal. B. Com. 1925.)

5. Describe the distribution of linen industry of Northern Europe excluding Great Britain and Ireland. Where do the raw materials come from? To what extent is this industry dependent on the supply of raw materials from India?

6. On an outline map of Europe mark the places containing important deposits of iron ore. Indicate also the region from which coal is obtained near the iron ores.

(Cal. Inter. 1928, 1937.)

7. What are the principal seats of ship-building in the United Kingdom and what are the geographical advantages for the industry enjoyed by them? What geographical circumstances tended to deprive the Thames of the high rank it once held in this industry?

(Cal. Inter. 1931.)

8. Compare Scotland and England as regards (a) physical features, (b) production and (c) distribution of population.

(Cal. Inter. 1931.)

9. In what part of Great Britain are all branches of the woollen industry most largely produced? Point out the local conditions favourable to it there and name three of the chief towns engaged in the district.

(Cal. Inter. 1925.)

10. Account for the localisation of the cotton textile industry in Lancashire. Also describe the present condition of the British cotton industry.

(I. I. B. 1937; Cal. Inter. 1936, 1940.)

11. Consider the position of France with regard to her supplies of (a) fuel and (b) water-power.

(Cal. B. Com. 1932.)

12. State briefly the prospects of France with her colonial Empire, becoming a self-supporting economic unit.

(Cal. B. Com. 1932.)

13. Name the three principal manufacturing industries of Great Britain and give reasons for their location.

(Cal. Inter. 1936.)

14. What are Great Britain's sources of supply of food-stuffs and textile raw materials in normal times, how have these been affected by the war? How is Great Britain trying to counteract the shortage of these commodities?

(Cal. M. Com. 1941.)

15. Describe the position of the principal coal-fields of Germany particularly as regards access to navigable waterways. Also name the chief manufacturing industries of these coal-fields.

16. Give an idea of coal and iron regions of Europe, and the industries which have been established there.

(Cal. Inter. 1938.)

17. Examine in detail the geographical factors which have contributed to the commercial and political superiority of Great Britain.

(Cal. B.A. 1942.)

18. Describe and account for the distribution of population in Great Britain.

(B.A. 1942.)

19. Describe the position of Continental Europe, excepting U. S. S. R. and the Iberian peninsula, as a self-supporting economic unit. This region was known to be a very large consumer of tropical and sub-tropical foodstuffs and raw materials. How is the demand for these commodities being met now?

(Cal. B. Com. 1943.)

CHAPTER XI

NORTH AMERICA

North America is the third largest continent, and embraces nearly one-seventh of the land surface of the globe. It has an area of 9 million square miles with a population of 130 millions. The continent almost touches Asia in the north-west, and comes nearest to Europe in the north-east. The situation is ideal for commerce. Both Europe and Asia can be approached conveniently by waterways. The trade with Asia has been further helped by the construction of the Panama Canal. North America has a variety of climate which accounts for the growth of agricultural products like wheat, cotton, tobacco, sugar beet, sugar-cane, rice, hemp, maize, etc. Minerals are abundant in the western mountains and in the Eastern Highlands. In some of the mineral products, she is the leading producer. Rivers and lakes, on the whole, provide excellent waterways.

The main divisions of the continent are the following :—

- (I) The Dominion of Canada.
- (II) U. S. A., including Alaska.
- (III) Mexico.
- (IV) Central America.
- (V) West Indies.

Canada

The Dominion of Canada includes the provinces of Nova Scotia, New Brunswick, Prince Edward Island, Quebec, Ontario, Manitoba, Saskatchewan, Alberta and British Columbia together with the North-West Territories and the Territory of Yukon. The total area is about 3,700,000 square miles and the population about 12 millions. In spite of the large size of the Dominion, many parts are not suitable for settlement because of unfavourable climate, relief and soil.

Yukon and the N. W. Territories have practically very little scope for development. The population of Canada is practically concentrated in a fairly narrow zone, bordering the U. S. A. One-third of the Dominion's people live in Ontario which lies above the Great Lakes and south of Hudson Bay. The Canadian population consists of many races which, in spite of living side by side, have not yet merged into a single nationality. The principal races are French (28 p.c.), English (26 p.c.), Scotch (13 p.c.), Irish (12 p.c.), and German (5 p.c.). They nourish their own language and individuality. The idea of nation-hood is the only cause of happy relations between the races.

The natural resources of Canada are very great. In agriculture, mining, lumbering, fishing and ranching it occupies the most important position in the British Empire.

Fishing is an important industry of Canada, which is carried on in the bank, shores and rivers. Nova Scotia and New Brunswick are the two important states noted for sea-fisheries. The indented coast-line provides plenty of small harbours, the forests supply timber for the fishing boats, and the shallow banks off the coast supply the fish. Cod, halibut, mackerel and herring are the chief catches. On the western side of Canada, river fisheries are very important; in that region salmon is caught in the Fraser, Columbia and Skeena rivers. Some valuable sea fisheries include herring, cod and halibut on the western side, where Prince Rupert is the chief centre. The rivers and the great lakes of Canada also contain fish which are mostly consumed in the country.

Agriculture is the chief occupation of the people of Canada. It has been greatly facilitated by the extension of railways in the Dominion. The main wheat belt of Canada is about 200 miles wide and 700 miles long and stretches diagonally across the southern parts of Manitoba, Saskatchewan and Alberta. Sowing takes place in May and the harvest is over by September. Recently wheat cultivation in the Dominion has undergone some change. The wheat fields are fast moving to the west. Saskatchewan which supplied 50 per cent. of the Canadian wheat even in 1926, now raises less than 30 per cent. To-day, Alberta

closely rivals the former. The stabilisation of prices, grading and supply are generally controlled through "wheat pools". About three-fifths of the Canadian wheat is exported and the destinations are U. K., U. S. A., Africa and the Far East. The wheat centres are Port Arthur, Fort William, Winnipeg and Montreal. Barley and oats are grown in all the wheat-producing regions, but mostly in Alberta. In recent years mixed farming has extended specially in the eastern parts ; and butter, cheese

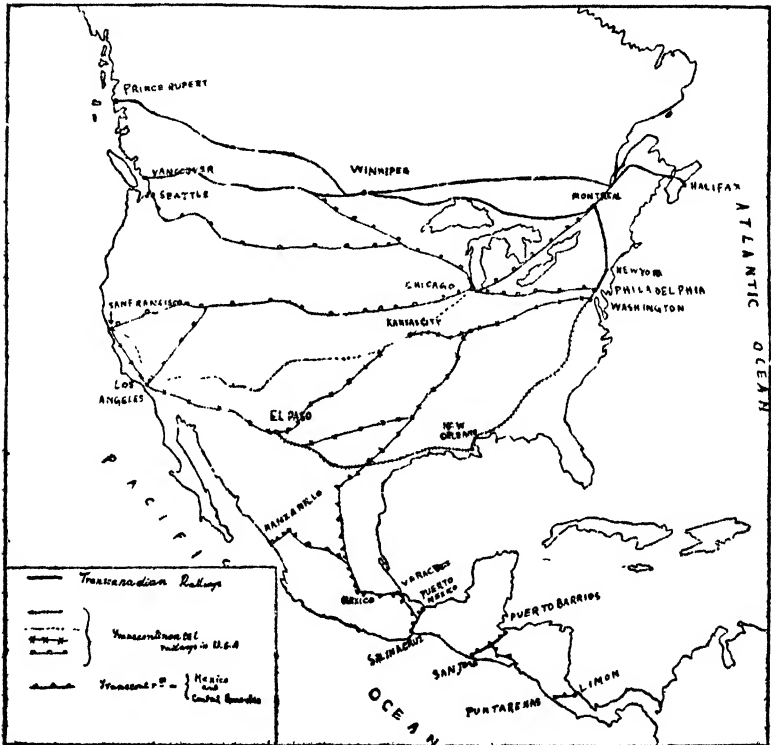


FIG. No. 43. Map showing the principal railway lines of North America.

and eggs are exported. Temperate fruits are largely cultivated in British Columbia.

The mineral wealth of Canada is very great. *Canada is the third largest producer of gold in the world and contributes 7 per cent. of the world's total.* The chief gold-areas are British

Columbia, Klondike district of the Yukon Territory, Nova Scotia, Ontario and Quebec. *The most valuable nickel mines in the world are at Sudbury in Ontario, which supply 90 per cent. of the world's total.* There are about 40 nickel mines at Sudbury in an area 40 miles long and 15 miles wide. Copper is another valuable mineral which is worked mainly in Ontario, Quebec and British Columbia. Another mineral, of which Canada supplies 95 per cent of the world's total, is asbestos, mined in Quebec. Silver, zinc, lead and cobalt are the other minerals. Iron ore regions are mostly found in Texada, Ontario, Nova Scotia, Alberta, Saskatchewan, Rocky mountains and Vancouver Islands. The coal-fields of Nova Scotia alone furnish about 40 per cent of the Canadian output. Crude oil and natural gas are obtained from Alberta at Medicine Hat and the Mackenzie basin.

Nearly one-third of the total area of Canada is forested and in all these, except in the north where movement is difficult, lumbering is an important industry. *Canada ranks among the greatest exporters of timber in the world.* More than one-half of Canada's lumber is supplied by British Columbia where the predominating species are Douglas, Fir, Hemlock, Spruce, Red Cedar and Pine. The northern forest belt is commercially important on the eastern side, especially in Quebec. "The lumbering industry is favoured in Eastern Canada by a multitude of rivers, the very severe winters and floods in spring when the thaw comes. The timber is cut in winter and is easily dragged over the snow and ice by horses to the nearest convenient stream. The trees are bound together to form a raft and when the stream thaws the rafts are floated down the stream to the saw mills." The great northern forests also give refuge to many fur-bearing animals. Furs and pelts of these animals are in great demand in America and Europe.

Canada is fortunate in having navigable waterways. St. Lawrence and the Great Lakes provide 2,000 miles of magnificent natural waterways to Canada, although they are frozen during the winter months. Large ocean vessels can pass about a thousand miles up the river St. Lawrence to Montreal, where goods are transhipped to smaller vessels. Navigation is rendered

difficult at the mouth of the St. Lawrence because of constant fogs and the rapidity of the current. In addition to this system, there are many large lakes and navigable rivers. The Dominion has more than 1,600 miles of canals which connect the rivers with the lakes.

"The advance of Canada in recent years has been the result of a great development of the railways, particularly in the west and north-west, greatly facilitating the transport of produce to the lake ports and seaboard." Canada has now two great railway-systems: (i) The Canadian Pacific Railways, and (ii) the Canadian National Railways. Each system has a trans-continental line and a network of innumerable branch lines which have played a great role in opening up the agricultural areas of the west. The railways of the Dominion are connected with those of the U. S. A.

The manufacturing industries are rapidly developing. The increase of agricultural population, extension of railways, mineral wealth, supplies of water-power and the large produce from agriculture and forests will in future make Canada a great industrial country. Already her manufactured products far exceed in value the un-manufactured farm products. Though she imports from abroad some of her requirements in railway materials, farming machines, iron and steel goods and textiles, yet signs are not wanting to show that this dependency with the further expansion of the manufacturing industries will be over in the near future. Canada's vast natural resources give rise to industries like fish-canning, flour-milling, butter and cheese-making, saw-milling and paper-making. Manufactures of leather, cotton and woollen goods and the construction of iron and steel goods are the other important industries. *"The phenomenal development of the pulp and paper industry in Canada during this century has been due primarily to a fortunate combination of readily accessible resources of wood of superior quality for the manufacture of both paper and rayon, vast and well-distributed water-powers and abundant and dependable supplies of clean, fresh water."*

Wheat, timber, cheese, cattle, fish, silver, bacon, gold, copper, fruits and coal are the chief exports. The principal imports are iron and steel goods, woollen and cotton goods, sugar and drugs. Great Britain had the largest share in the foreign trade of Canada till 1914, but at present the U. S. A. occupies the privileged position.

Halifax is the capital and chief sea port of Nova Scotia. It possesses a fine harbour and is seldom closed by ice during winter. The harbour is six miles long and one mile broad. It provides accommodation for large vessels. Although it is chiefly a trading centre exporting fish and minerals, a considerable progress in manufactures has taken place recently, especially in sugar-refining and cotton-spinning. *Charlottetown* is the capital and chief town of Prince Edward Island. Fox-farming is an important industry. *St. John* is the largest town and chief sea port of New Brunswick. The harbour is open all the year round, as it is never ice-bound. Its commerce is considerable, and the port exports live-stock, dairy produce and grain. *Montreal*, in Quebec, is the largest town of the Dominion. It is great in commerce, manufactures and industries. *Toronto*, in Ontario, is a rival of Montreal. It is the most important lake port. *Ottawa*, in Ontario, is the capital of Canada. It is a river port and has considerable timber trade. It is the centre of the greatest water-power of the Dominion. *Vancouver*, in British Columbia, is an important port on the Pacific coast of Canada. It possesses an excellent harbour. Wheat, timber and minerals are the chief exports. *Winnipeg*, in Manitoba, is the seat of the Provincial Government. It is the greatest wheat centre of the world.

Newfoundland

The island of Newfoundland is a separate unit of the British Empire and is the oldest colony of England. Geographically it may be treated as a continuation of the Eastern Highland regions of Canada. The island itself is nowhere very high. The climate is not attractive, it is rather damp. The damp climate and poor soil of the island retard agriculture.

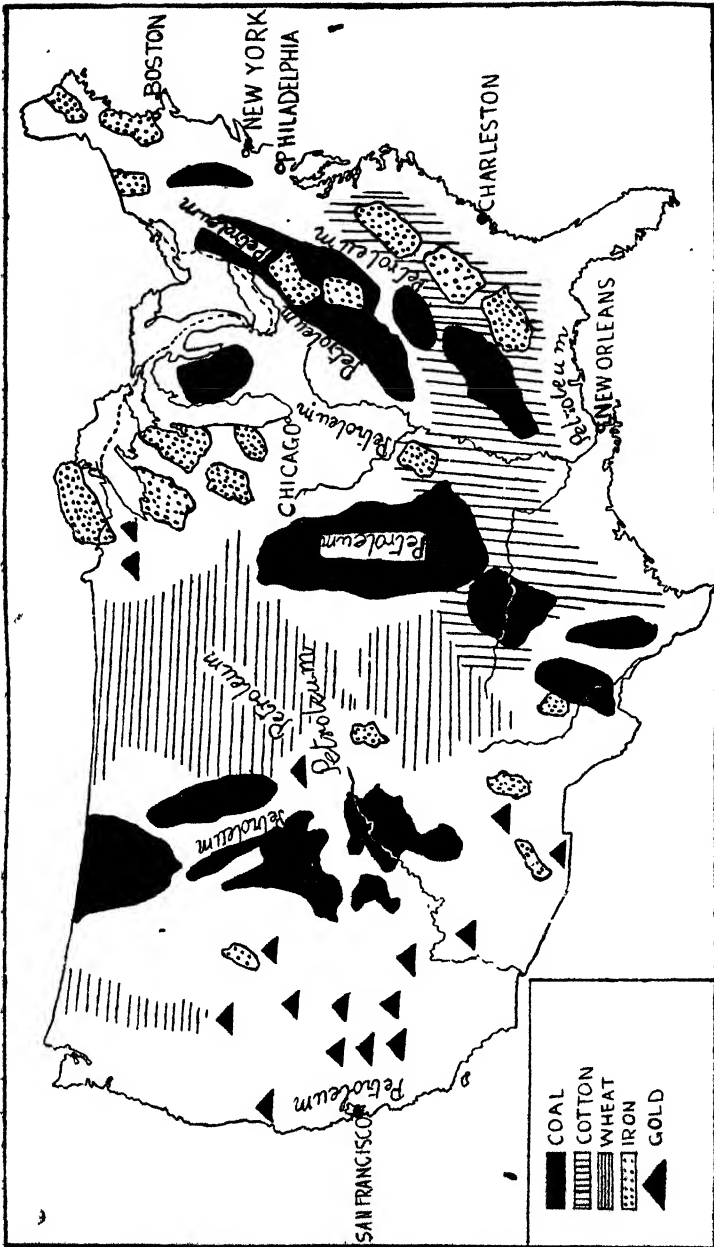


FIG. No. 44. Map showing the chief economic products of the U. S. A.

The population is very scanty, being just over 250,000. Much of the island is forested. Fishing is the most important industry, on which the prosperity of the island depends. Nearly one-fifth of the total supply of fish is exported to each of Brazil, Portugal, Italy and Spain. Considerable quantities go to Canada, Greece and the West Indies. Paper manufacture and iron-mining are the two other economic activities. Paper accounts for over 25 per cent of the exports.

St. John's is the capital and the centre of fishing industry.

The United States of America

The United States of America is the richest country in the world. No other country rivals the U. S. A. in wealth. *Certain conditions combined to help the country to attain commercial greatness.* These conditions are: (a) the racial and social inheritance of the people, (b) the excellent climate, (c) the vast natural resources, and (d) a moderately dense population. The original colonists came from Europe, and as such, they brought with them high culture, civilisation and commercial ideas. The U. S. A. has now 135 million people or 7 per cent. of the world population. The climate of the country, generally speaking, is favourable to the activity of mind and body. The natural resources are abundant in minerals, forests, fish and agriculture. She has a surplus of most essential foodstuffs. She is rich in coal, iron, petroleum, copper, and cotton, but she lacks rubber and tin. The great natural resources, on the one hand, and the moderately dense population on the other, have helped the people to maintain a high standard of living. The country is vast in size and there is practically no struggle for existence. The United States covers more than 5 per cent. of the land surface of the globe. It is slightly less in area than Europe. The situation of the country is also highly favourable to commerce. The country has oceans on the west and the east; in the south it is open to the Gulf of Mexico. The U. S. A. includes the greatest portion of the best part of North America. The eastern half of the country consists mainly of fertile plains with sufficient rainfall for agriculture. Further, the develop-

ment of industries in the U. S. A. was aided by its long distance from Europe. The internal rivalries and wars of Europe could not arrest the development of this young country. The U. S. A. has for a long time tried to remain aloof from European affairs and adopted a policy of "America for Americans"; but the present war has forced her to give up the policy of isolation and to play a leading rôle in the destruction of Fascism.

✓ The U. S. A. Government always shows a sympathetic attitude towards industries. Mention may be made in this connection of "New Deal" of President Roosevelt which aims at conserving and developing natural resources, encouraging international trade, providing employment for the workers and abolishing child labour and sweated labour. *Now Roosevelt is not but his aim is in the U. S. A.*

The United States is a federation of forty-eight States, each of which is sovereign and equal. In practice, however, the powers of individual States are declining and those of the Federal Government increasing.

The United States is the leading agricultural producer in the world. But in recent years the importance of agriculture has declined considerably. A century ago, 80 per cent. of the people depended on agriculture; in 1900, it was 37 per cent., and in 1930, it was only 20 per cent.

Wheat is the principal crop of the country. The most productive belt is where there is a light, early summer rainfall and a hot semi-autumn. These conditions are found in Eastern Texas, Oklahoma, Kansas, Dakota and Illinois. The California valley with its Mediterranean climate is also suitable for growing wheat. The next important produce is maize. Although the area sown is far larger than the area under wheat, it is not important for export, as most of it is either used as human food in the south or as fodder for stock of cattle. The maize crop requires rather hot and wet summer, and so the maize belt lies to the south and east of wheat belt. Middle Mississippi valley is very important for this crop; it is produced in the States of Iowa, Illinois, Indiana, Missouri and Eastern Kansas. The markets are St. Louis, Kansas City and Chicago. The next important crop is oats used mostly for the manufacture of break-

fast food. Cotton is grown in the south of the maize belt. Eastern Texas, with its rich black prairie soil, is important for the growth of cotton. It is produced also in Arkansas, Alabama, Mississippi, Georgia and Carolina. Georgia and St. Carolina grow "Sea-Island" cotton. *The U. S. A. produces 60 per cent. of the world's supply and Western Europe depends for 80 per cent. of cotton on America.* As a by-product cotton-seed is valuable, which is used either for the manufacture of oil or for cattle food. Next comes tobacco. The leading tobacco regions are Kentucky, Virginia, North and South Carolinas and Tennessee. The leading port for shipment is Richmond in Virginia. The U. S. A. produces 40 per cent. of the world's tobacco. The other minor crops are rice and cane-sugar.

The foremost industry of the U. S. A. is iron and steel production and the States which are highly developed in this direction are Western Pennsylvania and Eastern Ohio. This is due to the fact that there are vast coal-fields in this area ; moreover, there is a good market for the manufactured goods, and iron ore required is brought from the *Lake Superior District* by cheap means of transport. The ore from this place goes to the lake ports, from where it is carried by railways to the manufacturing centres, such as *Pittsburg* and *Chicago*. The second area of importance is Alabama which, in spite of having local supplies of coal, iron ore and lime stone, suffers from a handicap of being situated at a considerable distance from markets and ports. The region produces the cheapest steel in the world and the chief centre is Birmingham. *Specialisation is the feature of the iron and steel production in the U. S. A.* In the agricultural districts, agricultural machinery is produced and *Chicago* is the chief centre for the Middle West. Another centre of equal importance for the manufacture of agricultural machinery is *Milwaukee*. In the textile districts of New England there is a great demand for machinery and *Worcester* is the chief centre of textile machinery. *New York*, where there is a great demand for electrical machinery on account of water-power, produces electrical engines and machinery. The great railway centres of the U. S. A., such as *Philadelphia*, *Chicago*, *Pittsburg*, *St. Louis*, produce locomotives

and have large railway workshops. Ship-building is carried on in the ports on the Atlantic, the South Pacific and the Lake districts. *Detroit* is the greatest centre in the world for automobile industry. In the fruit-growing districts, tin plates are made for the canning industry.

The second important industry in the U. S. A. is the textile industry, in which the cotton manufactures take the lead. The first home of cotton industry lay in the New England States. These States have moist climate, plentiful supply of water-power, cheap cotton from the south, cheap coal from Pennsylvania and easy access to interior markets. There is also a large centre at Philadelphia. In the Southern States of Alabama, Georgia and Carolinas, the industry is of recent growth and produces coarse cloth for China and Canada markets.

Woolen industry has made rapid advance in the North-East with Philadelphia as the centre. Wool is imported from Australia and Argentina to Boston, the greatest wool market, from where it is distributed to the New England States. America is noted for the manufacture of silk which is chiefly carried on in New York, New Jersey and Pennsylvania.

Pulp and paper manufactures are important in the New England States on account of timber and water-power. The greatest centre of flour mills is *Minneapolis*. The other industries carried on are sugar-refining, meat-canning (in the States of Maine and New York), fruit-canning (in California) and fish-canning (at Baltimore).

In the output of minerals the U. S. A. exceeds any other country in the world. The U. S. A. produces more coal than the whole of Western Europe. There are five important **coal-producing areas** in the U. S. A. :—

(a) The most important area is the Appalachians where coal-fields extend from Pennsylvania to Alabama. This area raises nearly three-quarters of the U. S. A. output.

(b) The second important area is confined to the *eastern interior* and includes Indiana, Kentucky and Illinois.

(c) The *western interior* coal-field extends from Iowa through Kansas and Missouri to Oklahoma.

(d) The Gulf coal-fields extend from Southern Alabama to Texas. This coal is lignite.

(e) The western coal-fields are scattered throughout the mountain States.

But these mines are little developed on account of distance from the sea and industrial areas, the mountainous character of the relief and the sparse population. There are no big coal-fields on the Pacific coast. The next mineral is petroleum. The U. S. A. raises more than 60 per cent. of the world's total petroleum output. There are four **oil-bearing areas** :—

(a) The most productive region extends from Kansas through Oklahoma and north-eastern Texas into Louisiana. Texas and Oklahoma account for the major portion of the output.

(b) The Appalachian belt includes an area from New York State to Kentucky. Its output is decreasing.

(c) Ohio, Indiana and Illinois, at one time large producers, do not at present yield much oil.

(d) The western belt includes California, Colorado, Montana and Wyoming. California produces as much as Texas.

The third mineral of importance is copper, which is found in the Rocky mountains: The greatest output is in Arizona, followed by Montana; New Mexico is also important. Zinc is produced mostly in Missouri; other states producing it are Kansas, Oklahoma, Montana, New Mexico and Wisconsin.

Gold is found in California, Colorado, Arizona, New Mexico, Utah and Nevada. Silver comes from Arizona, Nevada, Colorado and Utah. About one-fourth of the world's silver and one-ninth of the gold come from the U. S. A. Gold and silver are usually found in close association. Black Hills district in South Dakota is the largest producer of gold in the U. S. A. The mines of the district were discovered in 1876. California, also known as "Golden State", has large deposits of gold on the western slope of the Sierra Nevada mountains. Iron is obtained from Minnesota, Wisconsin and Michigan, and is worked chiefly in *Chicago, Buffalo and Pittsburg*.

The U. S. A. is the leading supplier of aluminium in the world. The ores are usually found in the south of the Appalachian mountains. As a supplier of non-ferrous metals like copper, lead, zinc, silver, gold and aluminium, the U. S. A. occupies a dominant position. She supplies about half of the world's copper, half of the lead, half of the zinc, one-fourth of the silver, and nearly one-fourth of the aluminium. In recent years she has also been the world's largest producer of each of these metals with the exception of gold, in spite of the fact that she suffers from certain very definite disadvantages. Her labour is dear, her producing areas lie far inland—away from her industrial areas, and her transport costs are high.

Hydro-electricity plays a very important part in the industries of some areas in the U. S. A. Towns on the "Fall line" use water-power to drive their machinery.* The aluminium manufacture in Massena (New England State) and flour-milling in Minneapolis are dependent on water-power.

The growth and development of the transport system of the U. S. A. are remarkable. Of all the countries in the world, the U. S. A. has the largest mileage with its surface covered with a network of railways linking up the interior with the coasts and uniting the distant east and west, and north and south. The U. S. A. possesses over 260,000 miles of railroads. The mileage comprises somewhat more than 45 per cent. of the world's total. There are three regional groups of railways. The Northern Group serves the north-eastern states and handles about 45 per cent of the traffic. The Southern Group, with 20 per cent of mileage, deals with some 18 per cent of the traffic; the Western Group, with almost 55 per cent of the mileage, handles 35 per cent of the traffic. The trans-continental routes from the west to the east are of great importance. They carry the products of the Pacific States and of the central plain to the industrial East. From New York one line (the Northern Pacific Railway) goes to Chicago along the Mohawk Gap through

* Rivers flowing through the South Appalachian region descend by falls over the Piedmont plateau. The *fall line* so formed plays a big part.

Buffalo. From Chicago the line proceeds to Seattle on the Pacific coast *via* Milwaukee and St. Paul. Another line (the Union Pacific Railway) from Chicago, after crossing the Rockies proceeds towards San Francisco and thence to Los Angeles. New Orleans is an important centre of trans-continental route. A railway line (The Southern Pacific Railway) starts from New Orleans and continues to Los Angeles.

Of the two big natural means of inland transport, *viz.*, the Great Lakes and the Mississippi-Missouri system, the first—the

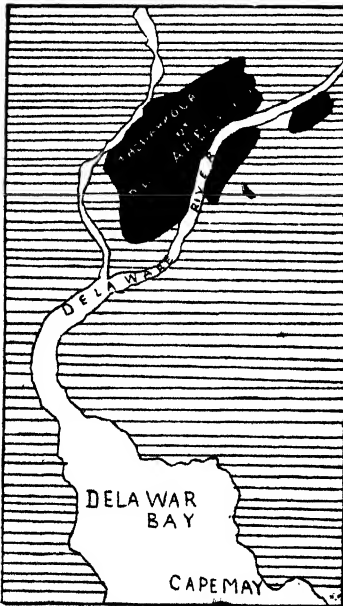


Fig. No. 45. Map showing the location of Philadelphia

Great Lakes—though of great importance for the eastward and westward movement of grain and iron ore and of coal and manufactured goods respectively, suffer from a handicap due to their situation at different levels necessitating the construction of canals and locks which limit the size of vessels for through journey. Of the canals, thus constructed, the Soo Canals carry more traffic than the Panama and the Suez Canals combined. Rapids between the Lake Superior and the Lake Hweon made it necessary to construct the Sanlt Ste Marie or Soo Canals. The enormous value

of the Great Lakes system is, however, mainly due to its location in the very centre of the temperate zone and to its natural and artificial outlets facing eastwards towards Europe across the busy North Atlantic.

The Mississippi-Missouri system, providing navigation as far inland as the great Falls in the State of Montana, has not been so useful as it seemed at first. Navigation is greatly hindered by ever-shifting mud bank, necessitating the construc-

tion of the famous "stern wheel" boats. The river not only meanders in its lower course over its flood plain but it flows also in a north-south direction into the Gulf of Mexico. Thus the Mississippi is still mainly used for very slow local traffic notwithstanding the difficulties overcome by the opening of the Panama Canal.

✓ The U. S. A. handles a large volume of air-traffic, larger than the total of all other countries. The efficient system of beacons, direction-beams and well-equipped air-ports have helped the working of navigation. The lines are linked with those of Canada and South America, and there are also trans-Atlantic and trans-Pacific services.

TRADE CENTRES AND PORTS

New York is the second city and the third port in the world. Its importance is due to a combination of factors, such as its natural harbour, its nearness to Europe, its easy access from inland cities, and its situation in the midst of the area producing either raw materials or manufactures. *Chicago* has got a natural advantage of communication. It is situated in the area which produces a large quantity of grain and live-stock ; it is at the head of the lake navigation. Chicago is the greatest railway centre as well. *Philadelphia* has a fine natural harbour. Its nearness to the regions of coal and raw materials makes it an important industrial centre for woollen and industrial goods. *St. Louis* is situated in the prairies between the lakes and the Gulf of Mexico. It is surrounded by grain, cattle, cotton and tobacco regions. It is a great railway centre and a manufacturing town. *Pittsburg* is the largest iron centre in the world on account of its nearness to coal, iron ore and limestone. Moreover, it is situated at the junction of navigable rivers. It has also got some special advantages for glass-making industry on account of the presence of natural gas. *Boston* is an important Atlantic port. It is also the receiving and distributing centre of the north-eastern industrial States. *Galveston* is situated on the mouth of the Galveston Bay and is the natural outlet for the bulk of the trade of the south-western States. It

is the greatest cotton-shipping port in the world, and its total trade places it second to New York only in the U. S. A. *San Francisco* is the only natural harbour on the Pacific coast and is the sole outlet for the products of the Californian valley. The opening of the Panama Canal has made it important. *Kansas* is a livestock market and is situated between maize and cotton area. It has important industries, such as meat and tanning. *New Orleans* is the greatest cotton and wheat exporting centre in the world.

✓ The class of goods imported by the U. S. A. is mostly raw-materials or luxury articles. Japan exports silk and tea ; India, jute, hides and tea ; Malaya Peninsula, rubber and tin ; Philippine, sugar and hemp ; China, beans and silk ; Australia wool ; Canada, paper and nickel. Raw cotton, petroleum and tobacco figure largely in the export trade of the U. S. A. The other exports are iron and steel goods, machinery, motor cars and air craft.

✓ The trade between the U. S. A. and Europe is mostly one-sided. Europe imports cotton, grains, oil, meat-products and tobacco. The only import from Europe is luxury goods.

In spite of there being great progress in various directions, the U. S. A. Government has not yet been able to solve the colour problem. The Negroes, who form about one-tenth of the population in the United States, are treated as though they are members of another and a lower, almost a sub-human, species. Adequate education, just wages and the right to vote are denied to them. The present war may lead to some improvement in the position of the Negroes.

Mexico

The geographical situation of Mexico is highly favourable to commerce, as it faces both the Atlantic and the Pacific Oceans, and is a neighbour to the U. S. A.—the greatest industrial country in the world. The country would have been great in commerce and manufactures, were it not for political and social conditions. The Government is weak. Revolutions and banditry are frequent.

About one half of the land lies in the temperate zone and the other in the torrid zone. The climate, therefore, varies from tropical to temperate from south to north. The variety of climate gives rise to a variety of vegetation. Mexico is capable of producing almost every variety of vegetable product. But only about 10 per cent of the land is well suited to agriculture. Much of the land is poorly managed and badly cultivated. If modern methods are adopted, Mexico may produce many times its present volume of crops. Maize and coffee are the chief crops. Sisal hemp is also cultivated extensively in the grasslands of the north.

Rainfall occurs in summer, but the quantity is not sufficient for agriculture. Therefore, it has been necessary to develop irrigation works.

Mexico is a store-house of minerals—petroleum, silver, lead, zinc, gold and others. The Western Range is volcanic and this partly accounts for its wealth of minerals. Mexico is the leading producer of silver in the world, a producer of petroleum and an important producer of copper and lead. In the past it was one of the great sources of gold. Mineral products constitute about 80 per cent of the exports of the country. The manufacturing industries are carried on to supply the home market. Cotton, sugar, cigar and cigarette are manufactured in great quantities for export. Because of the mountainous nature of the relief, transportation is expensive. Good roads are almost unknown except in a few larger cities. The Gulf Coast of Mexico has no first class harbour; the harbours on the Pacific sides are, however, better, but as yet their commerce is small.

Mexico is the capital and is an industrial centre for the production of leather and leather goods. *Tampico* and *Vera Cruz* are the two ports.

QUESTIONS

1. Discuss the position of Canada as:
 - (a) An agricultural country.
 - (b) A producer of minerals.

2. Explain why the wheat belt is moving towards the west in Canada.

3. Describe the principal agricultural regions of the U. S. A.

4. "Though young in the industrial field, U. S. A. has made rapid progress in the matter of industrial development." Give your reasons as to how it has been possible for it to make such progress.

(Cal. Inter. 1936)

5. Examine the present position of the iron industry in U. S. A.

(Cal. Inter. 1936)

6. Discuss the geographical factors that have influenced the distribution of wheat, maize, cotton and tobacco in North America. Discuss also the trade in cotton or wheat.

(B. Com. 1929)

7. Examine the influence of geographical factors on the localisation of the iron and steel industry in U. S. A.

(Cal. B. Com. 1931)

8. Describe the mineral resources of Mexico and discuss the chances of their full development. What do you know of the attempt in the country to check foreign exploitation of these resources?

(B. Com. 1928)

9. Carefully describe the position of the chief coal and iron districts of North America, paying special attention to the means of communication for bulky trade.

(Cal. B. Com. 1924)

10. Locate the chief industrial and mineral regions of North America and show how they are linked up.

(Cal. Inter. 1938)

11. State and comment on the situation of the chief coal-fields and the chief manufacturing areas of the United States.

(Cal. Inter. 1931)

12. Examine and estimate the coal and petroleum resources of U. S. A.

(Cal. Inter. 1931)

13. What are the chief mineral products of the United States of America and where they are obtained?

(Cal. Inter. 1940)

14. Name the commodities of which the U. S. A. is the largest supplier in the world's markets. What other parts of the world are also important producers of these commodities?

(Cal. B. Com. 1940)

15. Discuss the measures that are being taken in the U. S. A. to regulate the supply of cotton.

(Cal. B. Com. 1938)

16. Describe the recent development in transport facilities that have given impetus to agricultural production in Canada.

(B. Com. 1930)

17. How is the normal surplus production of wheat and paper pulp in Canada being consumed to-day?

(Cal. B. Com. 1944)

CHAPTER XII

SOUTH AMERICA

South America is somewhat smaller than North America and occupies the fourth place as regards size among the continents. In proportion to its area, South America has a shorter coast line than any other continent except Africa. The coast is singularly devoid of indentation. Only in the south-west, it is somewhat broken. The west coast is steep and high with only one opening, the Gulf of Guayaquil. The east coast is everywhere low and shelving.

South America may be divided into six natural regions—three highlands and three lowlands. The former are (a) the Andes, (b) the highlands of Brazil, and (c) the highlands of Guiana. The lowlands are the basins of (a) the Orinoco, (b) the Amazon, and (c) the Parana Paraguay.

The important rivers are the Amazon, the Orinoco, the Plata and the Colorado. The Amazon is 4,000 miles long, and is the greatest river in the world. Its slope is extremely gentle. It is navigable by large ships up to 1,000 miles from the mouth, and by small boats up to the foot of the Andes. The Amazon with its tributaries provides 50,000 miles of navigation. "The value of the navigation of the Amazon is diminished by the paucity of population and products in the region through which it flows and by the similarity of its products in nearly the whole of its navigable course." The Orinoco in the north is navigable for more than thousand miles. The Parana system is very important in the continent from the point of view of commerce. It flows by the heart of Argentine, Paraguay and Southern Brazil.

Nearly four-fifth of South America falls within tropics and, therefore, the greater part of the continent has a tropical climate. The temperate belt lies to the south beyond 30° latitude. Continental climate is absent. The population is still very scanty, being a little over 65 millions.

THE HINDRANCES THAT HAVE CHECKED THE DEVELOPMENT OF SOUTH AMERICA

I. Race is a dominant issue in South America. The majority of the white people at first came as soldiers and adventurers. They came not to settle in South America but to

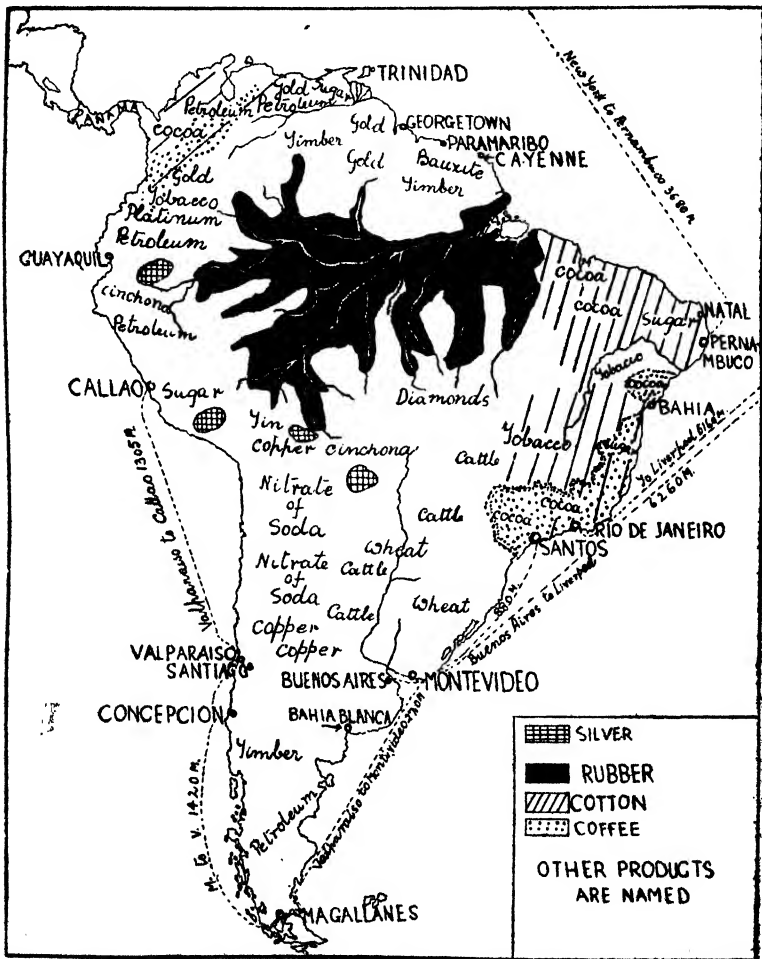


FIG. NO. 46. Map showing the economic products of South America.

plunder the continent. In every State they interbred with the Indians. To-day, $\frac{3}{4}$ of the population consists of Indians,

Negroes and Mestizos (mixture of white and native). The white are prominent only in Chile, Argentine and Uruguay.

II. Bad climate and the prevalence of deadly fever make the people inert, passive and idle. The death rate is also very high. Fortunately it is possible now to conquer tropical diseases with medicine, and South America is receiving the benefits of the results of scientific progress.

III. The *national differences* are also responsible for the political and economic backwardness of the continent. The terms "savages", "Niggers" and "barbarous" are often used by the people of one Republic against those of the other. To this must be added the weakness of Government institutions. Instability of Government is one of the worst handicaps to the development of a country in the modern world, where progress and prosperity depend essentially upon credit. In all the Republics of South America political disturbances are frequent, property is insecure, internal accumulation of capital is hindered, and foreign investors generally feel shy to invest money in industries.

IV. The difficulties of communications: Roads are generally poor and the railways have not developed to a great extent except in a few Republics.

V. The shortage of coal: Rich in almost every other mineral, South America is poorly provided with coal deposits. The poverty of South America in coal compelled the continent to devote its attention to the production of raw materials and agricultural and pastoral produce. But the discovery of petroleum in Peru, Venezuela, Argentine, Equador and Columbia has brought a new industrial life in the continent. Hydro-electric power can also be developed to a great extent as the continent is full of rivers and waterfalls. Paucity of labour and high wages are the present obstacles.

VI. South America is a producer of raw materials. Most States are one-crop or one-product countries, and they live on export. South American trade depends on Europe which takes more than 60 per cent of the continent's export. Therefore,

whenever the European demand for South American goods falls as a result of war or blockade, the consequence is disastrous.

There are 12 political divisions in South America.

- | | |
|----------------------|----------------|
| 1. Panama. | 6. Brazil. |
| 2. Columbia. | 7. Peru. |
| 3. Equador. | 8. Bolivia. |
| 4. Venezuela. | 9. Chile. |
| 5. Colonial Guiana : | 10. Argentina. |
| (a) French. | 11. Paraguay. |
| (b) British. | 12. Uruguay. |
| (c) Dutch. | |

All these countries, with the exception of Colonial Guiana, are politically "*democratic*".

Columbia occupies the fifth place among the States of South America in respect of size. It occupies a favourable geographical position facing the Atlantic and the Pacific oceans. Sugar, cocoa, coffee, rice, rubber and banana are grown. The mineral wealth of the State is very great. Gold and silver are found in considerable quantities. Iron, coal and platinum also are obtained. In various parts of Columbia petroleum is found and the rapid increase in its output has made Columbia the second oil-producing country in South America.

The means of communication are exceedingly bad. Roads are absent and the railway mileage meagre. Climatic conditions, coupled with the obstacles to communication between different parts of the land, have retarded the economic development of the country. The capital is *Bogota* situated at a height of 8,000 ft. above sea level and enjoys a healthy climate.

Venezuela. The Republic of Venezuela, though an agricultural country, is fairly rich. Cocoa, coffee, sugar, tobacco, maize, cotton, indigo, rice and barley are the chief products. Among mineral products gold, copper, petroleum, coal and iron are important. In recent years Venezuela has become the second oil-producing country in the world. The important towns are *Caracas* (capital) and *Valencia*, and the ports are *La Guaira* and *Porto Cabello*.

Equador is one of the smallest and poorest South American States. The population is about 2,000,000. The main crop is cocoa, on which the greater part of the country's prosperity depends. Next in importance are ivory, nuts and coffee. The State has considerable mineral wealth, but so far mining operations have not developed much. Oil-deposits are important. Equador is the chief producer of "Panama" hats. The capital *Quito* is situated at an elevation of 9,000 ft. *Guayaquil* is the chief sea port.

Bolivia. The economic development of Bolivia is slow and small. The population is only 3,000,000. Lack of labour is proving a great handicap to the development of industry. The means of communication are bad, and the State has no port of its own. Agriculture, stock-raising and mining are the chief industries. Tin, copper, silver and gold are the principal mineral products. Bolivia contributes more than 20 per cent. of the world's total production of tin. Sheep, alpacas and llamas are reared extensively. The chief agricultural products are coffee, cocoa, rice, sugar and tobacco. About 90 p.c. of the people are Indians. The political power is concentrated in the hands of the tin merchants. *La Paz* is a commercial centre and the seat of the government. The constitutional capital is *Sucre*.

Chile. The Republic of Chile is one of the most progressive States of South America. The population is about 4,300,000. The Republic ranks seventh in size among the States of the continent.

Desert conditions prevail in the northern side of Chile. Nevertheless it is a centre of great industrial activity. Great deposits of nitrate of soda are found, the export of which provides one of the chief sources of Chilean revenue. The Republic alone supplies practically all the world's requirements of natural nitrate of soda which is used as a fertiliser in chemicals and explosives. Recently the introduction of synthetic nitrates has greatly affected the Chilean nitrate industry. Copper, gold and silver are also obtained from Northern Chile. Copper is the most valuable export and about 15 per cent. of the world's production is obtained from the Republic.

Central Chile is very important from the agricultural point of view. Here the Mediterranean type of climate prevails. It is the most highly developed and most densely populated region. All the agricultural products are sent to Northern Chile to meet the demand of the large mining population there. Both water-power and coal are abundant. The manufacture of wine is also an important national industry and the Chilean wines are much in demand both at home and in the neighbouring states ; some are also exported to Central Europe. Southern Chile provides suitable grazing ground for cattle and sheep. The forest resources have been little exploited. The chief town is *Santiago*. The two important ports are *Valparaiso* and *Iquique*.

Brazil occupies nearly half the area of the continent and so it is the rival of the U. S. A. in respect of size. The population is nearly 30,000,000. Though it has a long coastline of more than 4,000 miles, the country is singularly devoid of good harbours. The north coast is low and swampy and in the south it is bordered by a sandstone reef. The country has a large number of rivers, the longest of which is the Amazon, nearly 4,000 miles. The tropical type of climate prevails in three-quarters of the Republic ; the remaining portion has temperate climate modified by altitude. The country is so vast in area and its economic possibilities are so great that it is sometimes described as a *sleeping giant*. The lack of communication, inadequacy of capital, paucity of labour and unhealthy climatic conditions in the north are the present obstacles to progress.

Agriculture is the most important industry. The products are coffee, cocoa, rubber, sugar, tobacco and cotton. Brazil supplies more than 80 per cent. of the world's coffee. Much of the prosperity of the country depends solely on this particular commodity. Coffee-growing is mainly confined to the Sao Paulo region due to various special causes. The soil of the place is rich in iron, a mineral that the coffee plant requires to be well supplied with. The climate is also well suited to the Europeans and is sufficiently invigorating to encourage bodily activities. With regard to maize, Brazil is the fourth among the producing

countries of the world, being excelled only by the U. S. A., Rumania and Argentine. In recent years the cultivation of cotton has also advanced rapidly. The fibre is short but it is of good quality.

Next to agriculture, the pastoral industry is important. Pigs, sheep, horses and cattle are extensively reared. The country is one of the most important pig-rearing countries of the world.

Though mineral resources are great, they are not worked on a commercial scale. The important minerals are gold, manganese, diamond, copper, zinc, mercury and precious stones. Brazil is the third largest manganese producer. The local consumption is small, and practically the entire production is exported outside. The chief mines are in the state of Minas Geraes. The country possesses a great potentiality of hydro-electric power.

The manufacturing industries are rapidly developing. Cotton and woollen manufactures, sugar refineries, breweries and fruit-canning are the main industries. The government helps these industries by levying protective duties on the imported goods. The chief exports are coffee, preserved meat, rubber, cotton, hides, skins, leather, tobacco, cocoa, meat, sugar and timber. The imports are mainly manufactured goods. Brazil is nearer to Africa than any other American region. The distance between Dakar (West Africa) and Brazil is only 1,600 miles. Euro-American air service follows this route. *Rio-de-Janeiro*, the capital of the Republic, is the chief sea port and possesses an excellent harbour. *Santos*, in the south, is noted for the export of coffee. *Bahia* and *Pernambuco* export sugar, cotton and tobacco.

Argentina is second to Brazil in South America in respect of size and population. The population is nearly 10,000,000, mainly composed of immigrants from Southern Europe. It is the most progressive State in South America. The climate is generally cool and the land is flat. The cool climate favours European immigration and the flat land permits the easy construction of a net-work of railways in the east of the country.

The rivers are Parana, Paraguay and Uruguay, which are all navigable.

The mineral wealth of Argentina is not great. The country is mainly an agricultural one and may be described as the granary of South America. *Wheat is the most important product.* Agricultural development is the greatest in the east, where nearly all the cereals are grown. Argentina wheat and oil-seeds have taken a larger market of Indian produce in the U. K. The pastoral industry is of considerable importance. Sheep, cattle, pigs and horses are reared in the south-west. The political power is largely in the hands of the land-owning cattle breeders. The railways have been extended to promote the movement of commodities. *Buenos Aires* is the chief railway centre. One great defect of the railway system is the lack of uniformity of gauge. *Buenos Aires* is connected with *Valparaiso* by railway—a distance of nearly 900 miles.

The chief exports are cereals, meat, linseed, wool and tobacco. The imports are iron and steel goods, cotton and woollen goods and railway plants.

Buenos Aires, the capital of the Republic, is situated on the river Plata and it is also the chief sea port. *Buenos Aires* handles about four-fifths of the imports of the Argentine Republic and three-fifths of its exports. Commercially, socially and economically, the city dominates the whole republic. One serious defect of the port lies in the fact that the river is shallow and requires constant dredging. *Rosario* has an excellent harbour. It is the most important port for the export of wheat, maize and linseed. *Bahia Blanca* is another grain port. It has a good harbour and the port may develop further in future.

Uruguay, the smallest south American State, lies between the Argentine Republic and Brazil. It is one of the most advanced countries of the world. It is a nation of whites. It is well situated for commerce. The climate is of warm temperate type. The main industry of the country is cattle and sheep breeding. Agriculture is practised on a limited scale, and the principal products are maize, wheat and linseed.

Montevideo on the Plata, with railways running to most parts of the interior, does the whole external trade of the country. The city has many slaughter-houses.

Peru, north of Chile, is a backward state because of frequent civil wars. Its economic resources are varied. In the high mountain plateaus, gold, silver and copper are found. Petroleum is also being worked there. The agricultural products are sugar, cotton, tobacco, maize and India-rubber. The chief problem of Peru is its "absentee capitalists". Its oil-fields and other minerals are controlled by the U. S. A. and Canada; its cotton plantations are under the Japanese and Germans; the railways are in the hands of the British; the banks are owned by the Italians; and sugar factories are controlled by the Germans. *Lima* is the capital and trade centre.

QUESTIONS

1. Describe the factors that are checking the development of tropical South America.
2. What are the economic products of South America? Show how they compete with the Indian products in the continent of Europe.
3. Give a short description of Brazil and mention its chief exports.
4. Describe the economic resources of Argentine. In which two commodities does the Republic compete with the Indian produce in the U. K.
5. Discuss the nature of trade between India on the one side and the South American States of Brazil, Argentina and Chile on the other. In what way do you expect this trade to be modified in the near future?
(Cal. B. Com. 1935)
6. Describe carefully with the aid of a sketch map the distribution of sheep in South America. Under what conditions does this animal thrive best?
7. Name five principal seaports of South America, and point out the parts of the country for which they are trade centres. Mention their chief exports.
8. In what parts of the two Americas can there be surplus production of rice?
(Cal. B. Com. 1944)

CHAPTER XIII

AFRICA

Economically, politically and socially Africa is the most backward of the continents. The causes are: (1) The lack of

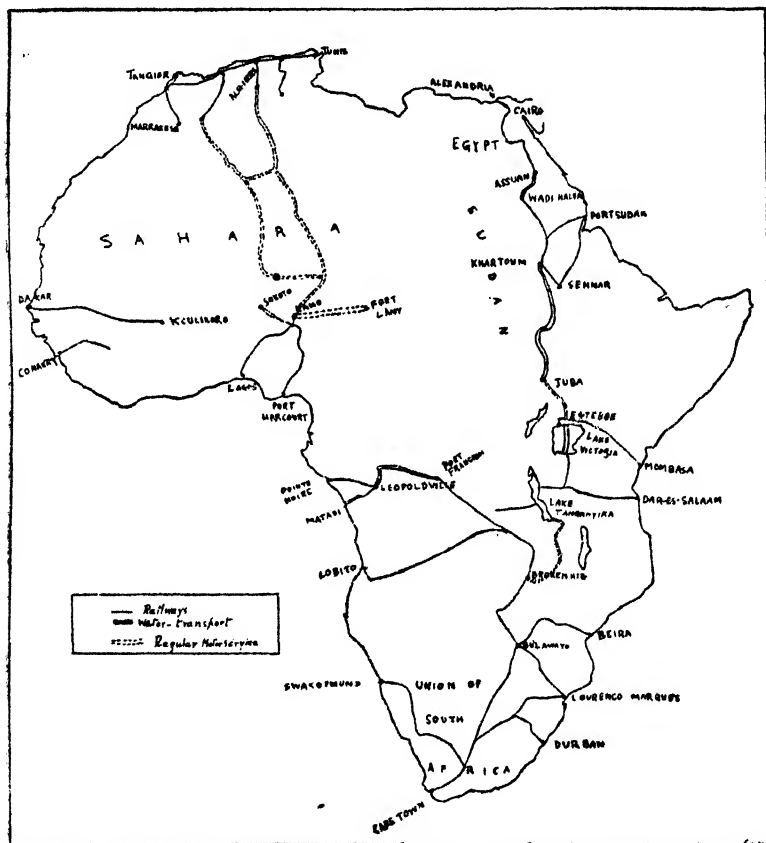


FIG. No. 47. Map showing the means of communication in Africa.

deep indentation and harbours. The coast-line is remarkably regular and no deep gulfs run into the land. (2) The rim of mountains, which almost everywhere borders the continent, causes rapids and falls in the rivers. (3) Poor soil. (4) Un-

healthy climate. Desert conditions prevail in the north-western and south-western sides, while large areas within the tropics are extremely enervating. The interior of tropical Africa, even to-day, remains unexplored because of unhealthy climate. Disease is widely prevalent and has greatly limited the economic growth of the country. These geographical and climatic conditions account for the economic, social and political backwardness of the continent.

The economic development of Africa will depend on the success of solving some problems which at present hinder its progress. (i) The difficulty and cost of transportation prevent much trade with the interior. Some railroads have been built ; but progress is slow. (ii) In Africa the demand for the goods of great manufacturing countries of the other continents is slight. The people have a low standard of living and hence they do not need expensive clothes, houses and furniture. The demand in the world market for the products of Africa is not yet great. Palm oil, copra, cocoa, rubber and other main articles, which the great central part of Africa produces, are supplied more easily by the tropical regions of South Eastern Asia, the East and West Indies and South America. So long as they can supply the world's demand, Africa is likely to be neglected. The development of the equatorial region of Africa will affect, to some extent adversely, the foreign trade of India. Coffee, copra and rubber of Ceylon and Southern India will have to meet the competition of the products of Central Africa in Great Britain. But how far the trade of India can be affected will depend upon the success of solving the transportation problems. (iii) The inadequacy of labour. The white man cannot work in tropical Africa because of diseases and tropical sunlight. The aid of coloured labour is required to develop the regions. The Negroes have few needs and hence little desire to work. The problem of lack of labour in East Africa has been solved by immigrating Indians and other Asiatics. In West Africa natives are employed after great persuasion. The people are ignorant, superstitious and idle. Their way of life is also unhygienic.

In the continent of Africa, only three areas are highly developed. These are (a) The French Colonies of Algeria and Tunis, where the Mediterranean climate permits the white people to live and work efficiently, (b) Egypt, and (c) South Africa. The rest of Africa is very backward, though the economic possibilities are great.

Politically Africa may be divided into six divisions: (1) British Africa, (2) French Africa, (3) Belgian Africa, (4) Portuguese Africa, (5) Italian Africa, and (6) African Africa, (*i.e.*, independent States).

British Africa may again be subdivided into (i) British East Africa, (ii) British West Africa, and (iii) British South Africa.

The population of Africa is about 130 millions, of which nearly half are the followers of the Prophet. In Africa, the whites are outnumbered by about 35 to 1.

British West Africa includes Gambia, Sierra Leone, the Gold Coast and Nigeria. The economic development of the Colonies is hindered by the unhealthy climatic conditions, disease, difficulty of penetrating inland and the lack of good harbours along the coast. The West Colonies are not suitable for white settlement. The work is always done by the natives.

Gambia. The climate and soil are ideal for growing groundnuts, and this is the chief occupation of the Protectorate. The country is unsuitable for the European settlers and farming is carried on by the natives. Though the predominant export crop is groundnut, considerable quantities of rice, maize and cotton are also grown. The seat of the Government is at *Bathurst*.

The Gold Coast is rich in agricultural and forest resources. The majority of the inhabitants are farmers. The important products are cocoa, kola, oil-palm product, copra and other food crops. Rubber and cotton are also produced in small quantities. Mahogany is the most important timber export. Gold, manganese and diamonds are produced in the Gold Coast by the Europeans. The road system has been improved recently

and there are at present 6,400 miles of motorable roads. The rivers are not navigable. There is a total of 500 miles of railway lines. The principal trade centres are *Kumasi*, *Accra* and *Sekondi*.

Sierra Leone. The country, as a whole, is flat and low-lying in the south and west, and broken and elevated in the north and east. Rice is the most important crop and the staple food of the people. Other important food crops are maize, millet, groundnuts and coconuts. The principal exports are oil-palm products, kola, ginger, cocoa, coffee and chilies. Some minerals are found in Sierra Leone, *viz.*, iron ore, diamond, gold and platinum. But up till now they are not commercially exploited. There is no large organised industry, but there are several cottage industries, such as the weaving of cloth, manufacture of mats, etc. These productions are mainly for local use. *Freetown*, the principal trade centre, is situated at the northern extremity of the peninsula on a fine natural harbour.

British East Africa. In East Africa, British territory stretches unbroken from the Anglo-Egyptian Sudan to the Union of South Africa. Uganda, Kenya, Tanganyika and Nyasaland lie entirely in the tropics; but the climate is very suitable for white people to settle, as these areas lie chiefly on the high plateau at an elevation of more than 4,000 ft. to 6,000 ft. The temperature is reduced by altitude and the Europeans can settle there permanently. East Africa has consequently developed much, and the bulk of cultivation is in the hands of the Whites. But in these areas also the White people require the aid of the natives.

Uganda. It lies on a high plateau. The temperature is moderate and varies only slightly throughout the year. The resources of the Protectorate are principally agricultural. Agriculture, including the rearing of live-stock, is the principal occupation of both the natives and the European settlers. The prosperity of Uganda has been closely bound up with the cotton crop, and the extension of roads and railways and the expansion of towns are responsible for the rapid progress made in this

industry during the last twenty years. *With the exception of India, Uganda is the largest cotton-growing country within the British Empire.* The other crops are tobacco, coffee, tea and rubber. Some tin, gold and salt are mined. The tourist-traffic of Uganda is important. The attraction of Uganda to tourists lies largely in the variety of its interesting scenery and of its animals. Certain areas have been set aside as game reserves. Communications are maintained by railways, waterways, roads and airways. *Entebbe* is the capital. *Kampala* is the commercial centre and *Jinja* is a port on the Lake Victoria.

Kenya is a large tract of territory in East Africa. The northern part of the Colony, comprising three-fifths of the whole, is arid and comparatively waterless. The southern strip, in which almost all economic productions are centred, comprises a low-level coastal area and a plateau raised by volcanic actions to a height varying from 3,000 ft. to 10,000 ft. The resources of the Colony are principally agricultural. Coffee, maize, sisal, wheat, tea, sugar-cane and cocoanut are the chief crops. Agricultural production in Kenya is subject to certain handicaps. The principal productive areas are remote from the coast, and transport charges are high by reason of the fact that almost all the goods are to reach their market *via* the Suez Canal. The Colony is self-supporting in all animal products and has built up a certain export trade with the neighbouring countries. Dairy produce is also exported to Europe. *Nairobi* is the administrative capital of the Colony. *Mombasa* is the chief port.

Tanganyika Territory. The Colony belonged to Germany before the Great War and was known as German East Africa. Agriculture (including stock-rearing) is the most important source of wealth of the country and is the principal occupation of the European settlers and natives. The chief crops are sisal, coffee, tea, tobacco, cocoanut, wheat and barley. Animal husbandry fills a very important place in the native life of Tanganyika and is the principal occupation of the pastoral tribes. Kola, mica, tin, coal, manganese and diamonds are known to exist. *Dar-es-salaam* is the chief port and capital.

Zanzibar and Pemba. These two islands lie off the coast of

Tanganyika Territory. Both the islands are low-lying. Though the climate is hot, it is not unhealthy to the European settlers. The agricultural produce for export purposes consists almost entirely of cloves and cocoanuts. The internal communications of Zanzibar and Pemba are carried on by roads and seas. There are no railways. Zanzibar was formerly the chief port of the east coast but with the rise of Mombasa and Dar-es-salaam it has lost a considerable trade.

Nyasaland is essentially an agricultural country. Agriculture is the principal occupation of both the Europeans and the natives. Tobacco, tea, sisal, cotton, rubber and coffee are the principal products. Some minerals occur in the country, viz., gold, copper, iron, mica, coal and manganese. The climate of the Colony is excellent for the European settlers. The Colony is 130 miles away from the coast. Beira, in Portuguese East Africa, carries the trade of the Colony. Zomba is the seat of the government.

Northern Rhodesia. Northern Rhodesia is a vast British territory and it lies on the water-shed of the Congo and the Zambesi. It consists mostly of the high plateau of Africa, but there are low lands in the valleys of the Zambesi, the Kafue and the Loangwa. The temperature is relatively high even on upland and is, therefore, unfit for European settlement. Its white population consists mainly of temporary residents engaged in trading, mining and plantation works. The country possesses great agricultural and pastoral resources. Cotton, maize, wheat and tobacco are the principal crops. Cattle, sheep, pigs and goats are reared in various parts of the territory. Mineral wealth is only beginning to be exploited. Copper, gold, coal, zinc and tin are worked. Pemba and Lusaka are the two trade centres.

Southern Rhodesia. Southern Rhodesia is more developed than Northern Rhodesia. It is mostly a high plateau and has, on the whole, temperate climate. Mineral wealth is the principal attraction for settlement in the country. Gold comes first in importance and is mined in several places. Chromium is found extensively, and Rhodesia occupies a high place in the

production of chromium. Silver, lead, iron, copper, coal and tin are also worked. Southern Rhodesia is admirably suited to arable and pastoral farming. Tobacco, maize, and cotton are the principal crops. But stock-raising is more important than agriculture. On the splendid grasslands, which are found all over the Colony, cattle are reared, and much is being done to improve the quality of the animals by the importation of good quality stock cattle from Great Britain. Bulawayo and Salisbury are the principal towns.

British Somaliland, a small territory on the Red Sea, lies between Eritrea and Italian Somaliland. It is of little economic importance and is more important politically. It occupies a position from which it can command the Red Sea. Some agricultural crops like barley and maize are grown mostly for local consumption. The chief wealth of the land is composed of a few sheep and cattle. Berbera and Zeila are the chief towns.

The Anglo-Egyptian Sudan. It is under the joint control of Great Britain and Egypt. The climate varies greatly from one region to another, and thus helps to produce different kinds of agricultural products. Cotton is the most important crop, which alone constitutes 76% of the total exports of the country. Cotton is grown in the Gezira, a fertile tract of land between the Blue and the White Nile. This region has been recently irrigated as the result of a great Government scheme, of which the main feature is a great dam at Sennar on the Blue Nile. Cotton is also grown on the north of Khartum in the Nile Valley. In the south forests are abundant, containing rubber and valuable timber. The middle portion of the Sudan is an extensive grassland where a good deal of cultivation and cattle-rearing are carried on. Rubber, coffee and gum are the other products coming from the middle region. The principal highway of commerce is the Nile. The railway runs from Haifa to Abū-Hamed and then goes to Khartum; from Khartum a line runs to Port Sudan on the Red Sea. Khartum and El Obeid are the principal towns.

The Union of South Africa. The Union of South Africa comprises the Cape of Good Hope, Natal, the Orange Free State

and the Transvaal. South-West Africa, which formerly belonged to Germany, is now administered by the Union Government. *The economic development of this British Dominion is the result of the discovery of minerals.* The two most valuable minerals are gold and diamond. South Africa is almost the only source of diamond, and is also a producer of more than half the world's total annual output of gold. "So far the economic structure of the Union has been supported on gold mainly, and the falling off in output that is anticipated suggests an insecurity of basis. New supports to the structure—both industrial and agricultural—are being slowly built, but they may not be sufficiently strong to bear the weight of the edifice in the event of an early exhaustion of the precious metal. That is the critical economic problem confronting the Union today."* The most famous diamond field is at Kimberley in the Cape Province. South Africa has great potential wealth in her fisheries, but up till now they have not been fully developed. The economic development of the region has been hindered by the existence of a large native population, and by the fact that much of the manual labour required is provided by the coloured people.

The Cape of Good Hope Province. It is mainly a pastoral country. The economic development is meagre due to labour and race problems, the difficulties of agriculture and the hindrances to communication. Good natural harbours are almost absent. Rivers are of little use for commerce. Fruits are grown on the south-western side where the Mediterranean type of climate prevails. Mineral wealth is considerable, especially diamond. 90% of the world's diamonds comes from Kimberley. Wheat, oats, rye, tobacco and millet are the chief agricultural products. Cape Town, a port of call, is the capital. It is also a railway centre and one of the great nodal points in the world's sea-traffic. Of the total population of 17,00,000 only 1,50,000 are Europeans.

Natal. Agriculture is the chief industry of the province. Sugar-cane, tea, tobacco, maize, coffee, cotton, rice and bananas

* W. Fitzgerald—*Africa*.

are extensively grown. Coal is the chief mineral product. The quality of the coal is the best in South Africa. Durban is the commercial centre and chief sea port. Pietermaritzburg is the capital. The European population is small.

The Transvaal. Mining is the important industry of the province. Gold, coal, iron, diamonds, platinum, lead, silver, tin and copper are the chief minerals. *The Witwatersrand, which lies to the west of Johannesburg, has acquired great importance in recent years on account of the vast quantities of gold which it contains. The rocks consist of a "banket" in which gold lies in particles. Cheap native labour and the proximity of coal contributed to the rapid growth of this industry in Rand.* In 1924, 50% of the world's gold came from this area. Coal is not of good quality, but still it plays a very important part in the industrial development of the country. The diamond mine lies near Pretoria. The important agricultural crops are sugar-cane, cotton and tobacco. Stock-raising is carried on in the high-Veld where cattle and goats are numerous. Pretoria is the capital. Johannesburg is the largest city in South Africa and is the centre of the gold mining industry.

The Orange Free State. It has a temperate climate and the country is mainly a pastoral one. Cattle and sheep are reared on the high-Veld and also on the grassland in the east of the Province, where the dairy industry has developed. In recent years, agriculture has received great attention. Wheat is cultivated in the south-east in the basin of Caledon river, which has been called, "the granary of South Africa." Maize and millets are also grown. The mineral output is not great. Bloemfontein is the capital and the chief trade centre. It is also an important railway centre.

South-West Africa. It was formerly a possession of Germany. The country is mainly noted for pastoral industry. *Basutoland* is a mountainous country. The climate is favourable both to arable and pastoral farming. In the *Bechuanaland Protectorate* the population consists entirely of natives. The chief wealth of the Protectorate consists of cattle, sheep and goats.

Egypt

Egypt occupies a very favourable position for trade. It is situated at the head of one of the most important highways of commerce—the Suez Canal route—through which the trade of Asia with Europe is maintained. Egypt has, therefore, a great scope for developing entrepot trade.

The climate of Egypt is typically that of desert with the exception of the Northern Delta region, which has the Mediterranean climate. Without the Nile Egypt would have been as barren as the rest of the Sahara. The Nile irrigates about 12,000 square miles out of a total area of 3,731,000. Practically the entire population of Egypt (14 million) live in this irrigated part of the country.

The climatic conditions of Egypt are such that, with the aid of irrigation, the land can be cultivated throughout the year. Cotton, sugar-cane, rice, maize and wheat are the principal crops. Cotton is the most important crop on which much of the country's prosperity depends. The country is mainly agricultural and only in a few places there are some manufactures. The mineral wealth of Egypt is found in the deserts. Petroleum and phosphates are little worked.

The Nile is of great importance as a waterway. The main river which flows through Egypt is formed by the union of two main branches, the White Nile and the Blue Nile. Rising in the Lake Victoria on the high plateau of East Africa, the White Nile flows northwards along a flat region. The White Nile has a flow of water throughout the year. The Blue Nile rises in the Abyssinian mountains. In summer, the Blue Nile is in floods. The two rivers join at Khartum and flow through Egypt to the Mediterranean Sea. It is navigable without impediment as far as the Aswan dam.

The railways are worked by the State. The principal line runs from Alexandria to Aswan. From Cairo an important line runs southward and joins the Sudan railway. The Suez Canal lies in Egyptian territory. The Canal gives great strategic importance to Egypt. The chief export of the country is cotton,

which alone accounts for over 85 per cent of the total value of the exports. Other exports are cotton seeds, cereals and vegetables.

Cairo is the capital of Egypt. It is the largest city in Africa. *Alexandria* is a port noted for foreign commerce. *Port Said*, on the northern end of the Suez Canal, is a great coaling station with large entrepot trade. Egypt virtually came under British control in the eighties of the last century. In 1914 she became a British Protectorate. In 1936 England recognised her as an independent State, but in some important respects Egyptian sovereignty is subject to British control.

Abyssinia

It is a large country in Africa, with a population of about 10,000,000. The country is a volcanic tableland, and the climate is healthy and stimulating. Economic progress is slow in spite of considerable mineral, agricultural and pastoral resources. The country has no sea coast and depends on Jibuti, a port in French Somaliland, for its foreign trade.

The country in future can be a great cotton-producing one. The important agricultural crops are coffee, wheat, cotton, barley and pepper. In its rugged hills and valleys the existence of considerable mineral wealth has been reported recently but lack of communications has prevented its exploitation. Transport is extremely difficult by rail and river. The vast economic possibilities on the one hand and the present backwardness on the other tempted the Italians to make it a Colony for them. *Addis Ababa* is the capital and is situated at an altitude of 8,000 ft. The other trade centres are Adowa and Gondar.

Abyssinia was an independent country till the early part of 1936 when it was conquered by Italy. Recently British forces have re-occupied it and the ex-emperor has returned to *Addis Ababa*.

ALGERIA AND TUNIS. These are the most important States of Northern Africa. They consist of a coastal range. Agriculture is the main occupation of the people. By means of artesian wells the land is irrigated for raising vine, cereals and

tobacco. Stock-raising is also of considerable importance. The principal exports are wine, cereals, olive oil, iron, zinc and lead; the chief imports are textiles, machinery and hardware. *Tripoli* is the capital of Tunis. It is very thinly populated. *Algiers*, the capital of Algeria, is an important coaling-station. Both these States are under France.

QUESTIONS

1. On a sketch map, locate the distribution of Africa's gold-fields. (B. Com. 1935.)
2. Discuss the present economic condition of South Africa with special reference to its (a) mineral resources, (b) pastoral industry. (Cal. B. Com. 1926, 1933.)
3. Mention the economic resources of the British possessions in equatorial Africa. What are the prospects of developing these resources and how will the Indian trade be affected by this development? (Cal. Inter. 1940; Cal. B. Com. 1928, 1939.)
4. "Egypt is the gift of the Nile."—Discuss. (Cal. Inter. 1939, 1942.)
5. Describe the economic developments that have taken place in the equatorial belt of Africa in recent years. How is India going to be affected by the progress made so far as her (India's) (a) agricultural exports, (b) industrial products are concerned? (Cal. B. Com. 1930.)
6. Carefully examine the geographical position of Egypt in relation to world trade routes. (Cal. Inter. 1941, B. Com. 1931, 1932.)
7. Describe the present development of irrigation in South Africa and examine its possibilities.
8. Account for the commercial and industrial backwardness of tropical Africa.
9. Examine the importance of Abyssinia to Italy as a source of raw material. (Cal. B. Com. 1936.)
10. What commercial interests induced Britain to colonise in Africa? (Cal. Inter. 1940.)
11. State the situation of and describe the Nile Valley and give a geographical explanation of its importance. (Cal. 1939, I. I. B. 1929.)
12. "The gold-mines are the backbone of South Africa." Discuss this statement.
13. Discuss the nature of the economic development of South Africa as the result of the war. To what extent is that country dependent on India for the supply of consumption goods? Are there alternative sources available now for such goods? (Cal. B. Com. 1944.)
14. In what parts of Africa can there be surplus production of rice? (Cal. B. Com. 1944.)

CHAPTER XIV

AUSTRALIA

The Continent-Island of Australia, situated entirely within the South Hemisphere, is rather off from the main trade routes of the world.

Generally speaking, the surface of Australia is fairly level, consisting of either plains or plateaux of great extent. In the east, however, a continuous range of highlands runs from north to south for over 2,000 miles. This range is known as the Great Dividing Range. Its distance from the sea varies from 25 miles to 120 miles. The coastal plains are, on the whole, very fertile. In between the Great Dividing Range and the Western tableland are the lowlands.

The coast-line of this vast island-continent is generally regular. The eastern side and, to some extent, the north-western side are also more or less indented.

The east coast receives abundant rainfall. Northern Australia, which enjoys monsoon winds in summer, also gets plentiful supply of rain. The central part and the west coast of Australia never receive rain-bearing winds and so these parts, collectively, are called the "dead heart of Australia".

The Continent occupies about 3,000,000 square miles with a population of 6 million, "the bulk of which live in a narrow belt running from a little north of Sydney round the coast of Adelaide and in the south-west corner." The density of population is nowhere high, except in Victoria. Therefore, there is opportunity for the population to be increased many times its present figure. Indeed, the lack of labour is a handicap to the development of industries. Again, though the northern part is very fertile and suitable for the cultivation of rice, sugar and cotton, the Europeans cannot carry on work there as the regions are within the tropics, and hence, very hot; nor will they permit the immigration of the Asiatic labourers there, as they

intend to make the Continent a White Man's Land. Australia is closed to land-purchase by the Asiatics. The "White Australia" policy must postpone the development of the

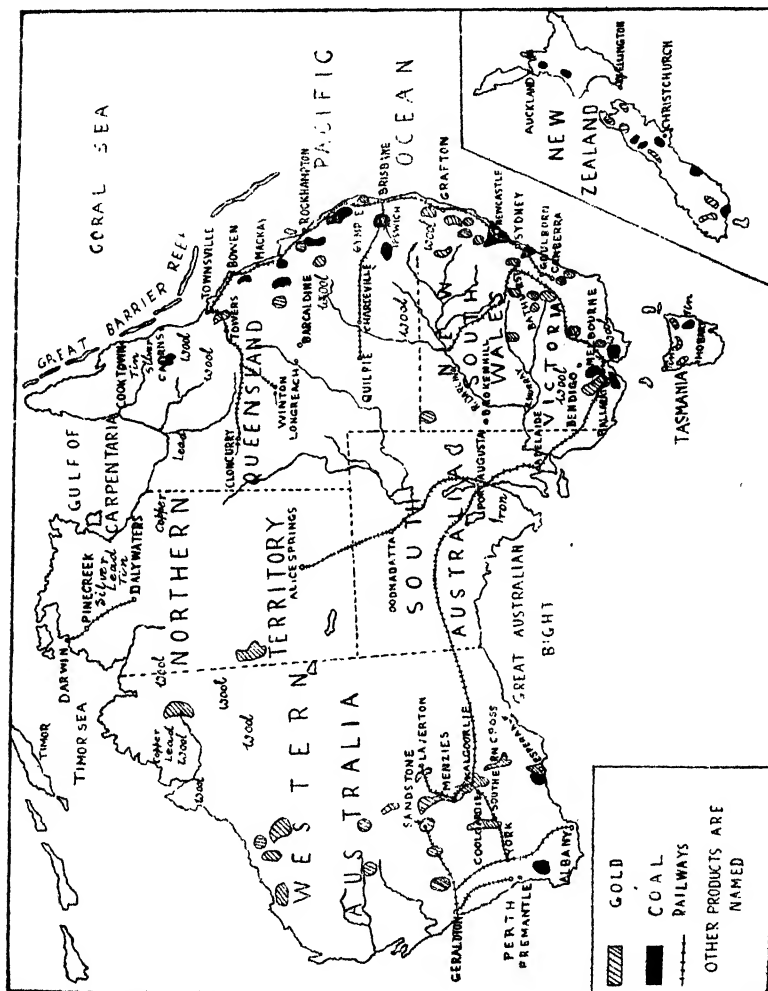


FIG. NO. 48. Map showing the economic products of Australia

Northern portion of the country till the White settlers sufficiently acquire knowledge and capacity to conquer tropical disease. The policy is also creating a feeling of bitterness in some countries in Asia (like Japan) where land is already congested.

Australia is deficient in waterways. The rivers of Australia are short and rapid. The Murray, the most important river, is in the south. The tributaries are the Darling and the Murrumbidgee. Although the length of the Murray is 1300 miles, it is of little use for navigation. During the rainy season, steamers can ply between Albury on the Murray and Bourke on the Darling. The railway system is being gradually developed. There is one serious defect in the railway system. Different States adopt different gauges on which the lines are built ; these involve many changes. Australia has a railway mileage of about 24,000. There is one trans-continental line running from Perth to Port Augusta, the distance being 1425 miles. The climate and relief of the country also permit easy development of air-traffic.

The economic development of the country has been greatly influenced by its geographical location and conditions. The great distance of the Continent from Europe and America is responsible for the slow settlement. "If it had not been for the discovery of gold, the process of occupation would have been even slower than was the case. But the mineral wealth of Australia, besides attracting a considerable number of people to its shores, gave it a supply of capital which was of great advantage to its development, and on the decline of gold production in the eastern States, the inhabitants began to settle down to agriculture and pastoral farming."

Cultivation does not occupy a large area in Australia. More than half the total cultivated area is under wheat, which is a winter crop and is reaped in early summer. The major portion of Australian wheat goes to the United Kingdom, but some of it is also sent to China and Japan. The chief wheat-growing areas are in the fertile plains of the Murray basin and in the Mediterranean areas. Adelaide is the chief wheat exporting centre. Next to wheat, maize, sugar-cane and oats occupy the largest area. *Sheep-rearing is very important in Australia, where the number of sheep exceeds that of any other country except Russia.* Sheep are reared mostly for wool in New South Wales, Queensland, Victoria, Western and Southern Australia.

But the country raises wool more for export than for turning it into finished product within the country. The U. K. is the single largest customer of Australian wool, taking as she does more than 30 per cent. France, Japan, Belgium and Germany are the other buyers. Cattle are reared for beef and dairy produce in Queensland, Northern Territory, coastal lands of New South Wales, Victoria, and the south-west of Western Australia.

The mineral wealth of Australia is considerable. In the beginning gold was the chief metal which attracted immigrants to Victoria and New South Wales. Even now gold is an important production of Australia, where more than 4 per cent. of the world's total production is raised. In Victoria the chief gold centres are Ballarat and Bendigo. New South Wales is now-a-days less important for gold. In Queensland, the chief centre is Rockhampton. At present more than half the total production comes from Western Australia, where it is worked in two main centres—Coolgardie and Kalgoorlie.

Coal is the most important mineral product of Australia. It is found in New South Wales, Queensland, Tasmania, S. W. Australia and S. E. Australia. Iron ore occurs in South Australia. Silver is found in many parts of the Continent. The most important silver mines are found in New South Wales, where it is worked in the Broken Hill district. Lead and zinc are also obtained from the silver mines of the Broken Hill. Tin and copper—though abundant—are not worked efficiently at present. The most important copper mines are found in Northern Queensland and South Australia. Of precious minerals, diamond, pearls and sapphires are found.

The manufactures of Australia are in their infancy. *The development of manufactures is hindered by scanty and widely scattered population, poor progress of rail and railroads and the overwhelming importance of agriculture and mining.* Whatever manufactures she has, are to be found in cities, where labour is available. Flour-milling, weaving and spinning of wool, furniture-making and iron and steel are the important industries.

The most important exports of Australia are wool, wheat,

gold, hides and skin, butter, flour, cane sugar, frozen meat, mutton, fruits, wine and cheese.

Wool—U. K., France, Japan, Germany, Belgium, Italy, U. S. A., U. S. S. R.

Wheat—India, U. K., South Africa.

Of the total exports, nearly half goes to U. K.

The chief imports are metal and metal goods, textile fabric and apparel, foods and drinks, drugs and chemicals and paper. Great Britain is the chief supplier. More than 40 per cent. of the total imports comes from the U. K.

The chief cities are Sydney, Melbourne, Adelaide, Brisbane, Perth and Hobart. *Melbourne* is the capital of Victoria and is the chief sea port and the manufacturing centre of the State. *Sydney*, the capital of New South Wales, stands on the south of Port Jackson. It possesses a fine harbour. Besides being the industrial and political centre, it is also the chief naval station in Australia. *Brisbane* is the capital of Queensland. It is the chief port and industrial centre of the State, from where wool, frozen beef, butter, bacon, hams, pork, hides and fruits are exported. *Adelaide* is the capital of South Australia. Its port is Port Adelaide. The chief exports are wool, wheat, flour, copper, skin, frozen meat, fruits and wine. *Perth* is the industrial, commercial and political centre of Western Australia. Its port is Fremantle. The exports are mainly wool, gold and timber. *Hobart* is the capital and chief railway centre of Tasmania. It has a fine harbour and has trade mainly with Sydney. The exports are wool, gold, tin, silver, timber, fruits, jam and grain.

New Zealand

The Dominion of New Zealand includes North Island, South Island and Stewart Island and several groups of small islands lying at a distance of 150 to 350 miles in the surrounding seas. Of these, South Island and North Island are the largest and they make up the greater part of the Dominion. *New Zealand is sometimes called "the brighter Britain of the South."*

It is the only part of the British Empire that resembles Great Britain in its life and habits, scenery, temperature and size. The original inhabitants of the Dominion are the Maoris, though at present they constitute only 2 per cent. of the total population. The British emigrants have now permanently settled in New Zealand and they comprise nearly 95 per cent. of the population.

The surface of all the islands is highly mountainous. In the South Island, there is a mountain-range from south to north on the western side. This range is known as the Southern Alps and it is covered by perpetual snow. The most extensive plains in New Zealand are those called the Canterbury plains which occupy the middle of the South Island on the eastern side.

The temperature and rainfall of New Zealand are mainly controlled by the fact that the greater part of the Dominion lies within the influence of the sea. Summers are not very hot, nor the winters cold.

“The uncrowned king of the country is sheep.” In New Zealand the number of sheep per square mile is greater than in any other country of the world. Its mild climate and rich pastures, coupled with the introduction of refrigeration and the utilisation of by-products, have made sheep farming very successful. On all the plains of New Zealand the sheep is extensively reared for wool and mutton. The Canterbury plains with the surrounding downs are the most famous fields for sheep-rearing, where more than one-fifth of the flocks of the Dominion is found. The rearing of cattle for meat and dairy produce is becoming very important. The dairy industry of New Zealand is run on a co-operative basis and is strictly supervised by the Government “to ensure that no goods are exported which will damage the reputation for good produce which New Zealand holds.”

The chief crops are wheat, oats, barley, potatoes and fruits. Of minerals, New Zealand has small quantities of many. Lignite, silver, gold, coal and petroleum are obtained, though with the exception of coal, these are not highly developed.

Manufactures have little developed in New Zealand and these are mainly concerned with the treatment of her primary products. Sparse population and distance from great industrial countries prevent it from becoming a great manufacturing country. Leather goods making, woollen and flux manufactures, fruit canning, furniture-making, and raising of dairy produce are some of the important industries.

Although the rivers of New Zealand are numerous, these are, for the most part, unfit for navigation. New Zealand has over 3000 miles of railways, which have been greatly influenced in their direction by relief features. The mountainous relief of the country has necessitated the construction of tunnels frequently at great expense. Roads are fast developing in New Zealand.

The pastoral character of New Zealand's development can be at once understood from exports like wool, butter, frozen meat, cheese, hides and skin which account for nearly 90 per cent. of the total value of her exports. The chief imports are motor car, oil, timber, cigarettes, iron and steel plate, manufactured cotton and wire for fencing. The Dominion has the greatest trade relation with Great Britain. The other countries with which the Dominion has trade relations are the U. S. A., France and Germany.

The chief trade centres are Wellington, Auckland, Dunedin, Christchurch, Nelsons and Invercargill. *Wellington* is the capital of the Dominion and is situated on *Port Nicholson* in the North Island. It is the most important collecting and distributing centre of the country and handles a large coastal traffic. *Auckland* is the largest town in New Zealand. As it is situated on a narrow Isthmus of the North Island, it has become important for sea traffic. Dairy produce is an important item of export. It is the centre of the gum collecting and gold mining industries. *Dunedin* is the principal town of the South Island. *Invercargill* is another chief town of the same island. *Christchurch* is an important town of the Canterbury plains of the South Island.

QUESTIONS

1. Outline the outstanding geographic factors which have determined Australia's economic development.

(Indian Institute of Bankers 1934)

2. Why does not Australia, which is a large producer of wool, develop extensive woollen manufactures? (Cal. Inter. 1934.)

3. Describe the principal industries of Australia, including agriculture. (Cal. Inter 1940.)

4. What are the principal exports from Australia and New Zealand? Discuss the possibilities of increased exchange between these countries and India. (Cal. B. Com. 1936.)

5. Discuss the development of east and west coasts of Australia and show how far the influence of climate is responsible for such development. (Cal. Inter. 1940.)

6. "Isolation and a small population have been potent forces in retarding the development of Australia." Discuss this statement.

(Indian Institute of Bankers 1942.)

7. Account for high density of population in the south-eastern parts of Australia.

[In Australia, the average density of population is only two per square mile. The continent is, therefore, "the most scantily peopled civilised area in the world". Nearly 50 per cent of the population lives in the capital towns of Brisbane, Sydney, Melbourne, Adelaide, Perth and Hobart.

The distribution of population has been influenced by rainfall, temperature, irrigation facilities, minerals and means of communication. The Desert Region of Australia where the rainfall is less than 10 inches, is practically uninhabited (one person per eight square miles). The Northern Savannah lands have one person per square mile because the areas are hot all the year. Victoria and southern parts of New South Wales are the most densely peopled areas of Australia. The rainfall, in these regions, varies from 20 to 30 inches. The eastern coastal region has many large cities, all of which are ports. The population is, therefore, dense here. The lower part of the Murray Basin has high density of population because of the extension of irrigation works. The denser population in some parts of West Australia is accounted for by the discovery of gold-mines.]

8. How is the normal surplus production of wool in Australia and New Zealand being consumed today? (Cal. B. Com. 1944.)

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8. How is the normal surplus production of wool in Australia and New Zealand being consumed today? (Cal. B. Com. 1944.)

CHAPTER XV

ASIA

Asia is the largest and the most populous of the continents. It nearly occupies one-third of the land surface of the globe. Its population, which is more than half of the world's total, is mostly confined to the south-eastern side in India, Java, China and Japan.

In Asia there are certain great physical disadvantages for the development of commerce. (1) Its size and topography. Asia's great size makes the interior very dry, because sea winds do not blow over it. The size also fosters isolation and backwardness inasmuch as transportation by land is more difficult than by water. The relief of Asia is unfavourable to commerce because the north is separated from the south by a series of mountains radiating from the Pamir plateau. From the Pamir, the Himalayas, the Karakoram, the Tien-shan and the Altai mountains extend to the east, and the Hindukush and the Sulaiman mountains to the west. Again, the east is cut off from the west by deserts and mountains. Communication, therefore, between the east and the west as well as between the north and the south, is difficult and in some places impossible. (2) Climatic extremes and contrasts in Asia are the results of its size, shape and relief. The northern side, which covers more than half of the continent, has a climate unsuitable not only for agriculture, but also for human health and efficiency. The deserts of the interior are totally barren. It is only in the south-eastern parts of the continent where climatic Monsoon and Equatorial conditions favour agriculture and other industries.

Races at all stages of development are found within Asia. About three-fifths of the total population of Asia belong to the Mongolian races, and the areas inhabited by them are Siberia, Japan, Korea, Manchukuo, Mongolia, China, Indo-China, Burma and the Himalayan slopes, the East Indies, the

Malaya Peninsula, and Formosa. The Caucasian races in Asia are found in Upper and Middle Indo-Gangetic Plains, in Iran, Afghanistan, Syria, Iraq and Arabia. Negroid characteristics are found in some of the inhabitants of the Malaya Peninsula, the Andaman Isles and South India.

The distribution of population is very uneven in Asia. Population is very dense in the Indo-Gangetic plain of India, coastal China, Japan and Java where we find more than 100 people per square mile. Population is very sparse in the high plateaus of Central Asia and Arabia as well as in the cold regions of North Asiatic Russia.

The vast size of the continent could not keep the foreign trade at a distance. For many centuries before the advent of the Europeans in Asia, India, Persia and Western Asia had a flourishing foreign trade. The Arabs monopolised it and passed on the merchandise to the Italians. It was to capture this trade that the Portuguese, the British, and the French merchants came to India. The opening of the Suez Canal and the political domination of Europe over Asia have changed the nature of that foreign trade. Asia supplies the world market with raw materials and food-stuffs, and provides a vast market for the products of the industrial countries of the West.

DIVISIONS OF ASIA

India	Syria
Indo-China	Palestine
Chinese Republic	Iraq
Japanese Empire	The Hejaz
Manchukuo	Asiatic Russia
East Indies	Afghanistan
Thailand	Iran
Turkey	Arabia

There is another popular division made by the Western people—(a) Far East, (b) Middle East and (c) Near East.

The Far East comprises generally India, China, Malaya; Siam, Indo-China, East Indies and Japan. The Middle East includes Afghanistan, Arabia, Iran, Iraq and the Hejaz. The

Near East ordinarily covers Palestine, Syria and Asia Minor. The Far East—namely, India, China and Japan, is highly developed. Rice, cotton, jute, tobacco, sugar-cane, opium, silk, timber, petroleum, tea, coffee, etc. are extensively found. The business activity is the greatest in the Far East. The Middle East offers unique opportunities for further economic development: here petroleum, gold, wheat, coffee, cotton, hides and skin are extensively raised. Lack of communication and political disturbances are the present obstacles.

The Empire of Japan

The industrial development of Japan has all taken place within the last sixty years. Indeed, its development is phenomenal. The favourable geographical situation in relation to China and other Eastern markets has offered her sources of raw materials and markets for manufactured goods. Its industrial development is the outcome of the governmental efforts. The Japanese Government, in the early stages of its growth, started factories, brought foreign experts, opened banking institutions and introduced the methods of the leading industrial nations of the world in the country. Its climatic conditions favour the production of certain raw materials, such as silk. Supply of labour is abundant and cheap. Moreover, the people lead a frugal life. The Japanese people, being animated by a desire to make their country independent and respected, made super-human efforts to make the country industrially great.*

* The industrial growth of Japan has been the result of a policy aiming at making the Empire an economic unit as completely self-contained and self-supplying as her physical limitations would permit. "There has now grown up in Japan a generation equipped with the necessary knowledge and skill which is able to profit by the experience—both the achievements and the mistakes—of other industrial countries." The industries no longer require grants and subsidies of the state, and the only form of government help is at present protection by import tariff. The Japanese Government, however, takes positive steps to direct the course of industry and trade by legislation.

There are many striking points of resemblance between Japan and the United Kingdom. Both consist of islands and are situated in the temperate latitudes. Both are, again, great naval and world powers. Like Britain, Japan is close enough to the continent to receive its civilisation and religion—and yet far enough to maintain its own independent characteristics.

The Empire of Japan consists of five large and about four thousand small islands.

		Area in square miles (000 omitted)	Population (000 omitted)
Japan Proper	...	148'8	69,254
<i>Possessions :</i>			
Formosa	...	13'9	5,213
Karafuto	...	13'3	332
Korea (Chosen)	...	85'2	22,899
<i>Leased territories :</i>			
Kwantung	...	1'3	1,145
South Manchurian Railway zone	...	1	523
<i>Mandate :</i>			
Pacific Islands	...	0'8	103
Japanese Empire	...	263'4	99,469

Manchukuo, autonomous Inner Mongolia, East-Hopei, North Shansi and South Chahar are now all under Japanese control.

Japan proper has the shape of a banana fruit and consists of four main islands of Hokkaido, Honshu, Kyushu and Shikoku. It is mountainous and lies in the earthquake zone in the monsoon region. "There is an average of four a day, but the shocks of a very serious kind only occur once in six or seven years." Climate is wet in summer and dry in winter. The temperature of both the seasons varies with latitudes and also with the influence of the sea currents. Winters are very cold on account of the North-west monsoon and the Bering current. In summer, Northern Japan has 80°F temperature, which is warmer than any other land in the same latitude on

the western coast of Europe. Typhoons appear frequently in September and cause much destruction on the coast.

Japan is remarkable for the length of its coast-lines which give a ratio of one mile of coast to nine square miles of land. The mountains, directly facing the monsoon, keep the west drier than the east in summer; so Eastern Japan has a mild winter except where the cold currents influence the climate. There are few rivers in Japan and none of them is practically good for navigation, for their course is short and they run through mountain slopes. However, they are useful for irrigation and as sources of power.

The mountainous character of the surface greatly limits the productive area. Agriculture is possible only in about one-sixth of the total area of the country and is practised on an intensive method. Rice occupies the largest area. Other crops are wheat, tea, barley, millet and pulses. The degree of self-sufficiency in foodstuffs is much higher in Japan—it being 95 per cent. higher than in many other industrial countries.

Among the forest products, the most important are pine, oak and maple. The Empire is also rich in bamboos, cypress, camphor tree, lacquer tree (used for varnishes), wax tree and mulberry trees. Japan has no grazing field and there are few cattle farms. People have to depend for wool, milk, butter and cheese and leather on foreign countries.

The next important industry is fishing from which the population around the coast earn a good living. The deep-sea-fishery is becoming more and more important. The industry is carried on in Korea, Formosa and at Shakhalin.

In Japan, the population is increasing very rapidly. In 1937 the population was more than 70 millions in the Empire. Since then there has been an annual increase of not less than 800,000 people. This pressure of a rapidly increasing population is a very serious problem of modern Japan. The Government is giving particular attention to the improvement of agriculture, reclamation of waste lands, development of manufactures and expansion of foreign trade with the object of

solving the problem. Agriculture alone cannot support the increasing population which will require new land four to five times greater than what she has. True it is that at present only 15 per cent. of the total area is arable, and with careful attempt 5 million acres of new land may be reclaimed ; but

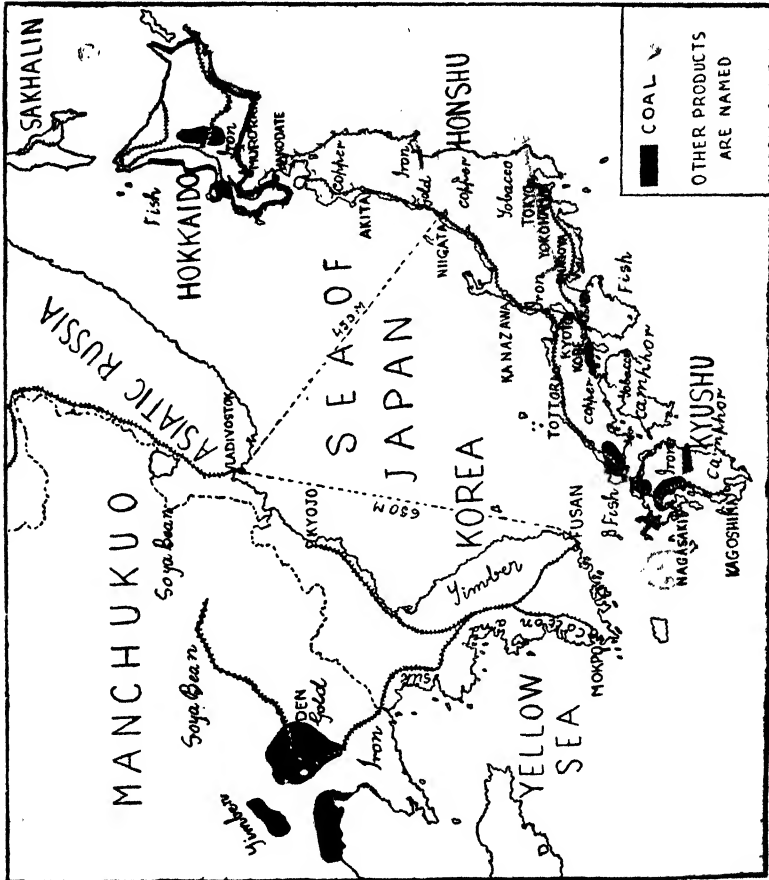


FIG. NO. 49. Map of Japan showing her economic products

even then, the real solution lies in turning to commerce and manufactures, and in migrating to sparsely populated parts of the Japanese Empire, *i.e.*, Hokkaido, Karafuto, Korea, Formosa and Manchukuo. People are also encouraged by the Japanese Government to migrate to foreign lands, particularly to Brazil,

Peru and Argentina. But it is doubtful whether Japan would be able to solve her problem of population through migration.

Communications. Owing to the mountainous character of the country, the development of the means of communication in Japan has been slow. At present there are only a little over 10,000 miles of railway. The difficulties of communication by land, and the facilities for it by sea, have naturally encouraged the growth of a strong mercantile marine.

One of the most serious handicaps of Japan's industrialisation is the *poverty of minerals*. Japan possesses mineral wealth, but the resources are not large.

Coal is the most important mineral of Japan. It provides more than 60 per cent of the value of her mineral output. The coal-fields of Japan are scattered throughout the islands from Sakhalin to Formosa. Northern Kyushu and Hokkaido are the leading producers. Kyushu alone raises more than 60 per cent of the total output of Japan's coal. The Chikuho field of Kyushu produces one-third of the total. The coal-fields of Kyushu are situated near the sea and in an area of dense population. Hokkaido supplies 17 per cent. of the total output. The poor transportation facilities and the scanty population are responsible for the smaller output of coal.

The next important mineral is copper. It constitutes 13 per cent. of the total mineral value of Japan. Copper is found in many places throughout the islands. More than 75 per cent. of the total copper comes from the five mines of Ashio, Besshi, Kosaka, Hitachi and Saganoseki. Japan ranks fourth in copper production, being surpassed by the U. S. A., Chile and Canada.

The third important mineral product is petroleum. In 1938 Japan raised 344,000 long tons of oil. Such an output is of no world significance, for Japan is outranked in oil production by some 17 countries and her contribution is only 0.12 per cent. of the total oil production of the world. The oil-fields are found in western Honshu. Small oil-fields are also found in Hokkaido, Formosa and Sakhalin. Sulphur is abundant in Japan. This is due to the volcanic nature of the islands. This mineral is mainly used in the fertiliser industry.

The iron-ore deposit of Japan is not considerable. There are only two important fields—one at Sendai on the east coast of Honshu and the other at Muroran in Hokkaido. Gold, silver, zinc, tin, clay and sand are also mined.

Japan is rich in water-power.* The rugged surface of the islands, the swift flowing streams and the heavy rainfall provide ideal conditions for developing hydro-electricity. Most of the larger power sites are located on the eastern and southern slopes of the mountains of central Honshu. The first hydro-electric plant in Japan was started in 1892 in Kyoto on a stream flowing from lake Biwa.

The hydro-electric power in Japan is mainly used for industry, urban transportation and lighting the houses. 91 per cent. of the residential households and industrial buildings are wired for electric purposes. Even in an industrially advanced country like the U. S. A., only 75 per cent. of such buildings are wired.

Several important manufacturing industries have been established in Japan.

IMPORTANT MANUFACTURING INDUSTRIES OF
MODERN JAPAN

Industry	No. of workers	Industry	No. of Workers
Silk-reeling ..	.. 410,000	Printing & book binding	70,000
Cotton Spinning ..	.. 205,000	Wool Weaving ..	45,000
Cotton Weaving ..	.. 165,000	Dyeing, Bleaching ..	50,000
Ship-building ..	.. 100,000	Machinery ..	44,000
Brewing ..	.. 90,000		
Silk Weaving ..	.. 88,000	Total ..	1,267,000

Japan has made remarkable progress in the textile industries which employ more workers than all the other industrial groups combined, and their products form the basis of the Japanese export trade.

* Of the total electric power production, about 60 per cent. is developed by water-power plants.

The reeling of raw silk is the most important single industry in Japan. Japan is the leading silk producing and exporting country in the world. But it is really surprising that Japan has not developed the silkweaving industry. More than 80 per cent. of the silk produced in the country is exported in its raw state.

Japan's industrial progress may be measured by the growth of the *cotton manufacturing industry*. "The industry is favoured by the cheap labour, the proximity of coal, the comparative ease with which raw material can be obtained from India, China, and the U. S. A., and the neighbourhood of the vast Chinese market for the manufactured commodities." Osaka, Kobe, Nagoa and Tokyo are the manufacturing centres.

Osaka is known as the Manchester of Japan. The expansion of Osaka has been very great during the last 20 years. It is the largest city in Japan with a population of 2,259,000. It is situated near the sea coast ; small steamers can bring cotton to the mill-area by canals or rivers. It contains more than one-tenth of the spindles of the country.

Japan is specially weak in iron and steel industries. Because of their vital importance in the industrial system and in many schemes of national defence, the Japanese Government is giving much assistance to these industries. At Yawata in Northern Kyushu, a big iron and steel-work has been established. Ship-building is carried on in Nagasaki and Kobe.

Matches, umbrellas, toys and paper are the important products of other industries. Rubber industry is of growing importance. Recently the Japanese have made much progress in chemicals.* The pottery-works of Japan are beautiful and have world-wide demand.

Japan has increased the volume of her foreign trade to a large extent. The prosperity of the country depends on the

* "The eagerness of the Japanese to proceed to their own is undoubtedly responsible for a serious *defect in their present day industrial structure*. Their artisans were very clever in mastering the detailed process so that they could repeat it successfully ; but their training was not sufficiently thorough to give them a grounding in the fundamentals

ability of importing raw materials, exporting manufactured goods, and keeping a favourable balance of trade. From the very beginning of her industrial days, it has been a constant struggle for Japan to balance her imports with her exports, and till 1934 her imports were greater than exports.

In 1938 Japan's foreign trade amounted to £160 millions for exports and £158 millions for imports.

THE EXPORTS OF JAPAN		THE IMPORTS OF JAPAN	
	p.c. of total exports		p.c. of total imports
Raw Silk ..	.. 23	Raw Cotton ..	.. 30
Cotton goods ..	.. 21	Wool ..	.. 7
Silk goods ..	.. 8	Metals and Machinery	15
Clothing ..	.. 5	Food ..	.. 11
Pottery ..	.. 3	Others ..	.. 37
Tobacco and tea ..	.. 3		
Machinery ..	.. 2		
Metals ..	.. 2		
Others ..	.. 33		

Till the outbreak of the present war the U. S. A. was the most important partner of Japan's trade. The U. S. A. alone provided 25 per cent. of Japan's imports and took 17 per cent.

and to make of them mechanics with the ability to modify, adapt and develop the methods of manufacture that were brought to them from West. The Japanese show many evidences of being good workers, but they are not originators or inventors in things mechanical.

The bad reputation of Japanese goods and the mistrust of the Japanese exporters and their methods are indications of the limitations of the present industrial development. During the World War Japan had an unusual opportunity to extend her markets in South-Eastern Asia. Her trade did increase very substantially but with the post-war recovery of the European nations, many of the consumers have returned to their former sources of supply because of the general dissatisfaction with Japanese goods. The poor quality was undoubtedly due to inferior manufacturing technique and to the prevalence of unsupervised domestic industries." (Orchard, J., *Economic Condition of Japan.*)

of her exports. About one-third of the total foreign trade of Japan is with her colonies and dependencies (30 per cent. of imports and 35 per cent. of exports).

DIRECTION OF JAPAN'S FOREIGN TRADE (IN P.C.)

Exports to Asia ..	.. 62	Imports from Asia ..	49
„ U. S. A. ..	17	„ U. S. A. ..	25
„ others ..	21	„ others ..	26

TRADE CENTRES AND PORTS :

The most important trade centres and cities of Japan are Tokyo, Osaka, Nagoya, Kobe, Yokohama and Kyoto. These cities are grouped very close to one another and none of these is far from the sea.

✕ *Osaka* is the business centre of Japan. It is often addressed as City of Smoke, for there are many mills and factories in the city, whose smoke keep the town in a cloak of grey all through the year. It is particularly important for cotton manufactures. It is located on the Osaka Bay at the eastern end of the Inland Sea, and has connections by water with the rest of Japan and with foreign countries. Moreover, in the city itself the facilities for water transport are excellent. It is sometimes called the Venice of Japan. But the hinterland is very poor in raw materials. Cotton spinning, printing and book binding, manufacture of machinery, iron and steel materials, paper goods and ship-building are the activities of the city. "Because of water transport within and without the city ; because of its wide expanse of level land ; because of the accessibility to raw materials, fuel and labour ; and perhaps to a less degree because of a supply of capital originating from the commercial activities of the feudal period, Osaka has surpassed all other cities of Japan in industrial development."

Kobe, only 20 miles from Osaka, is a port and possesses a deep natural harbour. As the city is confined to a narrow coastal strip, there is no room for industrial expansion. A high and continuous row of hills surrounds Kobe and the city is only 2 miles long and 1 mile wide. Its activities are ship-building, match industry and rubber manufacture.

Tokyo, the capital, is situated on the eastern coast of Honshu. It is the third largest city in the world. Its two ports are Yokohama and Tokyo. *Yokohama* is one of the finest harbours of Japan. It is large, deep and well protected. Tokyo harbour is shallow and large vessels cannot enter there. The principal industries of Tokyo are printing and book binding, the manufacture of electrical apparatus, the manufacture of hardware, and the manufacture of glass and rubber. Earthquakes frequently destroy the buildings and industries of the city.

Nagoya is situated on the south shore of Honshu between Osaka and Tokyo. Its harbour is artificial, and it is of no importance as a port of call for the steamship lines connecting with foreign countries. The great Mitsubishi aeroplane manufacturing factory is located in the city. The reeling of raw silk is the most important industry. China and porcelain and weaving of cotton cloth are the other activities. *Kyoto* is an old industrial city of Japan. It is the cultural centre of the Japanese empire. *Wakayama* is situated 40 miles south of *Osaka*. It is an important manufacturing city.

Korea (Chosen)

Korea is a mountainous peninsula. The eastern coastal region is narrow and is, therefore, not important for agriculture, which is mainly confined to the lowlands in the western parts. Rice, millet, tobacco, beans, cotton, hemp and other monsoon crops are cultivated. The mineral wealth consists of gold, coal and iron. These minerals are worked by the Japanese. Lumbering industry is becoming important in Korea. *Seoul*, the capital, is connected with Mukden by rail.

Formosa, also known as Taiwan, belongs to Japan and lies in the western Pacific Ocean, being separated from China by the Strait of Formosa. Its length is about 250 miles with an average width of nearly 80 miles. The total population of the Island is 4 millions. The Island is mountainous and possesses a tropical climate. Forests of the region yield various products, of which camphor is the most important. The climate and soil

favour agriculture, and the principal crops are rice, tea and sugar-cane. *Keeling* is the main trade centre and port.

QUESTIONS

1. In the course of thirty years Japan has made great progress in the matter of industrial development. State briefly how it has been possible for her to do so. (I. I. B. 1934; Cal. Inter. 1935.)

2. What are the principal industries of Japan? Where are they situated? State the sources of supply of the raw materials of those industries. (Cal. Inter. 1936.)

3. Estimate and locate the mineral wealth of Japan.

(Cal. B. Com. 1932)

4. Give an account of (a) the natural resources, and (b) the climatic conditions of Japan, and show how they have affected her development.

(Cal. Inter. 1933.)

5. Give a short geographical essay on the population problem of Japan.

(B. A. 1942.)

The Chinese Republic

The Chinese Republic covers nearly one-fourth of the surface and contains nearly half the inhabitants of all Asia.

It is approximately the size of Europe excluding Russia. It is indeed a continent, containing as it does over twenty provinces which are comparable, alike in size and population, to some of the countries of Europe.

The Chinese Republic has three divisions: (1) China Proper, (2) Eastern Turkistan, and (3) Tibet. Manchuria and Mongolia, which formerly were under the political control of China, are now separate States.

China is a vast Republic with rich mineral, agricultural and forest resources. Her soil is fertile and rivers are valuable for irrigation purposes. In spite of such vast resources and population *China is a backward country. Her share in the world's trade is scanty.* Certain geographical conditions are responsible for the meagre economic development of the Republic. With the exception of the eastern part, the country is surrounded on all sides by mountains and deserts which render communication with the rest of the world difficult. This isolation is a factor which keeps the people poor, uneducated and ill-informed of what is happening elsewhere. Only less than

a century ago the country came in contact with Europe and America. The vast Republic has only one opening to the sea—the eastern coast. The products of the western side cannot be conveniently brought to the eastern side as the distance is too great and the means of transport are insufficient. The need for foreign trade is little felt in the country because of diverse climates and products. When there is deficiency of food in one region, it is supplied by other regions of the Republic. The extension of railways has taken place only in the north; in the south railways are very few. The Government is weak and treats the foreigners with suspicion. Foreign merchants and foreign shipping are restricted to certain ports, known as 'Treaty Ports'.

With her vast resources and population China may become in future one of the greatest industrial countries and potential markets of the world. The majority of its people are docile, diligent, devoted to work and cheerful.

Agriculture is the main industry of the Republic. The monsoon climate and the fertility of the alluvial soil are the contributing factors. The three basins of the Hwang-ho, Yang-tse-kiang and Si-kiang are very important for cultivation. Millets and wheat are raised in Hopei, Shansi, Shantung and Honan districts which are watered by the Hwang-ho. Rice is cultivated more or less throughout the country. The entire basin of the Yang-tse-kiang from Anhwei to the outer part of Szechwan grows rice. The average yield of rice per acre in China is 1,900 lb. According to Dr. C. L. Pan, leader of the Chinese agricultural mission in India, the reason why the yield in China is great include the fertility of the soil, the use of manures and the diligence of the cultivator. Cotton is cultivated along the north-eastern coast, particularly in Kiangsu, Shantung and Hopei. Kiangsi and Fukien in the south-east coast are noted for tea. Tobacco is grown in most of the districts and there is a considerable export as well as a big home consumption. Silk, poppies, soya beans and sugar-cane are also found.

Horses and mules are used as pack animals in the drier north. Cattle are reared throughout the Republic, while sheep

are numerous in the north and the west. Swine is domesticated in Szechwan in the west, Anhwei, Shantung and Hopei in the north-east and Kwantung in the south-east.

The mineral wealth of China is considerable. It is estimated that the country's deposits of coal would exceed that of any other country of the world except those of the U. S. A. Large deposits of coal are found in the following areas: (1) the

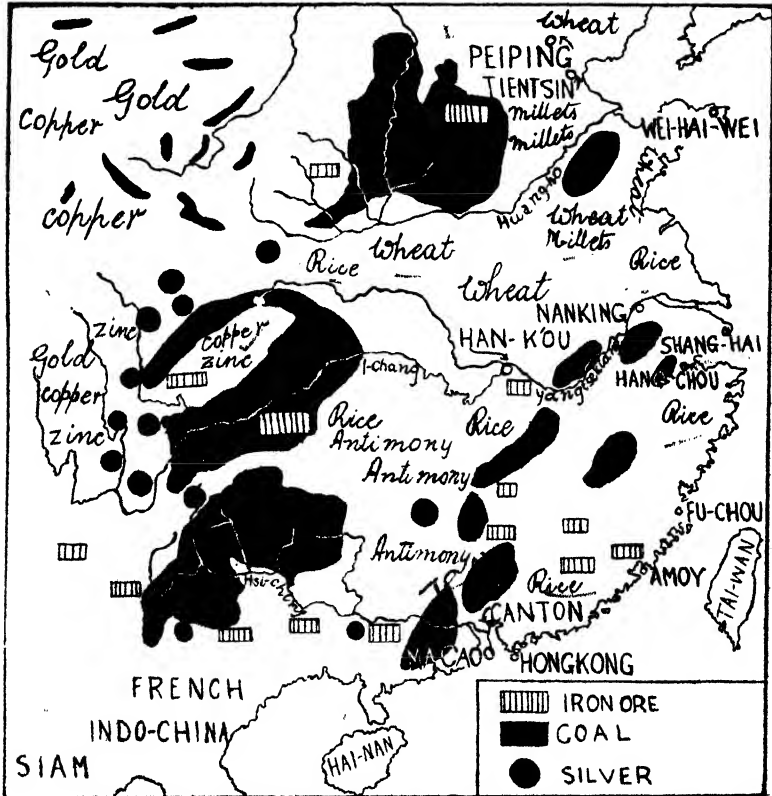


FIG. No. 50. Map showing the products of China.

mountains of Shantung, (2) the province of Shanshi, (3) Szechwan, and (4) Yunnan. There are also many other small coal-fields scattered throughout the country. In the southern side of Shanshi iron ore, tungsten, graphite, copper, etc. are found.

Tin, antimony, copper and gold are found in the south. Shantung raises asbestos, gold, gypsum, and iron ore in addi-

tion to coal. The most important region for minerals lies between Szechwan and Yunnan where almost every mineral is found.

The development of mining is greatly hampered by the disadvantageous location of the chief mineral areas. As they are mostly situated in the interior, the distance is considerable from the ports, and transport facilities are very poor. Iron ore is not generally found near the coal-fields, a factor which is responsible for the slow development of the metal industry.

The manufactures, which are little developed, are mainly engaged for the supply of domestic necessities and are produced under primitive methods. Silk, cotton piece-goods, woollen goods, cigarettes, vegetable oil, porcelain and lacquered wares are the products of the manufacturing industries. Recently the iron and steel industry has engaged the attention of the people. At Shanghai a ship-building yard has been opened.

The rivers of China are important both for irrigation and navigation. The chief rivers are the Yang-tse-kiang, the Si-kiang, Hwang-ho and the Pei-ho. The Yang-tse-kiang provides an excellent waterway for more than 1,000 miles from its mouth. The Yang-tse-kiang is the main channel of trade, industry and every form of communication with Central China. It has opened up an enormous tract of territory to foreign commerce. The Hwang-ho or Yellow River in North China is the second largest river of the Republic. Its disastrous floods have cost millions of lives and millions of wealth in China. From its source to the sea, it is 2,500 miles long, and yet the river is not navigable. The course is either too swift and broken by rapids or becomes too shallow and filled with sand bars to allow the use of boats. The Si-kiang in southern China rises in the highlands of Yunnan and flows eastward. The Si-kiang is navigable throughout its course.

The total population of China is over 425 millions, as compared with a European total (excluding Russia) of about 400.

The distribution of population in China is very unequal. Density of population is very high in (a) the coastal plain from the Manchurian border in the north to the island of Hai-nan

in the south ; (b) the plains watered by the Hwang-ho, Yang-tse-kiang and the Si-kiang ; (c) the Wei-ho valley and the Red Basin of Szechwan. The alluvial soil, adequate rainfall and high summer temperatures favour the cultivation of lands in all these regions. It must be noted that the very large population in China is based entirely on agriculture. The lower basins of the three great rivers have an average density of population of more than 500 per sq. mile. The areas of low density of population are Tibet, Siu-kiang and Mongolia which are desert-plateau. The density is nowhere more than 16 people per square mile. The Yunnan, although a plateau, is crossed by numerous fertile valleys and contains rich minerals. The region is, therefore, densely populated.

China's share in the world trade is scanty. Silk, bean products, cotton, tea and coal comprise the bulk of China's contribution to world trade. The chief role of China is to furnish raw materials. The other exports are tin, sugar, hides, pottery and bamboo ware. The principal imports are cotton goods, hardware, machinery, ship-building material, arms and ammunition, matches and opium. The development of trade in China has only begun, and the possibilities are great.

✓ The important ports of China are Tientsin, Shanghai, Hangchow, Canton, Nanking, Hankow and Fuchow.

Shanghai is situated on a tidal creek near the Yang-tse-kiang. Its manufacturing industries are cotton and silk. It is the principal port of northern China, and is the natural outlet of the Yang-tse-kiang. The harbour is not very deep and, therefore, big steamers have to anchor at some distance from the shore. *Hankow* is situated on the confluence of the Yang-tse-kiang and the Han rivers. It is an important river port and manufactures cotton, silk and steel. *Tientsin* is the port for Peiping and is the main outlet for the produce of northern China. *Nanking*, the capital of the Republic, manufactures silk and cotton.

Hongkong, a British possession, is an island port near the mouth of the Si-kiang in southern China. It has an excellent harbour. *Victoria* is the town of the island. It is the main

outlet for the produce of Southern China. Hongkong is a free port, and carries on a large entrepot trade with Australia, India and the United Kingdom.

Manchukuo

Manchukuo, formerly known as Manchuria, is formally an independent State ; but it lies within the sphere of Japan's political and economic influence. The State lies to the east of the Mongolian Highland and covers an area of about 460,000 square miles. The country is generally plain and is drained in the north by the Amur. Although agriculture is the mainstay of the people, the cultivated land constitutes only 14 p.c. of the total area, the remaining lands being forests, pastures and wastes. The principal agricultural crops are soya beans, millets, wheat, maize, barley and rice. Soya beans cover one-fourth of the cultivated land and supply 50 p.c. of the world output. Manchukuo is known as the "Soya-bean Empire of the world". Soya bean is the most important product. It is converted into sauce or into a kind of confectionery or is used as a table vegetable. The oil which is extracted from it is used in the manufacture of water-proof, umbrella, varnish, ink and soap.

The State has considerable mineral wealth. Gold, coal and iron are being worked gradually. The agricultural and mining resources have caused a rapid development of manufacturing industries—specially in the southern side. The industries are mostly run by the Japanese.

The want of adequate means of communication is still hindering the progress of the country. Roads are muddy and badly made. The extension of railways will bring about a rapid progress in the State. *Mukden* is the capital of the country. It is connected with Tientsin and Port Arthur. The two principal ports are *Newchwang* and *Dairen*.

The three adjacent countries of China, Japan and U. S. S. R. are very much interested in Manchukuo for its varied economic resources and geographical location. The U. S. S. R. always coveted its ice-free ports ; China looked on it as a new land for her surplus population. But the "Prize of

the Far East" has come under the political and economic influence of Japan.

Japan is vitally interested in Manchukuo. (1) Manchukuo will act as a first line of defence in case a war breaks out between Japan and Russia. (2) The vast agricultural, pastoral and mining resources of Manchukuo will provide Japan with raw material for her industries. (3) In Japan population is increasing fast and the country is feeling the pressure already. The surplus population can migrate to Manchukuo, where population is sparse. (4) Manchukuo will be a good market for Japanese goods.

QUESTIONS

1. Show by reference to climate, natural vegetation and mineral resources, why Manchukuo has such important economic possibilities for countries like Russia, Japan and China.

(I. I. B. 1930; Cal. Inter. 1934.)

2. Estimate and locate the mineral wealth of China.

(Cal. Inter. 1942; Cal. B. Com. 1933.)

3. Give a reasoned account of the economic geography of Manchukuo.

(Indian I. Bankers, 1940.)

4. Discuss the position of China as a supplier of industrial raw materials. How is the conquest of China likely to help Japan in its bid for commercial supremacy in the world? (Cal. B.A. Hons. 1941.)

Indo-China and the East Indies

The Malaya Peninsula, Siam and French Indo-China enjoy the monsoon type of climate; the East Indies and some parts of Malaya Peninsula have equatorial type of climate.

Siam or Thailand is the only independent kingdom in south-eastern Asia. It has an area of 198,000 square miles with a population of over 14 millions. The central plain which is drained by the river Menam is the most productive part of the country and here rice is the chief crop. Upper Siam consists of a series of hill ranges and is noted for teak. Tin ore and wolfram are found in southern Siam. *Bangkok* on the river Menam is the capital and only port of Siam. Many canals run through Bangkok and, therefore, it is known as "the Venice of the East".

French Indo-China has a total area of more than 250,000 square miles. It is divided into five areas ; one of these is a colony and the remaining four are protectorates. Cochin-China is a colony and the protectorates are Cambodia, Annam, Tongking and the Laos Territory. Extensive forests occur in the Laos Territory, Tongking and Annam. Rice, maize, rubber, tobacco, cotton and sugar-cane are cultivated in Cambodia and Cochin-China. Mineral products such as coal, zinc, tin and wolfram are found in Tongking. *Hanoi*, with a population of 129,000, is the capital of French Indo-China, *Saigon* and *Phan-Rang* are the chief ports.

Malaya comprises three political divisions and is a British sphere of influence.

- (i) The Straits Settlements.
- (ii) The Federated Malaya States.
- (iii) The Native States.

Malaya is more or less mountainous and has the equatorial type of climate. Rubber plantation is very important in Malaya, which supplies more than one-third of the world's rubber. Pine-apples and cocoanut palms are also found. Other crops include pepper, sago and tobacco. Malaya raises nearly one-third of the world's tin. The tin deposits are located in Perak, Selanger, Pahang, Sembilan, Johore, Kedah and Kelanton. Some gold, coal and copper are also found.

SINGAPORE with a population of 500,000 is one of the most important sea ports in the Far East. It has great entrepot trade. Rubber, tin, and copra are collected from Malaya and exported to the U. S. A., U. K., Japan and other countries. Penang exports tin and rubber.

The East Indies comprise Sumatra, Java, Celebes, Bali, Borneo and the Philippine Islands. They extend from east to west for more than 3000 miles. Sugar-cane, rubber, copra, tea, tobacco, coffee, Manila hemp and timber are the principal products. Oil-fields in Dutch Borneo, Celebes, Sarawak and Java have recently become very important and these supply nearly 3 per cent. of the world production. Palembang in Sumatra and

Tarakan in north-east Borneo are the two important oil centres. The East Indies supply 18 per cent. of the world's tin. Nearly $\frac{2}{3}$ of the output is from the island of Banka and $\frac{1}{3}$ from Belliton. *Manila* is the capital of the Philippines (under the U. S. A.) ; it has a good harbour.

Java is by far the most developed island in the East Indies and it can boast of a highly organised sugar industry in the East. The important trade centres are Batavia and Surabaya. Batavia is the capital of the Dutch East Indies and possesses a magnificent harbour.

The Near and the Middle East

Turkey, Syria, Iraq, Arabia, Afghanistan, Iran and Palestine are popularly known as the *land of the five seas*. This part of Western Asia is washed by the Caspian Sea, the Black Sea, the Red Sea, the Mediterranean Sea and the Persian Gulf. Economically, Arabia, Iran and Afghanistan are important.

Syria covers approximately 60,000 square miles of land and is a Mandate under the control of France. It constitutes the home of nearly 3 million people. Agriculture is the chief source of wealth. Fruits, grapes, wheat and cotton are grown in the western part of the country where the climate is Mediterranean. The central and eastern parts provide pasturage for live-stock. *Tripoli*, *Beirut* and *Saida* are the principal ports. *Aleppo* and *Damascus* are historically important.

Iran comprises an area of more than 600,000 square miles with a population of nearly 10 million. The interior is mountainous. In the central and eastern parts of the country desert conditions prevail, but the south-west and some northern parts are fertile, and produce garden crops, wheat, rice, cotton and tobacco with the help of irrigation. The climate is continental. Winter is very cold in the interior and in the lowland summer is very hot. Iran contains petroleum, coal and iron. With the exception of petroleum minerals are not worked. A British company is engaged in working the petroleum field on the south-western part of the country in an area of about 25 square miles. The oil-fields are connected by a double pipe-line, 145

miles long, running through Dar-I-Khazina and Ahwaz to refineries at Abadan. Iran is the fourth largest petroleum-producing country in the world. Want of adequate means of communication is a great handicap. Roads and railways are few. Almost all the trade is carried on by caravans. Exports are petroleum, carpets, wool, silk, dried fruits and pearls. The important centres are Teheran, Shiraz, Tabriz, Bandar Abbas and Bushire, the last two being sea ports.

Teheran lies almost at the foot of the Elburz mountains. Though situated in the midst of an arid steppe, Teheran has been the political centre of the country since 1788. The city is famous for artistic fabrics like carpets and rugs and also wine, etc.

Shiraz is situated on an elevation of 45,000 feet above sea level and 120 miles east of the Persian Gulf. It is famous for its excellent wine, rose-water and attar of roses.

Tabriz lies to the north-west frontier of the country, at an elevation of 5,000 feet above sea level. It is the principal trade centre of the kingdom. The neighbourhood is very fertile, producing large quantities of grapes and fruits.

Both *Bandar Abbas* and Bushire are noteworthy ports on the Persian Gulf. These two ports do considerable trade with India and the neighbouring areas.

Politically Iran enjoys nominal independence, but at present England, Russia and the U. S. A. exercise dominating influence over her affairs.

Palestine : This region is a mandatory State under British control and has an area of 9000 square miles with a population of a million and a half. In recent years Palestine has much developed as a result of the attempts by the Jewish people to establish their national home there. The coast of Palestine is narrow and fertile, and has the Mediterranean type of climate. The coastal plain is the main centre of the new Jewish colonies. The limestone highlands cover the central region, and in the further east there is the deep rift valley of the Jordan and the Dead Sea.

The principal occupation of the people is agriculture.

Wheat, barley, oranges, grapes, figs, and tobacco are the chief crops. Oranges are the most important fruit crop and the principal export of Palestine. Both wine grapes and table grapes are raised for the local markets as well as for export to the neighbouring countries.

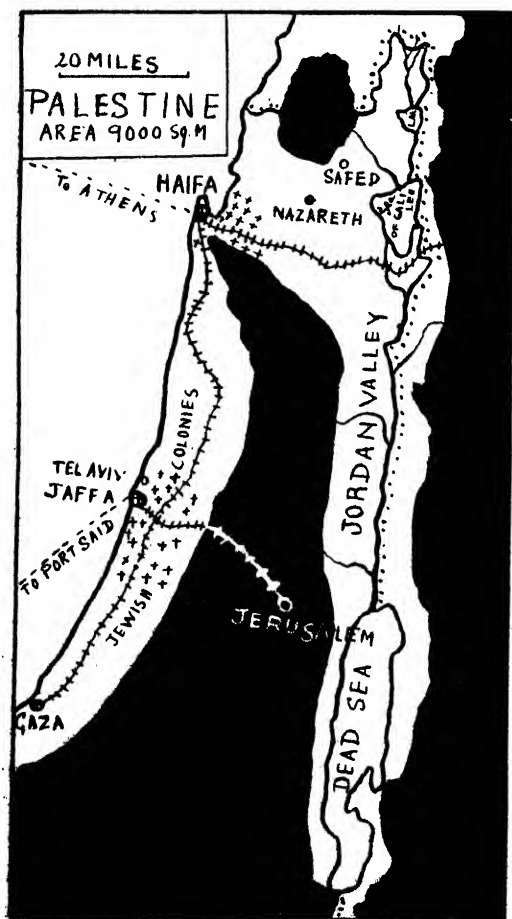


FIG. NO. 51. Map of Palestine. There is an oil pipe-line from Iraq to Haifa. Air-routes connect Gaza with Baghdad.

The mineral resources of the country are as yet undeveloped. The Dead Sea contains unlimited quantities of potash, bromine, magnesium and chloride. Other minerals known to exist in Palestine are salt, phosphates, gypsum, manganese, copper, sulphur and petroleum.

There is a small fishing industry but the exports are negligible. Live-stock consists of cattle, sheep, goats, donkeys, horses and camels. The colony requires more roads and railways. The important trade centres are Jaffa, Haifa, Tel-Aviv

and Jerusalem. Haifa is the natural outlet of the country ; it is a port as well as a railway centre. Soap boiling is the prin-

cial industry, and soap, cereals and fruit form the chief exports.

Iraq : The modern State of Iraq is a child of the First World War, and owes its progress largely to the efforts and devotion of its British officials. Iraq is situated between the Persian and the Arabian Highland and has an area of about 145,000 square miles. The greater part of the country consists of lowland which is drained by the Tigris and the Euphrates. The frontiers of Northern Iraq include a portion of the Syrian Desert, and consequently the area is uncultivable and almost waterless. Population is little over 3 millions, of which 2 millions are Muslim Arabs.

Cultivated lands form only 8 per cent. of the total area, but these support more than 8 per cent. of people. Barley, tobacco, cotton and wheat are the principal crops. Agriculture is practised in the southern alluvial plain with the help of artificial irrigation. This area is drained by the Euphrates and the Tigris, and is threaded and crisscrossed with water-channels. The southern part of the plain is always in danger of flood in the spring time when the snow melts on the mountains of Kurdistan and Anatolia.

“With improved agricultural methods, extended irrigation, more capital, and better communications, Iraq would be able to support a population many times its present size”.

With the exception of petroleum, the minerals of Iraq are not important. The oil-fields are found in the north-east from where a pipe-line has been extended to Haifa and Tripoli on the Mediterranean coast—a distance of about 1200 miles. Iraq raises a little above 4 million tons of petroleum every year.

The trade centres are *Basra, Baghdad, Mosul* and *Kirkuk*.

Afghanistan : Until recently Afghanistan was almost an inaccessible country. It is a mountainous country and is generally barren. Agriculture is pursued on the river valleys with the help of irrigation. The important agricultural products are wheat, barley and tobacco. Fruits are grown extensively and form an important item of commerce. Afghanistan contains a varied list of minerals. Both iron ores and coal are

found in large quantities in the mountain regions of Central Afghanistan. Pastoral industry is practised for meat and wool. Trade and commerce are hindered by lack of communication, extremes of climate and weak government. The country has a large frontier trade with India, Persia and Turkistan. The exports are wool, fruits and silk. The chief imports are cotton piece-goods, metals, leather and arms and ammunitions. *Kabul*, *Kandahar* and *Herat* are the principal trade centres.

The Afghans are cruel, yet they can die to protect guests. Muslims first and Afghans afterwards, these people are least concerned with imitating others.

Arabia : Arabia is divided into a number of autonomous States, although certain areas are under British Protectorate. The greater part of Arabia is accessible to the sea. It comprises an area of 1,200,000 square miles with a population of nearly 6 million. The country is practically a desert, with no lake or navigable river. The relief is mountainous with lowlands near the sea-sides. Horses are famous. Agriculture is carried on in the lowlands near the sea-sides. The famous mocha coffee is grown in Yemen. Pearl fishery is important in the Persian Gulf. Desert climate, inadequate transport facilities and the nomadic character of the people have retarded the general trade development of the country. Coffee, dates, pearls and dried fruits are the principal exports, while textiles, arms and ammunitions, sugar and rice are the imports. The principal towns are *Muscat*, *Mecca*, *Jeddah* and *Medina*.

Aden is a British colony in south-west Arabia, 100 miles from the entrance to the Red Sea. It has great importance as a naval and air-force station.

Asiatic Turkey or Anatolia has an area of about 290,000 square miles with more than 15 million people. The situation of the country at the junction of Asia, Europe and Africa has influenced greatly its political, social and economic development. Turkey has natural frontiers on all sides and is bounded on the west by the Aegean Sea, on the south by the Mediterranean and Iraq and on the east by mountains. Before

the construction of the Suez Canal, Turkey dominated caravan traffic between Asia and Europe. It is through Turkey, again, that a possible railway route between India and Europe may be built in future.

Andherence to old customs, religious prejudices and lack of coal and iron ore retarded so long its industrial and political development. Thanks to the introduction of Ataturk's *forward policy*, much progress has been made in recent years in various directions.

Geographically, Asiatic Turkey may be divided into three regions: (a) the Mediterranean climate region of the south and west coast, (b) the north coast region, and (c) the Central Plateau where the climate is of extreme type.

Agriculture is the main occupation of the country, supporting as it does more than 75 per cent. of the people. Citrus fruits, olives, grapes and tobacco are cultivated on the Mediterranean coastal region. Wheat, cotton and barley are also cultivated.

There are about 12 million sheep which yield coarse wool for the manufacture of carpets. The hair of goats supplies the material for the manufacture of mohair.

Turkey has a varied list of minerals like coal, lead, copper, emery, boracite and chromium, but mining is not fully developed. Turkey supplies about one-sixth of the world's chromium. The ore deposits are scattered over Asia Minor, and in the south along the Mediterranean coast. The country is also rich in forest resources. There is also a considerable amount of unharnessed water-power. Cottage industry, even to-day, remains more important than the factory system. The principal manufactures are rugs, carpets, cigarettes, sugar and cotton goods.

Transport facilities are inadequate in Turkey. The country has only 5,000 miles of railways. In recent years Turkey's foreign trade has increased much. The exports consist of tobacco, raisins, raw wool and raw cotton, and the imports are iron and steel goods, textiles and sugar.

Large cities are few in Turkey. *Ankara* in Inner Anatolia is the capital of the Republic. *Ismir, Adana, Konya* and *Bursa* are other important cities.

QUESTIONS

1. Discuss the nature of commercial exchange between India and the Middle East. Do you believe that the latter is a potential market for India's exports, particularly of manufactured goods?

(Cal. B. Com. 1937.)

2. It is said that export markets for India's manufactures can be developed in Arabia, Iraq, Iran and Afghanistan. Discuss the possibilities of such development.

(Cal. B. Com. 1939.)

3. Describe briefly the development in the transport system of the "Middle East".

(Cal. B. Com. 1934.)

4. Give a reasoned geographical account of the Philippines and the Malaya Peninsula.

(I. I. B. 1941.)

5. Write short notes on the following: Tel-Aviv, Haifa, Aden, Ankara, Basra, Teheran and Kabul. In each case describe its situation and geographical causes that have contributed to its importance.

6. Write an account of Iran under the headings: Position, Boundaries, Drainage, Climate and Products.

7. Describe the route or routes by which civil supplies from outside reach the Middle East. What is the position of India's exports of textile goods in this market?

(Cal. B. Com. 1943.)

8. The allied countries are apparently producing enough synthetic rubber to meet the deficiency caused by the loss of supply from the Japanese-occupied regions. What, in your opinion, will be the position of this industry when normal times return?

(Cal. B. Com. 1944.)

CHAPTER XVI

INDIA*

India comprises an area of 15,75,107 square miles, of which 10,84,774 square miles, or 60 per cent. are under the British. The remainder consists of Indian States and foreign possessions divided between France and Portugal. The population of the Indian Empire (British India and Indian States) is nearly 390 millions. The foreign possessions have a total population of 8,70,000 people in an area of 1274 square miles. The French possessions are Chandernagore in Bengal, and Pondicherry, Karikal, Yanam and Mahe in Madras. The Portuguese settlements consist of Goa, Daman and Diu, all on the west coast of the Bombay Presidency, with a total area of 1096 square miles.

The Indian Empire measures 2,000 miles from north to south and 2,500 miles from east to west. In area it is roughly equal to the whole of Europe without Russia.

India occupies a highly favourable situation for the purposes of international commerce. She stands almost at the centre of the Eastern Hemisphere and at the head of the Indian Ocean. She commands all the sea routes for trade between the old and the new world—towards Africa and Europe in the west, Australia in the south,—Siam, China, Japan and America in the east. India can rightly boast of possessing 'natural frontiers' by being shut off from the Asiatic mainland by the Suleiman range on the north-west and by the Hindukush and Himalayas on the north. These mountains have, no doubt, obstructed her land routes for trade by shutting up the northern boundary, but still a considerable amount of foreign trade now goes on through the mountain passes at the western extremity of the Himalayas. The important passes are the *Bolan Pass* in the North-West Frontier Province on the road to Kabul, the *Karakoram Pass* in Kashmir leading to Turkestan, and the

* For details see the present author's *Economic Geography of India*.

Jelep-La-Pass leading from Sikkim to Tibet. All these passes exceed 14,000 feet.

The coast-line of India, in spite of its great length (more than 3,000 miles), is broken by a very few inlets and possesses few islands round it. The continental shelf of the country is shallow, and the shores are usually flat and sandy. Because of these physical characteristics India possesses few ports and harbours in proportion to her coast-line. The Gulf of Cutch, the Gulf of Cambay, the backwaters of Cochin and Malabar, the Palk Strait and the Gulf of Mannar, and the indentations on the mouths of the Ganges are the inlets and straits of India. These are all shallow, with the exception of the *backwater* of Cochin and Malabar, and permit navigation when they are made deep by dredging operations.

The east coast of India runs from Tek Naf, the most southerly point in Bengal, along the Sundarbans in a westerly direction, to the Hugli river. From the Hugli, the coast proceeds south-west to the Kistna Delta from where it continues south to Cape Comorin. *The west coast* runs north from Cape Comorin to the Gulf of Cambay, where the Kathiawar Peninsula juts out towards the west from the mainland. The coast continues north-west from Kathiawar. [The opening (*i.e.*, the gulf) between the north-west coast and the peninsula is known as the Gulf of Cutch.]

The Natural Regions

A region of such vast extent is naturally of a diversified configuration—plains, plateaux and mountains. Geographically India presents three natural divisions, each of which is quite unlike the other. These divisions are based on physical conditions.

- I. The Mountainous regions of the North.
- II. The Indo-Gangetic plain.
- III. Peninsular India.

I. *The mountainous regions of the north* may again be divided into two parts: (a) The Himalayas, and (b) the North-West borderland. *The Himalayas* run for 2,000 miles from the

eastern extremity of Assam to the western limits of Kashmir with a breadth varying from 180 to 220 miles and contain some of the highest peaks in the world. The Himalayas, a series of parallel ranges* intersected by valleys and extensive plateaux, rise abruptly from the plains in the east and gradually in the west. The average height of the Himalayas is over 17,000 ft., and about forty peaks are known which exceed 24,000 ft. The best known of these peaks include Nanga Parbat (26,630 ft.), Nanda Devi (25,660 ft.), Dhavalgiri (26,820 ft.), Mount Everest (29,002 ft.) and Kanchinjinga (28,150 ft.). The snow-line is at a height of about 16,000 feet on the southern slopes of the Himalayas and higher on the northern.

The Himalayan chain acts as a natural protective wall for India, and provides rain-water for the plain by arresting the moisture-bearing clouds of the south-west monsoon. During winter it obstructs the piercing cold winds of Central Asia from coming into India. It gives birth to mighty rivers like the Indus, the Ganges and the Brahmaputra. The Lesser and Outer Himalayas are very rich in animal and forest resources. There are extensive tea plantations in the Outer Himalayas from Assam to the Punjab. Physical difficulties do not permit cultivation excepting in the Lesser Himalayas where rice, chillies, ginger, tea, wheat and fruits are raised.

The scenery and the mighty peaks of the Great Himalayas attract tourists and climbers from different parts of the world and thus provide a source of income to many hill stations.

The North-West borderland includes the mountainous districts of the North-West Frontier province, British Beluchistan and the Beluchistan Agency. Rainfall being scanty, agriculture is practised on the river valleys with the help of irrigation.

* Three distinct parallel ranges are noticeable in the Himalayas : (a) The *Great Himalayas* comprising the highest portion with an average height of 20,000 feet, (b) the *Lesser Himalayas* comprising the ranges with an elevation of less than 15,000 feet, and (c) the *Outer Himalayas* comprising the hills lying between the Lesser Himalayas and the plains. In front of the Outer Himalayas lies the terai jungle—the abode of many wild beasts.

The region is crossed by certain important trade routes which connect India with Central Asia.

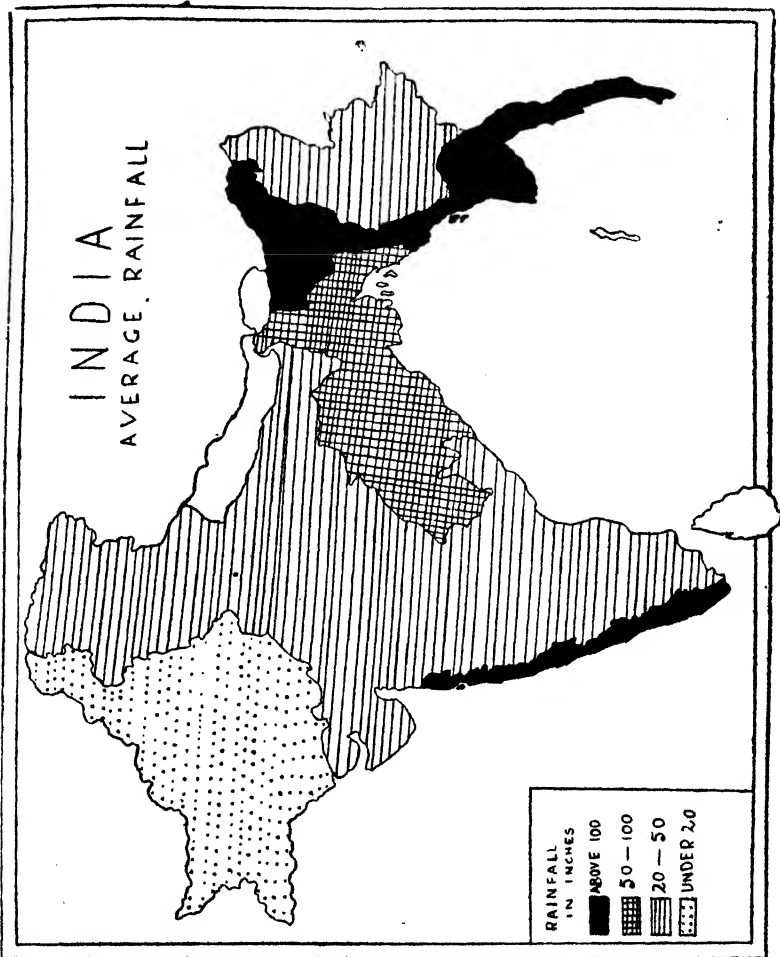


FIG. NO. 52. The Natural Regions of India.

II. *The Indo-Gangetic plain.* The plain of Hindusthan occupies the greater part of Northern India and covers more than 2,000 miles from east to west with a width of 200 miles. This plain is formed by the basins of the Ganges, the Indus and the Brahmaputra with their tributaries, and has been the

cradle of Indo-Aryan civilisation from the earliest period. The geographical advantages are (a) fertile soil, (b) favourable climate, (c) flat surface rendering possible the construction of roads and railways, (d) large rivers, (e) mineral products, etc. In the *Gangetic plain*, rainfall is heavy and agriculture is the chief occupation of the people. It contains more than 40 per cent. of the total population of India. *The Indus plain* is more or less dry. Agriculture is practised with the help of irrigation. Although the region contains only 10 per cent. of India's population, it has an extensive and well-developed system of irrigation.

III. *Peninsular India* lies within the tropics. It is bounded on three sides by mountains—on the north by the Vindhya and Satpura ranges including the Malwa and the Aravalli plateaus, on the west by the Western Ghats and on the east by the Eastern Ghats. Two coast strips of flat land exist on both sides of the Western and Eastern Ghats—the western coastal strip is known as the Konkan in the north and Malabar in the south; the Eastern coastal strip is known as the Coromondal Coast.

The Eastern Ghats are much less elevated and do not form a continuous chain like the Western Ghats. The Eastern Ghats run at a much greater distance from the coast, the intervening lowlands averaging from 50 to 80 miles.

As the general slope of the tableland is from west to east, most of the rivers flow into the Bay of Bengal. The Mahanadi, the Kistna, the Pennar, the Cauvery and the Vaigi flow into the Bay of Bengal; the Tapti and the Narmada flow into the Arabian Sea. The Peninsular rivers are all rain-fed, and they turn into mere puddles during the dry season. The principal agricultural crops are cotton, tea, coffee, and spices. Cinchona, cocoanut and forest products are also available.

In the Deccan, there are five natural divisions. (i) The narrow west coast region from the Tapti to Cape Comorin receives the full force of the Arabian Sea current of the monsoon and therefore rainfall is over 100". The soil is very fertile and the crops are rice, spices and fruits. The density of population is near about 400 per sq. mile.

(ii) The Black Soil region consists of deep basaltic soil which is highly retentive of moisture and therefore does not stand in need of irrigation. It is extremely fertile, and owing to the lime it contains, the region is suitable for cotton growing. Millets, oil-seeds and wheat are also cultivated. (iii) The north-east Deccan has poor soil, but the rainfall is over 50". Tank irrigation has much developed. Rice is the principal crop. (iv) The Southern Deccan is a *rain-shadow area*, and therefore famine occurs frequently. The soil is very poor and cultivation is possible by means of irrigation. Population is scanty. (v) The East coastal plain is a low, alluvial land. The northern portion has summer rain and the southern region has winter rain. The coastal-line is broken by the deltas of the rivers and many lagoons. The average rainfall is between 40" to 50". Rice is the principal crop. Millets and indigo are also raised.

The Climate of India

India is so vast in size with different topographical features that the same type of climate does not prevail throughout the country. For climatic purposes it is useful to divide India into two parts—*Peninsular India* and Northern India. Peninsular India has the characteristics of tropical climate. The temperature is always high and the variation of it, between summer and winter, is small.

Northern India lies beyond the Tropic of Cancer. In this region climatic conditions are never similar in all the places. The western side is very hot during summer and very cold during winter. Air is generally devoid of moisture. But in the eastern side winter is mild and summer is hot with plenty of moisture in the air. The western side includes the Punjab, Sind, Rajputana and N.-W. F. P. The eastern side embraces Bengal, Assam, Bihar and U. P.

These climatic conditions are disturbed by the monsoon winds. The word 'Monsoon' comes from the Arabic word 'Mausim' (meaning season) and in India monsoon means rainy season. There are two Monsoon currents—The South-West Monsoon and the North-East Monsoon. The South-West Monsoon, blowing from sea to land, carries with it particles of water and gives rain from June to September. The South-West

Monsoon contributes nearly 90 per cent. of the total rainfall in India, and reaches the country in two currents—the Arabian Sea current and the Bay of Bengal current.

✓ *The Bay of Bengal monsoon current*, after being obstructed by the Arakan mountains and the Shillong plateau on the east, and the Himalayas on the north, proceeds westwards up the Gangetic plain and causes copious rainfall in Assam, Bengal, Bihar and U. P. *The Arabian Sea monsoon current*, after surmounting the Ghats and giving rains to the Deccan and C. P., meets the Bay of Bengal current in Bengal and Assam. The combined monsoon is responsible for heavy rainfall in Bengal and Assam.

The South-West monsoon begins to retreat from Northern India in the early part of October, and the retreat becomes complete by mid-December. "This retreat is associated with dry weather in Northern India but with more or less general rain on the coastal districts of Madras and over the eastern half of the Peninsula."

The North-East wind begins in January and lasts

till March. At this period, dry winds from a belt of high pressure in the central region of Asia (from the West Mediterranean to Central Asia, and North-East China) pass across eastwards to Persia and Northern India and cause light rain in Northern India, particularly in the Punjab plains. This rainfall, though scanty, is very important for *kharij* crops. Another cold wind current crosses the Eastern Himalayas, moves towards the Madras coast and Ceylon, and gives rain to these areas.

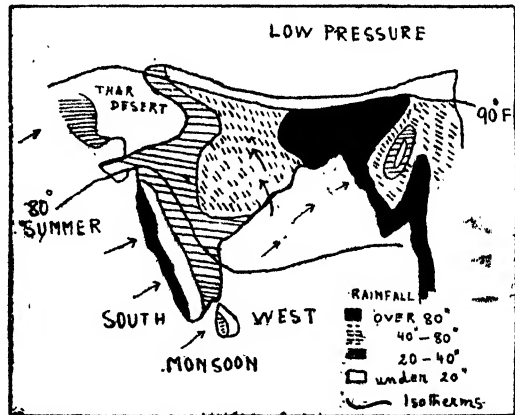


FIG. No. 53. The direction of the South-West Monsoon and the distribution of rainfall in summer

The average annual rainfall of India is 42 inches and the variations from this normal rainfall are surprisingly great.

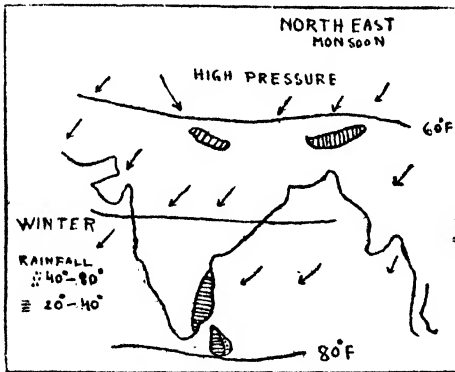


FIG. NO. 54. The direction of the North-East winds and the distribution of rainfall in winter

Again, the distribution of rainfall in India depends largely on the physical features. "If the hills and mountains of India were effaced, the country would receive much less rainfall and would not be able to support its present population."*

✓ The economic importance of rainfall in India is of the highest

order inasmuch as rainfall is an imperative necessity for agriculture. "The prosperity of most Indian districts depends on the success or failure of the monsoon," and a very slight variation in the direction of the wet winds may cause an usually well-watered district to become a desert.

Some Indian provinces always obtain abundant rain, some never get more than an inch or two per annum, whilst over large areas the rainfall is uncertain. *It is not the average rainfall of any province, but the deviation from normal average, together with its timely distribution, that may cause disaster.* A deficiency in the expected rainfall causes famine, too much rain spoils the crop, whilst the early or late arrival of the monsoon may spoil the harvest.

The most useful classification of areas, according to rainfall, is that into two great zones,—'certain' and 'uncertain'. The zones of *certain rainfall* include East Bengal, Assam, the West Malabar Coast, the Western slopes of the Ghats and the Upper valley of the Narmada.

* Normand : *The Weather of India.*

Soils

There are many varieties of soil in India ; the principal ones are (a) the alluvial, (b) the crystalline, (c) the Deccan trap, (d) Black cotton soil, and (e) the Laterite.

Agriculturally the most important soils are the alluvial which occupy extensive tracts of land, and include the greater portions of Sind, Gujrat, Rajputana, the Punjab, the United Provinces, Bengal, the Godavari, Kistna and Tanjore districts of Madras, and Assam. The eastern and western coastal lands of the Deccan are also alluvial.

The alluvial soil is rich in chemical properties and capable of giving a great variety of *rabi* and *kharif* crops. The alluvial soil of the Indus and the Upper Ganges valleys is dry, porous and in some places sandy, growing crops not requiring the retention of a great deal of moisture about their roots. At present cultivation has much developed in these areas with the help of irrigation. The level country and the absence of hills make it easy and comparatively cheap to make canals and distribute the water over the length and breadth of the country. The alluvial tracts of Bengal are more compact, less coarse and moist ; here rice, jute, sugar-cane, tobacco, etc., are extensively cultivated. The alluvial soil of the Deccan coastal strips is non-porous, clayey and of dark colour.

The trap soil comprises the greater portions of the Bombay Presidency, the whole of Berar, the western part of the Central Provinces and the western part of Hyderabad. The soil of this region varies in different parts as regards character and productivity. The soil is poor, thin and porous on the slopes and uplands of the Deccan hills where millets and pulses are the main crops. In the lowlands, the soil is deeper and darker-coloured, suitable for wheat, millets and cotton. The most important soil in the Deccan trap area is *regur* or *black cotton soil*, found mainly in the valleys of the Tapti, the Godavari, the Narmada and the Kistna, and also in parts of Kathiawar, C. P. and the western portion of Central India. "This soil is the product of the decomposition of lavas. It is of a dark colour and is exceedingly compact and tenacious. It is highly retentive

of moisture and rich in chemical properties." Cotton, jowar, wheat, linseed and gram are cultivated in these areas.

The crystalline soil covers almost the whole of Madras Presidency, Mysore, the south-east portion of Bombay Presidency, the eastern half of Hyderabad, parts of C. P., Orissa, Chota Nagpur, the western borderland of Bengal, parts of Eastern Rajputana and the Bundelkund region of Central India. The soil varies considerably in different parts as regards their physical and chemical properties. The laterite soil of the crystalline tract in Bombay, C. P., Eastern Ghats and Mysore is fertile when dark-coloured, but not fertile when light-coloured and sandy.

Forests and their Products

India is very rich in forests which cover more than one-fifth of the total area of the country. Throughout this vast forest area there is a variety in the types of forest vegetations, depending on variations of climate and soil and on other local factors.

AREAS OF FOREST LANDS

Provinces	Area of Provinces Sq. miles	Forest area Sq. miles	P.c. of forest area to whole area of the Provinces
Madras	... 125,163	15,245	12.2
Bombay	... 76,127	12,998	17.1
Sind	... 47,138	1,157	2.5
Bengal	... 76,960	10,803	14.0
U. P.	... 106,014	5,251	4.9
Punjab	... 95,315	4,842	5.1
Bihar	... 69,257	1,786	2.6
Orissa	... 32,179	1,985	6.2
C. P.	... 98,445	19,413	19.7
Assam	... 55,445	21,393	38.6
N. W. F. P.	... 13,184	282	2.1
Beluchistan	... 46,974	813	1.7
Ajmer	... 2,767	142	5.1
Coorg	... 1,593	839	52.7

Broadly speaking, there are five types of forests in India :

(1) *Arid country forests*, extending over Sind, a considerable portion of Rajputana, part of Beluchistan and the south of the Punjab. The most important tree is the babul.

(2) *Deciduous forests* extend over large areas in the Sub-Himalayan tract and in Peninsular India. Sal, teak and a great variety of other valuable trees are found in these areas.

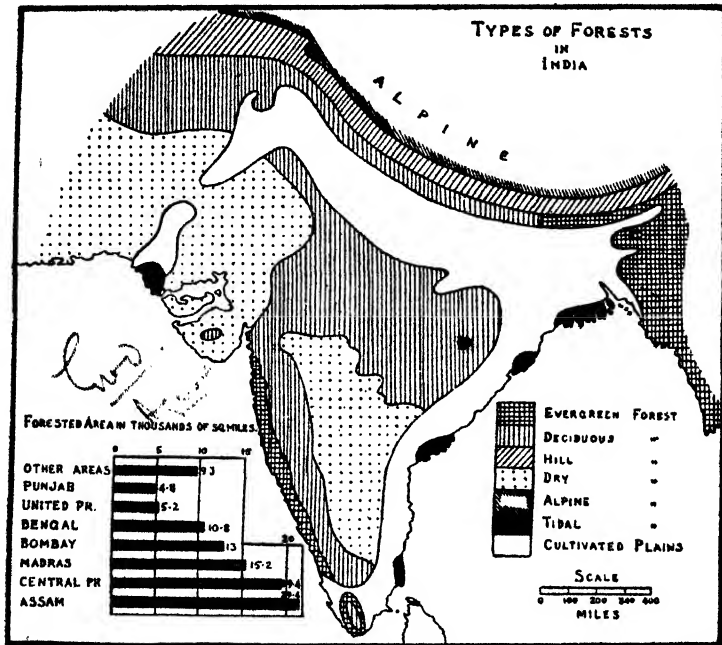


FIG. No. 56. Map showing the different types of forests in India.

(3) *Evergreen forests* occur in those areas where the rainfall is heavy. Such regions are the west coast of the Peninsula and the Eastern Sub-Himalayan tract. The trees are bamboos, palm, ferns and India rubber.

(4) *Hill forests* vary according to elevation and rainfall. In the Eastern Himalayas and Assam the forests are full of oak and magnolia, while in Assam pine trees grow abundantly at an elevation of 3,000 to 6,000 ft. Deodar, pine and oak occur in the North-Western Himalayas.

(5) *Littoral forests* occur on the sea coasts and along the tidal creeks. The most characteristic trees belong to the mangrove family.

Indian forests provide employment to a large number of people such as wood-cutters, sawyers, carters, carriers and raftsmen.

Indian forests play an important part as suppliers of raw materials for various industries. The forest produce is divided into two main heads: (1) Major produce, *i.e.*, timber and firewood, and (2) minor produce, *i.e.*, comprising all other products such as lac, tanning materials, essential oils, turpentine and resin. Paper industry is dependent on bamboos for the manufacture of paper pulp. Match-making industry also depends on the forest produce.

The annual production of timber in India is 220 million cubic feet. Important timbers include deodar, sal, rosewood, padauk, Indian mahogany and teak.

Lac is secreted by a type of insects which feeds on the saps of certain trees. These trees are abundant in Bihar, C. P., Bengal, Assam, U. P., Orissa and the Punjab. Chota Nagpur in Bihar raises 60 per cent. of India's total. Only 2 per cent. of the production is consumed in India, and the rest is sent outside.

India enjoys a practical monopoly of the lac trade. The best customers of Indian lac are the U. S. A., the U. K., Germany and Japan. About 98 per cent. of the total lac export is handled by Calcutta.

Resin is derived from the pines of the Himalayas and Assam hills and is worked for making rosin and turpentine oil. Rosin is used for shellac adulteration, in paper mills, soap factories, etc., while turpentine has demand for medicine and varnish.

Myrobalans grow in abundance in Madras, Bombay, Bengal, Chota Nagpur, Orissa and other places. A variety is found in Coimbatore, where fruits are very small in size, but the tree is taller than the *pipul tree* of Bengal. The fruits, the bark, the leaves, the trunk—every part of the myrobalans has some

use or other for us. The timber is very strong. The Jubbulpore myrobalan is the best of all and is used for the preparation of medicine and dyes. *Myrobalan is a great toner in tanning.* The alkali of myrobalans is used for preparing different dyes by mixing various ingredients. In Madras myrobalans are extensively used for dyeing cotton, wool and skin. In Assam, *cudi* and *muga* silk are dyed with myrobalans alkali. England, Germany, Belgium, China, Japan, the U. S. A., and Australia are the chief importers of Indian myrobalans.

The Forest Research Institute of India is engaged in (a) finding out suitable woods for aircraft construction, (b) producing cheap printing paper, (c) discovering indigenous woods suitable for use as battery separators, etc.

The question of bringing timber and other materials from forests to the road, railway or river that leads to the place of utilisation is the main problem of the forest industry. At present two methods are applied: (i) bullocks, buffaloes and elephants are employed as carriers of forest produce, and (ii) timber rafts are floated down to the rivers during monsoon months to be dragged again from the water (after, of course, many days of floating) at the saw mills.

Live-stock and their Products

Though of poor quality, a large number of live-stock are maintained in India.

NUMBER OF DOMESTICATED ANIMALS IN INDIA

(in millions)

Oxen	..	..	..	168	Horses	..	..	..	2
Buffaloes	..	..	..	47	Mules	..	..	..	2
Sheep	..	..	..	43	Camels	..	..	..	1
Goats	..	..	..	53					

India leads the world in cattle production. Cattle are used for ploughing and for milk. "Without them the fields remain unploughed, store and bin stand empty, and food and drink lose half their savour, for in a vegetarian country what can be worse than to have no milk, butter or ghee?" The cattle in India are ill-fed and irregularly distributed. In many parts of India,

sufficient grass is not grown, and, therefore, it is necessary to raise fodder crops. In Northern India almost every cultivable plot of land is occupied due to the overwhelming importance of agriculture, and thus grazing grounds occupy a small area. The important cattle-breeding areas are northern Gujrat, Central India, Nellore district in Madras, Sind, Montgomery district in the Punjab, the U. P., Mysore and Bombay.

There are 43 million sheep in India, reared particularly in the Hissar district of the Punjab, Garhwal, Almora and Nainital in the U. P. ; Sind and Beluchistan ; Kathiawar ; Gujrat ; Mysore ; and the Bellary, Karnool and Coimbatore districts of the Madras Presidency. The Indian sheep is inferior to that of Australia or S. Africa as mutton or wool producer. The wool of Northern India is white and of fair quality, while in Peninsular India, it is grey, short and coarse. The average annual production is a little above 85 million lbs. "A good deal of the wool which comes into the Indian market is dead wool, *i.e.*, that has been removed from the carcasses of slaughtered sheep and not shorn."

There are over 50 million goats in India. These animals are valued for their meat and milk and in some places for their hair. Goats are very prolific and they are easily domesticated.

Mules and horses are used in India mostly for drawing carts. There are 4 millions of such animals in India and these are found chiefly in the Punjab, U. P., Beluchistan, Sind and Bombay.

India has approximately 1 million camels which are mostly confined to the Punjab, Sind and Western Rajputana. In these areas camels are largely used for ploughing and as draft animals.

Animal products in India are hides and skins, bones, wool, milk, butter and ghee. Hides and skins are used for making harnesses, bags, suit-cases, trunks, machines, belts, automobile tops and seats, case for guns, shoes and gloves. The term *hides* denotes the skins of cattle, horses and camels, while the term *skins* is restricted to those of calves, sheep and goats. In India the hides and skins are mostly collected from the slaughter-houses and the average production is about 50,000 tons, of which

nearly 30,000 tons are exported. The leather centres in India are Lahore, Cawnpore, Agra, Calcutta, Delhi and Madras.

Indian hides and skins are purchased by the U. S. A., Germany, U. K., France, etc.

The total output of milk in India is as large as 700 million maunds. "Compared with other countries, India stands second in the volume of milk production, her output being exceeded only by the U. S. A. She produces over four times the output of Great Britain, over five times that of Denmark, over six times that of Australia and over seven times that of New Zealand." But the average milking capacity of the Indian cow is very poor, being 525 lbs. for a whole year. The Indian buffalo is superior in this respect to the Indian cow, its annual yield being 1,270 lbs.

The two important products of milk are butter and ghee. The production of butter from milk has increased in recent years with the development of dairy farming. The centres of this industry are Agra, Aligarh, Bombay and Calcutta. Practically the entire production is consumed in the country. *Ghee* has considerable demand in India and is "prepared by practically every household by heating butter over a slow fire until an oil is formed that rises to the surface, while the refuse settles down as sediment." Ghee is used in the preparation of food and sweetmeats. Buffalo butter gives greater yield of ghee than that of cow. The ghee-producing areas are the U. P., Bengal, Rajputana, Central India and the Punjab. Ghee is not only consumed in India but also sent to the Straits Settlements, Malaya States, Ceylon, South Africa, Mauritius and Hongkong, where a large number of Indian immigrants have settled.

The Fisheries

The maritime and riverine fisheries at present occupy a very minor place in the national economy of India.

The fishing areas of India may be divided as follows: (a) Sea-fisheries, (b) Deltaic fisheries, and (c) River-fisheries.

The sea-fisheries are confined to the coastal waters from 5 to 7 miles from the shore in Sind, Gujrat, Canara, Malabar Coast, Gulf of Mannar, Madras Coast and the Coromondal

Coast. "Most varieties of fish caught along the coasts are edible." The chief catches are prawns, jew fish, Indian salmon, mullets, cat-fish, pomfret, seer, sardine, mackerel, flying fish, rays, etc. These varieties are caught on a limited scale as there is little demand for sea-fish in the rural areas. Drift nets, cast nets, stationary nets, etc., are the different types of fishing implements.

The estuaries of the Mahanadi, the Ganges and the Brahmaputra, stretching from Puri to Cox's Bazar in Chittagong, contain cock-up, hilsa, pomfrets, prawns, catla, cat-fishes, rohu, etc., which are caught by trawl-type nets, drift nets and gilling nets, casting nets, bag nets, etc.

Fishing in the Indus and the Ganges system is very important. In these parts, people always prefer fresh-water fish.

The great problem that lies in the way of developing fishing industry in India is that people are greatly accustomed to the consumption of certain varieties of fish and these only. Wide publicity and propaganda are necessary to enlighten the people as regards the nutritious value of fish not consumed at present.

Present position in Madras, Bombay and Bengal. Madras with a coast-line of 1750 miles makes a fishing ground in the shallow water area of 40,000 square miles. The fishing population is very large, but the methods are very primitive. Drifters and trawlers are never used. Country boats are engaged in catching sardine, mackerel, Jew fish, ribbon fish, etc., in the shallow waters around Ganjam, Gopalpur, Vizagapatam, Cocanada, Masulipattam, Nellore, Madras, Pondicherry and Nagapattam on the east coast and Calicut and Mangalore on the west coast. Deep sea-fisheries are practically absent in Madras.

Fish is considered as an important item of food for daily use in Bengal, and more than half a million people depend on the fishing industry in the districts of Dacca, Rajshahi and the Presidency Division. But fishing is confined to inland waters; the sea-fisheries are as yet little developed. If proper attempts are made, the Bay of Bengal can yield large quantities of high-class fish. Recently the Government of Bengal have begun to pay some attention to the development of the fishing industry.

In Bombay fisheries are concerned almost entirely with the exploitation of the wealth of the sea. "Bombay is favoured with a coast-line abounding with excellent harbours for fishing craft, a fair weather season lasting for some seven months, and a fishing population more alive to their opportunities and more daring than those of the sister presidencies."

Agricultural Production

India is essentially an agricultural country where nearly 70 per cent. of the total population depend directly and another 20 per cent. indirectly for their sustenance upon land. Thus

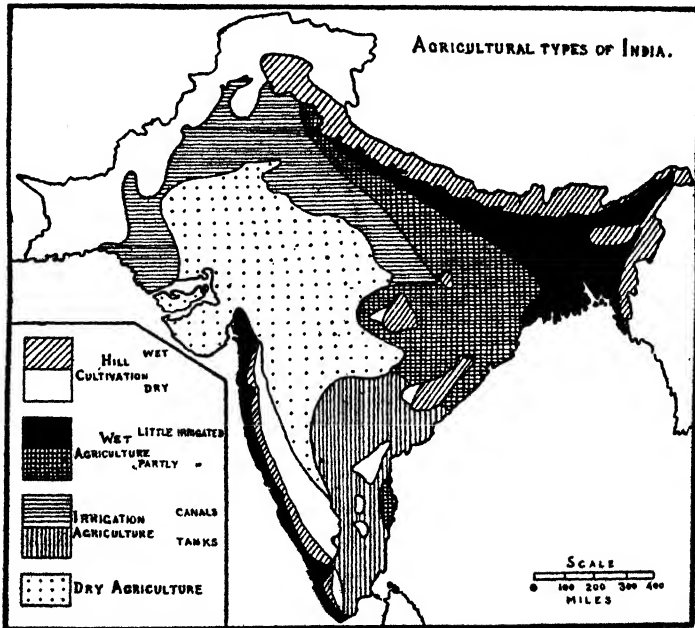


FIG. NO. 57. More than 35 per cent. of the total area of India is actually under cultivation.

agriculture is the single largest industry in India. It provides not only all the food grains and raw materials for inland consumption but also for export. As a matter of fact, India occupies a very important place from the point of view of supply of materials for the world's industries. She is, to-day, the largest sugar-cane producing country in the world. In the

production of rice, millets, tea, groundnut and linseed, her position is equally enviable. She holds a virtual monopoly in jute and lac.

Agricultural operations in India begin in June with the arrival of the monsoon. The crops thus raised in the autumn as a result of the sowings made in June are known as the *Kharif* crop. The principal *Kharif* crops are wheat, rice, millets, maize and cotton. Another agricultural season commences in winter whose products are known as the *Rabi* crops. The principal *Rabi* crops are wheat, barley, gram, linseed, rape seed and mustard.

There are mainly four types of agriculture in India, *e.g.*, hill cultivation, wet agriculture, irrigation agriculture and dry agriculture. All these varieties are due to geography, climate, soil and the types of population.

The agriculture industry in India is in an extremely backward condition. The outturn per acre is low ; methods of cultivation are primitive ; quality of seeds is poor ; and irrigation facilities leave much to be desired. The Indian peasant is fundamentally the conservative of conservatives and has proved acquiescent rather than enthusiastic in accepting reforms.

Of the total area of India, nearly 275 million acres of land are under cultivation. Rice, wheat, gram, millets and cotton cover more than 200 million acres of land.

✓ Cultivation is mostly confined to Madras, Bombay, Bengal, the U. P., the Punjab, Bihar, Orissa and the C. P. The areas where the cultivation of land is difficult are : (a) the Punjab and Sind, where the chief obstacle is the scanty and uncertain rainfall, which, of course, is not so vital a factor now because of irrigation facilities ; (b) Bombay and the Central Provinces, where the high lands and generally infertile soil (excepting the black soil) do not facilitate cultivation ; (c) Assam, where the unhealthy climate discourages immigration of labour ; (d) Rajputana, an arid region where cultivation is extremely difficult ; (e) the Himalayas and the North-West borderland, where high mountains prevent large-scale cultivation. Thus the progress in cultivation in India is very slow.

Rice is the most important crop of India and covers nearly

30 per cent. of her sown area. Rice is sown in India in three ways—broadcast, by drill and by transplantation from a seed-bed. The first method is practised where labour is scarce and the soil infertile. The second method is mostly confined to Peninsular India. The third method is common but it requires a plentiful supply of labour, because the seed-beds are to be highly manured before the seeds are sown. After four or five weeks, the seedlings are uprooted, tied into bundles and carried

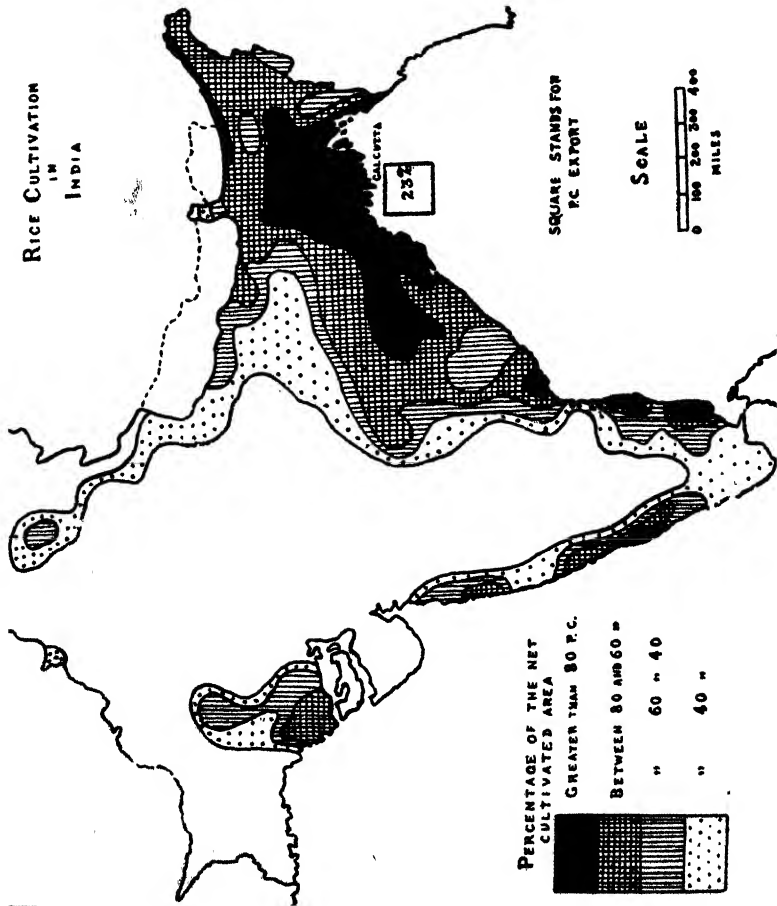


FIG. No. 58. Note that the rice-growing areas are practically confined to the eastern part of the country. Bengal raises one-third of the total production.

to the field where they are again planted by hand. The transplanting of the young plants from seed-beds to fields, cutting the rice with sickle and husking of the grain—all involve much manual labour.

Monsoon greatly influences rice production in India. Its failure has much adverse effect on the output, because water is the principal factor in the cultivation of rice.

The principal rice-growing provinces of India are, in order of importance, Bengal, Madras, Bihar, United Provinces, Orissa, Central Provinces, Assam, Bombay and Sind.

AREA AND YIELD OF RICE IN INDIA
1938—39

Provinces	Area (in 000 acres)	Yield (in 000 tons)
Bengal	21,988	7,567
Bihar	9,579	2,654
Madras	9,844	4,100
C. P. & Berar	5,791	1,736
Assam	5,351	1,742
Orissa	5,138	1,406
C. P.	7,555	1,975
India's Total Production ...	72,943	23,818

The yield of rice per acre in India is only 900 lb. as against 1,500 lb. in Siam and 2,700 in Japan and Korea. So there is much scope in India for increased outturn of rice per acre.

Bengal has the greatest rice acreage in India, and she contributes nearly one-third of the total rice production of the country. In every district of Bengal rice accounts for more than 60 per cent. of the sown area. Other areas where rice crops covers over 80 per cent. of the sown area are Cuttack, Puri and Sambalpur in Orissa ; Sylhet, Kamrup and Goalpara in Assam, and West Godavari, Chingleput, Tanjore and Kanara in Madras.

Although India is the second largest rice-producing country in the world, the home consumption is so great that the

exportable surplus is always small. Hardly 1 per cent. of the total production is exported outside.

Of India's total export of rice, more than 60 per cent. is consumed by Ceylon and other Asiatic countries. Calcutta is the chief export centre of rice, followed by Madras, Karachi and Bombay.

In spite of her normal production of between 23 and 30 million tons, India is not self-sufficient in rice. More than 240 million people of India eat rice and so far India has been unable to produce all the rice that they eat. Before the present war Burma normally sent $2\frac{1}{2}$ million tons per year to supplement India's production. Bengal has a normal deficit of 64,000 tons. Madras, Bihar, Bombay and U. P. have larger deficits, but in these provinces wheat is the staple food crop. Assam, C. P., Orissa and Sind have normally surplus production, while the N. W. F. P. is self-sufficient.

There is a large scope for further cultivation of rice in India, particularly in the provinces of Bengal, Bihar and Orissa, where at present jute cultivation has partly displaced rice. In view of the lessened demand for jute and the stoppage of the supply from Burma, it is desirable that Indian peasants should produce more rice crop.

✓ *Wheat* is the staple food of the people in the Punjab, United Provinces and the North-West Frontier Province. India occupies the fourth place in the list of wheat-producing countries and produces about one-eighth of the world's total. The yield per acre is very low in India: it is only 10 bushels (*cf.* Holland, 45 bushels of wheat per acre).

Wheat requires a large amount of heat for its grain to ripen; and the necessary period of heat need not be very long as the grains ripen quickly. At the sowing season wheat requires water, but too heavy rain like that of Bengal, Assam and Eastern Madras is unfavourable to cultivation. The plant can endure extreme dryness, provided there is provision for minimum of water by rainfall or by means of irrigation. In Sind, the Punjab and the United Provinces, where the rainfall is very small and never exceeds thirty inches per annum,

wheat cultivation has become very successful with the help of irrigation.*

WHEAT-PRODUCING PROVINCES IN INDIA
1938—39

Provinces	Area (in 000 acres)	Yield (in 000 tons)
Punjab	11,471	4,200
United Provinces	7,800	2,777
C. P.	3,358	673
Bombay	1,827	301
Bihar	1,098	433
N. W. F. P.	1,028	268
Sind	1,155	368
Central India	1,176	384
Rajputana	1,499	415
Gwalior	1,662	389
Hyderabad	1,355	200
Total for India	35,635	10,780

Ploughing and sowing, harvesting and threshing call for a large amount of manual labour and, therefore, wheat is cultivated on a large scale in those areas where a large force of labour is available.

In India wheat is cultivated during winter and the harvesting begins from March.

The Punjab and U. P. cover more than 50 per cent. of the total Indian wheat acreage and produce nearly 60 per cent. of the Indian output. Its cultivation in the Punjab is everywhere extensive except in the south-east. In the districts of Muzaffargarh, Attock, Jhelum and Sialkot between 50 and 60 per cent. of the net cultivated area is under wheat crop. In U. P. wheat

* In India there are two principal varieties of wheat: *the normal bread wheat* and *the macaroni wheat*. The first type grows as an irrigated crop in the Punjab, Sind and U. P., while the second type is grown as a rain-fed crop on the clayey black soil in Bombay, C. P. and Hyderabad.

is cultivated more or less throughout the province and the rich producing districts are Dehra-Dun, Shaharanpur, Muzaffarnagar, Meerut, Moradabad, Etawah, Shajahanpur, Budaun and Nainital,

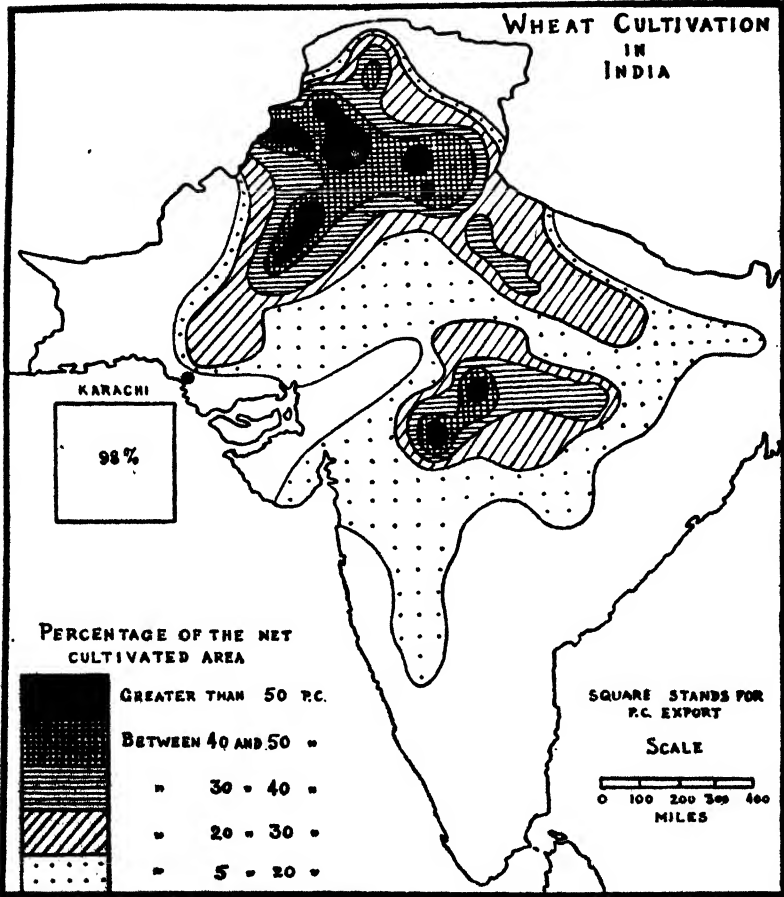


FIG. NO. 59. Note the extensive wheat areas in the Indus and Upper Ganges valleys. The Punjab raises nearly half the total production.

where more than 30 per cent of the area is under wheat. The basin of the Narmada in C. P. is also a rich wheat region. Although the monsoon discourages wheat cultivation in Bengal, it is raised in small quantities in Malda, Rajshahi, Murshidabad, Pabna and Nadia. The average production in Bengal is 36,000

tons and the average area under cultivation is 1,44,000 acres.

Nearly 45 per cent. of Indian wheat is consumed in the villages of production and the remaining 55 per cent. is put in the open market.

In India the average yield of wheat per acre is abnormally low. Other producing countries use farm machinery, grain elevators, better seeds, etc. which help to increase enormously their outturn per acre. The Indian cultivators are poor, conservative and illiterate and, therefore, cannot improve their methods of cultivation.

Till 1920 India used to export considerable quantities of wheat. Now, there is a great decrease in export and, what seems strange, she has to import a fairly large amount of wheat, mostly from Australia. In 1938-39 India imported 15,000 tons of wheat. The enormous increase of wheat production since 1920 in Canada, Argentine and Australia, as well as the extension of cultivation in many European countries by protective measures, such as heavy import duties and the quota system, have resulted in the considerable decline of Indian wheat export. The pre-war average for the export of wheat was 14 per cent. of the total output, but in 1938-39 the percentage was only 2·8.

Before the present war the export trade in wheat recovered to a certain extent. The U. K., Germany, Belgium, Italy, Burma and Kenya were the principal customers. Karachi alone handles nearly 98 per cent. of the export trade; the rest is shipped from Bombay and Calcutta. Indian wheat is mostly exported in June and July, when most of the important producing countries have exhausted their stock and when new wheat is not generally available. It should be noted that in Canada, U. S. A., South Africa, Australia and Argentine the harvesting season begins in August and lasts till December; while in India it begins in March and lasts till May.

In the face of keen competition and lowered prices, Indian wheat has kept itself generally aloof from the world markets, and has also, in the interest of its growers, been receiving protection against imported wheat. The scope for further produc-

tion of wheat is indeed great in Sind, the Punjab and U. P., but then in future exports may not increase, because the increasing population in India will require more wheat.

India is normally self-sufficient in her wheat production, the deficit in Assam, Bengal, Bombay and Madras being made up from the surpluses in the Punjab, C. P., C. P. and Sind.

Millet is the staple food of the agricultural population of Madras, Bombay and the adjoining districts of Hyderabad. It flourishes best in hot lands which are fairly dry. It can be grown without irrigation even in areas where the rainfall is scanty.

There are two varieties of millets in India—*Jowar* and *Bajra*.

Jowar is extensively cultivated in the Deccan, and also to some extent in other dry parts of India. The area under cultivation in 1937 was 36 million acres and the yield was seven million tons. Bombay and Hyderabad account for more than 50 per cent. of total acreage under *jowar* in India. Other provinces growing *jowar* are Madras, C. P., U. P., the Punjab, Gwalior, Rajputana and Central India. In the Sholapur district of Bombay more than 60 per cent. of the sown area is under *jowar*. In Poona and Belgaum districts *jowar* acreage accounts for more than 50 per cent. of the sown area. *Jowar* is commonly called *Sorghum* in Europe and America. In India, the product is of great importance as food for men and cattle.

Bajra is a short season crop and is grown generally in poorer soils. It is less widely cultivated and is essentially a village food crop. Bombay, Madras, the Punjab, Hyderabad and Rajputana States are the principal producers. The area under cultivation was 15 million acres in 1937 and the yield in the same year amounted to 2 million tons. More than two-third of the acreage under *bajra* is confined to Bombay and the Punjab. In Bhavnagar (in Kathiawar) and in the south-eastern part of Sind *bajra* covers more than 60 per cent. of the sown area.

One-fourth of the total production of millets is exported and the destinations are the Sudan, Arabia, Holland, Germany,

Italian East Africa and Aden. More than 90 per cent. of the millets is shipped from Bombay. Karachi and Calcutta handle 7 per cent. and 2 per cent. respectively.

Barley resembles wheat in general appearance and manner of growth. It is a winter crop in India and is sown in October and November. The harvesting season begins in March. India raises nearly 5 per cent. of the world's total barley. It is mainly grown in Northern India and the U. P. has the largest acreage.

Its cultivation is very extensive in the Ganges basin of the U. P., particularly in the districts of Benares, Jaunpur, Gazipur, Ballia, Pratabgarh, Azamgarh, and in Garhwal. Its cultivation also covers large percentage of the sown area in Central Kashmir, Muzaffarpur in Bihar and Peshawar in N. W. F. P. The internal demand for barley is so high that exportable surplus cannot attain considerable dimension. India in 1939 exported 9,000 tons of barley of which the U. K. took 8,600 tons. The next important buyer is Arabia. Nearly 99 per cent. of Indian barley is exported through Karachi.

✓ *Maize* is found more or less all over India, but Northern India raises the major portion. Maize requires high temperature and much more summer rain than wheat. The soil should be rich and well drained. Most of the maize are grown in regions with annual rainfall of at least 20 inches. The total area under maize is about 6.6 million acres with an average annual production of 2 million tons.

The U. P., Bihar and the Punjab are the leading producers. Maize cultivation is practised throughout U. P. and Bihar, although the Upper Ganges valley has greater acreage. The North-Eastern Punjab and South-Western Kashmir are also rich producing areas.

The crop is raised mainly for consumption in the areas of production, and the exports are never considerable. In 1933 India exported an insignificant quantity of maize, only 38 tons. Recently exports have increased to a certain extent and she exported more than 2000 tons in 1936. Exports are mainly

from Bombay, Calcutta and Karachi. Bombay alone sends more than 50 per cent.

Pulses include food grains like gram, arhar, lentils or masur, etc. These grains are raised in different parts of India and consumed mostly in the areas of production. More than fifty million acres of land account for the cultivation of pulses in India. Pulses constitute an important food-stuff not only for villagers but for animals as well. They are also grown as rotation crops to restore the fertility of the soil.

Gram is the most important pulse and is grown extensively in the Punjab and in the United Provinces. Other producing areas are Bihar, C. P., Bombay, Hyderabad and Mysore. The average annual output is nearly 4 million tons and the acreage exceeds 17 millions. Gram is often cultivated in combination with wheat.

The percentage of acreage is greater in the North-East Punjab, Central Bihar, Southern U. P. (between Agra and Mirzapur), South Mysore and in North-East C. P. Local consumption being great, exports of gram are never considerable. In 1938-39 India exported 17,000 tons of gram of which France took 7000 tons and Ceylon 3000 tons. Other customers are the Straits Settlements, the Mauritius and Aden. The principal ports through which gram is shipped are Karachi and Bombay. Karachi handles more than 70 per cent. of the trade.

Lentil or Masur is grown particularly in the Central Provinces, Madras and the United Provinces, though in other provinces its cultivation is not uncommon. "*Arhar* is one of the most important food-stuffs of the country-side and is generally grown as a mixed crop, particularly in rotation with cereals." The annual production of these two pulses is very considerable. The exports of pulses are sent to U. K., Ceylon, Mauritius, Burma and France. Karachi, Calcutta, Madras and Bombay participate in the trade.

✕ *Tea*. India is the second largest tea-producing country in the world. The region of Indian tea cultivation is a wide one. Beginning with the Himalayan plantations in the Punjab near 33°N. latitude, it extends to Peninsular India between 10°

and 13°N. latitude. The principal belt of tea plantations lies between 23° and 32°N. latitude.

Seventy-seven per cent. of Indian tea is obtained from Assam and Bengal. In recent years, Southern India has become an important tea-producer and she contributes nearly 18 per cent. of the Indian output.

AREA AND PRODUCTION OF TEA IN THE DIFFERENT
PROVINCES OF INDIA IN 1939

Provinces	Area (in 000 acres)	Yield (in 000 lb.)
Assam	439	2,61,037
Bengal	200	1,06,440
Bihar	4	1,304
Madras	78	38,100
Punjab	10	2,780
U. P.	6	1,856
Cochin	2	834
Mysore	5	940
Travancore	77	35,050
Total ..	832	4,51,860

Assam is the largest producer and contributes more than 50 per cent. of the total Indian tea production. In the districts of Darrang, Sibsagar, Lakhimpur (in the Upper Brahmaputra valley) and in Cachar tea plantations cover more than 30 per cent. of the sown area. The Sadia Frontier Tract and Sylhet also grow a large amount. These areas are served magnificently by railways and riverways. The tea of the Upper Brahmaputra valley can be sent by steamers to Calcutta or by the B. & A. Ry. to Chittagong or to Chandpur (and thence to Calcutta).

Although Bengal occupies the second position in the list of tea-producing provinces, her tea cultivation is not so extensive as that of Assam. The two adjoining districts of Darjeeling and Jalpaiguri produce almost the entire output of the province. Tripura State raises a small quantity. Tea is also grown in Purnea, Ranchi and Hazaribagh in Bihar; Garhwal

and Almora in the U. P. ; and Kangra in the Punjab. In Southern India, the major portion of the output is raised by Travancore and Madras ; the other areas are Coorg, Mysore and Satara (Bombay).

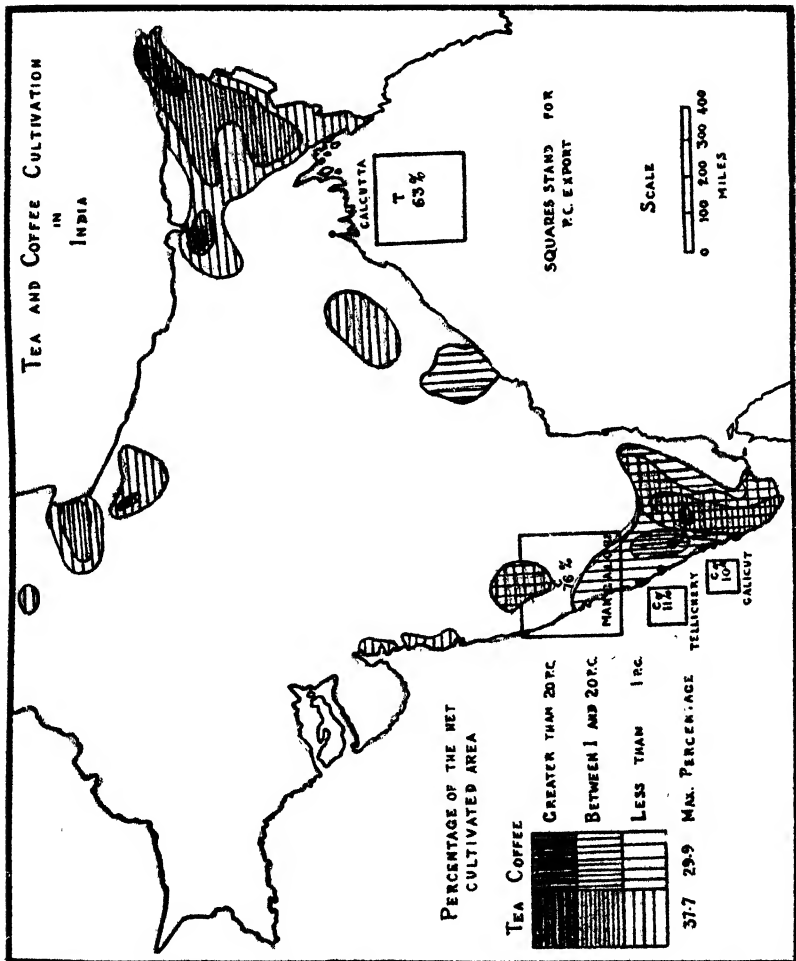


FIG. No. 60. Assam and Bengal raise more than 77 p.c. of Indian tea. More than 50 p.c. of Indian coffee is obtained from Mysore.

India is the greatest tea-exporting country in the world, supplying as she does more than 40 per cent. of the world's trade in tea.

EXPORTS OF TEA FROM THE PRINCIPAL TEA-GROWING
COUNTRIES

(in million lbs.)

Countries	1936	1937	1938
N. India	314·9	340·1	353·6
S. India	51·6	53·5	55·8
Ceylon	218·0	213·2	235·7
Java	123·0	117·2	126·3
China	82·2	89·6	91·8
Sumatra	30·1	29·5	31·5
Japan and Formosa .	57·4	77·3	59·8
Others	19·3	23·9	25·8
Total	896·2	944·3	980·3

India usually exports 76 per cent. of the total tea production of the country. The recipients of Indian tea are the U. K., France, Canada, U. S. A., Australia and New Zealand. In 1939 India exported 350 million lbs. of tea to the following countries :

U. K. .. ..	.. ..	.. ..	305 million lbs.
Canada .. ..	.. ..	.. ..	15 ,, ,,
U. S. A. .. ..	.. ..	.. ..	8 ,, ,,
Ireland .. ..	.. ..	.. ..	3 ,, ,,
Iran .. ..	.. ..	.. ..	5 ,, ,,

In these foreign markets, Indian tea has to compete with the tea of Ceylon, China and Java. The percentage of Indian tea in the U. S. A. market is decreasing rapidly.

The share of Calcutta in the total export of tea is usually 63 per cent. and of Chittagong 25 per cent. ; the remainder is shipped from Madras.

The export of Indian tea is regulated according to the terms of the *International Tea Restriction Scheme*. Between 1927 and 1932, there was a great over-production of tea in the different producing countries, as a result of which prices fell below the cost of production. On 1st April, 1933, an agreement was

reached by India, Ceylon and Java which contained the following points :

“(a). That the exports of tea from the producing countries be regulated in order to restore equilibrium between supply and demand ;

(b) That the government of the respective countries will undertake to prohibit exports in excess of the quotas agreed upon ;

(c) That the agreement shall be for a period of five years ;

(d) That the existing tea area must not be extended during the said period of five years except in special cases where the existence of an estate would otherwise be imperilled.”

In 1938, the agreement was renewed for another five years. A Board has since been formed in India to look after the interest of the Indian tea industry. Its name is *the Indian Tea Market Expansion Board*. By means of propaganda, the Board is popularising the Indian tea in villages and towns.

Coffee. The systematic cultivation of coffee in India was started in 1830, when a large plantation was opened in Mysore. Southern India has the monopoly of coffee cultivation in India.

In India the plant is sown in the rainy season and the berries begin to ripen in October. Plucking and hand-picking of berries continue till January.

Nearly 2,00,000 acres of land are under coffee plantations and the average yield exceeds 3·5 million lbs.

Provinces	Average Area (in 000 acres)	Average Production (in 000 lbs.)
Mysore	101	16,455
Madras	54	7,322
Coorg	42	9,249
Cochin	2	...
Travancore ..	1	...

Seventy per cent. of the coffee acreage is Indian-owned and 30 per cent. European-owned.

Southern India has nearly 7,000 coffee plantations which engage 65,000 permanent labourers and 35,000 temporary labourers. Mysore alone possesses 4,600 plantations. In Mysore, the plantations are mostly confined to the south and west, particularly in the districts of Kadur, Shimoga, Hassan and Mysore. Mysore has the largest acreage under coffee plantation and the production is always over 50 per cent. of India's total. In the Madras Presidency the coffee plantations are found mostly in the south-west—from North Arcot to Tinnevelly including the western areas. The Nilgiri is the most productive area of Madras. Some plantations are also found in Vizagapatam in the north-east. Madras contributes nearly 23 per cent. of the Indian output. In Coorg more than 20 per cent. of the total acreage is under coffee and the region supplies more than 1 per cent. A little coffee is also grown in the Satara district of Bombay.

Only fifty per cent. of the annual production of coffee is consumed in India. The Indian coffee industry is therefore very much dependent upon foreign markets.

Indian coffee is exported to the U. K., France, Germany, Holland, Belgium, Australia and Iraq. The ports participating in the export trade are Mangalore, Tellicherry, Calicut and Madras. The exports of Indian coffee have fallen off considerably as a result of the competition of Brazilian coffee which to-day dominates the coffee market of the world. The Indian Coffee Cess Committee is now engaged in finding out markets for Indian coffee, both in India and abroad. Propaganda in the U. K. and other parts of Europe is being conducted. In India coffee houses have been opened in several towns like Calcutta, Lahore, Bombay, New Delhi and Secunderabad.

✓ *Tobacco* plant was first introduced to India by the Portuguese in 1508. It has a wide climatic range and is cultivated in India throughout the country. The harvesting period in India is between February and April.

India is the second largest tobacco-producing country in the world, and contributes about 35 per cent. of the world's

total. Nearly 1·3 million acres of land are under tobacco cultivation and the average production is about 6,00,000 tons.

The tobacco cultivation is geographically confined to two main zones—the Eastern zone, comprising Bihar and Bengal, and the Southern zone which comprises Madras, Mysore and Bombay.

In Bengal the important tobacco tracts are Rangpur, Jalpaiguri and Cooch Bihar ; some quantities are also raised in Dinajpur, Chittagong Hill tracts, Malda and Hooghly. Bengal tobacco gives higher yield of leaf and matures earlier than that of other districts.

In Madras, the important tobacco-growing districts are Guntur, Vizagapatam, East Godavari, Coimbatore and Madura. Two-thirds of the total acreage of Madras is confined to Guntur.

The districts of Muzaffarpur, Darbhanga, Monghyr and Purnea produce 90 per cent. of Bihar tobacco.

In Bombay, the tobacco-growing regions are Belgaum, Satara, Baroda and Kairo.

Outside these two zones, tobacco is cultivated in the Punjab, particularly in the districts of Jhang, Sialkot, Jullundur, Hosiarpur and Gurudaspur ; and also in the Bidar district of Hyderabad.

The leaf produced in India is generally of a coarse, heavy type, with a dark colour and a strong-flavour and, as such, it is unsuitable for cigarette-making. Indian leaf makes an excellent filler. It is a happy sign that the Government is encouraging the production of tobacco in Madras and North Bihar similar in colour, flavour and texture to the recognised Virginia tobacco.

The bulk of the tobacco grown in India is consumed locally, and the exportable surplus is never considerable. In 1938-39 India exported 27,563 lbs. of tobacco, of which unmanufactured tobacco accounted for 20,000 lbs. Madras contributes nearly 70 per cent. of the total export. The next important exporting province is Bombay, whose share is 25 per cent. of the export trade. The principal destination of tobacco are the U. K., Aden and Japan.

Sugar-cane. India is not only the original home of sugar-cane but she is also the largest producer in the world. Although sugar-cane is cultivated throughout India, the most important sugar-cane tracts are in the U. P., the Punjab, Madras, Bengal, Bihar and Bombay. In fact, Northern India has a preponderant interest in the crop.

AREA AND YIELD OF SUGAR-CANE IN 1938-39

Provinces	Area (000 acres)	Yield of raw sugar (000 tons)
United Provinces	.. 1,610	2,160
Bihar .. ..	.. 375	369
Punjab . . .	.. 354	229
Bengal .. ..	.. 299	439
Madras .. ..	.. 98	274
Bombay .. ..	.. 71	177
India's total ..	.. 3,113	4,108

“The average yield per acre is so low and the demand from a population that is largely vegetarian so great that the country had to depend to an increasing extent on the imports of foreign sugar.” Recently much progress has been made in sugar-cane cultivation in India. The average area under sugar-cane is nearly 4 million acres. Even 10 years ago, the acreage under sugar-cane was between 2.5 to 3 million acres. This great increase in acreage is the result of the grant of fiscal protection and the introduction of the improved varieties of sugar-cane.

The United Provinces produce more than 50 per cent. of India's total output. The plant is cultivated throughout the province and the higher acreage is devoted in Shaharanpur, Shahajanpur, Fyzabad, Gorakhpur, Azamgarh, Ballia, Jaunpur, Benares and Bulandshahr. In Bihar, the important sugar-cane producing districts are Champaran, Saran, Darbhanga and Muzaffarpur.

The Punjab is the third largest sugar-cane producing province in India, with a produce less than one-tenth of that of U. P. The plant is grown extensively in the eastern half of the province. The sugar-cane tracts of the Punjab are Mont-

gomery, Lyallpur, Sialkot, Amritsar, Lahore, Jullundhar, Rohtak etc.

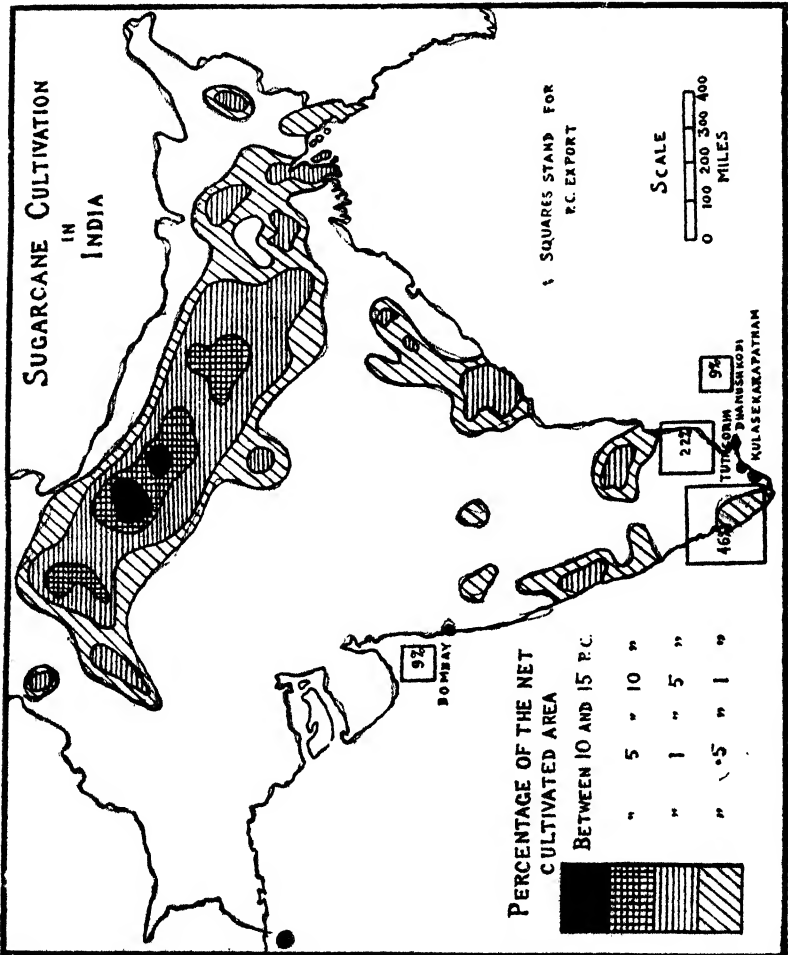


FIG. No. 61. Note the great concentration of sugar-cane cultivation in the Ganges valley. The U. P. alone raises more than 50 p.c. of India's raw sugar.

Bengal also produces a large quantity of sugar-cane, but the quality is poor. The producing districts are Dinajpur, Rangpur and Bogra in the north ; Dacca and Mymensingh in the east ; Birbhuon, Burdwan and Nadia in the west.

It has been estimated that "in actual sugar, India's production per acre is less than one-third that of Cuba, one-sixth that of Java, and one-seventh that of Hawaii." This weakness of the Indian sugar industry is due to (a) unscientific cultivation ; (b) defective method of extracting juice from the cane ; (c) small and scattered nature of holdings ; and (d) the impossibility in most cases to concentrate cultivation round a central factory.

Recently, improved varieties of sugar-cane are being raised in different provinces.

Jute is the most important bast fibre in India and is the object of world commerce. India enjoys a monopoly as the world's sole producer of jute on an extensive scale. "The demand for jute in the world's markets is based upon the fact that no cheaper fibre is procurable for bagging agricultural produce."* The cultivation of the plant is restricted mainly to the Ganges-Brahmaputra delta in Bengal and Assam and to Bihar and Orissa, where the soil is enriched by alluvial deposits brought by river inundation favouring the growth of this exhausting crop without any expenditure on manure. Jute is sown from March to May and it grows to a height of ten to twelve feet. The harvesting period begins from July and extends to September.

The fibre from the stem is separated after the plant is retted in a pool of stagnant water for 2 to 25 days according to the nature of the water. Though the usual practice is to do the retting in tanks and roadside stagnant pools, in some districts the plant is submerged in rivers also.

JUTE GROWING AREAS IN INDIA

Provinces	1938—39	
	Acres (in 000)	Yield (in 000 bales of 4000 lbs.)
Bengal	2,504	8,232
Bihar	265	709
Orissa	23	47
Assam	281	557

In Bengal less than 10 per cent. of the cropped area raises over 85 per cent. of the total Indian jute, and the product exerts a tremendous influence on the economic life of the province. The main jute belt, which accounts for nearly four-fifths of the total acreage under jute in Bengal, comprises Tipperah,

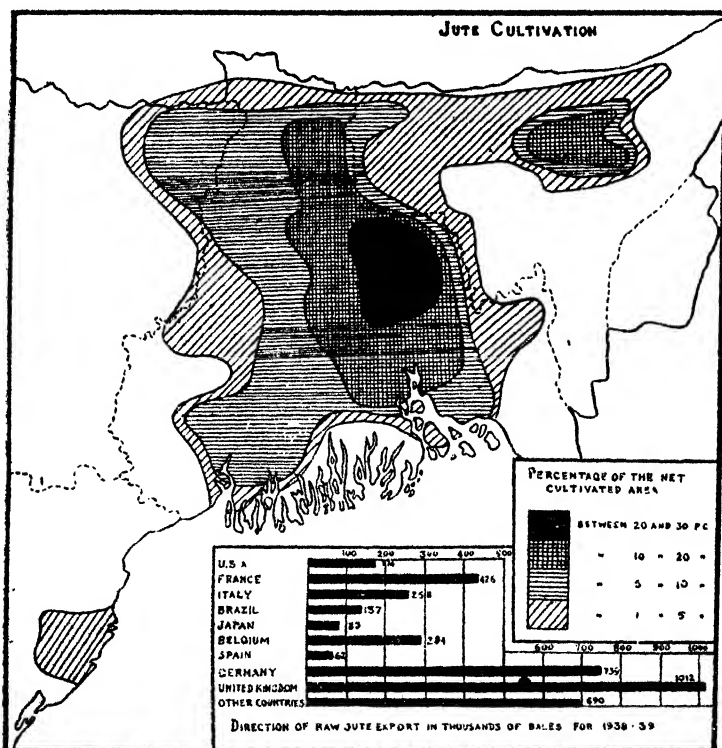


FIG. No. 62. Bengal grows more than 85 p.c. of Indian jute. Note the maximum cultivation in Mymensingh.

Dacca, Faridpur, Pabna, Bogra, Rangpur and Rajshahi where innumerable rivers, tanks and pools make the retting most advantageous and convenient. Mymensingh alone raises more than half of the total produce of Bengal.

In Bihar over 90 per cent. of jute cultivation is concentrated in the district of Purnea ; in Orissa more than 92 per cent.

of the jute is raised in the Cuttack district ; and in Assam jute is raised throughout the Brahmaputra valley and in Sylhet.

Jute is produced mainly for foreign markets. The destinations of jute are the U. K., Germany, Japan and the U. S. A. Raw jute constitutes a small portion of the total jute exports. The principal buyers of Indian jute are the U. K., the U. S. A., France, Italy, Brazil, Japan, Belgium, Germany and Spain. The U. K. alone takes nearly one-third of the total export.

The cultivation of jute is a very profitable occupation to the Bengal peasants who depend very much on it for their prosperity. The demand for manufactured jute is comparatively fixed. Therefore it is always necessary to regulate the supply of raw jute. But the jute cultivators are ill-informed, ill-organised and poor. They always compete amongst themselves and thus bring down the price of jute. They cannot adjust supply, nor have they the capacity to hold on the crops. When the demand for jute declined after 1930 as a result of the introduction of many substitutes and import barriers by foreign countries, the jute industry faced a severe depression which brought in its wake starvation and misery to the Bengal cultivators. To improve the condition of the jute industry of Bengal, the Government suggested in 1934 the voluntary restriction of jute acreage and started a propaganda among the cultivators with the same object. Propaganda is often effective but economic forces are inexorable. Propaganda cannot check the increase in acreage when prices rise. The voluntary method was successful in the beginning but subsequently it failed to achieve satisfactory results. Therefore it is necessary to introduce a scheme of compulsory regulation.

The principal difficulties in the way of giving effect to any scheme of compulsory regulation are (a) the compilation of statistics for demand and supply of jute, (b) the allocation and enforcement of quotas, and (c) supervision and control.

The crops which might be used as substitutes for jute in jute-growing areas are sugar-cane and rice. Sugar-cane is not an exact substitute, because it cannot be grown in low-lying

areas where at present jute is cultivated. Moreover, there are practical difficulties in sugar-cane cultivation: (a) it is not a seasonable crop in the sense that jute is; (b) it is a perishable crop and must have a ready market as soon as it is taken off the field; (c) the acreage under sugar-cane would constitute a very small percentage of the present area under jute. *Rice can be a good substitute.* Bengal at present does not produce enough food for herself, and therefore if only one-fifth of the acreage of jute is reduced and replaced by deep water paddy, that would give much relief to the jute growers. It must be emphasised that jute must continue to be the principal crop *in char and bil areas* and in low-lying areas as long as no other suitable crop is found out. In most of the comparatively high lands of Rangpur, Dinajpur and Jalpaiguri, it is possible to grow more tobacco.

It is necessary to emphasise here that the cultivation of jute is not the monopoly of India only. It is also raised in Egypt, Iran, Siam, Indo-China, Japan, Formosa, Brazil, Paraguay and Mexico. Moreover jute-like fibres are being raised in many countries. Belgian Congo cultivates *Urena lobata* fibres and every year the production is increasing. Java has become almost self-sufficient so far as sugar bags are concerned by cultivating extensively a jute-like fibre called *Rosella*. A similar fibre called *Kenaf* is grown in Manchukuo, and is used in making bags for soya beans. *Manila hemp* in the Philippines and *Polompon* in Indo-China are similar to jute.

The production of such jute-like fibres may, in future, affect adversely the cultivation of jute in India.

Hemp. There are three varieties of hemp in India—Sisal hemp, Sann hemp and Indian hemp. As a fibre, Sann hemp is the best and is grown in Bombay, the Central Provinces, the United Provinces and the districts of Godavari, Kistna and Tinnevely in the Madras Presidency. Large quantities of raw sann are exported to the U. K., Belgium, Italy, France and Germany. Indian hemp is more important for the narcotic in the form of *bhang*, *ganja* or *charas* than for fibre. As a source of fibre it is now grown in two chief localities—(i) the North-

West Himalaya region comprising Nepal, Simla, Kashmir, Kumaon and Kangra, and (ii) Sind.

Sisal hemp has been least exploited commercially. It is grown in Sylhet, Tirhoot, Bombay and Southern India.

Cotton. India is the second largest cotton producing country in the world, being preceded by the United States of America only. In spite of the fact that she occupies the second position, her share in the world-production is less than one-fifth. Besides, the quality of Indian cotton is inferior. Indian cotton is of short staple and is good for coarse fabrics only. Cotton holds the first place among the commercial crops of India.

Cotton has a considerable climatic range. It grows in the dry region of Bombay as well as in the moist province of Bengal. Generally speaking it is a dry-region crop and flourishes where the rainfall is less than 40 inches. The soil is equally important. The sticky black soil of the Deccan is ideal for cotton cultivation. Cotton is cultivated in Bombay, C. P., Berar, the Punjab, Madras, U. P., Bengal, Hyderabad, Central India, Baroda, Rajputana and Mysore. Half the total area is confined to Bombay and Berar. There are two varieties in India: (i) The Indian or short staple cotton, and (ii) the American cotton. The bulk of the production comes in the shape of Indian cotton. Of late years American cotton has been raised in the Punjab and Sind, which are now watered by a perennial canal system and where the climate is plentiful of moisture. Such plant needs about seven months of growing season, during which time there must be no risk of frost.

In India, cotton is considered as long staple when the fibre is one inch long. When the fibre is less than $17\frac{1}{2}"/32"$, it is known as short staple.

Areas of short staple
C. P., Berar, Khandesh,
Central India, Rajputana,
U. P. and the Punjab.

Areas of long staple
Gujrat, part of Kathiawar,
Southern Bombay, large por-
tions of Madras & parts of Sind.

The Central Cotton Committee is engaged in helping to improve cotton cultivation in India. The Committee raises a

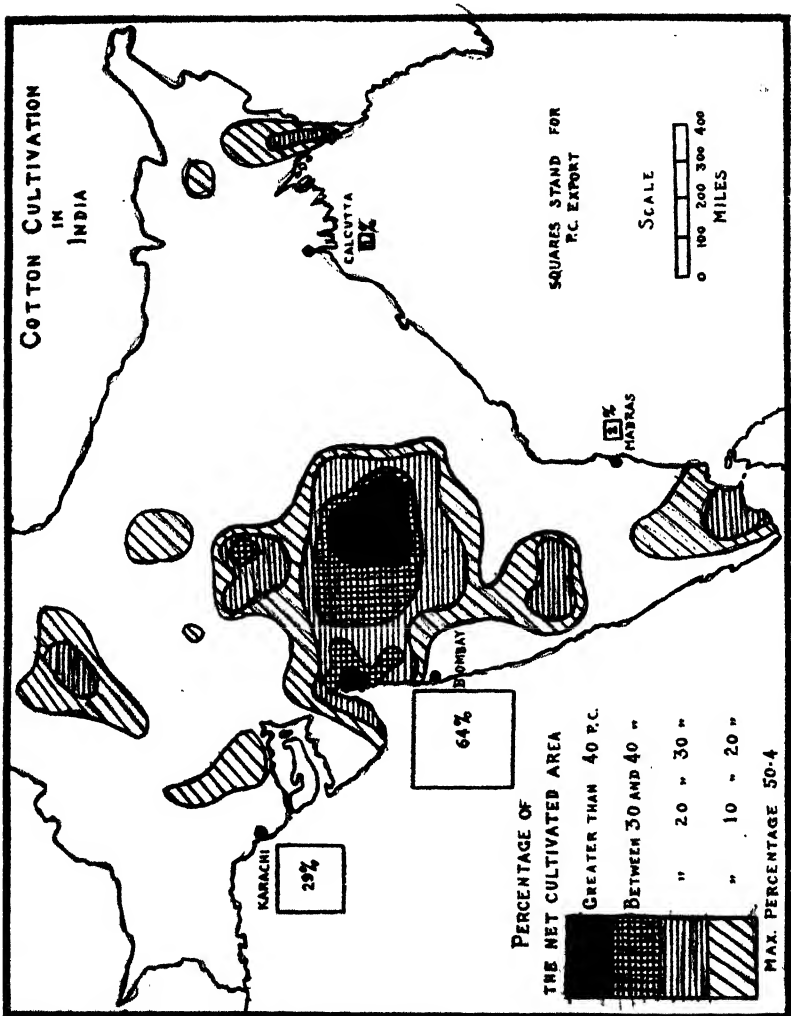


FIG. NO. 63. Cotton cultivation is mostly confined to the *Black Soil* region of the Deccan.

cess of two annas a bale on all cotton produced in India to meet its necessary expenses.

Indian cotton, being for the most part short staple, is unsuitable for the manufacture of cloth of higher counts such as that turned out by the Lancashire mills. India is the second largest cotton-exporting country after the U. S. A.

The chief consumers of Indian cotton are Japan, the United Kingdom, Italy and China.

Before the present war, Japan occupied the most dominant position as a consumer of Indian cotton, taking more than 60 per cent. of our total export. This is due to the gradual development of the cotton industry in that country. Japan is not in a position to grow cotton and depended for her supply of raw material partly on India and partly on the U. S. A. China, which occupied the second position as a consumer of Indian cotton in 1930, has now dropped to the third place. Among the European countries, Germany used to take large quantities of our cotton before the War.

Recent tests conducted in Lancashire have proved that certain types of Indian cotton can be used for spinning yarns of higher counts. It is significant that after the Ottawa Agreement the Lancashire mills are consuming more Indian cotton and to-day the United Kingdom occupies the second place as a consumer of Indian cotton. India cannot rely much on the Lancashire market, because very recently the British capitalists have opened large cotton plantations in East Africa.

Oil-seeds. The trade in oil-seeds is very recent in India. Oil-seeds are in demand not only for salads and food, but also for preparing medicines, perfumeries, varnishes, lubricants, candle, soap manufactures and other purposes. The principal oil-seeds found in India are linseed, groundnuts, cotton-seeds, rape-seed, castor-seed, sesamum-seed, copra, mowra-seed and polly-seed.

A large quantity of seeds is exported annually and this export forms a big item in India's foreign trade, and it occupies the fifth place among the exports. It is felt that India does not yet make the best use of her oil-seed resources, though attempts have been made to develop local oil-crushing industry.

Linseed is cultivated for its seed mainly in the Central Provinces, Bihar, Orissa, the United Provinces, Bombay and Bengal. It is also cultivated in Hyderabad, the Punjab and Kotal. In 1938 India raised about half a million tons of oil-seed in four million acres of land.

Practically all the products are exported to the United Kingdom, France, Belgium, Italy and Holland. Recently Indian linseed is facing severe competition in Europe with Argentine linseed.

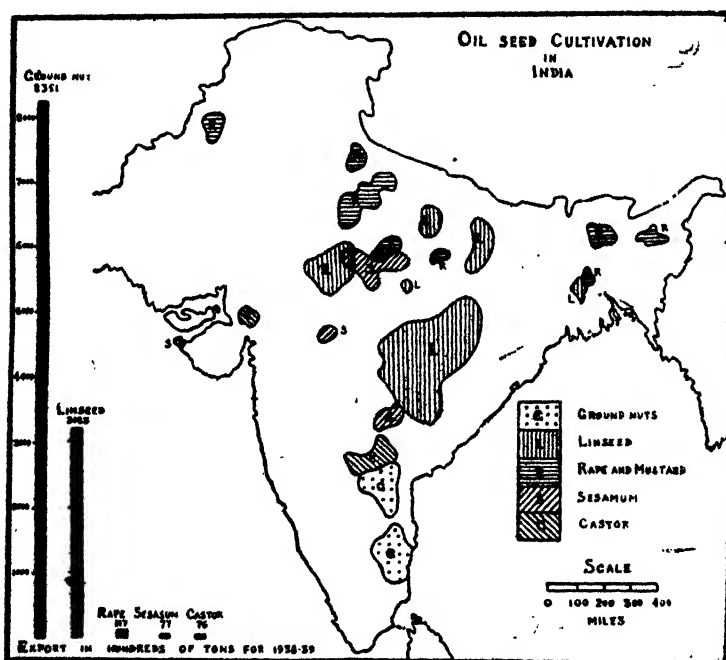


FIG. NO. 64. Notice the cultivation of oil-seeds in the eastern half of the country. The groundnuts are practically the products of the Madras Presidency.

Rape Seed: Its cultivation is restricted to the northern part of India, and the principal provinces are the United Provinces, Bengal, the Punjab, Bihar and Orissa. The U. P. alone

supplies more than 50 per cent. of India's total. Rape seed is exported to the United Kingdom, Italy, Belgium and France. 98 per cent. of exports passes through Karachi.

Groundnut is one of the most important oil-seeds and has exhibited rapid growth within recent years. It is grown mostly in Madras, Bombay, and Hyderabad. Recently groundnuts have been introduced in the Central Provinces and Chota Nagpur. The average annual production is nearly 3 million tons in an area of 8 million acres. The principal buyers of Indian groundnuts are France, Belgium, Austria, Hungary, Germany, Italy and the United Kingdom. The chief ports for exports are Madras and Karachi.

Sesamum is known to the trades as *til* or *sesame*. The cultivation extends to almost all the provinces of India, but the crop is raised most extensively in Bombay, Madras and in the Central Provinces. About one-fourth of the world's total is raised in India. Indian sesamum is imported by Belgium, France, Germany, Italy, Egypt and the U. K.

Castor Seed: Castor oil plant is principally grown in Madras, Hyderabad State, Bombay and the Central Provinces. It is largely exported and India commands a preponderating share of the world's export trade in the seed. The noted buyers are the United Kingdom, France, the U. S. A., Belgium, Italy, Germany and Spain.

Rubber. India produces nearly 2 per cent. of the world's total production of rubber. Rubber is mainly grown in the southern part of India. Madras, Coorg, Mysore, Travancore and Cochin are the principal producers of rubber.

P. C. OF TOTAL AREA UNDER RUBBER CULTIVATION

Madras	..	..	10 p. c.	Cochin	..	..	8 p. c.
Travancore	..	..	60 p. c.	Coorg & Mysore	..	..	2 p. c.

In Southern India, communications are well developed, and there is never any scarcity of labour in the plantations.

The rubber plantations employ more than 30,000 people in India.

Indian rubber is mostly raised for foreign markets. The principal recipients of Indian rubber are the U. K., Ceylon, Holland, Straits Settlements and Germany. The United Kingdom alone takes more than 35 per cent. of our rubber export. Cochin is the principal port through which rubber is exported.

The International Scheme for the regulation of production and exports of rubber came into operation from the 1st June, 1934. The scheme aims at regulating the production and export of rubber in order to reduce existing world stocks and maintain an equitable price level, reasonably remunerative to efficient producers. Further planning of rubber and export of the material from the territories covered by the agreement are prohibited.

The Agricultural Problems

The study of agricultural crops in India reveals that the Agriculture is a very old industry and the cultivators are intelligent and hardworking—though illiterate and poor. But there are great differences in the agricultural conditions and practices that prevail in different parts of the country, which are due to, in no small measure, the differences in soil, climate, rainfall and methods of cultivation.

YIELD PER ACRE IN LBS.

	Rice	Wheat	Linseed
Bengal	998	660	416
U. P.	645	725	359
Bihar	756	865	307
Central Provinces ..	705	429	180
Bombay	871	393	

Another problem is that the agricultural productivity of India is comparatively low than of other important agricultural countries of the world.

QUINQUENNIAL AVERAGE (1932-36) IN QUINTALS PER HECTARE.

Crop	China	Japan	France	Italy	U.S.S.R.	U.S.A.	India
Rice	25.6	36.0	—	—	—	—	13.7
Wheat	11.1	13.8	15.9	14.3	7.8	8.3	7.0
Barley	12.1	20.4	14.6	10.6	8.9	10.5	9.4
Maize	13.7	13.8	14.4	19.6	10.1	13.2	8.7
Cotton	22.4	—	—	—	2.4	2.1	0.9
Linseed	—	—	4.6	5.9	2.8	3.5	2.7
Groundnut	18.2	21.5	—	—	—	7.9	10.0

This low productivity of land in India is due to the differences in agricultural methods and in the stages of development in the economic life of these countries.

The third problem is the maladjustment of food resources to the growing population of India. The pre-war production of food grains in India, even when supplemented by imports, fell short of the actual requirements of the country. In normal times there has always been a food deficiency for about 12 per cent of the population in a year. The net imports of food grains are practically stopped due to the shipping difficulties and the fall of Burma. Thus, there is now acute shortage of food all over the country.

Irrigation Works in India

As India is essentially an agricultural country, the need for a sufficient supply of water is always great. The *Monsoon* usually supplies water to Indian districts; but there are certain draw-backs in the character of the monsoon. These are:

(i) **Uncertain rainfall:** In Sind, Rajputana and many parts of the Punjab rainfall is uncertain.

(ii) **Ill distribution:** In the Deccan, rainfall is not only scanty but ill-distributed.

(iii) **Absence of winter rain:** Cultivation in winter requires artificial water supply in the absence of winter rain.

(iv) **Certain crops require more water than rainfall can supply, viz. sugar-cane and rice.**

Man is unable to control rainfall in which either deficiency, irregularity or superabundance may give rise to disastrous famines. He can, however, provide measures which reduce famine. The chief among these is the extension of irrigation. Irrigation means supply of water to the fields by means of canals from rivers or from storage tanks for the purposes of agriculture.

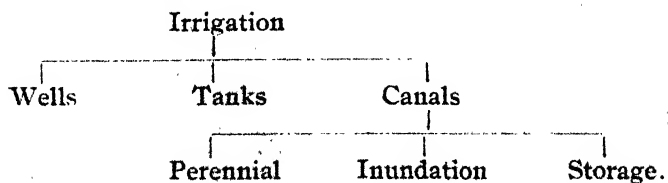
Irrigation has played a very important part in the rural economy of the different provinces of India. In a word, the prosperity of Indian agriculture is ultimately bound up with the progress of irrigation.

The area irrigated in British India is about 60 million acres, of which grain crops occupy more than 40 million acres.

PROGRESS OF IRRIGATION IN INDIA (1939-40)

Province	Total area sown Acres.	Area of crop irrigated Acres.	Percentage of area irrigated to sown area
Punjab	29,946,850	17,046,510	56.9
U. P.	45,161,675	13,153,590	29.2
Madras	36,280,212	10,655,537	29.3
Sind	5,623,877	5,289,049	94.5
Bihar	23,260,300	5,220,757	22.5
Orissa	7,005,958	1,507,247	21.5
Bengal	30,228,400	2,073,002	6.8
Bombay	29,413,873	1,407,705	5.0
C. P.	27,133,285	1,380,124	5.1
N. W. F. P. ..	2,635,447	1,064,945	40.4

There are three main kinds of irrigation works in India :



(i) *Wells*: About 20 per cent. of the irrigated area of India is well-irrigated. The construction and maintenance of wells have been mainly the result of private enterprise. Water

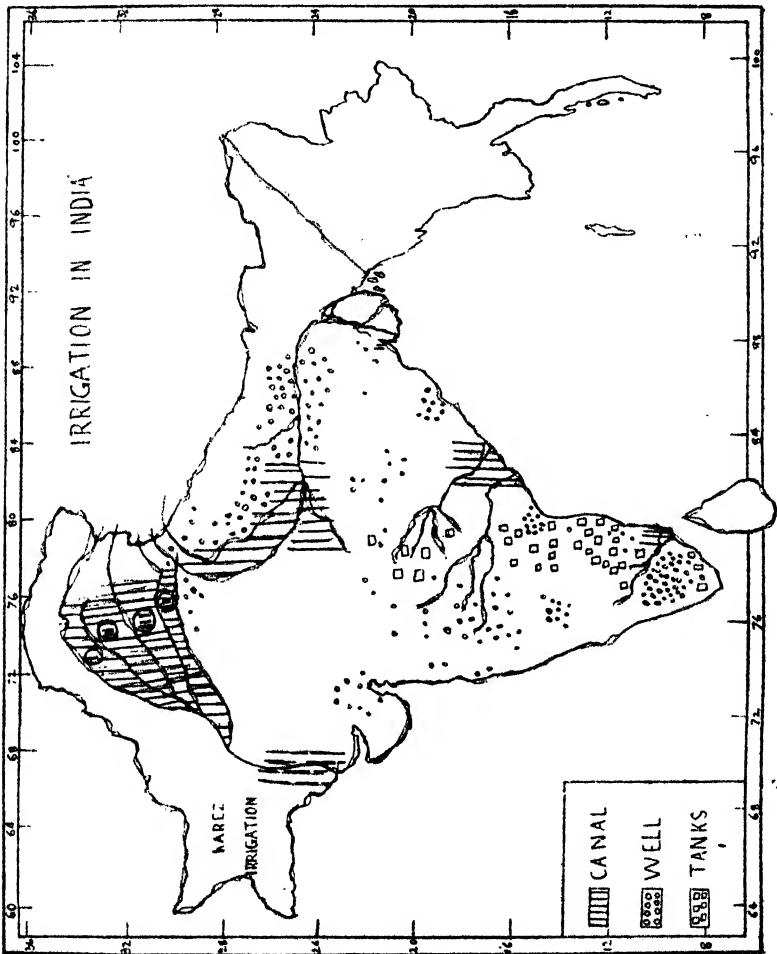


FIG. No. 65. Nearly 60 million acres of land are cultivated with the help of irrigation. Notice the irrigation development in the areas of uncertain and scanty rainfall.

is raised from wells either by manual labour, bullocks, water-lifts, and Persian wheels or by means of oil engines. Well-

irrigation is extensively used in the United Provinces, the Punjab, Madras, Bombay, Rajputana, etc.

(ii) *Tanks*: Tanks are really hollows, natural or artificial, in which the rain water, when it comes, is collected and stored. Tank irrigation is prevalent in Madras, Mysore and Hyderabad.

(iii) *Canals*: This is the most important type of irrigation in India. Canals may draw their water either from rivers or from artificial storage. Canals are mostly constructed in Northern India, where the rivers have flow of water throughout the year. Storage canals are constructed in the Deccan, the Central Provinces and Bundelkhand. Here the rivers dry up during the hot season and, therefore, artificial storage is necessary. Rain water is stored across a valley by building a dam and then distributed to the neighbouring lands by means of canals.

The river canals may be of two classes: (a) Inundation canals and (b) Perennial canals. The inundation canals obtain water when the river rises above a certain level. Thus the canals depend for their supply of water on the natural flood level of the river. When the level is low, canals do not obtain water, but when the river is in flood, they permit a widespread cultivation. Irrigation is thus suspended from October to April when the level of the water is low. During this period cultivation is practised with the help of well-irrigation. To remedy this defect perennial canals are constructed.

The perennial canals draw their water from rivers which have flow of water throughout the year. Some form of barrage is put across the river and its water is diverted by means of canals to the neighbouring areas. The great canal systems of the U. P. and the Punjab are of this type. Many of the inundation canals are being transformed into perennial canals. By perennial irrigation, the agricultural production in the "uncertain zone of rainfall" has been enormously increased, for unlike the inundation method, it allows full advantage to be taken of the hot season and so permits cultivation all the year round.

The Punjab is a canal colony.* The conditions are excellent for developing irrigation in the Punjab. The Indus and its tributaries have their sources in the Himalayas and spread out over the province "like the fingers of an open hand." With the exception of the north-east and the north-west, the province is flat, with soft alluvial soil. The development of canal irrigation has transformed large areas of semi-deserts into fertile agricultural lands. More than sixteen million acres of land are irrigated by canals in the province. These areas comprise nearly 44 per cent. of the total area sown. There are seven important canal systems in the Punjab.

(i) The Western Jumna Canal takes its water from the Jumna and irrigates the districts of Rohtak and Hissar (South-East) and the States of Patiala and Jhind. More than 8,90,000 acres of land are irrigated by 1900 channels of the Canal.

(ii) Sirhind Canal takes its water from the Sutlej at Ruper and irrigates the districts of Ludhiana, Ferozepur and Hissar, and the State of Nabha. The Canal was opened in 1862.

(iii) The Upper Bari Doab Canal takes its water from the Ravi at Madhopur and irrigates the districts of Gurudaspur, Amritsar and Lahore.

(iv) The Lower Chenub Canal is the most important canal in the Punjab and the greatest in all India. It has 2437 miles of channels and irrigates 23,63,112 acres of land of the Lyallpur Colony. It takes its water from the Chenub at Khamki and has turned a semi-desert tract into a rich agricultural area around Lyallpur, where population has increased with great rapidity after the opening of the canal system. Before its construction, the density of population in this area was very sparse and never exceeded 10 people per square mile. At present there are more than 300 people per square mile.

* The chief canal colonies of the Punjab are Shahpur (between the Jhelum and the Chenub), Lyallpur (between the Chenub and the Ravi), Montgomery (immediate south of the lower Ravi), and Nilibar (immediate north of the lower Sutlej).

(v) The Lower Jhelum Canal has 583 miles of channels and irrigates more than 8,60,000 acres of land of the Shahpur Colony in the North-West Punjab. The head stream is at Rasul.

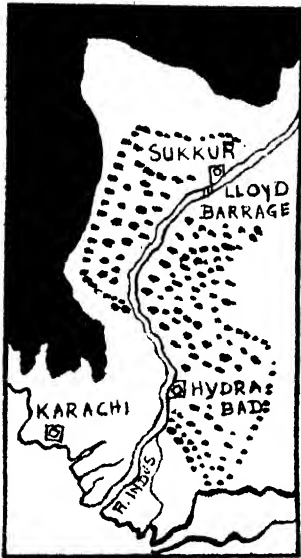


FIG. No. 66. The dotted areas are irrigated by canals. The head water of the canal system is at Sukkur.

(vi) The Upper Jhelum Canal takes its water from the Jhelum at Mangla in Kashmir and irrigates the land lying between the Upper Jhelum and the Upper Chenub.

(vii) The Upper Chenub Canal takes its water from the Chenub at Marala and joins the Lower Bari-Doab Canal at Balloki on the Ravi. The canal was opened in 1912.

Mention may be made of the *Triple Canal Project*—a magnificent engineering work. The lower Bari-Doab Canal does not possess sufficient water, because the Upper Bari-Doab Canal takes away much water from the Ravi at Madhopur. The Upper

Chenub Canal has, therefore, been connected with the Lower Bari-Doab Canal at Balloki. Again, owing to the existence of the Upper Chenub Canal, the Lower Chenub Canal does not possess sufficient water. By a bold engineering conception, the Upper Jhelum has now been connected with the Lower Chenub at Khamki. The entire project was completed in 1933.

More than 74 per cent. of the total area sown in Sind is irrigated by canals, though only $4\frac{1}{2}$ million of acres are irrigated. The Lloyd Barrage scheme is one of the marvels of engineering science. A great dam has been constructed across the Indus river by putting a barrage at Sukkur in order to control the waters of the river; from the dam water is distributed by means of canals to different areas of Sind.

In Madras about 7 million acres of land are irrigated by tank-canals. The percentage of the area irrigated in relation to the total area sown in Madras exceeds 30. Canals take their water from the Godavari, the Kistna and the Cauvery. The Periyar canal system is one of the best examples of irrigation in Southern India. The flat land around Madura, covering an area of 1,33,000 acres, is watered by the Periyar river.*

The prosperity of the United Provinces is largely due to the great irrigation works. The irrigated region covers nearly 22 per cent. of the area sown. Rainfall in the Upper Ganges valley is under 40 inches and irrigation is of vital importance. There are five large canal systems in the province :

(i) The Upper Ganges Canal was completed in 1854 and has its head water at Hardwar. It irrigates over 1,00,000 acres of land and is the most important canal system of the province. The main canal is 213 miles long with branches and distributaries covering a total length of 3,400 miles. It also supplies water to the Agra Canal and the Lower Ganges Canal.

(ii) The Agra Canal was opened in 1874 and is taken off from the Jumna near Delhi. It irrigates over 2,60,000 acres of land.

(iii) The Lower Ganges Canal was completed in 1878. It is taken off at Narora in the district of Bulandshahr. The total length including channels exceeds 3,000 miles. It irrigates over 8,00,000 acres of land.

(iv) The Sarda Canal is the largest productive canal of the province. It was completed in 1928. Its mileage including distributaries is over 5500. The head works are situated at Banbansa on the border of Nepal. It irrigates Rohilkhand and the western part of Oudh. The Sarda system commands an area of about 60,00,000 acres of land.

(v) The Eastern Jumna Canal serves the north-eastern part of the province. The canal takes the water from the Jumna near Faizabad.

* The Periyar is a small river in the Western Ghats of the Madras Presidency. Its water is drawn to the eastern part of the hills by means of a tunnel.

It must be admitted that the progress of irrigation in India is not rapid. Irrigated areas cover only $\frac{1}{5}$ of the total sown area in India. Irrigation is least developed in Bengal, where its need for agriculture is not felt very much. Agriculture in Bengal is favoured by magnificent rivers and a plentiful and never-failing supply of rain. Only 2 million acres of land in Bengal are served by irrigation works.

Canal-irrigation is not without evils. Water-logging and salt effervescence are the two dangers of canal irrigation. In the Punjab and Bombay many acres of land have become unfit for cultivation as a result of the rise of sub-soil water and by the appearance of salts driven to the surface of the soil. Cultivators also waste an enormous volume of water in the irrigated areas and are responsible for water-logging.

In this connection mention may be made of "Karez", an underground system of irrigation which is extensively practised in Beluchistan. Here the soil is open and porous, and is composed of water-worn stones; but below the surface the soil is hard and impermeable conglomerate. Therefore water is found flowing in many places below 20 or 30 feet from the surface, although on the surface itself there is no water. "The water thus found is led gradually towards the surface through the *Karez*. A series of wells are dug at intervals of 15 to 25 yards, and connected below by an underground passage, through which the water runs till at last it reaches the surface and is utilised for irrigating the fields."

Mineral Resources

Nature has been very kind to India in the endowment of mineral resources. In recent years much progress has been made in the survey of mineralised areas, and many new mining regions are being found out. The average annual value of the minerals found in India exceeds Rs. 20 crores.

Of the various minerals found in India, the most important are coal, manganese ore, gold, mica, iron ore, salt and petroleum. She is the world's main source of supply of ilmenite, monazite and zircon.

Lead, copper and zinc are also found, though not in sufficient quantities. Sulphur, in which India was lacking until lately, is at present available. India is also rich in aluminium ores. And yet the progress of the mining industry is very

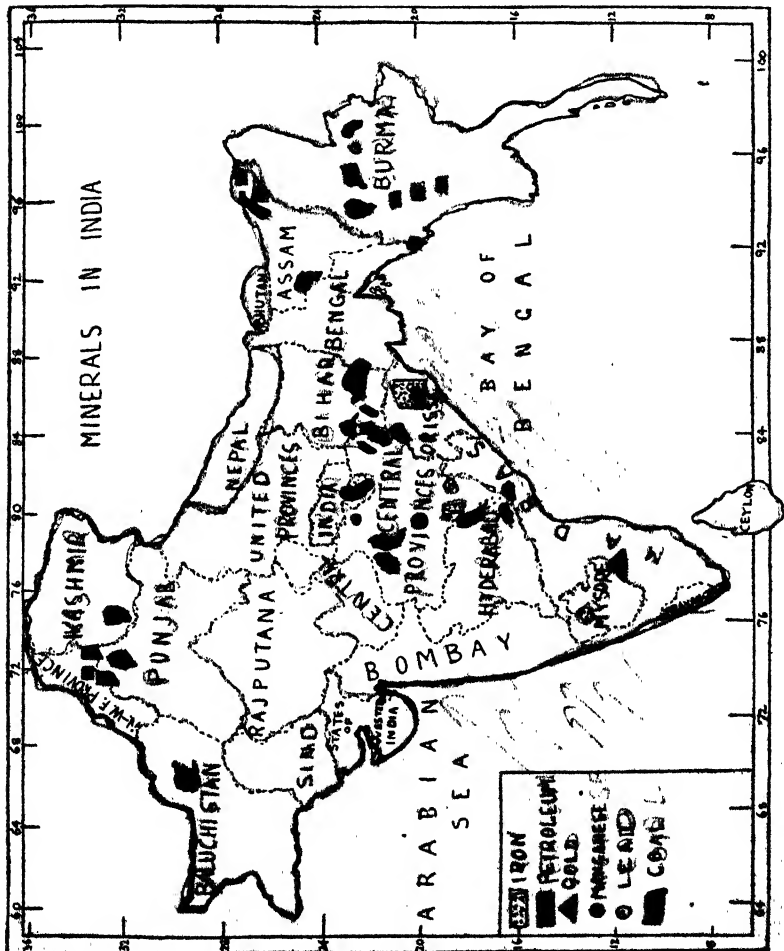


FIG. No. 67. Map showing the distribution of minerals in India.

slow and irregular. Until lately, the mineral products were mostly raised for export trade. We have not utilised our metals, except iron and steel, to our best advantage.

Iron. India is the second largest iron-ore producing country in the British Empire and occupies the ninth place in the list of iron producing countries of the world. "Next to the U. S. A. and France, India has the world's largest reserves of iron ore, and, what is more, they are of the richest kind."

The value of an iron-ore deposit depends not only upon its richness in iron, but also upon its location and the ease or difficulty of mining. India is fortunate in this respect, because most of her iron-ore fields are found within easy reach of coal-fields. Dolomite and limestones, necessary for smelting, are also found in the neighbouring areas. No geographical barrier offers impediments to the construction of roads and railways.

Though deposits of iron ore of good quality are found in many parts of India, the most important fields are confined to the Singhbhum district and the Keonjhar, Bonai and Mayurbhanj States of Orissa. The less important areas are in the Central Provinces, Madras and Mysore.

The Mayurbhanj State contains large deposits of high grade iron ore in three principal fields—Gurumahisani, Sulaipat and

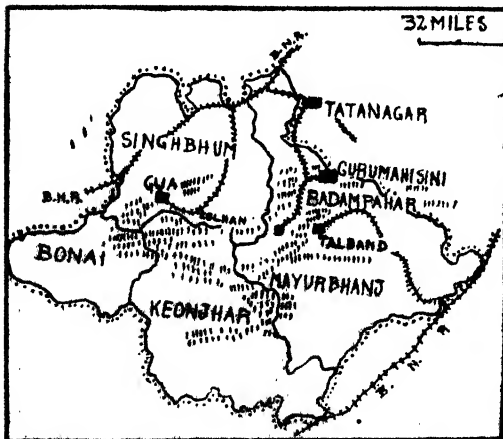


FIG. NO. 68. The iron-ore fields of Orissa.
Notice the B. N. Ry. serving the fields.

Badampahar. These three fields are all high lands and are connected by the branch lines of the B. N. Railway with Tatanagar, the centre of the steel industry. These are also within easy reach of coal and dolomite fields and raise nearly one-third of the total Indian output.

Singhbhum is the largest iron-ore producing area in India and rich deposits of high grade haematite occur in Pansira Buru, Gua, Buda Buru

and Noamundi, all in the Kalhan estate. The iron contents of the ores in this area are greater than those of the ores in the Mayurbhanj State. The fields are connected by the branch lines of the B. N. Ry.

Keonjhar possesses two fields--one in the Bagia Buru ridge and the other on the north-eastern part which is really a continuation of the Noamundi mine of Singhbhum. Manganese and dolomite are also raised in the neighbourhood.

The Central Provinces is rich in iron ores but up till now the ores have not been exploited. Lohara and Pipalgaon in the Chanda district and the Dalli and Rajhara hills in the Drug district and the Bastar State hold out future possibilities. In Mysore the main source of ore supply is the Kemmangundi field in the Babubudan hills. Iron ores are also found in other places of Mysore; but they are not worked at present. Goa, the Ratnagiri district in Bombay, and Salem and some other districts of Madras may supply iron ores in the near future.

AVERAGE ANNUAL PRODUCTION OF IRON ORE

Provinces	Quantity (tons)	Provinces	Quantity (tons)
I. Orissa :		2. C. P.	800
Keonjhar ..	3,00,000	3. Mysore State ..	24,000
Mayurbhanj ..	3,00,000		
Singhbhum ..	12,00,000		

Manganese. India is the second largest manganese producer in the world, following the U. S. S. R.

The manganese mining engages nearly 10,000 workers who are mostly recruited from the districts adjoining the area of production.

PRODUCTION OF MANGANESE IN INDIA

(1935)

Central Provinces	3,85,179 tons	Bombay	4,866 tons
Madras ..	1,75,571 ,,	Mysore	871 ,,
Orissa ..	74,996 ,,		

The Central Provinces is the largest producer of manganese ore, which is found in the Balaghat, Bhandra, Chinduvra,

Nagpur and Jabbalpore districts. The province raises nearly 60 per cent. of the Indian output. The industry has received great impetus by the opening of Vizagapatam port, which now permits easy movement of the mineral to the port by the Vizianagram—Raipur Railway line. Before the opening of the port, C. P. had to depend on Bombay or Calcutta for exporting manganese.

Madras produces a little more than half of the C. P. output of manganese. The producing areas are the Bellary district, the Sandur State and the Vizagapatam district. Much of the manganese ore is exported outside through Vizagapatam and Mormugao.

The Gangpur State and Singhbhum are the only manganese fields in Orissa at present and they supply nearly 80,000 tons annually. In the Bombay Presidency manganese ore occurs in the Panch Mahal district, Chota Udaipur and Ratnagiri. In Mysore, the fields are widely distributed, but the output is very small, being less than 1,000 tons. It is raised in the Chitaldrug, Kadur, Shimoga and Tumkur districts. Labour is easily available in Mysore.

Although there is a steady rise in the consumption of manganese ore by the Indian iron and steel companies, the prosperity of the industry will depend on its ability to put the mineral in the world market at competitive prices. The Indian iron and steel companies consume hardly 60,000 tons annually out of the total annual production of nearly 7,00,000 tons.

Recently there has been a sharp decline in the export of manganese from India due to over-production of manganese in the producing countries, the decline in the activities of the iron and steel industry of Europe and the U. S. A. and the increased competition from Russia. The principal importers of Indian manganese ore are the U. K., Belgium, France and the U. S. A.

Copper. India occupies the thirteenth place in the list of copper-ore producing countries of the world. In 1935 she supplied 11·3 thousand tons of contents of metallic copper out of the world's total of 2,000 thousand. This figure compares

very unfavourably with that of the U. S. A. which raises an annual average of over 330 thousand tons.

In India copper used to be smelted formerly in considerable quantities in Southern India (Mysore and Madras), Rajputana and in various other places. At present the mineral is mined on an extensive scale in two areas—Singhbhum and Nellore.

A copper bearing belt persists for a distance of some 80 miles in Singhbhum where important fields like Mosabani, Ghatsila and Dhobani supply the major portion of the Indian output. The copper mines of Singhbhum employ more than 800 persons.

The Nellore district in Madras exploits the copper ores on modern lines, but the output is very small.

Copper ore also occurs in Hazaribagh, Central India and Mysore. Along the outer Himalayas, a belt of copper bearing rocks runs through Kulu, Kangra, Nepal, Bhutan and Sikkim ; but it is now difficult of commercial exploitation due to the inaccessibility of the areas and the lack of adequate communication.

The prosperity of the Indian copper industry depends greatly on the success of the brass-making industry. Recently, with the introduction of the aluminium products in the markets, the demand for brass goods has fallen considerably in India.

Gold. In the list of minerals in India, gold occupies the third place as regards value. But India's contribution to the world's total output of gold is only about 2 per cent. She produces every year about 3,50,000 ounces of gold valued at about Rs. 3 crores.

In India gold is found in Mysore, Hyderabad, Madras, Punjab, U. P., Bihar and Orissa. About 99 per cent. of the Indian output comes from the Kolar field in Mysore. The Kolar gold-field is 40 miles from Bangalore and lies on a high land of 2800 feet above sea level "*where there is a single gold bearing reef of quartz some four miles long.*" The field employs more than 23,000 workers. Sivasamudram 92 miles distant, supplies electrical power to the Kolar field. The production of the field

is, however, on the decline. The mines have reached a depth of 7,500 feet.

Not long ago Raichur district in Hyderabad and Dharwar district in Bombay produced a fairly large quantity, but these fields have now been closed down. Though Anantapur in Madras contains several large quartz, it does not at present produce any gold.

Alluvial gold is found with stands in many rivers of India. It is recovered by the local inhabitants. Such areas are Singhbhum in Orissa, Attock, Ambala and Jhelum districts in the Punjab ; Bijnor district in U. P. ; the Indus valley in Gilgit (in Kashmir) ; and the Brahmaputra valley in Assam. The value of gold thus obtained does not exceed £300 a year.

Chromite. Mysore is the principal supplier of chromite and contributes nearly 65 per cent. of the Indian output. Shimoga and Hassan are the two main fields of Mysore where production is on the increase every year. The next important supplier is the Singhbhum district in Orissa which raises nearly one-third of India's total ore. The other areas where chromite occurs are Beluchistan, Ranchi and Bhagalpur district in Bihar.

Practically the whole output is exported outside. The principal purchasers are the U. K., Norway, Sweden, Germany and the U. S. A. The shipment goes through Karachi, Madras and Calcutta. The chromite of Rhodesia and New Caledonia is competing with that of India in the European markets.

Mica. India is the largest mica-producing country in the world. This industry gives employment to about 12,000 persons.

PRODUCTION OF MICA IN INDIA
Area and Quantities in 1935

	cwt.		cwt.
<i>Bihar :</i>		<i>Travancore</i>	41
Gaya	10,524	<i>Rajputana :</i>	
Hazaribagh	37,679	Ajmere	384
Monghyr	442	Jaipur	160
Manbhum	29		
<i>Madras :</i>			
Nellore	9,452		
Nilgiris	43		

The official figures regarding production are not reliable inasmuch as they represent a little above one-third of the exports of mica from India.

Although mica is widely distributed, two principal areas control its production and trade. These are (i) the Bihar belt, a strip of country some fourteen miles broad and over 60 miles long, running obliquely across the districts of Hazaribagh, Gaya, Monghyr and Manbhum, and (ii) the Nellore district of the Madras Presidency.

The Bihar belt supplies more than 80 per cent. of the Indian output. Bihar mica is mainly of the ruby variety, the higher qualities of which (known as *cleared and slightly stained*) are the finest in quality in the world and are greatly used in certain electrical industries.

The Nellore district of the Madras Presidency raises mica by open quarrying at Cudur, Kavali, Atmakur and Raipur. The fields are in the coastal plain and extend for about 60 miles. The Nellore mica has a greenish colour and is inferior to Bihar mica.

The mineral is raised mainly for export, because the internal consumption of mica in India is very small. In 1937 India exported nearly 3,00,000 cwt. of mica. The exports mainly go through Calcutta, Madras and Bombay. Calcutta alone handles 85 per cent. of exports, while Madras and Bombay handle 14 per cent. and 1 per cent. respectively. The U. S. A. is the largest customer of Indian mica and takes as much as 45 per cent. of the total export. Other recipients are the U. K. (30 per cent.) and Germany (10 per cent.).

Salt. In India salt is mainly obtained from three sources :—(i) sea water, (ii) inland lakes and sub-soil water, (iii) beds of rock salt. More than two-thirds of the total production comes from the sea water of the Bombay and Madras coasts. Dharsana and Chharvad on the east of the Gulf of Cambay and Okha in Kathiawar manufacture salt in large quantities. Normally the manufacturing season is from January to June. A considerable quantity of salt also comes from the wells of brine on the Little Rann of Cutch. The saline content of the water is

very high ; and the salt is produced by solar evaporation. There is also a salt factory at Myurpur, near Karachi in Sind.

In the Madras Presidency, the salt-producing districts are mostly confined to the eastern coast extending from the district of Ganjam to Tuticorin in the extreme south. Salt is also manufactured in the Udipi district in Malabar. Madras contributes more than 30 per cent. of India's total production.

Another important source of salt is sub-soil and lake brines of Rajputana where there are many lakes. The Sambhar Lake, the largest of all, covers an area of 90 square miles and produces about a quarter of a million ton every year. The reason for the high percentage of salt is that during summer the south-western winds carry particles of salt from the Rann of Cutch and deposit them in this part, which are again washed into the lakes with rain water.

Rock salt is raised from the mines of the Punjab, Salt Range, Kohat in the Frontier Province and the Mandi State in the Punjab. Rock salt supplies more than 12 per cent. of the Indian production, of which 85 per cent. is contributed by the Salt Range of the Punjab alone. Indian production represents about three-fourths of the annual consumption of salt in India. India imports salt mainly from Aden, East Africa and Germany.

Saltpetre. Saltpetre has great industrial demand. It is used in connection with the manufacture of glass, for food preservation and for manurial purposes in addition to its importance as a constituent of gun powder. Bihar and the United Provinces are the important producers. The main centre of manufacture is Farrukhabad in U. P. Nearly the whole of the output is exported and a small part is retained in the country for the Assam tea gardens. Saltpetre is exported to the U. S. A., China, the U. K., Mauritius, Ceylon and Straits Settlements.

Gypsum is necessary for making fertilisers and also certain kinds of paper. It is also used in India in considerable quantities in the cement industry. It is found in Rajputana, the Punjab, Kashmir, Madras, Sind and Kathiawar.

By far the most important producer is Rajputana, where the mineral is found in Bikanir, Jodhpur and Jaisalmer. Rajputana raises nearly 70 per cent. of the Indian output. The Punjab, which contributes about 27 per cent. of the total production, contains large deposits of gypsum in the Jhelum, Shahpur and Mianwali districts.

Asbestos. India raises a very small quantity of asbestos from the Bangalore district of Mysore, Ajmer-Merwara in Rajputana and the Cuddapah district of Madras. India has to import every year large quantities of asbestos goods.

Diamond occurs in the Anantapur, Bellary, Kistna, Guntur and Godavari districts of Madras ; Sambalpur district in Orissa ; Chanda district in C. P. ; and Bundelkhand in Central India States. Although the Indian diamond industry is the oldest one in the world, its present output is insignificant. In 1935 it raised diamond worth only about Rs. 1,00,000.

Power Supply in India

Coal. In India coal is the most important mineral product in respect of value and quantity. India is the second largest coal-producing country in the British Empire and she occupies the eighth place in the world.

Although coal is the principal source of mechanical and chemical energy in India, there are certain drawbacks attached to the Indian coal industry. Indian coal is generally poor in quality ; its fuel properties, that is, the percentage and condition of carbon content, are definitely lower than those of the European or American fields. With the exception of Jharia coal, Indian coal has usually high proportion of moisture. The coal-fields are again very unevenly distributed. More than 98 per cent. of the total output comes from one big belt—the Lower Gondwana coal-fields (in Bengal, Bihar, Orissa, Central Provinces and Hyderabad). Coal is very deficient in Peninsular India and totally absent in U. P. and Sind. The transshipment of coal entails great difficulties in view of its bulky size. Hence it can be easily realised how expensive coal becomes as a motive power in industries in India, where coal must needs be carried over long distances.

The Indian coal-fields are not situated either near the coast or in the valleys of navigable rivers. In the United Kingdom, the coal-fields are all found within easy reach of the sea coast ; in Germany the fields are found along the basins of the big navigable rivers. The distance of coal-fields from the sea and navigable rivers compels the Indian coal industry to look to railways for the movement of its products and consequently the freight is high.

Geologically, the coal-fields of India may be divided into two classes: (a) The Gondwana system of strata, extending from Bengal, Bihar and Orissa to Hyderabad, including the Central Indian Agencies and the Central Provinces ; (b) the Tertiary beds found in Assam, Beluchistan, the Punjab and Rajputana.

GONDWANA BELT

<i>Provinces</i>	<i>Fields</i>
Bengal	Raniganj.
Bihar and Orissa ..	Jharia, Bokaro, Giridih, Rajmahal Hills, Palamau (Aurunga, Hutar and Daltangunj), Talcher, Rampur (partly in the Sambalpur district and partly in the Raigarh State in C. P.), Ramgarh, North and South Karanpura.
Central India ..	Umaria, Sohagpur, Singrauli.
Central Provinces ..	Mohpani, Shahpur, Pench Valley, Warora, Yeotmal, Ballalpur (also known as Sasti field. It lies partly in Hyderabad).
Hyderabad ..	Sasti, Tandur and Singareni.

TERTIARY BELT

<i>Provinces</i>	<i>Fields</i>
Assam	Nazira, Makum.
Beluchistan ..	Sor Range and Mach, Khost.
The Punjab ..	Shahpur, Mianwali, Jhelam.

The total reserve of coal in India amounts to about 4,500 million tons out of which 1,700 million tons are coking

coal and 2,800 million tons are non-coking coal. At the present rate of raising coal, the reserve is likely to last about 200 years.

Raniganj, the earliest coal-field to be worked in India,* covers an area of 600 square miles. It contributes near about one-third of the total coal production in India. The Raniganj mines are the deepest in India and seams occur up to a depth of more than 2000 ft. The E. I. R., with its branch lines, serves the field.

The Jharia field, 140 miles north-west of Calcutta, covers an area of 175 square miles. It is 16 miles west of Raniganj. More than 50 per cent. of the Indian output comes from Jharia. Seams occur up to a depth of 2000 feet. Both E. I. Ry. and B. N. Ry. serve the Jharia field.

Close to the Jharia field to the west is the Bokaro field with an area of 220 square miles. The North Karanpura field is very extensive and covers an area of more than 450 square miles. Though it is not so important a field to-day, yet in future it may become a great supplier of coal. In 1930 North and South Karanpura raised more than 2 per cent. of the Indian output. The Giridih coal-field is a small one, but it yields some of the best coal in India which is greatly used in metallurgical industry.

In Central India, there are two fields—one in Sohagpur in Rewah and the other in Umaria, near Katni. Sohagpur has an area of 1200 square miles and raises nearly 1 million ton annually.

There are many coal-fields in C. P. scattered throughout the Rewah-Gondwana basin, the Satpura region, and Wardha Valley. Two fields are very important—one in the Pench Valley in the Satpura region and the other at Ballapur in the Wardha Valley. In 1935 C. P. raised more than one million ton and a half of coal out of a total of 23 million tons in India.

In Hyderabad, the principal coal-field lies in Singareni, 146 miles from Hyderabad city. "The coal itself is a dull, hard, non-coking, steam coal largely consumed by railways and mills in Southern India."

* It was opened in 1777 and was the leading producer till 1905.

Tertiary coal-fields are worked in Assam, Beluchistan, the Punjab and Rajputana, and they supply nearly 2 per cent. of

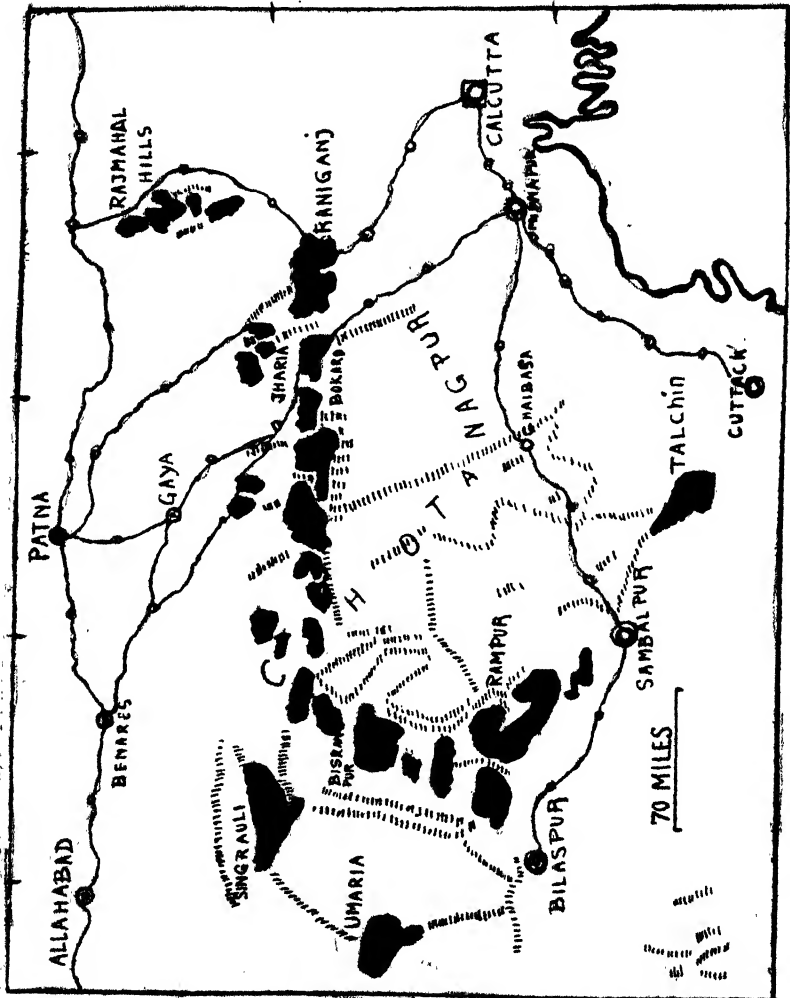


FIG. NO. 69. Coal-fields of Bengal, Bihar and C. P. (in parts).

India's total output. Assam raises more than 50 per cent. of the Tertiary coal. Makum contains coal of excellent quality which is largely consumed by the railways, steamer companies and tea factories in Assam.

Railways as well as iron and steel and brass foundries consume more than half of the total coal available in India. Domestic consumption is as yet small, although intensive propaganda is being carried on for the popularisation of soft coke as a domestic fuel. The following table shows how the Indian coal is consumed annually by the different branches of industries.

CONSUMPTION OF COAL IN INDIA

	p.c.		p.c.
Railways	31·9	Brick and Tile factories	3·5
Iron, steel and brass foundries	24·4	Jute mills	2·9
Cotton mills	6·7	Inland steamers	2·4
Consumption at collieries	5·3	Tea Garden	0·8
Bunkar coal	4·5	Paper mills	0·7
		Port Trusts	0·6
		Other forms	16·2

The demand for coal by the railways from the open market is sharply declining. This is because much of their requirements for coal by the E. I. Ry. and B. N. Ry. is met from their own collieries.*

The coal industry of India gives employment to more than 1,80,000 people who are mostly recruited from Chota Nagpur, C. P. and Bihar. Many of these labourers do not work in the mines throughout the year, and during the agricultural seasons, particularly during the harvesting periods, they go back to their respective villages. This problem of the periodical shortage of labour in the coal-fields has been solved to a certain extent by the use of electricity in the mines for pumping and coal-cutting.

The Indian labourers are not very efficient. This is reflected in the low average annual output per head of labour in the mines. In the U. K. the average output per head is 290 tons (above ground) and 300 tons (below ground) as compared with 130 tons (above ground) and 180 tons (below ground) in India.

* The Railway Board should be urged to enforce rigid restrictions on the output of the railway collieries and stop them from selling coal to the public.

But before the outbreak of the war in 1939, the prosperity of the coal industry is threatened by the falling off in the demands for coal from abroad and also in India. Ceylon, Straits Settlements, Penang, Aden and Perim used to take a considerable quantity of Indian coal, but as a result of Japanese Australian and South African competition, the export of Indian coal to these countries declined.

The western part of India imports coal from South Africa and Australia, because the freight charges are definitely lower in case of *India—Africa* or *India—Australia* line than in that of Indian coastal shipping. India raises a large quantity of low grade coal which has very limited demand. The slow progress in the industrialisation of the country and the reluctance of the iron industry to utilise such coal have rendered it almost superfluous in the market. Some use for this surplus coal may be found by the carbonisation of coal which will produce not only oil but also chocolate, laxative, phenyl and naphthalene.

“With the outbreak of war in 1939, demand for coal became brisk and the export trade surpassed all previous records.” In 1939-40 India exported 2 million tons of coal compared to 1.3 million tons in 1938-39. In the same year, the production of coal was raised to 29 million tons. But in 1943, the coal raising was disturbed due to shortage of labour and inadequate supplies of stores and machinery so that the production of coal was lower by 8 p.c. compared to 1942. This shortage of labour was due to the following reasons :

- (1) Attraction of higher wages in more congenial occupations than mining.
- (2) High prices of rice and consequential enhancement and prolongation of annual seasonal migration during planting time.
- (3) Outbreak of cholera owing to infection brought in by Government contract labour employed on neighbouring projects.
- (4) Malnutrition of labour.

To solve the problem of shortage of labour, the Government have allowed women to work underground. The Government

has further introduced a *coal control scheme* according to which all coal-owners are required to produce a certain minimum quantity and to work under conditions laid down by Government in regard to employment of labour, payment of wages etc. The Government will take over the management if any colliery fails to comply with the conditions. "Under the control scheme, control will cover not only the production of coal, but also its distribution among the various consumers on a system of priorities with a view to meeting the needs of the essential industries."

Petroleum. In terms of value, petroleum occupies the fifth place among the minerals of India. Its products are very important for the growth and expansion of many industries in India. The position of India as a supplier of oil is not at all satisfactory and her output, including that of Burma, represents less than one per cent. of the world's total.

There are two distinct oil-bearing areas on either side of the Himalayan arc. The one on the east, by far the most important, is Assam; the other on the west comprises the Punjab, Beluchistan, North-West Frontier Province and Sind.

The eastern oil-bearing belt stretches from the extreme north-east of Assam to the eastern borders of the Brahmaputra and Surma Valleys. The Digboi field in the Lakhimpur district of Upper Assam covers an area of $2\frac{1}{2}$ square miles and is the most important oil-producing field in India. The important oil centres are Digboi, Bappapung and Hansapung. An up-to-date refinery near Digboi has been established recently to distil the crude oil. In the Surma Valley some oil of poor quality is found in Badarpur, Masimpur and Patharia. In the Badarpur field the production is on the decline.

The oil-fields of Assam are conveniently connected by railways and rivers with Calcutta and Chittagong. The Bengal and Assam Railway runs from Chittagong to as far north as Sadia, a little north of Digboi. Digboi is connected by a branch line with Dibrugarh, an important river port. The Cachar field is practically on one of the main lines of the B. & A. Ry.

The western oil-bearing belt covers the Punjab, the North-Western Frontier Province, Beluchistan and Sind. The only important producing field in this area is Khaur in the Punjab which supplies annually more than 6 million gallons. The Khaur field contributed more than 3 per cent. of the Indian output (Burma included) in 1932. A refinery has been opened at Rawalpindi, 43 miles north-east of Khaur. A new field has been discovered near Khaur in Dhulian.

Before the separation of Burma, the annual average production in India was a little above 300 million gallons of petroleum. To-day, as a result of the separation of Burma, the output must have come down to near about 60 million gallons. The home supplies are therefore still more insufficient to meet the internal demand. Nearly 300 million gallons of petroleum are imported annually from Iran, U. S. A., Borneo, Burma and Russia.

It is interesting to note in this connection that the major portion of the imported oil comprises kerosene and fuel oil. Petrol accounts for only 3 per cent. of the total imported oil.

Kerosene	39'9 p.c.	Petrol	2'7 p.c.
Fuel oil	46 ,,	Other kinds .	1'4 ,,
Lubricants	4'5 ,,		

The low production of mineral oil in India cannot be a handicap to the progress of industries dependent on oil. India has inexhaustible resources for the manufacture of synthetic fuel oils from sugar-cane and oil-seeds. The sugar factories of India throw away every year nearly a quarter million tons of molasses which could be very well utilised for the production of alcohol. When mixed with petroleum, this alcohol becomes an excellent fuel power for automobiles. It is also possible to utilise vegetable-oil contents for the preparation of fuel oil.

The Development of Hydro-Electricity. For the purpose of industrial development, a country should have cheap motive power. The principal sources of power available in India are coal, wood fuel, oil, alcohol, wind and water.

The situation of India with regard to the supply of coal, wood fuel or oil for purposes of generation of power is not quite

favourable. Coal is of inferior quality and it is most unevenly distributed. Indian forests are generally confined to hilly tracts from where transport is difficult and expensive. The production of petroleum in India is decreasing and, therefore, unless new fields are found, it cannot provide power on a large scale.

There are, however, fair prospects for the development of water-power. Indeed, India promises to be one of the leading countries in the world with regard to the development of hydro-electric power, and great strides in this direction have already been made.

Water-power schemes are, generally, difficult in India, because the power needs be continuous, while the rainfall is seasonal. Hence, costly storage works are indispensable. Favourable sites for storage works exist in many parts of the mountainous and hilly regions where the rainfall is heavy. Hydro-electric schemes have developed in Bombay, Mysore, Kashmir, Madras, U. P. and the Punjab. Western India has practically no coal ; but this is compensated by the possession of magnificent hydro-electric power resources in the Ghats.

In the Western Ghats of the Bombay Presidency, there are three great hydro-electric power stations situated respectively at *Lonavla, Nila Mula and the Andhra Valley*. The Lonavla works are situated at the top of the Bhore Ghats where rain-water is stored in three lakes, namely, Lonavla, Walwan and Shirawata, from where water is conveyed by canals and through pipes to Khopoli at the foot of the Ghats 43 miles from Bombay. Khopoli is capable of generating 50,000 h.p., and it supplies energy to more than 50 big mills of Bombay. The Andhra Valley Power Supply Company is situated at Bhivpuri on the Andhra river where a reservoir has been constructed by a dam across the river. The Andhra Scheme makes nearly 60,000 h.p. available for the electrification of about 40 mills in Bombay. To the south-east of Bombay on the Nila Mula river a great hydro-electric station has been developed in 1927 at Bhira. All these three works have been developed through the enterprise of Messrs. Tata and Sons of Bombay to provide Bombay, Thana, Kalyan and Poona with energy.

Southern India has developed, in recent years, hydro-electric resources at various places. The first hydro-electric scheme was developed in India in 1902 on the Cauvery river in Mysore with the object of supplying power to the mining

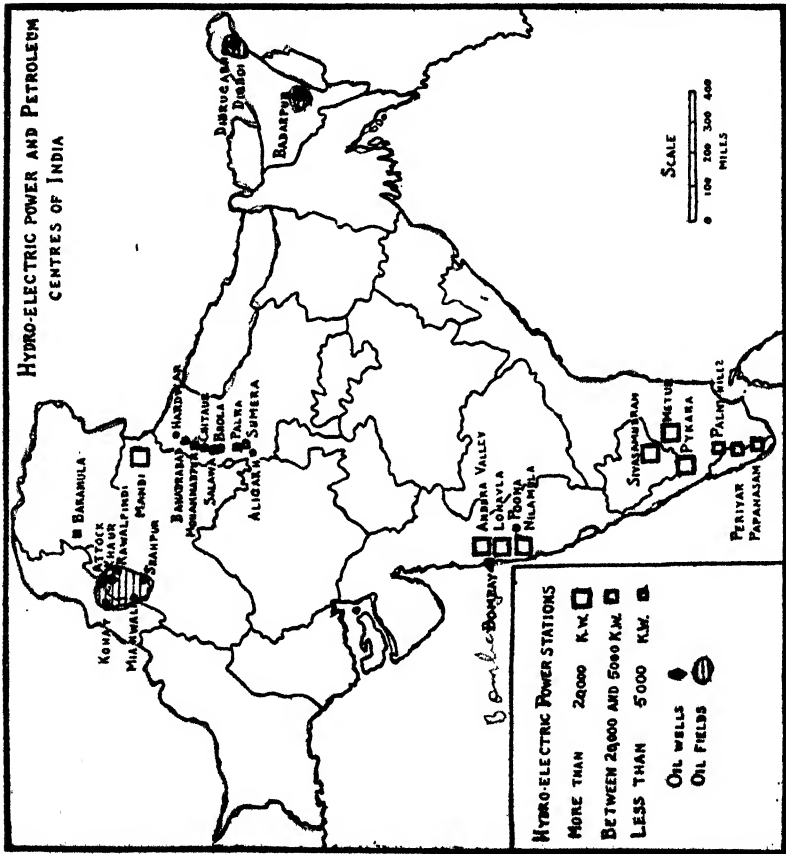


FIG. No. 70. Hydro-electric power and petroleum centres in India. Notice the great hydro-electric works in the western side of the Deccan.

companies on the Kolar gold-fields. The power house is situated at Sivasamudram, 92 miles from the Kolar fields. At present power is transmitted not only to the Kolar gold-fields but also to Bangalore and to about 200 other towns of Mysore.

The Pykara Hydro-electric Scheme was developed in 1932 on the Pykara river in the Nilgiri district (Madras). Power is transmitted to Coimbatore, Erode, Trichinopoly, Negapatam, Madura and Virudhunagar.

The Mettur Hydro-electric Scheme is situated immediately below the Mettur Dam. Mettur Dam, one of the largest of its kind in the world, has been constructed mainly for irrigation, and part of the water let down for irrigation is utilised to the best advantage for the generation of hydro-electric power. The Mettur power scheme provides the districts of Salem, Trichinopoly, Tanjore, North Arcot, South Arcot and Chittoor with energy. The Mettur scheme is linked with the Pykara works at Erode.

Madras is developing another scheme on the Tambraparni in the Tinnevely district. It will supply water power to Tinnevely, Koilpatti, Madura, Tenkasi and Rajpalayam.

A number of schemes are being worked out in Upper India, particularly in Kashmir, the Punjab and the U. P., for the generation of electrical energy from hydro-electric power resources. Kashmir has developed a hydro-electric scheme at Baramulla, thirty-four miles north-west of Srinagar. The power station utilises the waters of the Jhelum river.

In the Punjab the Uhl River scheme supplies power to the North-Western Railway and to several industrial towns like Amritsar, Lahore and Ludhiana. The project was completed in 1933. Recently in the U. P. hydro-electric works have been opened in the Upper Ganges area to supply power to agriculture and industries. The Ganges Canal in its course from Hardwar to Meerut passes over 12 falls which range in height from 10 to 15 ft. The Government of the province made a scheme in 1926 to obtain energy from these falls and as a result there are seven hydro-electric stations, situated as follows: Bahadurabad, Mohamadpur, Chitaura, Salawa, Bhôla, Palra and Sumera. More than fourteen districts of the Upper Ganges area are served by these hydro-electric works. A number of hydro-electric schemes are also being developed in Travancore.

Principal Manufacturing Industries

In recent years several important manufacturing industries have been established in India. The relative importance of the principal industries in India is determined generally on the basis of the number of workers employed. In 1935 nearly two million people were employed in the different major industries of India.

LARGEST INDUSTRIAL ESTABLISHMENTS IN 1935

	Number	Persons employed
Cotton Mills	398	5,00,000
Jute Mills	104	2,80,000
Silk Factories	49	7,000
Woollen Mills	15	6,000
Iron and Steel Factories	8	35,000
Sugar Factories	174	72,000
Tea Factories	994	66,000
Paper Mills	9	7,000
Matches	61	22,000
Chemicals	23	4,000
Glass Factories	59	7,000
Leather	40	8,000
Ship-building and Engineering	17	17,000

The principal manufacturing industries of India are controlled both by the Indians and the Europeans. The European capitalists have invested more than Rs. 90 crores in purely manufacturing industries. The Jute mills of Bengal, the Tea plantations of Assam, gold and coal mining, Engineering works, and woollen mills and tanneries of Cawnpore are practically in the hands of the Europeans. The main cause of the supremacy of European capital is that the indigenous capital is not sufficient in quantity "for accelerating the progress of our material and industrial regeneration." Moreover, the Indians suffer from ignorance and lack of venturesomeness. In more recent years, the indigenous capital has been coming out freely, and its greatest achievements are in the lines of cotton mill industry, iron and steel industry, sugar factories, cement works and small mills.

The manufacturing industries of India are mainly confined to Bombay, Bengal and Madras, where power, labour and transport facilities are excellent.

In the list of the major industries the two characteristics are the predominance of the textile industries and the subordinate position of chemicals and paper.

The Cotton Textile Industry

India is now one of the leading cotton manufacturing countries of the world ; she is second in the production of cotton and third in the number of persons employed among the countries manufacturing cotton.

The first cotton mill in India was started in Ghosery on the Hooghly in 1822. The real progress started from 1854 when Bombay had its first cotton mill. At the end of the year 1936, there were more than 370 working mills giving employment to more than 4,00,000 persons in India.

The distribution of cotton mills in India (1936) are as follows : Bombay 220, Madras 35, U. P. 25, Bengal 22, C. P. 7, Punjab 6, Delhi 7, Indore 7, Gwalior 7, Hyderabad 6, Berar 4, Ajmere 4, Mysore 6, Pondicherry 3, and Cochin, Travancore and Rajnandgaon (in C. P.) 1 each.

At the present moment four areas lead in the production of cotton goods. These are Bombay, Bengal, Madras and the U. P.

The lines of cotton manufactures consist of yarn and woven goods ; and these supply more than 80 per cent. of the country's requirement for mill-made goods. In 1936 India produced 10,53,000 thousand lbs. of yarn and 7,62,000 thousand lbs. of woven goods. The woven goods are grey and bleached piece-goods, coloured piece-goods, hosiery, cotton goods mixed with silk or wool and miscellaneous.

The Bombay Presidency has more than 220 mills, of which Bombay Island and Ahmedabad possess 70 mills each. Judged by the quantity and value of production, Bombay ranks first in the list of cotton manufacturing centres.

The localisation of cotton industry in Bombay has been governed not so much by natural and permanent factors as by capital and credit advantages, the presence of adequate means

of communication and the fact of Bombay being a port. The climatic condition of Bombay is such that it favours the production of yarn of finer counts, but the preponderance of higher counts is a feature of the Ahmedabad cotton industry, and not so much of Bombay. Again, Khandesh, Berar and Wardha, where raw cotton is grown, are nearer to Ahmedabad than Bombay. When the cotton textile industry was established, Bombay had not developed hydro-electricity and depended on Bengal for coal. The supply of labour came, as now, from other districts.

In spite of all these defects, Bombay is still the principal centre of the industry. It proves, therefore, that certain advantages are definitely on the side of Bombay: (i) Credit and

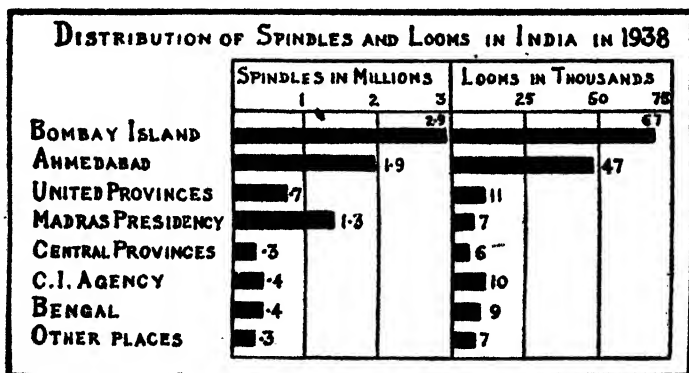


FIG. NO. 71. Notice the large number of spindles and looms in Bombay and Ahmedabad.

banking facilities, (ii) the natural harbour. The cotton crop of the province gravitates in large quantities to Bombay for export, and so a special flow of cotton for the purpose of mills need not be created. The port also enables Bombay to import machinery and other requirements from England, Germany and the U. S. A. with ease.

Therefore Bombay has combined the textile specialisation of Manchester with the commercial and shipping characteristics of Liverpool.

Other cotton textile centres in the Bombay Presidency are Ahmedabad, Sholapur, Belgaum, Broach, Jalgaon and Surat.

Although the first cotton mill in India was established in Bengal, the present position of the province as regards cotton mill industry is not at all satisfactory. In 1936 there were 22 cotton mills in Bengal and since then 24 new mills are in the course of erection, making a grand total of 46 mills. The cotton mill industry is highly localised in the Hooghly basin within a radius of 32 miles from Calcutta. The Hooghly basin offers unique opportunities for the development of industries inasmuch as the area is served by a perfect network of railways and riverways. Calcutta, by bringing mill machinery and raw cotton from abroad, distributes them to the different cotton centres of the Hooghly basin. The economic advantages of Calcutta in being near to Jharia and Raniganj coal-fields, besides being itself a money and labour market, have influenced greatly the concentration of cotton textiles around the city. Of the 22 existing mills of Bengal, 9 are in the 24-Parganas, 4 in Hooghly, 5 in Howrah, 2 in Dacca, 1 in Khulna and 1 in Nadia.

The prospects of cotton mill industry in Bengal are indeed very bright. Bengal is the greatest market for cotton goods in India. The Bengal mills cannot satisfy the local demand to any appreciable extent ; out of the annual average consumption of goods valued at nearly Rs. 15 crores, the Bengal mills produce goods to the value of only Rs. 3 crores. Thus the Bengal mills have before them a wide scope for expansion. Moreover, the neighbouring provinces of Assam, Bihar and Orissa will offer a vast market for the Bengal mills. As the province is intersected by many rivers, the atmosphere is very humid.

The moist climate of Bengal is no less important. Cotton industry requires moist atmospheric conditions, otherwise thread breaks. The climate of the province is certainly an advantage, if not over Bombay and Ahmedabad, at least over the up-country towns of Cawnpore and Delhi, where the humid atmospheric conditions are created in the mills artificially. As regards labour, "a factor very much in favour of Bengali labour is that he is more intelligent, though physically a bit poorer, than outside labourers. But workers in the mills do not presumably require very strong physique, because the operations are such as

require a sensitiveness to touch and flexibility of fingers more than physical exercise, which it does not take long time to develop.”*

The only problem is the question of raw materials. Bengal is situated far from the cotton-growing areas of India. But then, the high price paid for raw cotton will be compensated largely by the economy in the freight on coal. Besides, the possibilities of cultivating raw cotton in Tipperah, Mymensingh and Chittagong are great.

The third largest cotton manufacturing province is the United Provinces. Its disadvantage of being located far off from the coal-fields is compensated by the presence of a large local market, cheap and efficient labour and excellent transport facilities. The cotton industry is particularly confined to the Ganges towns. Cawnpore is the most important cotton manufacturing centre. The cotton manufactures in the U. P. are yarn, grey and coloured piece-goods, hosiery and carpets. Cotton carpets are becoming important of late, and the centres of manufactures are Bareilly, Aligarh, Agra, Moradabad and Etwah in the United Provinces.

Other cotton manufacturing centres of India are Coimbatore, Delhi, Agra, Nagpur, Madura, Madras and Ludhiana.

The Indian mills not only use Indian raw cotton but also import considerable quantities from East Africa, Egypt, the Sudan and the U. S. A. In 1939 more than 5,40,000 bales (400 lbs. each) of foreign raw cotton entered India. Foreign raw cotton obviously competes with that of India, and therefore protection has been granted to Indian raw cotton with effect from March, 1939.

The development of Indian cotton mill industry has considerably affected the Lancashire cotton industry. Formerly, Lancashire had a strong hold on the market of India.

The entry of Japanese cotton piece-goods in India before the present war adversely affected the Indian industry, more

* Gupta, M., *Cotton Mill Industry in Bengal* (Department of Industries, Government of Bengal).

particularly the Bombay cotton industry. *The Japanese manufactures had several advantages over their rivals in Bombay and in Lancashire.* The real strength of Japan as exporter of piece-goods rested largely in the ability of the small factories situated throughout the country to produce goods at a low cost. Many of the weavers in Japan are part-time farmers. Even the wives, mothers and elderly relatives of the farmers work in the mill. These operatives are satisfied with a very small remuneration. Organised buying of raw cotton from America and India gave Japan some additional advantage. Total freight on both raw cotton and piece-goods, from India to Japan and back, was very low. State-aid to cotton industry in Japan was also a great contributing factor for its expansion.

Cotton twists and yarns and piece-goods of India are exported in large quantities to Burma, Straits Settlements, Syria, Aden, Siam, Iraq, Arabia, French Somaliland and other countries where Indian immigration is considerable. Bombay is the principal port for shipment.

There is still immense scope for further development of the industry. The market available at home is quite large and India has to import cotton goods even to this day. The total value of import exceeded Rs. 12 crores in 1938-39.

Since 1939 the cotton textile industry of India has been passing through a period of prosperity unparallel in its history, due mainly to war demand and the virtual elimination of all imports.

Many new types of cloth such as khaki cellular, shirting, cotton webbing of various description and jute cotton union canvas are manufactured.

PRODUCTION OF COTTON MANUFACTURES IN INDIA AFTER 1938-39.

Year.					Million Yds..
1938-39	..	..	..	..	4,270
1939-40	..	..	..	..	4,012
1940-41	..	..	..	..	4,270
1941-42	..	..	..	..	4,500
1942-43	..	..	..	..	4,029

The cotton production in 1942-43 was short by 470 millions compared to 1941-42. The imports of cotton piece goods into India also fell from 650 to 13 million yards. During the same period, India exported 818 million yards to Egypt, Iran, Iraq and other countries. Thus since 1942-43, there has been an acute shortage of cloth in the country which could not be filled up by the production of hand-loom goods. All these factors have led to an enormous rise in prices of the cotton goods.

India can look forward confidently to a long period of post-war prosperity in the cotton textile industry, provided her industrialists exercise enough forethought and bring about a reduction in manufacturing costs so that she can compete with her potential rivals. India has already captured the cotton markets of Iran, Arabia, Iraq, Aden, Australia, New Zealand, South Africa, etc. As these are essentially *price markets*, Indian cotton industry must try to reduce its cost of production, so that when the normal trade will be resumed, the other countries may not drive out Indian cotton goods from these markets.

The Jute Mill Industry

After cotton, jute is the most important industry in India. "In point of efficient organisation, the jute industry is perhaps second to none in India." The industry employs a daily average of nearly 3,00,000 workers.

Calcutta has the leadership in jute mill industry. Practically all the mills are in the neighbourhood of Calcutta on the banks of the Hooghly.

Provinces	Mills	Provinces	Mills
Bihar and Orissa .	.. 3	United Provinces	.. 2
Madras .. ..	.. 4	Bengal .. ..	.. 95

The localisation of jute mill industry in a small area on the banks of the Hooghly, near Calcutta, is due to the proximity to the raw material, the plentiful supply of cheap labour, moist climate, the nearness to the port of Calcutta and the navigability of the river.

The jute-mill workers are usually housed in dwellings provided by the mills at a nominal rent. These workers also enjoy free medical aid.

Jute manufactures may be divided into four classes: (a) gunny bags, used for packing rice, wheat, sugar, oil-seeds etc. ; (b) gunny cloth or hessians ; (c) coarse carpets and rugs ; and (d) cordage. Fine and clean jute yarn of uniform size and quality is used in the cable industry. The jute products are mainly exported to the U. K., Germany, France, Italy, Egypt, South Africa, Australia, Java, Japan, Argentine, Canada, the U. S. A., Cuba and the Netherlands.

Jute—raw and manufactured—represents 50 per cent. of the total exports of Indian merchandise from Calcutta to foreign countries. The jute trade, raw and manufactured, represents 20 to 25 per cent. of exports from the whole of India, the highest figure recorded being 28 per cent. in 1929.

The jute mill industry of Bengal received a great set-back after 1930. This was reflected in the exceedingly low level of prices of raw and manufactured jute. Trade depression throughout the world and over-production of jute brought about the crisis. The introduction of substitutes and restrictions imposed on the free entry of jute in many countries aggravated the situation. In Cuba, Ecuador and the Netherlands restrictions were imposed on the free entry of jute products. In Germany, Rumania and Lithuania the restrictions took the form of regulation of imports by licence. Germany also prohibited the use of jute sacks for coal and wool. It was a part of the Italian industrial programme to substitute jute by home-grown fibre.

The displacement of jute in many foreign countries has developed along two lines: (a) the use of grain elevators and other mechanical appliances for the bulk handling of grain in countries like Australia, Canada and Argentine ; (b) the substitution of jute bags by paper, cotton, sisal, hemp and other fibres.

The situation was made more critical by unchecked over-production of jute in India. The Indian jute mills are now

having short time working hours and voluntary restriction of production.

The jute industry depended too much on foreign market ; moreover, nothing was done before to find out new uses of jute. The replacement of jute by processes of bulk handling is a permanent loss, but it is doubtful whether the substitutes of jute would compete ultimately with success. So long the price of jute is kept within reasonable limits, there is no possibility of its being ousted from the international market by the substitutes.

Although India enjoys almost a monopoly of jute production, its demand in the market is influenced by the price factor. Therefore it is not desirable that any attempt should be made to fix a minimum price of jute by legislation, for that would encourage the producers of substitutes to compete effectively with jute.

The mill-owners are beginning to realise that, although markets may have been lost to competitive fabrics or in countries which are more and more tending to self-sufficiency, other new and valuable markets may be gained by research and experiment.

In the meantime the Indian Central Jute Committee has undertaken the task of finding out by research the new uses of jute other than its employment as a packing material.

*The new lines of manufacture**

Housing: Heat insulation ; plastic furniture ; carpets and curtains ; upholstery ; blankets ; wall covering, etc.

Transport: Car upholstery ; water-proof covers ; tarpaulins ; canvas ; cordage and ropes.

Industry: Electric insulation ; plastic reinforcement.

Clothes: Mercerised and bleached fibres blending with wool and cotton.

In many of these new lines of manufacture, the jute industry has already made good progress.

* Barker—Jute Industry.

Now that the fear of over-production of jute has been removed by restriction scheme and new uses are being found out, the jute mill industry can look forward to a bright future.

The first effect of the war in Europe on the Jute industry was a "change working on double shifts, unsealing of looms, rise in wages and increased activity to the extent of seeking exemption from the operation of the Factories Act. But the boom was short-lived and the industry took an erratic course due to loss of markets, transport difficulties and fluctuating military demands". Since 1943, the industry has improved due to large order for hessian from American Government.

The most serious problem of the jute industry is the shortage of coal, for which many mills had to be closed down.

The Sugar Industry

Even twenty years ago India was a great sugar importing country. She could not develop this industry because of the competition of other countries like Mauritius, Germany, Austria and Java. "The demand for imported sugar in Indian markets has gone a remarkable change since the grant of protection to the sugar industry in India in 1932 as a result of which the Indian industry has developed its production steadily." Before 1932 there were only 31 factories: but to-day, more than 156 factories are producing sugar.

The industry is mainly confined to the United Provinces and Bihar which might be regarded as the sugar-belt of India. The important sugar manufacturing centres in these two provinces are Cawnpore, Gorakhpur, Lucknow, Allahabad, Champaran, Muzaffarpur and Bhagalpur. Other sugar centres are Coimbatore in Madras, Dacca in Bengal, Belapur in Bombay, and Amritsar and Lyallpur in the Punjab.

Production of sugar in India may be classified under three heads—(a) by modern factories working with cane, (b) by modern refineries working with *gur*, and (c) by indigenous pan concerns which may be collectively called *Khandsaris*. Of these three methods of sugar manufacture, it is only the first that gives what may properly be called the white sugar of India, and it

constitutes the most important section of the industry. The *gur* refining industry as well as the *Khandsari* industry are very inefficient and wasteful.

Provincial Distribution of Sugar Factories

	1932	1938		1932	1938
U. P. ..	.. 33	68	Bengal ..	* ..	6
Bihar ..	.. 19	33	Orissa ..	* ..	2
Punjab ..	.. 1	3	Indian States ..	* ..	9
Madras ..	.. 2	8	Total ..	57	136
Bombay ..	.. 2	7			

The sugar industry has made the country almost self-sufficient in sugar. The protection which the industry is enjoying in the shape of protective duties has, therefore, been justified.

Production of Sugar in the Provinces in 1938

(in 000 tons)

U. P. ..	..	..	628	Bombay ..	..	..	47
Bihar ..	..	..	232	Bengal ..	..	..	26
Punjab ..	..	..	23	Others ..	..	..	82
Madras ..	..	..	35				

The consumption of sugar in India in the same year was 1,59,000 tons.

In 1931 India imported 8,93,404 tons of sugar and in 1938, the figure came down to 14,389 tons. India is prohibited from exporting sugar to any country other than Burma. This has been decided by the International Sugar Conference.

In spite of such remarkable progress, there are certain drawbacks in the industry. The present weakness of the Indian sugar industry lies in the high cost of production which is due to (a) unscientific cultivation, (b) defective methods of extracting juice from the cane, (c) great waste in refining, (d) poor output, (e) small and scattered nature of holding, and (f) the impossibility in most cases of concentrating cultivation round the central factory. These defects may be removed. Both the Government and the industrialists should pay attention to research and modernisation.

In Java the factories for turning the cane into sugar are near the plantations and the process of manufacturing sugar are so developed that there is no loss of sucrose. Attention is also paid in Java to the production of by-products like rum and methylated spirit. Moreover, the marketing of Java sugar is controlled by an association of producers. In India, sugar-cane areas are generally found at a great distance from the factories ; as a result, the factories have to depend for their supply of the raw material on remote areas and thus to pay high costs.

At present the sugar industry of India faces two serious problems : (a) over-production, and (b) need of foreign markets. According to the terms of the International Sugar Conference of 1937, India cannot export sugar outside by sea. Till 1940 India did not feel the necessity of having foreign markets for sugar, because the entire production was required by the country. But now, the industry has expanded so much that there remains a large unsaleable stock every year in the mills. By closer examination, it has been found that this *unsaleable stock is not a true surplus*. The sugar market in India is extremely elastic. The present high price of sugar has kept the market confined mainly to the rich and the middle class people. A little reduction in the price will bring the produce within the financial capacity of the poor.

The position of Bengal in the production of sugar is at present not satisfactory. She produces near about 26,000 tons of sugar against her consumption of 1,90,000 tons. Bengal is the third largest sugar consuming province in India.

Consumption of Sugar in Different Provinces in 1938

(in 000 tons)

Bombay	..	..	230	U. P.	..	..	..	150
Punjab	..	..	206	Madras	..	..	..	100
Bengal	..	..	190					

There are now 6 sugar factories in Bengal, and the present is the most opportune time for starting more sugar mills.

Bengal enjoys certain natural and economic advantages for the cultivation of sugar-cane. In the U. P. and Bihar, the production of sugar-cane per acre is between 15 and 16 tons, while

in Bengal it is as much as 35 tons, sometimes 40 tons. The soil and climate of Mymensingh, Chittagong, Dinajpur, Rangpur, Nadia and 24-Parganas are favourable to sugar-cane cultivation. Bengal has also the advantage of a large local consuming market ; economy in railway freight charges on finished goods is also an additional advantage for her over the U. P. and Bihar.

As regards availability of cheaper power Bengal stands in a very favourable position in comparison with the U. P. A very large coal-field lies near at hand and her excellent railway system and riverways bring this source of mechanical power at a cheap cost to the doors of the mills. But the great disadvantage of the Bengal sugar industry is that the port of Calcutta brings other sugar-producing countries within easy reach of Bengal markets.

Before the outbreak of the war in 1939, India was self-sufficient in sugar. She did not try to produce more for export, as she was not allowed to export sugar in accordance with the International Sugar Agreement of 1937. When the war spread to the East Indies, Burma and Siam, and supplies of sugar were cut off from Java and the Philippines, "the sugar industry of India became the only major source of supply to the Empire countries not producing their own sugar". Moreover, India has to supply sugar to Iraq and Iran.

The distribution and prices of sugar are controlled by the Government of India, and sugar is rationed in many towns. The present retail price of sugar is Rs. 18/- compared to Rs. 6/- in 1938-39.

Tea Plantations

India is the second largest tea producing country in the world. Seventy-seven per cent. of the Indian tea is obtained from Assam and Bengal. Southern India raises nearly 18 per cent. of the total output.

There are more than 5,000 tea plantations in India, of which 50 per cent. is confined to the Punjab and 20 per cent. to Assam. But the average size of a plantation in the Punjab is only 4 acres, whereas in Assam the average size exceeds 400 acres.

“Every garden of any importance has its own factories where tea is prepared for the market, as it is essential that the various processes should be carried through immediately after the leaf has been plucked. The better organised factories are elaborately equipped with highly specialised plant and are under the supervision of expert tea makers.”

The Indian tea industry employs more than a million labourers, recruited mostly from the United Provinces, Bihar, Central Provinces, Madras and Orissa. Assam employs in the tea plantations more than half a million persons ; in Bengal the number is a little above 200,000. The question of labour is a difficult problem in Assam, where the local labour is generally unwilling to work in the plantations, because it finds in the cultivation of land a more easy occupation. Labour is employed in Assam on a contract system—the workers agreeing to remain at a stretch for certain years in a garden.

Four-fifths of the Indian tea is exported outside. The U. K., Canada, Australia, Egypt, the U. S. A., France and New Zealand are the chief buyers. The U. K. is the single largest buyer and takes as much as 95 per cent. of the export. Although India is the greatest tea exporting country in the world, several other countries like Ceylon, Java, Sumatra, China, Japan, Formosa and French Indo-China produce tea and compete with India in European and American markets.

But there is great scope for the expansion of Indian tea in Iran, Egypt and the U. S. S. R.

Percentage of Indian tea in the total imports of certain important countries.

	1936	1937
U. K.	55·8	56·5
Canada	55·1	55·8
U. S. A.	14·9	10·7
France	6·1	7·6
Australia	4·9	2·4
New Zealand	2·3	3·0

It is evident from the above figures that the competition is severe in the U. S. A., France, Australia and New Zealand.

Therefore it is necessary to develop the internal market, and fortunately there is great scope for such development. *The Indian Tea Market Expansion Board* is carrying on extensive propaganda throughout India, as a result of which the demand for tea has increased considerably.* The Board claims that in Madras and Bombay more than 60 per cent. of the former drinkers *has become regular visitors to the tea shops*. The Board spends more than Rs. 20 lakhs on propaganda work in India.

The tea industry has had a continuous run of prosperity throughout the war years 1939-1943.

PRODUCTION OF TEA.

				Million lbs.
1938-39	...	...	...	452
1939-40	...	...	...	453
1940-41	...	...	...	463
1941-42	...	...	...	470
1942-43	...	...	...	562

There has been a large increase of export of tea to Canada, U. S. A. and Australia.

The Silk Industry

The Indian silk industry was once in a very flourishing condition. The industry declined as the result of the competition of the silk yarn and silk piece-goods from Italy and Japan. In more recent years Chinese silk and artificial silk manufactures are competing severely with the silk weaving and spinning industry of India.

India is a great raw silk producer. Various silkworms are reared in different parts of the country. The varieties are the mulberry silk, *tasar* silk, *endi* and *muga*.

* "The old Indian Tea Cess Committee is now defunct and its place has been taken by the Indian Tea Market Expansion Board, a branch of the International Tea Market Expansion Board. The intensive advertising campaigns initiated by the Board have already borne fruit in several countries; and apart from India and the United Kingdom itself, the potential markets in America, Egypt and South Africa offer a vast field for operations."

There are three principal areas where raw silk is found : (i) Southern portion of the Mysore plateau with the Coimbatore district of Madras, (ii) the Murshidabad, Malda, Rajshahi and Birbhum districts of Bengal, (iii) Kashmir and Jammu with the neighbouring districts of the Punjab and the N. W. F. P. There is also a considerable cultivation in Chota Nagpur and Orissa and parts of the Central Provinces of the *Tasar* silkworm and in Assam of the *Endi* and *Muga* silkworm. Silk is also obtained from North Bihar. Kashmir is the most important producer of silk in India where silkworms thrive best in the mulberry trees. Silk industry is a State monopoly there and the major portion of the products is exported to Europe.

Silk Producing Areas in India

Name of area	Silk reeled lbs.	Name of area	Silk reeled lbs.
Mulberry Silk		Tasar Silk	
Bengal	10,00,000	Bihar Orissa ..	2,40,000
Mysore	7,40,000	Central Provinces ..	1,60,000
Kashmir	2,32,000	United Provinces ..	1,000
Madras	90,000		—————
Assam	6,400		4,01,000
Punjab	1,000	Other Silk	lbs.
	—————	Assam Muga ..	1,00,000
	20,69,400	Assam Endi ..	50,000
			—————
			1,50,000
		Grand Total ..	26,20,400
			—————

Silk manufacture is a cottage industry in India. The bulk of the raw silk produced in India is consumed by the handloom weaving industry. At present there are only three mills using power-driven looms for silk manufactures—one in Bengal, one in Mysore and one in Bombay.

The chief silk-weaving centres are Amritsar, Jullundhar and Multan in the Punjab ; Benares, Mirzapur and Shahjahanpur in the U. P. ; Malda, Murshidabad, Rajshahi, Bankura and Bishnupur in Bengal ; Nagpur in C. P. ; Bhagalpur in Bihar ;

Ahmedabad, Poona, Belgaum, Dharwar, Hubli and Sholapur in Bombay ; Bangalore in Mysore State ; Berhampur, Trichinopoly, Salem and Tanjore in Madras ; Srinagar in Kashmir.

Mysore silk industry produces more than two-fifths of the total output of silk manufactures in India.*

Rayon or staple fibre is produced from wood-pulp by forcing viscose through minute holes to form filaments which are cut into short lengths or staples which can be spun on ordinary cotton machinery after a little adjustment.

The present condition : India imports a large quantity of artificial silk from Italy, Japan, the U. K., France and other countries. In 1938 India consumed artificial silk to the value of Rs. 487 lakhs. The great demand for silk on the one hand, and the absence of any artificial silk industry in India on the other, indicate great possibilities. The necessary raw materials for artificial silk are available in India.

The Dehra Dun Forest Research Institute has observed that rayon can be manufactured in India from "fibro", a product obtained from grass and bamboo pulps. The forest wealth of Travancore and Mettur can be used for the manufacture of "fibro" with the help of cheap power obtained from the Pallivasal Hydro-electric Project. Moreover, in India large quantities of cotton and cotton waste are available, and this can be used in the artificial silk industry. "The percentage of yield of artificial silk from cotton is far greater than that from wood-pulp ; wood-pulp yields 30 per cent. and cotton 85 per cent." The chemicals required are caustic soda, carbon disulphide, ammonium

* In order to improve the condition of the silk industry in India, it is necessary to ask for State support. The silk weavers are all poor and therefore cannot buy the necessary implements. They are also exploited by middlemen. These evils can be removed to a certain extent through co-operative societies.

Though India is a large producer of silk, she has not been able to capture any foreign market. France and the United Kingdom import small quantities of raw silk. India exports cocoons, because reeling is so badly done that foreign countries prefer to do the reeling themselves. The Imperial Sericulture Committee, which was established in 1935, is encouraging silk production in some provinces.

sulphate, white soap, bleaching liquid, etc., which are mostly available in India. As plentiful supply of water free from chlorides is necessary, the industry should be localised on a river bank having transport facilities.

The Woollen Industry. There are about 50 million sheep in India which are reared mostly in Northern India. The annual wool production is nearly 85 million lbs. Indian wool is short stapled and is inferior to that of Europe and Australia. Raw wool is obtained from the Punjab, particularly the Hissar district ; Garhwal, Almora and Nainital in the U. P. ; Sind, Beluchistan and Bikanir.

Indian wool is suitable for the manufacture of carpets and blankets which are made at Amritsar, Srinagar, Bangalore, Agra, Mirzapore and Cawnpore. Shawl is a cottage industry product of Kashmir. The finest wool comes from the Bikanir State and is used in the mills. Modern mills are mostly localised in Dhariwal and Cawnpore.

The Iron and Steel Industry

India is the second leading iron and steel producing country in the British Empire, and yields place only to the United Kingdom. Although her output of iron ore cannot be compared with that of the U. S. A. and France, her reserves of ore are so vast that there is every hope that India will eventually take an important place among the producers of iron goods. The principal iron-ore deposits are found in Bihar, Orissa, Central Provinces, Mysore and Madras. The most important iron belt extends from Gurumahisani in the Mayurbhanj State of Orissa through Keonjhar and Bonai to the Kalhan sub-division of Singhbhum. "Most valuable deposits occur in the chain of hills extending over 30 miles from Kompilai in the Bonai State to the neighbourhood of Gua in the Singhbhum district as in this area we get above 60 per cent. of the total deposits of this belt."

The value of an iron-ore deposit depends not only upon its richness in iron, but also upon its location and the ease or difficulty of mining. In India the various other metallic ores

required in extracting iron from the ore are also available in abundance not far from the iron deposits. Manganese ore, for example, occurs in the Singhbhum district. Again, dolomite and limestone are found within a short distance of the ore-fields.

The iron and steel industry is now recognised as one of the biggest industries in India. It gives employment to nearly

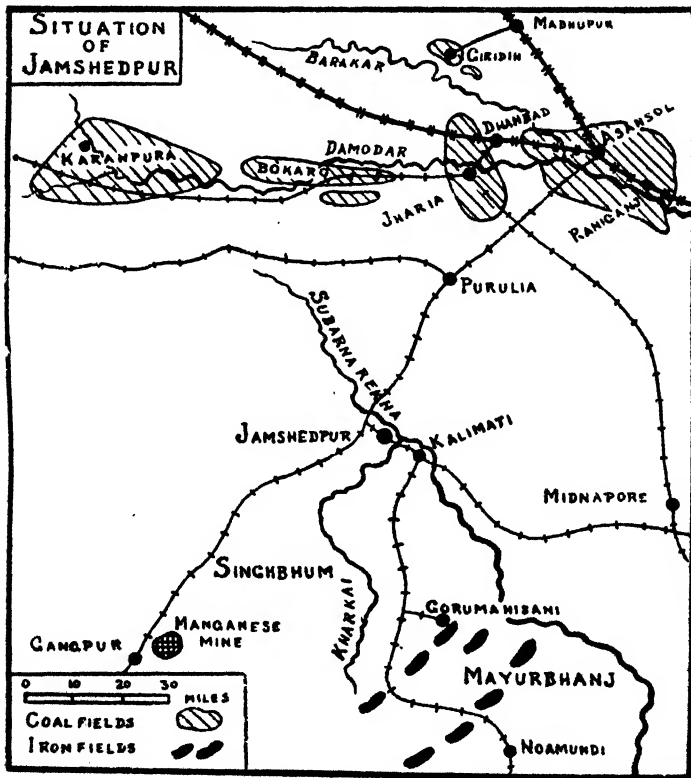


FIG. No. 72. Notice the coal-fields in the north and the iron-fields in the south-east of Jamshedpur.

35,000 persons. The first iron and steel company was started in 1830, but the real development began after 1908 when the Tata Company was established at Sakchi in the Singhbhum district. At present the companies chiefly engaged in the making of iron and steel are the following :

- (a) Tata iron and Steel Co., Ltd.—It owns valuable iron-ore concessions in the Mayurbhanj State of Orissa and the Raipur district of the Central Provinces, magnesite and chromite in Mysore and coal in the Jharia field.
- (b) Bengal Iron Co., Ltd. at Hirapur brings iron-ore from Pansira, Ajita and Maclettan mines.
- (c) Indian Iron and Steel Co., Ltd.—It manufactures pig iron, steel, ferro-manganese, etc. at Burnpur, near Asansol, 130 miles from Calcutta.
- (d) United Steel Corporation of Asia brings iron from Keonjhar mines. The centre is at Monoharpur.
- (e) Mysore Iron-works at Bhadravati.

It is not possible now for India to produce machinery, higher grade of cutlery, high-grade steel and rolling stock. She manufactures mainly pig iron, iron bars, steel tubes, tin plate, enamel wares, wires, nails, railway wagons, etc. The Indian iron and steel industries are enjoying fiscal protection as manufacturers of basic materials.

India exports a large quantity of pig iron and steel manufactures. The bulk of the shipment goes from Calcutta. Madras also handles a considerable quantity. The chief markets for pig iron are the U. K., the U. S. A., Japan and China, while scrap iron and steel for re-manufacture go mainly to the U. K. and Japan.

Production of Iron and Steel in India
(in 000 tons)

	1938-39	1939-40
Pig iron	1,576	1,838
Casting	88	128
Steel ingots	977	1,070
Semis	791	872
Finished steel	726	804

Jamshedpur, the centre of the Tata Iron and Steel Company, is the principal seat for the manufacture of steel in India. It owns valuable iron-ore concessions at Gurumahisani, only

50 miles away. Coal is brought from the Jharia field, the distance being only 100 miles. Limestone and dolomite are obtained from the neighbourhood. The centre is connected by railways and the cost of transportation is never high. Cheap labour is always available from the Central Provinces and Chota Nagpur. The river Subarnarekha, though useless for navigation, supplies water to the industry. During summer this river dries up and therefore arrangements have been made to preserve water in the Kharkai river by constructing a dam.

Production of Tata Company (in 000 tons)

	1937	1938
Coke	778	896
Pig iron	827	921
Steel ingots	850	899
Steel goods	667	660

(In 1939-40, the Tata's production of steel goods was 777,000 tons)

The Bengal-Nagpur Railway, with its branch lines, serves the industrial city for moving the raw materials and the finished products.

Burnpore is the second largest iron and steel centre in India. The city is 142 miles from Calcutta and the industry is managed by the Indian Iron and Steel Corporation Ltd. In 1936 the Bengal Iron Co. Ltd. was amalgamated with it. The output of the pig iron of the amalgamated companies in 1937 was 7,13,000 tons. The companies also manufacture foundry iron for castings.

In Mysore the iron-ore deposits exist in the Bababudan hills and in the Shimoga district. The iron industry is localised at *Bhadravati*. The forests of the Shimoga and Kadur districts supply charcoal for smelting iron ore. Limestone comes from Bhandigudda.

The present war has brought a run of continuous prosperity for the Iron and Steel industry. The industry has now doubled its pre-war output of finished steel. A large variety of special steels like special bar for the manufacture of shells, a bullet proof armour plate, gun turrets, high grade steel machine tools

and stainless steel for surgical instruments are being manufactured. The consumption of pig-iron, ingots, bullets, tin bar and tin-plate are controlled in regard to civilian population.

“The future outlook for the Indian iron and steel industry is bright. The immense natural resources of the country, particularly in comparison with those of some other eastern lands, its position of easy accessibility to the markets of the Indian and Pacific Oceans, the proved metallurgical skill of its iron masters and steel founders, and the commercial ability already displayed in the development of the export trade in pig iron—these, together with the great potential and growing home market for steel goods of every description, all presage expansion when world commerce returns to its normal channels.”

Paper-Making in India

The manufacture of machine-made paper in India dates from 1870 when the first mill was established on the Hooghly. At present there are eleven mills in India.*

Calcutta with its neighbourhood is the principal centre of the paper industry in India. The other centres are Lucknow, Bombay, Punalur (Travancore), Saharanpore, Poona and Chittagong.

<i>Provinces</i>	<i>No. of Mills</i>	<i>Provinces</i>	<i>No. of Mills</i>
Bengal	4	Madras	1
Bombay	4	Travancore ..	1
U. P.,	1		

The paper industry gives employment to more than 10,000 people. Pulp is mostly imported from foreign countries. Wood-pulp is not available in sufficient quantity. Experiments with pipe wood for the purpose of producing pulp are going on. The Dehra Dun Forest Research Institute is making experiments with Bagasee. Sabai grass, which grows abundantly in Northern India, is now used for making pulp. For cheaper varieties, rag, hemp, jute waste and waste paper are used. Bamboo pulp is used only in Naihati, Bengal.

* Several other small mills have started work recently in Mysore any Hyderabad.

Bamboo is extensively found in Bengal and south-west India. Its yield is larger than sabai grass and cost cheaper. Of course, as a raw material, bamboo is inferior to sabai grass ; but, in India, the demand for superior quality paper is limited. The prospect of the bamboo paper-pulp industry is, therefore, quite bright.

The paper industry of India is working under certain disadvantages. The necessary chemicals, like caustic soda, soda ash, salt cake, bleaching powder and dyes, are to be imported from abroad at high price. With the exception of Bengal mills, heavy charges for coal are paid. Moreover, Norway, Sweden, Germany, the U. K., Japan and the U. S. A. are competing severely with Indian mills. The total quantity of paper of all kinds imported by India before the war was 2'5 million cwts.

The Percentage Shares of the Principal Countries in the Total Value of Paper imported into India

1938-39.

	<i>Per cent.</i>		<i>Per cent.</i>
U. K.	27'6	Germany	19'7
Norway	11'6	Japan	4'1
Sweden	12'0	Netherlands	4'7

With the outbreak of the war, imports from these countries have ceased and therefore Indian paper-mill industry has got an excellent opportunity of expanding and consolidating its position. The growth of the paper industry in India will be evident from the following figures :

Paper Production (*in 000 cwt.*) in India

1932-33	804	1938-39	1,183
1936-37	971	1939-40	1,369
		1941-42	1,600

Although the paper industry has increased its production considerably, the out-put is yet not adequate enough to meet the requirements of the country. The demand has also increased for hand made paper. At present paper is rationed on the basis of 30 and 70 per cent as between civilian and Government uses. Notwithstanding 85 per cent illiteracy in the country and the

consequent small demand for paper, even educational institutions and the student community—teachers included—have been facing literally a paper famine in India and have been forced to get whatever is available in the black markets at approximately four times the control rates.”

It is expected that in course of time, Indian paper industry will supply the entire requirement of India.

Chemical Industry

The chemical industry in India is still in its infancy. In 1938-39 India imported chemicals to the value of Rs. 3 crores. The imported chemicals consist of sodium compounds, sodium carbonate, caustic soda, acids, potassium compounds, sulphur, bleaching powder and glycerine. Many of these chemicals can be made in India, if serious attempt is made. The present war is responsible for the birth of a heavy chemical industry in India. At present, several types of heavy chemicals are manufactured in Bombay, Calcutta, Delhi, Madras and Bangalore, but the production is not sufficient to meet the requirement of the country.

Shares of the Principal Supplying Countries in the Total Imports of Chemicals in India

1938-39

		<i>per cent.</i>			<i>per cent.</i>
U. K.	..	.. 56'5	Italy	..	.. 5'2
Germany	..	.. 13'1	Japan	..	.. 5'2
U. S. A.	..	.. 6'5			

Glass Industry

It has a wide geographical distribution in India. There are nearly sixty glass factories scattered all over the country giving employment to more than ten thousand people. Though it is a very old industry, its development has been comparatively very tardy.

The industry is carried on under two systems: (a) the indigenous cottage industry, and (b) the modern factory industry.

The principal centres are Bombay, Jubbulpore, Allahabad, Naini, Bijhoi, Ambala, Lahore and Calcutta.

The indigenous glass industry is spread all over India, but the chief areas are the Firozabad district of the United Provinces and the Belgaum district of Bombay.

Glass industry has developed to a considerable extent in the United Provinces, where about 50 factories manufacture bangles, hollow and pressed wares, glass sheets etc. *Bahjoi* in the District of Moradabad is the only glass sheet making centre in India. Bangles are mostly made at Firozabad. It supplies nearly one-third of the country's demand. Hollow and pressed wares like motor head-lights, reflectors, bulb, chimneys etc. are produced in Shikohabad, Hathras, Naini and Bahjoi.

The factors that led to the success of the glass industry are the availability of sand, potash, nitrate and lime in the province itself. Coal is imported from Bihar and Bengal. There are, however, certain drawbacks in the glass industry of U. P. The designs of bangles and glasswares are all old-fashioned and are mostly imitations of the Japanese brand or Moradabad brass-wares.

The industry is in the hand of small dealers, and as such it is not properly organised.

Bombay and Bengal are the two main provinces for glass factory. Lamp wares, bottles, glass tubes, flasks, beakers, test tubes, plate glass etc., are made in these factories. The future of the glass industry is indeed bright. The home market is fairly large and many of the raw materials are found in large quantities. The value of import is above one crore of rupees, and Japan was the main supplier before the war.

The present difficulties in the way of the expansion of this industry are the lack of trained men, inadequate supply of coal, soda ash, sand, lime, etc.

Leather Industry

It has the greatest potentialities for the future as the hides and other raw materials are found within the country in plenty. India has the greatest number of cattle in the world, and it

is mostly reared in Northern India. Agra, Cawnpore, Delhi and Calcutta are the important leather centres. Batanagar, near Calcutta, makes foot-wears on a large scale. Chrome process has been recently introduced in India and Madras has done much pioneering work in this direction.

At the present moment the industry has been receiving considerable fillip due to large military demand for boots and shoes, harness, saddlery and other army equipment. The United Provinces is the largest producer of army boots and shoes in the British Empire. From the pre-war production of 40 lakhs pairs of shoes in 1938-39, the country now produces more than 85 lakhs pairs of shoes. The output of harness, saddlery and others can be valued at Rs. 22 crores a year. The output of leather has increased by more than seven times. "Such a large increase in the supply of leather was made possible by the increased slaughter of cattle to provide meat for the defence forces." This increased slaughter of animals has brought in its wake the problem of scarcity of milk supply in urban towns.

The Ship-building Industry

The sea-borne and coastal trade of India is very large and is at present controlled by foreign companies. The oversea trade is more than 25 million tons of cargo and a quarter million passengers, and when measured in terms of rupees, it exceeds Rs. 4,000 million. The coastal trade of India is over 7 million tons of cargo and 2 million passenger-traffic. "It is obvious that the carriage of such a huge trade requires a large mercantile marine. Moreover, India is surrounded by seas on three sides and therefore she needs her own ships for the defence of her coasts. With a view, therefore, to promoting and strengthening the broad economic interests of India in the carriage of India's vast maritime trade and passenger-traffic and to providing for this country an efficient second line of defence, it is imperative that India should have a large and powerful mercantile marine of her own."

The share of Indian shipping at present is 2 per cent. in oversea trade and 21 per cent. in the coastal trade. The number of Indian steamers in service is only 63.

The necessary requisites for the ship-building industry are :

- (i) Ship-building and repairing yards,
- (ii) Deep water in the harbour,
- (iii) Proximity of raw materials,
- (iv) Supply of labour.

In Calcutta and Vizagapatam there are already certain repairing yards for making hulls and lighter crafts. Calcutta also boasts of a few dry docks. The Gondwana coal-fields are connected by railways with Calcutta and Vizagapatam. Though India is fairly rich in iron ore and there are four important steel manufacturing centres in India which can supply ship-building materials, yet in the initial stage, engines, propellers and other machinery will have to be imported from abroad.

The Scindia Steam Navigation Company has very recently opened a ship-building yard at Vizagapatam. *It is interesting to examine the suitability of Vizagapatam as a ship-building centre.* The situation of the harbour at the centre of the eastern coast between Calcutta and Madras offers great facilities for bringing down the necessary materials from the hinterland of those two big ports. Vizagapatam has the additional advantage of possessing a deep-water harbour which permits the launching of big ships. The tidal range is also satisfactory. Steel, the most important raw material, can be brought to the shipping yard from Tatanagar, 550 miles away, by the B. N. Ry. The Gondwana coal-fields are also within easy reach. Timber, necessary for making decks, cabins etc., can be had from Chota Nagpur. If railway lines are constructed to connect Waltair with the actual shipyard, the cost of transport in bringing raw materials will be further reduced. Supply of skilled labour, though at present scanty, may be requisitioned from outside in the beginning.

The other major ports of India, like Karachi, Bombay and Madras, cannot conveniently develop the ship-building industry. Bombay and Karachi are many hundred miles away from the coal and iron fields. The harbour of Madras is artificial and the sea is shallow. Therefore big sea-going steamers cannot be hed.

In order to develop the Indian mercantile marine, it is necessary that Government should reserve the coastal traffic for Indian steamers as has been done by many other countries like Australia, South Africa, etc.

Aircraft Manufacture

The possibilities of an aircraft industry in India are very promising. Apart from the requirements of military aircraft, India with its long distances and excellent visibility has vast possibilities of civil aviation. On Indian internal air services the weight of mails carried was quadrupled, the mileage flown increased by 127 per cent. and the number of passengers carried nearly doubled during 1938 as compared with the previous year.

Although as late as September, 1939, the Government of India turned down the scheme of the Scindia Steam Navigation Company for the manufacture of aircrafts in India as "impossible", as a result of the changing course of the war, the Government declared in 1940 that "it was Government's intention to proceed with the scheme as soon as the necessary plants and materials became available." An aircraft factory was floated in Bangalore in 1941. This factory has now been taken over by the Government and is engaged in the repairing and production of aeroplanes.

In the initial stage of its development, the Government should help the industry to procure machinery and raw materials from abroad and also ensure a certain market by placing substantial orders.

Bangalore, in Mysore State, is an ideal place for aircraft manufacture. The advantages of this centre are the availability of cheap electric power, equable climate, central situation and remoteness from the sea coast, existence of the Science Institute and the proximity of an iron factory.

Automobile Industry

There are fair prospects for the development of an automobile industry in India. The average annual import of motor cars, cycles, omnibuses and parts exceeds Rs. 4½ crores. The

estimated number of vehicles in use in India is 1,85,000 as compared with 30 millions in the U. S. A., 2½ millions in the U. K., 2 millions in France and 1½ million in Canada.

Average Number of Persons Served by one Motor Car in some Countries.							
U. S. A.	4	France .	..	..	18
Canada	8	India ..	..	..	1900
U. K.	18				

During the War, it may not be possible to establish an automobile industry in India because of the difficulties of importing certain raw materials and machines from abroad. But recently a company has been floated in Bombay with a scheme for manufacturing automobiles in India with Mr. Walchand Hirachand as chairman. The promoters of the company have entered into a contract with one of the leading American automobile manufacturers to get every assistance from the American Motor Corporation to establish motor manufacturing in India. It should be noted that in the initial stage the industry will require Government help and patronage. The sites of the industry may be at Burnpore, Jamshedpur and Calcutta which, besides being near or in the heart of iron areas, can conveniently use imported machines and parts. As these three centres are already noted for engineering industries, the supply of trained labour and various parts for the automobile industry will be available.

India need not produce all the parts and accessories used in building up automobiles, for "nowhere in the world an automobile manufacturing plant is self-sufficient in every way..... India too while manufacturing most of the parts necessary would have to import some parts and there need be no qualms about them."

Transportation

The importance of cheap and quick transport in the economic life of a country can hardly be exaggerated. For a vast country like India, the process of industrialization is dependent on her means of communication. Till the middle of the nineteenth

century, there was practically no organised industry in India. "Industries have followed transport facilities."

Transportation in India can be divided into four heads: (i) railways, (ii) roads, (iii) waterways, and (iv) airways.

Railways

Railways are the most important of all systems of communications. Originally, railways were built up in India for military purposes. The frequent visitation of famine also necessitated the extension of railways. The railways have brought about an equalisation of prices throughout the country. The rapid industrialisation of the country is largely due to railway developments; it has fostered agricultural production and encouraged the establishment of industries.

In India 43,000 miles of railway lines are open to traffic. The frequent changes of gauge and the scarcity of bridges across some of the bigger rivers are the two main drawbacks of the Indian railway system. To these must be added the absence of railway communications in Kashmir and Nepal.

India requires more railway miles. In comparison with the U. S. A., Canada and England India is lagging behind in railway extension.

Countries	Mileage of total railways.	Miles of line per 100 sq. mls.	Inhabitants per mile of line.
India	43,000	2.2	7,800
Canada	40,351	1.10	222
U. S. A.	2,50,000	8.42	450

Indian railways carry annually more than 520 million passengers and 88 million tons of goods.* In auspicious years, when there is a great rush of pilgrims visiting holy places, the volume of passenger traffic increases further. With the exception of a few companies, the railways are now controlled by the State in India.

* Indian railways carry more than 98 per cent. of the total volume of goods and services moving within the country.

The Chief Railway Lines of India

1. Bengal and Assam Railway.
2. Oudh and Tirhut Railway.
3. Bombay, Baroda and Central India Railway.
4. Bengal-Nagpur Railway.
5. East Indian Railway.
6. Great Indian Peninsular Railway.
7. Madras and Southern Marhatta Railway.
8. North-Western Railway.
9. South Indian Railway.

The two railway lines—the A.-B. Ry. and the E. B. Ry.—have been recently amalgamated and are now called the Bengal and Assam Railway. *The Assam-Bengal Railway* with a mileage of 1,500 miles serves Assam and some of the adjoining districts of East Bengal. The main line runs from Chittagong to Tinsukia through Calcutta. The important stations on the main line are Feni, Comilla, Durgapur and Lumding. A number of branch lines connect Gauhati, Silchar, Jorhat and Mymensingh. It carries normally 1.5 million tons of goods and 12 million passengers. The goods consist of tea, jute, timber, lime, coal and oil. The small tonnage of the railway is due to the fact that a large volume of traffic is handled by the river steamers. *The Eastern Bengal Railway* system serves the Northern and Eastern parts of Bengal and carries jute, rice, tobacco and tea to the port of Calcutta for exportation. The existence of innumerable rivers makes through-communication difficult, and in many places steamers are used for transshipment. The railway is connected with O. T. Ry. at Katihar. The Railway covers nearly 2000 miles.

The Oudh and Tirhut Railway with more than 2000 miles of metre gauge line serves the northern half of Bihar and the United Provinces. The main line extends from Katihar in Bihar to Cawnpore in the U. P. Several branch lines connect Benares, Lucknow and Mokama Ghat. It joins the E. I. Ry. at Benares, Allahabad, Cawnpore and Patna, and the B. & A. Ry. at Katihar. The line handles mainly coolie traffic.

The Bombay, Baroda and Central India Railway with more than 3500 miles of line serves the northern half of the Bombay Presidency, Central India and the southern portion of Rajputana.

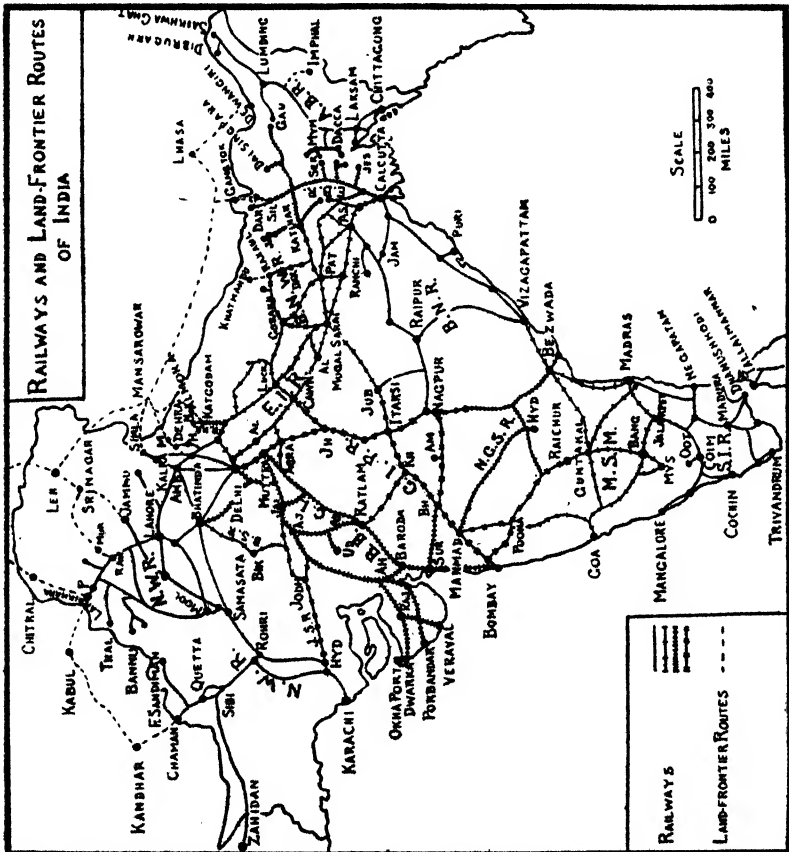


FIG. No. 73. Map showing the principal Ry. lines and the caravan routes in India

The main line extends from Bombay to Delhi through Surat, Baroda and Muttra. There are a number of branch lines to serve Ahmedabad, Agra, Cawnpore etc. The B. B. and C. I. Ry. carries annually more than 10 million tons of goods and 9 million passengers.

The Bengal-Nagpur Railway with 3500 miles of line serves South-West Bengal, Chota Nagpur, Eastern C. P. and the

Andhra area in Madras. There are two main lines running from Calcutta, one to Nagpur and the other to Waltair. The Nagpur line crosses the rich mineral areas and handles the substantial portion of the traffic composed of manganese, coal, iron-ore etc. Tatanagar—the most important iron centre of India—is on the Nagpur line. A number of feeder lines has been constructed to connect Tatanagar with the manganese and iron-fields of Bonai, Keonjhar and Singhbhum. The Waltair line handles a considerable coolie traffic. The opening of Vizagapatam as a first-class port and the construction of the Raipur-Waltair line have made this section of the B. N. Ry. very important. Much of the goods traffic which previously used to be sent to Calcutta for export now passes to Vizagapatam. The B. N. Ry. normally carries annually 20 million passengers and 18 million tons of goods.

The East Indian Railway with more than 4000 miles of line serves the entire Gangetic plain. No other Indian Railway system has played a greater part in developing agricultural and mineral wealth of India. Coal and mica of Bihar, Jute of Bengal, sugar-cane of the U. P. and Bihar and many other commodities are handled by the E. I. Ry. In fact, the great development of Calcutta as a port is largely due to the extensions of the E. I. Ry. The main line extends from Calcutta to Ghaziabad (near Delhi) through Patna, Benares, Allahabad, Cawnpore and Aligarh. The line meets the N. W. Ry. at Ghaziabad ; the O. T. Ry. at Benares and Patna ; and the G. I. P. at Allahabad. In respect of freight traffic, the E. I. Ry. occupies the first place.

The Great Indian Peninsular Railway with more than 3500 miles of line serves the central portion of the Bombay Presidency, Hyderabad, Western C. P., Central India, the south-western part of the U. P. and some parts of Rajputana. There are four principal lines radiating from Bombay: (a) Bombay-Delhi through Manmad, Jalagaon, Itarsi, Bhopal, Jhansi, Agra and Muttra. From Jhansi a branch line goes to Cawnpore. (b) Bombay-Allahabad by the valleys of the Narmada and Tapti through Itarsi, Jubbulpore, and Katni. (c) Bombay-Nagpur,

through Jalagaon and Wardha. A branch line connects Nagpur with Itarsi. (d) Bombay-Raichar through Poona after crossing the Bhore Ghat. The G. I. P. Ry. carries more than 50 million passengers and 11 million tons of goods annually.

The Madras and Southern Marhatta Railway passes through the densely populated and fertile areas like Madras and Mysore and therefore handles large traffic. Grain, cotton, oil-seeds, salt, sugar, tobacco, timber and hides are the chief commodities handled. The line connects Madras with B. N. Ry. at Waltair and serves the eastern and the central districts of the Madras Presidency. One line goes to Poona and another to Bezwada. The length of the line is more than 3000 miles.

The North-Western Railway is the largest and longest railway system in India. It has more than 7000 miles of line, extending into the Punjab, Sind, the North-West Frontier Province and Beluchistan. There are two main lines running from Delhi. One line connects Delhi with Peshawar through Ambala, Amritsar, Lahore and Rawalpindi; the other line connects Delhi and Karachi through Lahore, Multan, Bahawalpur and Hyderabad. A branch line along the Indus valley connects Peshawar with Bahawalpur. The N. W. Ry. handles cotton, salt, wheat, hides and skins and wool. The hinterland of Karachi is served entirely by the N. W. Ry. The annual tonnage of the N. W. Ry. is over 14 millions.

The South Indian Railway runs along the west coast of the Peninsula from Mangalore to Cochin. It is connected with the east coast by a line which crosses Pal Ghat and goes to Nagapatam. Coconut, sugar-cane, spices and oil-seeds are extensively handled by this railway. A line from Trichinopoly, west of Nagapatam, runs to Dhanuskodi. The total mileage of the Railway is nearly 2500.

Road Transport

India has a total of less than 3,00,000 miles of metalled and unmetalled roads. Considering the size of the country this mileage is very meagre. Of the total roads, 82,000 miles only are metalled. This represents only 1 mile of metalled road

for every 23 square miles of area. Want of adequate roads is keenly felt in rural areas. Recently many roads have been constructed throughout the country for motor vehicles, but much more remains to be done in this direction. Good road communication in a vast country like India, which is predominantly agricultural, is essential. Railways have served their purpose with credit and it is now felt that to help the country to continue the development of its potential wealth, roads must be opened and improved—not to supplant the railways in moving goods and people over long distances, but to provide a properly co-ordinated supplement to railway transportation.

Road Mileage in the Different Provinces of India

Madras	.. 27,115 miles	Bihar & Orissa	... 3,961 miles
Bombay	.. 13,400 ,,	Bengal	.. 3,500 ,,
Punjab	.. 9,940 ,,	N. W. F. P.	.. 1,113 ,,
U. P. ..	.. 7,776 ,,	Sind	.. 200 ,,
C. P. ..	.. 7,535 ,,		

About 48 per cent. of railway mileage is paralleled by metalled roads. Buses and lorries carry goods and persons from rural areas to towns and railway stations. Motor transport has become an indispensable agency for short-distance traffic as "it affords quick, cheap and flexible service." It cannot be denied that in many cases railways consider the public buses and lorries as competitors. Road transport is cheaper than railways, because it does not require stations, sidings etc., and as such it can offer low rates. In the neighbourhood of large cities and suburbs and in areas where roads run parallel to railways, competition is confined to short distances only, *viz.*, a range of 50 miles.

There are at present four trunk roads with which subsidiary roads are linked :

- (1) From Khyber to Calcutta.
- (2) Calcutta to Madras.
- (3) Madras to Bombay
- (4) Bombay to Delhi.

These trunk roads comprise 5000 miles of metalled roads.

The roads are great feeders of railways. They link up the cultivators' holding with the local markets and the nearest railway station. Without good and sufficient roads railways cannot collect for transport enough produce to render its operation possible. To avoid competition, roads and railways should be extended in such a manner that roads may become the feeders of railways and not their competitors.

The Caravan Routes

Although India has an extensive land frontier more than 6000 miles long, the volume of trade is very small. Dense forests, high mountains and deserts have so long hindered the progress of land frontier trade. There is no through railway line from India to her frontier countries. Yaks, mules, camels and ponies are usually employed in maintaining trade relations with Iran, Afghanistan, Central Asia, Tibet and Nepal.

There are five main land routes which connect North-West India with Iran, Afghanistan and Sinkiang.

(a) From Chaman (in Beluchistan) along the Khojak Pass to Kandahar and Herat.

(b) From Quetta to Zahidan on the Iran-Beluchistan border by a branch line of the N. W. Railway; thence by caravan route to Iran. Of late, to supply war materials and equipment, regular motorable roads have been opened connecting Zahidan with Teheran via Bam, Kerman, Yezd, Ardistan and Kasan.

(c) From Peshawar along the Khyber Pass (3370 ft.) to Jalalabad. The Khybar Pass is only 30 miles long.

(d) From Attock, in the Punjab, to Kashgar (Sinkiang) via Chitral and Hindukush.

(e) From Dera Ismail Khan along the Gomal Pass (7500 ft.) to Kalat and Kandahar.

There is another route which goes from Leh in Kashmir to Tibet and Sinkiang. This is one of the hardest routes in the world, as it includes the Karakoram Pass (18,000 ft.)

Communications with Tibet are maintained through Darjeeling, Nainital and Bettia.

Waterways in India

From the earliest times the trade and commerce of Northern India have been much facilitated by the abundance of navigable streams. The combined mileage of the navigable rivers in Northern India is about 26,000. Before the advent of the railways, the rivers of Northern India handled a considerable portion of the country's inland trade. But inland navigation has received a great set-back with the development of railways.

Besides a large number of minor streams India has three great rivers which serve, even to-day, as arteries of trade and travel. These are the Indus, the Ganges and the Brahmaputra. *The Indus* rises on the north side of the Kailash range, near the source of the Sutlej. The Indus flows first north-west through Ladak between the Kailash and the main Himalayan range up to Gilgit, from where it takes a sharp bend towards the south and maintains this direction for the rest of its course. Near its mouth the Indus divides into distributaries "which form intricate channels across its reed-covered delta, fringed with mangrove swamps." In its upper and middle course, the Indus receives the waters of the *Shayok*, *Kabul*, *Kuram* and *Gomal*. But the most important tributaries are the *Jhelum*, *Ravi*, *Chenub* and *Sutlej*—all flowing from the western Himalayas and joining the Indus at Mithunkot.

The Indus is 1800 miles long and is navigable for 1000 miles from its mouth. The shifting character of its banks and sudden floods during the rainy season are responsible for the absence of important towns on its course. It is interesting to note that Multan, Lahore, Amritsar, Ferozpur, Wazirabad and Bahawalpur are situated not on the main stream but on its tributaries.

The upper course of the Indus, though not navigable because of a fall of about 800 feet from its source, is important for hydro-electricity.

The Ganges is the most important river of India. The source of the Ganges is an immense mass of snow at 14,000 feet on the Himalayan range in the Garhwal district. The river is 1,500 miles long. From Hardwar at the foot of the Himalayas, the Ganges flows in a south-easterly direction through the rich

alluvial plain of the U. P., Bihar and Bengal into the Bay of Bengal. For about 500 miles from its mouth, the river maintains a nearly uniform depth of about 30 feet, and therefore steamers can safely move up to that distance, although country boats proceed as far as Hardwar. "The navigation in the Ganges is quite magnificent and offers probably one of the finest spectacles of its kind to be seen in the world." Recently the

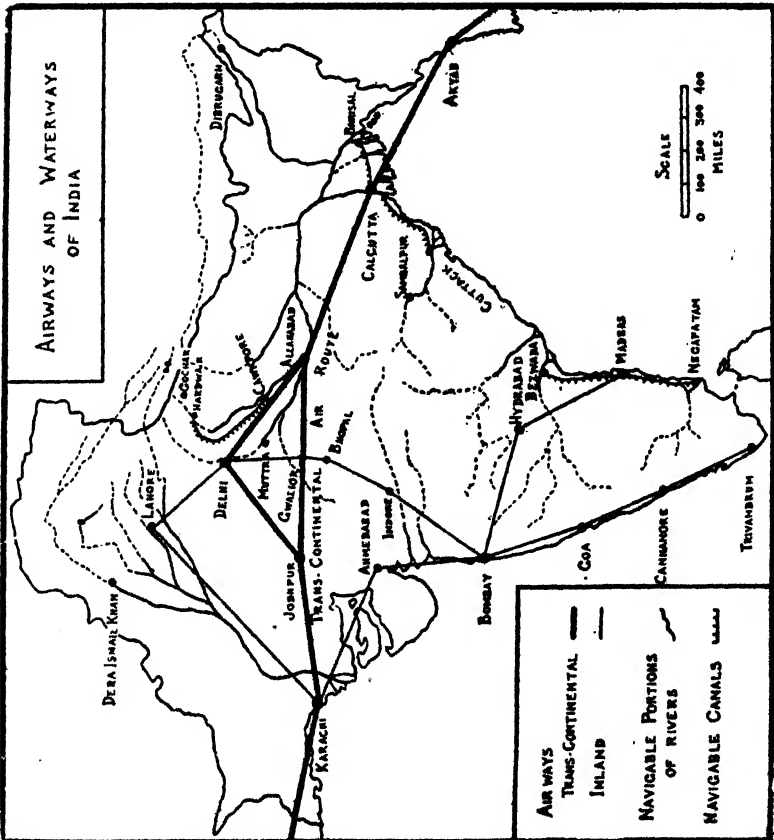


FIG. No. 74. Map showing the airways and waterways of India

Ganges has lost much of its importance as a highway of commerce because of the development of the railways.

The tributaries of the Ganges are mostly on its left bank, and these are the *Gumti*, *Gogra* and *Gandak*. Scanty rainfall

and the absence of any snow-capped mountain in Central India account for a small number of tributaries on the right bank of the Ganges. The *Jumna* is a great tributary of the Ganges and runs parallel to it for 860 miles and joins the Ganges at Allahabad.

The important towns on the Ganges are Hardwar, Cawnpore, Allahabad, Mirzapore, Benares, Ghazipur, Patna, Monghyr, Murshidabad and Calcutta, while on the *Jumna* the towns are Delhi, Muttra and Agra.

The Brahmaputra is one of the longest rivers in the world. It is about 1800 miles long. It has its source at a height of nearly 16,000 feet, a little east of Lake Manasarowar in Tibet. Flowing eastwards along the foot of the northern slopes of the Himalayas, it enters Assam and takes a sharp bend towards the south-west. After traversing the entire length of the Assam valley, the Brahmaputra again bends towards the south and joins the Ganges at the south-eastern corner of the Pabna district in Bengal.

The river is navigable by steamers throughout the year and steamers run from the mouth to Dibrugarh, about 800 miles from the sea. There are certain drawbacks in the river which make navigation dangerous: (a) formation of new islands, sand banks and shoals, and (b) the presence of a very strong current during the rains. The rich deposits of silt as the result of floods every year make agriculture very productive in the Brahmaputra basin. "In agricultural and commercial utility, the Brahmaputra ranks next to the Ganges, and with the Indus, among the rivers of India."

The *Surma*, a tributary of the Brahmaputra, is navigable as far inland as Sylhet.

The principal rivers of Peninsular India are the *Narmada*, *Tapti*, *Mahanadi*, *Kistna* and *Kaveri*. Of these, the *Narmada* and the *Tapti* flow towards the west coast. Owing to the greater heights of the Western Ghats, the other rivers flow towards the east. These rivers are navigable in their lower courses only during the rainy season.

There are only a few navigable canals in India, the most

notable being (i) the Circular and Eastern canals in Bengal, (ii) the Ganges canal running from Hardwar to Cawnpore, (iii) the Buckingham canal running parallel to the east coast in Madras, and (iv) the Orissa Coast canal. Conditions for constructing canals are very favourable in the coastal regions of Bengal, Orissa and Madras. "In Eastern Bengal particularly there is considerable scope for connecting the canals so as to improve the navigation facilities in connection with its great river system."

The need for waterways in India is great. In spite of physical difficulties, much improvement can be made in the existing waterways of the country. Its development would not only remove the congestion of traffic in the railways, but would also open up many new areas whose products cannot be at present moved because of high railway freights.

Airways in India

In recent years India has witnessed a remarkable development of *air transportation*. The mileage of regular air routes in India is a little above 6500. Passengers and mails make up the bulk of the air traffic services in India. Air mails are increasing with surprising rapidity. Several foreign and British aircrafts fly over India. *The Imperial Airways* maintains connection between London and Calcutta and has opened a few air stations, *viz.*, Karachi, Jodhpur, Delhi and Allahabad. *The Dutch air line* in its way to the East Indies avails of this route.

Karachi is the principal air-port in India. There are three lines radiating from Karachi: (a) by far the most important line goes to Jodhpur from where the line proceeds to two different directions, one to Delhi and the other to Calcutta *via* Gwalior and Allahabad; (b) another line maintains air service with Bombay *via* Broach and Ahmedabad. The Bombay route continues up to Madras *via* Hyderabad; (c) the third line goes from Karachi to Lahore.

Bombay and *Madras* have air-route connections with Colombo *via* Trivandrum. Bombay is also connected with *Delhi via* Gwalior, Bhopal and Indore. Calcutta maintains service with Delhi *via* Allahabad and Cawnpore.

The Tata Company Ltd. controls the Karachi-Madras and Bombay-Delhi sections. The company has extended its Karachi-Bombay service to Trichinopoly *via* Goa, Cannanore and Trivandam. Arrangements are being made to open an air-service between Jamshedpur and Bombay *via* Nagpur.

India is also linked up by air routes with Europe, the East Indies and Australia; and these lines are maintained by the Dutch and British aeroplanes. The air route to Europe extends from Calcutta to London through Karachi, Bahrein, Bagdad, Gaza, Coiro, Athens and Marseilles. The eastern route to Australia proceeds through Rangoon, Penang, Singapore, Batavia, Darwin, Brisbane and Melbourne.

Foreign Trade

The foreign trade of India is fairly large. The aggregate volume of India's trade is sufficiently large to entitle her to the fifth place among the countries of the world in the following order:—The United Kingdom, the U. S. A., Germany, France and India. By far the most important trade relation of India is with Great Britain and her Empire.

The special features of India's foreign trade are that (a) her exports exceed imports, (b) she imports manufactured articles and exports raw materials, (c) she receives back a portion of the same raw materials in the form of manufactured articles, and (d) more than 99 per cent. of her foreign trade is sea-borne.

The difference between the value of export and import is known as the *balance of trade*. When India's exports exceed her imports, the balance is said to be in India's favour. The excess of export is always noticeable in India's trade figures.

THE DIRECTION OF INDIA'S TRADE

Imports by percentage in 1938-39

United Kingdom	..	30·5	Straits Settlements	..	2·7
Burma .. ..	..	16·0	Belgium .. ..	..	1·9
Japan .. ..	..	10·1	Italy .. ..	..	1·8
Germany .. ..	..	8·5	Australia .. ..	..	1·6
United States of America	6·4		Switzerland .. ..	..	1·1
Kenya and Zanzibar	..	3·4	China .. ..	..	1·1
Iran, Arabia and Iraq	..	2·9	France .. ..	..	0·9

Exports by percentage in 1938-39

United Kingdom	..	34.0	Belgium	..	..	2.6
Japan	..	9.0	Netherlands	..	..	2.3
United States of America		8.5	Australia	..	..	1.8
Burma	..	6.2	Argentina	..	..	1.8
Germany	..	5.1	Iran, Arabia and Iraq	..	..	1.6
France	..	3.8	Italy	..	..	1.6
Ceylon	..	3.1	China	..	..	1.5

The total value of India's foreign trade was Rs. 321 crores in 1938-39, of which exports accounted for Rs. 169 crores, and imports Rs. 152 crores.

The articles of import are cotton manufactures, machinery, sugar, silk, spices, mineral oils, drugs and chemicals, coal, motor vehicles, match boxes, salt, paper and pasteboard and dyeing and tanning materials.

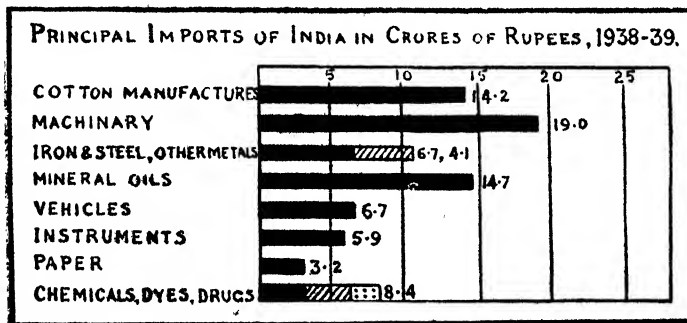


FIG. No. 75.

Except jute manufactures and tanned leather, India mostly sends out raw materials. Cotton occupies the first place, followed by jute, tea, grain, oil-seeds, etc.

EXPORTS AND THEIR DESTINATIONS

(a) *Raw cotton*: The U. K., Japan, Germany, France, Italy, Belgium, the Netherlands, China, etc. Before the war Japan was the largest buyer, taking as she did more than 55 per cent. of India's total cotton export. The U. K. takes a

little more than 14 per cent. In 1939 India exported cotton goods of the approximate value of Rs. 32 crores.

(b) *Jute manufactures*: The U. S. A., Argentine, Belgium, Australia, Canada, Japan, etc. The U. S. A., the largest importer, takes 32 per cent. of the total jute manufactures. The value of jute manufactures exceeds Rs. 24 crores.

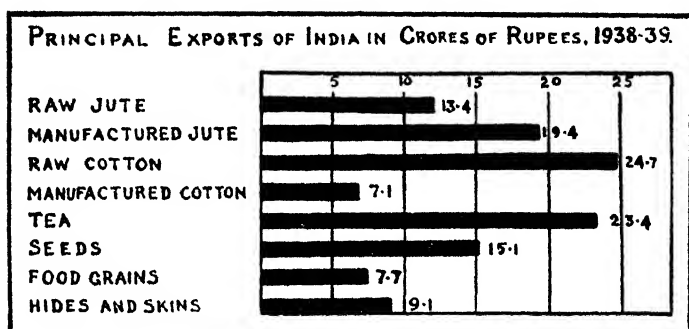


FIG. No. 76.

(c) *Jute (raw)*: The United Kingdom, Germany, the U. S. A., France, Italy, Belgium, Spain, etc. The U. K. is the largest importer, followed by Germany. The U. K. consumes 26 per cent., while Germany absorbed 19 per cent. before the war. The value of raw jute export exceeds Rs. 13 crores.

(d) *Tea*: The U. K., Canada, Australia, the U. S. A., Iran, Arabia, Ceylon, etc. More than 86 per cent. of Indian tea is imported by U. K. alone.

(e) *Hides and Skin*: The U. K., the U. S. A., Germany, Japan, France, Italy, Holland, etc. The U. K. (67 per cent.) and the U. S. A. (15 per cent.) are the largest importers.

(f) *Oil-seeds*: The U. K., France, Germany, Holland, Italy, Belgium, Ceylon, etc. The U. K. imports 28 per cent. and Italy imported 16 per cent. before the war.

(g) *Food grains*: Ceylon is the greatest importer. The U. K., Germany, Japan, France, Iran, Holland and the Straits Settlements are the other customers.

(h) *Metals and ores*: The U. K., Japan, Straits Settlements, Germany, Belgium, France, the U. S. A., Ceylon, Italy, etc.

IMPORTS AND THEIR SOURCES

(a) *Cotton Manufactures*: The U. K., Japan, China, Switzerland, Holland, France, Italy, Germany, etc. The U. K. and Japan competed with each other before the war for the control of the Indian market. The U. K. alone sends 50·7 per cent. of the total cotton imports, while Japan sent 43 per cent. before the war. The value of cotton imports in 1937 was Rs. 14 crores.

(b) *Sugar*: Java and the Straits Settlements, China, Holland, the U. K., Japan, etc. Java and the Straits Settlements supply more than 55 per cent. of India's total import.

(c) *Iron and Steel*: The U. K., Germany, Belgium, Japan, France, etc. Nearly 60 per cent. of India's iron and steel goods comes from the U. K.

(d) *Machinery*: The U. K., Germany, the U. S. A., Belgium, Japan, France, etc. The U. K. is the largest supplier (70 per cent.). Import of machinery is increasing every year; it is a sign of India's industrialisation.

(e) *Motor Cars, etc.*: The U. K., the U. S. A., Canada, Germany, Italy, etc. The average annual value of such imports exceeds Rs. 5 crores.

(f) *Mineral oil*: Iran, China, Borneo, Sumatra, the U.S.A., Burma, etc.

(g) *Paper and Pasteboard*: The U. K., Germany, Sweden, Norway, the U. S. A., etc.

(h) *Silk Manufactures*: Japan, China, Italy, the U. K., etc. Japan sends 73 per cent.

(i) *Chemicals*: The U. K., Germany, Japan and the U. S. A. India imported chemicals in 1938 to the value of about Rs. 6 crores.

INDIA'S TRADE RELATIONS WITH CERTAIN IMPORTANT COUNTRIES

The United Kingdom. The most prominent feature in the direction of India's foreign trade is the fact that it is dominated

by the U. K. both in imports and exports. India imported goods from the United Kingdom to the value of Rs. 46½ crores in 1938-39. The value of exports in the same year was Rs. 105 crores. The principal exports to the U. K. are tea, jute, hides and skin, oil-seeds, raw cotton, raw wool, grains, oil-cakes, metals and ores. Tea alone accounts for more than one-third of the value of total exports to the U. K. On the import side, the chief articles are machinery and millworks, cotton manufactures, iron and steel, chemicals, instruments, hardware, liquors, motor cars, rubber manufactures, paper and pasteboard, etc. Machinery and millworks usually comprise one-fourth of the value of total imports from the United Kingdom.

Burma has a large share in the foreign trade of India. Burma sends 16 per cent. of India's imports and occupies the second position in the list of India's suppliers. India sends only 5 per cent. of her total exports to Burma. The balance of trade is, therefore, unfavourable to India. Imports from Burma consist largely of rice, petroleum and teak wood. These represent more than 85 per cent. of the total imports from Burma.

Imports from Burma may be reduced considerably if some special efforts are made. India is almost self-sufficient in rice, and in the matter of timber, India's own sources are being steadily exploited. Imports of rice from Burma should be curtailed by imposing import duty with a view to extending rice cultivation further in India and also to maintaining a fair level of prices. More than 40 per cent. of our exports to Burma consists of cotton and jute manufactures. Other exports are iron and steel, tea, sugar and coal. Burma is India's best customer of coal.

Ceylon. The important items of imports into India from Ceylon are : copra, cocoanut oil and tea. Unhusked rice, cotton piece-goods, fish and coal are the important items of exports from India. Ceylon is India's second best customer of coal. Other important items of exports to Ceylon are pulses, fruits and vegetables, chillies, oil-cakes and manures.

India has had a favourable balance for many years in her trade with Ceylon.

INDO-CYLON TRADE
1938-39

(in lakhs of rupees)

<i>Exports</i>				<i>Imports</i>			
			Rs.				Rs.
Rice	..	..	117	Copra	..	..	61
Cotton goods	..	..	66	Cocoanut oil	..	..	14
Coal	..	..	26	Tea	..	..	2
Tea	..	..	26	Fish	..	..	35
Pulses	..	..	28				
Fruits	..	..	23				
Chillies	..	..	18				
Manures	..	..	14				
Total Export .. 539				Total Import .. 118			

Japan. The balance of trade in relation to Japan is not favourable to India. Indian exports to Japan have been continuously declining recently. Imports into India from Japan are cotton manufactures, artificial silk, silk manufactures, wool manufactures, glass and glass ware, iron and steel, machinery and millworks, earthen ware and porcelain, toys and requisites for games and hardware, chemicals, paper and pasteboard and stationery, raw silk, rubber manufactures, electrical instruments and apparatus, paints and painters' materials. Cotton manufactures account for 50 per cent. of India's total import from Japan. The principal items of India's exports to Japan are raw cotton, pig iron, manganese, jute (raw and manufactured), mica, shellac, etc. Raw cotton usually constitutes more than a quarter of Japan's total imports of foreign goods. About 55 per cent. of India's exports of pig iron are consumed by the Japanese iron factories.

Germany. Imports from Germany to India consist of iron and steel, brass and copper, hardware, machinery and millworks, glass and glassware, liquors, paper and pasteboard, woollen manufactures, salt, blankets, etc. Exports to Germany consist of jute (raw), grain, pulse, flour, cotton (raw), seeds, hides and skins (raw), lac, coir manufactures, bones, hemp (raw), etc. Jute accounts for nearly one-fourth of the value of exports of Germany. In recent years, the volume of exports

to Germany has fallen considerably. "The movement towards great self-sufficiency in Germany coupled with trade restrictions would, to some extent, account for the fall in India's export to that country."*

United States of America. The trade with the U. S. A. has fallen considerably. The imports consist of raw cotton, machinery and millworks, motor vehicles and parts, oils—mineral and lubricating, rubber manufactures and hardware. The principal exports consist of jute (raw and manufactured), hides and skins, lac, raw wool, fruits and vegetables, and linseed. The export trade in fruits and vegetables and linseed is sharply declining.

India has frontier trade with Afghanistan; Central Asia, Persia, Nepal, Tibet and Western China. In the north-west frontier, communication with the trans-frontier countries is maintained by the Bolan Pass and the Khyber Pass. The principal commodities that are imported by India from these countries are grain, fruits, raw wool, living animals and raw silk. The most important exports are cotton goods, sugar, leather manufactures, tea and silk goods.

LAND FRONTIER TRADE

<i>Imports—1938-39</i>		<i>Exports—1938-39</i>	
	(Maunds)		(Maunds)
Wheat	1,74,958	Cotton piece-goods ..	6,19,843
Gram and pulse ..	3,75,150	Wheat	5,71,631
Rice—		Rice (husked) ..	5,17,503
Husked	17,03,084	Other grains	10,91,789
Unhusked	4,02,915	Iron and steel in-	
Other grains	10,88,920	cluding machinery,	
Hides and skins ..	1,36,647	hardware and cut-	
Tobacco	1,15,707	lery	4,81,888
Wool (raw)	1,90,324	Petroleum	5,53,422
Jute, raw (from		Salt	16,28,150
Nepal)	2,06,905	Tea	1,54,324
Linseed (from Nepal)	4,20,117	Sugar	8,82,831
Mustard and rape seed	3,25,729	Tobacco	1,21,061
	(Ounces)		(Ounces)
Gold	3,644	Gold	11
Silver	1,98,583	Silver	5,36,164

* These remarks refer to the pre-war days.

India has also a large entrepot trade. The entrepot trade of a country consists of the re-export of articles previously imported. In other words, a country which imports things with a view to exporting them is known to have entrepot trade. India occupies a very favourable geographical situation for the purpose of doing entrepot trade as she is at the centre of the Eastern Hemisphere.

From the West, cotton, chemicals, machinery, minerals and metals are imported for distribution to countries like Kenya, East Africa, Japan, Straits Settlements, Afghanistan and China.

THE WAR AND THE INDIAN TRADE.*

With the outbreak of war in Europe in 1939, the normal trade of India with European countries has been cut altogether. Although the war in Europe is now over, it will take at least one year more to restore the trade connection. The spread of war in the East after 1940-41 is also responsible for the suspension of trade with Malaya, Dutch East Indies and Burma.

In 1939-40 both exports and imports increased as a result of heavy purchases by the Allies in the Indian market. The volume of trade in the same year was Rs. 374 crores as compared to Rs. 335 crores in 1938-39. In the year 1940-41, after the fall of France, Holland and Belgium, our exports declined considerably. This was also partly due to the shortage of shipping. But there was an appreciable increase in our exports in 1941-42, due to heavier war demands and improved shipping facilities. The year 1942-43 witnessed a fall in our exports because of the fall of Burma and other far eastern countries.

The outstanding feature of export trade during the war is the remarkable increase in the manufactured goods. But at the same time, there has been a considerable decline in the export of raw materials like jute, cotton and oilseeds after the collapse of Europe in 1940-41.

* Based on Jain's *Indian Economy during the War*.

COMPOSITION OF INDIA'S WAR-TIME TRADE.

	1938-39	1939-40	1940-41	1941-42	1942-43
Exports :					
Food stuffs ...	36.2	38.3	47.3	56.0	46.9
Raw materials ...	80.8	82.4	58.8	57.2	42.9
Manufactures ...	52.5	90.2	78.6	111.3	95.2
Imports :					
Foodstuffs ...	31.3	31.3	26.1	16.3	7.6
Raw materials ...	32.4	40.0	47.0	44.7	51.8
Manufactures ...	96.9	88.3	100.4	71.8	49.4

Significant changes in the direction of India's foreign trade :

1. Our trade with European countries has ceased altogether.

	1938-39	1939-40	1940-41
(In crores of Rupees)			
Export	29.6	21.6	6.4
Import	26.9	19.5	4.7

2. Our trade with the Empire countries has greatly increased.

	1938-39	1939-40	1940-41	1941-42
Export ..	85.4	114.1	116.6	148.95
Import ..	88.6	93.1	89.7	105.63

3. Before the war, India imported more than she exported to the United Kingdom. Since the war, the balance of trade is in our favour. In 1941-42, the balance in India's favour was Rs. 40 crores.

4. Since 1941-42, trade with Japan has been cut off. In 1940-41 India exported to Japan to the extent of Rs. 9 crores. In the same year India imported Rs. 21.5 crores worth of goods, due to the loss of sources of our imports in Europe.

5. Trade with the U.S.A. has increased considerably.

	1938-39	1939-40	1940-41	1941-42
Export ..	13.9	24.4	2.9	45.59
Import ..	9.8	11.9	27.0	36.61

6. "Trade with the middle Eastern countries, notably Egypt, Iraq and Arabia, has received a stimulus due to the cutting off of Japanese supplies and improvement in war situation in the Middle East".

Trade Control. For the duration of the war, the Indian trade has been subjected to *control* regarding exports and imports.

Export restrictions have been made with a view (a) to preventing supplies of certain goods reaching the enemy by direct channels and (b) to preserving the supplies of essential goods for internal consumption and for the use of the Allied countries. The export control is exercised in the following forms:—

1. Exports to enemy countries are prohibited.
2. Exports of certain goods are prohibited to neutral countries.
3. Exports of certain goods to neutral or non-enemy countries are allowed *only under license*.
4. Exports of certain articles without license are allowed *only to specified countries*.

Import Control. At the beginning of the war the only restriction imposed on import trade was in respect of goods from enemy countries. The importers could obtain foreign exchange for payment of goods.

Since 1940, an elaborate system of import restriction has been introduced for the following purposes:—

- (a) Conservation of the available supplies of foreign exchange in certain countries.
- (b) Economy of shipping space.
- (c) Utilisation of the productive capacity of friendly nations overseas for essential war purposes.

Import control is generally imposed on those imports which can be replaced by Indian goods or whose consumption can be reduced without much difficulty.

The export and import countries are administered by Trade Controllers functioning at the chief ports. "In respect of imports, the restriction has generally taken the form of fixation of quotas on the basis of pre-war imports and a quota recommendation certificate must be obtained from the Import Trade Con-

troller Owing to the growing difficulty of obtaining supplies of several imported articles and the increasing stringency in the matter of foreign exchange facilities it had become necessary to give priority to all the imports needed for war purposes and to ensure that such imports as could be obtained after the war needs were satisfied, were directed to the most useful purposes."

Ports and Trade Centres

Industrialisation of a country may be measured by the growth in the number of its cities. In India the great majority of the people derive their livelihood from agriculture. Consequently there is a great variation in urban and rural population. About 11 per cent. of the total population of India live in the cities or in the suburban districts.

There are only 37 cities in India with a population of over 1,00,000 in each. These cities can again be divided into two classes—those having more than 2,00,000 and those having less than 2,00,000.

I. PRINCIPAL CITIES OF INDIA

(more than 2,00,000 people in each)

<i>Towns</i>	<i>Population</i>	<i>Towns</i>	<i>Population</i>
Calcutta (including Howrah) ..	2,488,000	Amritsar ..	391,000
Bombay ..	1,490,000	Karachi ..	360,000
Madras ..	777,000	Poona ..	258,000
Hyderabad ..	733,000	Cawnpore ..	437,000
Delhi ..	522,000	Agra ..	284,000
Lahore ..	672,000	Nagpur ..	302,000
Ahmedabad ..	591,000	Benares ..	263,000
Bangalore ..	407,000	Srinagar ..	208,000
Lucknow ..	387,000	Madura ..	239,000
		Allahabad ..	260,000

II. PRINCIPAL CITIES OF INDIA

(less than 2,00,000 people in each)

<i>Towns</i>	<i>Population</i>	<i>Towns</i>	<i>Population</i>
Patna ..	.. 1,60,000	Peshawar ..	.. 1,20,000
Sholapur ..	.. 1,50,000	Ajmer ..	.. 1,20,000
Jaipur ..	.. 1,45,000	Multan ..	.. 1,20,000
Bareilly ..	.. 1,40,000	Rawalpindi ..	.. 1,20,000
Trichinopoly ..	.. 1,40,000	Baroda ..	.. 1,15,000
Dacca ..	.. 1,40,000	Moradabad ..	.. 1,10,000
Meerut ..	.. 1,35,000	Tinnevely ..	.. 1,05,000
Indore ..	.. 1,30,000	Mysore ..	.. 1,05,000
Jabbalpure ..	.. 1,25,000	Salem ..	.. 1,02,000

PRINCIPAL PORTS IN INDIA

India is a vast country with a coast-line of about 2500 miles. Unfortunately, however, her coast-line has few indentations and consequently she has only a few first-class ports for trade. The southern side is different in harbours to accommodate large vessels now employed in sea-borne trade. The violence of monsoon keeps the ports of the western coast of India, with the exception of Karachi, Bombay and Mormugao, closed to traffic from May to August. Then, again, the eastern coast is surf-bound and as such requires constant dredging.

The chief ports of India are Karachi, Bombay, Mormugao, Mangalore, Tellicherry, Mahi, Calicut, Cochin, Tuticorin, Negapatam, Pondicherry, Madras, Masulipotam, Vizagapatam, Cocanada, Calcutta and Chittagong. But of the total sea-borne trade of India, more than 90 per cent. is shared by Bombay, Calcutta, Karachi, Madras, Vizagapatam and Chittagong. The ports on the coasts of the Deccan have restricted hinterlands, but recently some of them have been enlarged by the development of railways and other communications.

SHARE OF PORTS IN THE FOREIGN TRADE OF INDIA

1934

(in crores of Rupees)

	Import	Export	Total
Bombay	46·16	29·49	75·65
Calcutta	32·12	58·45	90·57
Karachi	12·96	14·22	27·18
Madras	11·18	9·7	20·88
Vizagapatam	7	39	46
Chittagong	07	5·23	5·93
Total of India's trade ..	115·3	149·7	265

The concentration of India's ocean-borne trade in these few ports is due to a number of causes. Geographical cause is no doubt important, but the more important is the historical one. Bombay, Madras and Calcutta have been centres of administration for a long time. This brought development. Population increased and with it commercial and industrial activities were inspired. Moreover, the railway systems were constructed from these ports during the latter half of the 19th century. Thus from political and railway centres they developed into great ports.

The Principal Ports on the Western Coast of India

Karachi: Next to Bombay, Karachi is the most important port on the west coast of India. It is provided with a splendid natural harbour. Its hinterland is very extensive, covering as it does Persia, Afganistan, Beluchistan, the Punjab and Kashmir. The importance of the port increased after the opening of the Suez Canal. The principal exports are wheat, oil seeds, cotton, wool, hides and bones. About one-third of the total export of wool from India is handled by Karachi. The imports are cotton manufactures, sugar, metals, machinery, oil, woollen manufactures, liquor, chemicals, etc. Karachi is more noted for commerce than for industries. With the exception of wheat, other industries are little developed. Karachi is connected with its hinterland by the North-Western Railway. The Indus also brings down the produce of the Central Panjab and

Sind. The value of foreign trade in 1938 was to the extent of Rs. 61 crores.

Kathiawar ports are Okha, Bedi Bander, Porbandar and Bhavnagar. *Bedi Bandar*, in Nawanagar, is a small port which does considerable coastal trade. The sea is shallow and therefore large steamers must anchor about 2 or 3 miles away from the shore. Okha, in the Baroda State, occupies a very good position at the extreme north-east point of the Kathiawar Peninsula. Although the sea in this part is deep enough for large vessels, the circuitous approach to the port making navigation rather dangerous and the scanty population and small railway mileage of the hinterland stood in the way of its development. The port is open at all seasons of the year and competes sometimes with Bombay by offering lower port charges.

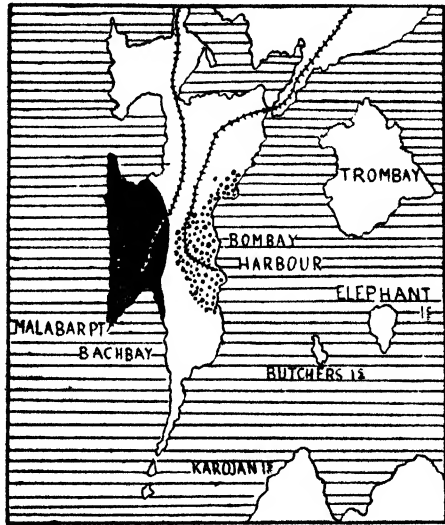


FIG. No. 77. Bombay is an inland port. It is connected with the mainland by railway bridges.

The imports are textile machinery, motor cars, sugar and chemicals. The exports are oil-seeds and cotton.

✕ *Bombay* lies at the base of the Western Ghats. It has a natural harbour directly on the sea. ✓ The hinterland of Bombay extends from Hyderabad and the western part of Madras in the south to Delhi in the north, and includes Western U. P., Eastern Rajputana, C. P., Central India and the Bombay Presidency. It is the second city in the Indian Empire and owes its importance to its magnificent harbour and its position as the nearest Indian port to Europe except Karachi.

It is connected with the interior by railways (G. I. P. Railway and B. B. C. I. Railway). It is the seat of the cotton textile industry. Although Bombay does not possess rich coal-fields within 200 miles or a system of navigable rivers to bring produce down to the port, her volume of trade is always large in view of her natural harbour which is open at all times of the year. Bombay is the principal outlet for the staple products of Western India, in particular, the raw cotton of the Deccan. Large quantities of oil-seeds, wool and woollen goods, hides and skin, manganese ore and food grains are exported. The principal imports are manufactured cotton goods, machinery, railway plant, iron and steel goods, hardware, sugar, kerosene oil, dyes, coal and petroleum. In the year 1933 Bombay had a foreign trade of the value of Rs. 150 crores. (Imports Rs. 90 crores and exports Rs. 60 crores).

Mormugao, on the Konkan coast, is situated on the eastern extremity of the Mormugao peninsula in Portuguese India. Its hinterland extends to Bombay-Deccan, Hyderabad and Mysore. Manganese, groundnuts, cotton, cocoanuts etc., are the principal exports.

Calicut, 90 miles north of Cochin, is a port of periodical importance. During the early part of the monsoon, the port is practically closed to navigation. As the sea is shallow, steamers anchor about three miles off the shore. Coir, coir-fibre, copra, coffee, tea, ginger, groundnut and fish manure are the exports.

Cochin, in Madras, is the most important port between Bombay and Colombo. Its position is such that it can serve the whole of Southern India. Cochin is nearly 300 miles nearer to Aden than Bombay. "The system of back-waters running parallel with the coast affords cheap transport and excellent waterways connecting several places of importance in the Cochin and Travancore States."

Coir, yarn, coir mats and mattings, copra, cocoanut oil, tea and rubber are the chief exports from Cochin.

The Principal Ports on the Eastern Coast of India

Tuticorin, an important port of the Madras Presidency, is situated at the extreme south-eastern point of the Peninsula.

The harbour is shallow, and constant dredging is necessary. Cotton, tea, senna leaves and cardamoms are the principal exports. The port has considerable trade with Ceylon. The value of foreign trade in 1938 was worth Rs. 10 crores, of which exports amounted to Rs. 5.5 crores.

Madras, the third largest city in India, is the chief port of the Presidency. Several railway lines connect it with Bombay, Tuticorin, Calicut and Calcutta. Although the port has considerable manufactures, it cannot be compared with Calcutta or Bombay as a trade centre. Its extensive hinterland includes the whole of the Eastern Deccan, but then this area does not produce things which are required by the European markets in large quantities. Moreover, many small sea ports on the Coromondal and Malabar Coasts compete with Madras. Madras handles only some 5 per cent. of India's foreign trade. Its harbour is artificial. Before the construction of the harbour, Madras was an open roadstead with a surf-beaten coast. The imports are cotton piece-goods, iron and steel, machinery, dyes, sugar, leather goods, paper etc. The chief exports are oil-seeds, raw cotton, coffee, tobacco, rubber and fish. It is also an industrial town, but lack of coal is its great handicap. The value of foreign trade in 1938 was to the extent of Rs. 34 crores, of which exports accounted for Rs. 18 crores.

Vizagapatam : It has become a major port within very recent years. It is a port of call for all ocean-going and coastal traffic steamers. It is situated on the Coromondal Coast, about midway between Madras and Calcutta—500 miles south of Calcutta and 325 miles north of Madras. Manganese, ground-nuts, myrobalans, hides and skins are the chief exports. The imports are sugar, cotton, piece-goods, iron, timber and machinery.

It sometimes competes with Calcutta. For shipping the produce of Orissa and the eastern part of C. P., Vizagapatam offers better facilities in respect of distance and charges than Calcutta. To a certain extent Calcutta has been affected adversely by the opening of this young port. Very recently a ship-building yard has been opened here. The port is connected

by the B. N. R. with Raipur in C. P. The opening of the line has greatly reduced the distance to C. P. markets.

Calcutta, the largest city in India, is situated on the left bank of the Hooghly, nearly 80 miles from the Bay of Bengal.

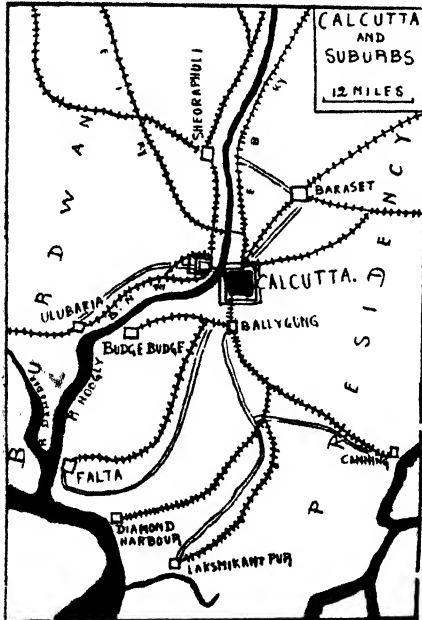


FIG. NO. 78. Calcutta and its suburbs

Although primarily it is a port for the Gangetic plain, it is also the greatest trading centre to the east of the Suez.

Its hinterland comprises Assam, Bengal, Bihar, the United Provinces and parts of the Eastern Punjab, Orissa and Central Provinces, which are all connected with Calcutta by roads and railways. All these areas produce in large quantities goods which are wanted by foreign markets. The Ganges and the Brahmaputra by providing splendid natural waterways help to bring agricultural

produce of the plains to be exchanged for the manufactured goods in Calcutta.

Calcutta with its suburbs is the greatest manufacturing area in India. Its jute mills, paper mills, cotton mills, sugar factories, engineering works etc., use coal of Raniganj and Jharia. The port of Calcutta, which extends for about five miles along the banks of the Hooghly, suffers from the disadvantage of its river being silted up. The frequent formation of tidal bore in the Hooghly is another difficulty. The principal exports are jute, tea, rice, wheat, mica, coal, iron, manganese, iron and steel goods, sugar, petroleum, motor car, paper, chemicals, liquor, salt, rubber and cycle. The value of foreign

trade in 1938 amounted to Rs. 140 crores. (Exports Rs. 85 crores and imports Rs. 55 crores). Calcutta is the greatest jute centre of the world. Other industries of importance are rice mills, cotton mills, tanneries, perfumeries, iron and steel works and match making.

Chittagong is an important outlet for the produce of East Bengal and Assam. It is situated at a distance of 11 miles from the mouth of the Karnafuli river. The chief article of export is tea. In recent years Assam has been exporting tea mainly through Chittagong. The other exports are jute, kerosene, rice and raw cotton. The imports are chemicals, machinery, metal, salt, cotton goods and sundry instruments.

TRADE CENTRES

Trade centres have grown in six different classes of cities in India. These are: (i) holy cities, (ii) ancient capitals, (iii) ports, (iv) health resorts, (v) manufacturing cities, and (vi) modern administrative capitals.

India is a land of *holy* cities. Benares, Puri, Allahabad, Muttra, etc., have become important trade centres because of the assemblage of pilgrims. Some of the *ancient capitals* of India, like Nagpur, Poona, Dacca, Murshidabad, etc., are still important as centres of trade. *Health resorts* are mostly confined to the sea-sides and the hills where people in large number from the plains go for a change. *Ports and manufacturing centres* in India command the largest trade because of railways and navigation facilities. Administrative reasons have also led to the development of many towns in districts, divisions and provinces of India.

The inland centres of India are mainly to be found in the Indo-Gangetic plain which is favoured by three mighty rivers—the Indus, the Ganges and the Brahmaputra. The industrial centres have all grown on the banks of these rivers and their tributaries or at the junctions of railways.

The *United Provinces* of Agra and Oudh have an area of 110,000 sq. miles and a population of 55 millions. The important

trade centres are Allahabad, Benares, Cawnpore, Gorakhpur, Lucknow, Mirzapore, Moradabad, Aligarh and Agra.

Allahabad, 564 miles from Calcutta, is the principal railway centre of the U. P. It is situated on the confluence of the Ganges and the Jumna. There are several oil mills, glass factories and flour mills in the city. The trade is considerable, because the city enjoys unique advantages in regard to communication by rail, roads and rivers. Jowar and bajra, linseed, tobacco etc., are collected from the surrounding districts for export. *Benares*, on the bank of the Ganges, is one of the biggest towns of India. The city being a place of pilgrimage to the Hindus, the pilgrim traffic is enormous. It is also an important industrial and commercial centre. Toys of wood, zarda, lac bangles, ivory articles, silk cloth, blanket sheets, linseed, mustard seed, sugar and gram are the chief articles of trade. There are several oil mills and silk factories. The place is also noted for brass-works. The famous Hindu University is situated at a distance of three miles from the city. *Cawnpore* is a great collecting and distributing centre for Northern India. It is also an important railway junction of E. I. Railway, B. B. & C. I. Railway, O. T. Railway, and G. I. P. Railway. It has the largest manufacturing industries in the U. P. Cotton pressing and ginning are the foremost. Sugar mills, flour mills, iron foundries, chemical works, cotton mills and oil mills are the important industries. The population of the city is over 2,50,000. *Gorakhpur* is situated on the left bank of the river Rapti. The chief industry is carpentry. Timber is brought here from the Nepal border. The city has a large number of sugar factories. *Lucknow* is an important distributing centre for the rich agricultural produce of Oudh. The city is growing in importance rapidly. There are several railways and iron foundries. The articles of trade are silver and gold-works, ivory and wood carving, pottery and perfumes. *Mirzapore*, an important industrial town in the U. P., is situated on a fertile tract of land on the bank of the Ganges. Carpets, rugs and silk cloths are the chief manufactures. Its stone business is also famous. *Moradabad*, the most important town of the district

of Moradabad, is noted for brasswares. It has a population of 1,10,000. *Agra*, on the Jumna, is an important centre of arts and manufactures. The articles of trade are carpets, shoes, brass utensils, looking-glass frames and marbles. It is an important railway junction. It is also a collecting and distributing centre for Rajputana. The famous Taj is situated at a distance of one mile from the city. *Aligarh* is famous for its manufacture of locks and other brasswares. Bangles, glasswares and butter are other articles of importance. It is the seat of Muslim culture in India.

The *Punjab* has an area of 1,00,000 sq. miles. Its population, excluding the native States, is a little above 28 millions. Although the province is watered by five rivers, its trade movements are conducted by roads and railways, because the rivers are all unfit for navigation during the greater part of the year. The important trade centres are Amritsar, Lahore, Ludhiana, Lyallpur, Multan, Rawalpindi and Simla. *Amritsar* stands on the main line of the N. W. Railway and is 1143 miles away from Calcutta. It is famous for its carpets and shawls. The other important industries are the manufacture of textiles, acids, chemicals, hosiery and leather. *Lahore*, the capital of the Punjab, is the largest city and the chief trading centre of the province. It stands on the river Ravi and is 33 miles distant from Amritsar. Cotton weaving, tanneries, glass-works, flour mills, sugar mills etc., are the chief industries. Leather trade is also important. *Ludhiana*, 103 miles from Lahore, is the centre of hosiery manufacture. Ludhiana supplies turbans practically to every Indian regiment. *Lyallpur*, 87 miles south-west of Lahore, is the biggest wheat exporting centre of the Punjab. *Multan* is a frontier town. It is an important collecting centre—it brings fruits, drugs, silk and spices from Afghanistan and passes them on to the East. It is connected by railways with Lahore and Karachi. *Simla* is the summer capital of the Government of India. It has an entrepot trade with Tibet and China. Its trade is generally busy from March to October.

The *Central Provinces* has an area of 130,000 sq. miles with 17 millions of people. Nagpur, Yeotmal, Katni, Wardha,

Jubbulpore, Akola and Amraoti are the principal market places. *Akola* and *Amraoti* are the two chief centres of cotton trade. *Jubbulpore* is noted for cement, glass, lime and potteries. It has a gun carriage factory. Its other industries are cotton textiles, brass and copper utensils etc. *Katni* is an important centre for utensils, stones and grains. *Nagpur*, the capital of the Central Provinces, is a very important commercial town. It is situated at the junction of the G. I. P. Railway and the B. N. Railway. Its cotton trade is important. *Yeotmal* and *Hardha* are important cotton marts and have ginning factories.

Bengal is a densely populated province. It has an area of 80,000 sq. miles and it contains a population of more than 60 million people. The two rivers—the Ganges and the Brahmaputra—provide navigable routes of more than 2,000 miles. Bengal has 3,500 miles of railways and about 4,000 miles of metalled roads. The important trade centres are Calcutta, Dacca, Narayanganj, Serampore, Chittagong, Berhampore and Burdwan. *Dacca* is famous for shell bangles and for the works on gold and silver. It is the most important inland trade centre of Bengal. It is situated in the heart of the jute growing districts. *Narayanganj* is practically the port of Dacca. It is an important centre of trade in Eastern Bengal. It has a population of about 45,000. *Serampore* and *Salkea* are two important industrial towns, situated near Calcutta. Both the towns possess a number of cotton mills. *Chittagong* is situated on the river Karnafuli, 10 miles from the sea. It is a natural outlet for the trade of Assam and North-East Bengal. Tea, jute, rice, tobacco and live-stock are exported. *Batanagar* on the Hooghly, is a new industrial place, famous for shoe-making.

The *Bombay Presidency* has an area of 152,000 sq. miles with more than 24 million people. The trade centres are Bombay, Ahmedabad, Belgaum, Broach, Nasik, Poona and Surat. *Ahmedabad* stands on the left bank of the Sabarmati and is 50 miles away from the head of the Gulf of Cambay. It is the second largest cotton manufacturing centre in India. There are nearly 80 cotton mills. *Belgaum* is a silk and cotton centre. *Broach* has large coastal trade. It is one of the oldest

ports of Western India. *Nasik* is noted for brass and copper vessels. *Surat*, once an important port, is to-day famous for gold and silver-thread making industry. There are a few cotton mills.

In the *Madras Presidency*, the principal trade centres are ports. *Madura* and *Trichinopoly* are the two inland trade centres. *Madura* has several weaving mills. Copper and brass vessels are also made. In *Trichinopoly* there are many cigar factories.

Delhi, the capital of India, is situated at the junction of many railway lines. It is an important clearing house for the Punjab and the western districts of U. P. in cotton, silk and woollen piece-goods. It has several cotton spinning and weaving mills. Ivory carving, jewellery works, lace works and gold embroidery are the other important activities.

Assam is the most easterly province of India. It has a population of 10 millions. The province is very rich in natural resources and holds out immense possibilities for many industries. Forests cover 38 per cent. of the total area. Agriculture is mainly confined to the *Brahmaputra* valley, and the principal produce is rice and tea. The trade centres of the province are *Silchar*, *Shillong*, *Gauhati* and *Sylhet*. *Silchar*, with a population of 20,000, is situated in the *Surma* valley. It is a centre of tea trade. Paper pulp is also made here. *Shillong*, the capital of *Assam*, is in the *Khasi Hills* on an altitude of 4000 ft., above sea level. Fruits and hill-products are the articles of trade. The population is more than 30,000. *Gauhati*, on the left bank of the *Brahmaputra*, is the largest town and the most important port of *Assam*. It has a population of more than 35,000. *Gauhati* is a commercial centre and handles as a port or a railway centre silk, tea and timber. *Sylhet* on the *Surma* river is important for fruit and lime.

The *North-West Frontier Province* is mountainous and covers an area of about 37,000 sq. miles. It has a population of 3 millions. The chief trade centres are *Peshawar*, *Abbottabad*, *Dera Ismail Khan* and *Thal*. *Abbottabad*, with a population of 20,000, is a hill-station on the border of *Kashmir*. Leather

and stone works are carried on in the city on an extensive scale. Recently certain weaving and spinning mills have been established.

Orissa, a newly made province, has an area of 32,000 sq. miles with a population of more than 8 millions. Though rich in resources, the province is very backward in industrial development. The principal trade centres are Cuttack, Puri, Sambalpur and Balasore. *Cuttack*, the capital of Orissa, has a population of more than 70,000. The local manufactures comprise lac bangles, shoe, toys and combs. It also collects timbers from C. P. and other places and sends them to Calcutta by the B. N. Railway. It is on the main line of the B. N. Railway running between Madras and Calcutta and is connected by the Orissa Coast Canal with Chandbali. The city is 253 miles from Calcutta. *Puri*, a holy place of the Hindus, is an open roadstead. As the sea is shallow, the steamers anchor about 7 miles away from the shore. The local manufactures consist of brass, silver and gold ornaments.⁴ *Sambalpur* is an important silk and cotton weaving centre.

In the *Indian States*, there are many trade centres. *Jaipur*, the capital of the Jaipur State in Rajputana, has a population of more than a lakh. It is famous for its artistic pottery and brassware. *Jodhpur*, the capital of the Jodhpur State, has a railway workshop and woollen and cotton mills. Stone-works are also important. *Gwalior*, the capital of the State, has a population of nearly 1 lakh of persons. The name of the city is Lashkar. It has important stone-works and cigarette manufactures. The city also boasts of many cotton mills and pottery works. *Indore*, the largest trade centre of Central India, has cotton mills, flour mills, brasswork founderies and metal-works. It has more than a lakh of population. *Bangalore* in Mysore State is 220 miles east of Madras. Carpets, cotton textiles, woollen goods and leather are the principal manufactures. Soap, shellac, furniture and porcelain are also made. The population is nearly half a million. *Srinagar*, the capital of Kashmir, is famous for silk, embroideries and carved woodwork. A large hydro-electric works has been installed at Buramulla to supply

power to Srinagar. The city has a population of over 1,80,000. It has no railway communication, but excellent motor roads connect the city with the neighbouring areas.

The Distribution of Population

India is one of the most densely populated parts of the world, containing as she does nearly one-fifth of the world's total population. The population of India is near about 390 millions, of which the British territory contains more than 290 millions according to the census of 1941.

The average density of population is 264 per square mile. The distribution of population is, however, very unequal. Bengal, Bihar, U. P., Orissa and the Southern Punjab possess more than 350 people per square mile, whereas Kashmir, Rajputana, Sind and the Frontier Province contain less than 100 people per square mile.

Mean Density per square mile 1941

Bengal	..	..	742	Assam	..	..	..	160
United Provinces	..	..	501	Orissa	..	..	..	233
Madras	..	..	390	N. W. F. P.	..	..	..	180
Punjab	..	..	248	Beluchistan	..	..	..	6
Bombay	..	..	226	Kashmir	..	..	..	45
Bihar	..	..	454	Madras States	..	..	..	640

The density is greater in British India than in the States. With the exception of the Madras States the average density per square mile does not generally exceed 200 persons in any Indian State.

(All figures are in thousands)

Province, State or Agency	Persons	
	1941	1931
India	... 388,800	338,119
<i>Provinces</i>	... 295,827	256,755
1. Madras	... 49,342	44,205
2. Bombay	... 20,858	17,992

Province, State or Agency	Persons	
	1941	1931
3. Bengal	60,314	50,116
4. United Provinces	55,021	48,409
5. Punjab	28,419	23,581
6. Bihar	36,340	32,371
7. Central Province and Berar	16,832	15,323
8. Assam	10,205	8,623
9. North West Frontier	3,038	2,425
10. Orissa	8,729	8,026
11. Sind	4,537	3,887
12. Ajmer-Merwara	584	507
13. Andaman-Nicobar	34	20
14. Baluchistan	502	464
15. Coorg	169	163
16. Delhi	917	636
<i>States and Agencies</i>	93,199	81,367
17. Assam States	725	826
18. Baluchistan States	356	405
19. Baroda States	2,855	2,448
20. Bengal States	2,114	1,863
21. Central Indian Agency	7,506	6,648
22. Chattisgarh States	4,054	3,548
23. Cochin State	1,423	1,205
24. Deccan and Kolhapur States	2,786	2,458
25. Gujrat States	1,457	1,265
26. Gwalior State	3,992	3,523
27. Hyderabad State	16,338	14,436
28. Kashmir State (including Feudatories)	4,021	3,646
29. Madras States (Pudukota, Banganapalle and Sandur)	499	453
30. Mysore State	7,329	6,557
31. North-West Frontier Province (Agencies and Tribal Areas)	2,738	2,259
32. Orissa States	3,925	2,683
33. Punjab States	5,459	4,497
34. Punjab Hill States	1,090	990
35. Rajputana Agency	13,670	11,571

Province, State or Agency	Persons	
	1941	1931
36. Sikkim State	122	110
37. Travancore States	6,070	5,096
38. United Provinces States (Rampur and Benares)	928	856
39. Western India States Agency ...	4,901	4,222

The density of population depends on the external environment of a region. Climate, soil, natural resources, topography, etc., greatly determine the number of people which each square mile may support. In India the density of population varies with the amount of rainfall. Population is thick in those places where the rainfall is not only heavy but certain as well. Bengal, Bihar, the U. P. and Orissa are densely populated, because they possess fertile soil, level land and rainfall sufficient for developing agriculture. But unhealthy regions like the *Sundarbans* in the Lower Gangetic Delta cannot attract population, although they receive heavy rain. There are areas in India which support a large population with the help of irrigation, though the rainfall is scanty. The Punjab, Sind and the western parts of the U. P. have been developed by irrigation.

Mountains cannot attract people for settlement. Land is limited for cultivation, and roads and railways are very difficult to construct; rivers are swift-flowing and therefore useless for navigation. Kashmir and Nepal are mountainous and contain a low density of population.

The density of population is also determined by the economic progress of a country. In Europe and North America, the density of population is great in urban and suburban districts and is usually a sign of progress in mining or industrial or commercial occupations. In India nearly 90 per cent. of the total population is in the main village-dwelling. This is because agriculture is the mainstay of the great majority of the people. The Eastern Punjab, the Upper Ganges basin, the Lower Ganges basin, the Eastern marginal plain, the Western marginal plain and the South-Eastern plain are the most densely populated

parts of India. In all these areas agriculture has a preponderant position.

There is very little movement of population in the provinces of India. The home-loving character of the Indian

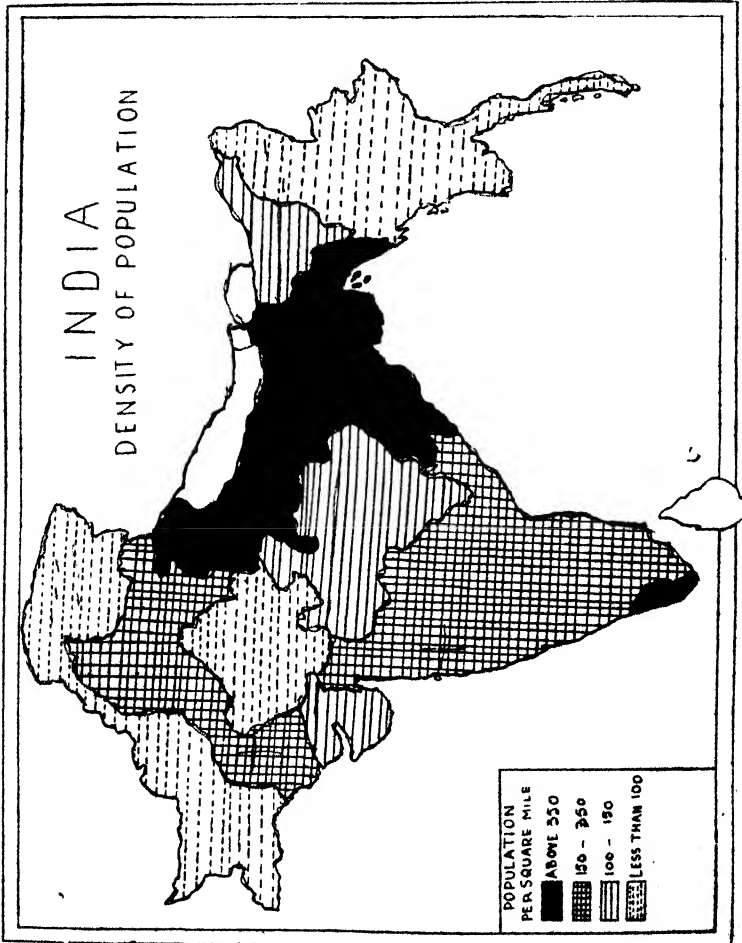


FIG. NO. 79. The density of population in India. Notice the great density of population in the Ganges valley.

people and the innate dread of change of any kind are responsible for the immobility of the agricultural population. Very

recently, however, some movement is noticeable in Assam, Bengal and Bombay.

A large number of immigrants from Bihar, Orissa, the United Provinces, Central Provinces and Nepal have settled in Bengal. These people are mostly employed in the mills and factories of the Hooghly basin and in the tea plantations of the Darjeeling district. Bengali labour, though intelligent, is physically a bit weaker than non-Bengali labour.

Tea plantations and large cultivable lands of Assam have attracted many immigrants there and to-day these people form about one-fourth of the total population of the province. For tea plantations the recruiting grounds are Bihar, Orissa, Central Provinces and Madras, while immigrants from Mymensingh and Comilla are engaged in developing new lands. Although Assam is a big province and contains a comparatively sparse population than in any other provinces, yet in the interest of local labour it is necessary to stop the unrestricted flow of immigrants from other provinces.

In the great industrial centres of Bombay, Ahmedabad, Sholapur and Nagpur labour is recruited from the North-West Frontier Province, the Punjab, the U. P., Madras and Hyderabad.

Indians abroad: More than $2\frac{1}{2}$ million Indians live outside India, the majority of them living in Ceylon, British Malaya, South Africa, Trinidad and British Guiana. The number of Indians in the non-Empire countries is about 1,00,000, of which 50,000 are in the Dutch East Indies.

Race, Religion and Languages

The people of India are a collection of many different races. There has been great intermixture, and pure racial characteristics are hardly found. Six races can be distinguished in India :

(i) *The Dravidians* were the aboriginal inhabitants. They had very dark skins and broad noses. They now occupy Southern India and some parts of the Deccan. They are also found in Bengal and Chotanagpur (the Santals), Orissa (the Juangs), the Central Provinces (the Gonds), the Nilgiri Hills (the Todas), the Eastern Ghats, etc.

(ii) *The Aryans* came from the north-west many centuries before the Christian era and settled in Northern India. They had white skin and finely-cut noses. They were tall. They now occupy the Punjab, Kashmir and Rajputana.

(iii) *The Aryo-Dravidians* are a mixed race of Aryans and Dravidians. They occupy the United Provinces, Bihar, Central India, Bombay, C. P. and parts of western Bengal.

(iv) *The Mongoloids* are people of Mongolian origin and occupy Tibet, Nepal, parts of eastern Kashmir and Assam. They have yellow skin, flat nose and short features.

(v) *The Mongolo-Dravidians* are a mixed race of Mongols and Dravidians. They occupy the eastern part of Bengal and Assam. They have dark complexion, medium height and broad noses.

(vi) *The Scytho-Dravidians* are a mixed race of Scythians and Dravidians. They are found in Sind, Gujrat and the western Deccan. The Marathas are of this type.

More than one hundred distinct languages are found to be in use in India. These may be divided into three groups according to race : (a) Dravidian, (b) Aryan, and (c) Indo-Chinese. Telugu, Tamil, Malayalam and Kanarese are the languages of the Dravidians, spoken in Peninsular India. The most important Aryan languages are Hindi, Bengali, Oriya, Punjabi, Marathi, Sindhi and Gujarati, spoken all over Northern India and Kathiawar peninsula. The Indo-Chinese languages are used in the south-eastern part of Assam, Tibet, etc. The aborigines of India speak the Kolarian language.

Nearly 240 million people are Hindus by religion. Next to Hinduism, the most important religion of India is Islam, whose adherents exceed 78 millions. Christianity is professed by more than 6 million people. Sikhs, Jains and Buddhists comprise 18 million people.

BURMA*

Burma occupies the north-western and western part of the great southward projection of the Indo-Chinese Peninsula. On the east lie the Chinese province of Yunnan, French Indo-China and Siam. To the north is the rugged region where India,

* Burma was separated from India in 1937. In her racial type and culture, as well as in her geographical position, Burma belongs to the Indo-Chinese Peninsula. The Indian population in Burma is about one million or roughly 6 per cent. of the total population.

China and Tibet meet. It has an area of 2,60,000 square miles with a population of more than 16 millions. Burma presents the form of a kite, some 870 miles from north to south and 575 miles from west to east, *with a long tail extending to another 600 miles southward*. The coast-line is about 1200 miles long, and more broken than that of India.

It is a country of mountains and valleys. Northern Burma is a land of steep, lofty mountains and narrow valleys, all covered by forests. The valleys of the Irrawady and the Sittang comprise level lands of rich alluvial soils which have extended to the extreme south along the coast of the tail of Burma. The river Irrawady traverses the whole length of Upper and Lower Burma and is navigable from Rangoon for nearly 900 miles to Bhamo. It is the most important outlet of the heart of Burma, and the chief cities of the country are situated on its bank. The Salwin, though longer than Irrawady, is navigable only for 80 miles from its mouth. It is much interrupted by rocks and rapids.

The greater part of Burma being within the tropics, the climate is hot and damp.

The separation of Burma affected adversely the economic interests of India to a great extent. The fiscal protection granted to the various industries of India does not extend to Burma; and, therefore, these Indian industries are to compete in Burma on equal terms with the products of foreign countries. Then again, many Indian immigrants in Burma, who are working in rubber plantations and other industries, are looked upon as foreigners.

The separation of Burma also made the position of India as a supplier of mineral oils, rubber, tin and wolfram, very unsatisfactory. In 1941 an Indo-Burma Trade Agreement was signed, whereby it was agreed that Indian goods in Burma would enjoy a 15 per cent. tariff preference over non-Empire goods, and a 10 per cent. preference over Empire goods. "The two countries can benefit by fostering mutual trade. If the Burmese can be sure that their economic growth and interests will not be stifled or overlooked, and the Indians in Burma be assured that their status in Burma will be the same as that of Burmans, then Indo-Burma relations will be placed on a good footing and a better understanding between the two countries will be established."

The situation of Burma is very important: (i) She is a vital link in the Imperial air route from India to Australia.

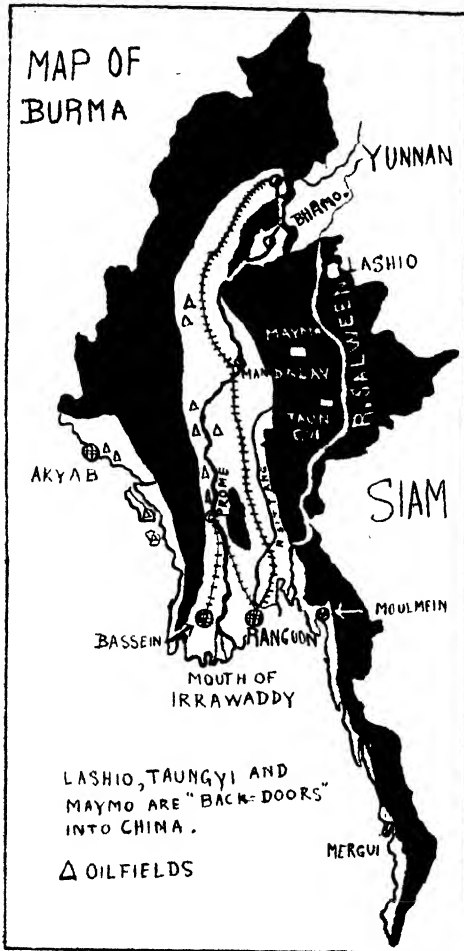


FIG. No. 80. Map of Burma

hardworking and enterprising it is because life in Burma has not been particularly strenuous. The prevailing religion is Buddhism, which is professed by about 85 per cent. of the population.

The people of Burma are mostly Mongolian and are gene-

(ii) She has a common land frontier with Thailand, French Indo-China and China. The back doors into China are Lashio, Taungyi and Maymo; the Lashio route, commonly known as the *Burma Road*, is very important. (iii) She is also connected with the main sea routes of the world.

The people of Burma are mostly Mongolian and are generally better off and better educated than the Indians. They are open and frank, and they easily adapt themselves to those with whom they come into contact. Men and women enjoy equal rights in society. If the Burmans are not

rally better off and better educated than the Indians. They are open and frank, and they easily adapt themselves to those with whom they come into contact. Men and women enjoy equal rights in society. If the Burmans are not hardworking and enterprising it is because life in Burma has not been particularly strenuous. The prevailing religion is Buddhism, which is professed by about 85 per cent. of the population.

Mineral wealth is considerable, but with the exception of tin and petroleum, it is little developed. The oil-fields of Burma are confined to the valley of the Chindwin and the Lower Irrawaddy. The main oil-field lies at Yenangyaung, and there is a pipe-line running to Rangoon. In 1937 the total production was more than 300 million gallons, or one-half per cent. of the world yield. Rich deposits of tin are found in Tenasserim. Bawdin contains one of the largest deposits of silver in the world. Coal is found in the Chindwin valley where jade and amber mines are also worked. The other minerals are lead, rubies and wolfram.

The forests of Burma, which cover nearly 60 per cent. of the total area of the province, yield valuable timber. *Teak* has always been the most valuable tree commercially, while bamboo is probably the most useful forest product from the point of view of the people. *Teak* is found on the Pegu Yomas and the eastern slopes of the Arakan Yomas and also on the Siamese border. The *teak* trees are dragged by trained elephants from the forest to a river to be floated down to the Delta ports. Evergreen forests occupy the regions where the rainfall is very heavy.

Burma is essentially an agricultural land. Nearly 71 per cent. of the population are engaged in agriculture and forestry. Agriculture occupies about 22 million acres of land. Burma produces more than 5 million tons of rice annually. The Upper and Lower Irrawaddy valleys, the narrow coastal region on the west and Upper Tenasserim utilise more than 80 per cent. of their cultivated land for rice. Burma has about 3½ million tons of exportable surplus of rice. India takes about half of Burma's rice export. Maize is cultivated in the central valley

of the Irrawaddy. Sugar-cane is cultivated in more than 20,000 acres of land in the Upper Irrawaddy region. The Northern Shan States raise tea. Although tobacco is cultivated throughout the country, the western regions are more important, particularly the Arakan hill tracts. Other crops are cotton and oil-seeds.

Waterways form the most important means of communication in Burma. The railways are all metre gauge and start from Rangoon. One railway line follows the valley of the Irrawaddy and goes as far as Prome ; the other line runs parallel to Sittang, crosses the Irrawaddy at Mandalay, and reaches Myitkyina in the north-east. Roads are not properly developed in Burma. The cost of making metalled roads is high because of the scarcity of good stone and the high cost of labour. There are only 17,000 miles of roads, of which 12,500 are motorable. The principal road runs from Rangoon to Mandalay, and another from Rangoon to Prome. There are no regular land-routes between India and Burma.* After the present world war is over, the question of linking the road and railway systems of Burma and India will receive attention.

The principal trade centres are Akyab, Bassein, Tavoy, Moulmein, Mandalay, Bhamo and Rangoon. *Bhamo*, in Upper Burma, does considerable frontier trade with China. It is 200 miles above Mandalay. *Akyab*, on the western coast of Burma, is an important rice exporting centre. Its great drawback is that it has no railway communication. It has a popula-

* There is no regular road between Burma and India. "In this connection the question may be asked why Burma has never had a road connection with India. Such a road could only have been built as a strategic road, as sea freights would always be lower than the charges by land. The road project has often been discussed, and the possible routes have been surveyed, but the money for the construction has never been found. Before separation, India apparently did not think the scheme an urgent one; and since separation, Burma's finances were inadequate, and also the ministers who fear Indian immigration, would never agree to the construction of a land route which would increase the difficulty of checking or controlling that immigration."--Sir H. Craw, the 29th April, 1942.

tion of over 40,000. The principal imports are liquor, machinery, textiles and hardware. *Bassein*, on the south-west of the Irrawaddy Division, is situated at a distance of nearly 70 miles from the sea. It has direct railway communication with Rangoon. *Rangoon*, the chief port of Burma, is the capital of the country. It is situated on the Rangoon river and is about 25 miles from the sea. The principal imports are cotton manufactures, metals, provisions, silk, sugar, leather goods, machinery, paper etc. The chief exports consist of rice, hides and skins, zinc, lead, timber, mineral oils, tobacco and rubber. It is connected by railways with the most important towns of the country. The value of foreign trade in 1937-38 was worth Rs. 70 crores, of which imports accounted for Rs. 20 crores. *Moulmein*, on the Gulf of Martaban, is a large port. It is connected by railways with Rangoon. The opening of railway line has increased its importance, and much of the former import traffic of Rangoon is to-day handled by Moulmein. The chief imports are steel, sugar, provisions, and gunny bags; while the exports consist of timber, rubber, tin ore and tobacco. *Tavoy* is situated in the centre of the tail of Burma and is an important port. Wolfram and tin are the principal exports. *Mergui* on the south-west coast of Tenasserim is the centre of rubber and pearl fishing industry. *Mandalay*, in Upper Burma, is situated on the Irrawaddy river, about 400 miles north of Rangoon. Rice and silk are the articles of trade in the city.

CEYLON

Ceylon, a Crown Colony, is separated from Peninsular India by the *Palk Strait* and connected with it by a line of islands known as *Adam's Bridge*. Physically the island is a part of the Deccan. Its length is 270 miles and its greatest width is 140 miles. The *Mahavila Ganga* is the longest river (134 miles) and flows to the north-east. It is navigable by small boats. Conditions of soil, temperature and rainfall have made Ceylon an agricultural country. The climate is more or less tropical, and there is rain throughout the year. The western side receives rainfall in the May-October season, while the eastern part gets

it during winter. Plateaus and mountains occupy the central portion, and the other parts are plain. Only one-fifth of the total area is cultivated, and the remaining areas are either waste lands or covered with forests. Tea, rubber, cocoanuts and cinnamon are raised and exported. Coffee, cocoa and tobacco are also cultivated. Of the minerals, limestones, gems and graphite are important. The railways run from Colombo to the north-west to Talaimannar, to the north to Jaffna and to the east to Trincomalee.

The population is a little over 5 millions, the south-west being the most thickly populated area. Two-thirds of the people are Singhalese and nearly one-quarter Tamils. More than half the population professes Buddhism and one-fifth Hinduism.

Tea, rubber, copra and coconut oil are the chief items of export. Cinnamon, tobacco, timber and cardamoms are exported. The country imports rice, petroleum, cotton goods, motor cars, metals, coal and cement.

Colombo, the capital of Ceylon, is a great entrepot port, occupying an important location in one of the principal highways of commerce between the East and West. Its harbour is artificial, but a fine backwater encloses it. *Trincomalee*, on the north-east coast, is a port of minor importance. *Jaffna*, on the north, is an important town. *Kandy*, in the central highland, is the old capital.

QUESTIONS

1. Account for the variety in the distribution of rainfall in India, and show its effect on the chief products. (Cal. Inter. 1941.)
2. Divide India into natural regions. Describe the climate, products and industries in each of them. (Cal. Inter. 1938.)
3. India has a population of above 350 millions. Analyse the factors which determine the irregular distribution of population in India. (Dacca Inter. 1941; Cal. Inter. 1934, 1940, 1942.)
4. Describe the various methods of irrigation in India. Indicate the region where each is practised. (Cal. Inter. 1934, 1937, 1940.)
5. Examine and estimate the importance of the following agricultural products in India: (a) Wheat, (b) Rice, (c) Maize, (d) Cotton and (e) Jute. (Cal. Inter. 1932, 1935.)

6. Name five important oil-seeds of India, describing the areas where they are grown and the uses to which they are put.

(Cal. Inter. 1933.)

7. What do you know of the jute restriction scheme? Do you think it has benefited the growers of jute?

(Cal. Inter. 1936.)

8. On a sketch map of India, locate the places where hydro-electric power is being utilised for irrigation purposes. What manufacturing industries, in your opinion, can be developed in these places?

(Cal. B. Com. 1927, 1938.)

9. On a sketch map of India, show the regions where iron, manganese and mica are found. Which of these minerals are mined for home consumption? Name the countries of the world that compete with India in manganese for export markets.

(B. Com. 1937.)

10. Describe the principal coal-fields of India and discuss the present condition of the coal industry in India.

(Cal. Inter. 1938.)

11. Examine the iron resources of India. Show how far these are located near the coal-bearing areas in India.

(Cal. Inter. 1936.)

12. On a sketch map of India, show the regions with important timber resources. How are these utilised at present? Discuss the prospects of increasing exports of Indian timber to the world's markets.

(Dacca Inter. 1940; Cal. B. Com. 1941; Inter. 1942.)

13. Examine the present position and the future prospects of the fishing industry in Bengal.

14. On a sketch map of India, show the important regions of wool production together with the centres for imported wool. Where is the Indian wool mainly consumed?

(B. Com. 1941.)

15. There is a move for establishing (a) automobile, (b) aviation and (c) ship-building industries in India. What are the shortcomings in the country in the way of successfully developing these industries and how can these be removed?

(B. Com. 1941.)

16. Narrate what you know of the development of steel industry, in its various forms, in India in recent years.

(B. Com. 1937.)

17. What is rayon? Do you think India can produce rayon sufficient for her need?

(B. Com. 1934.)

18. Describe the present position of the Indian tea industry. Do you share the view that the industry should pay more attention towards development of internal market?

(Cal. Inter. 1941.)

19. Examine the possibilities of developing cotton industry in Bengal.

(Cal. Inter. 1939.)

20. Examine the possibilities of developing sugar industry in Bengal.

(Cal. Inter. 1939.)

21. Discuss the prospects and possibilities of revival of land trade routes between Central and Eastern European countries on one side and India on the other.

(B. Com. 1940.)

22. For the development of communication facilities in India, would you favour extension of railways or construction of roads, or both? Give your reasons. (Cal. Inter. 1940.)

23. Discuss the possibilities of linking up the Indian railways with railways in other countries of Eurasia. Examine the probable effects of such linking up on the overland foreign trade of India. (I. I. B. 1931.)

24. The war in Europe has naturally caused loss of some of India's export markets for staple products. Discuss how this loss can be compensated in the case of (a) Cotton, (b) Jute, (c) Hide and (d) Oil-seeds. (B. Com. 1940.)

25. Give a brief account of the articles which enter and the countries which participate in the external trade of India carried on by land routes. What steps should be taken for its improvement? (B.A. Hons. 1941.)

26. Have you got any idea about the trade which India carries on with other countries by land route? What are the countries which participate and the commodities which enter in this trade? (Cal. Inter. 1941.)

27. Write a short essay on the foreign trade of India stating (a) imports and their sources, and (b) exports and their destinations. (Dacca Inter. 1940; Cal. Inter. 1933; B. Com. 1937.)

28. What is hinterland? Give an idea of the hinterland of Calcutta and Bombay. (Dacca Inter. 1940; Cal. Inter. 1938.)

29. Account for the importance of the following: (a) Lucknow, (b) Dacca, (c) Karachi, (d) Bangalore, (e) Amritsar, (f) Moradabad, and (g) Shillong. (Cal. Inter. 1939.)

30. Discuss the importance of the following: (a) Tuticorin, (b) Colombo, (c) Ludhiana, (d) Cawnpore, (e) Digboi, (f) Ahmedabad, and (g) Murshidabad. (Cal. Inter. 1940.)

31. Discuss the importance of the following: Lahore, Bombay, Jodhpur, Rawalpindi, Allahabad, Asansol, Delhi and Narayanganj. (Cal. Inter. 1936, 1937, 1938.)

32. Mention the chief commercial products of Burma and examine its position in the British Empire after its separation from India. (Dacca Inter. 1940; I. I. B. 1936.)

33. State briefly the present condition of the Indian paper industry. Name the indigenous raw materials used for manufacturing paper and mention where they are found. (Cal. Inter. 1942.)

34. Discuss the adequacy of transport facilities in North-eastern India—Bengal and Assam—in normal times and also in an abnormal period like the present one. What, in your opinion, is the remedy to the apparent defects? (Cal. B. Com. 1943.)

35. Describe the present position of Chemical industry in India. In what direction is expansion possible in this industry?

(Cal. B. Com. 1943.)

36. Describe the changes that have taken place in recent years in the localisation of the ship-building industry of the world. What is India's share in this industry?

(Cal. B. Com. 1943.)

37. On a sketch map of India, show the important regions of production of food-grains. How is it that acute shortage of food-stuffs is being felt in many parts of the country?

(Cal. B. Com. 1943.)

38. Describe the nature of the present-day trade between India and U. S. A. and discuss the prospects of permanency of these exchanges after the war.

(Cal. B. Com. 1943.)

39. Mention briefly the principles behind the various 'controls' over the foreign trade of India and discuss their effect on the economic life of the country.

(Cal. B. Com. 1943.)

40. Describe the main land routes from India towards the Middle East, U.S.S.R. and China, organised since the outbreak of the present War. Will these routes be of any benefit to India's foreign trade in normal times?

(Cal. B. Com. 1944.)

41. On a sketch map of India, show the principal air routes—both trunk and feeder—in operation within the country. What new development do you expect in this sphere after the war?

(Cal. B. Com. 1944.)

42. To what extent is the industrialisation of India retarded by the lack of adequate supply of machine tools and power plants? State the present position of these industries in the country

(Cal. B. Com. 1944.)

43. In view of the still rising cost of production in India, do you believe that this country will be able to compete in the world markets, in the matter of supplying after the war the following commodities? Give your arguments.

(a) Oil Seeds.

(b) Cotton.

(c) Hide and Skin.

(d) Cotton Textiles.

(Cal. B. Com. 1944.)

APPENDIX

I. GERMANY. II. ITALY. III. JAPAN. IV. PHILIPPINES. V. BURMA. VI. DEVELOPMENT PLAN IN INDIA.

GERMANY UPTO 1945.

Since the eighteenth century, Germany wanted an economic expansion by having control of the seas, an economic empire in the Near East and economic domination of Russia.

She entered the field of colonial activity in 1884. At the beginning her leaders had been opposed to colonial expansion as large expenditures were necessary to keep distant and undeveloped territories under control.

In the matter of colonisation she followed a policy of aggression. She wanted to extend her African colonies further—it was her ambition to build an African Empire.

Her colonies before 1918 consisted of German South West Africa, German East Africa, the Cameroons and Togo in Africa ; Kaiser Wilhelm's Land, Papua, North New Guinea, New Britain Archipelago (Bismark), Soloman Islands, Tonga, Upolu, Carolines, the Mariannes and the Pelew Islands in the Pacific. The Pacific colonies were considered important commercially and as naval bases from which the power of the German Government could be extended to rich and populous countries.

As a result of her defeat in the First World War in 1918, her colonies were taken out from her, and distributed as follows :—

German East Africa to Union of South Africa.

German South West Africa to Belgium.

Togoland to France.

The Cameroons to British.

Pacific Colonies : North of Equator to Japan.

Pacific Colonies : South of Equator to Australia.

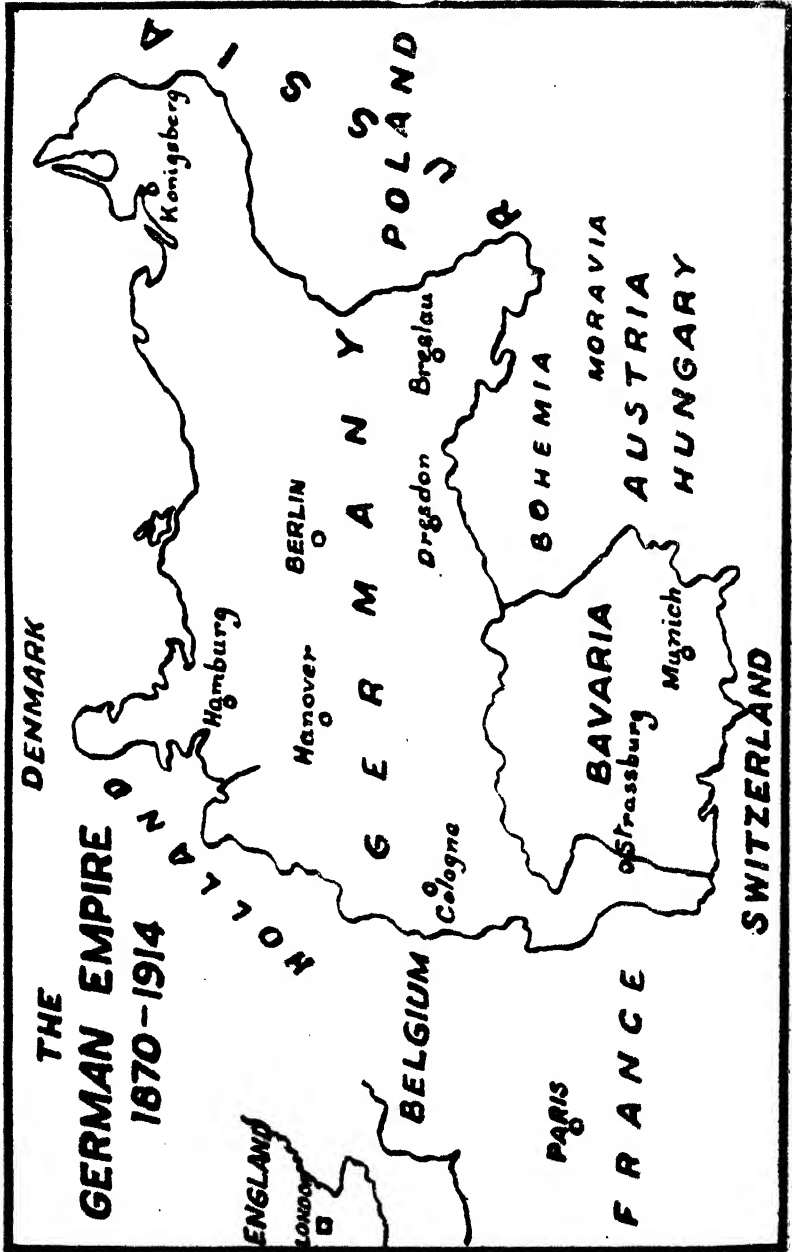
EUROPEAN TERRITORY LOST TO GERMANY AS A RESULT OF THE WAR

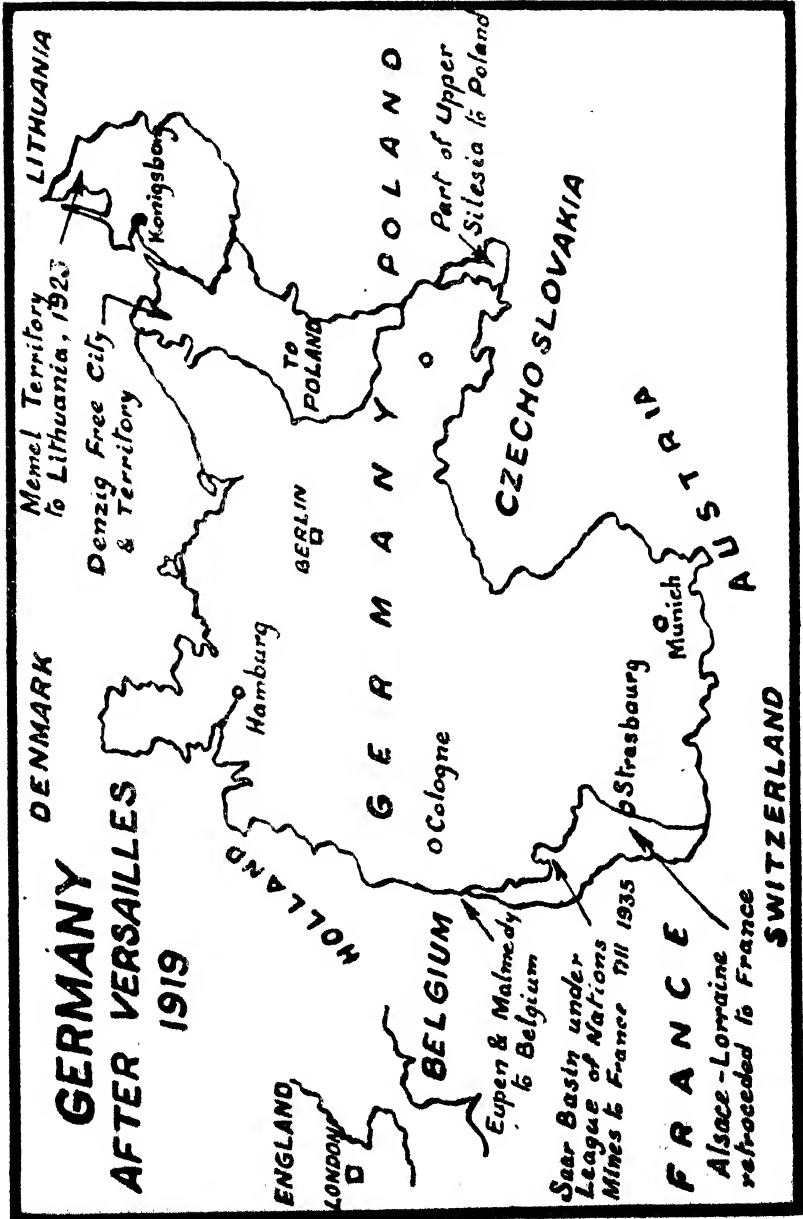
	Population	Area (Sq. Miles)
Alsace-Lorraine	1,874,014	5,607
Saar Basin (under League of Nations for 15 years) ..	713,105	744
To Belgium (Eupen and Malmedy)	60,003	400
To Poland	3,854,971	17,816
Mamel	141,238	1,026
Danzig	330,630	739
To Denmark (Slesvig) ..	166,348	1,542
To Czechoslovakia	48,446	122
Total	<u>7,188,755</u>	<u>27,996</u>

The loss of Alsace-Lorraine meant loss of territory, population, iron ore and Potash. In Slesvig, Eupen and Malmedy, Germany lost strategic barriers. Danzig was a leading Baltic port. The areas ceded to Poland contained minerals, forest and agricultural lands. The Rhine traffic came under the control of the League of Nations.

All these losses in territories and colonies as well as the reparation payment could not keep Germany weak and subdued for long. By 1938 she emerged strong, resourceful and ambitious. She became aggressive once more, and started making claims on her neighbours. The Germans considered themselves belonging to Master-race to rule the world. Adolf Hitler became the dictator of the country, and every citizen was to consider him his guardian and custodian. There was no room for individualism. The country made preparations for another war—at first secretly and then openly. She took back Saar basin by plebiscite in 1935; remilitarised Rhineland in 1936 and seized Austria in 1938; occupied Sudetanland after Munch agreement in 1938, annexed Bohemia, Moravia and Slovakia in March 1939.

The second world war was started when she attacked Poland in September 1939. The war cut off Germany from the sources of many valuable raw materials and minerals.





VALUE OF IMPORT TRADE LOST IN SECOND WORLD WAR

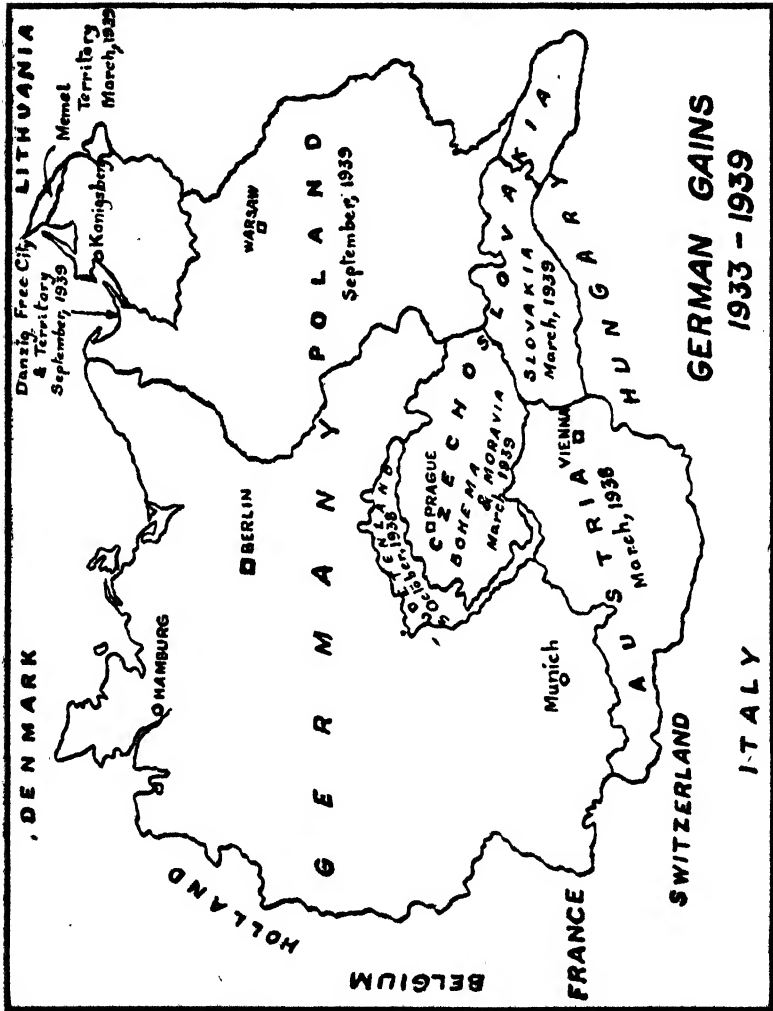
	Million R.M.	Proportion of total imports.
Raw cotton	225	93%
Oilseeds	222	96%
Coffee & Cocoa	198	100%
Raw Wool	175	61%
Mineral oil	171	74%
Skins & Hides	150	63%
Copper ore	141	72%
Maize	119	67%
Rubber	118	100%
Iron ore	78	35%

Germany, however, accumulated a vast stock of these materials from 1936 to 1939. Germany and Italy had, moreover, between 1939 and 1943, free access to entire food and raw materials of Europe except Russia. Between 1939 and 1942, she conquered Poland, Yugoslavia, Greece, Crete, Belgium, Holland, France, Denmark, Norway, Baltic States, and a considerable portion of European Russia (White Russia, Ukraine, Trans-Caucasia and Cremea). The situation changed during the fourth year of the war. Germany was compelled to retreat from North Africa and Southern Italy. The Mediterranean became safe again. On the Eastern front, the Russians were advancing rapidly. Italy surrendered in September 1943. During the year 1944, the German industrial centres were destroyed by aerial bombardments. In May 1945, Germany surrendered unconditionally.

ECONOMIC CHANGES IN GERMANY

The present boundary of Germany as a result of her defeat, is likely to change considerably. The Greater Germany has been dissolved, and Austria is once again a separate unit. Then there is the demand of France on the East Ruhr, Alsace-Lorraine and Palatinate, of Poland on East Prussia, Pomerania and Silesia, of Denmark on Kiel Canal Colony and of Czechoslovakia on Sudetanland. Germany itself may be partitioned into three or more states. It is admitted on all hands that the country's capacity to wage another war must be crushed. Partition of Germany into Western Germany, North West

Germany, Southern Germany, Austria and Prussia may prevent future wars, since Germany's capacity to wage war depends upon her unification in one Government. But it is doubtful if such



a partition can really divide a people tied by one language, same culture and tradition for several centuries. There are bound to be secret political agreements between these states.

Then there is another aspect. In 1919 the Austro-Hungarian Empire was divided into several small states many of which could not prosper as separate units. Some were even just above the starvation level. If Germany is divided into three or four states, it is certain that industries will suffer in Prussia, Eastern Prussia and Southern Germany, and there will be continuous depression. Since Germany is the Centre of European trade, and touched by 13 countries of Europe, depressed and impoverished Germany would mean impoverished Europe. "In war she may be ringed about by enemies, but in peace, she is ringed about by customers."

Nor is it desirable to reduce Germany to an agricultural status. Agriculture will not be able to support 70 million people of Germany. Moreover how can the big industries be closed down? If it is done, "Such an extensive throttling of the economic life of the German area could not fail to react disastrously on economic conditions in countries with which Germany normally maintains extensive import and export relations. . . . The reduction of any highly industrialized country to an agricultural status would disorganize and contract international trade at a time when an expanding world economy is of paramount importance for all nations" (*The Control of Germany and Japan* by Harold G. Moulton and Louis Marlio).

But all the same it will be necessary to impose certain great sacrifices upon Germany.

German man power and production must be made to work to repair the destruction made by Germany. "This will mean a lowering of the general standard of life and it will teach each German citizen that Wars of aggression and world conquest are an unprofitable business." Germany should remain an industrial country but she must not be allowed to manufacture aircrafts and enlarge electric power industry—so essential for war purposes. Her strategic minerals may also be controlled so that she can never use them for war equipment. Germany is deficient in many strategic minerals like antimony, bauxite, chromium, copper, tin, petroleum, tungston, vanadium and mica. If her imports of these minerals were controlled and permitted only on

the basis of peace time requirements, she would not get a chance to accumulate them for war purposes. Moreover she must not be allowed to work out substitutes of these minerals.

To sum up: The restrictions should be on the following lines: (1) Prohibition of the manufacture of aluminium ingots, (2) Restriction on the manufacture of synthetic petroleum, (3) Suppression of German aviation, (4) Elimination of a large part of the electric industry, (5) Import-control of strategic minerals, (6) Destruction of all German munition plants and land weapons, (7) Elimination of a large part of naval vessels.

II. ITALY

Italy was administered till 1943 by a system known as Fascism. The King was the nominal head, and Benito Mussolini, the leader of the Council occupied the position of the Dictator. Under the regime of Mussolini considerable economic progress of the country was made. Like Germany, Italy wanted to build an Empire for which she pursued a policy of "blood and iron". In defiance of the terms of the League of Nations, she attacked and conquered Abyssinia in 1936.

The League, in retaliation, imposed sanctions relating to coal, oil, iron and other key products. Albania was occupied in 1939. She also had an eye on Corsica, Dalmatia, and South East France, and the Mediterranean passage. Finally she sided with Germany in the War in 1940. The Italian Colonial Empire, at the time she entered the War, consisted of (1) Libya; (2) Abyssinia; (3) Eritrea; (4) Italian Somaliland and (5) the Aegean Islands. Italy's association with Germany extended the War to Africa and to the Mediterranean.

Italy could not stand the strain of the Allied blockade. Italy always depends on the imported supplies of coal, oil and iron. Germany alone could not spare Italy in adequate quantities with these vital materials since her own demand exceeded the supply. "Thus Italy's industrial position for waging modern warfare was very vulnerable to Allied blockade." Eritrea and the Italian Somaliland were conquered in 1941; Abyssinia was liberated in 1942 and Libya in 1943. In the same

year the Allied forces landed in Italy and advanced beyond Rome from Sicily. Italy surrendered unconditionally on the 3rd September 1943. It is doubtful if she would get back her African colonies, and Abyssinia is again an independent Kingdom. The country is returning to a democratic system.

III. JAPAN.

The Japanese are very proud of their rise to the position of a Great Power. They find in wars and aggression the road to power and prosperity. They are eager to draw raw materials from their own political sphere which would also provide markets for their manufactured goods. The conquest of Manchukuo and the *China incident* are the results of the Japanese desire to remain an industrial power at the cost of her neighbours. The idea of a *New Order* in Asia is to make Japan responsible for the maintenance of peace and not to allow other western powers to interfere. Japan wanted to enjoy special facilities for the economic development of China and eastern countries' natural resources. The other powers could operate commercial enterprise only with the permission of Japan. She wanted to bring China, Malaya, Burma and East Indies within her so-called 'co-prosperity sphere'. But real intention of Japan was to hinder industrialisation in neighbouring countries and to control their raw materials, most of which she lacks.

Naturally, therefore, China opposed such *New Order*. Japan attacked China in 1937. The war is still dragging on, although Japan thought that China would be finished in a few months. Japan has spent about ten times as much on the 'China Incident' as in the two year Russo-Japanese War in 1893.

In Manchukuo, Japanese got an area twice the size of pre-war Germany. It has 8 million acres of arable land, 400 million tons of iron ore, 6 billion tons of coal and gold deposits equal to American production.

Japan built in Manchukuo the continental base which enabled her to attack China. Today, Japan is engaged in extending that base into China itself, for the purpose of conquering Asia. Of course, Japan is fighting this war on the pretext of

liberating Asia from foreign exploitation. China resisted the aggression alone till 1941 December. All her coastal ports were seized by Japan. The only link with outside world for bringing supplies was the Burma Road from Bhamo to Chunking.

In 1940 Japan signed a pact with Germany and Italy for the establishment of a *New World Order*. Influenced by Germany's successes in Europe, Japan declared war against British and Americans in December 1941 after having attacked Pearl Harbour and the British and American bases in the Pacific. Within a few months, Japan occupied French Indo-China, Burma, Malaya, Philippines, New Guinea, Papua, and came almost at the border of defenceless Australia.

Since 1943, the Japanese are being driven out rapidly from the East Indies, Philippines, and Burma. The cities and industrial centres of Japan are being heavily bombarded. Now that the War in Europe is over, the mighty Allied Power will be engaged in the Japanese War.

Japan is probably self-sufficient in food, from a war stand point, and her resources of war materials are sufficient to support a war for another year or so with the Allies. But her defeat is inevitable.

IV. THE PHILIPPINES.

The Philippines has been liberated from the Japanese. "The last three years under the Japanese Co-prosperity sphere have impoverished the country, wrecking its industries, halting its commerce and bringing down the standard of living which was patterned after America's".

The Japanese issued currency notes in such quantities that prices of commodities, like rice, sugar, meat, fish and clothing rose very high. Famine, starvation and disease were common features of the country. With the re-occupation of the country, the work of rehabilitation has begun.

Problems.

- (1) The immediate problem is food.
- (2) Sugar industry is to be revived. Before they left the

country, the Japanese destroyed the well-organised sugar industry of the Philippines.

- (3) Trade agreements with America. The Philippines products should receive a preferential treatment in America.

V. BURMA.

Japan attacked Burma in December 1941 and conquered the whole area by the middle of 1942. Burma had not experienced any war for 50 years, and her people lived in peace and prosperity. The homogeneous population and the indigenous institutions were in favour of Burma being given a Dominion Status. The war put a stop to the aspirations of the Burmans.

The Allies have re-occupied the major portion of Burma. The Allies have to face several natural difficulties: much of the country is mountainous and covered with tropical forests; the monsoon does not permit long campaign.

With the re-occupation of Burma, an essential step will be gained towards liberating China from the Japanese.

The plan for reconstruction in Burma should contain the following:

- (1) Desirability of making Burma a member of the British Commonwealth of Nations.
- (2) Establishment of land communications with India.
- (3) Industrialisation.
- (4) Safeguarding of commercial interest of non-Burmans.
- (5) Transfer of land from non-cultivating ownership of absentee landlords to Burman cultivators.
- (6) Arrangement for financial facilities to cultivators.
- (7) A new Indo-Burma Trade Agreement and restoration of better relations.

The Indo-Burmese relation is one of the most difficult problems confronting the Burma Government. Since the opening of the Suez Canal, many Indians have been settling in Burma for the development of trade and industry. There are now about one million Indians in Burma. The Burmans do not like this situation, and they want to take industries out from

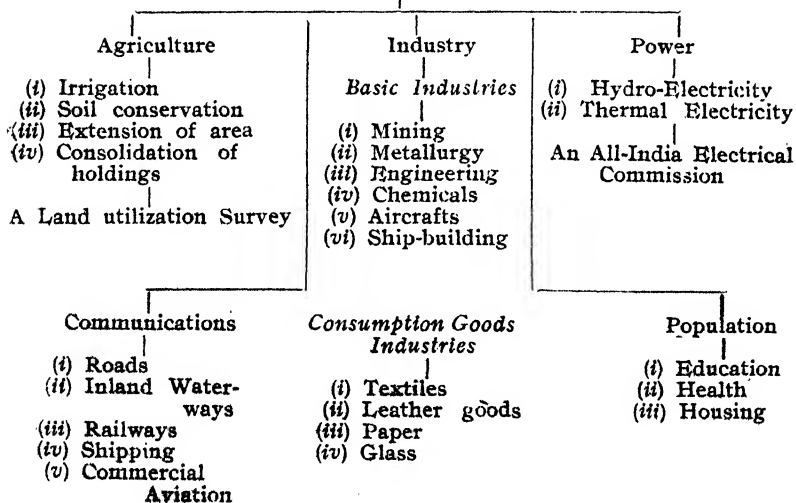
the Indians. Anti-Indian feeling led to riots just before the outbreak of the present war. Better understanding and mutual tolerance can alone bring about happier relations. "If the Burmans can be sure that their economic growth and interests will not be stifled or overlooked, and the Indians in Burma can be assured that their status in Burma will be the same as that of Burmans, then Indo-Burma relations will be placed on a good footing and a better understanding between the two countries will be established."

A new Indo-Burma trade agreement is to be made as early as possible. The Agreement in 1941 contained the following terms :

- (a) Indian goods imported into Burma enjoyed 15 per cent tariff preference over non-empire goods.
- (b) Indian cotton manufactures enjoyed 15 per cent preference over all other imported piece goods.

VI. A POST-WAR ECONOMIC DEVELOPMENT PLAN IN INDIA

Directions in which the Development should take place



(a) LAND UTILIZATION SURVEY IN INDIA.

India badly needs a Land Utilization Survey to examine problems with regard to agriculture, conservation of soil, reclamation, water-power and irrigation. The test of land utili-

zation "is the satisfaction which the farm population perceives from the type of agriculture developed, the provision for future production and the contribution to national needs". Since soil is an important factor in determining the suitability or otherwise of growing different crops, the soil surveys should be the main function of the Land utilization. Soil surveys will help proper crop planning with reference to the potentialities of different regions.

In view of several social and economic obstacles like Law of Inheritance, permanent settlement, fragmentation of land and the highest density of population, it is doubtful whether a land utilization Survey in Bengal can be of any immediate practical value except as an academic exercise. It will be a tremendous task to remove these barriers in Bengal for crop-planning to be a success for increasing the present and potential productivity of land.

Such a survey, on the other hand, in undeveloped areas like Assam, Central India, Central Provinces, etc., can be the basis of a well-thought-out plan to consider and develop agriculture, water-power, mineral wealth, forest, rural industries, health and housing.

In this connection India can follow the Tennessee Valley Project in the U. S. A.

(b) **HYDRO-ELECTRICITY VS. THERMAL ELECTRICITY IN INDIA.**

Cheap electricity is an essential pre-requisite of economic development. So far agriculture is concerned, "it can raise the efficiency, increase earning and thus improve the standard of living in the rural areas." India need not have hydro-electricity only but thermal electricity as well. Apart from the rates of power being same, the thermal sets are less expensive. Unless there are big industries in the neighbourhood to make use of power, hydro-projects are not installed. Thermal installations, on the other hand, can be opened in rural areas and its power can be increased as the demand increases.

The Government should set up an All-India Electrical Commission to examine the ways of developing thermal stations at suitable places.

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