OUTLINES OF THE GEOGRAPHY OF THE WORLD

BY

G. SRINIVASA AIYAR, B.A., L.T.,

WITH A FOREWORD

BY

W. TURNER, M.A.

PRINCIPAL NIZAM COLLEGE, HYDERABAD

PART I

THE SOUTHERN CONTINENTS AND NORTH AMERICA

Madras :

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PART I

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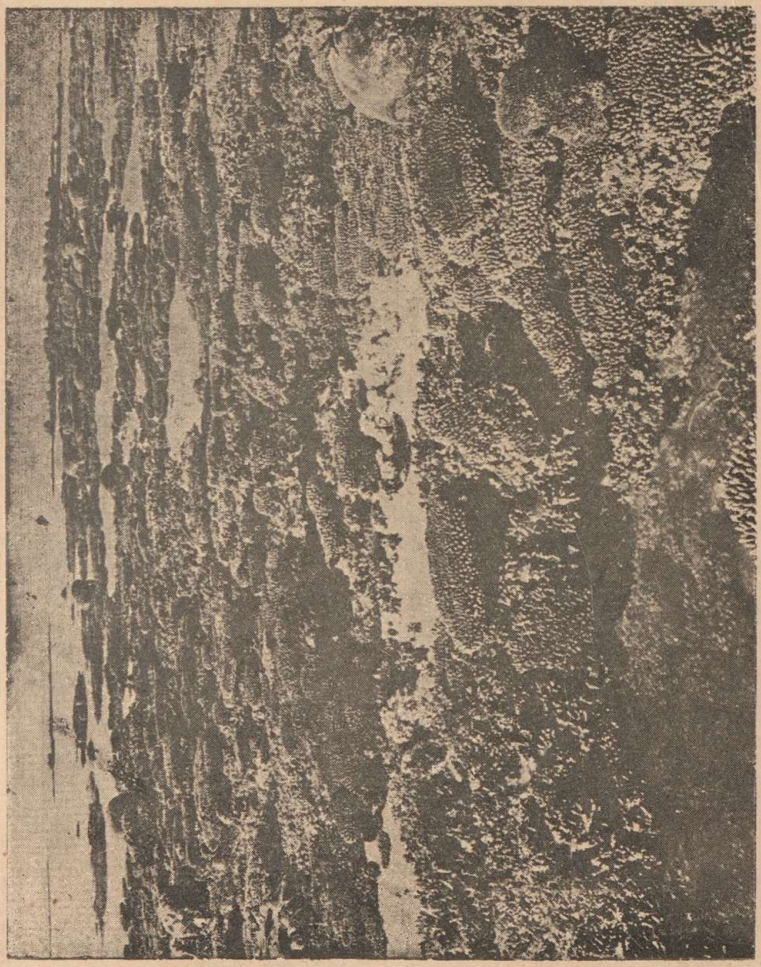

THE GREAT BARRIER CORAL REEF, QEENSLAND

Courtesy : Commonwealth of Australia, Development and Migration Commission

PREFACE

THE World, as the abode of man, is, next to man, the most proper study for man. The aim of this book is to make the study of the World as the abode of man really interesting to the students of the Indian High Schools. Importance is given to man's intelligent control over nature as well as to the influence of natural conditions on man's life.

The treatment of the subject is so planned as to enable the student to understand the fundamental facts and primary principles and to make his way intelligently through the subject stage by stage. Questions and exercises are so framed as to make the study practical and real and to enable the student to satisfy himself that he is on sure ground in his onward march. Great care has been taken to make the language simple and the matter clear to the students just at the beginning of the High School course.

The author wishes to record here the invaluable assistance rendered to him by Mr. A. V. Thiagaraja Sastriar, M.A., L.T., of the Madras Educational Service, in the preparation of this book and to express his profound gratitude to him.

While the aim and the method of treatment may be claimed as the author's, the mass of facts contained in the book, the statistics, the diagrams and the maps are largely based on the contents of many recent publications, too many to be enumerated, to all of which the author here records his indebtedness.

The author—and the Publishers also join with him—is extremely grateful to the authorities of the Commonwealth of Australia, Cinema and Photo Branch, the Immigration Office, and the Development and Migration Commission, the South African Railways and Harbours, the Soudan Government Railways, the Imperial Institute and the High Commissioner for Canada not only for the excellent photographs furnished, but also for permission to reproduce them.

June 1934. G. S.

FOREWORD

DURING recent years, there has been a steady advance in the method and ideals of teaching in all the subjects of the school curriculum. History has at last been rescued from the conception of being a memorised list of dates and events; elementary science has been brought into line with life and environment. Geography still lags behind, and in many areas, there is no more than the reading of a standard text-book, in which much is memorised but little is understood and retained. Yet it is certain that no subject depends more on proper teaching, for without the proper foundation of early principles, all teaching of geography will fall to the ground.

The earliest steps in the primary instruction of geographical principles must be practical; a hill, cape watershed, plateau—all are meaningless terms unless seen in actuality. The clay modelling-tray and the sand map are absolutely indispensable with primary pupils, who must make their own mountains and pour the water of their own streams, before they have knowledge of a kind that will endure. They will never in later years "flash the lightnings, weigh the sun," if their earliest steps have been through the dry medium of a text-book. Geography is, in early years, an open-air subject.

The adage "Man, know thyself," may be expanded to "Man, know thy own surroundings!" It is of no avail to ask pupils to study the physical and commercial features of North America or Belgium unless they have been trained to use their eyes around their own home. The Indian boy must first understand the configuration, types of soil, rotation of crops, rainfall, social and political systems of his own homeland, and not until he is equipped with this knowledge can he hope to approach the corresponding features of other lands. The writer had occasion to visit a class, Form IV to be more precise, which was busily engaged in the study of the Portpatrick and Wigtownshire Joint Railway in Southern Scotland, and the towns which are served by that railway. The class was asked to turn aside for a moment, and answer a few simple questions, such as: "Give an account of one important Railway in India, and the district which it serves," and "Give a short account of the Railway which would be used on a journey from Madras to Delhi." Not a single answer could be obtained, showing even an atom of home knowledge.

Even VI Form students frequently break down when asked to give a simple explanation of the physical causes of the monsoon, or a demonstration of a lunar eclipse. It is always because the earliest

instruction has not been practical enough. A visual experiment with a funnel and a candle, showing the tendency of heated air to rise and create a vacuum, is as essential in the geography class as in the science laboratory. A Tellurian apparatus, or its home-made equivalent of an orange perforated by a long needle, a football, and a bicycle lamp, is not at all to be dispensed with in the teaching of the features of a lunar eclipse.

Having thus established that there is no book which supplies a royal road to geographical knowledge, or forms a substitute for proper and practical teaching, I have no hesitation in saying that I consider the present work of Mr. G. Srinivasa Aiyar to be one of the best I have seen. There is a wealth of pictorial interest, an abundance of practical illustration, and a simplicity and clarity of treatment which should make a refreshing appeal to teachers and pupils. This work should supply a long-felt want, and make the geography lesson what it should be, a period of warm and human interest, instead of a period of drudgery, and I hope to see it receive from all educationists the support which it deserves.

W. TURNER,
Ag. Principal, Nizam College.
Inspector of Schools,
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June, 1934.

CONTENTS

A GEOGRAPHY OF THE WORLD

PLAN OF STUDY. In the Fourth Form, we shall study the three southern continents—(Australia, Africa, and South America) and North America. In the Fifth Form course, we shall deal with Eurasia, laying special emphasis on the homeland. In the last year of the High School course, we shall complete our study of the geography of the world in outline, by a general revision, paying special attention to life in the various natural vegetation regions and in the industrial areas of the world.

CHAPTER I

AUSTRALIA—NATURAL DIVISIONS

INTRODUCTION. Of all the continents of the world, Asia is the biggest and Australia is the smallest. Australia is very far away from the main continents of the world. It is nearly 8000 miles from America and 4000 miles from Africa. Its nearest continent, Asia, lies at a distance of about 2000 miles. Australia was the last of the continents to be discovered. Its distance from the principal countries and routes of the world was the chief reason for its late discovery. In the seventeenth century, the Dutch, as the people of Holland are called, established themselves in the East Indies, and tried to find out places for trade in the barren western coast of Australia. Their attempts were of no great use. In the eighteenth century, Captain Cook, a British seaman, explored the south-eastern coast of the continent. In 1770, he proceeded along the south-east coast, and named it New South Wales, from a resemblance of the coast to that of South Wales. Note the seas surrounding this island continent.

POSITION, SIZE AND EXTENT. Australia has an area of nearly three million square miles. From North to South it extends from 10° to 40° South Latitude. From West to East it spreads from 113° to 153° East Longitude. Its breadth varies from 1100 miles to 2000 miles. Its greatest length is a distance of 2400 miles. This island is twenty-five times Great Britain, and a little less than twice India in area.

SURFACE FEATURES: (*a*) THE COASTS. Australia, like South India and Africa, consists of a singularly

MAP 1. AUSTRALIA—PHYSICAL FEATURES

compact land mass with an unbroken coastline. The proportion of the coastline to the area is very small.

The Gulf of Carpentaria in the north, the Shark Bay in the west, the curved Australian Bight together with Spencer and St. Vincent Gulfs and Encounter Bay in the south, and Botany and Moreton Bays in the east, are the principal inlets.

(*b*) NATURAL DIVISIONS. "Australia is very simply built." There are four well-marked natural divisions in Australia. (See Map 1.)

1. The Western Plateau, with an average elevation ranging from 600 to 1500 feet above the sea level, occupies more than half the area of the island. This vast desert plateau extends from the west coast to 135° East Longitude.

2. The Eastern Highlands, commonly known as the Great Dividing Range, extend from Cape York in the north to the province of Victoria in the south. The highlands are broad and low in the north, and narrow and high in the south. There is a steep slope towards the coastal plain. The highlands are known under different names in different parts. In New South Wales they are called the Blue Mountains, and in Victoria they are known as the Australian Alps.

3. The Central Lowlands stretch from the Gulf of Carpentaria in the north to Spencer and St. Vincent Gulfs in the south.

4. The narrow coastal plains in the east:—Off this plain at a distance varying from 10 to 100 miles lies the Great Barrier Reef of coral rocks, stretching out to a distance of more than 1000 miles. The warm waters within the reef are highly favourable for the growth of pearl oysters. Hence pearl fishing is

resorted to on a large scale in this region. Further, the calm waters in this region may be expected to provide a safe shelter for ships. But the presence of rocks submerged under water lessens the usefulness of such an advantage.

(*c*) River Systems. From the above study of relief of land, it may be noticed that the rivers of Australia fall under three groups.

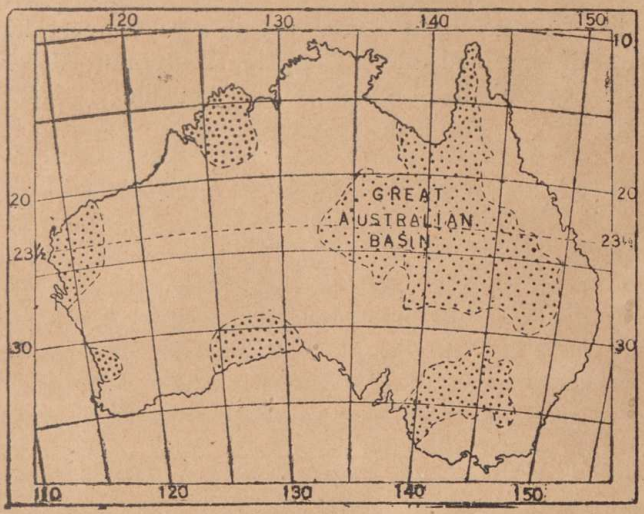
1. The rivers of the Western Plateau:—There are numerous rivers of little or no importance, as the streams dry up soon after rains and are, for many miles, without water.

2. The rivers of the Central Area, forming the western slope of the Great Dividing Range:—The rivers that flow into the Gulf of Carpentaria are separated from the rivers that drain the Lake Eyre region, by the Selwyn Range. The Flinders Range separates the Murray-Darling Basin from the rivers of the Lake Eyre region. The Selwyn Range and the Flinders Range form the two main watersheds of Central Australia. Note their position in Map 1.

The Murray with its tributaries, the Darling, the Lachlan and the Murrumbidgee, forms the only large river system of Australia. The Murray has its source in the Australian Alps and flows westward draining the vast area west of the Blue Mountains. The river is navigable for about eight months in the year almost up to the source. The Darling and the Murrumbidgee are navigable for nearly six hundred miles only of their course. Thus these rivers are useful to man as important waterways.

3. The rivers that drain the eastern coastal plains:—There are short and swift rivers resembling those that drain the Malabar coastal plains in India.

(*d*) ARTESIAN BASINS. The central plain of Australia is a region without much water. The Great Dividing Range prevents the free entry of rain-bearing easterly winds. But, fortunately, in this region are found tracts of chalk and limestone, which absorb



MAP 2. THE ARTESIAN BASINS OF AUSTRALIA

water more readily than other rocks. As these lie between impervious layers of clay, water is stored underground, and large supplies are obtained by artesian bores. The Great Australian Basin is the most important artesian area. (See Map 2.) The artesian wells have enabled large areas of dry land to be converted into a rich cattle and sheep rearing country.

EXERCISES

1. "Australia was the last of the continents to be discovered." How do you account for this?

2. On a map of Australia mark the chief mountains, plateaux and rivers.

3. What rivers of Australia are useful as waterways? Why are the other rivers not so useful?

4. "It has been found possible to convert large areas of dry land into a sheep rearing country." Explain how this has been done in Australia.

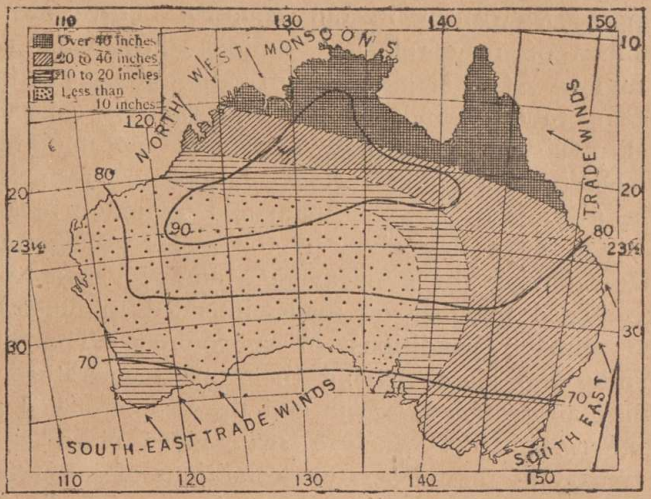
CHAPTER II

AUSTRALIA—CLIMATE

TEMPERATURE, WINDS AND RAINFALL

INTRODUCTION. By the climate of a place, we mean the average character of weather conditions in the locality. By weather, we mean the state of the atmosphere on a particular day or period in a locality. Daily weather reports are published by the Meteorological Department in our country. There are a number of meteorological stations throughout the country. At these places, information about weather —temperature, winds, clouds and rain—is collected and published. The daily maximum and minimum temperatures for the various stations are recorded. The average of the maximum and minimum temperatures for a day gives us the mean temperature. Places having the same average annual temperature are joined together on maps, intended to illustrate the climatic conditions of a country. The line joining the places having the same temperature is called an *Isothermal Line* and the map is called an *Isothermal Map*. Such a map gives us a clear summary of the temperature conditions of a country. Temperature is an important element in climate. Height above sea level, distance from the equator, nearness to the sea, the force and direction of the prevailing winds, and the influence of ocean currents—all these affect the climate of a country. In the lower classes, these facts were learnt in a general way. These may again be considered in a detailed manner in a later chapter. Now, let us confine our attention to a study of the climate of Australia.

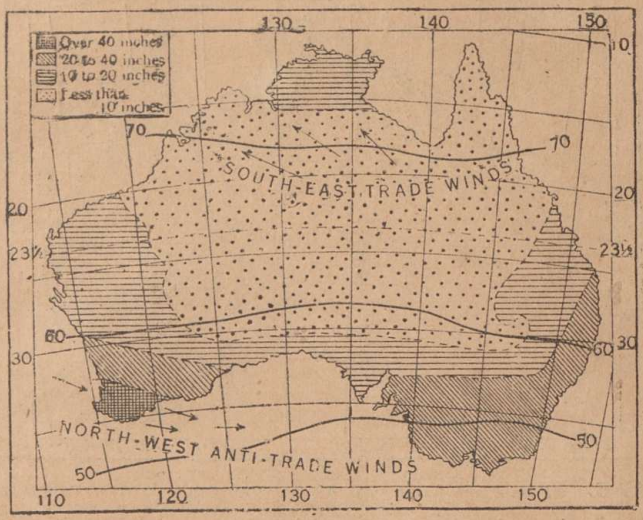
JANUARY CONDITIONS. Look at the climate map of Australia for January. (See Map 3). The sun shines overhead near the Tropic of Capricorn which cuts Australia nearly into two halves. While we living in regions north of the equator have winter conditions, those living in places south of the equator have summer conditions. The area along 90° F. Isothermal Line is the region of greatest heat and hence,



MAP 3. TEMPERATURE, WINDS & RAINFALL: JAN. CONDITIONS

of low pressure. Towards this hot region of low pressure, moisture-bearing winds blow from the north-west and these are called the North-West Monsoons. The eastern coast gets its rainfall from the rain-bearing South-East trade winds coming from the oceans. These winds, being obstructed by the Great Dividing Range, cause good rains in the coastal plains. But the interior region becomes an area of "rain

shadow." On account of the unbroken character of the coast-line and the barrier of the mountains shutting off the inland regions from the influence of the sea and the rain-bearing winds, the interior of Australia is extremely dry and intensely hot in summer. Note that the rainfall diminishes in the interior regions. While the coastal plains on the east have an average annual rainfall of 45 inches, the interior gets only about 10 inches.

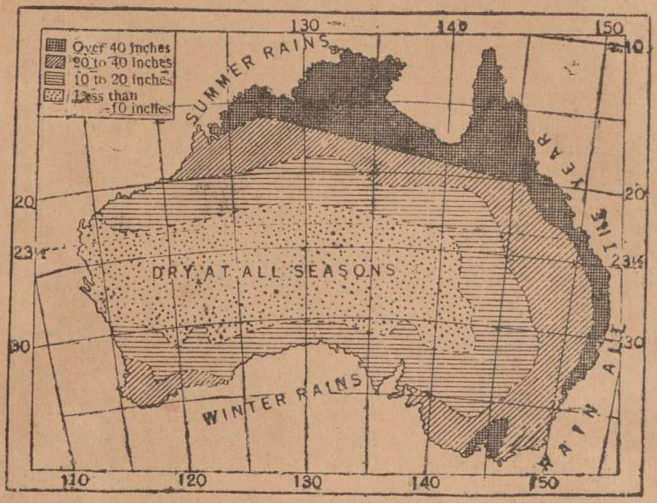


MAP 4. TEMPERATURE, WINDS & RAINFALL: JULY CONDITIONS

JULY CONDITIONS. In July, (*i.e.*, winter) the sun is far to the north of the equator shining overhead near the Tropic of Cancer. The whole of North Australia is now under the influence of the dry South-East winds blowing from the interior. 60° F. Isothermal Line now passes through the centre of Australia and the 70° F. line lies north of it. (See Map 4). The

southern region, a region of drought in summer, now under the influence of the westerlies, gets good rainfall. Hence the south has the mild wet winter and dry summer of the Mediterranean type of climate.

RAINFALL ZONES. The rainfall map indicates (1) regions which have rains throughout the year, (2) regions in the north which have summer rains,



MAP 5. ANNUAL RAINFALL AND SEASONAL DISTRIBUTION

(3) regions in the south which have winter rains and (4) the dry interior regions. This dry region is the region of deserts, and lies between the region of summer rains and the region of winter rains (*vide* Map 5). Notice that the wettest parts of Australia are found along the coasts and rainfall becomes less and less as one proceeds farther and farther into the interior.

EXERCISES

1. The following table gives the mean monthly temperature of four places. Note their position on the map. Fill up columns 3 and 4—Average temperature and range of temperature. Account for the difference in temperature between Perth and Sydney, and between Darwin and Melbourne.

TEMPERATURE IN DEGREES' FAHRENHEIT

Name of the places.	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Aver-age.	Range.
Darwin ...	84°	84°	84°	84°	82°	79°	77°	80°	83°	86°	86°	85°		
Perth ...	74°	74°	71°	66°	61°	56°	55°	56°	58°	61°	65°	71°		
Sydney	72°	71°	69°	65°	59°	54°	53°	55°	59°	64°	67°	70°		
Melbourne ...	67°	67°	65°	60°	54°	51°	49°	51°	54°	58°	61°	65°		

2. On page 14 is given the mean monthly rainfall of a number of places. (i) Find the annual rainfall of each place. (ii) From the figures find out in which rainfall zone each place lies. Verify your answer by map study.

RAINFALL IN INCHES

Name of the places	Ja.	Fe.	Ma.	Ap.	Ma.	Ju.	Ju.	Au.	Se.	Oc.	No.	De.	TOTAL
Cape York ...	23	19	17	8	3	·5	·6	·4	·1	·1	2	8	
Perth ...	·3	·3	·6	2	5	7	6	6	3	2	·8	·6	
Coolgardie ...	·4	·7	6	·6	1	1	·9	·9	·6	·6	·5	·5	
Sydney ...	4	5	5	5	5	5	3	3	3	3	3	3	

3. Explain clearly why the interior of Australia is a desert.

4. Learn to draw diagrams of temperature and rainfall of the places given in questions 1 and 2.

CHAPTER III

THE NATURAL VEGETATION REGIONS AND MINERAL WEALTH OF AUSTRALIA

From our knowledge of the physical features and the climatic conditions of Australia we can divide Australia into five natural vegetation regions. (See Map 6).

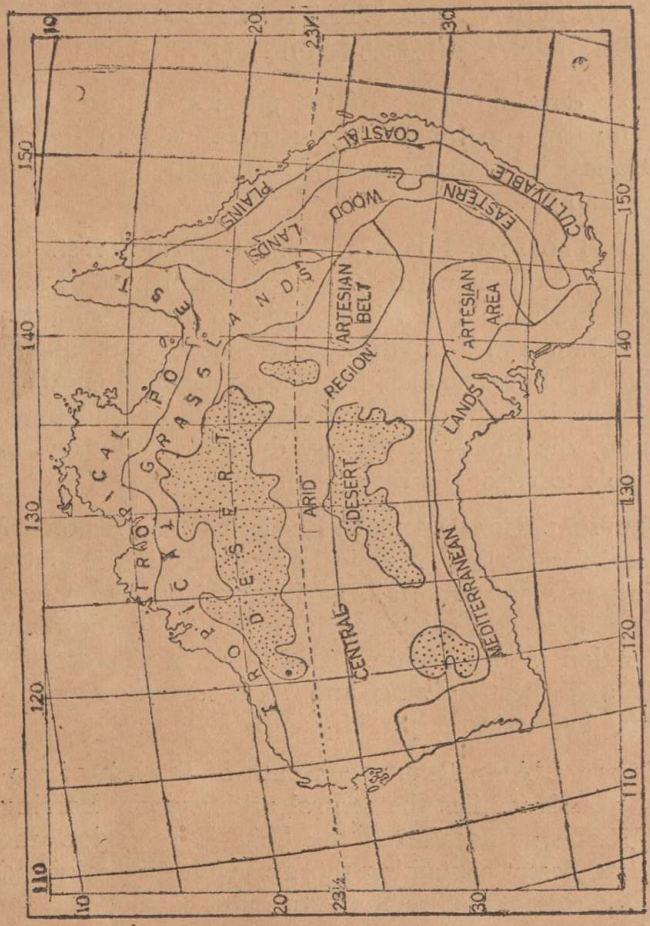
THE TROPICAL FORESTS:—The tropical forests of the Monsoon regions in the north form part of the coastal lowlands and are regions of heavy summer rains (January). In these forests there are many kinds of palms, bananas, bamboos, vines and eucalyptus. The last is greatly valued for its oil and gum. Further, the timber is of very durable quality and is also able to resist the ravages of white-ants.

TROPICAL GRASSLANDS:—Bordering the region of tropical forests lie the tropical grasslands, in the south. Owing to scanty rainfall, agricultural operations are not possible. So cattle-ranching has to be the main occupation in this region. The cattle yield plenty of beef, and meat-freezing and meat-canning are important industries.

CENTRAL ARID REGION:—South of the belt of tropical grasslands lies the central arid region. Barring the Western Plateau and the Lake Eyre region, the rest is a desert containing thorny shrubs like spinifex. The interior of this region is dry and barren.

"MEDITERRANEAN" LANDS:—In the south-west and southern portions of this island lies an area with

long dry summers and mild wet winters. The south-western region yields two varieties of timber, Jarrah



MAP 6. NATURAL VEGETATION REGIONS

and Karri, which are durable and so are used for railway sleepers, bridge construction and street paving.

A Sheep Farm in Australia

Courtesy: Commonwealth of Australia, Cinema & Photo Branch

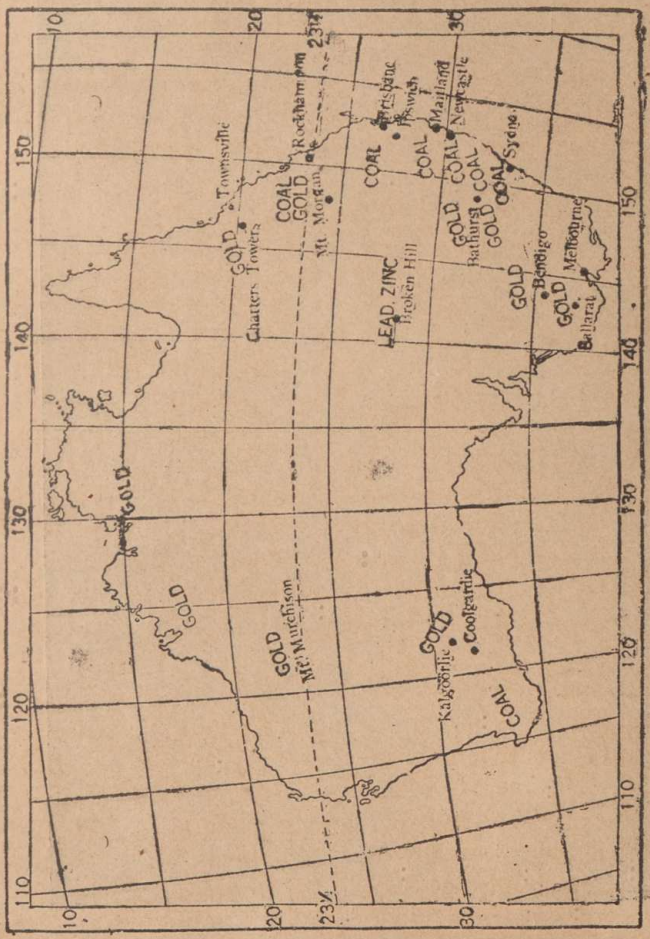
In the lands irrigated by the Murray, fruits such as grapes, oranges, apricots and peaches are grown. Wheat and beet-root are two important products raised in this region.

Coastal Plains:—On the slopes of the eastern highlands in the north, cocoa and coffee are grown. On the western side, there are good pasture lands and cattle-farming is the chief industry. On the coastal plains, sugar-cane and maize are chiefly raised. The eucalyptus tree grows here also.

Animal Life. The native animals of Australia are peculiar; they are not found in the other continents, and the common animals of other continents are not native to Australia. This pecularity is due to the remoteness of Australia from the other continents. Among mammals, only one kind is native to Australia, and of this kind is the duck-bill which has the body of an otter and the bill of a duck; it lays eggs like reptiles, but suckles its young. The pouched animals —animals whose young are carried about by the mother in a pouch—are very common in Australia. The most famous of this class is the kangaroo, of which there are many species. Rabbits which were introduced into the continent have multiplied rapidly and cause great damage to the crops; and hence they are killed ruthlessly. Among its native birds are the emu, the largest in size, which cannot fly though possessing wings, many beautiful birds like the lyre bird, and some birds having peculiar cries.

There was no useful domestic animal in Australia before the European settlement. The Europeans

introduced the sheep, the horse, and cattle, and the



MAP 7. AUSTRALIA—MINERALS

animals have multiplied on the pastures, under the management of the colonists.

PANNING FOR GOLD AT WARBURTON

Courtesy: Commonwealth of Australia, Cinema and Photo Branch

MINERAL WEALTH. Coal:—Australia is very rich in mineral wealth. New South Wales is the chief coal producing State of Australia. The mines are situated at Maitland and at Newcastle. Here is the advantage of the mines lying near sea ports. In Queensland, the important mines are near Ipswich and Rockhampton. In Western Australia, south-east of Perth, there is a small deposit of coal. Victoria, Tasmania and South Island of New Zealand have large deposits of coal.

Gold, lead and zinc:—In Victoria, gold was discovered in 1851 near Bendigo's Creek, at Ballarat and around Melbourne. People rushed to the gold-fields. Melbourne, Ballarat and Bendigo's Creek are the important gold-mining centres in Victoria. In Western Australia, the important gold-mining centres are Coolgardie, 360 miles east of Perth, Kalgoorlie and Murchison. In Queensland, Charters Towers and Mount Morgan are the important centres of gold mines.

In New South Wales, the regions around Broken Hill are rich in silver, lead and zinc. (Map 7, Minerals of Australia).

EXERCISES

1. In the tabular form appended below, summarise your knowledge of Australia with regard to physical features, climatic conditions and vegetation.

Physical features	Climatic Conditions.	Vegetation.

2. Study this table of annual production carefully:—

Provinces.	Wheat (in million bushels)	Sheep (in million)	Cattle (in million)
Victoria	25·0	13·0	2·0
Queensland	0·3	21·0	5·5
New South Wales	18·0	45·0	3·5
South Australia	15·0	6·5	1·0
Western Australia	11·0	5·2	1·2

(i) Arrange the provinces in the descending order of production of each product.

(ii) Account for the following:—

(*a*) While Victoria produces the greatest quantity of wheat, Queensland produces only a little.

(*b*) New South Wales, while producing a sufficient quantity of wheat has also good pasture lands for sheep.

3. Under what head in the above table does Queensland occupy the first place and why?

4. Draw a rectangle 10″ × 1″. If this represents the quantity of wheat produced in the provinces, mark off in the diagram the share of the provinces in the total. Draw similar diagrams for sheep and cattle.

CHAPTER IV

PEOPLE—THEIR WORK AND LIFE

HISTORY OF THE POPULATION. The history of the population of Australia is a very interesting study and falls under three heads:—1. The Period before the discovery by the Europeans, 2. Early settlement, and 3. Progress after 1851.

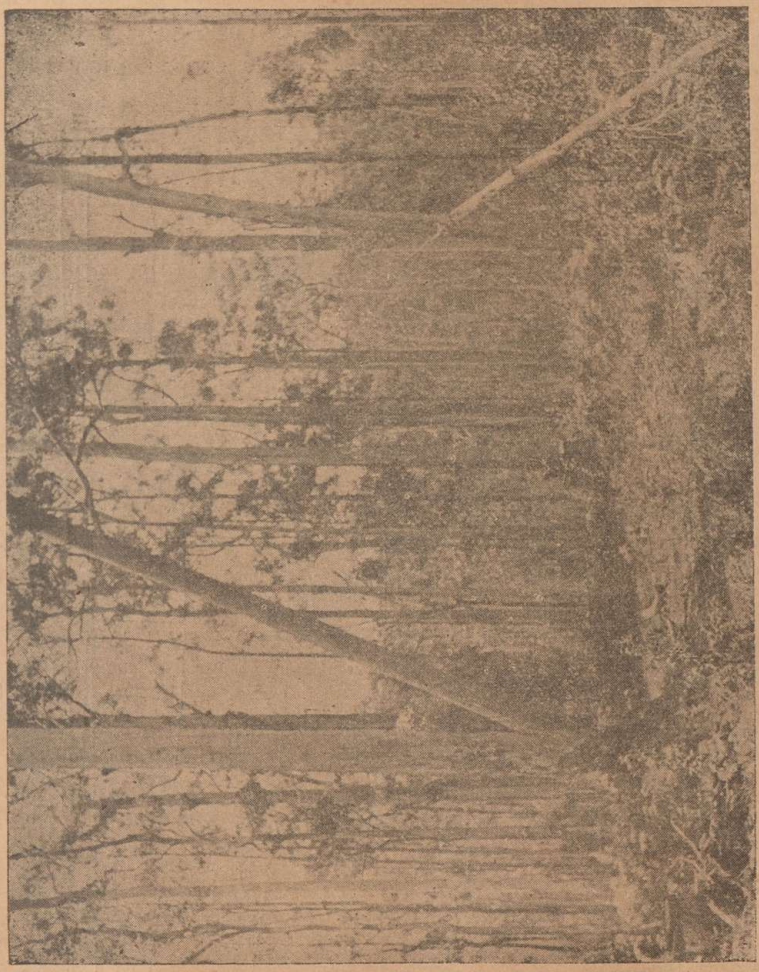
In the first stage, Australia was inhabited by a small dark-skinned people. They used stone implements and had no knowledge of metals. The arts of agriculture were not practised. Hunting was their chief occupation. Their only domesticated animal was the dingo dog. The population was only 150,000. The people were leading a nomadic life.

About the middle of the 17th century, the Dutch, who had already settled in the East Indies, explored the inhospitable coast of Western Australia, but made no attempt at settlement. About 1771 Captain Cook explored the south-eastern coast. The first British settlements in New South Wales were convict settlements. In 1788 the convicts were landed at Port Jackson, and their old settlement forms the present town of Sydney. After the period of servitude these convicts were given lands. Further, fresh colonists came and took to sheep-rearing. Moreover the British formed colonies in South Australia round Adelaide and in Western Australia in the region of the Swan river round Perth. The discovery of gold was the main cause of the rapid growth of regions like Western Australia. Settlements crept from the east to the west except in West Australia, and from the coast to the interior.

AREAS OF DENSE POPULATION. It was not until 1851, when gold was discovered at Bathurst in New South Wales, that people, anxious to make a fortune, began to flock in large numbers. We have already noted the mineral wealth of Australia; the chief centre of attraction in Australia is the gold mines. More than fifty per cent. of the population live round the important mining centres. (See Map 8). The total population of white settlers amounts to six millions. The population is very thin and there is little prospect of any rapid increase in population as the Australian Government has reserved the island for the white settlers. The native population is gradually diminishing in numbers.

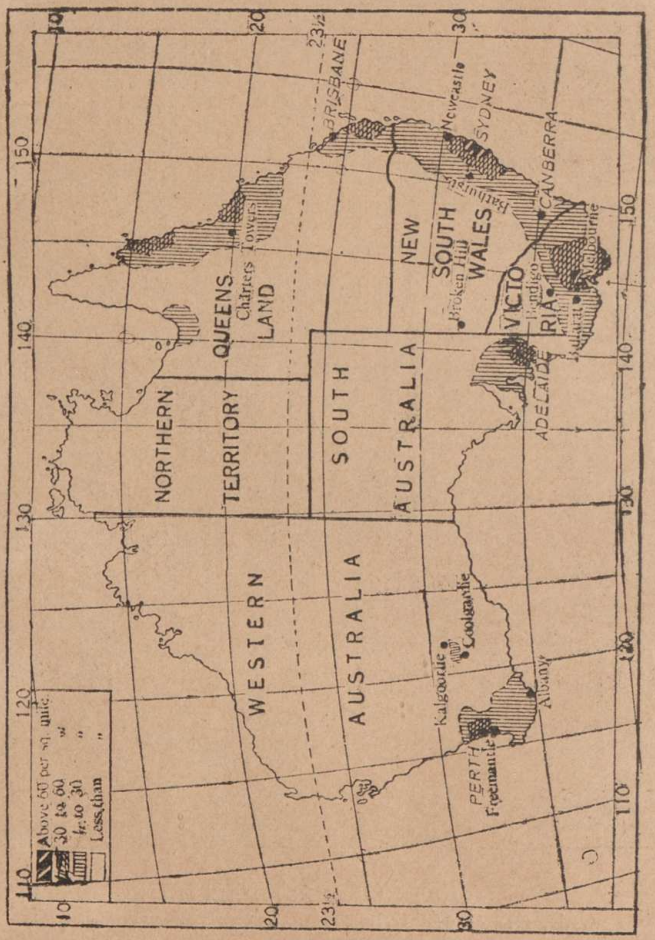
ACTIVITIES OF THE PEOPLE. The occupations of the people depend on the nature of the soil and climatic conditions. A rapid recollection of these with regard to Australia brings before our minds the important occupations:—

(1) Agriculture in the eastern coastal plain and the Murray-Darling Basin and South Australia having a "Mediterranean" type of climate, (2) fruit-farming in Southern Australia, Queensland and West Australia, (3) cattle-ranching in Queensland and the northern territory, (4) sheep-farming and horse-rearing in New South Wales, South Australia and Victoria, (5) pearl-fishing on the coast opposite the Barrier Reef, (6) mining in the important mining centres like Kalgoorlie and Coolgardie in Western Australia, Bendigo in Victoria, Broken Hill and Bathurst in New South Wales and Rockhampton and Charters Towers in Queensland and (7) manu-



TREE (KARRI) FELLING
in the State Forest, Pemberton (W. A.)
Courtesy: Commonwealth Immigration Office

facturing industries of leather, wool and dairy produce in the regions like Bathurst where coal is plentiful.



MAP 8. AUSTRALIA—POPULATION AND POLITICAL DIVISIONS

CHAPTER V.

REGIONS OF AUSTRALIA

THE TROPICAL NORTH:—The northern territory has a hot wet climate in the north and the tropical forests yield timber. Port Darwin, the only important port, is the starting point of the Overland Telegraph Line. A submarine cable connects Port Darwin with Java. The southern portion of the territory is drier and there are poor pasture lands. Cattle-ranching is the main occupation. The interior regions are deserts. The great Sandy Desert and the Gibson Desert are deserts of this type. In Queensland, mountains line the coast for hundreds of miles. The grassy slopes west of the Great Dividing Range, provide extensive feeding grounds for cattle and sheep. Note the position of Charters Towers in the map. Gold, copper and tin are mined in the region round Charters Towers.

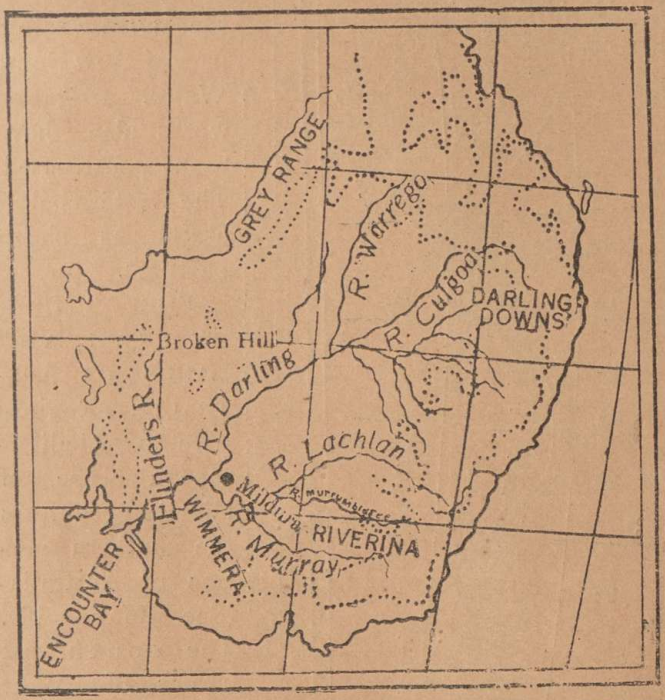
EASTERN COASTAL PLAINS:—On the east of the mountains, is the coastal plain. The northern part of the plain is within the tropics. Maize and sugar-cane are largely grown. Further, tropical products like tobacco, cotton and bananas are raised. There are pearl oyster and turtle fisheries along the coast. On the southern side of the plains, wheat and potatoes are grown. Townsville is the port of tropical Queensland and Rockhampton is the port of the south. Brisbane, the capital, has a fine harbour.

The southern portion of the eastern coastal plain consists of regions forming part of New South Wales.

The coast-lands are very suitable for the production of wheat and potatoes. Fruit-growing is also an important industry, especially in Paramatta near Sydney. West of the highlands, there are excellent pasture lands. Cattle and sheep are reared in vast numbers. In the region round Newcastle, coal-mining is the principal occupation. Broken Hill is a silver-mining area. Bathurst is a wheat-growing and gold-mining district. Sydney is the capital and its natural port is Port Jackson. It is the terminus of the steamship lines connecting Australia with Europe, New Zealand and the Pacific Islands. It is the centre of a busy coasting trade. Canberra is the capital of the Federal Government.

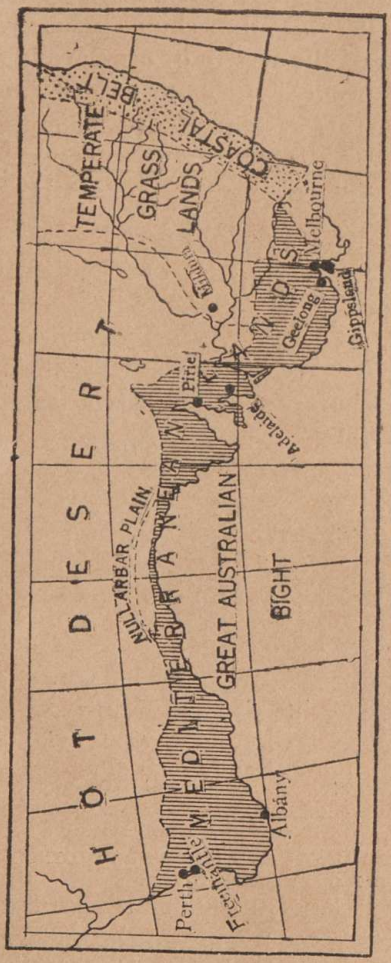
THE MURRAY-DARLING BASIN :—New South Wales consists of a narrow coastal plain, a belt of highlands and the basins of the Darling and other tributaries of the Murray. The Murray-Darling basin consists of three belts: (1) a wet eastern belt, (2) a middle dry belt and (3) a very dry western belt. The rainfall varies from 25 inches in the first division to 15 inches in the second belt and to 9 inches in the third belt. The whole region lies completely outside the tropics. According to relief and rainfall, vegetation also varies. In the wetter eastern parts temperate forests occur. There is an abundance of tree ferns and gum trees. The Riverina (see Map 9) doab—the land between two rivers (the Murray and the Murrumbidgee)—is a fertile flat area fit for farming. This is an important sheep-farming area in the world. Formerly, all this land was a pastoral area and supported millions of merino sheep. Of late

years, wheat-growing has made enormous strides, though sheep-farming is still the chief industry. Further, the introduction of the system of dry-farming has made possible great progress in wheat-cultivation even in drier areas. In this system of dry-farming,



MAP 9. THE MURRAY-DARLING BASIN AND ITS SURROUNDINGS
Note the names of highlands indicated by dots

the farmer ploughs up his land in the dry season but does not sow the seed for some months. During the period, the surface is frequently broken up in order to make the rains sink in the earth and thus escape evaporation. In this way moisture is retained and a crop



MAP 10. AUSTRALIA, SOUTH OF 30°. TO ILLUSTRATE THE MEDITERRANEAN LANDS
Note the Number of lines of latitude and longitude

gets two years' rainfall instead of one. Further artesian wells are of great use in the north-western part of New South Wales. Irrigation works also have been constructed. The western belt is useful as sheep pastures.

THE "MEDITERRANEAN" LANDS OF AUSTRALIA:—Regions with a Mediterranean type of climate occur in the southern portion of Australia. (See Map 10). The south-west corner of West Australia and the lands bordering Spencer and St. Vincent Gulfs and regions in Western Victoria possess, in a greater degree, the main characteristics of the "Mediter-

ranean" type of climate than the dry regions bordering the Australian Bight. As the regions are adjoining oceans, they are under oceanic influence. Hence the winters are mild and the summers are not excessively hot. In these regions the grape vine is cultivated. The richest yield occurs in Victoria and South Australia. Figs, pears, almonds and apricots are also fruits of the Mediterranean regions.

The south-western coast receives sufficient rainfall, and excellent hard timber useful for railway purposes is obtained from the forests in this area. Wheat is also grown in this region. In Southern Australia, wheat is raised in the lands adjoining the Gulf belt. The Nullarbar plains support sheep. The most developed parts are around Adelaide and on the border of Victoria and New South Wales. The scrubs of the Wimmera district have been cleared off. Irrigation works have been construed and wheat and vines are extensively produced. Mildura is the chief town in this important area.

The important outlets for the export of the products of the region are Fremantle and Albany in Western Australia, Adelaide in South Australia and Melbourne, Port Philip and Geelong in Victoria. Perth, Adelaide and Melbourne are capitals of West Australia, South Australia and Victoria respectively. Perth and Fremantle on the Swan River serve the gold-mining region of Western Australia, Kalgoorlie and Coolgardie. Albany is the timber port of Western Australia. Adelaide is the outlet for the wheat and the wool of South Australia. Minerals from Broken Hill are brought by rail and exported through Pirei in

South Australia. Melbourne is the collecting centre of the produce of the timber and dairy-farms of Gippsland in the south-east, and sheep-farms of Geelong in the west and of the Murray basin and the fruit-farms of Mildura.

EXERCISES

1. The following table shows the area and the population of the provinces of Australia:—

Provinces. (1)	Area in 1000s of sq. miles. (2)	Population in 1000s. (3)	Density. Explanatory Remarks. (4)
Queensland ...	670	726	
New South Wales ...	311	2000	
Victoria ...	88	1455	
South Australia ...	360	472	
West Australia ...	976	336	
Northern Territory ...	523	6	

Work out the density of the population by dividing the total population by the area. Population ÷ Area = Density of the population. Which province has the greatest density and which the least? Fill up column 4.

2. Australia has a total population of only six millions, of which 80 per cent. live in a belt of country, 100 miles wide, along the eastern, southern and south-western coasts. How do you account for this? (S. S. L. C. Public Examination, 1932).

3.

Centre. (1)	Industry. (2)	Remarks on facilities. (3)
Melbourne	Textiles and Engineering	
Ballarat	Iron-Works & Locomotive Shops	
Geelong	Textile, Tanning and Paper	
Sydney	Ship-Building and Engineering	
Newcastle	Steel Works	
Ipswich	Textiles	
Townsville	Soap-Works	

Above is given a list of the chief industrial centres of Australia with the industries for which they are noted. Examine the facilities for the growth of each industry. Fill up column 3.

4. "Of the whole of Australia, the regions with a 'Mediterranean' type of climate alone have progressed considerably." What are the lands referred to? Draw a map of the regions and mark therein the ports with the names of the goods that are exported from each.

5. What is dry farming? In what regions of Australia is this practised and why?

6. Draw up a statement in two columns showing, in one, the chief regions of Australia and, in the other, the main occupations of the people in each.

CHAPTER VI

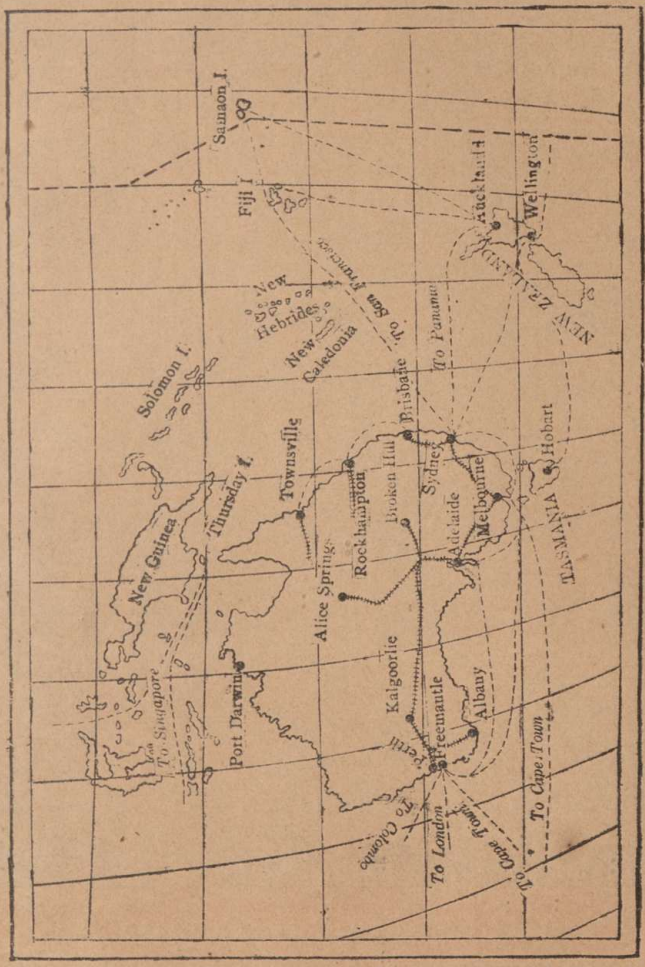
COMMUNICATIONS AND TRADE

INTERNAL COMMUNICATIONS. The development and proper maintenance of means of communications forms one of the important factors in the welfare and progress of any country. This is especially so in a dry continent like Australia. A reference to the map of Australia—Communications (Map 11), shows a railway-line joining Perth on the west coast with Brisbane on the east. This line passes through the five provinces of Australia and connects the five capitals. This is a trans-continental railway. The railways suffer from lack of uniformity of gauge. The difficulty in this arrangement is, that people have to get down for a change to the various gauges of lines. Similarly goods have to be transhipped. Note on the railway map the lines joining the ports with the productive interior regions.

OCEAN ROUTES. River navigation along the Murray is possible as far as Albury. In the east, there is direct steamer service from Sydney to San Francisco, Panama, Wellington and Cape Town. In the west, from Perth, there is direct steamer service to Singapore, Colombo, Calcutta and London. It may thus be seen that Australia occupies a very favourable position for trading with the lands adjoining the Pacific and the Indian Oceans.

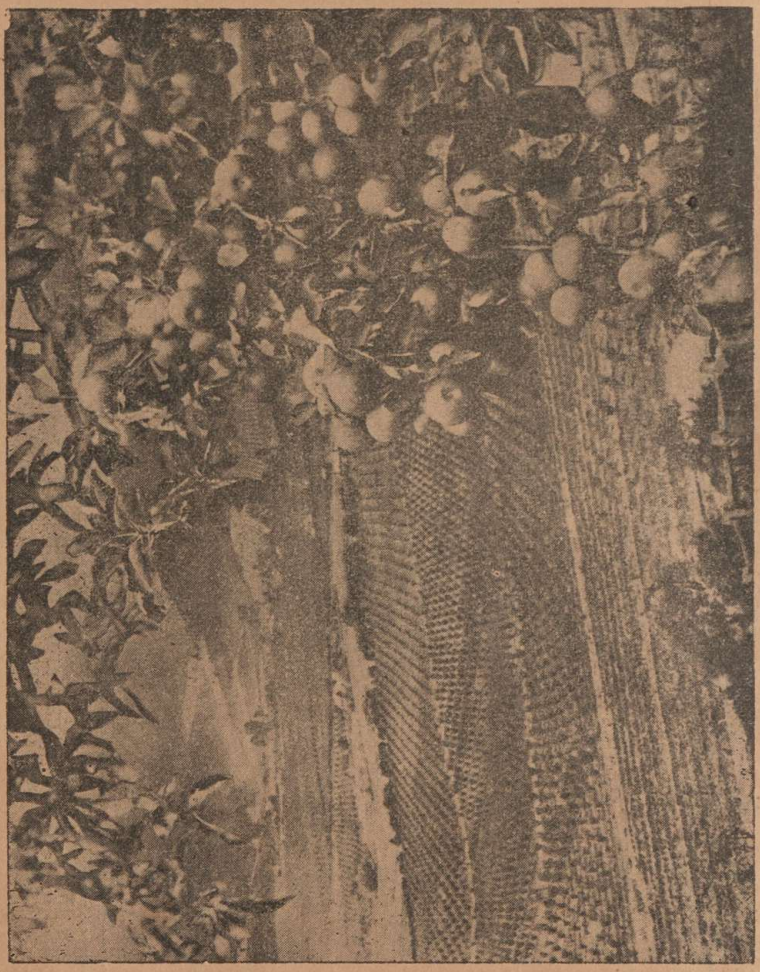
TRADE. Sydney exports gold, hides, wool, meat and coconut oil to North America and gets, in return, from San Francisco textiles, machinery and fruits. There is a brisk coal trade with South America. The chief exports from Perth are wool, meat, hides and

metals and the imports are all manufactured articles like machinery, chemicals and textiles. Like Indian



MAP 11. AUSTRALIA—RAILWAYS AND OCEAN ROUTES
Note the position of 180° Longitude and the International date line

exports, Australian exports also consist chiefly of raw



AN IRRIGATED APPLE ORCHARD
Courtesy: Commonwealth of Australia, Cinema & Photo Branch

materials and the imports are generally manufactured goods. The trade is carried on chiefly with industrial countries like Great Britain and the United States. Australia exports horses, timber and fruits to India.

MODERN IMPROVEMENTS AND PROXIMITY OF DISTANT LANDS. Since the European settlement, Australia has made considerable progress. Modern achievements in aerial transport and wireless telephony have banished distance and brought her from a position of remoteness from the civilised countries to one of proximity.

Consider the following extract from the "Hindu" dated 2nd June, 1931: "While in the Mid-Atlantic, recently, a passenger of the White Star Liner "Homeric," Mr. Hooke of the Australian Branch of the Marconi Company, talked for fifteen minutes to Melbourne in Australia, 10700 miles distant. This was the longest ship-to-shore conversation ever made. Every word was distinctly audible." Realise how modern scientific inventions have brought distant places near to one another.

POLITICAL DIVISIONS AND GOVERNMENT. Till the year 1901, Australia consisted of a number of provinces, each with a responsible Government of its own. Soon, it was realised that the provinces should all unite together in considering problems affecting the welfare of the whole island. The need for a Government, which would look after affairs, common to the whole island, as Posts and Telegraph, communications, tariffs, immigrations, foreign relations, irrigation and defence was keenly felt. Hence, the provinces formed themselves into a federation on 1st January, 1901.

The capital of the Federal Government is Canberra, while the provinces have their own State Governments at their respective capitals. The provinces are Western Australia (capital Perth), South Australia (capital Adelaide), Victoria (capital Melbourne), New South Wales (capital Sydney), and Queensland (capital Brisbane). Tasmania (capital Hobart) also is one of the States in the Federal Commonwealth.

Some Current Problems. The Federal Government has set up a system of preferential tariffs. By this arrangement, the imports from the various parts of the British Empire are taken at a rate of customs duties lower than on the imports from countries outside the British Empire. Imports from the various parts of the British Empire are preferred to imports from other countries. Hence, Australia carries on a large trade with the United Kingdom and other parts of the Empire.

A current problem in Australia is the exclusion of coloured races from settling in the country. It has been specially reserved for the white settlers. The regions in which the white people can conveniently live and work have all been colonised and developed. But Australia contains vast areas within the tropics. These are regions in which the coloured races alone can live, work and thrive. Nature seems to have provided habitation in Australia for coloured races also. A full development of Australia naturally means the development of the tropical areas also by the coloured people. How far this policy of exclusion is conducive to the economic welfare of the continent is a problem for time to solve.

EXERCISES

1. With what countries does Australia carry on brisk trade and why?

2. What is "preferential tariff"? What is the advantage of having such a system?

3. Show that Australia is favourably situated for trade with lands adjoining the Pacific and the Indian Oceans.

4. Name the various States of Australia with their capitals. Why is a Federal Government necessary?

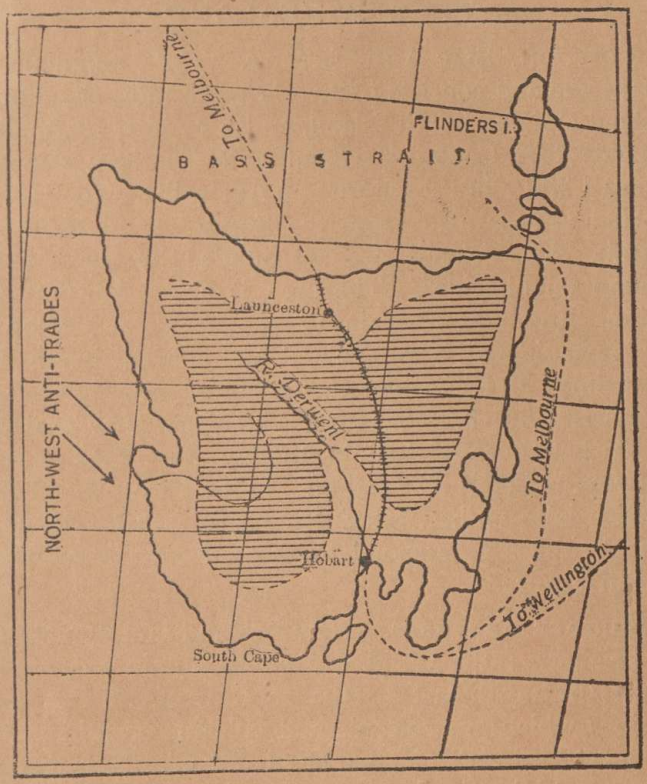
CHAPTER VII

TASMANIA AND NEW ZEALAND

I. TASMANIA

SURFACE FEATURES. This island is separated from Australia by the Bass Strait about 140 miles in width. (See Map 12). It is over 26,000 square miles in area. It was discovered by Tasman in 1642. As in Australia, a convict settlement was first established at Hobart, which later on became an industrial centre.

RELIEF, CLIMATE AND ECONOMIC WEALTH. Tasmania is an isolated portion of the Eastern Highlands of Australia. It has in the centre a tableland dissected by many streams. The island possesses great possibilities of hydro-electric development. It has a much broken coast. There is a gentle slope towards the south-east where there is a considerable tract of open country serving as pasture lands for sheep and cattle. Its climate is more temperate and equable than that of Australia. The west receives a heavy rainfall throughout the year from the anti-trades and is thickly forested. In the east, there are good pastures. Fruit-farming and agriculture are the chief occupations of the island. Fruits are exported in large quantities. A large area is devoted to wheat. In the mines of the north-west highlands, copper, tin, silver and lead are extensively worked. The population is about 217,000. Hobart is the capital town and has an excellent natural harbour. Launceston on the Tamar estuary is the chief port of the north.



MAP 12. TASMANIA

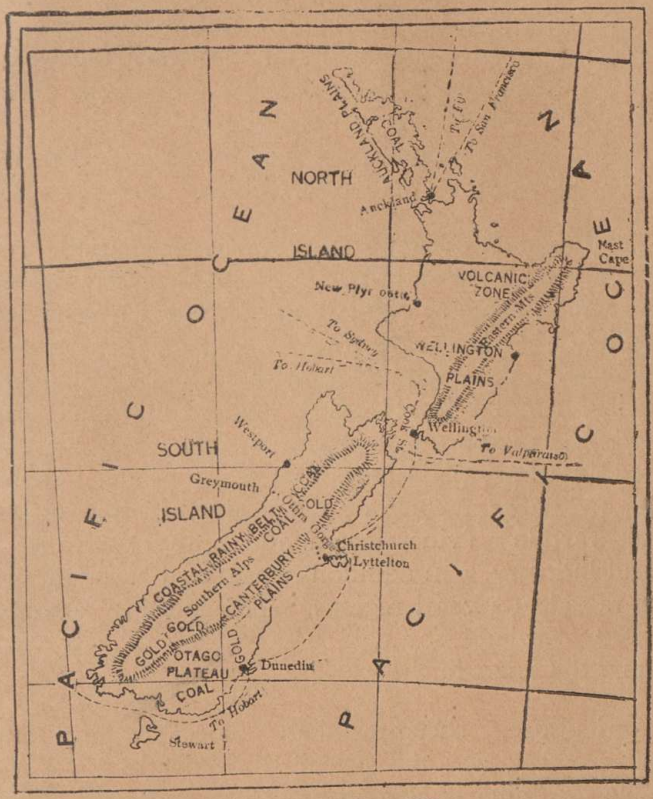
On account of the north-west anti-trades blowing throughout the year, Tasmania receives rain all the year. Learn the numbers, of the lines of latitude and longitude.

II. NEW ZEALAND

POSITION, SIZE AND EXTENT. The Dominion of New Zealand consists of two large islands, the North Island and the South Island, and a number of smaller islands like Cook, Auckland and Chatham groups, lying 1,200 miles south-east of Australia. The North Island is separated from the South Island by Cook Strait. The islands are surrounded by the Pacific Ocean on all sides. The area is about 105,000 sq. miles. In 1769 Captain Cook, the great explorer, circumnavigated New Zealand and charted it for the first time. In his memory a statue was recently erected at Christ Church. It is often stated that New Zealand is the antipodes of Britain, though New Zealand lies between parallels 34° and 48° South Latitude and the British Isles lie between 50° and 60° North Latitude. The latitudes correspond to those from Gibraltar to North France.

SURFACE FEATURES. New Zealand is a mountainous country; the trend of the mountain system is from the north-east to the south-west. There are regions which are volcanic and volcanic eruptions are frequent, especially in the North Island. The mountains are higher in the South Island than in the North Island. The Southern Alps form a barrier to communication between the eastern plains and the western coastal districts. The chief route lies through the Otira Gorge (Map 13) and across Arthur Pass and connects Christ Church on the east coast with Greymouth on the west coast. On this route lies the longest tunnel in the British Empire. East of the Southern Alps lies the Canterbury plain, an excellent

and extensive pasture ground of about three million acres. Both the North and South Islands are in-



MAP 13. NEW ZEALAND

Learn the numbers of lines of latitude and longitude

dented by deep fiords, and these give all parts easy access to the sea. Further there are many natural harbours.

CLIMATE AND RAINFALL. The climate is cool and equable owing to oceanic influence. The Islands are always under the influence of the westerly winds and so receive good rains. The western coast has an average of over one hundred and fifteen inches of rain while the eastern coast receives only about thirty inches of rain. The rain-bringing west winds are barred by the mountains. Hence the eastern side has a drier climate than the western side.

ECONOMIC WEALTH. As regards vegetation, tree ferns are common and the Kauri pine, a stately timber tree, which supplies resin used for fine varnishes, is found in the temperate forests of the North Island. The New Zealand flax grows wild in the North Island. Its fibre is used for blending with manila and sisal. The fibre is exported to Australia and Great Britain. The Canterbury plain is famous pasture land. Wool, meat and dairy produce are the products of this region. Fruit farming (vine, lemon and orange) is also a useful industry. In addition, wheat and beet-root are also raised in several regions. The freezing factories of New Zealand for cold preservation of meat are among the finest in the world.

Agriculture, sheep-farming, dairy-farming and fruit-growing are the principal occupations of the people. Mining is also an important industry. Gold is found in the north-west of the North Island and in the south-east of the South Island. Further, iron is found in the west coast of the North Island at Parpara. Coal is obtained from most parts. Westport and Dunedin are the chief coal-mining centres.

Mutton-freezing and tanning are important industries; there are many saw-mills and grain-mills.

As in Australia, animal life in New Zealand is of a singularly peculiar type. There are many fightless birds like the moa, "a giant about nine feet high," the ground parrot, the kiwi and other birds. The native animals are rapidly vanishing. Rabbits and sparrows have been introduced from Europe.

The original inhabitants were called the Maoris. They were physically very strong. They have adopted European ways of life.

TRADE AND COMMUNICATIONS. The chief exports are raw wool, butter, cheese, frozen meat, hides, gold, Kauri gum, and New Zealand flax. The imports consist of machinery, clothes, sugar and paper. New Zealand carries on an extensive trade with the United States of America. The chief ports are Auckland with fine harbours on both seas and Wellington in the North Island and Lyttelton and Dunedin in the South Island. The progress in pastoral work, sheep-rearing and dairy-farming has considerably helped the development of these ports. Wellington is the capital of New Zealand. There are railways connecting Wellington with Auckland in the north and Napier in the east. In the South Island a railway runs from Dunedin to Christ Church which has an important export trade in frozen mutton and dairy produce. There is direct steamer service from Wellington to Sydney and Hobart occupying a journey of four days each and to Rio de Janeiro and San Francisco. Auckland is another important seaport in the North

Island. From this port there is direct steamer service to San Francisco. New Zealand is a Dominion of the British Empire.

EXERCISES

1. "The western coast of Tasmania receives a greater rainfall than the eastern coast." How do you account for this?

2. New Zealand is the antipodes of Britain. Examine this statement (antipodes of Britain means the part opposite to the feet of the people of Britain).

3. Explain clearly how the situation and surface features of New Zealand affect the rainfall of the Island.

4. Compare the occupations of the people in Australia with those of the people in New Zealand.

5. State how situation has helped New Zealand to develop itself into a pastrol farming country.

6. There are geysers and hot springs in New Zealand. In which part do you expect to find them? Why?

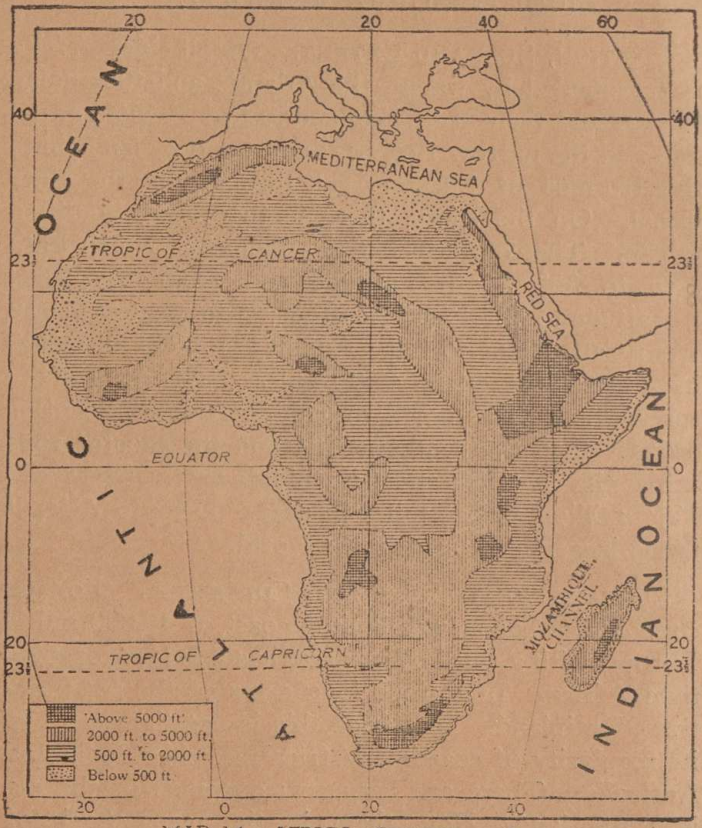
CHAPTER VIII

AFRICA—SURFACE FEATURES

POSITION, SIZE AND EXTENT. On all sides, Africa is surrounded by water—the Atlantic and the Indian Oceans and their arms, the land-locked Mediterranean Sea and the narrow Red Sea; and the only land joint, the Isthmus of Suez, is cut through by the Suez Canal. On the south, there is the Great Southern Ocean. The continent extends from 37° North Latitude to 35° South Latitude and from 18° West Longitude to 52° East Longitude. Its greatest length from Cape Blanc to Cape Agulhas is 5,000 miles and its greatest breadth is 4,500 miles. It is not equally spread out. The northern half of the continent is broader than the southern half and the equator runs across the continent about its middle part. It is about 11½ million square miles in area. Next to Asia, it is the largest continent in the world.

SURFACE FEATURES. (*a*) COASTLINE: For its size, Africa has a very limited coast of 19,000 miles. Europe, with a third of its area, has a longer coastline than Africa. In Europe long arms of the sea penetrate far inland. In Africa this is not the case. In its regularity of coastline, Africa resembles India and Australia. There are very few openings of the sea into the land. Note them in the map. Lack of inlets of the sea into the land has resulted in the lack of good harbours. The lack of good harbours was a serious obstacle to the early exploration of Africa.

Even now liners are often forced to anchor in exposed roads. Passengers and cargo have to be transhipped in small boats. Exploration and settlement depended, to a great extent, on the existence of some river that



MAP 14. AFRICA—RELIEF OF LAND

formed an easy channel of communication to the interior. Central Africa lacked such a route, and continued to be the dark continent.

(*b*) RELIEF: The relief of Africa, like its coast-line, is simple. The entire continent is one vast block plateau bordered by a very narrow coastal belt. In South Africa, the Nieuwveld Mountains and the Drakensberg Mountains rise from the interior in gentle slopes and somewhat above the level of the interior near the coast. The result is, the coasts have mountainous rims. In other places, there is a narrow and unhealthy coastal belt. There are three fairly well-marked relief divisions of this continent. (See Maps 14 and 15.)

First, there is the Atlas region of fold mountains in the north-west. Secondly, there is the extensive low plateau south of the Atlas region extending from the mouth of the river Congo to Port Sudan. This plateau averages about 1,500 to 2,000 feet above the sea level. Thirdly, there is the high plateau which averages 3,000 to 4,000 feet above the sea level in the southern portion of the continent.

1. THE ATLAS REGION. The Atlas region lies in North-West Africa. It consists of three ranges—the Tell Atlas, the Great Atlas and the Little Atlas. Between the Tell Atlas and the sea lies the Tell valley, a fertile lowland, varying in width from fifty to hundred miles. Between the Great Atlas and the Little Atlas lies a basin-like plateau studded with shallow salt lakes called Shotts.

2. THE LOW PLATEAU. The low plateau may be regarded as an extension of the southern high plateau in three directions—east—Abyssinian tableland (see Map 15), north—the Tibesti Mountains, and west—the Cameroons and Futa Jallon Highlands. The low

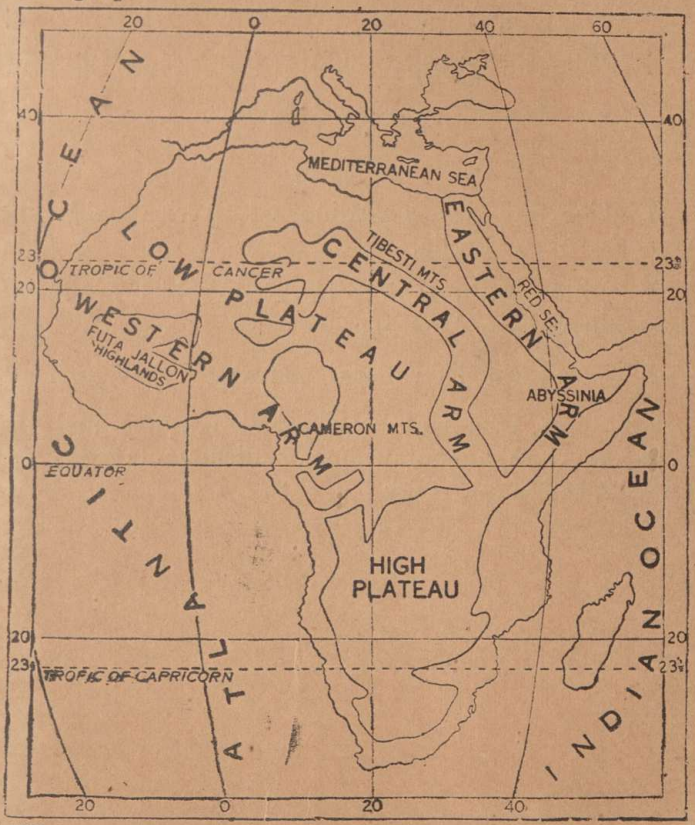
plateau consists chiefly of the Sahara and the Libyan deserts. The Tibesti Mountains may be said to form a watershed separating the waters of the Nile in the east from those of the Niger in the west.

3. THE HIGH PLATEAU. The high plateau forms the southern portion of the continent. Geologists are of opinion that this plateau was connected with the tableland of the Deccan before the Indian Ocean was formed by the subsidence of portions of this continent. The seaward slopes of the plateau are steep while on the other side, the slope is gradual. Rising from the plateau near the equator are the loftiest peaks, Mount Kilimanjaro (19,700 ft.), Mount Kenya (18,000 ft.), and other peaks of volcanic origin.

One peculiar feature of the East African plateau is the existence of rift valleys. The term 'valleys' immediately reminds us of the erosive nature of the work of running water along a region. A valley is generally formed because water runs along a particular region or has run along it in the past. But, a rift valley is not formed in this manner. It is formed by two parallel rents in the surface of the earth, and by the gradual sinking of the crust of earth between. The subsidence of the land between two rifts is a very gradual process. It takes place slowly in the course of ages. Between two rifts are often found huge hollows, which gradually become lakes with steep sides. Lakes Rudolf, Tanganyika, Edward and Albert are in such hollows. (Map 16.)

The plateau is bordered by a narrow coastal strip. It is broader in the south-east than in the south-west. In Portuguese East Africa and Tanganyika, the slopes

of the plateau is towards the west. The Drakensberg Mountains, the Nieuwveld Range, the Zwarteberge Range, and the Langberg Mountains are all edges of the high plateau.



MAP 15. AFRICA—THE HIGH PLATEAU AND ITS THREE ARMS

In short, the structure of Africa presents the case of a big block plateau with rift valleys and lakes radiating from the centre of the eastern plateau.

EXERCISES

1. On a map of Africa mark and name
   (1) The Equator and the Tropics of Capricorn and Cancer.
   (2) The principal inlets of the sea into the land.
   (3) The three main relief divisions.
   (4) The chief mountains.

2. Compare the coastline of Africa with the coastline of Australia.

3. Find out the regions in Africa which are in the same parallels as Australia.

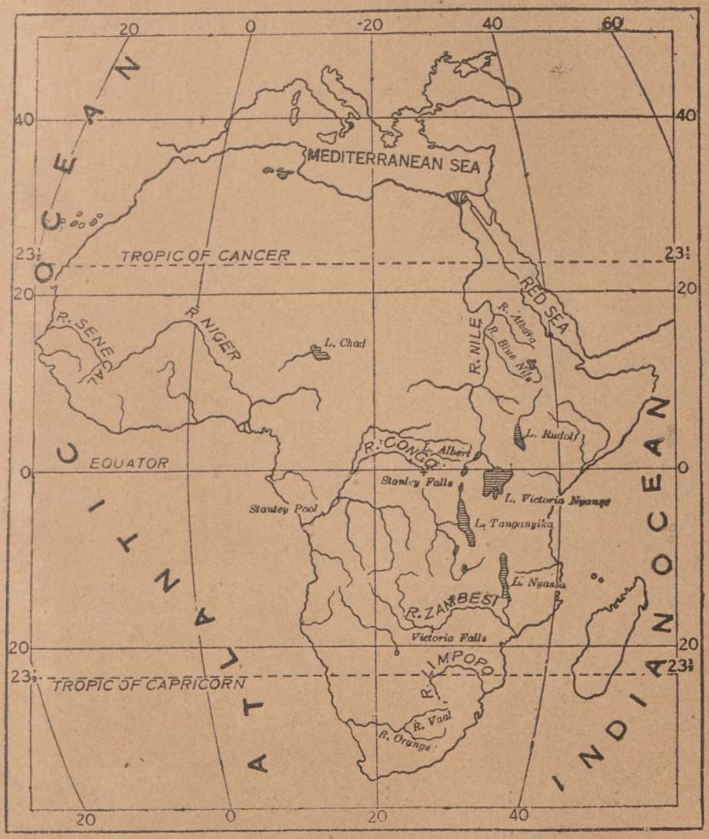
4. What are rift valleys? How are they formed?

5. Show whether the physical features and the coastline were advantageous or disadvantageous for an exploration of Africa.

CHAPTER IX

THE RIVER SYSTEMS OF AFRICA

GENERAL FEATURES. The chief river systems of Africa are:—(1) The Nile, (2) the Congo, (3) the



MAP 16. AFRICA—RIVER SYSTEMS

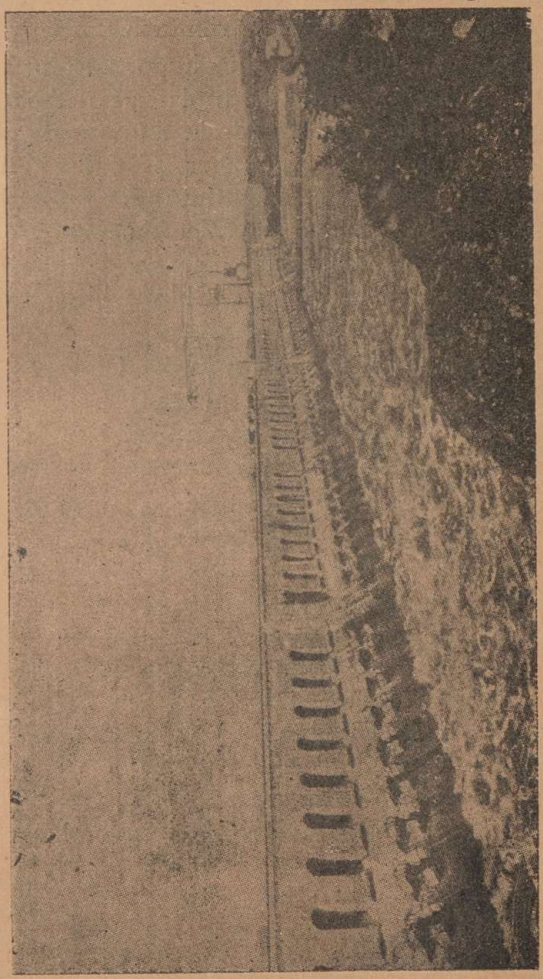
Zambezi, (4) the Orange and (5) the Niger. (See Map 16). The first two rivers have their source in

the central plateau of Equatorial Africa. The peculiar feature about African rivers is that they run in deep gorges cut in through the plateau and cause occasional waterfalls which can become sources of hydro-electric power. On account of these rapids and falls, few rivers are navigable far inland. This was an additional obstacle to the early exploration of Africa. The nature of the country through which the rivers flow does not give rise to the usual three stages of rivers, the mountain, the valley and the plain. In this respect African rivers present a contrast to the rivers of India.

THE NILE. The Nile drains Lake Victoria on the high eastern tableland at an elevation of 3,800 feet above the sea level and flows north-west entering Lake Albert Nyanza. In its course between Lakes Victoria and Albert there are the Ripon Falls. On its leaving Lake Albert, it has the Murchison Falls. The Bahr-el-Ghazal is the only tributary which joins the White Nile from the west. The Blue Nile which joins the White Nile at Khartoum and the Atbara are the tributaries from the Abyssinian highlands. From the junction of the Atbara near Berber to the Mediterranean Sea, for a distance of about 1,600 miles, the river flows through a desert and has no tributary. The area of the deltaic region is about 9,000 sq. miles. The length of the river is 4,000 miles.

THE CONGO. This river, the second largest in Africa, rises south of Lake Tanganyika. At its source it is called the Chambezi. It flows into and out of Lake Bangweulu and continues northwards until it descends to the Stanley Falls. Then the river

changes its course westward and still farther on south-westwards. The river is navigable between



SENNAR DAM (Sudan)

With Acknowledgment to the Sudan Government Railways

Livingstone Falls and Stanley Falls. The river

carries the largest volume of water among the African rivers, and takes much mud into the Atlantic Ocean. The Ubhangi is one of its chief tributaries.

THE ZAMBEZI. This is another important African river having its source on the high plateau of Angola. It flows eastward through Rhodesia and Portuguese East Africa. There are a number of falls in the course of this river as it descends through the plateau, and the finest of these falls is the Victoria Falls. The river is navigable only for a short distance. The river falls into the Indian Ocean. The Shire which drains Lake Nyasa joins it, near its mouth.

THE ORANGE. This river rises in the Drakensberg Mountains and flows across the plateau towards the west. It has cut a deep valley across the dry plateau and is navigable. The Vaal is its chief tributary.

THE NIGER. This is another river of importance, and has its source near the Futa Jallon Hills, a region of heavy rainfall. At first it takes a north-eastern course. Then it curves towards the east up to Timbuktu and farther it turns south-east and falls into the Gulf of Guinea. From the mountain, south of Tchad, the river Benue joins the Niger. Navigation on the river is interrupted by a number of rapids. Below Rabbah, a hundred miles north-west of the confluence of the Benue, the river is navigable. The river mouth is studded with silt. At its mouth there is a vast delta. (See Map 16.)

CONCLUSION. From a study of the river systems of Africa, it may be seen that the lakes and rift valleys of Equatorial Africa are drained by the three important rivers, the Nile, the Congo, and the Zambezi

flowing in the northern, western, and eastern directions respectively. West Africa is drained by the Niger and the Senegal and South Africa by the Orange and its tributary, the Vaal.

EXERCISES

1. On a map of Africa mark and name the lakes and chief river systems of the continent.

2. Of the rivers of Africa which, do you think, is the most useful to man, and why?

3. What is a "watershed?" Do you find any watersheds in Africa? If so, where?

4. Why are the rivers of Africa not very useful as inland water-ways?

5. Compare the Nile and the Congo as affording river routes to the interior.

CHAPTER X

CLIMATE

INTRODUCTION. The term climate means the average character of weather in a locality or region. The chief factors that determine the climate of a region are:—(1) The temperature of the air as influenced by latitude and elevation; (2) the nature and the direction of the prevailing winds; (3) the amount of rainfall; and (4) the influence of the ocean. The cumulative effect of the causes determines the climatic character of the region.

DUPLICATION OF CLIMATIC BELTS. The equator passes through Africa almost in the centre. The result is that there are similar climatic belts from the equator to the Mediterranean Sea in the north, and to the Cape of Good Hope in the south. The Sahara has its counterpart in the arid tracts of the Kalahari, the Sudan in Rhodesia, and North-West Africa, in the south-west region around Cape Town. Thus every region in the north has its counterpart in the south. The climatic belts in Africa are thus duplicated. But higher altitude, and proximity to seas of the southern plateau, and the greater width, and lower elevation of the northern portion of the continent cause some modifications in regard to the climatic character of these belts.

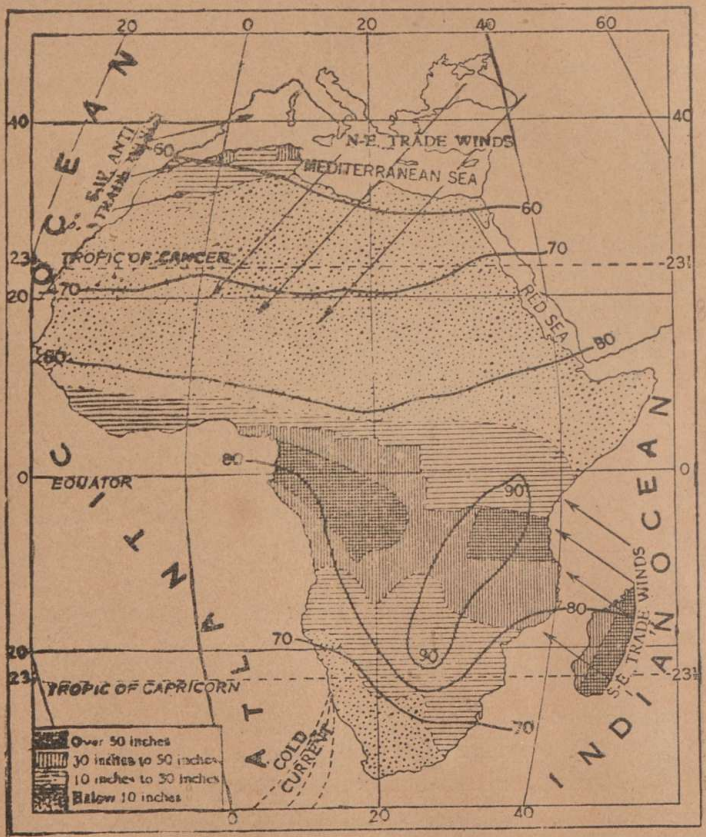
JULY CONDITIONS. The seasonal migration of the sun is a determining factor in the climate of Africa. The period from April to September is the season when the lands north of the equator receive the direct rays of the sun and so have the summer season. Similarly, the period from October to March is the period when the regions south of the equator have

summer conditions. The isothermal map of Africa for July shows that the isothermal line 80° F. passes through the equator. (See Map 17). North of this

MAP 17. AFRICA—TEMPERATURE, WINDS AND RAINFALL—JULY CONDITIONS

line, encircling the interior region, is the 90° F. isothermal line. This is a region of intense heat and

drought. North of this line, bordering the Mediterranean lands, runs the 80° F. line. North of the Tropic of Capricorn and cutting it runs the 70° F.



MAP 18. AFRICA—TEMPERATURE, WINDS AND RAINFALL—JANUARY CONDITIONS

line. South of the Tropic of Capricorn runs the 60° F. line. July is the summer season for lands

north of the equator, while winter conditions prevail in lands south of the equator.

JANUARY CONDITIONS. The January isothermal map reveals reversed conditions: The 60° F. isothermal line now passes through the Mediterranean lands. (See Map 18). The July 90° F. region of drought in the north now has 70° F. temperature. The equatorial lands now have temperature of 80° F. The interior plateau in South Africa now has the same temperature as the interior plateau of North Africa in July, *i.e.*, 90° F. The southern extremity of South Africa now has only 70° F. temperature.

CONCLUSION. Considered as a whole, Africa has a higher mean temperature than any other continent; for, a large portion of the continent lies within the Tropics, and the small area which is outside the Tropics lies in warm temperate latitudes. The higher elevation of the southern plateau, the moderating influence of the sea and the cooling effect of the Benguella current in the south-west, have all made South Africa a suitable place for European settlement.

RAINFALL. The rainfall regions of Africa are as simple as its temperature belts. In January, when the sun is overhead in regions near the Tropic of Capricorn, the area of heavy rainfall, high temperature and low pressure lies south of the equator. In July the conditions are reversed, and the area of heavy rainfall lies to the north of the equator. During the period from October to March the Mediterranean lands come under the influence of South-West Anti-Trade Winds and this is a season of wet winter rains.

But the interior of the region is dry, for the north-east winds start from a huge land-mass, which is dry, and blow towards a warmer area. During the period from April to September the whole of North Africa is dry. The Sahara gets very hot and cool winds are drawn to the interior from the south. These winds take the character of a monsoon in the lands adjoining the Gulf of Guinea. The South-East Trades bring plenty of rain to the south-east coast of Africa and the rainfall diminishes as we proceed west, for by the time the winds reach the western coast they are rid of all moisture. Hence the west coast region of the southern plateau receives no rainfall and there is the Kalahari Desert. The south-western corner of Africa lies in the track of the North-West Anti-Trade Winds and receives winter rains in July. It is a region which has the characteristic of a "Mediterranean" type of climate.

GENERALISATION. Summing up the points we have now studied, we find that the climatic belts of Africa fall under five divisions:—(1) Equatorial regions of heavy rainfall at all seasons; (2) Tropical regions with summer rains on either side of the equatorial belt; Summer conditions occur in July in regions north of the equator and in January in regions south of the equator; (3) Deserts dry at all seasons; in the north it is greater in extent than in the south. In the south desert conditions exist only in the west; for, the eastern coast receives rain from the South-East Trade Winds blowing across the Indian Ocean; (4) Temperate grasslands (veld) of the southern plateau; (5) Mediterranean regions with dry summers and wet winters.

EXERCISES

1. Why do the great river systems take their source in Equatorial Africa ?

2. Explain clearly the statement, "Within the Tropics the rain follows the sun," and illustrate it.

3. Below are given the mean monthly temperatures of two places, Cape Town and Cairo, in degrees Fahrenheit.

Names.	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Aver-age.	Range.
Cape Town ...	70°	69°	68°	63°	59°	56°	55°	56°	57°	61°	64°	67°		
Cairo ...	54°	58°	62°	69°	76°	81°	83°	82°	78°	73°	65°	58°		

(*a*) On a piece of squared paper draw temperature curves.

(*b*) Find the annual average temperature and the range of temperature.

(*c*) Guess the latitude in which these places are situated ? Verify your answer with the aid of an atlas.

(*d*) How do you account for the variation in the range of temperature between these two places ?

(*e*) Which place is likely to have greater rains, why ?

4. Find similar conditions in the formation of deserts in Australia and in Africa.

5. While regions in the east coast lying in the same parallel as the Kalahari area get a good rainfall, the latter is a desert. How do you account for this?

6. In Africa the South-East Trade Winds cause plenty of rain: but the North-East Trade Winds bring little rainfall. Assign reasons for this.

7. The statement on the next page gives the mean monthly rainfall in inches of a number of places in Africa. In the table a fall of rain measuring less than .5 inch has been omitted, the rainfall of more than .5 has been reckoned as one inch.

(*a*) Draw a horizontal line 2.4 inches in length. Mark off twelve equal divisions of the line. Let each division represent a month of the year. Over each division draw a rectangle to represent the rainfall of a place for each month. Let one inch of rainfall be represented by .1 inch in the vertical scale. This is called the rainfall diagram (this exercise can be done easily on a squared paper).

(*b*) Find out the total annual rainfall of each place.

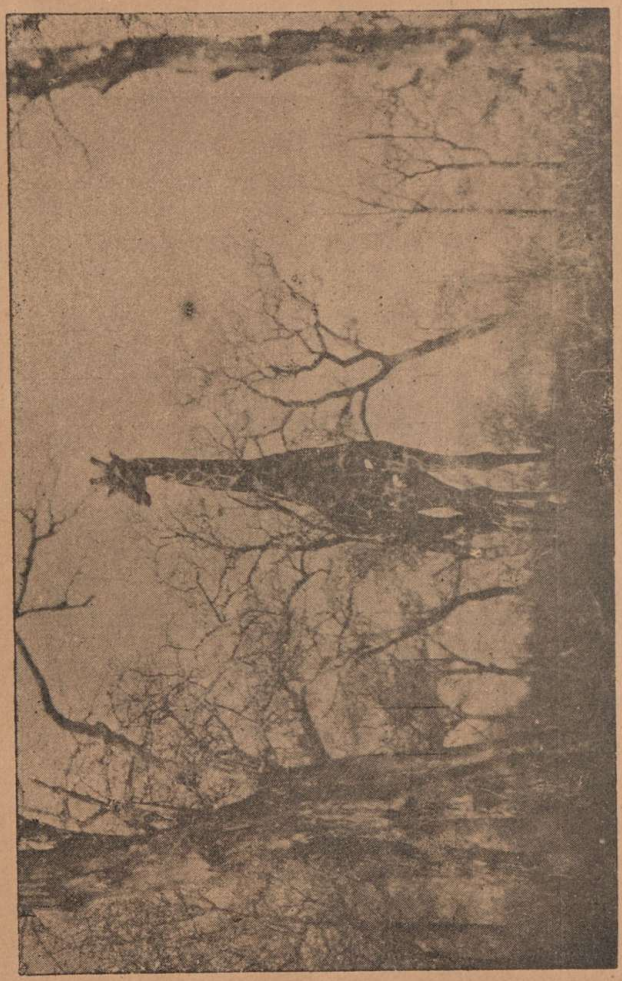
(*c*) Compare Algiers and Cape Town in regard to the season of rains.

(*d*) Explain why Free Town has a heavy rainfall.

(*e*) Port Nolloth and Berber get an annual rainfall of only two inches. Why?

(*f*) Assign these places to their respective climatic belts in column 15.

Place.	J.	F.	M.	A.	M.	J.	J	A.	S.	O.	N.	D.	Total	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Mombasa	1	1	2	8	14	5	4	3	2	3	5	2		
Addis Ababa	1	2	3	3	3	6	10	12	8	1	1	0		
Berber	...	..	...	1	...	...	...	...	...	...	...	...	2	
Alexandria	2	1	1	...	...	...	...	...	...	...	1	3		
Algiers	4	4	4	2	1	1	...	...	1	3	5	5		
Cape Town	1	1	1	2	3	4	4	3	2	2	1	1		
Port Nolloth	...	...	...	...	...	...	..	...	...	...	...	...	2	
Free Town	1	1	1	5	15	21	36	40	33	15	5	1		



A GIRAFFE IN THE KRUGER NATIONAL PARK
Courtesy: South African Railways and Harbours

CHAPTER XI

VEGETATION REGIONS OF AFRICA

There is a close correspondence between the climatic and the vegetation belts of Africa. As in the case of climatic belts, here also we find a duplication of vegetation belts in the regions north and south of the equator. The main vegetation belts are (See Map 19) :—

1. Equatorial forests of the regions of great heat and heavy rainfall. The Guinea Coast and the Congo Basin fall within this zone and are areas of dense vegetation with thick undergrowth. Rubber, palm oil, hard woods like mahogony are the products of these regions where forests have been cleared off.

In the forests live a remarkable number and variety of wild animals, reptiles, monkeys, elephants and a large variety of birds. The life of the people is not pleasant. They engage themselves in collecting forest produce. In some places the forests are cleared and maize is sown and bananas are planted.

2. Tropical grasslands or savannahs. It is a region of light rainfall and long periods of drought. This region of savannahs borders the equatorial forests. The long period of drought is the chief obstacle to the growth of dense forests in this region. Summer rains facilitate the growth of grass.

3. Adjoining the tract of the savannahs lies a sandy and infertile region with little or no rainfall. This is the region of scrubland and deserts, the Kalahari in the south and the Sahara in the north.

4. South-eastern Natal is a region of warm temperate forests. Compare this region with the eastern coastland of New South Wales in Australia.

MAP 19. AFRICA—NATURAL VEGETATION REGIONS

Temperate forests occur also in the Abyssinian highlands and on the higher parts of the mountains on and near the equator.

5. West of this region of warm temperate forests in the south, lie the temperate grasslands of South Africa. Vegetation of this type also occurs in the Abyssinian highlands. The eastern half of the plateau of South Africa is known as the High Veld. It is a good pasture land.

6. Mediterranean lands lying along the north coast of Africa and south-western coast of South Africa. This is a region of summer drought and winter rains growing grape vine and fruits. Note such regions in Australia.

EXERCISES

1. Find out regions of similar vegetation in Africa and Australia.

2. In a map of the western half of Africa mark the duplication of vegetation belts.

3. What features of climate are found in each of the zones of vegetation referred to in question 2?

A Herd of Impala (Antelope)
Courtesy: South African Railways and Harbours

CHAPTER XII

THE CHIEF NATURAL REGIONS OF AFRICA

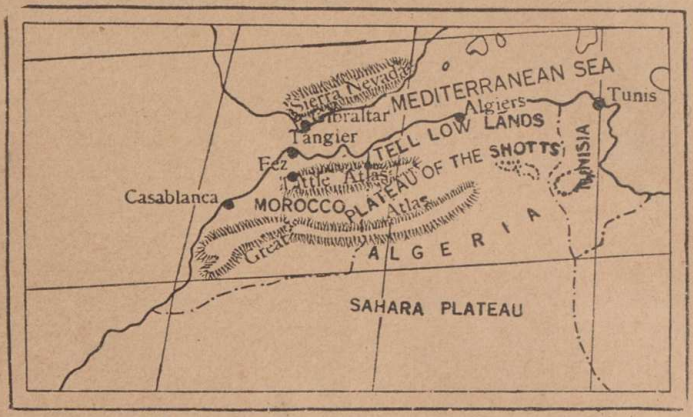
THE NATURAL REGIONS OF AFRICA. In our study of the vegetation regions of Africa, we grouped together similar physical, climatic and vegetation conditions and gave a common label such as "Mediterranean" lands, temperate grasslands, etc. The vegetation regions are proper natural regions, for only similar physical and climatic conditions produce similar natural vegetation and this effectively controls the life and occupations of the people. The chief natural regions of Africa are (1) the Atlas region, (2) the Sahara, (3) the Nile lands, (4) the Abyssinian highlands, (5) the Sudan, (6) The Guinea lands and the Congo Basin, (7) the plateau of the Great Lakes, and (8) South Africa.

I. THE ATLAS REGION. (*a*) RELIEF. This region lies in North-West Africa. As pointed out in an earlier section, this region consists of three natural divisions: 1. The lowlands of the Tell region; 2. the plateau region between the Great Atlas and Little Atlas studded with lakes called Shotts; 3. the Sahara side of the plateau. Compare the trend of the South European mountain system with the trend of the mountains in North-West Africa (See Map 20).

(*b*) CLIMATE. In January the 60° F. isothermal line passes through this region. In July the southern portion lies within 90° F. isothermal line. The 80° F. line passes through the north and north-western parts of this region. The climate of this region is of the

Mediterranean type, with remarkably dry summers and mild wet winters. The temperature varies with the height. The rainfall is brought chiefly by the westerly winds in winter. It ranges from 25 to 30 inches on the coast and diminishes as we proceed to the interior. The Sahara plateau is extremely dry.

(*c*) PRODUCTS. The coastal plains are fertile. Wheat, barley, maize, potatoes and rice are the chief crops. On the slopes of mountains, olive, mulberries,



MAP 20. AFRICA—THE ATLAS REGION

Learn the number of lines of latitude and longitude.

lemons and other fruits are grown. Alfa or esparto grass, used in the manufacture of paper, covers much of the plateau. Camels, sheep, goats and horses are reared in the pasture lands.

In Algeria iron is obtained from the mines; zinc, copper and lead are worked at several places. A large quantity of phosphate, useful for manure, is also available.

(*d*) COMMUNICATIONS AND TRADE. Morocco, Algeria and Tunisia are the three principal divisions. Algiers, a good harbour on the sea coast, is the capital. It has a large trade with Marseilles, and exports wine, cereals and fruits. At Fez, the largest city in Morocco, fez caps and silk goods are manufactured. Tunis is the capital of Tunisia and has a good export trade in cereals and minerals such as phosphate, lead and iron. Casablanca is a port on the Atlantic border of this region. Railways connect the coastal plains with the interior in a few places. Tangier, opposite to Gibraltar, is of strategic importance.

II. THE SAHARA. The Sahara, the largest desert in the world, is as large as Europe. It stretches from the Atlantic to the Red Sea. The fertile Nile valley breaks "the monotony of the desert" at its eastern end. The average elevation is about 1,000 feet above the sea level. The Tibesti mountain range is from 7,000 to 9,000 feet in height. The Sahara is not one boundless waste of shifting sand. There are several small ranges of bare rocks, sandhills and a few depressions.

The Sahara is one of the hottest regions in the world. The difference between day and night temperature or the range of temperature is very striking. During day the exposed rocks expand. After sunset rapid radiation takes place and the extremely cold night causes contraction. This process of sudden expansion and contraction splits up the rocks into fragments and these are finally reduced to sand. The area is in the track of the dry North-East Trade

Winds which blow from a great land mass. The shining sand has the appearance of water at a great distance and this raises up hopes of water in regions where there is none. Such illusions are known as mirages.

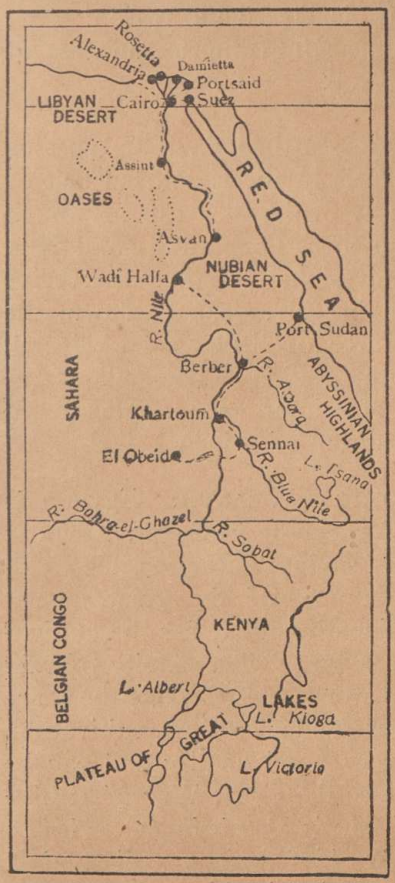
But in some places there are permanent springs and around these have grown up oases. Irrigation projects have extended the area of the oases. Date palms, rice, barley, oranges and pomegranates are raised in the oases. Gum trees are found in the southern regions bordering the grasslands. Phosphates of potash and soda are the chief mineral products of this region.

Sahara is a very thinly peopled region. The people lead wandering lives following their flocks of horses, camels and goats in search of pasture. They dwell in tents. Milk, cheese, cereals and dates form their chief food. Settled inhabitants live in the larger oases. The camel is the animal most suited for desert life. Its hump, a mass of fat, is its larder for hard times. Small pouches in its stomach serve as the storage of water sufficient for three or four days. The camel is called 'the ship of the desert.'

There are caravan routes from one place to another. The desert automobile, the aeroplane and the construction of new railways have all a great future in the development of this region.

III. The Nile Lands (See Map 21). The Nile is one of the largest rivers of the world. Taking its source in Lake Victoria, one of the lakes of equatorial Africa at an elevation of 3,800 feet above sea level, it

runs for a distance of 4,000 miles and reaches the Mediterranean. The Nile thus drains the enormous rainfall of the equatorial heat belt. From the view point of relief the river passes through the three physical divisions of Africa—the High Plateau, the Low Plateau and the Desert Plains



MAP 21. THE NILE LANDS

The river also runs through the three vegetation regions of equatorial forests, tropical grasslands and deserts.

The lakes of the Ruwenzori group with an almost permanent snow-field on account of their high elevation ensure a regular supply of water large enough to cross the Sahara. The only tributaries it receives in these regions are the Atbara and the Blue Nile of the Abyssinian Highland with its heavy July rainfall. The Blue Nile brings down "lava dust" from the mountains, and thus adds to the fertility of the valley.

Between Khartoum and Aswan, the river descends nearly 1,000 feet in six cataracts. Below Aswan, the river flows slowly and is navigable right up to the sea. The region below Cairo is the delta region. The valley and the delta of the Nile comprise an area of 12,000 sq. miles.

CLIMATE. The river passes through four types of climatic belts. Its source is in the equatorial belt of high temperature and heavy rainfall. Further on, it passes through a region of high temperature and good summer rains. The Abyssinian Highlands receive about 50 inches of rain in July. Lower down, the river flows through an area of little or no rainfall. Aswan and Cairo lie in this region. The delta of the Nile lies in the region of winter rains. Alexandria has an average annual rainfall of 9 inches.

PRODUCTIONS—ECONOMIC WEALTH. Egypt is the Gift of the Nile. "The Nile is Egypt, Egypt is the Nile," so runs the old saying. But for this river, it should have formed a part of the great desert. Climate and soil are eminently suited for the cultivation of rice, cotton and sugar. The scarcity of rain is made up by irrigation works. In Egypt, there are about 2½ million acres under cotton cultivation. Egyptian cotton is of very good quality and can be spun as fine as silk. Since the Great War of 1914—1918, the cultivation of flax is also being attended to with care. Dates are the chief fruits of this region. There are millions of date palms in this region. From time immemorial wheat has been a staple crop in Egypt. Even in the delta, a third of the land is under

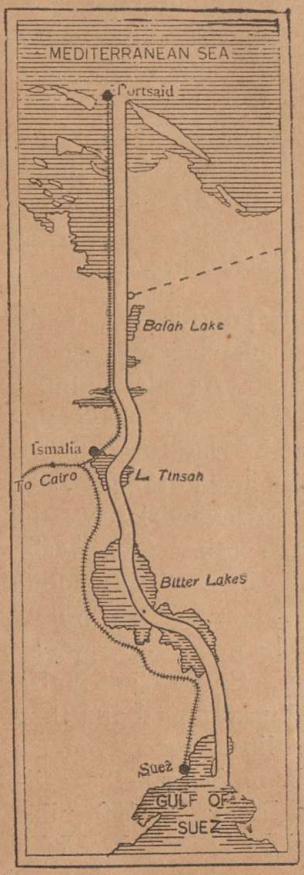
wheat. Wheat, barley and pulses are the winter crops of this region.

PEOPLE. The irrigated areas are all regions of fairly dense population. The people are mainly agriculturists. The manufacture of cigars is a useful industry. The necessary tobacco is imported from Greece. The people are highly conservative and are loath to take advantage of modern improved methods of agriculture. For its total area of 350,000 sq. miles, Egypt has only about 14 million people. Almost all the people live in cultivated and settled areas.

COMMUNICATIONS AND CHIEF TOWNS. Since the construction of the dam at Aswan, river-vessels can ply between Wadi Halfa and Aswan uninterrupted. In the deltaic area the two navigable channels are the Rosetta and Damietta distributaries. The other distributaries are all sand-barred. Railways connect Cairo with Alexandria in the north-west and Aswan in the south. Alexandria, Rosetta and Damietta are on the base of the deltaic region and Cairo is at the apex. Egypt is the hinterland of these three ports. There is no railway between Aswan and Wadi Halfa. From Wadi Halfa the railway goes south-east to Abu Hammed and then to Berber. From Berber the lines reach Sennar passing through Khartoum. From Sennar the railway line takes a direct route to El Obeid, 150 miles west of the Nile. A line from Berber reaches Port Sudan.

Cairo, the capital, is at the head of the delta. It is an important centre in imperial airways. Alexandria,

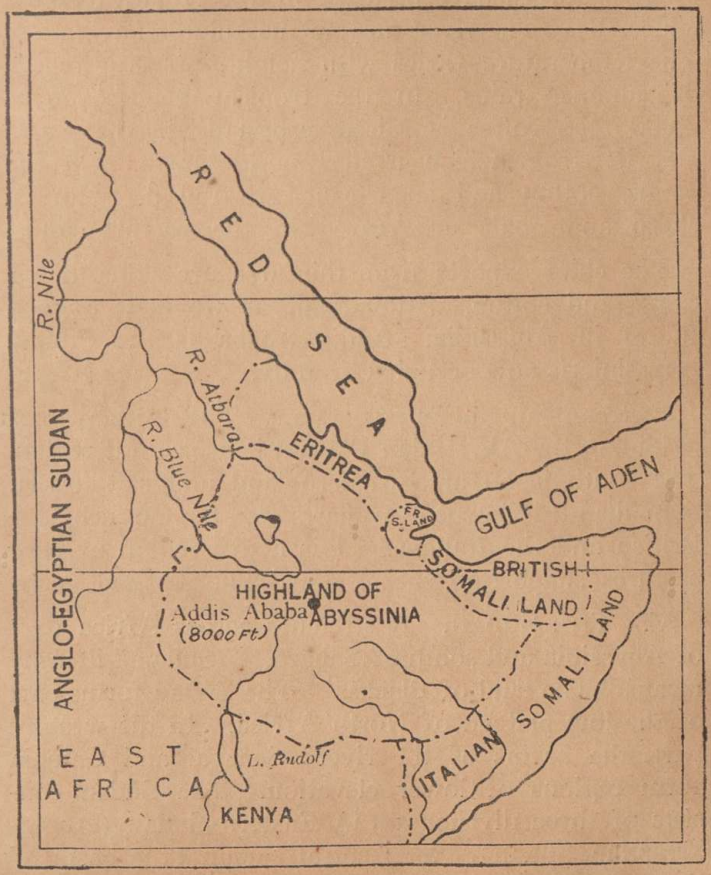
Rosetta and Damietta are all ports on the Mediterranean and are connected with Cairo by railway. The Suez Canal was opened in 1869 (See Map 22).



MAP 22. THE SUEZ CANAL

From Port Said at the Mediterranean entrance of the Canal to Suez at the Red Sea entrance of the Canal there is a distance of nearly 100 miles. The width of the bed is 121 feet and the depth is 31 feet. The time taken to cover the distance varies from sixteen to twenty-four hours. Port Said is 1,080 miles from Brindisi and 1,750 miles from Marseilles. It is a coaling station at the Mediterranean entrance of the Canal. Ismalia, a port in the middle of the Canal, is connected with Cairo by railway. The opening of the Suez Canal has shortened the distance from the English Channel to Bombay from 10,640 to 6,110 miles, and to Calcutta from 11,460 to 7,750 miles. Khartoum, at the junction of the Blue and the White Nile, is the capital of Anglo-Egyptian Sudan. Cotton, gum, dates and ivory are the articles largely brought to the market at Khartoum for trade.

IV. THE EASTERN HORN (See Map 23). The Eastern Horn of Africa includes Abyssinia, Eritrea and Somaliland.



MAP 23. THE EASTERN HORN OF AFRICA

Abyssinia is a highland region between Sudan and the Red Sea. Its people are largely engaged in

pastoral work. Cotton and coffee are raised at high altitudes. Somaliland is a pastoral region.

Deep gorges have been cut by the Atbara and the Blue Nile. The rivers are not useful for navigation. The temperature varies with height. It is a region of summer rains. In the tropical heights above 5,000 feet, coffee is raised, especially in the Kaffa District from which it derives its name. On the plains, cotton and sugar-cane are raised. Horses, sheep and goats are reared in the pasture lands.

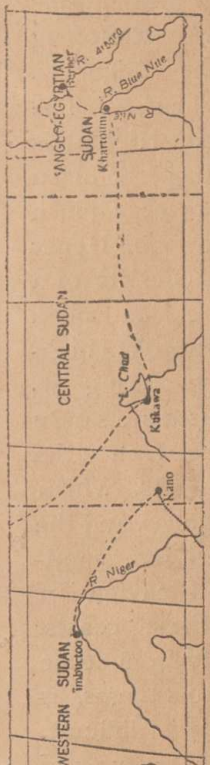
The chief exports from this area are skins, hides, coffee and cotton. Mining appears to have a good future in Abyssinia. Addis Ababa is the capital. Abyssinia is now occupied by Italy.

Eritrea is an Italian possession. The northern part adjoining the Abyssinian Plateau is a pastoral region. The south is an area of scrubland and salt desert. Somaliland is owned in parts by the French, the British and the Italians. It is a dry region of poor pastures supporting sheep, camels, horses and goats.

V. THE SUDAN. It stretches across Africa west of Abyssinia and south of Sahara. "Sudan" literally means "The land of Blacks." The Sudan forms part of the low plateau of North Africa. In the western part, the basins of the rivers Senegal and Gambia form regions of lower elevation. The Sudan consists of three divisions: (1) Eastern Sudan (Anglo-Egyptian Sudan), (2) Central Sudan (the basin of the Lake Chad), (3) Western Sudan drained by the Senegal, the Gambia and the middle and upper Niger. Lake Chad is the centre of an inland drainage system,

for the rivers which flow into it do not flow further and reach the ocean. (See Map 24).

The heat is very great, especially in summer (July). The winters are very warm, the mean temperature being about 80° F. This is a region of summer rains. This region lies in the track of the dry north-east winds in winter. The southern portion of the Sudan being nearer the region of equatorial forests has a greater rainfall than the northern parts.



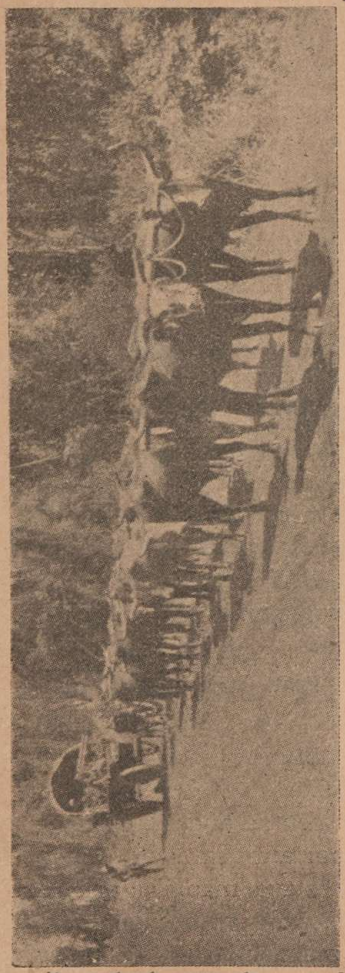
MAP 24. AFRICA—THE SUDAN. CARAVAN ROUTES SHOWN THUS . . .

From the above it follows that the northern portion of the Sudan with its poor rainfall contains grass-lands for pasture. It is a great pastoral region. In the southern portion millet, maize, pulses, cotton and ground-nuts are raised. There are rich tin deposits in this area. Cotton and ground-nuts are exported.

The important towns of this region are:—

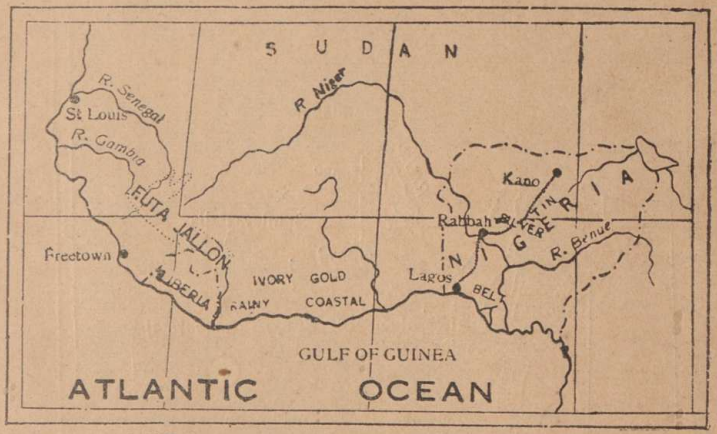
(1) Timbuktu is the chief town of French Sudan. It is an important caravan centre and (2) Kano, another important caravan town, carries on a large manufacture of cotton goods; it is also a large trading centre noted for its metal works and dyes. North-west of it lies Kuka, another important caravan centre.

VI. THE GUINEA LANDS. These can be divided into two regions: (1) Upper Guinea extending from the Gambia to the Niger and (2) Lower Guinea stretching from the Niger to the Cunene. The Cameroon Highlands divide Upper Guinea from Lower Guinea (See Map 25). Upper Guinea consists of a narrow coastal plain and a stretch of highlands bordering it. The coasts are sandy and between the river mouths, which form lagoons, and the sea there are sandbars, and navigation along these coasts, especially from Free Town to Lagos, is extremely difficult. The relief features of Lower Guinea are somewhat similar. Lagos and Kano are connected by rail and the products of the interior, especially oil-nuts and palm oil, are brought to Lagos.



OX WAGON TRANSPORT (Molo District, Kenya)
Courtesy: H. M. Eastern African Trade and Information Office, London.

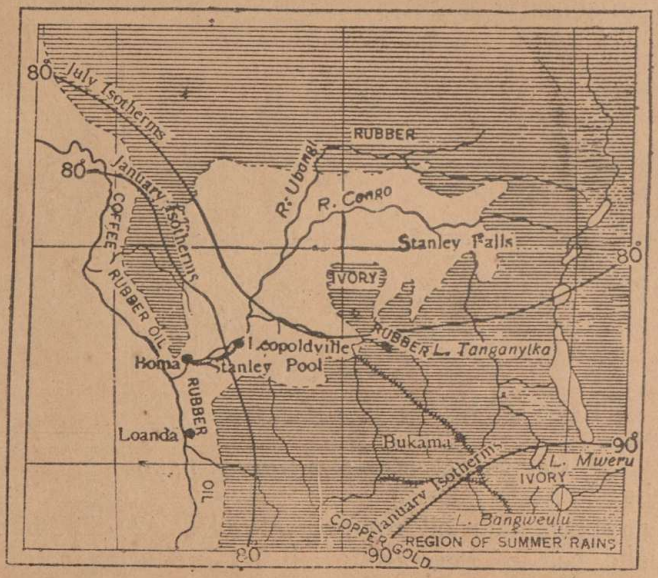
CLIMATE AND ECONOMIC WEALTH. This area is uniformly hot on account of the region lying near the equator. The January and July isotherms 80° F. pass through this region. There is continuous rainfall throughout the year, heavy in the coasts and decreasing in the interior. Corresponding to the relief features and climatic divisions, the vegetation zones of this region can be classified under two



MAP 25. AFRICA—THE GUINEA LANDS

belts: (1) The coastal belt of equatorial forests yielding rubber, palm oil and ground-nuts. (2) The high inland belt of decreasing rainfall producing cotton, millet, maize and other products. Tin is extensively worked in Nigeria. South of Kano there are tin mines stretching over 9,000 sq. miles in extent. Silver, lead and iron are also found. In olden days gold formed the chief export of the Gold Coast, ivory of the Ivory Coast and grains of the Grain Coast. Palm oil, coconuts, kola nuts and tin are the chief articles of export. Lagos is the port.

VII. THE CONGO BASIN. The Congo is one of the most important rivers of equatorial Africa. It takes its rise in the region west of Lake Nyasa; the river Luapula, one of the head-streams of the Congo, flows into and out of the shallow lakes of Bangweulu and Mweru. The other head-stream is the Lualaba. The combined river runs northward till it reaches the



MAP 26. AFRICA—THE CONGO BASIN

Stanley Falls, a descent from the high plateau to the low plateau occurring in about 50 miles. There is a series of rapids and falls. From Stanley Falls, the river takes a western course and passes through an area of dense equatorial forests. It flows in and out of the lake called Stanley Pool whence it again plunges

down into a series of rapids called Livingstone Falls. Then it reaches the estuary which forms its mouth (See Map 26). Although not navigable in the region of Falls, the river and its tributaries, chief of which is the Ubangi, from excellent waterways, especially in a region of thick impenetrable forests.

The region is hot at all seasons. The mean annual temperature is 80° F. The region of the source of the river has a temperature of 90° F. in January. Rainfall is heavy and the period of heavy rainfall in the north and south of the equator follows the migration of the sun. Rubber and ivory are the plant and animal wealth of this region. The absence of a settled policy in regard to the forests and the reckless slaughtering of elephants have led to a decrease in the production of this area. There is considerable mineral wealth in the Katanga District. Copper and gold deposits are found in this area and these mines are worked, the necessary coal for this purpose being supplied by Northern Rhodesia.

Politically the Congo Basin is divided into Belgian Congo, French Congo and Portuguese Angola. The Negroes of this region live by hunting, fishing and collecting forest produce. In the open parts of the region agricultural occupations are practised. The density of population varies with the regions. It is specially dense in the Belgian Congo where the density of population is 75 per sq. mile. In other regions it varies from twenty-five to sixty.

Dr. Stanley gives the following description of the life of the dwarfs of the Congo Basin: "With their

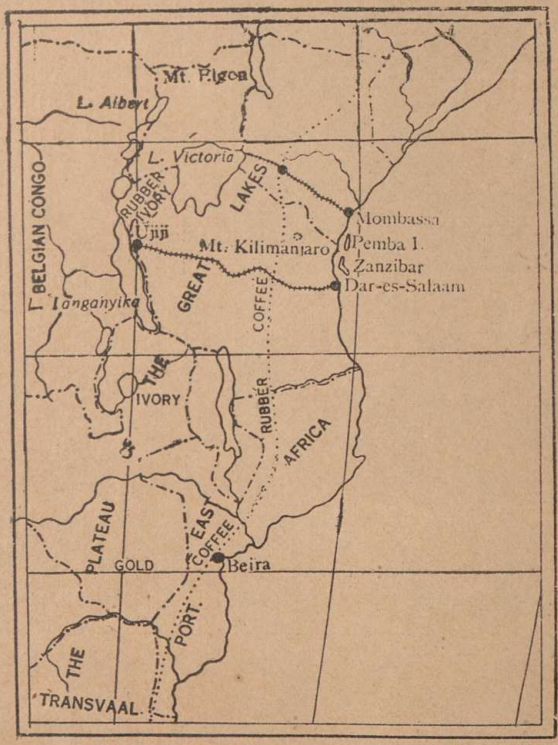
weapons, little bows and arrows the points of which are thickly covered with poison, and spears they kill elephants, buffaloes and antelopes. They sink pits, and cunningly cover them with sticks and leaves over which they sprinkle earth to disguise from the unsuspecting animals, the danger below them. They build a shed-like structure, the roof being suspended with a vine, and spread nuts and ripe plantains underneath to tempt the chimpanzees and the baboons within, and by a slight movement the shed falls, and the animals are captured. As soon as the supply of game is exhausted in one region, they migrate to other regions."

Leopoldville is the capital of Belgian Congo and Loanda is the capital of Portuguese Angola. Benguella on the coast is linked with Katanga District by rail. Railways connect Loanda and Boma with the interior. Study the map carefully and note the railways marked therein.

CHAPTER XIII

REGIONS OF AFRICA *(Continued)*

VIII. THE PLATEAU OF THE GREAT LAKES. This is the region lying between the Abyssinian High-



MAP 27. AFRICA—THE PLATEAU OF THE GREAT LAKES

lands in the north and the Zambezi in the south. (See Map 27). The tableland descends steeply to a narrow

coastal plain. The plateau has an average elevation of 3,000 to 4,000 feet and contains numerous volcanoes like Mount Elgon (17,000 ft.) and Mount Kilimanjaro (19,000 ft.). The lakes of this region are rift valley lakes like Albert, Edward and Tanganyika. Victoria, Bangweulu and Mweru occupy low depressions in the plateau and are not rift valley lakes.

VIEW OF LAKE VICTORIA FROM ENTEBBE (Uganda)
Courtesy: H. M. Eastern African Trade and Information Office, London.

Politically, East Africa is divided into the British possessions comprising (1) the Kenya colony and protectorate including the islands of Zanzibar and Pemba, (2) Uganda, (3) Tanganyika territory, a

former German possession mandated to Britain after the Great War (1914—1918), (4) Nyasaland and (5) Rhodesia, and Portuguese East Africa in the eastern lowlands in the coast.

The climate of the plateau is very warm throughout the year. The 90° F. isothermal line passes through the region in January. The July temperature is 80° F. The lowlands are hot on account of the lower altitude. The rainfall is heavy on the coast, which receives rain almost at all seasons of the year.

The coastal lowlands are congenial to the growth of rice, coconuts, sugar-cane and tobacco. West of Nyasa, a large quantity of coffee, rubber and tobacco is grown. On the lower slopes, cotton and maize are raised. Cattle rearing is also an important occupation, especially in Rhodesia, where there are good pasture lands.

The outlets for export are Mombasa in Kenya, Dar-es-Salaam in Tanganyika territory and Beira in Portuguese East Africa. Nairobi is the capital of Kenya. Railway lines connect Port Florence on Lake Victoria with Mombasa. Another line connects Ujiji on Lake Tanganyika with Dar-es-Salaam. Zanzibar occupies a well-protected site. The city has become a collecting and distributing centre for the coast.

Rhodesia is rich in minerals, especially gold, coal and iron. The gold-fields lie in the region between Salisbury and Bulawayo, a large town on the Cape to Cairo railway project.

Madagascar, a large French island, lies two hundred and fifty miles east of South Africa. In extent it is

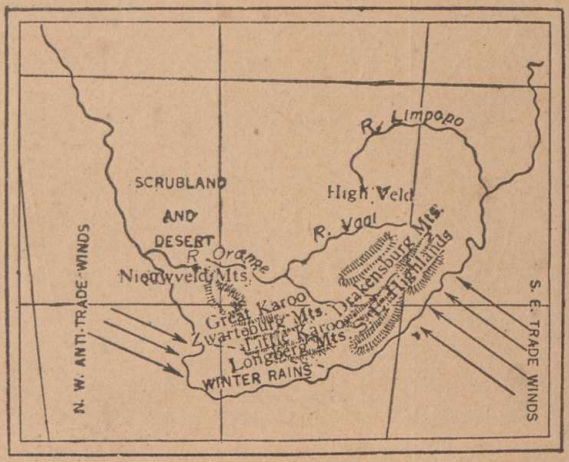
nearly twice the size of the British Isles. Its area is about 228,000 sq. miles. The eastern margin is swept by the south-east trades. The windward side gets an abundant rainfall. The leeward coast is comparatively dry.

The two main types of vegetation in this island are the tropical forests and grasslands. Coconut palms, plantains, mangoes and sugar-cane are grown near the coasts. The raffia palm is a peculiar plant. All its parts are used by the people. In the construction of huts the tough stem is found useful. The fibres are woven into cloth. The fruits are eaten, and the finer fibres are used as a substitute for cotton in stuffing pillows. The travellers' tree, a native of Madagascar, grows like a huge fan. Rice is cultivated in the plains. On the plateau, at the higher altitudes, coffee is raised. The east coast is more populous than the west.

IX. South Africa. South Africa comprising the region south of the Zambezi consists of (1) the edge of a vast tableland called Nieuweld in Cape Colony and the Drakensberg Mountains in Natal and (2) the coastal plain (See Map 28). The descent from the plateau to the coast is by means of a number of terraces. In Cape Colony these terraces are called the Great Karroo and the Little Karroo. The Zwarte Berge Mountains lie between the two Karroos. Between the Little Karroo and the coastal plain lie the Langberg Mountains. In South Africa, the edge of the plateau stands higher than the plateau level. The three chief rivers of South Africa are the Zambezi,

the Orange and the Limpopo. The first two rivers have already been considered. The Limpopo rises in the Transvaal near Pretoria and flows in an easterly direction to the Indian Ocean. It is a shallow river.

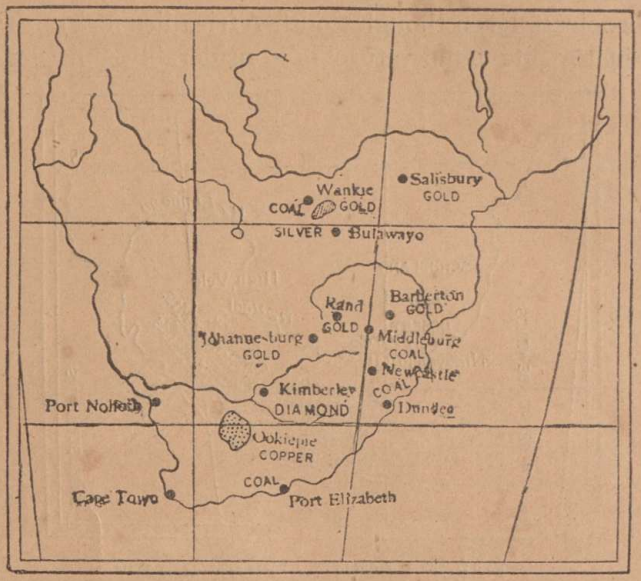
South Africa lies almost in the same parallels as Australia. The northern portion is within the Tropics. Even though South Africa lies 35° F. of the equator, its temperature is considerably modified by



MAP 28. SOUTH AFRICA—RELIEF

the high altitude and vast expanse of water on its three sides. The sea level temperature is 80° F. in January and 60° F. in July. The greater part of South Africa lies in the track of the south-east trade winds. The rainfall decreases as one proceeds west. The west coast is dry. The south-western coastal strip is under the influence of the westerlies and receives winter rains.

Agriculture is the chief occupation in the coastal plains and Natal. Wheat and maize are the chief crops raised. On the eastern coastal lands, tobacco and sugar-cane are grown. Fruit-growing is an important industry in the "Mediterranean" south-west corner of South Africa; grapes are the important



MAP 29. SOUTH AFRICA—MINERAL WEALTH

fruits of this region. In the region of the Karroos, sheep rearing is a useful occupation. In the Transvaal, "dry farming" is resorted to by farmers.

But the real wealth of South Africa lies in its mines (See Map 29). The Kimberley diamond mines are the most famous in the world. Diamonds are also mined in Griqualand and in a region east of Pretoria.

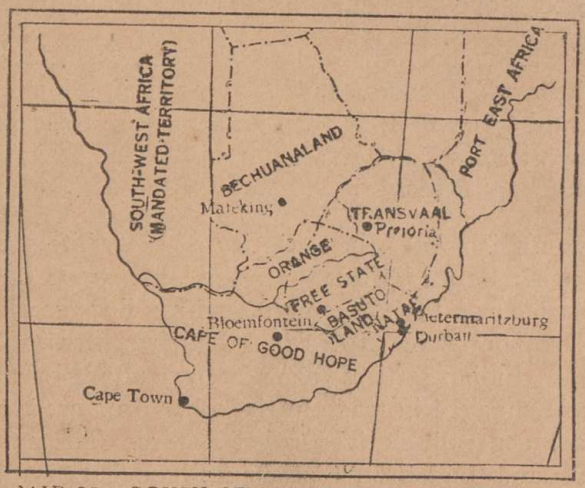
Gold is another important mineral. A third of the world's output of gold comes from the Witwatersrand in the Transvaal. The centre of this gold-mining industry is Johannesburg. Other gold-mining areas are Barberton, east of Pretoria, and the region between Salisbury and Bulawayo in Southern Rhodesia. Copper is mined in the north-west corner of the Cape of Good Hope. Its chief port is Port Nolloth.

Excellent coal mines lie east of Pretoria near Middleburg. Dundee and Newcastle are important coal-mining centres of the Drakensberg area. East of the Victoria Falls and south of the Zambezi lie the Wankie coal fields.

The British form the majority of the white settlers in British South Africa. In the rural parts of the Transvaal and the Orange Free State live the Boers, the descendants of the former Dutch settlers of this region. Indian settlers carry on agriculture in Natal, and are engaged in trade in the other provinces. The rest are generally natives called Kaffirs. The bracing climate and the existence of mines have led to a large white population settling in British South Africa.

The four divisions of British South Africa are the Cape of Good Hope, Natal, the Orange Free State and the Transvaal (See Map 30). South-West Africa is a mandated territory. Before the Great War of 1914—1918, South-West Africa was a German possession. Cape Town is the capital of the Cape of Good Hope province. The improved means of communication with the interior have extended the hinterland of the port and increased its importance;

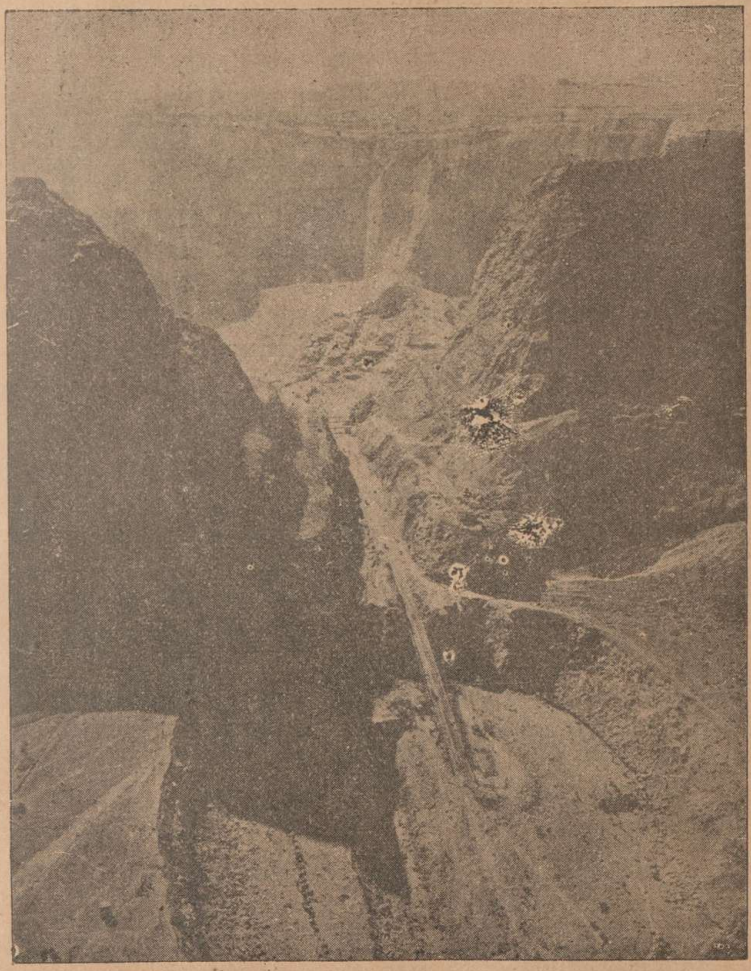
wine, wheat, fruits, diamond from Kimberley, and gold from Johannesburg are the chief exports from this port. The other chief ports of this province are Port Elizabeth and East London in the east and Port Nolloth, south of the mouth of the river Orange in the west. Copper is the chief commodity of export at this last port. Railways from Port Elizabeth and



MAP 30. SOUTH AFRICA—POLITICAL DIVISIONS

East London join the Cape to Cairo Railway at the De Aar junction. From this junction, another line branches out to Windhoek, the capital of South-West Africa. Cape Town is connected with Port Elizabeth by another line.

Pietermaritzburg is the capital of Natal. Durban, its chief port, is connected with the capital by a railway line. The proximity of this port to the important coal fields has made it a valuable coaling station.



THE PREMIER MINE NEAR PRETORIA
Courtesy: South African Railways and Harbours

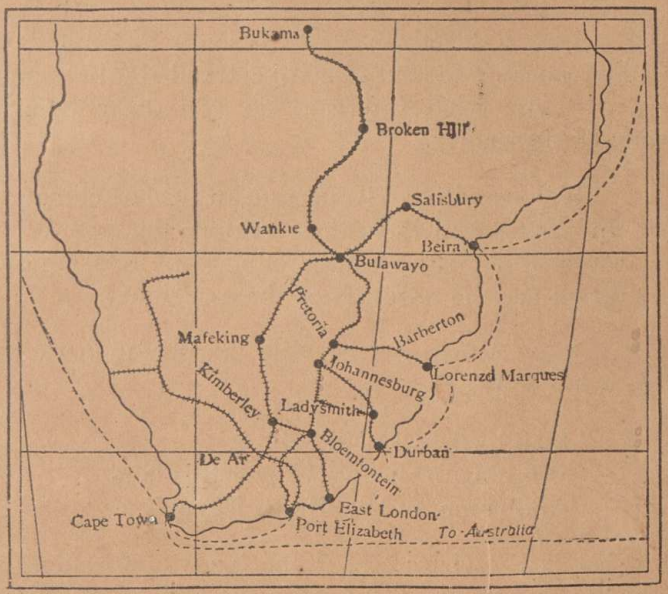
Gold, wool, sugar and the bark of wattles useful for tanning purposes are exported from this centre. It is also a whaling centre of considerable importance.

Bloemfontein is the capital of the Orange Free State. The capital is well served by railways. Pretoria is the capital of the Transvaal. Johannesburg is a rich gold-mining centre. Lourenco Marques in Portuguese East Africa is the natural outlet of the Transvaal. The nearest British port is Durban. The Rand mines of the Transvaal are famous. Middleburg is the chief coal centre. Mafeking is the capital of Bechuanaland. A line of railway joins Mafeking on the Cape Line to Johannesburg.

There are two important railway lines in South Africa. One starts from Cape Town and passes through De Aar junction, Kimberley, Mafeking and Bulawayo to Bukama in Belgian Congo (See Map 31). This is known as the Cape to Cairo line. There is a break from Bukama to El Obeid. Parallel to this Cape line runs another line in the east from Port Elizabeth to the Limpopo river passing through Bloemfontein, Johannesburg and Pretoria. Study the map carefully and note the situation and importance of the lines serving the rich mining areas of South Africa.

As in Australia, there were colonies in British South Africa, with different degrees of Self-Government. The grant of Self-Government to these colonies speedily led to a union of the British South African states styled as "The Union of South Africa" in 1910. Some years back the Union of South Africa

celebrated the twenty-first anniversary of its establishment as a Dominion within the British Empire. The messages of His Majesty the King Emperor and of the Prime Minister, Mr. Ramsay MacDonald are highly inspiring as they lay down principles of Empire policy. The King's message contained the following: "To-day (June 1, 1931) we commemo-



MAP 31. SOUTH AFRICA—RAILWAYS AND COMMUNICATIONS

rate the twenty-first anniversary of the establishment of the Union. By that act of wisdom and good-will, a new and a happier era will be opened in the history of South Africa. Twenty-one eventful years have vindicated the faith and foresight of those who laid the foundation of the great nation." The following

is an extract from the Premier's message: "The establishment of the Union in South Africa is an abiding example of what can be accomplished by a spirit of good-will and by wise statesmanship."

EXERCISES

1. Draw a sketch map of the lands adjoining the Mediterranean Sea and mark the trend of the mountain systems: what inference do you draw from a study of the map?

2. Regions with a Mediterranean type of climate—(*a*) In what parallels do these regions lie? (*b*) What are the characteristics of the climate of this region? (*c*) What are the products of these regions?

3. Draw a map of the Nile lands and mark the vegetation zones.

4. "Hail to thee, O Nile,
Who manifest thyself over this land
And come to give life to Egypt."

What is the character of the land? How does it give life to Egypt? "Egypt is the gift of the Nile." Explain this fully.

5. The Cape to Cairo Railway—(*a*) What are the advantages of this scheme? (*b*) How far has this scheme been accomplished? (*c*) Say how far the accomplishment of this scheme is likely to affect the ocean trade of the continent.

6. How are the tributaries of the Nile from the Abyssinian highlands useful to the main stream?

7. Explain the term "centre of inland drainage" with examples from Australia and Africa.

8. How are rift valleys formed? Explain your answer by means of diagrams.

9. Compare Africa south of the Zambezi with Australia in regard to (1) physical features, (2) rainfall, (3) natural vegetation, (4) population.

10. Write a note on the work of the Indian settlers in East Africa and in South Africa.

CHAPTER XIV

(A) PEOPLES OF AFRICA

The northern part of Africa is similar to the south of Europe in respect of races. The Semites, with their wavy hair, fine features and oval faces, and the dark skinned Hamites form the bulk of the population north of the Sahara. In Sudan and Guinea live the Negroes. In and around the Kalahari desert live the Bushmen. The Pygmies, short in stature and yellow in complexion, live in the region of the Congo. The Kaffirs of the Bantu race form the large majority of the "Blacks" in British South Africa. The Kaffirs are good fighters. Kaffir chiefs rule over Basutoland and Bechuanaland under British protection. The Dutch and the English have settled in South Africa. Indian settlers are found in East and South Africa.

The most densely peopled regions in Africa are the Lower Nile valley and the Cape Town area. The density is over 200 per square mile. The south-eastern coast of Africa, the Mediterranean plains, the region along the valley of the Nile from Khartoum to Aswan, the Niger basin, and the coastal plains of the Plateau of the Great Lakes have a moderate density of population varying from 50 to 200 per square mile. The Congo basin and the Upper course of the Niger have a density ranging from 10 to 50 per square mile. The Sahara region and the Kalahari desert and the adjoining tracts of land have a density of less than one person per square mile.

(B) TRADE ROUTES OF THE INDIAN OCEAN

The continents adjoining the Indian Ocean are Africa, Asia and Australia. The Indian Ocean may be said to be the highway of these three continents. The Suez Canal, opened in 1869, has cut out the land joint between Africa and Asia, and shortened the water route between Western Europe and the East. Ships from Cape Town bound for Indian ports touch on their way at Port Elizabeth, Durban, Biera, Dar-es-Salaam and Mombasa and then reach Bombay. From Durban, there is a direct route to Colombo *via* Mauritius. Steamers from Cape Town call at Port Elizabeth, Durban, Mauritius and Colombo. From Colombo, there is a direct route to Perth in the west and Port Darwin in the north of Australia. In the latter case, the ships pass through Singapore where the British are establishing a naval base. From Cape Town and Durban ships go to Perth, Adelaide, Melbourne and Sydney. After the opening up of the Suez Canal, the Cape route to the east has declined in importance. But the heavy customs duties of the Suez Canal make it still profitable for goods to be sent by the Cape route in spite of the distance.

EXERCISES

1. Describe a coastal voyage round Africa.

2. Examine the importance of the following places as centres of communication:—Cape Town, Durban, Timbuktu, Port Said and Mombasa. Draw sketches.

3. Mark the ocean routes connecting Cape Town, Colombo and Port Darwin.

CHAPTER XV

SOUTH AMERICA—SURFACE RELIEF

POSITION, SIZE AND EXTENT AND COASTLINE. South America lies to the south-east of North America and is connected with it by Central America and the West Indies. It is also linked up with the Antarctic continent by a series of islands such as the Falkland Islands, South Orkneys and South Shetlands. The continent stretches from 12° North to 54° South Latitude and from 35° to 81° West Longitude. The extreme length is about 4,500 miles and the extreme breadth about 3,200 miles. It may be seen that the meredian 60° W. cuts the continent into two halves (See Map 32). South America has an area of seven million square miles. It is roughly four times the size of our country, nearly twice Europe, and more than twice Australia. The shape of the continent is that of a right-angled triangle.

Great oceans encircle the whole of the continent. The length of the coastline is about 18,000 miles. In proportion to its vast surface, South America has only a small coastline. On the whole, South America resembles Africa and Australia in its regularity of coastline.

RELIEF. South America has well-defined physical features. It is not one big mass of confused tableland like Africa. The Western Highlands (the cordillera of the Andes), the Guiana Plateau and the Brazilian Highlands are the three highland systems of the continent. The narrow Pacific coastal strip,

west of the Andes, the chief river basins, the Orinoco,

MAP 32. SOUTH AMERICA—RELIEF OF LAND

the Amazon, the Parana, the Paraguay and the Argentine Pampas and the Patagonian deserts are the chief lowlands of this continent.

(*a*) THE ANDEAN SYSTEM. The Andes system runs through the entire length of South America from the Isthmus of Panama to Cape Horn (See Map 33). In some places, the ranges run in two or three distinct chains enclosing high plateaus, like Bolivia. The equatorial section of this system, *i.e.*, the ranges lying betwen 10° North and 15° South Latitudes consists of a series of ridges and valleys due to river erosion. This equatorial section of the Andes is a crustal belt in an unstable condition. The result is, that this is a region of volcanic peaks the most famous of which are Cotopaxi and Chimborozo.

MAP 33. THE ANDES

The Peru-Bolivian plateau has an average elevation varying from 12,000 to 14,000 feet. It is an area of inland drainage. In the middle of the plateau, there are a large number of lakes receiving the drainage

from the mountains near by. Titicaca, the largest lake in South America, is like this.

In the southern part, Andes contains the highest peak of the Andean system, Aconcagua. South of Aconcagua, the system is like a single ridge and becomes submerged at its southern end with the result that there is a chain of islands along the Chilean coast.

(*b*) THE EASTERN HIGHLANDS. The north-east of South America is a region of tablelands. The Brazilian highlands form one group. The southern parts of Guiana and Venezuela form another. The Guiana Plateau is high in the west and has its slope towards the coast. The mountain ranges of the Brazilian Plateau radiate from a centre close to Rio de Janeiro. The Matto Grasso uplands meet the western slopes of the Andes and form a watershed separating the waters of the Amazon from the waters of the Paraguay.

(*c*) THE CENTRAL LOWLANDS AND THE RIVER SYSTEMS OF SOUTH AMERICA. The central plains are river basins. The chief river systems of South America are (1) the Orinoco, (2) the Amazon and (3) the Parana Paraguay (See Map 34).

1. The Orinoco rises to the south of the Guiana Highlands, flows west and then curves north and east describing almost a semi-circle. It is about 1,400 miles long. About 130 miles from the source of the river a natural channel from the main stream joins with the Rio Negro, a tributary of the Amazon. These river basins are thus connected by natural channels. A boat may travel round from the mouth of

the Orinoco to the Rio Negro and thence to the mouth of the Amazon, thus encircling a vast portion

MAP 34. SOUTH AMERICA—RIVER SYSTEMS

of the tableland. Note this feature on the map.

2. The Amazon is the largest river in the world. Its chief headstreams, the Maranon and the Ucayali, both rise in the Andes at an elevation of about 14,000 feet. Below the confluence of the two, the river is navigable down to its mouth. The two important tributaries are the Rio Negro and the Madeira. The rivers flow through a dense forest area known as the Selvas. Note the very large number of tributaries that rise from the plateau of Matto Grasso and join the Amazon. The main river and its tributaries provide thousands of miles of waterways, a factor especially important in a region of rank vegetation, difficult to be cleared for purposes of road construction. The length of the Amazon is 4,000 miles and the area of its basin is 2½ million square miles.

3. The Rio de Plata is a vast estuary formed by the junction of the Parana and the Uruguay. The Parana rises in the Brazilian Highlands and takes a south-westerly course till it receives the Paraguay. The Paraguay rises in Matto Grasso of the Brazilian Highlands. The combined river known as the Parana flows south, and the Uruguay, which rises at the southern end of the Brazilian Highlands, joins the Parana almost at its mouth. The estuary thus formed is known as the River Plate. The Parana-Paraguay valley affords a good route to the interior. The length of the river is 2,300 miles, and the area of the basin is 1¼ million square miles.

EXERCISES

1. Bring out the points of comparison between South America and Africa in regard to (i) position on the globe and (ii) coastline.

2. Draw a map of South America and mark in it the chief physical features. Note the position of Lake Titicaca, Aconcagua and the Uspallata Pass.

3. Draw a sketch of the Highlands of South America. Study (i) the work of rivers in regard to erosion and (ii) the way in which the river systems are connected with one another.

4. How are waterways specially important in South America?

5. Make out a list of the points of comparison between the Congo and the Amazon in regard to (i) the source, (ii) the course, (iii) the estuary and (iv) usefulness to man.

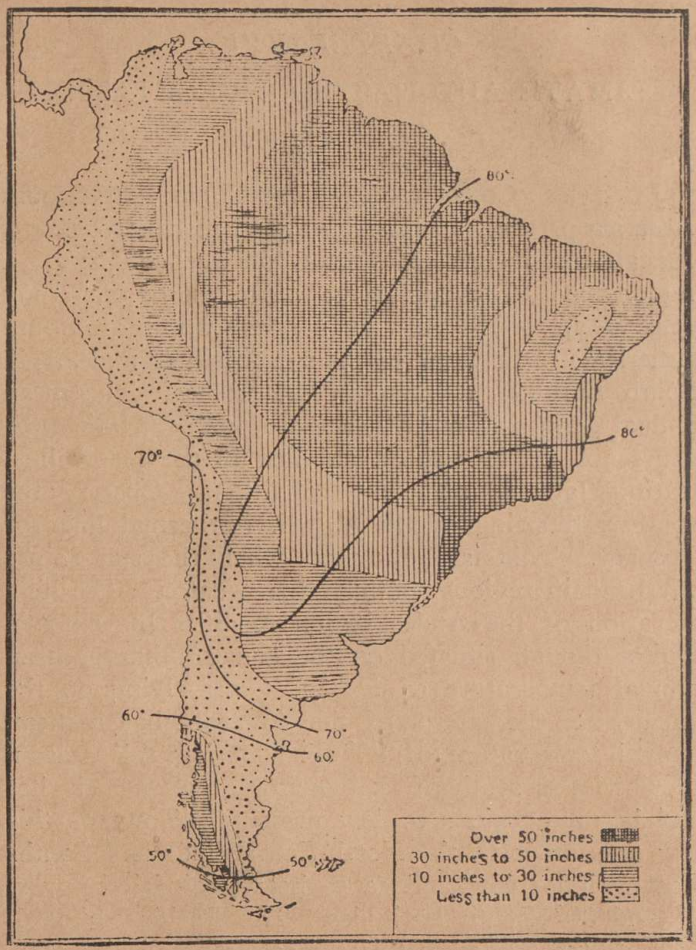
CHAPTER XVI

CLIMATE AND NATURAL VEGETATION

VEGETATION

JANUARY CONDITIONS. The climate of South America presents an interesting and instructive study, for all the factors that determine the climate of a region have to be applied in the course of our study (See Map 35). A very large portion of South America lies between 12° North Latitude and 23½° South Latitude, *i.e.*, within the tropics. The mean annual temperature is therefore high. Notice the course of 80° F. isothermal line in the maps illustrating January and July conditions. Observe the southward swing of the 80° F. isothermal line for January. This is the season when the sun shines overhead in regions south of the equator. The high elevation of the Andes region modifies the climate. Quito, though situated on the equator, has a mean annual temperature of 55° F. Para, lying on the equator at the mouth of the Amazon, has a mean annual temperature of 80° F. During this season, the lowlands south of the equator get extremely hot and become regions of low pressure. Towards this low pressure belt, the North-East Winds and South-East Winds blow and cause heavy rainfall between 4° and 30° South Latitudes. The Pacific seaboard, west of the Andes in this region, is practically rainless. The Andes prevent the moisture bearing winds from getting into the Pacific seaboard. Peru and

Northern Chile form part of this hot and dry region.



MAP 35. SOUTH AMERICA—CLIMATE: JANUARY CONDITIONS

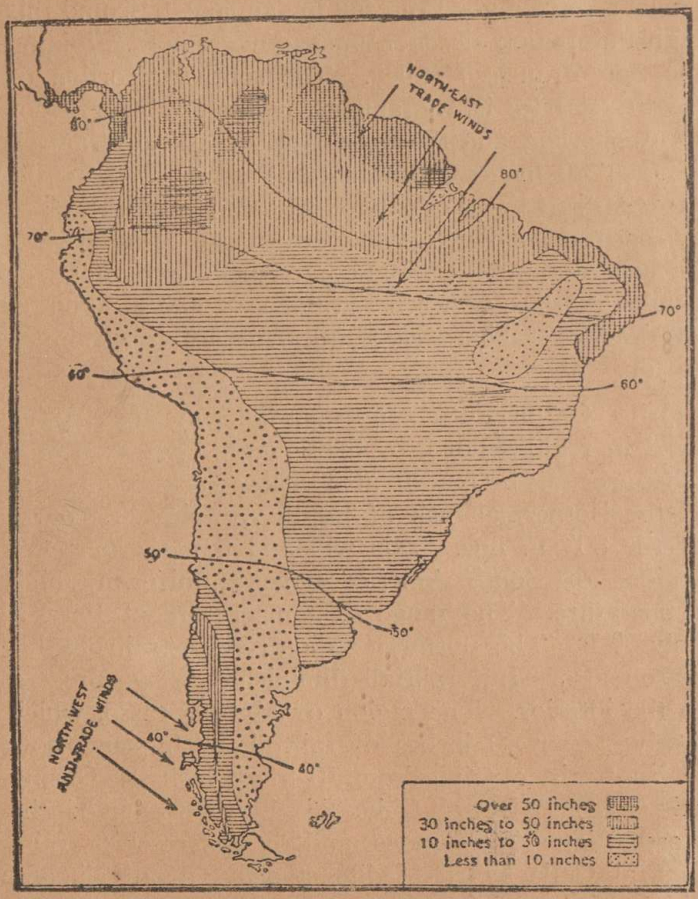
The Amazon basin has a heavy rainfall. Para has

a rainfall of 94 inches. The South-East Winds are obstructed by the Brazilian Highlands and the coastal plains receive a good rainfall in January. Behind this highland region lies a rain-shadow region adjoining the Sao Francisco valley. The southern portion of South America is, in January, under the influence of the westerlies, and the coast receives a heavy rainfall of over 80 inches. But the Andes are a bar to the free entry of the winds to the eastern regions. Hence the eastern portion of the south of South America is an arid region. It should be remembered that, for similar reasons, between Latitudes 4° and 30° South, the Pacific seaboard of South America is a rainless region.

JULY CONDITIONS. In July, the sun shines overhead in regions north of the equator (See Map 36). These regions become an area of low pressure. Notice in the isothermal map of South America the course of the 80° F. line. You will find that the northern regions of South America have a uniformly high temperature. The range of temperature at Para is only 4° F. This northern region receives rains in this season also. But rainfall diminishes as we proceed to the interior. The region of Matto Grasso, which receives over 40 inches of rainfall in January, now receives rain ranging from 10 to 20 inches. During this season, Central Chile lies in the track of the North-West Anti-Trades and hence receives rain. Central Chile has a Mediterranean type of climate. It has winter rains.

INFLUENCE OF OCEAN CURRENTS. One other factor has to be noticed in our study of the climate

of South America. It is found that the eastern coast of South America is warmer than the west coast.



MAP 36. SOUTH AMERICA—CLIMATE: JULY CONDITIONS

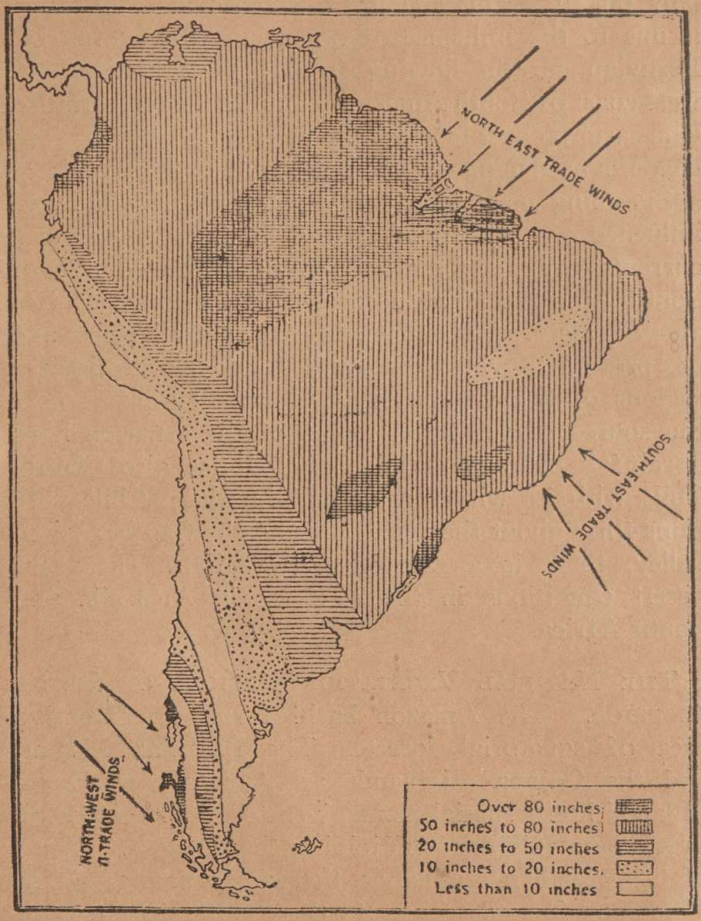
Antofagasta on the west coast and Rio de Janeiro on the east coast both lie on 23½° South Latitude. The

mean annual temperature of Rio de Janeiro is 74° F. and the mean annual temperature of Antofagasta is only 66° F. This striking difference in temperature is due to the influence of ocean currents. The cold Peruvian current flowing from the south along the west coast of South America, modifies the temperature. The eastern coast is under the influence of warm ocean currents branching out from the Gulf of Mexico.

Summing up, we may say that elevation, latitude, influence of the sea, of the winds and of the ocean currents are all factors controlling the climate of South America. The accompanying map (Map 37) gives a pictorial summary of the rainfall zones and the prevailing winds of South America. Notice the regions of heavy rainfall. Observe that places near the source of the headstreams of the Amazon have a rainfall of over 400 inches. Notice also Central Chile with its winter rains and Southern Chile with rains throughout the year. Behind the Sao Francisco valley, there is a rain shadow region. There are desert conditions in the west, as in Australia and South Africa.

The Natural Vegetation Regions of South America. The Amazon basin forms an extensive area of equatorial forests. The Brazilian Plateau and the Guiana Highlands are tropical grasslands. 'Llano' is the special name given to the grasslands of the Guiana Highlands adjoining the Orinoco. South of the Brazilian Highlands, there is an area of warm temperate forests which, further south, becomes an area of the temperate grasslands of Argentina. The narrow Pacific belt, west of the Andes, falls into

four regions, of northern equatorial forests, the Atacama desert, the Mediterranean region of Central



MAP 37. SOUTH AMERICA—ANNUAL RAINFALL AND WINDS

Chile and the cool temperate forests of South Chile.

The vegetation of the different Andean zones varies,

MAP 38. SOUTH AMERICA—NATURAL VEGETATION REGIONS

according to elevation, from the hot equatorial forests

to the vegetation of the Tundra belt. Note these facts illustrated in the adjoining map (See Map 38).

EXERCISES

1. Study the isothermal and rainfall maps of South America and find out the meaning of the statement " Rain follows the sun."

2. " The northern half of the Pacific coastal strip and the Atlantic side of the Andes in the south are rainless regions." Why?

3. Show what effect (i) the mountains and (ii) the ocean currents have on the climate of South America.

4. The accompanying statement gives the mean monthly temperature in degrees F. and the mean monthly rainfall in inches of two places, Para and Quito, both on the equator.

Place	Altitude in feet		J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Average
PARA	39	Temp.	78°	78°	78°	78°	77°	77°	78°	78°	79°	80°	80°	79°	
		Rain	10	13	13	13	9	6	5	4	3	3	2	5	
QUITO	9335	Temp.	56°	56°	56°	55°	55°	55°	55°	55°	55°	55°	55°	56°	
		Rain	3	4	5	7	5	2	1	2	3	4	4	4	

Study the above table carefully and answer the following questions:—

1. What is the mean annual temperature of each of the two places?
2. What is the total annual rainfall of each?
3. How do you account for the difference in temperature and rainfall between these two places?

CHAPTER XVII

PEOPLES AND STATES OF SOUTH AMERICA

AREAS OF DENSE POPULATION. South America has an average density of nine persons to the sq. mile. The thinly peopled parts are the deserts of Patagonia, Peru and Chile and the thick equatorial forests of the Amazon basin. The regions of thick population are Central Chile with its "Mediterranean" type of climate, the region round Buenos Aires, favourable for agricultural pursuits, and the coastal regions of eastern highlands, the higher slopes of which are suitable for coffee plantations. Regions around Bahia and Pernambuco (Recife) are also fairly thickly peopled. The interior regions are thinly peopled. There are vast fields suitable for cultivation. These areas afford excellent scope for enterprising immigrants.

HISTORY OF POPULATION IN SOUTH AMERICA. Originally, South America was inhabited by a set of people akin to the yellow race. They were generally uncivilised, though there were traces of an old civilisation, and they led a nomadic life. Later, the Spaniards, in their thirst for silver and gold, turned their attention to South America. Pizzaro, a Spaniard, planned to capture Peru where he thought there was plenty of gold. He conquered Peru and made himself master of that region. He led another expedition to Chile and conquered it. The Portuguese

did similar work in Brazil. African slaves were taken to South America by the Portuguese for work in the plantations and the mines. Later, the Spaniards sailed up the Plate estuary and established Buenos Aires. The civilised races now inhabiting South America are mainly the Portuguese and the Spaniards. Italian immigrants also have settled in the coasts of the eastern highlands.

Mineral wealth is important at present as in the past. The manufactures, in all states, are in their infancy. Chile is rich in nitrates, copper and tin. Rich deposits of silver and copper occur in Bolivia. There are oil fields with great possibilities at the northern end of Andes—the Maracaibo basin and Venezuela. The old rocks of the eastern and northern highlands are rich in gold and diamonds. Near the region of Lake Titicaca, tin deposits are found in abundance.

The possibilities of the development of South America are very great. Except the Guiana colonies, all the countries are republics. Occasional revolutions in government are great obstacles to the peaceful development of the continent.

EXERCISES

1. Account for the greater density of population in (i) the coastal margins of Brazil, (ii) Central Chile.

2. As a colonist, what place would you prefer in South America for settlement, and why?

3. Compare South America with Africa in regard to the possibility of future development.

CHAPTER XVIII

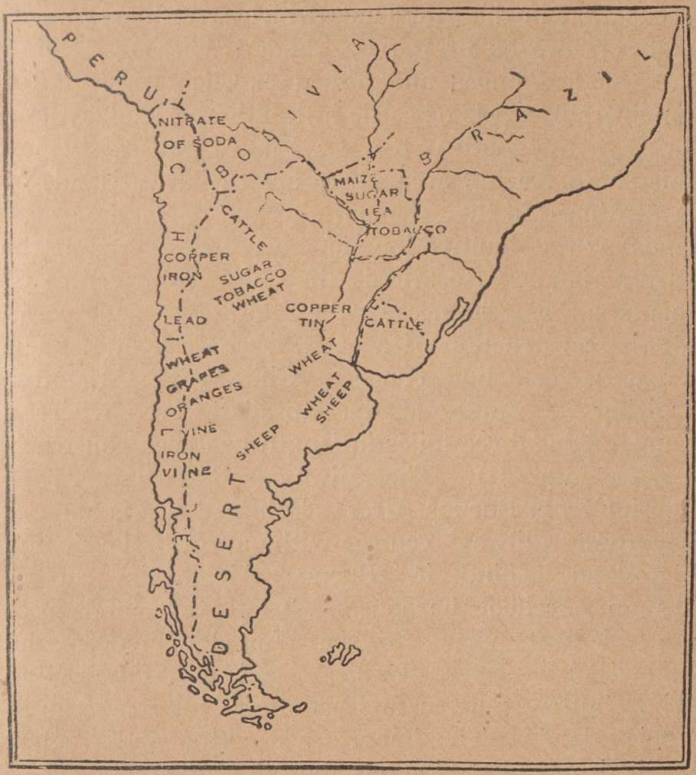
THE TEMPERATE COUNTRIES OF SOUTH AMERICA

(A) The Plate Region

This region comprises the large state of Argentina (1,153,000 sq. miles) and the small states of Uruguay (72,000 sq. miles) and Paraguay (75,000 sq. miles). Argentina occupies the whole of southern South America from the eastern slope of the Andes to the estuary of the La Plata. The Andes has an eastern slope and rivers from the slopes join the Paraguay river. The surface of the country is flat over a wide area. The rivers are natural channels into the interior (See Map 39).

Climate. The temperature is high in the upper part of the Parana-Paraguay basin. Notice the southward swing of the 80° F. January isotherm. Rainfall is heavy in January (30-40 inches). It varies from 10 to 20 inches in July. In the lower course of the river, the climate is warm with diminished rainfall. Between the lower course of the river and the Andean slopes, there is an area with a type of climate almost "Mediterranean" in its character. The southern portion of Argentina is a barren plateau with a cool, dry climate. This is the region of the Patagonian Shingle desert. Study temperature conditions in the Isothermal maps. Corresponding to these climatic divisions, there are natural vegetation belts.

VEGETATION AND PRODUCTS. 1. *The tropical forests of the upper part of the Parana-Paraguay*



MAP 39. TEMPERATE COUNTRIES OF SOUTH AMERICA —PRODUCTS

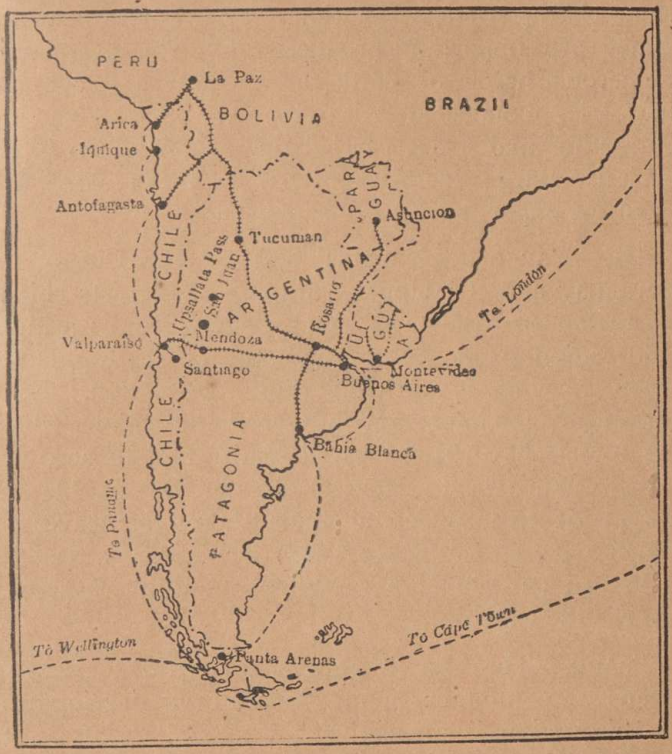
basin. In regions where the forests have been cleared, maize, sugar-cane and tobacco are raised. Coffee is grown on the slope of the Andes.

2. *The temperate grasslands of the lower course of the river.* The climate is ideal for wheat. Sugar-

cane and tobacco are also raised around Tucuman. The rearing of cattle and sheep is a very important occupation in the grasslands which stretch westwards and southwards of the La Plata. These grasslands are called Pampas and afford excellent pasture for innumerable herds of cattle in Southern Uruguay, and sheep in the south of the La Plata estuary. Behind this sheep rearing area, there are the wheat lands of Argentina. In the drier parts of the temperate grasslands wheat cultivation is encroaching upon the pasture lands. Rosario is the chief grain centre of this area. The flatness of the region has made possible the construction of a net-work of railways. The Trans-Andean line connects Chile with Argentina crossing the Andes at the Upsallata Pass where a tunnel about three miles in length has been constructed (see Map 40). The railways radiate towards the interior from Buenos Aires. Bahia Blanca is another important railway centre with a fast developing hinterland behind it. Buenos Aires, the capital, has an excellent harbour. Wheat, wool and meat are chiefly exported to the United Kingdom and countries of Western Europe. Maize, beef, hides and skins, butter, mutton and wool are all exported to foreign lands. The imports are cotton and woollen goods, iron and steel goods and oil.

3. *The region with a type of climate almost Mediterranean in character* lies along the foot of the Andes near Mendoza and San Juan. Though this is a dry region with a little rainfall, mountain streams are utilised for irrigation purposes. Sugar, hemp, tobacco and cotton are raised in small quantities.

This is a good region for fruit farming. Grapes thrive best at Mendoza and wine making is an important industry in the town.



MAP 40. TEMPERATE COUNTRIES OF SOUTH AMERICA
RAILWAYS AND TOWNS

4. *The arid southern region.* The last is a desert region and was of little economic importance till the recent discovery of oil deposits. The grasslands on the Andean slopes support sheep. Punta Arenas, the chief port, exports wool.

II. URUGUAY. The region enjoys a climate similar to that of the temperate grasslands of the Lower Parana-Paraguay Basin and possesses the same characteristic vegetation. Therefore wheat and maize are important products. On the grasslands, numerous herds of cattle are reared and the bye industries connected with it, mutton salting and extracting malts, are carried on. Montevideo is the capital. Large factories preparing meat, skins and wool for export have been established.

III. PARAGUAY is a small state in the basins of the Paraguay and the Upper Parana. It consists chiefly of lowlands in the east. The western part is a highland region. On the grassy slopes of the highlands, sheep rearing is an important occupation. Fruit farming is an important industry. In regions where the forests have been cleared, maize and tobacco are raised. Further, the forests are chiefly valuable for a type of tree, which abounds there, the leaves of which are used to make a beverage similar to tea. It is known as Mate tea. Asuncion on the Paraguay river is the capital.

TRADE. The La Plata states enjoy excellent means of communication. The railway development of this region is a positive aid to and proof of its commercial prosperity. The rivers are navigable far into the interior. The chief exports from the Argentine states are wheat, beef, linseed, hides and skins, maize, butter, wool and mutton. The imports are manufactured goods, especially cotton and woollen goods, and iron and steel goods consisting of machinery and locomotives.

CHILE is the long narrow coastal strip between the Andes and the Pacific border from Peru to Cape Horn. It has an area of 2,89,000 sq. miles. It is nearly 2,500 miles long from north to south and about 200 miles broad from west to east.

The northern portion is an arid rainless region with desert conditions. But this region of the Atacama desert contains rich deposits of nitrates of soda, very useful as manure. The absence of rain accounts for their preservation in the soil. Scarcity of water interferes with the working of the mines. Other minerals such as silver and copper are also available. These are exported from Iquique, Arica and Antofagasta—all sea-ports on the Pacific coast.

Central Chile has a Mediterranean climate, a dry summer and a rainy winter. The long valley between the Andes and the coastal ranges is fertile and has facilities for irrigation. This region yields good crops of wheat, barley, maize, tobacco, and grapes. This is the most thickly peopled region of Chile. Its capital, Santiago, and its chief port, Valparaiso, both lie in this region, though it is subject to earthquakes. The capital which is an inland town, is connected with Valparaiso by rail.

In Southern Chile, the coast is broken and there are fiords like those of Scandinavia. The climate is cool and wet. As it lies in the track of the westerlies, the region has sufficient rains. Sheep farming is the chief occupation.

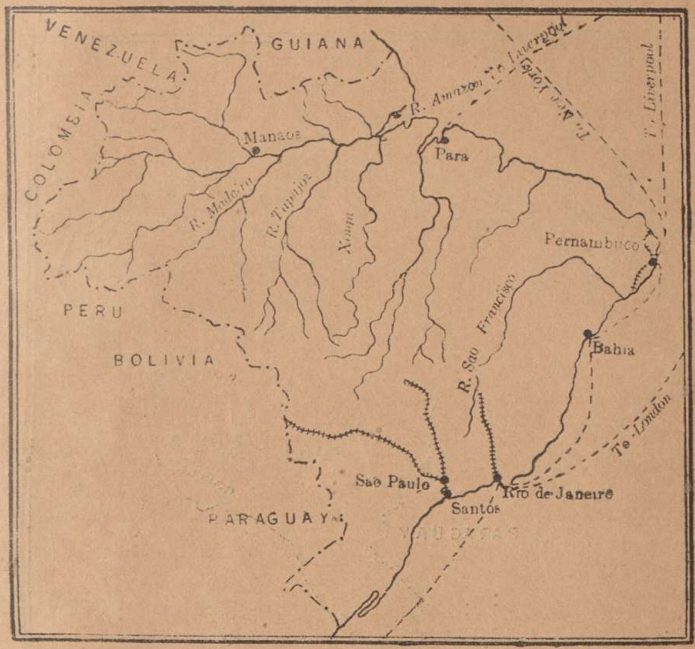
CHAPTER XIX

TROPICAL REGIONS—BRAZIL

Brazil is the largest state of South America occupying about half the area of the continent. It consists partly of the basin of the Amazon and partly of the Brazilian Plateau. Notice the innumerable streams that drain the Brazilian Highlands. It is a region of very intense heat and heavy rainfall. Great heat and rainfall have produced very dense forests. The chief product of the forests is rubber. This is collected from several kinds of trees by the natives and made solid by the action of heat and smoke. The rubber is then taken to the trading centre, Manaos, just above the confluence of the Negro with the Amazon and thence to Para at the mouth of the Amazon. The very best rubber is collected from Hevea trees and these are found in the plateau between the Tapajos and the Madeira rivers in Brazil.

The eastern highlands are regions of plantations. The strip along the Atlantic coast from the mouth of the Amazon to Sao Paulo is the only developed region; coffee, cotton, sugar-cane and tobacco are the products that are grown in these lands. Rio de Janeiro, the capital, is the chief port of the country. It has an excellent harbour. Sao Paulo is the coffee collecting centre and Santos is the chief coffee port. Railways connect these three centres. The waterways of Brazil are very important as they are the only means of communication in the dense forest regions (see Map 41).

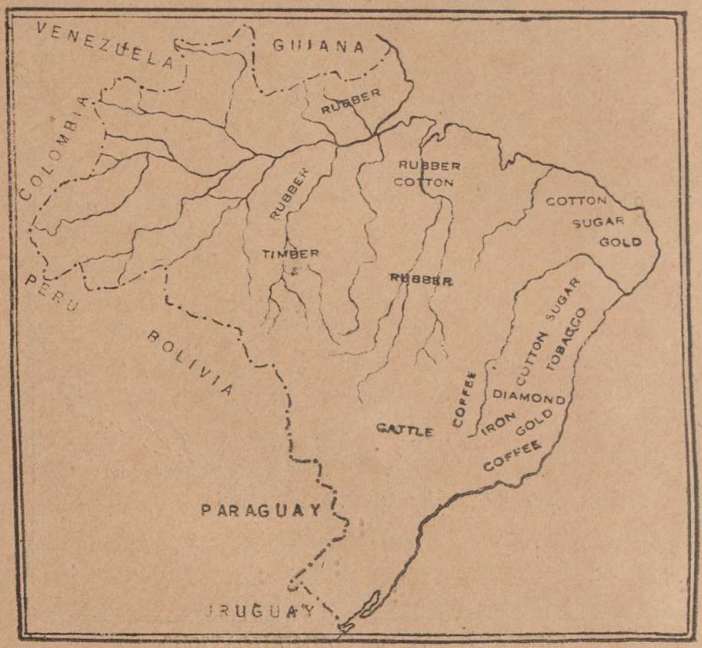
The mineral wealth of Brazil has a great future (see Map 42). Manganese is found in abundance. Gold, iron, diamond and coal mines are found in Brazil. Owing to lack of communications, mining has not been developed at all. Industries are being developed slowly. Iron and steel works have been started in



MAP 41. BRAZIL—COMMUNICATIONS

the Sao Francisco Basin near Minaes Geraes. The chief ports of exports are Para (rubber), Pernambuco (sugar and cotton), Bahia (tobacco and cocoa), Rio de Janeiro and Santos (coffee). The chief imports are iron and steel goods, wheat, cotton goods and coal.

II. THE ANDEAN STATES. Columbia, Ecuador, Peru, Bolivia and Chile are the Andean states of South America. We have already studied Chile under the head 'the Temperate countries.' The rest are all in the tropics and fall into two groups—the North Andean states composing the countries of



MAP 42. BRAZIL—PRODUCTS

Columbia and Ecuador and the Middle Andean states consisting of Peru and Bolivia (see Map 43). Columbia is in the extreme north-west of South America at the northern end of the main chain of the Andes. It consists of two main relief divisions,

the coastal lowlands and the mountain spurs. Both the regions lie in the tropics and have intense heat and heavy rains. Rubber, sugar, cinchona and cocoa are produced; in the plains wheat cultivation is also carried on. On the mountain spurs cattle grazing is the chief occupation. The country has great mineral wealth. Gold, platinum, copper and coal are found in the Andean Plateau. Oil deposits have been discovered near the coastal plains.

MAP 43. THE ANDEAN STATES
MINERALS AND OTHER PRODUCTS

Ecuador, Peru and Bolivia are the three proper Andean states. Ecuador and Peru have three natural divisions—the coast, the Andes and the Montana or the highland forests of the Amazon Basin east of the Andes. The Montana is a region of tropical forests yielding rubber. In the regions, which have

been cleared, are grown sugar-cane and cocoa. On the slopes of mountains, cattle and sheep rearing is the important occupation. A large quantity of coffee is also grown. Quito is the capital of Ecuador. It is at a height of 9,000 feet above the sea level. The "Alpaca wool" of the "lama" is a commodity of special importance. Peru has the same vegetable products as Ecuador. But Peru is rich in minerals. There are many copper, gold and silver mines in this region. Pizzaro's first objective was Peru. In recent years, oil also has been obtained. Nearly all the vanadium useful for black colouring produced in the world comes from Peru. Lima is the capital of Peru. Iquitos is the great business centre for Eastern Peru and has a considerable trade in rubber.

The wedge between Peru and Brazil is Bolivia. The plateau lies between two ranges of the Andes. It consists of two relief divisions, western highlands and eastern slopes. The tracts round Lake Titicaca are regions of inland drainage. The plateau is rich in minerals, especially tin and silver. The silver mines of Potosi, discovered nearly 300 years ago, are still worked. Tin, gold, lead and copper are also found. The forests of the mountain slopes produce coffee and cinchona. The forests of the lowlands yield rubber. La Paz, the capital of Bolivia, is on the plateau.

III. The Northern States. *Venezuela and the Guiana States* (See Map 44). Venezuela is the region in the extreme north of South America. The region is practically the basin of the Orinoco. But on the west, it is crossed by a branch of the Andes.

Coffee, sugar-cane and cocoa are cultivated in the lowlands. In the grasslands of the plains of Orinoco, sheep, cattle and horses are reared. There are large mineral deposits; gold and oil are mined to some extent. The chief exports are hides, coffee and cocoa. Caracas is the capital.

The Guiana colonies consist of Guiana highlands in the south and coastal lowlands in the north. Part

MAP 44. THE NORTHERN STATES OF SOUTH AMERICA
PRODUCTS AND MINERAL WEALTH

of the country is forested, but large tracts are grassy. The uplands are rich in minerals, gold and diamonds. The lowlands produce sugar, rice, cocoa, cotton and tobacco. George Town is the capital of British Guiana. Paramaribo is the capital of Dutch Guiana and Cayenne is the capital of French Guiana.

Trinidad, a small island near the mouth of the river Orinoco, is a British possession rich in oil fields. There is a natural pitch lake in Trinidad and much asphalt is produced. Indian labourers have settled in Trinidad and British Guiana.

EXERCISES

1. Compare the effects of mineral wealth on population and industries in South Africa with their effects in (1) Australia and (2) South America.

2. "The world's store house of tropical products is Brazil." Examine the statement.

3. "Of all the natural regions of South America, the La Plata region is most highly developed." Assign reasons.

4. Examine the relative importance of trans-continental railways in (1) Australia (Perth to Brisbane), (2) Africa (Cape to Cairo), (3) South America (the Trans-Andean Railway).

5. How would you divide either Chile or Brazil into natural regions? What are the chief products of each? Show how climatic conditions affect their production (*S. S. L. C. Examination*, 1932).

6. Compare the ports on the Pacific coast with the ports on the Atlantic coast of South America in regard to the character of the hinterland and products sent to the ports for export.

CHAPTER XX

THE SOUTHERN CONTINENTS

1. Position, Size and Extent Compared. Australia, Africa and South America are the three southern continents of the world. The equator runs 12° north of Australia. It cuts South America at the mouth of the Amazon and passes right through the centre of Africa. Africa and South America have a good portion of their area within the tropics. Both the continents were linked with other land masses by an isthmus. The isthmus of Panama linked the continent of North America with the continent of South America. The isthmus of Suez connected Asia with Africa. For the sake of rapid communication, canals were dug in the isthmuses. The Suez Canal was opened in 1869 and the Panama Canal in 1914.

All the three continents have relatively a small coastline in proportion to their area. The accompanying table gives the necessary figures.

Continent	Area in sq. miles	Length of the coastline
Australia ...	3,000,000	12,100
Africa ...	11,000,000	19,000
South America ...	7,000,000	18,000

Encircled, as these continents are, by seas, the small length of the coastline may seem somewhat strange. But this is due to the regular unbroken and unindented character of the coastline. There are no big bays or gulfs as the Bay of Bengal or the Persian Gulf in Asia and the Baltic Sea or the Bay of Biscay in Europe. The Gulf of Carpentaria and the Great Australian Bight in Australia and the Guinea Bay in Africa are the only bays and gulfs of importance. The Chilean coast of South America is fringed with islands like the fiord coasts of Scandinavia.

SURFACE RELIEF COMPARED. As regards relief features, Africa is one huge block tableland with its rift valleys and lake depressions. The physical features of South America and Australia have one thing in common, the central lowlands. As regards the other features, the mountains are on the east and the plateau in the west, in Australia. In South America, the Andes run on the western border and the highlands are in the east. But both in South America and Australia, the mountains run from north to south. The rivers of Australia except the Murray Darling are all short rivers of little importance. In the other two continents the river systems have their source in the equatorial plateau of heavy rains. Compare the sources of the Congo and the Nile with the sources of the Amazon and the Paraguay rivers.

CLIMATIC CONDITIONS COMPARED. In regard to climate, the relation of the three continents to the equator must not be forgotten. Isothermal lines indicate only sea level temperatures. An altitude of 300 feet causes a reduction of one degree F. in the

sea level temperature. Africa, owing to its great size and width, its connection with another great land mass and its larger area lying within the tropics, has a high temperature extending over greater areas than either in Australia or South America. For regions south of the equator, January is the hottest month. The South-East Trade Winds bring rain to Australia, the eastern portion of Central and South Africa and the Parana-Paraguay Basin of South America. But the North-East Winds cause good rains in South America. But, in Africa, owing to the winds coming chiefly from the land mass of Eurasia, little rainfall is caused. The North-West Anti-Trade Winds bring winter rains to Central Chile, the south-west of the Cape of Good Hope Province and the south-western corner of Western Australia in July. These are regions of dry summers and wet winters, *i.e.*, Mediterranean type of climate.

VEGETATION REGIONS. The natural vegetation belts closely correspond with the climatic belts. In regions of heavy equatorial rains, there are the dense equatorial forests of the Northern Territory in Australia, the Congo and Guinea lands in Africa and the Amazon Basin in South America. These forests pass on to tropical grasslands, temperate forests and temperate grasslands. In all the three continents there are desert conditions. The Atacama and the Shingle Desert in South America, the Kalahari and the Sahara in Africa and the West Australian desert are examples of desert conditions.

PRODUCTS. Rubber is the chief tropical product raised in the forests of Africa and South America.

On account of the competition of plantation rubber and the wasteful method of extraction of wild rubber, the latter supply is gradually becoming very small. On the lowlands, in the tropics, sugar-cane, tobacco and cotton are grown. Wheat is raised in the temperate grasslands of the Parana-Paraguay Basin, Orange Free State, New South Wales, South Australia and Victoria. In all the continents, especially in South America and Australia, cattle rearing and sheep rearing are important occupations. Frozen meat from Argentina, New Zealand and New South Wales is sent to the British Isles. Butter is also a product of export from these places.

MINERAL WEALTH. All the three continents are rich in mineral wealth. In fact, Australia owes her development to the discovery of gold mines. South Africa also has rich gold and diamond mines. South America has vast unexplored mineral wealth. The time-honoured silver mines of Potosi are still famous. Mining has developed considerably in Australia and South Africa. It is yet to be developed in South America.

POPULATION. Of the three continents, Africa has the largest number of people, 200,000,000 nearly, or about 18 persons to the sq. mile. In Australia, the density of population is 2 to the square mile, while in South America, it is 9 to the sq. mile. In Australia, there is a large area in the tropics fit for habitation by the coloured races. Australia is a British self-governing dominion. The Federal Government pursues a policy of excluding the coloured races from Australia. Time alone can decide the wisdom of the

principle involved in this policy. In Africa, the thickly peopled regions are those which are economically well developed like Egypt and South Africa. In South America, the important trading centres such as Sao Paulo and the coastal towns like Buenos Aires and Rio de Janeiro are centres of dense population. The interior is very thinly peopled.

GOVERNMENT. Australia consists of a number of states, all British. These part states have established a Federal Government for affairs concerning the whole continent. In Africa, a large number of European powers have possessions. Besides, there are a few small native states. In South America, except the Guiana colonies, all are republics. In all continents, there are vast fields for colonisation. Enterprising colonists are in asset to the colonised country. In South America, future possibilities are very great. Before any great development can be effected there, nature has to be harnessed by man first in the matter of communications.

"All the southern continents are young in the sense that European civilization has been introduced in them comparatively recently: they are young also in manufacturing industries."

EXERCISES

1. "The three southern continents have few indentations." How does this feature affect the climate and trade of the three continents?

2. Mention the regions with a "Mediterranean" type of climate in the three southern continents. What are the productions of these regions?

3. "The mineral wealth of the southern continents has been the chief source of their attraction." Explain this statement with examples.

4. How is rubber useful to us? Mention the regions in the southern continents which produce rubber. Is there a large supply of wild rubber now? If not, why not?

5. What are the wheat growing areas of the southern continents? Describe the climate of those regions. To what countries are wheat exports chiefly made?

6. Study the important of these ports in relation to their hinterland:—Adelaide, Sydney, Fremantle, Alexandria, Lagos, Port Elizabeth, Durban, Mombasa, Pernambuco, Rio de Janeiro, Buenos Aires and Valparaiso. Draw sketch maps to show the importance of their situation.

CHAPTER XXI

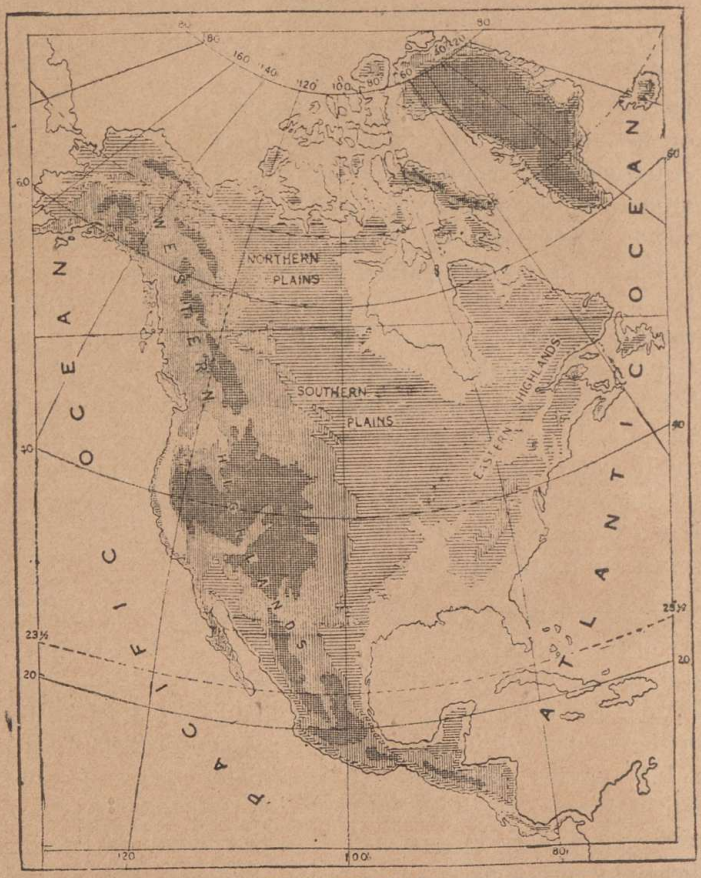
NORTH AMERICA—SURFACE FEATURES

Position, Size and Extent. North America and South America are the two continents of the New World. They were originally linked together by the Isthmus of Panama. But the Panama Canal, opened in 1914, now separates them. Hence North America is surrounded on all sides by seas. For its area of eight million sq. miles, it has a coastline of nearly 47,000 miles. North America has a number of bays, gulfs and peninsulas with the result that it has a long coastline. Further, as in Southern Chile, the north-west coast of North America has a fiord coast. The northern Arctic coast is useless as it is ice-bound practically throughout the year. The northern half of the eastern coast is useless for a few months in the year on account of the ice-bound character of its harbours. Yet, the coastline in North America has a great many advantages over the coastline of the southern continents.

North America is triangular in shape. It tapers towards the south. Its greatest length is 6,000 miles and its greatest breadth is about 3,000 miles. The Tropic of Cancer cuts the Peninsula of California in the south, while the Arctic Circle (66½° N. Latitude) passes through the northern part of the continent across the Baffin Island. It may thus be seen that a very large portion of the continent lies in the temperate zone.

Relief. From the view-point of surface characteristics, North America like South America falls under three heads:—(1) The western mountains,

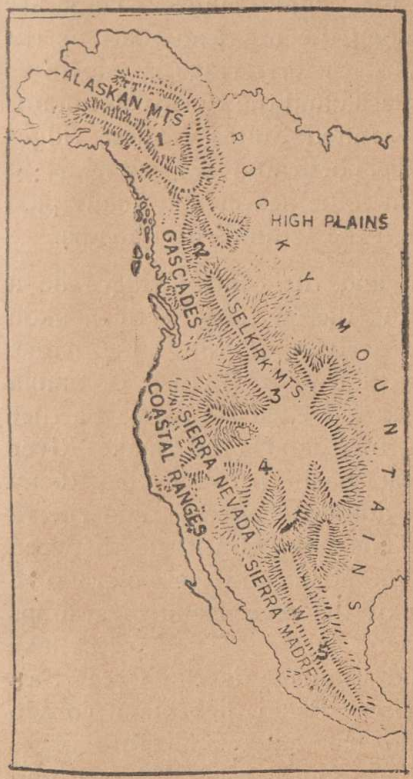
(2) the central plains, (*a*) northern central plains, (*b*) southern central plains or the Mississippi Basin,



MAP 45. NORTH AMERICA—RELIEF FEATURES

(49° N. may be said to be the boundary between these two plains), (3) the eastern highlands. (See Map 45).

(1) THE WESTERN HIGHLANDS are systems of mountain ranges and plateaus extending from the Behring Sea to Southern Mexico. (See Map 46). The ranges run fairly parallel to one another. Three ranges of mountains are noticeable. The most westerly ranges are known as the St. Elias Alps in Alaska and the Coastal range in Canada and in the United States. As in Southern Chile, part of this chain is submerged under water with the result that British Columbia has a fiord coast. The fiords are submerged valleys and the islands are the remnants of mountain ranges. Vancouver is the largest island formed on account of submergence of the area. Between these coastal ranges and the Pacific Ocean, there is a small strip of plain.



MAP 46. THE WESTERN HIGHLANDS

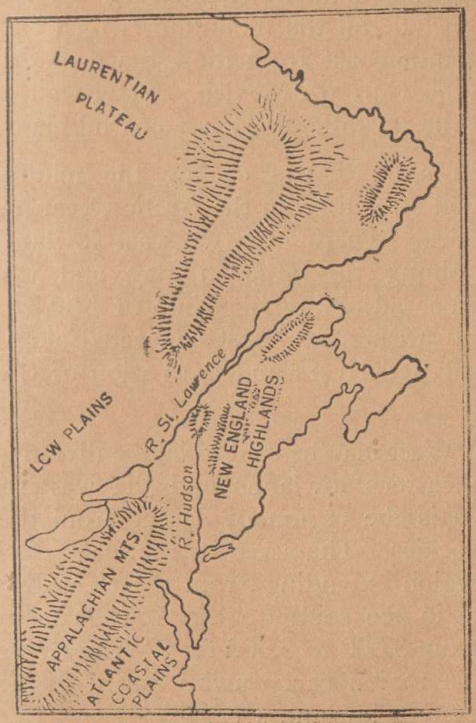
NOTE 1. The Yukon Plateau
2. British Columbia
3. The Idaho Plateau
4. The Colorado Plateau
5. Plateau of Mexico

The central ridge is known as the Alaskan Range, the Coast Range of Canada, the Cascades and Sierra Nevada of the United States. These are continued southward along the Mexican coast by the Sierra Madre. The most easterly ridge is known as the Endicot Range in Alaska and the Rocky Mountains in Canada and in the United States. These ridges are close together in the north and are far apart in the middle. They again come nearer and finally pass as a single chain through the Isthmus of Panama.

Between the eastern and the central ridges lie a number of plateaus. In Alaska, there is the Yukon Plateau drained by the river of the same name. South of this lies the Plateau of British Columbia traversed by the Selkirk and Gold Ranges. Farther south lie the Plateaus of Idaho (the Snake River Plateau) and the Great Basin between the Rocky Mountains on the east and the Cascades and Sierra Nevada on the west. The Great Basin lies between the Columbia river in the north and the Colorado in the south. The rivers of the region end in swamps or lakes and never reach the sea. The largest lake of this basin of inland drainage is the Great Salt Lake. South of the Great Basin, lies the Colorado Plateau. The Colorado has cut wonderful gorges called Canyons. Farther south, the Western and Eastern Sierra Madre enclose the plateau of Mexico. Between the Sierra Nevada and the Coast Range lies the Californian valley, the most fertile region of the Western United States.

(2) THE EASTERN HIGHLANDS. The Eastern Highlands stretch from Greenland in the north almost

to the Gulf of Mexico in the south. (See Map 47). This region can be divided into four sections, (1) The Greenland area, (2) Laurentian Plateau, (3) the New England Highlands and (4) the Appalachian Mountains. The Davis Strait separates the first from the second, the river St. Lawrence the second from the third and the river Hudson the third from the fourth. The general trend of the system is from the south-west high plateau, to the north-east low plateau. Further, during the ice age, the whole region was covered with ice. Owing to the movement of depres-



MAP 47. THE EASTERN HIGHLANDS

sion, the lands drowned under the sea formed a continental shelf. The Grand Banks of Newfoundland are examples of such a formation. The irregular coastline in the north is due to the sinking of

ridges under the sea in the movement of depression.

The Labrador Plateau slopes towards the Hudson Bay and contains many lakes. A number of rivers join the St. Lawrence estuary from this region. The New England Highlands and the Appalachian system may be taken to include all the mountains which run parallel to the Atlantic coast from the estuary of the St. Lawrence to the Gulf of Mexico. Between the Appalachians and the Atlantic, there is a coastal plain.

(3) THE CENTRAL PLAINS occupy the middle of the continent and stretch from the Arctic Ocean to the Gulf of Mexico. There are two vast lowland regions, one adjoining the Hudson Bay and the Lakes, and the other adjoining the Gulf of Mexico. These two lowland areas are almost connected along the Mississippi and Red rivers and the region of the Great Lakes.

Longitude 100° West may be said to be the dividing line between the eastern lowlands and the western high plains. This is the region of ascent from the lowlands to the Rockies. The ascent is gradual. The altitude of this region extending from the river Rio Grande del Norte in the south to the Mackenzie in the north varies from 3,000 to 6,000 feet. The rivers flowing across this region carry away much of the good soil to the eastern lowland area.

CHAPTER XXII

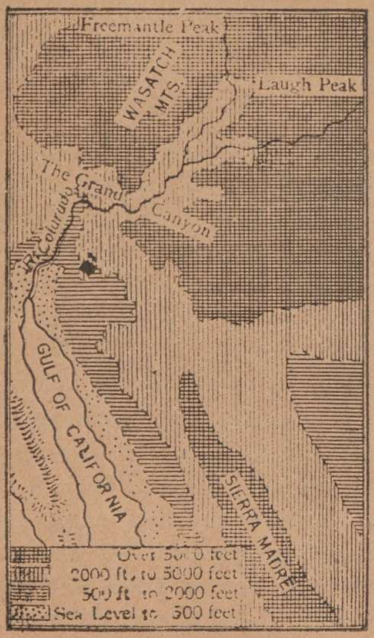
THE RIVER SYSTEMS OF NORTH AMERICA

There are two groups of rivers: (1) Rivers draining the Rocky Mountain system and flowing west, (2) Rivers that drain the central plains. The Rocky Mountains form a watershed.

THE RIVERS FLOWING INTO THE PACIFIC OCEAN. Though lofty ranges skirt the coast, still they are broken by several streams, which take their source in the Rockies and flow westward. The large area of Alaska is drained by the Yukon. The Columbia rises near Mount Sabrine in the Rocky Mountains, flows across the Columbia Plateau, turns west, below its junction with the Snake river and reaches the Pacific Ocean at Astoria, after a course of nearly 1,400 miles. There are dangerous rapids in the course of the river through the Cascades. Canals and locks have been constructed around the Cascade falls to make the river useful for purposes of commerce. The Colorado has, for its head-streams, the Green river and the Grand river. (See Map 48). The Green river rises near the Fremantle Peak in the Rocky Mountains, whose snow and rain supply water all the year round. It takes a south-westerly course across the plateau between the Rockies and the Wasatch Mountains. The river has cut the Grand Canyon, a gorge about 6,000 feet for a distance of nearly two hundred miles. Besides, there are various canyons of lower depth.

The rocks vary in colour through all shades, brown, red, grey, black and yellow; hence the name of the river Colorado.

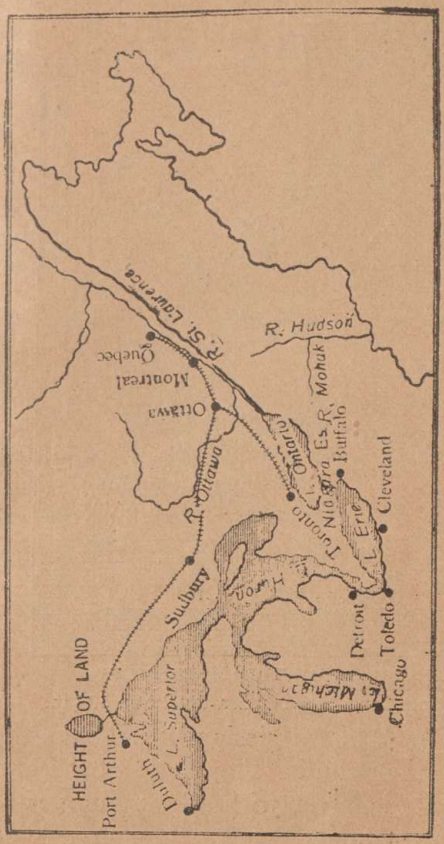
THE RIVERS OF THE CENTRAL PLAINS. The rivers draining the Central Plains are: (1) the Mackenzie, (2) the St. Lawrence and (3) the Mississippi. The Mackenzie named after its first discoverer, Alexander Mackenzie, in 1789, is about 2500 miles in length. The river proper flows from Lake Athabasca to the Great Bear Lake, and finally reaches the Arctic Ocean. The river is ice-bound for a great portion of the year. It is navigable from June to October for nearly 1000 miles of its course.



MAP 48. THE COLORADO

2. The St. Lawrence has its source near the Height of Lands in the Rocky Mountains and flows through the region of the Great Lakes, Lakes Superior, Michigan, Huron, Erie and Ontario. Between Lakes Superior and Michigan, canals have been cut to avoid

rapids. Between Lakes Erie and Ontario the difference in height is about 330 feet. The Niagara Falls occur in this region. They are about fifty-six yards in height and six furlongs in width. The St. Lawrence forms an excellent waterway to the ocean.

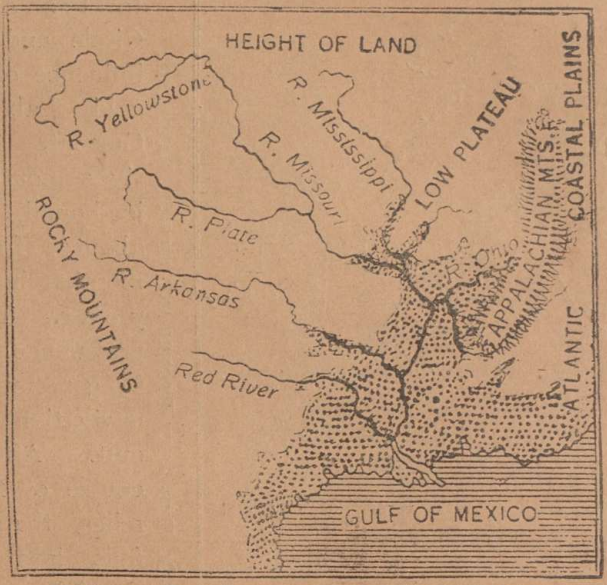


MAP 49. THE LAKE REGION AND THE ST. LAWRENCE

But on account of its proximity to the Arctic Circle and the influence of the cold Labrador Current, the river mouth is ice-bound for about four months in the year. The prevalence of fogs renders navigation difficult. After a course of 2200 miles, the river falls into the Gulf of St. Lawrence. (See Map 49).

3. The Mississippi is the most important river in North America draining

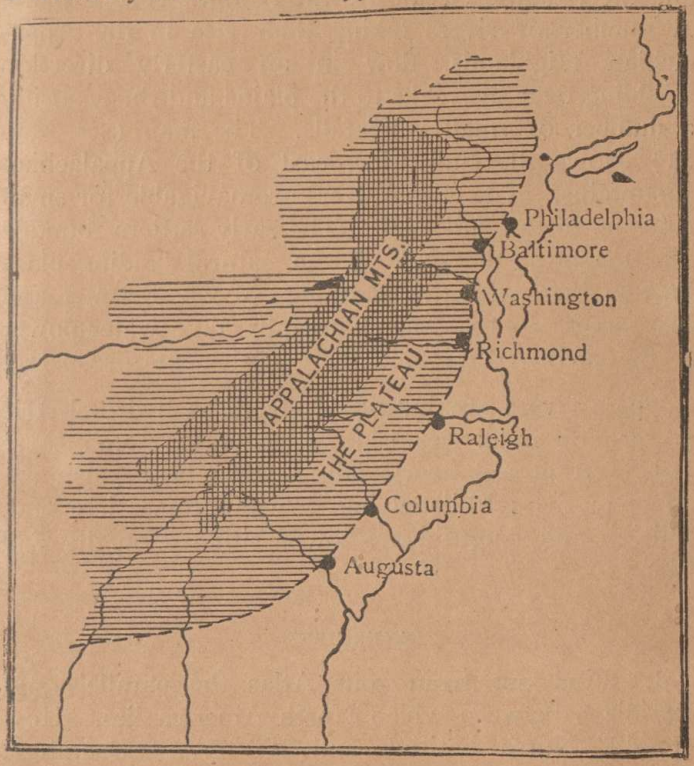
practically the whole of the Central plains, south of the parallel of 49° north. The Mississippi rises near the Height of Lands, and flows eastward. Its great tributary is the Missouri which has its rise also in the Rocky Mountains. Before its junction with the Mississippi, it flows over a distance of nearly 3,000 miles; the other important tributaries are the Ohio from the east, the Arkansas and the Red river from the



MAP 50. THE COURSE OF THE MISSISSIPPI
Dotted area represents land between sea-level and 500 ft.

west. (See Map 50). The Mississippi enters the Gulf of Mexico near New Orleans. The river mouth is a vast deltaic region. The river with all its tributaries, has 16,000 miles of navigable water courses. It may be interesting to note that the Chicago drainage

canal connects Lake Michigan with the Illinois River, a tributary of the Mississippi.



MAP 51. THE FALL LINE AND THE TOWNS

INLAND DRAINAGE. The Great Basin like the region of Lake Titicaca in South America is a region of inland drainage. The Great Salt Lake is the principal lake of this region between the Columbia in the north and the Colorado in the south at an altitude of 4,200 feet. The Humboldt, one of the chief rivers in this region, drains itself into the Great Salt Lake.

THE FALL LINE. Between the Eastern Highlands and the Atlantic Ocean lies the Atlantic coastal plain. A number of rivers taking their rise in the Appalachian Highlands, flow in an easterly direction tumbling over the rocks to the plains and thus causing a number of small waterfalls. The map (see Map 51) shows the Fall Line, east of the Appalachian Mountains. The larger rivers are navigable for small ships up to the Fall Line. The early settlers founded settlements at the Fall Line, a natural landing place on the river, with the advantage of wood, water and easy access to the sea. The falls gave water-power to the early settlers, and there settlements prospered.

These rivers are industrial rivers as hydro-electric power for industries can be generated from these falls. At almost every fall, a town has grown up. Among others Philadelphia, Washington, Richmond, Raleigh and Augusta are towns situated on the Fall Line.

EXERCISES

1. Find out from your Atlas the parallels and meridians between which North America lies. How are 49° North Latitude and 100° West Longitude significant?

2. Bring out clearly the points of similarity between the structural features of the two continents of the New World.

3. Study carefully the course of the Colorado, and understand what a canyon is. Is there anything resembling it in your locality?

4. Compare the Mississippi with the Amazon as means of communication.

5. Make out a plan of the Eastern Highlands and coastal plain of North America showing the rivers and the Fall Line.

6. What is a region of inland drainage? Where are such regions found in Australia, in South America and in North America?

7. Study the location and usefulness of lakes in North America and Africa. Account for the difference if any.

8. What are fiord coasts? How are they formed? How are they useful to man? Study the importance of the fiord coast in North America and compare it with that in South America with regard to usefulness.

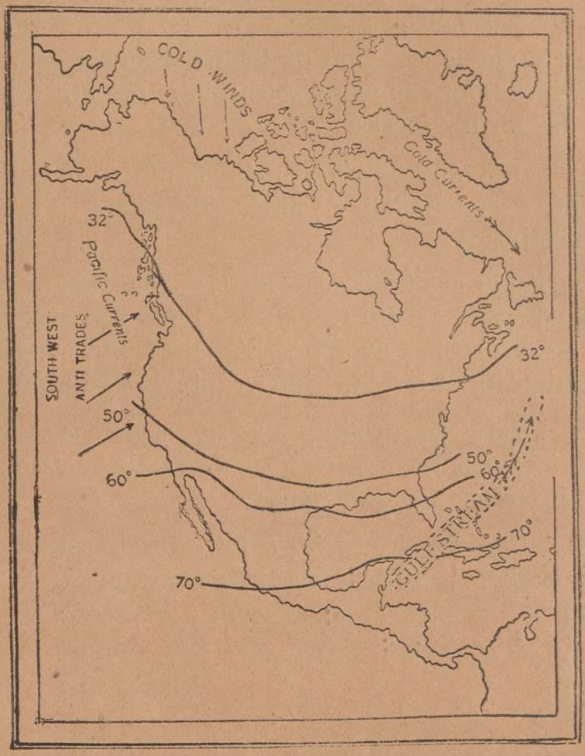
9. Study the source of rivers in (1) North America, (2) Africa and (3) Australia. Draw your own inference from the study.

10. Explain clearly how the Atlantic coastal plain is specially suited for industrial purposes.

CHAPTER XXIII

CLIMATE AND NATURAL VEGETATION

JANUARY CONDITIONS. North America lies in the northern hemisphere. July is the hottest month and January is the coldest month. The climate of the



MAP 52. NORTH AMERICA—JANUARY ISOTHERMS

greater part of North America is of the continental type, with warm summers and cold winters. Of course, the mountains and coasts, altitude and proximity to the sea have their influence on the climate.

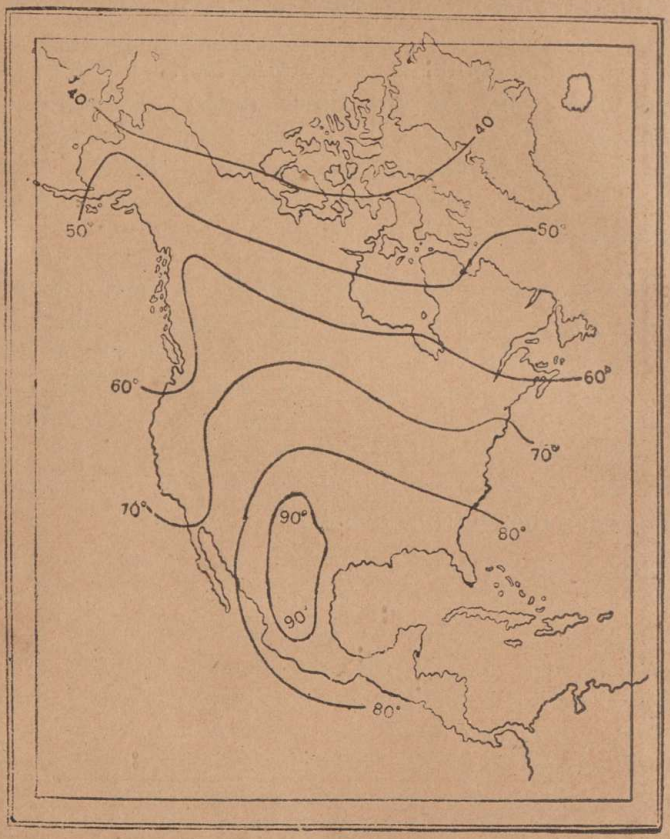
In January, the cold winds from the Arctic blow into the interior. Inasmuch as the mountain ranges run from north to south, there is no barrier to these winds coming far into the interior. It may be seen that the January isothermal line 32° F. cuts right across the heart of the continent. (See Map 52). Further, the Labrador cold current flows down the coast of Labrador and affects the climate of most places on the eastern sea board. So, places on the east coast have a more severe winter than places on the same latitude in Western Europe.

The west coast of North America is much warmer than the east coast, for the Japan current, otherwise called the North Pacific current, flows across the Pacific to the coast of British Columbia. This is a warm ocean current. In addition, the warm moist South-West Anti-Trade Winds blowing across the Pacific, cause heavy rainfall on the western sea board and make the climate equable.

JULY CONDITIONS. In July, the isothermal line 90° F. passes west of Mexico. The centre of the continent is very hot. (See Map 53). The west coast is kept cool by the influence of the sea. The central region being hot is a low pressure area. Into this low pressure area, the moist North-East Trade Winds blow from the Atlantic both from the north and south of the Appalachian Mountains. In the central lowlands it is warm in the south, cool in the north and very dry in the centre.

RAINFALL. From what has been said above, it is clear that north of latitude 40° the Pacific slopes of

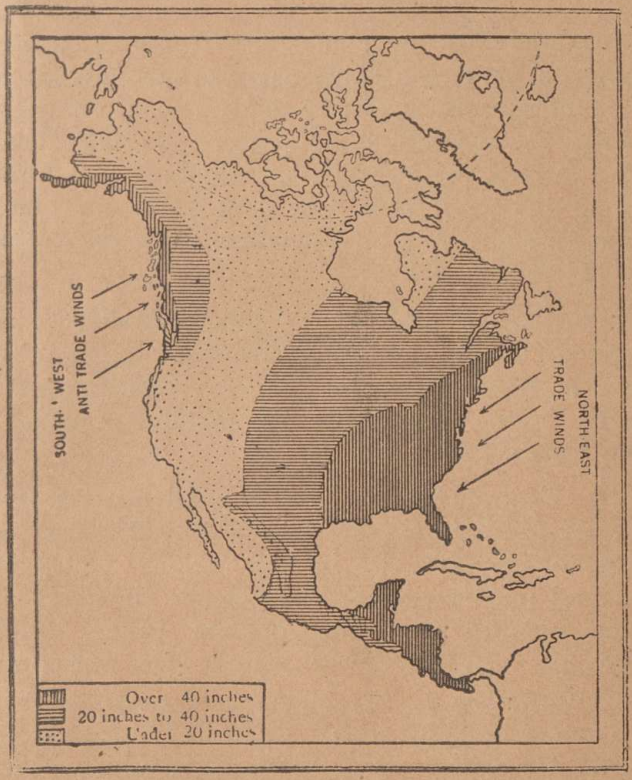
the Rockies and the coastal strip get good rainfall from the South-West Anti-Trade Winds. On the east coast, the St. Lawrence basin is a region of rains



MAP 53. NORTH AMERICA—JULY ISOTHERMS

at all seasons on account of the cyclones which pass through this region frequently. The North-East

Trade Winds bring good rain to the south-eastern states and the east coast of Central America. The rainfall decreases as we proceed west. The region of high plains between the Rockies and 100° West



MAP 54. NORTH AMERICA—ANNUAL RAINFALL AND WINDS

Meridian is a very dry region. Round San Francisco, there is a region of winter rains only, owing to a swing of the wind belt. During this season, the

westerly winds extend southward. Hence the shoreland of California has dry summers and wet winters of the Mediterranean type. The dry plateau of the Rocky Mountains in the United States and the north-western border of Mexico receive very little rainfall.

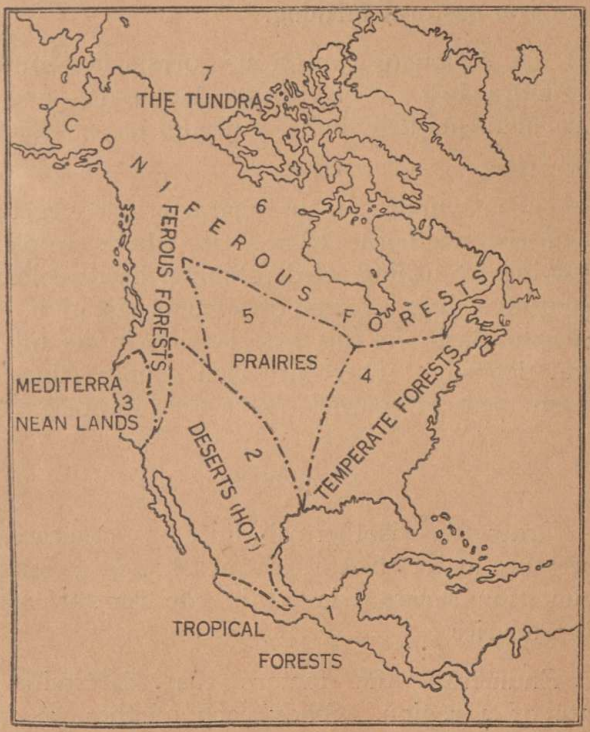
The study of the climate of North America is interesting and instructive as it brings into prominence almost all the factors that go to determine the temperature and rainfall of a region—latitude, height above the sea, the direction of mountains as affecting rainfall and temperature, the nature and direction of the prevailing winds, and the effect of ocean currents, both warm and cold.

NATURAL VEGETATION. Climate, rainfall and nature of the soil are the determining causes of the distribution of plant life. North America can be divided into seven belts of natural vegetation. (See Map 55).

(1) Central America is a mountainous region of high temperature and good rainfall. The hot wet forests of America are in this region. Mahogany, rosewood and ebony are the valuable timber of the forests. Coffee is grown on the slopes of the mountains. In the lower plains, rice, sugar and cotton are raised.

(2) North-west of this region lies a rain shadow region: the plateau area of the Rockies in the United States and Mexico. As these are rocky areas with little or no rainfall, desert conditions prevail. These are the hot deserts. The cold deserts are in the north.

(3) The shorelands of California enjoy a "Mediterranean" type of climate, and have a "Mediterranean" vegetation. Figs and grapes are the chief fruits. Wheat is also cultivated.



MAP 55. VEGETATION MAP OF NORTH AMERICA

(4) The eastern states comprise two divisions—the cool temperate forests of the north and the warm temperate forests of the south.

(5) The Central lowlands are the temperate grasslands. These are called Prairies and extend

from Lake Winnipeg to the Gulf of Mexico. The eastern parts are cultivated and the northern portion of these plains forms the great wheat lands of North America. The western parts are still grasslands carrying on pastoral farming.

(6) A region of coniferous forests lies south of the Tundra belt. The Rocky Mountains and the Appalachians at their higher altitudes have vegetation of this type.

(7) The Tundra is the characteristic vegetation type of the northern Arctic belt, where people get their living by fishing, bird catching, berry collecting and hunting. It is a region of dwarf vegetation. The Mackenzie Basin in this belt is rich in its oil and mineral deposits. There are rich copper mines and numerous beds of coal also have been located.

EXERCISES

1. Draw the isothermal lines to indicate the temperature in North America in July and in January. Account for severe winters in the central belt of North America.

2. Enumerate the factors that determine the climate of a region. Study each of these as influencing the climate of North America.

3. Assign reasons for the following:—

"California enjoys a Mediterranean climate."

"The St. Lawrence region receives rain all the year round."

4. Vancouver and St. Johns are places on the same latitude and are situated on the sea-coast. Below are given the mean monthly temperatures of the two places in degrees F. Study the table carefully and assign reasons for differences in temperature conditions.

Towns	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	Average
Vancouver...	35°	35°	44°	47°	55°	58°	60°	65°	58°	50°	43°	36°	490°
St Johns ...	24°	22°	27°	35°	44°	50°	57°	50°	50°	45°	40°	40	403°

5. The accompanying table gives the mean monthly rainfall in inches of Los Angeles and Charleston.

Towns	J.	F.	M.	A.	M.	J	J.	A.	S	O.	N.	D.	Total
Los Angeles	3	3	3	1	...	...	...	...	...	1	2	2	15
Charleston	4	3	4	3	4	5	7	7	6	4	3	3	53

(1) Do the seasons of heavy rainfall coincide in these two places? If not, what is it due to?

(2) How do you account for Charleston having rainfall all the year round?

(3) Draw diagrams to represent rainfall in each of the places.

6. What different types of forests are found in North America, and where?

CHAPTER XXIV

POPULATION AND POLITICAL DIVISIONS

The accompanying table shows the principal political divisions and the total population and area of each of these divisions.

Divisions	Area in sq. miles	Population
Greenland ...	700,000	13,000
Canada ...	3,604,000	7·25 millions
Newfoundland & Labrador	162,700	245.000
The United States ...	3,743,000	118 millions
Mexico ...	770,000	16 millions
Central America ...	180,000	5½ millions
The West Indies ...	95,000	10 millions

Canada with its capital Ottawa, like Australia, is a British self-governing dominion with a federal government. It is divided into a number of provinces. The United States of America with its capital Washington is also a federation of a number of states. Central America consists of a number of republics and British Honduras. The West Indies comprise the group of islands which include Cuba, Jamaica, Haiti and Porto Rico and the Bahamas. The United States control Cuba and Porto Rico; Jamaica and the Bahamas are British possessions.

The average density of population of North America is 19 to the square mile. The population includes people almost from every country in Europe and Asia. But the majority of them are of European

descent. In the United States and Canada, they are mostly of British, German and French descent. In Central America and Mexico, they are mostly of Spanish descent.

The original inhabitants were the Red Indians, red on account of the colour of their hair and skin, and Indians because Columbus took the American islands for the Asiatic East Indies. These Red Indians now live in Central America and in tracts reserved for them in the United States and Canada. From Africa, Negroes were taken to work as slaves in North America. Though the Civil War resulted in the abolition of slavery, colour prejudice is still clearly seen in the treatment accorded to the descendants of the Negroes. The other people living in North America are the descendants of the British, the French, the Germans, the Russians and the Italians; and a few in the Western Mediterranean region of North America are of Chinese descent.

Man has made tremendous progress in his work in North America. A wilderness of three centuries back has now become a beehive of industry and agricultural farms. Population has considerably increased. The area of dense population extends from the east coast to the Missouri in the United States and from the St. Lawrence basin to Lake Huron in Canada. Facilities in communications consequent on the construction of trans-continental railways have extended the area of dense population from the east to the middle west. Los Angeles on account of its film making industry has become a region of dense population. Further, the districts round the great sea

ports, or coal mines and oil fields are regions of thick population.

EXERCISES

1. What contrast do you notice in the foreign elements of population in South America and in North America? Infer reasons for such a contrast.

2. Facilities in communications have resulted in a dense population in areas, where communications have been developed. How?

3. "The middle west." What is the region referred to? What are the attractions for settlement in that region?

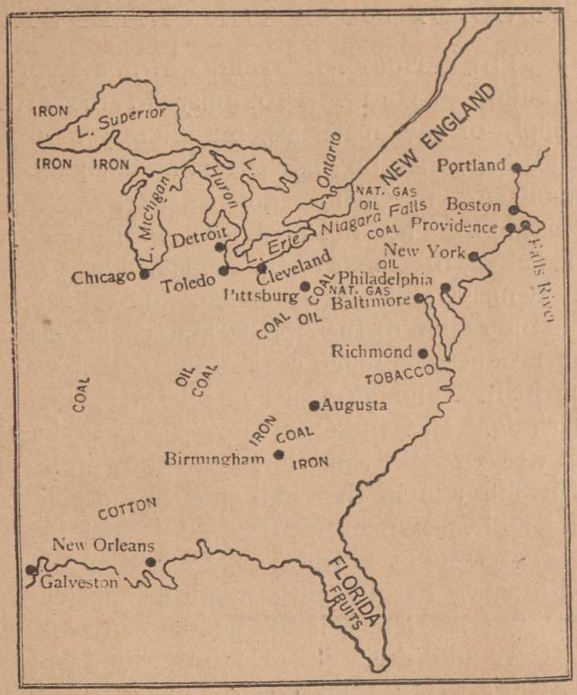
CHAPTER XXV

REGIONAL STUDY OF THE UNITED STATES

(*a*) THE NORTH-EASTERN INDUSTRIAL AND COMMERCIAL REGION. Proximity to the area for the supply of raw materials, accessibility of markets, facilities for generating power and an adequate supply of labour are the main requisites of a good industrial region. The north-eastern industrial region extends along the flanks of the Appalachian Mountains from Pennsylvania to Alabama. (See Map 56). This is the region of the Appalachian coal fields. This region produces as much coal as the British Isles and is rich in it. Though coal and oil abound, iron ores are lacking. But these are now brought from the region west of Lake Superior. Pittsburg in the north and Birmingham in the south are two great centres of iron and steel manufactures. Kindred industries have progressed in towns near these two. In addition, Pittsburg has the largest glass industry in the United States. Detroit is the famous centre for Ford Motor Cars and Tractors. Recently, the Ford Company celebrated the function of manufacturing the twenty millionth car. It may be of interest to note that the first Ford Car was manufactured in 1893. Buffalo on Lake Erie is noted for the manufacture of steel goods. The Niagara Falls supply power for the manufactures at Buffalo, Toledo and Cleveland, and these are noted for their iron and steel works. Machinery and steamships are constructed there.

Nearer the sea, in New England is a region of textile manufactures getting its supply of cotton

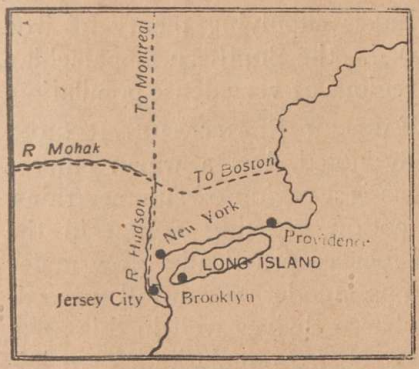
from the southern states, wool from Australia and Argentina, and coal from the Appalachian coal fields.



MAP 56. THE NORTH-EASTERN INDUSTRIAL AND SOUTH-EASTERN PLANTATION REGIONS

Fall River and Providence are the towns for cotton and woollen industry. Further south another textile area has developed. Richmond, Columbia and Augusta are important centres of textile manufactures. Both cotton and coal are near at hand in this region. Besides, these towns are situated on the Fall Line and power generated from the falls is utilised for running the machines.

The trade of this region is centered in a group of cities in the northern part of the Atlantic Plain: New York, Boston, Baltimore and Philadelphia. *New York* at the mouth of the Hudson is an ideal port having an excellent harbour and an equally important hinterland, well served by road and river communications. The port serves as an excellent "transfer point between continental and oceanic traffic." Besides, it is an industrial city manufacturing cotton and iron goods. (See Map 57).



MAP 57. NEW YORK AND ITS ENVIRONS

Baltimore on the Chesapeake Bay is another important port. The Bay is noted for oysters. The port exports meat and grain. *Philadelphia* on the river Delware is on the Fall Line. This port exports coal and manufactures iron and steel goods. It carries on a brisk trade in fruit and sugar with the West Indies. Manufacture of machinery and locomotives as well as ship-building provides employment for thousands of labourers; the manufacture of cotton and woollen goods and sugar refining are the other important industries of this city. *Boston* is a port with a magnificent harbour. It is a collecting centre for goods of export and distributing centre for raw materials imported by sea. It exports meat and

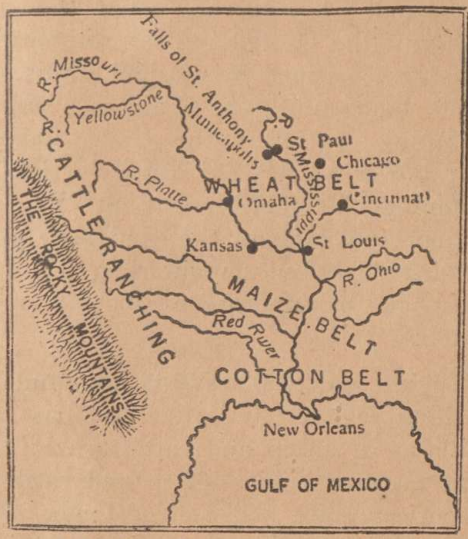
grain. The completion of the electrification scheme of large sections of railways is likely to effect a saving of nearly fifty million tons of coal. These cities have regular steamship connections with the chief centres of Europe.

To sum up, the north-eastern industrial and commercial areas of the United States consist of four regions: 1. The Upper Ohio Basin comprising the Pittsburg area, 2. the manufacturing region of the New England states, 3. the southern belt on the shores of the Great Lakes supplying plenty of iron ore, and (See Map 56) 4. the Southern Appalachian coal fields. These are regions of very dense population.

(*b*) THE SOUTH-EASTERN PLANTATION REGION. This region, as already noted, has a warm climate and good rainfall. This is a region of summer rains. This is the greatest cotton growing region in the world. As cotton and tobacco practically grow under similar climatic conditions (moderate rainfall succeeded by dry weather), tobacco thrives well in this area. This is a region of great Negro population, for originally the Negro slaves worked in these plantations. Cotton seeds are used for the manufacture of soaps and candles. New Orleans and Galveston are the great ports of this region. Florida has excellent fruit gardens and vegetables, and straw-berries are exported. The manufacture of chemical manures is a chief industry in this region. Virginia is noted for its tobacco, the important centre being Richmond on the James River.

(*c*) THE CENTRAL FARMING REGION. (See Map 58). The low plains east of 100° West Longitude

are eminently fit for agriculture. Just to the north of the cotton belt of the Gulf of Mexico lies the maize belt. North of this lies the wheat belt. Much of the maize raised is used for feeding pigs. Pork and bacon are the important products of these states. Chicago may be said to be the capital of the Prairie region in the United States. It is the chief slaughtering and canning city of the Prairie region. It is said that about 150,000 sheep, cattle and pigs are slaughtered daily for domestic use and export. Its position makes Chicago an important railway centre. It carries on an extensive trade in timber, meat, wheat and iron ores. St. Louis, a little below the junction of the Mississippi and the Missouri, is a centre for agricultural and pastoral produce. Its location, as controlling three river routes and as the junction where many trains meet, has made it a city of great importance. It is one of the greatest grain markets



MAP 58. THE CENTRAL FARMING REGION

of the world. Further it is one of the great horse markets of the world. It is a meat packing station of great importance. Besides it is noted for its manufacture of shoes and iron goods. It is moreover an important market for wool and tobacco. *Cincinatti,* on the Ohio, is a large pork packing centre. *Minneapolis* and *St. Paul* are often known as the "twin cities" of the United States. Minneapolis, at the falls of the Upper Mississippi, utilises water power for its flour mills. St. Paul is a collecting and distributing centre of the Great Lake routes. The water power of the St. Antony's Falls is utilised for running the factories at St. Paul. Besides it is an important cattle market and next to Chicago, it is the most important slaughtering city of the United States. The manufacture of shoes is an important industry.

Between the Rockies and 100° West Longitude lies the great ranching region. It is dry and has a little rainfall. Millions of sheep and cattle graze in this region. Texas possesses more sheep and cattle than any other American state. The chief towns in this region are Omaha and Kansas. Both these export meat.

(*d*) THE BASINS AND MINING AREAS OF THE ROCKIES. West of the high plains lie the Rockies forming the eastern ridge of a number of plateaus. Many rivers pass through these plateaus cutting deep gorges on their way. The region known as the "Yellowstone Park" is a wonderful region of forests, mountains, waterfalls and geysers, "jets of steam and hot water which suddenly gush out from

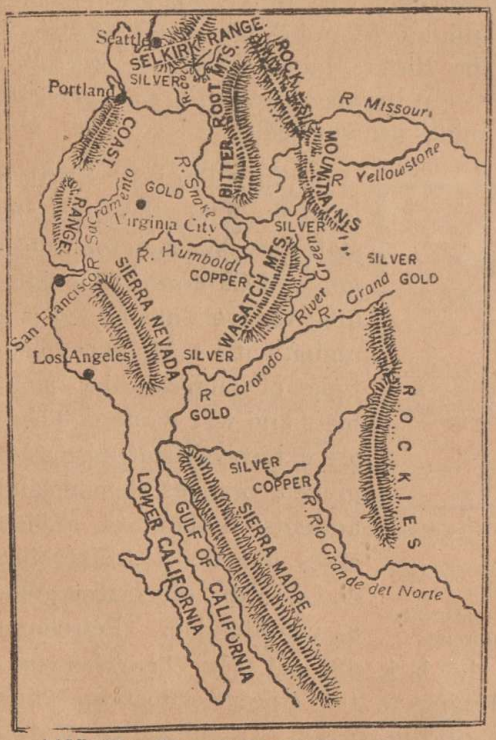
certain holes in the earth." The Great Basin is a region of inland drainage. The Colorado plateau has many canyons cut by the Colorado river. Stock-raising is the chief occupation of this region. There are gold, silver, lead, copper and iron mines. Denver in Colorado and Virginia City in Nevada are the chief centres for the mining of gold and silver. Silver is also found in the Bitter Root Mountains, north of the Snake River. In the region west of the Colorado estuary, copper mines are worked.

MAP 59. SAN FRANCISCO
1. From Panama
2. From Australia
3 From Japan and other Asiatic countries

(*e*) THE PACIFIC SHORELANDS. The three Pacific states are Washington. Oregon and California (See Map 60); the last mentioned is a region with a Mediterranean type of climate—dry summers and wet winters. There are extensive fruit farms of grapes, oranges, lemons and apricots. About a million acres are under fruit. Mineral wealth, especially gold, is considerable. Petroleum makes up for the lack of coal. In the other two provinces, lumbering is the chief occupation. The red wood trees of this region are the tallest in the world.

San Francisco, one of the finest harbours of the world, has a large trade with Asia and Australia. (See Map 59). It is the chief Pacific port. The

golden gate, the main entrance, is five miles long and a mile wide. The bay affords splendid protection for ships by shutting out dangerous waves. The port has a rich hinterland and exports gold, wheat, wine and fruits.



MAP 60. THE PACIFIC SHORELANDS

Portland is another important Pacific port. Ocean vessels can reach Portland. It is easily reached from the interior both by rail road and the Columbia River.

Seattle on Puget Sound has great advantages for shipping. The Puget Sound affords a safe harbour for ships. Seattle is one of the best natural harbours of the world. Portland and Seattle are ports nearer Asia than the other ports of the Pacific Ocean. The chief exports from these ports to the

Asiatic countries are coal, wheat, iron and steel goods and cotton. The main imports are rice, tea and raw silk.

Los Angeles is the centre of the orchards of the Californian valley. Round this city are worked some of the richest oil deposits in the world. It is one of the great beauty spots, and is the centre of the film industry.

CHAPTER XXVI

REGIONS OF CANADA

Canada falls into three distinct divisions:

(1) Eastern Canada, with its agricultural, fishing, stock-raising and manufacturing occupations;

(2) The Prairie Provinces devoted to wheat farming in the east and cattle farming on the west;

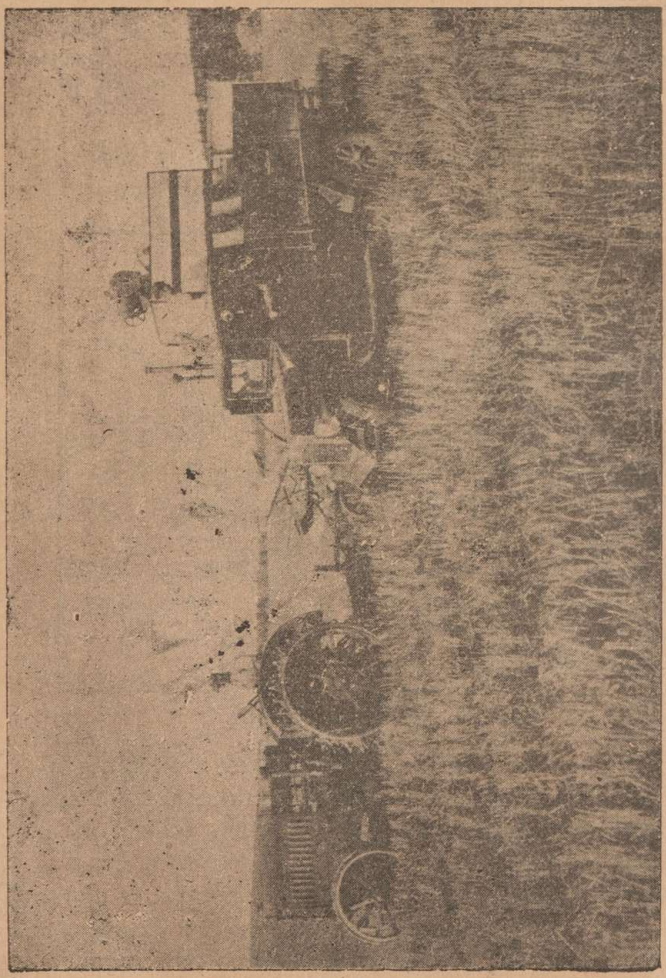
(3) British Columbia wih its mining, fruit farming, fishing and lumbering industries.

1. Eastern Canada includes the basin of the St. Lawrence and the Atlantic coast of Canada. Nova Scotia (capital, Halifax), Prince Edward Island (capital, Charlotte Town), New Brunswick (capital, St. John), Quebec and Ontario (capital, Toronto) are the provinces comprising this region. (See Map 61). As the early settlers were mainly Europeans, the eastern coast, being the nearest landing place, was the first to be settled. The land was covered with dense forests. First the forests had to be cleared. Lumbering, *i.e.*, cutting down the trees and transporting the logs, is still an important industry. People proceed to the forests in autumn, cut down the trees and leave them on river courses to be covered with snow and ice, during the winter. In the spring, the ice thaws and the logs are floated down till they reach a convenient centre. St. John, Quebec, Montreal and Ottawa are all lumbering centres; paper pulp is manufactured there.

Agriculture and fruit farming are important occupations in almost every province of Eastern Canada. Oats and barley are the crops grown. Wheat is grown in the dry interior. Nova Scotia and the Lake Peninsula have excellent fruit farms. Grapes, olives and apricots are the fruits raised. In Ontario and Quebec dairy farming is an important

MAP 61. EASTERN CANADA

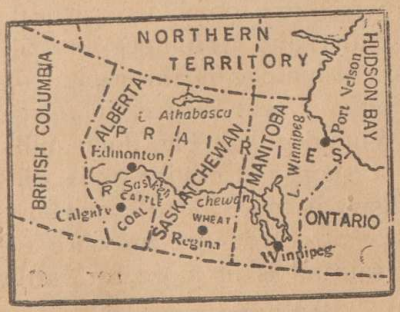
occupation. The Grand Banks of Newfoundland are excellent fishing grounds. As the land is not suitable for agricultural pursuits, most people take to seafaring occupations. An enormous quantity of fish is caught, salted and exported to the various parts of the world. St. Johns, the capital of Newfoundland, and Halifax in Nova Scotia are excellent fishing ports, and have a good trade in cod and cod liver oil.



MOTOR TRUCK TAKING GRAIN FROM COMBINED HAWLER THRESHING IN THE FIELD (Alberta)
Courtesy: High Commissioner for Canada, London

Mining is an important industry in this region. North of Lake Huron, the Sudbury region is specially rich in nickel and copper. Farther north in the Cobalt district, silver and arsenic are obtained. Asbestos is found in Quebec in very large quantities. Small quantities of coal are obtained in Nova Scotia and Cape Breton Island. The last mentioned province has a great future in coal mining. Further, in northern Ontario, there are very productive gold fields.

The manufactures which are increasing in importance are the making of woollen goods, cotton goods, leather goods, paper, machinery and tools for agricultural purposes. Water power resources are utilised and centres like Toronto, with its ship building yards and railway workshops, Hamilton noted for its boot factories and Trenton famous for its dye stuffs are assuming an industrial importance.



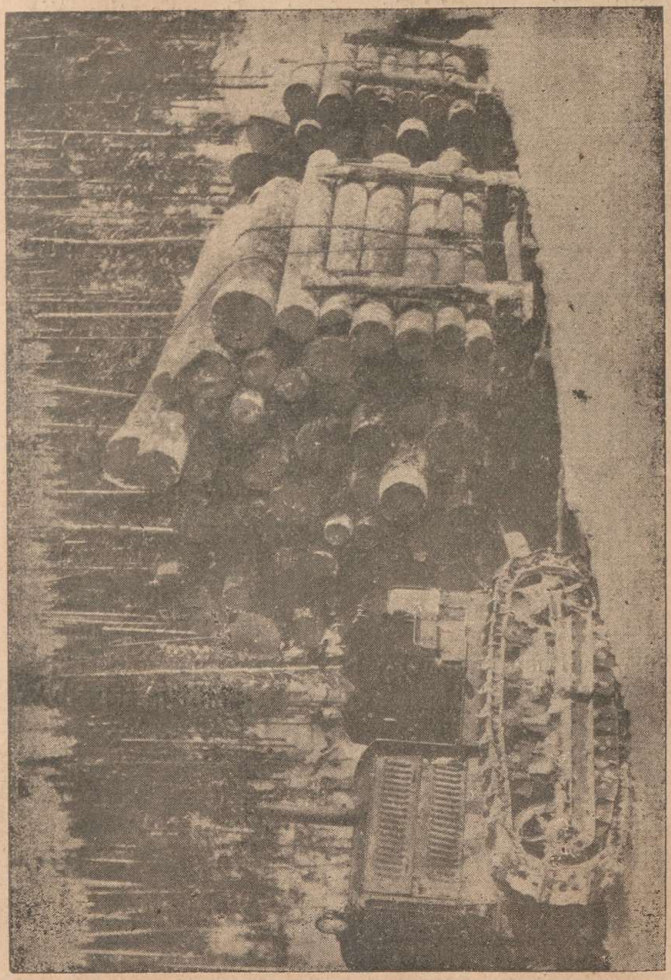
MAP 62. THE PRAIRIE PROVINCES

2. THE PRAIRIE PROVINCES. The Prairie Provinces are Manitoba, Saskatchewan and Alberta. (See Map 62). These provinces form part of the central lowlands of North America, and are the rich corn lands of Canada. The land rises towards the Rocky Mountains, and is drained by the Saskatchewan river which reaches Lake Winnipeg. The region

round Lake Winnipeg is an area of very rich soil with a temperate climate and moderate rainfall. These are exactly the conditions most favourable for the growth of wheat. The region west of Lake Winnipeg and round the Red River forms one of the richest wheat-lands of the world. As we go west, the wheat-lands give place to ranches of cattle.

The development of the Prairies is mainly due to the opening of the Canadian Pacific Railway—a trans-continental line from Vancouver to Montreal. The Prairies of Canada annually produce 3,000 million bushels of wheat; oats and barley are raised in the northern regions which are too cold for wheat. Calgary, Edmonton, Regina and Winnipeg are all grain collecting centres. Winnipeg is the capital of Manitoba. Besides being a wheat centre, it forms a good fur market. Winnipeg has big flour mills and large railway workshops. Edmonton is the capital of Alberta. Calgary is more a cattle ranching than a grain collecting centre, for the province of Alberta with its scanty rainfall is fit more for cattle ranching than for wheat cultivation.

3. BRITISH COLUMBIA is the Pacific coast province. (See Map 63). The whole region is mountainous. Its coast is highly broken by fiords. The province is traversed from north to south by rugged mountains. Between them is a plateau. The South-West Anti-Trade Winds bring good rain to the shoreland. The interior is dry. The warm Japan current makes the climate mild in the coastal regions.



LUMBERING IN BRITISH COLUMBIA (Tractor hauling of spruce logs 15,000 ft.)
Courtesy: High Commissioner for Canada, London

British Columbia possesses enormous wealth in its mines and forests. Coal is mined in the region round

the Elk River and Crowsnest. It was the discovery of gold in 1854 that attracted the European settlers to the extremity of the continent. The Klondike gold fields of the Yukon valley are famous. Next to mining, lumbering is important as the mountains and hills abound in a variety of trees, which are in great demand in Central Canada. Vancouver is the most important shipping and distributing centre of the Pacific coast. A large quantity of timber is exported to Australia, South America, China and Japan. Fishing has made great progress. The opening of the Panama Canal has considerably increased the importance of this port. Prince Rupert, the terminus of the Canadian National Railway, is an important fishing centre. Fruit farming is an important occupation in the south. Apples and grapes are grown in very large quantities. To meet the home demand a small extent of agriculture and dairy farming are practised.

MAP 63. BRITISH COLUMBIA

CHAPTER XXVII

MEXICO, CENTRAL AMERICA AND THE WEST INDIES

MEXICO is a continuation of the Rocky Mountain system of the United States with coastal plains on either side. It has a large plateau in the centre which is of a volcanic nature. The elevation of the plateau ranges from 4,000 to 8,000 feet above the sea level. Rio Grande, the northern boundary of the country, is the only river of importance. (See Map 64).

MAP 64. MEXICO

The Tropic of Cancer runs right through the country. The coastal plains have a high temperature and abundant rainfall. The plateau has a scanty rainfall. The tropical coastal plains are suitable for the cultivation of sugar-cane, tobacco and rubber trees. The slopes of the hills are fit for coffee plantations. In the plateau, sheep-rearing is an important occu-

pation. But in places where irrigation has rendered cultivation possible, wheat, cotton and maize are raised.

Mexico is rich in minerals. Mexico possesses rich silver and copper mines. Lead and zinc are also found. Further, Mexico has important oil wells near Tampico, where petroleum is obtained from the wells and exported in large quantities.

Mexico was originally a Spanish colony. Now it is a Republic. There has been great political unrest and the foundations of settled government cannot be said to have been truly and firmly laid. Mexico, the capital, stands in the middle of the plateau. Tampico is the oil port. Vera Cruz is a cotton centre and also exports sugar and tobacco.

CENTRAL AMERICA as a political division comprises the British Colony of Honduras and the following five republics, Guatemala, Honduras, Salvador, Nicaragua and Costa Rica. Much of the country is mountainous. There is a narrow coastal plain on either side of the mountains as in Mexico. Central America lies entirely within the Tropics. The rainfall on the Atlantic side is very heavy. As in Mexico the coastal plains produce sugar-cane and tobacco and the plateau a small quantity of wheat and cotton. On the slopes of the hills, there are coffee plantations. British Honduras has an area of nearly 8,600 sq. miles. It is a forest region where mahogany and logwood are found in abundance; Belize is the capital.

THE WEST INDIES forming a curve from Florida to the mouth of the Orinoco consist of four large

islands, Cuba, Haiti, Jamaica and Porto Rico (this group of four islands is otherwise known as the Greater Antilles), a group of small islands known as Lesser Antilles and the Bahamas. Except the Bahamas, the whole group lies in the Tropics.

The entire region is hot. There is abundant rainfall. The sea has a moderating influence on the climate of these islands. Cuba produces large quantities of sugar-cane and tobacco. Havanna is a cigar making centre. In the British possession of Jamaica are produced sugar-cane, coconuts and bananas. Kingston is the capital of Jamaica. The chief occupations in the Bahamas are the manufacture of salt, fishing and fruit farming. Trinidad, another British island, has large quantities of asphalt used in road making.

EXERCISES

1. "Settlers in British Columbia and Western Australia had similar attractions." What are the attractions referred to?

2. Make a list of the requisites of a good industrial centre. Study to what extent the north-eastern industrial region of the United States satisfies these conditions.

3. What is lumbering? What are the facilities in British North America for carrying on this occupation?

4. Which is called the cotton belt of the United States? What facilities are there for the growth of cotton in this region?

5. Say how the region of the "Fall Line" is important industrially.

6. What are "Prairies"? What are the climatic characteristics of this region?

7. Compare the Mediterranean lands of North America with the Mediterranean lands of South America in regard to (1) relief, (2) climatic conditions, (3) products and (4) occupations of the people.

8. What are the minerals that are found in the plateaus of the Rockies. What facilities are there for improving the mining industry in the region?

9. What is "cattle ranching"? What physical features and climatic conditions are favourable for the pursuit of this occupation? Compare the cattle ranching regions of the United States with those of Australia.

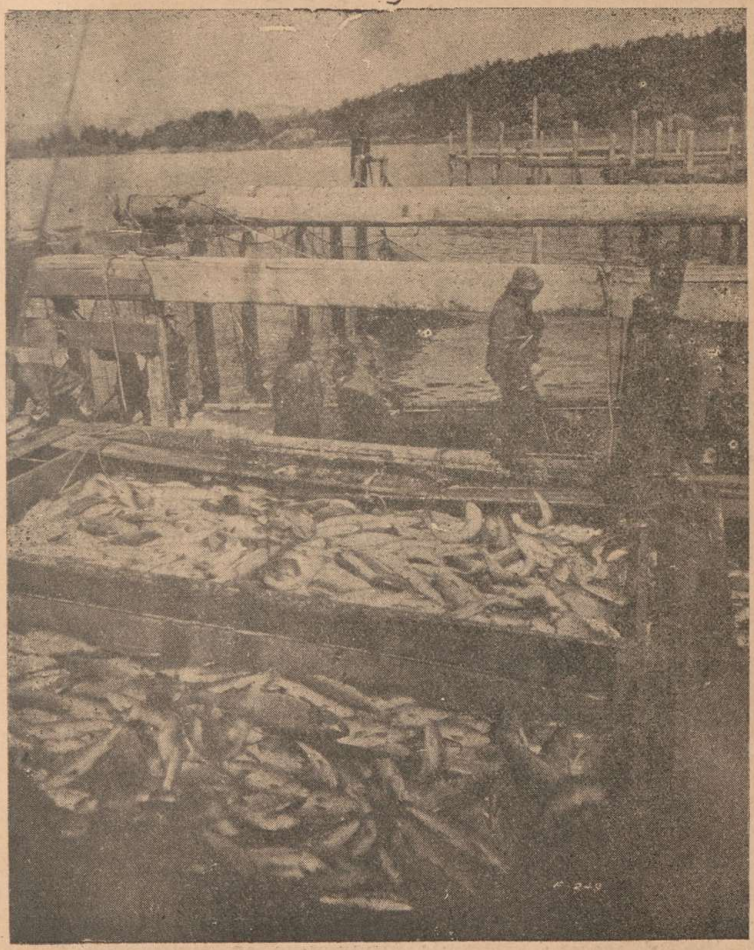
10. "The United States is industrially more advanced than Canada." Study this statement carefully and assign reasons in support of your conclusion.

11. Name the chief ports on the Atlantic coast of North America. Make out a list of the articles of export from the various ports.

12. "The economic backwardness of Northern Canada." Study this topic carefully. Give reasons for such a condition.

13. What are the chief products raised in the West Indies? What facilities are there for raising such products?

14. How do you account for the comparative backwardness of Mexico? Study this problem in regard to environment and government.



SALMON FISHING IN BRITISH COLUMBIA (TRAP)
Removing Catch from Weir
Courtesy: High Commissioner for Canada, London

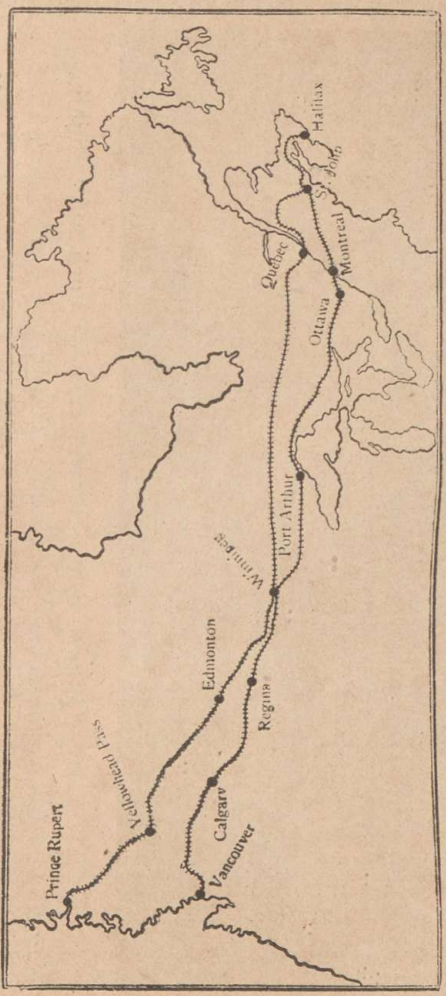
CHAPTER XXVIII

TRANSPORT AND COMMUNICATIONS OF NORTH AMERICA; LINKS IN ROUND THE WORLD ROUTES

GENERAL. In a continent about 3,000 miles in breadth, communications are of great importance in the development of the various regions of the continent. The Atlantic coastal region was the first region to be occupied by the European settlers. There are many good harbours. From the eastern regions, people began to move in the westerly direction. The Hudson-Mohawk valley presented the chief opening into the interior. The construction of railways has been a great inducement for people to settle in the Prairie region. The discovery of gold in the west was an additional attraction to push on communications to the west coast. The construction of railways in North America has caused a "great shrinkage" in the width of the continent and has facilitated the easy transport of goods from one region to another. The railways now suffer from the competition of motor vehicles.

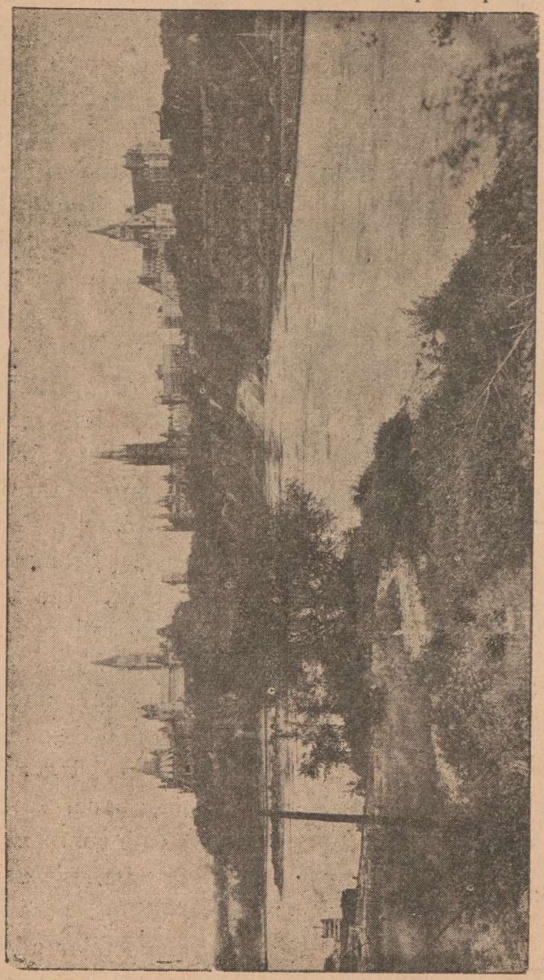
CANADA. The Canadian Pacific Railway is one of the railways of great importance in British North America. The construction began in 1871 and was completed in 1886. This railway starts from Vancouver on the Pacific coast and goes north-west crossing the gold fields of the Fraser River region.

It crosses the Rocky Mountains along the Kicking Horse Pass and reaches Calgary, the capital of Alberta, the ranching province. Then the railway passes through the Prairies crossing Regina and arrives at Winnipeg, the great wheat centre. Then it continues its march to Port Arthur passing through the area of Sudbury. From Port Arthur, the line runs north of Lake Superiorior to Montreal and is continued to Halifax in Nova Scotia, the eastern terminus. Owing to its situation, Halifax possesses a peculiar advantage over ports on



MAP 65. RAILWAYS OF CANADA

the Atlantic coast of North America. It is several hundreds of miles nearer the European ports than the



OTTAWA FROM QUEBEC SIDE (Showing rear of Parliament Building)
Courtesy: High Commissioner for Canada, Trafalgar Square, London

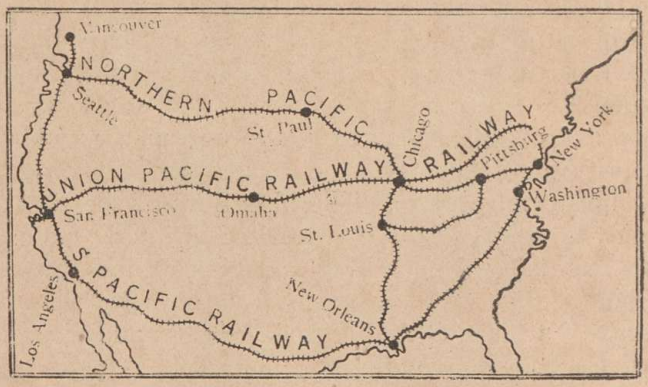
other American ports. It is ice free. It is one of the

safest harbours of the world. (See Map 65). Ottawa, the capital of Canadian Federal Government, Montreal, Quebec and St. John are all important stations on the way. These towns are all in the industrial area of Canada. Ottawa, the capital of Canada, is the centre of the lumber trade. It is the principal port and has many factories. Montreal is the terminus of the main line of the Canadian Pacific Railway. Montreal is a far inland port. It lies at the "interchange point between ocean and inland voyage." It is open for seven months in the year. It is one of the largest grain exporting ports in the world. There are four storage elevators. There is a ship-building and repairing plant in the harbour. Quebec is the capital of the State of Quebec. It is noted for its paper pulp and leather goods. It exports a very large quantity of timber, paper pulp and asphalt. St. John is a big fishing centre. The high tides of the Bay of Fundy keep its harbour clear of ice in winter. Halifax also has this advantage of a sheltered and ice-free harbour. The St. Lawrence ports of Quebec and Montreal are ice-blocked ports in winter and cannot be used for four or five months.

The Canadian National Railway starts from Prince Rupert on the Pacific coast, passes through the gold field or the Fraser River region and Yellowhead Pass, proceeds to Winnipeg and has its course north of the Canadian Pacific Railway in an easterly direction till it reaches Quebec.

THE UNITED STATES. In the United States, there are three main trans-continental systems of railways. (1) The Northern Pacific Railway, starting from

Boston, passes through Pittsburg, Chicago, St. Paul and Seattle and reaches Vancouver. From Seattle a line runs south along the coast to San Francisco and Los Angeles, the western terminus of the Southern Pacific Railway. (2) The Southern Pacific Railway connects New Orleans and Los Angeles. Los Angeles is a centre of the film industry. Further, the region round this town is an area of rich oil fields. In the east coast a coastal line joins New Orleans with Washington and New York. (3) The Union Pacific Railway joins San Francisco with New York,



MAP 66. RAILWAYS OF THE UNITED STATES

and passes through Chicago and Pittsburg. (See Map 66). From Chicago and Pittsburg railways go to St. Louis and thence further south to New Orleans. The Union Pacific Railway passes through rich mining and farming areas.

THE WATERWAYS OF NORTH AMERICA. The waterways of North America are no less important. A good waterway should be free from falls. It

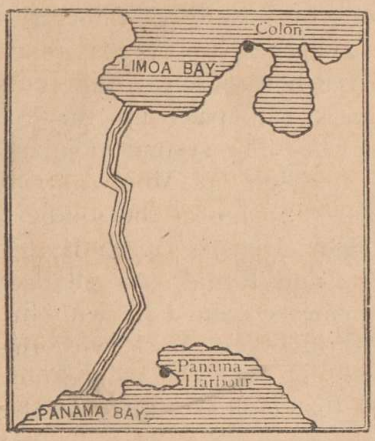
should have a fairly straight course. It should be deep and broad throughout the year. It should be free from ice, floods and drought. Starting from the heart of the country it should flow towards great markets and pass through a fertile area.

The Great Lakes of North America form a magnificent system of excellent waterways. Port Arthur in the North and Duluth to the west of Lake Superior are the most interior towns up to which goods can be sent to the interior regions by means of waterways. In other words, these two are the first ports that goods from the interior should reach for their voyage outward. Big ocean steamers can pass up the St. Lawrence as far as Montreal. The system of inland waterways may be said to begin at Montreal and thence lead to the interior. Chicago at the southern extremity of Lake Michigan, Detroit (a centre for motor cars) on Lake Erie and Buffalo are all lake ports. The Erie Canal connects Lake Erie with the Hudson River thus connecting New York with the system of inland waterways. Another important system of waterways in the United States is the Mississippi River with its tributaries. The river is navigable for a very long distance.

North America has the Pacific Ocean on the west and the Atlantic Ocean on the east. The opening of the Panama Canal on 10th October 1913 brought a great revolution in steam-ship routes. The Panama Canal is fifty miles long and is deep enough for large ocean vessels. The town at the Atlantic end is Colon and at the Pacific end is Panama. (See Map 67). A railway line runs all along the canal. The United

States bought the required land from the Republic of Panama and spent about 150 crores of rupees on this project.

Till the opening of the canal, ships sailing from the west to the east coast of North America, had " to make a detour around a large continent," namely South America. The opening of the canal shortened considerably the length and time of voyages made by ships, between the Atlantic and the Pacific Oceans. The canal saves a distance of 8,000 miles in a voyage from San Francisco to New York. This has resulted in a great increase in trade and commerce. The raw materials of the western states are transported to the industrial centres of the north-eastern United States. States like Chile and Peru also have considerably increased their trade.



MAP 67. THE PANAMA CANAL

The canal extends from Panama on the Pacific coast to Colon on the Atlantic coast. The canal is 50 5 miles long and a ship takes nearly ten hours to clear the canal. The canal was opened on the 10th of October 1913 by President Wilson. The canal is not a sea level canal. The isthmus is a hilly region.

A good volume of trade is carried along the North Atlantic with the countries of Europe. Wheat and flour, wood pulp, iron, gold, cheese, meat, furs, fish, motors and paper are the chief articles of

export. The imports are all manufactured goods. The exports of the United States are raw cotton, oil, iron and steel, tobacco, coal, meat, machinery, motors and cotton goods. The imports are cane sugar, raw silk, coffee, rubber, wool and jute.

From Portland and Vancouver, wheat is sent to China and Japan and other goods to Australia and New Zealand. The Eastern Atlantic ports export cotton, wheat, petroleum, animal products and manufactured goods to the European countries and Africa. America exports motor cars, machinery, and petroleum to India and imports tea and hides from India.

EXERCISES

1. Explain clearly how the construction of railways led to the development of Canada.

2. "The advantages of opening up of the Panama Canal." Study this problem carefully.

3. Compare the utility of waterways in North America with those in South America (the Parana-Paraguay and the Amazon). How far are the waterways useful in Canada?

4. Study the location and importance of the following places:—(1) New York, (2) Chicago, (3) St. Louis, (4) Vancouver, (5) Montreal, (6) Halifax, (7) San Francisco and (8) Quebec.

Draw sketches to illustrate the importance of their situation.