

REFERENCE TO COLOURING

above 18 000 feet
12 000 to 18 000 feet
6 000 to 12 000 feet
3 000 to 6 000 feet
1 500 to 3 000 feet
1 000 to 1 500 feet
600 to 1 000 feet
Sea Level to 600 feet
Sea Level to 100 fathoms
below 100 fathoms

OROGRAPHICAL MAP
OF
INDIA

English Miles
0 100 200 300 400

Always use Imperial Measure

A
JUNIOR GEOGRAPHY
OF
INDIA, BURMA
AND CEYLON

BY

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WITH NEW MAPS AND ILLUSTRATIONS

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PREFACE.

I HAVE been led to write this little school-book by the reception accorded by the Indian educational world to my "New Geography of the Indian Empire and Ceylon." That was confessedly a compromise between the old methods and the new : here an attempt is made to get rid of a mass of topographical detail, and to present to the pupil, in simple language, a general outline of the main features of relief and climate, with their influences on the lives of the inhabitants.

It is being every day more widely and fully recognised that, if topography is to be effectually taught, reliance must be placed almost entirely on map-study and map-drawing. The eye and the hand will teach the memory twice as quickly and effectively as the ear. Half-a-dozen lessons with a teacher before a large, simple, and clear map of India or Burma or Ceylon will tell the pupil all he requires to know of place-names and their whereabouts. The pupil is then in a position to begin the study of geography, and it is at this point that this little book is meant to be placed in his hands. Its object is to teach (I should prefer if it could rather suggest) the interpretation to be put on what he has learned from the physical map—to accustom him to reason forward from what nature has done and is doing to consequences in the daily lives of human beings, and to argue back from man's handiwork, his crops and harbours and canals and towns, to the natural conditions which favour and even compel their location here rather than there.

Political geography is therefore relegated to an altogether subsidiary place. In an area such as India the divisions into red and yellow are of little value geographically : their significance is almost entirely historical. It is really of little importance, for example, that a pupil should fail to remember whether Delhi is in the jurisdiction

of the Lieutenant-Governor of the Punjab or of the United Provinces, but it is of the essence of geographical knowledge that he should have fixed in his mind its position in relation to the natural features of the country, and that he should be able to deduce therefrom something of the conditions affecting the life and work of its citizens.

I trust that teachers may find the line between essentials and non-essentials drawn at a convenient point. The book necessarily involves some knowledge of physiography, but all that is required can be explained to the pupil as he goes along, with more advantage than if it were set down in abbreviated form in a text-book professedly dealing with geography.

The regional maps have been specially prepared by Messrs. Bartholomew for this book. They constitute an attempt to combine the accuracy of contour maps with the vividness of those produced by the photo-relief method. They seem to me to be well adapted to the stage of geographical knowledge expected of pupils for whom the book is written.

The spelling of place-names adopted by the Editors of the new Imperial Gazetteer has been followed in this book, as in my larger "New Geography of the Indian Empire and Ceylon."

C. M.

MADRAS, 1909.

CONTENTS.

CHAPTER I.

	PAGE
Introduction—What Geography teaches—The uses of Mountains, Plains, Sea-Coasts, &c.—Questions about Climate—The Monsoons—Effects of Climate and Rainfall on the People	9

CHAPTER II.

What Man has done—Crops, Villages and Towns, Roads, Canals, Railways and Harbours	26
---	----

CHAPTER III.

The Boundaries of the Indian Empire, Landward and Seaward	42
---	----

CHAPTER IV.

The Mountain Regions of the Indian Empire—The Work of the Himalayas—Crops, Population, Hill Stations—The Sulaimans and Kirthars—The Mountains on the Eastern Boundary	43
---	----

CHAPTER V.

The Plain Region of India—Boundaries and description	58
--	----

CHAPTER VI.

The Eastern Plains—Climate and Rainfall—Crops, Population, Towns and Trade—Calcutta	61
---	----

CHAPTER VII.

The Western Plains—Climate and Irrigation—Crops, Population, Towns and Trade—Karachi	73
--	----

CHAPTER VIII.

	PAGE
The Region of Table-lands—The Table-land of the Deccan and the Table-land of Central India—Their Drainage, Rainfall, Rivers and Waterways, Crops, Population, Towns and Trade	81

CHAPTER IX.

Region of Coast Strips—West Coast : Rainfall, Crops, Population, Towns and Trade—Bombay—The East Coast Strip : Climate and Rainfall, Crops, Population, Towns and Trade—Madras	91
--	----

CHAPTER X.

The Coasts and Islands of India	103
---	-----

CHAPTER XI.

Burma : its Mountains, Rivers, Rainfall, Crops, Inland Trade, River-ports and Sea-ports—Rangoon and the Irrawaddy	106
---	-----

CHAPTER XII.

The Coasts and Islands of Burma	117
---	-----

CHAPTER XIII.

The Political Geography of the Indian Empire—The Provinces of India—The Native States—Frontier India—Burma—Foreign Possessions in India	118
---	-----

CHAPTER XIV.

The Peoples, Religions, and Languages of the Indian Empire	124
--	-----

CHAPTER XV.

How the People of India earn their bread—Agriculture and Handicrafts, Steam-mills, Mines and Minerals—Trade and Commerce—Exports and Imports	128
--	-----

CHAPTER XVI.

Ceylon : its Position, Shape and Build, Coasts and Islands, Climate, Rainfall, and Crops, Population and Towns—Colombo : Trade, People, Languages, and Religions—Government	133
---	-----

APPENDIX	141
--------------------	-----

ILLUSTRATIONS.

	PAGE
Rice, Tea Plant, Wheat, Coffee	27
Gathering Tea	29
Castor Oil, Rape, Jute, Cotton	31
Linseed, Indigo, The Opium Poppy, Tobacco	33
Tobacco Field	34
Mount Godwin Austen in the Karakoram Mountains	47
Caravan Crossing the Kwen Lun Mountains	49
Simla	50
The Khyber Pass	52
Benares, the Sacred City on Mother Ganges	65
The Taj Mahal at Agra	69
In Calcutta	70
Bridge over the Indus at Sukkur	78
Railway Station, Bombay	94
Bhor Ghat, Western Ghats	96
Madras and its Harbour	100
River-side Village in Burma	114
The Great Shwe-Dagon Pagoda at Rangoon	115
Udaipur	121
Colombo Harbour	137

MAPS.

	PAGE
Relief Map of India and Burma	11
Density of Population, with Rainfall	22
Distribution of Millets and Pulses, Rice, and Wheat	28
Distribution of Cotton, Indigo, and Jute	30
Distribution of Tea, Coffee, Opium, and Oil-Seeds	32
Rainfall and Irrigation Map of India and Burma	38
Railway Map of India and Burma	40
Mountain Region. The Himalayas	45
Mountain Regions, West. Sulaimans and Kirthars	51
Mountain Regions, East.	55
The Eastern Plains	63
Eastern Plains. Rainfall and Crops	67
Calcutta and Howrah on the Hooghly	71
Western Plains	75
Western Plains. Rainfall, Irrigation, and Crops	77
Karachi and its Harbour	80
Table-land Region. Physical Features	83
Table-land Region. Rainfall and Crops	87
Table-land Region. Towns and Railways	89
The Narrow West Coast Strip	92
West Coast Strip. Rainfall and Crops	93
Bombay on its Island	95
The East Coast Strip	97
An East Coast Delta, the Kistna	98
East Coast Strip. Rainfall and Crops	99
Madras on its Flat Coast	101
Burma. Physical Features	107
Burma. Rainfall and Crops	109
Burma. Railways and Towns	111
Rangoon	112
The Native States of India	120
The Chief Languages of India and Burma	126
Ceylon. Position	133
Ceylon. Elevation and Rainfall	134
Sailing Routes to and from Colombo	138
How to Draw the Map of India and Burma	143

JUNIOR GEOGRAPHY OF INDIA.

CHAPTER I.

§ I.—The best way to understand the geography of any part of the world is to study the map carefully. There are two kinds of maps, political maps and physical maps. Political maps are the ordinary maps. They give us a picture of the country, and, by different colours, they show the divisions of it which man has made, *i.e.* the parts into which it is divided for purposes of government. A physical map gives a picture of a country showing how nature has shaped it into mountains and valleys and watered it with rivers: in short a physical map * gives us the build or shape of the land. It is much more important to know what nature, *i.e.* mountains, valleys, rivers, lakes and the sea, heat, rain, and the soil do for a country than to know how man has divided it up into different provinces or states. If we first study the shape and climate of a country we can find out what parts are most useful to man, where he can grow the different crops most easily, where he can use the rivers for boats or steamers, where he can use the water of these rivers for irrigation, where the most suitable places for towns are to be found, and how these towns can be joined by railways along level valleys or over gaps in the mountains. After we have studied these things we can read the history of the country and see how, by wars and treaties, it has been divided into the provinces and states which we see painted on the political map.

In this little book we do not trouble ourselves with long lists of mountains, or rivers, or towns, or capes, or bays. We do not keep

* Relief maps are a new kind of map which show the build very clearly: contour maps do this even better.

long lists of our friends, our bullocks or our dogs, or the trees in our fields, or the houses in our villages. We know and remember the names of all these because we see them and speak of them every day. In the same way the pupil should know the names of the chief mountains of India, of its rivers, valleys, coasts, and islands, and where they are. For this purpose an atlas should be used, but the worst of an atlas is that it too often remains shut on a shelf. Therefore the best plan is to keep a good map of India and Burma always hanging where it can be constantly seen. By doing so we can always be learning something new about the country we live in. A map on the wall, if we study it a little every day, soon becomes a picture in our minds which we can never forget. Even a one-anna map constantly used is better than a ten-rupee atlas which is only opened now and then. The author of this book always kept a good map in front of him when writing it: the pupil should do the same when studying it.

(Still another and a better way to learn the geography of a country is to draw the map.) We can do this first by copying it and then after some practice we can do it from memory. It is a great help if we can have some framework or guiding lines to fit the map into. At the end of this book a figure with straight lines is printed which helps us to draw the map of the Indian Empire correctly.

But far the best way to know the geography of a country is to build a map out of clay, or even out of brown paper and paste, so that we can feel with our fingers, as well as see with our eyes, the shape of the land. Any one who builds a map like this is sure to learn the geography of a country so that he cannot forget it and far better than one who only looks at a map made by some one else.

What geography teaches us.—We must remember, then, that this book does not tell the names of all the mountains, rivers, and towns of India and Burma and it does not tell where they all are. These things must be learnt from the map. But to know the geography of a country we must do more than know the names of places and where they are. A country is of no interest without human beings living in it, and real geography teaches us what use a country is to the people in it.

In learning geography, therefore, we are always trying to find



RELIEF MAP OF INDIA AND BURMA.

out answers to a great many questions beginning with **How** and **Why**. In the geography of the Indian Empire, for example, we find out how the people of India earn their bread, why they are mostly tillers of the ground, why they grow rice in one part, millets in another, wheat in another, and tea in another; how the climate helps them to do this, how the sun helps and how the rain helps: why some land is fertile and some is not, and, therefore, why some districts have many people living in them, and some very few, and some none at all. In some parts of India there are many towns, in some few: in one part there are many rivers or canals or railways, in another very few, in another none at all—how is this? India has few bays and inlets in the coast and very few islands near it: has this made any difference to the people in the past, and does it make any difference now? Why is a town built in one place rather than in another, and why do some towns grow quickly and others decay? By studying geography we can answer some of these questions. And then, when we afterwards read about other countries which are quite different from India or Burma, we can understand why the people there are also different, why they earn their bread in a different way, and live different lives altogether.

§ II.—Now (the two things which make most difference to the people living in any part of the world are, the Shape, and the Climate of the country they inhabit.) Therefore when we study the geography of the Indian Empire we must pay great attention to these two things, because, if we can understand them, we shall be able to understand how they help or hinder the people to live and make their home there.

Shape.—**What Mountains do.**—By shape we do not mean merely the outline on the map; (we mean the ups and downs, the mountains, river-valleys, table-lands, and coasts—in short, the build of the land. Mountains are the most important part of the build of India and Burma,) and we now study the work of these mountains. A good physical map shows us that (all round the Indian Empire there are ranges of high mountains. These have always kept India and Burma separate from the rest of Asia) **The Himalayas** are, of course, the highest of these ranges and they have done this work

of separating best. (No army has ever come across them into India. Across the **Sulaimans** there are, as we shall see, certain passes by which invaders have come into India : on the **East of Burma** there is only little communication across the mountains into China.) Inside India too we can see how the mountains have shut off one part from another. (The **Western Ghats**, which run along the west coast not far from the sea, have always shut off this narrow strip of coast from the rest of India. The customs of the people of the Malabar coast, and their language, are therefore different from those of the rest of India. In the same way the **Vindhya and Satpura** mountains prevented the Aryans coming in large armies to the south of India : therefore, in the south of India the people are of a different race from those of the north.) The map shows many ranges of mountains, e.g. (the **Patkais, the Khasi, Jaintia, and Garo Hills**, and the **Lushai Hills**, dividing India from Burma, and that is why the people of India are quite separate in blood, in religion, in language, and customs from the Burmese.) Inside Burma, too, we see how difficult it must be to get inland from the sea across the mountains which run along the coast.

But mountains do a great deal more than divide one part of a country from another. We shall see (they have a great influence on the climate. If they are high they keep off winds. They catch rain-clouds and are thus the birthplace of rivers.) By knowing the direction of the mountain ranges of a country we can tell how the rivers flow.

What Plains do.—Plains and River-valleys.—We shall see that (the most important part of India is its flat Indo-Gangetic valley or plain. We may call this the greatest river-valley in the world. In early times, civilisation, in hot countries, began on the banks of rivers, because food was there easily grown and it was easy to pass by water from one place to another. No river in the world has done so much for the civilisation of man as the great Ganges. On its banks the history and religion of India began : when the rest of India was rude and half savage there were places of learning on its banks : no wonder it is the most sacred river in the world.) We shall study the work of rivers later on.

What Sea-Coasts do.—Sea-coasts.—The map shows us that

(India juts far out into the Indian Ocean: its coasts are therefore far from the shores of other parts of Asia, and from this we can guess that, long ago, before steamships were built, it took a long time to sail, say, from India to Burma or Africa. This is one reason why the people of India have always been stay-at-homes.)

The map shows us another thing: (on the coast of India there are very few bays and islands.) We shall see that (this also makes a great difference to the people of India. In other countries where there are good bays and openings for harbours, or where there are many islands to protect ships from storms, or where the islands are thickly scattered over a large sea, so that the sailor is never out of sight of land, there people quickly and easily learn to become seamen. But this is not so in India, for as soon as we leave the shore we are in the open ocean. This is another reason why the people of India have not been seamen and wanderers over the world.) On the one hand they have been hemmed in by high mountains, on the other by a great unknown and dreaded ocean, which they have named the Black Water. They have not gone to foreigners: they have allowed foreigners to come to them, and the sea trade of India has thus always been in the hands of people of other countries.

(India and Burma, being shut in by high mountains on the one hand and by broad oceans on the other, were for hundreds of years kept apart from their neighbours and did not, like European countries, learn much from the rest of the world.)

✓ § III.—What Climate does. (When we think of the climate of any part of the world we think chiefly of three things—heat, moisture, and the soil.) Of course in such a large area as the Indian Empire we do not expect to find only one climate. It has different climates in different places, and the climate of each of these places changes at different times of the year.

Now here there is a very important Why and a very important How which we must try to answer.

I. Why does the climate of India and Burma differ in different places and at different seasons of the year?

II. How does the climate of these different parts affect the people who live in them?

The first of these questions is much the more difficult, but we can make it easier by dividing it up into three.

Questions about Climate.—These are 1. **Why are some parts of India and Burma hotter than others?**

2. **Why are some parts moister and wetter than others at certain seasons?**

3. **Why is the soil of some parts so different from the soil of others?**

1. The great source of heat is the sun, and the amount of heat he gives depends on the slant or slope at which his rays fall on the earth. Where the sun shines directly down on the earth the heat is always greater than where he shines at a slope or slantingly. The earth in its orbit round the sun is not shone on always at the same slope or angle. There is a belt called the Tropics on both sides of the equator bounded by imaginary lines—the Tropic of Cancer in the north and the Tropic of Capricorn in the south. On some part or other of this belt the sun is shining directly all the year round. On the parts north and south of this belt he is always shining at a slope and this slope is greater the nearer we go to the poles. The map shows us the Tropic of Cancer running across the upper part of India and Burma. Hence the larger part of these countries lies within the tropical belt, and even the parts outside it are not far off. When, during half the year (October to April), the sun is shining directly on the southern half of the belt, he is of course shining at a slant on the whole of India, and during that time the slope of his rays will be greater and the heat he gives less as we go north. During the other half of the year (April to October) he will be shining directly on the northern half of the belt, but he will still be shining with only a slight slant on the parts of India north of the belt, i.e. beyond the Tropic of Cancer. From these facts we can understand that India as a whole is a very warm part of the earth and that, as a rule, its climate gets cooler as we go north.

But this is not all. It is not enough simply to say that the climate of India is cooler and cooler as we go north. Indeed, it is not true for all places and seasons. We know for instance that places far from the sea have a more varying climate than places near it: they are hotter in the hot weather and cooler in the cold weather. Thus Madras on the sea-coast is cooler than Lahore, far inland, in the hot season,

but it is much warmer in the cold season.* The reason of this rule is that water, *i.e.* the sea, gets heated and gets cooled more slowly than the land.) Therefore, if land is near the sea it will not become heated in summer and cooled in winter so quickly as land which has no sea near it.

There is another thing which everybody knows. (If we go up hills or mountains the climate is cooler than it is on the plains. It is a rule of climate that the higher a place is the cooler it is. On the tops of the Himalayas although the sun be shining brightly the ice and snow never melt. The coolness of the hills is of course the reason why hill stations have been built so that Europeans, who are unaccustomed to the heat of the plains of India, may go up there in the hot weather.)

We can now answer our first question about climate by saying that, as a rule, in India and Burma the farther north we go the cooler the climate becomes, but that distance from the sea and height above the sea-level also make a difference.)

2. Our second question about climate was—Why are some parts of India and Burma moister and wetter than others at certain seasons?

(As the sun is the great source of heat so the ocean is the great source of moisture. Rain comes from clouds, and clouds are formed by the moisture which the sun sucks up from the ocean. (The sun in hot parts of the world of course sucks up much more moisture than in cold parts, and that is the reason why rain in India is so much heavier and "stronger" than in England.) We can now see how the climate of a country depends very much on winds and on how they blow. If they blow the clouds from the ocean to a country, then that country will get good rain and be fertile. But if the winds blow clouds away from a country, or only past the side of it, then that country is sure not to get much rain and to be barren.) By looking at the map of Asia we can see that Arabia is a very dry and barren country—there are no rivers, no lakes, and very few towns, but plenty of desert. The reason is that winds do not blow clouds into Arabia but only at a distance from it, so that it is always barren.

* People who went from the south of India to the Great Durbar at Delhi in January 1903 were surprised to find the water in their tents frozen in the morning.

It is very lucky for India that it sticks right out into the Indian Ocean, because it can catch the clouds that are formed on the sea on both sides of it. We can therefore lay down the rule that, in India and Burma, a wind blowing from the sea is sure to be damp and a wind blowing from the land is sure to be dry: and that north winds are of course cooler than south winds.)

The Monsoon.—But we must not think that winds blow simply by chance in any direction. Just as men have found out the laws by which a stone falls to the ground or a ball flies through the air, so they have found out the laws by which wind moves and why it goes one way and not another. We can easily understand that the blowing of the wind is not mere luck or chance, for we find that winds regularly blow a certain way at certain times of the year, *i.e.* at certain seasons. (Now the seasons of the year depend on the heat of the sun, and) we can guess that the change of the wind depends on the sun's heat. It is difficult to understand the laws of winds, but we know that (the great wind of the year in India and Burma comes just in the middle of the hot season) (In June a great wind comes sweeping in from the ocean. It is called the south-west or summer monsoon, and it is the most wonderful and most important thing in the climate of India.) Suppose we are standing on the Western Ghats before the monsoon breaks, some time in May. The sky is clear, the sun shines brightly, and only a gentle breeze is blowing. But in June this is all changed. Now the sun cannot be seen: clouds hurry across the sky, driven by a strong wind, towards the land: the thunder roars, the lightning flashes, and the rain falls in torrents and quickly floods the hill streams. Sometimes the wind is so strong that trees are blown down or uprooted. (This monsoon blows, off and on, for about four months, June, July, August, and September. It is the great moisture-bearing current which brings life to the parched lands of India and Burma every year. It is divided into two great branches. One comes across the Arabian Sea and strikes the west coast of India: the other crosses the Bay of Bengal and strikes the long coast of Burma, and the mouths of the Ganges.)

How Mountains act on the Monsoon.—But the rain from this moisture-bearing wind is not divided equally over the land. (The mountains of India and Burma have a great effect on it, for they

check and turn the monsoon so that its rain falls more heavily in some places than in others.) In the maps in this book which show rainfall there are certain lines marked with figures. These figures tell us the number of inches of rain that fall in a year in these places. There is a rule we must remember which is this, that (the hotter air is, the more moisture it can hold, and if air which is full of moisture be cooled some of that moisture falls in the shape of rain or dew. Now when air or wind that is full of moisture strikes against mountains it is forced, when it tries to cross them, to go higher. In doing so the air is cooled and the vapour or moisture it carries is also cooled and falls in the form of rain.) (If air very full of moisture has suddenly to climb a high mountain its moisture is cooled very quickly and the rain falls there very heavily.)

Now let us look at the chief mountain ranges of India and Burma and see how they act on the monsoon current.

The Arabian Sea Branch.—This branch of the monsoon meets the long line of the **Western Ghats** running close to the coast. What happens? (The moist current is forced up these mountains and so becomes cooled and, in consequence, the rainfall is very heavy. The long narrow strip of coast seaward of the Ghats, from Bombay to Cape Comorin, receives a very heavy rainfall during the monsoon months. The monsoon wind, however, crosses the Western Ghats, but it is now drained of almost all its moisture, so that it has only very little left for the part of India east of the Ghats. This is the reason why the Deccan of India gets so little rain.) We thus see that the Western Ghats, by catching the rain-clouds of the monsoon, distribute the rain very unevenly. They make most of the rain fall on the narrow west coast strip and only allow a little of it to cross them into the Deccan.

(If now we look again at the map farther north, at the coast between Karachi and Bombay, we find that here there are **no mountains**. What is the result? (The monsoon wind, finding no mountains to stop it, rushes right across the land, without shedding any rain, till it reaches the Himalayas against which it dashes in heavy showers. This is the reason why all this country inland from the Gulf of Cambay and Ranns of Cutch is so very dry, and here, too, we see the Thar or Great Indian Desert. There is, however, one range of mountains

in this part of India—the **Aravalli Hills**. There, therefore, there is more rain than on the plain. Mount Abu, the highest peak, receives heavy rain. Still farther north, again, we see (the **Sulaiman and Kirthar mountains** which separate India from Baluchistan. These mountains are, however, of no use as rain-givers for they are outside the path of the monsoons, and the country on both sides of them is, therefore, nearly rainless.)

Bay of Bengal Branch.—In the north of India again there is the great triple wall of the **Himalayas**. These mountains are much higher than the Western Ghats and, therefore, they prevent the monsoon which comes rushing up from the Bay of Bengal from passing over them. In this way the **Himalayas keep the monsoon in India**, and that is the reason why Tibet, the country to the north of them, is so dry and so little fertile. The Himalayas bend the monsoon along their southern face—one part of it going up the Assam valley (which is thus one of the wettest parts of inland India), and the other along the great Ganges valley. Therefore in this—the Ganges—valley it is not a south-west but a south-east monsoon. As the Ganges plains are the most fertile and most thickly populated part of India, it is most important to understand how the rainfall is distributed as it comes up this valley. The monsoon, of course, is strongest where it strikes the coast and gets weaker and weaker as it goes up the valley. The rainfall is thus very heavy in the delta of the Ganges and in the Surma valley, but at the other end of the great plain, e.g. at Peshawar, it is very light. So too it is heaviest on, or near, the Himalayas and lightest in the parts farthest away from these mountains.)

(In Burma the mountains act on the monsoon in the same way. The map shows the long line of the **Arakan Yomas** running near the coast in the northern part of the country and the **Tenasserim Yomas** running near the coast in the southern part. Both these ranges catch the Bay of Bengal branch of the monsoon exactly as the Western Ghats catch the Arabian Sea branch. Therefore all along the coast strip of Burma there is a very heavy rainfall and the strip is very fertile, being a great paddy-growing country. The monsoon also gets up the Irrawaddy valley for some distance, but south of Mandalay there is a dry area because the Arakan Yomas there keep the monsoon

from reaching the interior of the country. On the east of Burma and in the north there is also a good rainfall, for here there are many mountains. We thus see that mountains distribute the rainfall of the monsoon, making it heavier in some parts than in others.)

The North-East Monsoon.—(In October the south-west monsoon turns round again and strikes India from the opposite direction for three months. It gives rain in these months to the east coast of India and a little inland from it—from the mouth of the Godavari to Cape Comorin. This is very lucky for these parts of India for they get very little rain in the south-west monsoon.)

We can now understand which are the wet and which the dry parts of India and Burma.

(In India the west coast strip, the Gangetic delta, the Assam and Surma valleys, and, in Burma, the long coast strip and the Irrawaddy delta are very wet.)

(The Ganges valley up to Delhi, the east coast of India and the mountainous parts in the north and east of Burma have a good rainfall.)

(The Deccan and Central India tableland and the part of Burma just south of Mandalay are dry.)

The part of India west of the Aravallis, including Baluchistan and Sind, are very dry, and some parts are barren and desert.

(In a hot country like India where the people live by tilling the soil almost everything depends on rainfall, and we shall afterwards see what a difference it makes to the people.)

Our third question about climate was—Why is the soil of some parts of India and Burma so different from the soil of other parts? Soil is formed by the rubbing down of rocks. This rubbing is chiefly done by water, *i.e.* rain and rivers. Now (where there is a good rainfall and therefore plenty of streams, the rocks will be more quickly rubbed down than in places where the rainfall is scanty. That is why we find so much alluvial soil in the Indo-Gangetic plain.) (The soil of this great plain (in some places 500 feet deep) has all been rubbed off the Himalayas, and Vindhya and brought by rivers and streams into the plains.) (This work) has been going on for thousands and

millions of years but it (is) not finished. We can see it (going on still). Every year the rain, the brooks, and the rivers rub lacs of tons of soil off these great mountains and carry it down to the plains. (That is, of course, one reason why these plains are so fertile: they are always being supplied with fresh soil.) (This alluvial soil can be found in all places where there is a heavy rainfall, and on the banks of rivers.) But in parts like the Deccan where the rainfall is not heavy we find that the soil is not deep, and that rocks lie close to the surface.)

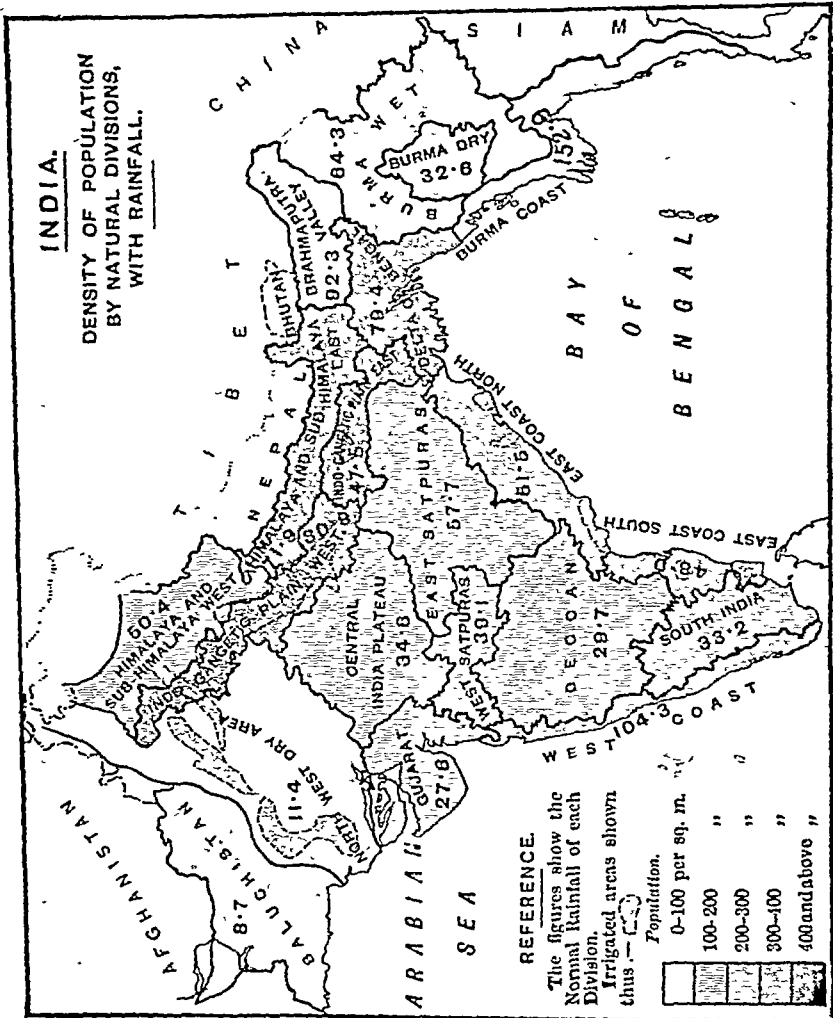
§ IV.—How does Climate act on the people of India?—

If now we look back to page 14 we find we have still to answer our big How—viz. How does the climate of the different parts of India and Burma affect the people who live in them, *i.e.* what difference do heat, moisture, and soil make to the people and the way they live?

(The heat in a tropical country like India of course makes the life of the people different from the life of those who dwell in temperate and cold climates. They wear fewer and thinner clothes, their houses are built differently—to keep out the heat not the cold.) It is said that (the heat of tropical countries makes a difference to the minds of the people—it makes them unwilling to work hard and regularly. They also suffer much from fever.) In hot countries too (the food of the people is different,) because there many plants grow well which are not found in cold climates. (Thus in India and Burma rice, millet, palm-trees, oil-seeds, sugar-cane, tea, and coffee are grown easily,) while they can only be grown with great difficulty, or not at all, in colder climates. (The animals are different too. Tigers, elephants, wild buffaloes, monkeys, parrots, crocodiles, and snakes are found in India though they are unknown in a wild state in temperate climates.)

But in a hot country like India or Burma it is moisture that makes the greatest difference. We may write it down as a rule—(Where rainfall is heaviest there crops grow most plentifully, and there also the population is thickest.) Of course this rule is not true if the country is full of mountains, for we never find much cultivation and a thick population among mountains, however good the rainfall may be. (But in the plains the rule is true.) This is why the Gangetic Plain from Calcutta right up to Delhi is so fertile and so thickly populated,

why there are so many people on the wet west-coast strip, and why the population of the flat parts of Burma is growing so quickly. But where there is little rainfall there is very little cultivation, and therefore



a very thin population. In parts of Baluchistan and Sind, where very little rain falls, there are only a few wandering shepherds. On mountains we find great differences in plant-life. Where the rainfall is heavy as on the Western Ghats, on the southern ranges

of the Himalayas and on the mountains of Burma, there are great forests and thick undergrowth. But on the Sulaimans and in the Trans-Himalayas which receive very little rain the hill-sides are bare and rocky with only a few shrubs here and there.)

But rain, besides watering the surface, also sinks into the ground, sometimes very deep. Here it flows wherever it can find a way along the beds of clay and rock. It is then called sub-soil water. In some places it comes to the surface in the form of springs. In almost every part of India if we dig deep enough we come to water. A great deal of cultivation in India thus depends on wells.) Where there is much rain, as in the Ganges valley, the water is found near the surface and very plentifully, but in the Deccan and in places like Rajputana and in Baluchistan, where there is little rain or a rocky soil, there are few wells and they have to be sunk to a great depth.

(Rain, however, does more than make the land fertile. It also changes the shape of the land. It rubs down the surface of the ground partly by washing it off and partly by dissolving it. In this way, bit by bit, it makes the surface of a country more level and smooth.) Where only gentle rain falls this work is very slowly done. But at places like Cherra Punji, in Assam, where the rain falls in heavy torrents, large parts of the hills are torn off and washed away. Of course the kind of soil makes a difference too. Rain has only a slight effect on rocks, but where the soil is soft its work is quickly seen. And it must be remembered that this work is always going on and has gone on for thousands and millions of years. In India, as in other countries, where we see steep hills and a rugged surface we may be sure, either that very little rain falls there, or that the surface is made up of hard rocks. But if there are plains or valleys, or if the hills are smooth and round, we know this has been the work of rain.

(The rainfall of a country) is also important in another way: it feeds the rivers that run through it.)

The work of Rivers.—(Rivers do three things which change the face of a country. They eat away their beds and their banks, they carry down sand, mud, and gravel, and they lay down or deposit what they carry off either on their banks or at their mouths.) Where a

river is flowing very fast, for example down the steep side of a mountain, it does its work very quickly. The force of the water tears away mud, gravel, and even large stones. The gravel and stones, being heavy, are deposited at the foot of the mountain where the current loses its power and the mud, being light, is carried on. A river always does more work if it does it suddenly. If all the rain in India fell in gentle showers every day through the whole year the amount of water carried by the rivers would not be nearly the same, for more of it would be sucked up by the soil and the sun, and thus the work done by the rivers would be much less.

In India the rainfall of the year only comes in one or two months, and in some places it is very heavy. Therefore a great deal of water is, in a very short time, poured by brooks and tributaries into the main rivers and they rise in great floods. It is during floods that rivers do most of their work. When a flooded river enters a flat plain it begins to flow slowly and so drops its mud and silt on its bed. Its bed is thus gradually raised till it is sometimes higher than the surrounding country. Then, when another flood comes, the stream will break through its banks and spread its waters far and wide over the low level plain. In this way the river constantly shifts its course till it has visited in turn every part of the plain, raised it and levelled it. We can see this work being done on a large scale in the plains of the Ganges, Brahmaputra, Indus, and Irrawaddy. These rivers have, in the course of thousands and millions of years, made the country through which they flow quite flat and smooth.

Deltas.—When a river is almost at the end of its journey, near the sea, the current of the water is very weak because the country is very flat. Therefore, having no more force to carry on its mud, it allows it to sink. Year after year new mud is brought down till it is higher than the level of the river, and plants and trees begin to grow on it. These large banks of mud choke the main bed of the river, and its water now spills on either side over the low land to the sea in *distributaries*. These distributaries also become choked in the same way, and they, in turn, split into smaller streams till the whole region is a huge stretch of mud with slow muddy streams wandering through it. We can understand how these distributaries, like the branches of a tree, go farther and farther away from the main stream, so that

they form a shape like a fan. This fan-shaped or three-cornered piece of land enclosed between the point where a river begins to split up and the mouths of its most distant distributaries is called a **delta**. Delta is the name of the Greek letter Δ which, as we see, is shaped like a triangle. The sea also helps to form these deltas, for it comes up the different mouths, stops the current, and so makes it drop its mud. The amount of mud carried down by the rivers of India is so enormous that we cannot picture it in our minds. The Ganges, the Brahmaputra, and the Meghna together, during the four rainy months of June, July, August, and September, bring down and deposit on their delta and sea-shore as much soil as all the millions of people in Bengal could carry there in a year. And we must never forget that this work has been going on for thousands and millions of years; so we can say that all the flat country between the Himalayas and the Vindhya has been made by the water of the rivers. The same thing takes place, on a smaller scale, in the other river-valleys of India and Burma. ✓

We have now seen what the build and climate have done and are doing for India—what the mountains, plains, and sea-shore have done, what the heat does, and what the moisture and the soil do, and how all these things together make India a home for its peoples different from the homes of people who live in other countries and other climates.

CHAPTER II.

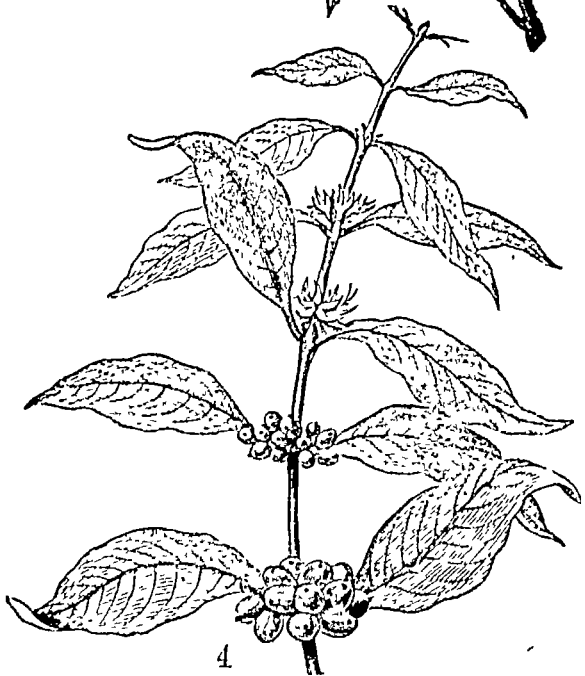
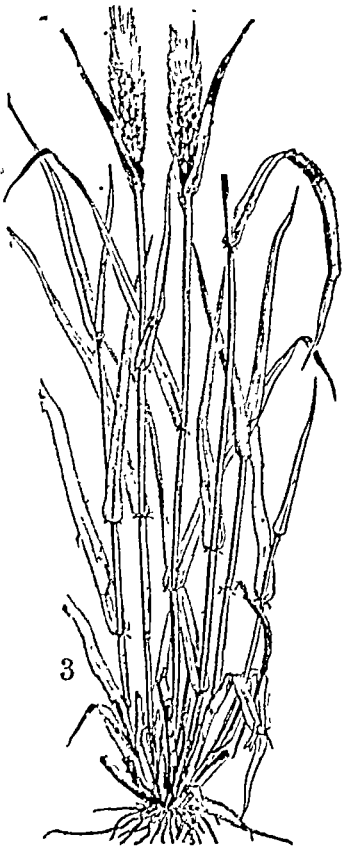
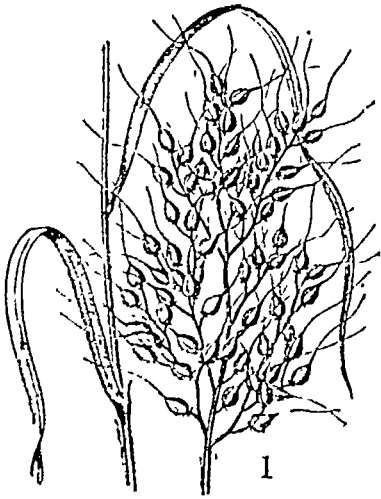
§ I.—What man has done.—We have now to see if man has done anything for himself. Man cannot of course change the shape or climate of a country, but he can use the hills, the valleys, the rivers, and the sea-shore, the soil, the heat, and the rain for his own purposes. (He has changed the face of the country,) (1. by growing certain crops to give him food and clothing, 2. by building houses, villages, and cities for shelter, 3. by making roads, canals, railways, and harbours.)

I. Crops.—(India was in old times largely covered with forest and jungle; but these have, bit by bit, been cut down to make room for fields.) Man has found out what are the most suitable soils and climates for each kind of crop. (The chief food of the people of India, as a whole, is millet and pulses.) These can be grown without much help from rain, and so we may say they are cultivated all over India and Burma wherever the climate or soil does not suit rice. (The chief millets are jowar or cholam, bajra or kumbu, and ragi. The pulses include all kinds of gram and dal.)

Rice.—(The rice or paddy plant requires heat, and can only be grown in fields which can be flooded at certain stages of its growth. Therefore it is grown (1) In the great well-watered plains of the Ganges and Mahanadi and in the Surma and Brahmaputra valleys.) In fact the delta and lower valley of the Ganges produce more rice than all the rest of India put together. (2) (It is grown in the delta and coast-strips of Burma which receive very heavy rain; (3) also, in the wet Malabar coast of India; and (4) in the deltas of the east coast.)

Wheat likes a cool and dry climate; damp air spoils it. Therefore it is, in India, a winter crop and is grown in the dry climate of the upper Indus and Ganges valleys far from the sea and in the cool dry uplands of the Deccan.

Sugar-cane, from which sugar is made, likes a rich soil. It is



1. RICE.

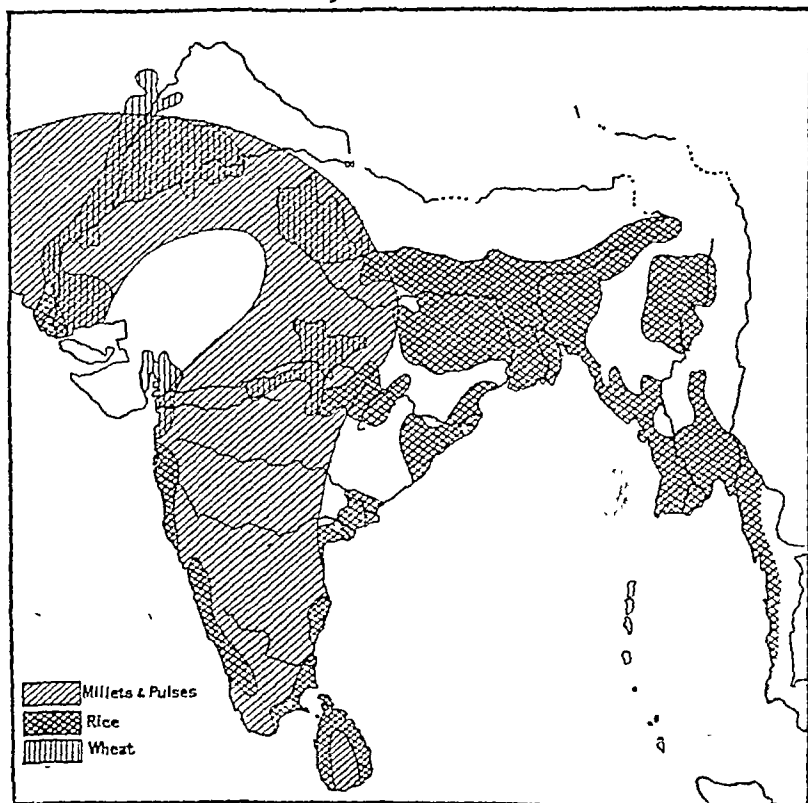
2. TEA PLANT.

3. WHEAT.

4. COFFEE.

therefore chiefly cultivated in the Upper Ganges valley and in the south of India wherever plenty of water can be had.)

(Tea is the dried leaf of a shrub) It is very little used by the natives of India and is sent abroad in large quantities. (The plant grows best on high easily-drained soil under a hot sun, and the best /



DISTRIBUTION OF MILLETS AND PULSES, RICE AND WHEAT.

crops are got where there are frequent showers to bring out the fresh leaf-buds from which the finest tea is made. (The slopes of the Brahmaputra valley receive rain nearly all the year round, and, therefore, Assam is the chief country in India for growing tea.) It produces about three-fourths of all the tea grown in India. (Tea also grows on other high places, such as the Himalayas near Darjeeling and on the Nilgiri and Travancore hills in the south of India.)

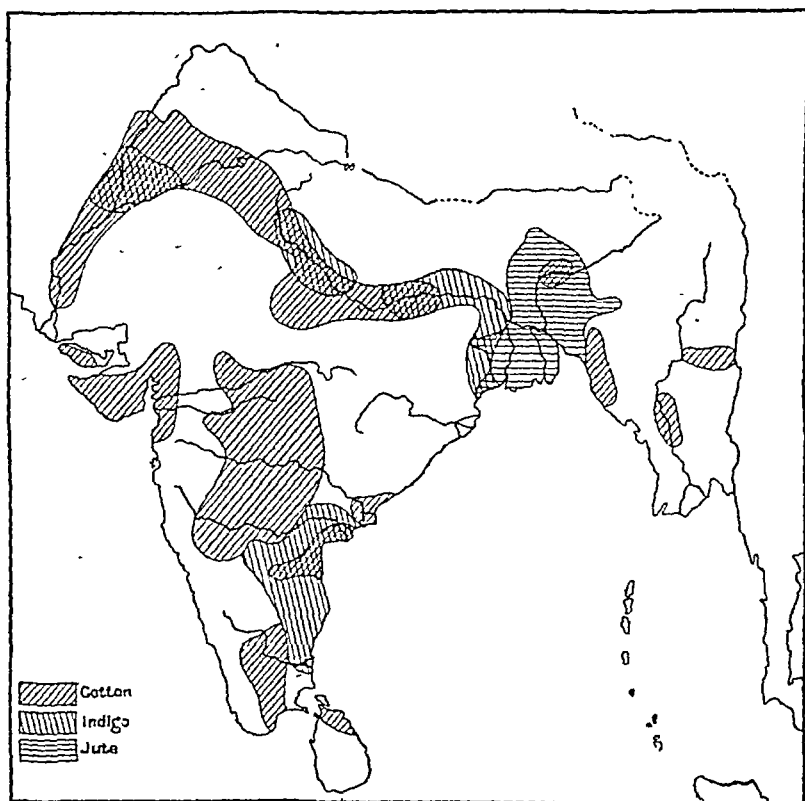


GATHERING TEA.

JUNIOR GEOGRAPHY OF INDIA.

Coffee is the dried berry of a shrub which also likes high ground. It is grown on the Western Ghats in Mysore and Travancore and on the Nilgiri hills.

India has also many plants which are useful to man in other ways

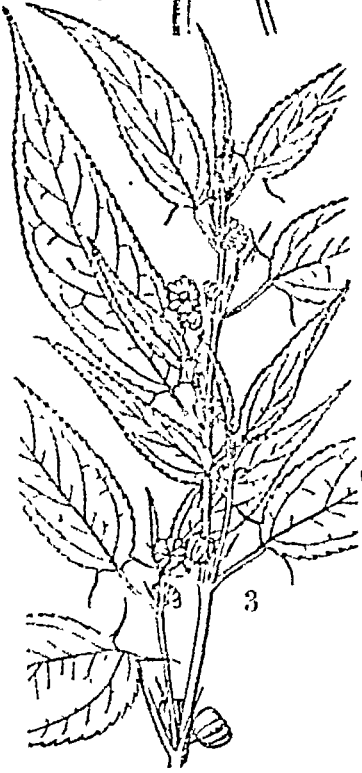


DISTRIBUTION OF COTTON, INDIGO, AND JUTE.

than as food. (The chief of these are cotton, jute, oil-seeds, indigo, opium, tobacco, and cinchona.)

(The cotton plant grows best in the black cotton soil of the Deccan and Gujarat, especially in Berar and the Bombay Presidency.)

Jute likes damp soil. As it takes a great deal of nourishment out of the ground it can be grown best where the soil is constantly renewed, e.g. on the banks of rivers which are yearly flooded.) (Thus its chief home is the lower valleys of the Ganges and Brahmaputra.)



1. CASTOR OIL.

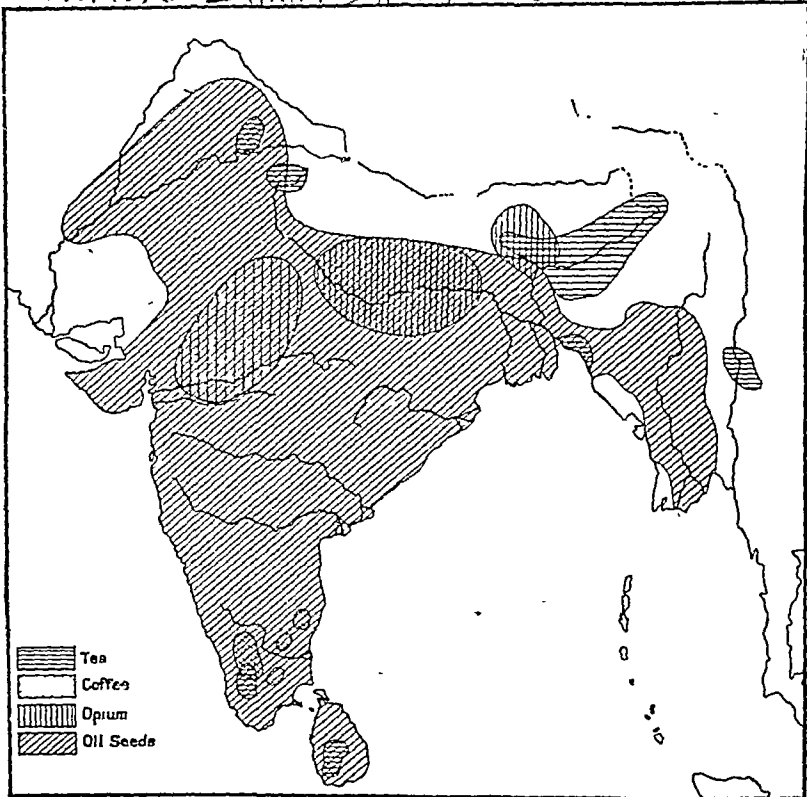
2. RAPE.

3. JUTE.

4. COTTON.

From the stalk of the plant a strong fibre is got which is used to make sack-cloth and gunny-bags.

(Oil-seeds are grown more or less all over India. There are five chief kinds: linseed, rape, gingelly or til, castor-seed, and ground-nuts). The oil squeezed out of them is used for food, oil-baths, and



DISTRIBUTION OF TEA, COFFEE, OPIUM, AND OIL-SEEDS.

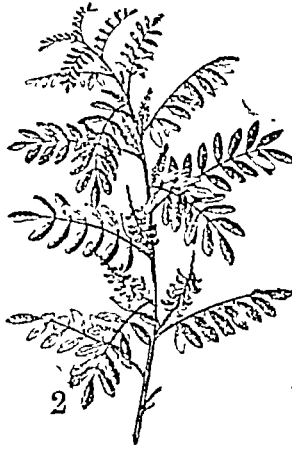
for lamps. A great quantity of the seeds is sent abroad to Europe as food for cattle, and for making sweet-meats, soap, and candles.

(Indigo is a kind of dye which is obtained from a plant which is grown chiefly in Bihar)(a part of Bengal). As the Germans have found out a cheaper way of making this dye from chemicals, the plant is not grown in India so widely as it was.

(Opium is the gum or juice) which comes out (of) the seed-vessel of



1



2



3



4

1. LINSEED.

2. INDIGO.

3. THE OPIUM POPPY.

4. TOBACCO.

(the poppy plant.) It is a very strong drug, and is used as a medicine. No one is allowed to grow or sell opium without a licence from Government. It is largely exported to China. (Opium is chiefly grown round Benares.)

Tobacco is grown in almost every district of India, but chiefly in the Gangetic valley and Burma.)

(Cinchona) is prepared from the bark of a tree which was brought into India from Peru in 1860. Hence it is sometimes called Peruvian



TOBACCO FIELD.

bark. It thrives best on hills where there is plenty of rain and sun and so it is grown chiefly on the Western Ghats in the Mysore and Travancore States. From the bark of the tree quinine is got—the well-known medicine for fever.)

(Many kinds of forest trees are also grown in India and Burma, chiefly on rainy hills such as the Western Ghats, the Himalayas, and the Burmese Yomas. The teak is the chief timber tree and grows on the Western Ghats and on the hills of Burma. Sal is another good timber tree. Sandal-wood grows chiefly in Mysore. Bamboos and palm-trees, which like a warm climate, grow well all over the low-lying parts of the Indian Empire.) (The cocoanut palm prefers a sandy soil near the sea with plenty of rain. It is therefore found growing

best on the strip of coast all round the south of the peninsula of India.) It yields a fibre from which ropes and mats are made and from the nut a useful oil is got. (Sugar is made from the juice of the palmyra palm.)

§ II.—2. Villages and Towns.—(India and Burma are quite unlike countries such as England or Belgium or the United States. In these countries thousands of people get their living by manufacturing things.) Thus in England there are very many large towns which make cotton goods, woollen goods, iron goods, or machinery: but in India and Burma there are only a few (such as Bombay, Calcutta, Cawnpore, and Rangoon) which have large manufactures. The reason is that in India and Burma but little coal or iron is mined as yet. In these countries there is only one great industry or business—the tilling of the soil, or Agriculture. About two-thirds of the people of the Indian Empire get their living by cultivating the fields or pasturing cattle or by working in forests. (Now when people are cultivators of the soil they do not live in towns but in villages near their fields.) (Therefore in the Indian Empire we find that, for its size, there are very few towns and very many villages.) Out of every ten people nine live in country villages and only one lives in a town. In looking at an ordinary map of India and Burma we see very few towns: but if we looked at a detailed map we should be surprised at the number of villages that are dotted all over the country. (The chief difference, therefore, between countries of Western Europe and India and Burma is that the former have many large towns, and the latter have very few.)

Towns and villages have not been built by mere luck or chance: man chooses the places where his villages and cities are to stand. The villages, of course, are near the fields, and in those parts of the country where the land is most fertile we find the population thickest and the villages most numerous.

② Places where towns and cities are built.—In former times when there was little peace in India towns grew up round about forts. The chiefs used to choose a suitable spot for a fort, usually a hill or rock, where they and their followers might be safe against enemies.) Inside the fort they built a palace for themselves and houses for their followers. Soon a small town grew round this centre, as people

came to live near the fort for protection. They were chiefly those who worked for the chief and his court—weavers of fine cloths and muslins, silk weavers, jewellers, carvers in ivory, makers of arms and ornaments. For protection, a wall was often built surrounding the town. There are very many old towns like this in India.

(Thus the Rajputs when they retreated to Rajputana from the violent Afghans, built many towns of this kind such as Chitor, Jodhpur, Bikaner, and Jesalmir: the Mohammedans after they came built Delhi, Agra, Lucknow and Allahabad, Hyderabad and Bijapur. In the same way Poona and Nagpur are old capitals of the Marathas.)

(Sacred places attracted priests, pilgrims, and therefore merchants, and towns grew up near them. Benares (Kasi), Allahabad (Prayag), Amritsar, Gaya, Puri, Madura, and Trichinopoly are examples.) In India, more than in any other part of the world, towns have been built on sacred spots.

We can also tell from the shape and climate of India and Burma what kind of buildings will be used in different parts. Thus, where the soil is made up of deep mud we find the houses built of mud, clay, or brick. (In the north of India there are many fine buildings, e.g. in Agra, Delhi, and Jaipur) because there is a good supply of sandstone near at hand in the Vindhya mountains, and of marble in Rajputana. The Deccan of India is made up of hard granite and so we find many fine stone temples and forts there. In Burma, where teak grows plentifully, the houses and monasteries are all built of that wood; Srinagar in Kashmir is built of cedar wood which grows on the Himalayas; in the far south, bamboos and palms are largely used by poor people. As a rule where the climate is cold in winter, or where the rainfall is heavy, the houses and the villages are better built than in places where it is hot and little rain falls, and people need but little shelter from the weather. As a rule, too, in hot countries like India houses are built for coolness; in cold countries they are built for warmth. (a)

Markets. (Places where there are markets for the exchange of goods often grow into towns.) In India and Burma many towns and villages are important on account of fairs held in them. (Thus a place) where many roads meet (e.g. Srinagar in Kashmir) soon grows into a town; or where two or more rivers meet (e.g. Allahabad and

Patna) or (where there is a bridge across a river (e.g. Attock and Dera Ismail Khan on the Indus). So also an important point on a trade route where caravans and traders meet helps the growth of a town. Thus Multan, Peshawar, and Shikarpur are points from which trade routes start from India to Afghanistan, Baluchistan, and Persia. Bhamo, in the north of Burma, is the point where the trade route from China meets the great waterway of the Irrawaddy: Tuticorin, being opposite to the island of Ceylon, is the natural starting place for ships and steamers trading to that island from India.)

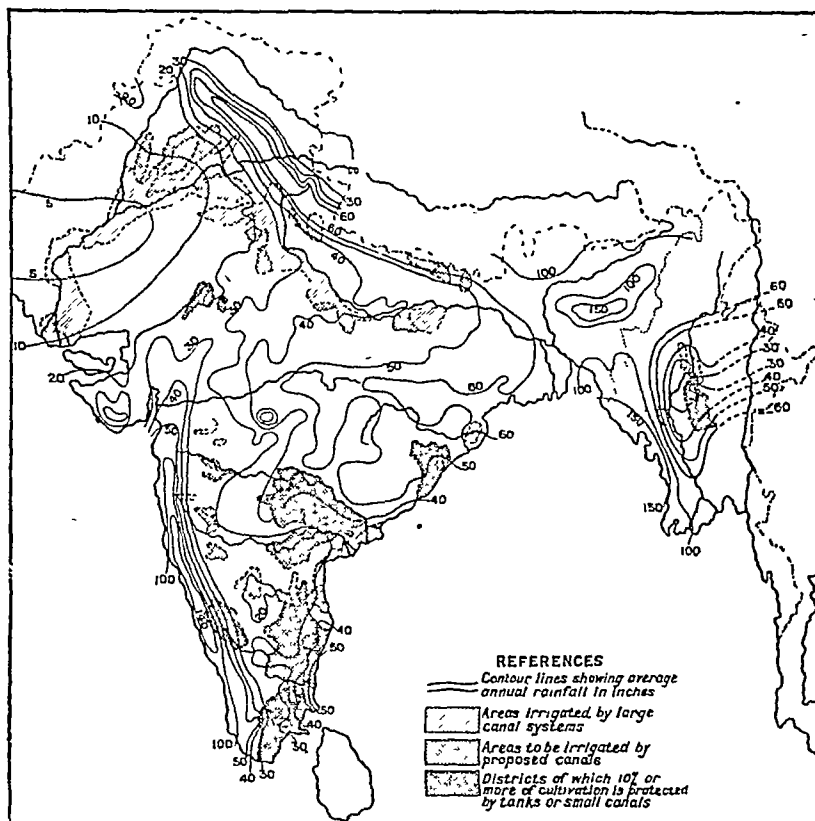
(In modern times the trade with foreign countries has made towns grow up at places on the coast where there are deep harbours able to hold large steamers. Bombay, Calcutta, Rangoon, Karachi, and Chittagong are examples.) (After railways were made places on the main lines or at junctions or termini became important and towns grew up there.)

The Government of India have also chosen towns (often old capitals) as centres of government where their chief offices and law courts are built. (Allahabad, Nagpur, and Lahore are three examples.) In some places they have established (military stations) for troops in order to preserve order and to protect the country against invasion. Secunderabad, Meerut, Rawal Pindi, Peshawar, and Quetta are examples.

§ III.—3. Roads.—In ancient times there were scarcely any roads in India or Burma: everything had to be carried on pack animals. (During the last fifty years the Government has made roads all over the country connecting the chief towns. When a railway is built, roads are soon made to the stations on it from the towns and villages on both sides.) (The Grand Trunk Road runs from Calcutta to Peshawar and is the great highway for cart traffic through the fertile plain region.)

4. Canals.—In old times many canals were built on the Indian deltas by the rulers of those days, but in modern times (the Government of India has used the money of the State to make hundreds of canals for irrigating land in suitable places. Canals cannot be made everywhere: we must have (1) A flat country with no rocks.) Where the land slopes steeply the water runs away, and where rocks must be

blasted a canal cannot be cheaply made. We must have (2) Plenty of river water to supply the canals. If the rivers dry up in the hot season the canals are useless, so those rivers which are fed from melting snows are the best feeders for canals. We must have (3)



RAINFALL AND IRRIGATION MAP OF INDIA AND BURMA.

Good soil near at hand. There is no use making a canal unless there is fertile soil to which the water of the canals can be led. We shall see that the fertile plains of the Ganges and Indus valleys, fed by rivers from the Himalayan snows, have all these advantages. Therefore we find most of the irrigation canals of India in this part of it. The canals watered by the Punjab rivers are the most important in India.)

The canals on the flat deltas of the Mahanadi, Godavari, Kistna, and Kavari are among the most useful of man's works in India. Across these large rivers bunds or anicuts have been built to dam up the stream, and canals and hundreds of smaller channels have been dug to draw off this water and spread it over the land on either side. In this way hundreds of miles of land on the banks of these rivers have been irrigated and the country has been turned into a rich garden. If we climb the rock fort at Trichinopoly, a town at the head of the Kavari delta, the whole country for miles looks like one huge green paddy field. By saving up the water of these large rivers and spreading it over the land man increases the produce of the soil, for two or three crops can be grown every year. Even if little or no rain falls in the rest of the country these deltas give food for people who have lost their crops and are suffering from famine. Of course an irrigation canal is only built where it is wanted. Thus in the lower Ganges valley and in the Irrawaddy valley we do not find canals, though they could easily be built there, because these plains have a heavy rainfall and need no help of this kind.

The Government of India have also made canals for navigation by small boats. They, of course, are also dug in flat country which is fed by rivers or by the sea. The chief canals of this kind are thus found on the deltas of the Ganges, Mahanadi, Kistna, Godavari, and Indus. The Great Ganges Canal runs from Hardwar to Cawnpore, and the Buckingham Canal along the flat Madras coast. Of course irrigation canals are much more numerous than navigation canals: they also do much more good to India.

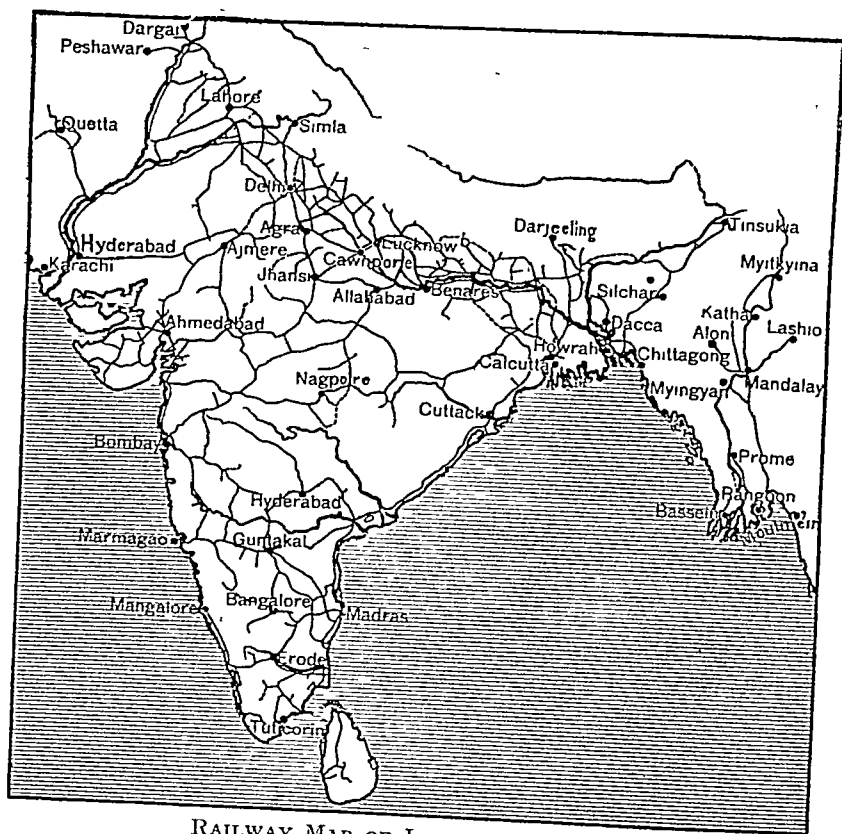
5. Railways.—The Government have made railways in many parts of India and Burma. They have been built

1. In the most fertile and thickly peopled parts of the country because here there is most goods and passenger traffic. The railway map of India shows that railways are thickest in the great Gangetic plain. Almost every town in this plain is a junction of two or more lines. But in Rajputana, in Sind, the Central Provinces, and Hyderabad, where the country is not fully cultivated and there are fewer people, there are not many lines.

2. (Railways have been built to join important sea-ports with inland centres of trade.) Thus the map shows that Bombay, Calcutta,

Madras, Karachi, and Rangoon have each one or more lines running up country.

3. Railways have been built for military purposes. The whole of the Indus Valley Railway is a military railway. It has been built



RAILWAY MAP OF INDIA AND BURMA.

to carry troops and guns quickly to any part of the frontier.) Off this line, as we can see on the map, short branches run up to the passes, for example to the Bolan Pass, the Kuram Pass, and to the mouth of the Khyber Pass.)

4. Railways have also been built to convey food in time of famine.) When famine comes, the cattle die and railways are the only means of carrying food to save the people from hunger. (The railways of

Rajputana, the Punjab, and the Madras Carnatic have been partly built for this purpose.)

(Of course railways are chiefly made where they can be most easily and cheaply built, *i.e.* in flat country. This is another reason why railway lines are so thick in the flat Gangetic plain—scarcely any digging is required.) But in a mountainous country like Kashmir there are no railways. The Himalayas and the mountains of Burma have nowheré been crossed by the iron horse.

§ IV.—6. Harbours.—In former times, before man had found out the use of steam, only small wooden ships were built which could float in very shallow water. Therefore, in those days, they could enter many small harbours. But in modern days the sea-trade of India is carried on in large iron steamships which can only float in deep water. Therefore these ships can only enter those harbours where there is plenty of water.) Unluckily for India there are very few places on her coasts where the water is deep enough for these big steamers to lie close to the shore. (Calcutta, Bombay, Karachi, Madras, and Chittagong in India, and Rangoon, Bassein, and Moulmein in Burma are almost the only ports where large vessels can come quite close to the shore. In these places large harbours have been built to hold these large ships so that they can load and unload their cargoes and be mended if necessary. In this way almost all the sea-trade of India and Burma passes through these few ports, for at other parts of the coast these big ships must lie far off the land to take in and put out cargo by the help of boats from the shore, and this is a very costly and troublesome business.)

CHAPTER III.

The Boundaries of the Indian Empire.—When we look at the map of a country or continent which we are to study, the first question we ask ourselves is—'What are the boundaries?' Some countries have boundaries made by man, which are simply marked by posts or forts: in other countries the boundaries are made by Nature and are marked by sea-coasts, rivers, or mountains. The boundaries of the Indian Empire are very easy to understand, because they are marked by mountains and the sea. The Indian Empire has two boundaries—the landward boundary and the seaward boundary.

Landward Boundary.—The first thing we notice in the map is the great line of the Himalayas. We must study it very carefully. In shape it is like a great curved sword bent downwards over the top of the map of India. At either end of this great curve there are other ranges of mountains which run southwards to the sea. At the western end we can see on the map one range called the Sulaimans, and, a little farther south another called the Kirthars which ends at the sea-coast in Cape Monze. At the eastern end of the Himalayas the map shows a long line of mountains which also runs nearly due southwards to the sea along the eastern frontier of Burma. These mountains in their southern half are called the Tenasserim Yomas, and they end in Cape Victoria.

Now if we follow this line on the map—from Cape Monze northwards along the Kirthar and Sulaiman mountains, down the great curve of the Himalayas and then along the mountains in the east of Burma, south to Cape Victoria, we have the landward boundary of the Indian Empire.

Seaward Boundary.—The seaward boundary is very easy to understand and to remember. It is the great Indian Ocean. This ocean washes the long coast-line of the Indian Empire. (It has two great branches—the Arabian Sea on the west and the Bay of Bengal on the east, and between them lies the great Peninsula of India.

CHAPTER IV.

§ I.—The Mountain Region of the Indian Empire.—We must now study the mountains that make up the great landward boundary of the Indian Empire.

The giant Himalayas are by far the most important of these mountains, for they are the highest in the world. Let us look at them on the map again: if our map is a good physical map the first thing we notice is that on the other side of the Himalayas the land does not sink again to a low-lying plain. Behind them is a great high table-land—the table-land of Tibet—nearly three miles higher than the level of the sea and the highest table-land in the world. The Himalayas are, therefore, not like most other mountains which stick up from the surface of the earth with plains on both sides. They are rather the outer edge of a great table-land which stretches far north into Asia. The next thing we notice, if we look closely at the map, is that the Himalayas are not a single range. They are really made up of three ranges one behind the other. The range nearest India is the lowest; in two places the map gives this range a special name: (in the United Provinces it is called the Siwaliks, and, farther west, in the Punjab, it is called the Salt Range. Behind this low range are the two main ranges in which are the famous high peaks.) We can have some idea of the area of the mighty Himalayas if we remember they are about 1500 miles in length and about 150 miles across. They are so large that the whole of the Alps of Switzerland could be placed among them and we would not notice the difference. If one of the highest peaks could be carried off and placed on the table-land of Mysore at Bangalore, we could from the top on a clear day see the Arabian Sea on the one side and the Bay of Bengal on the other. A good map shows some of the highest peaks marked—Nanga Parbat, Nanda Devi, Dhaulagiri, over four miles high, Mount Everest, the highest mountain in the world, 29,000 feet, and Kinchinjunga.

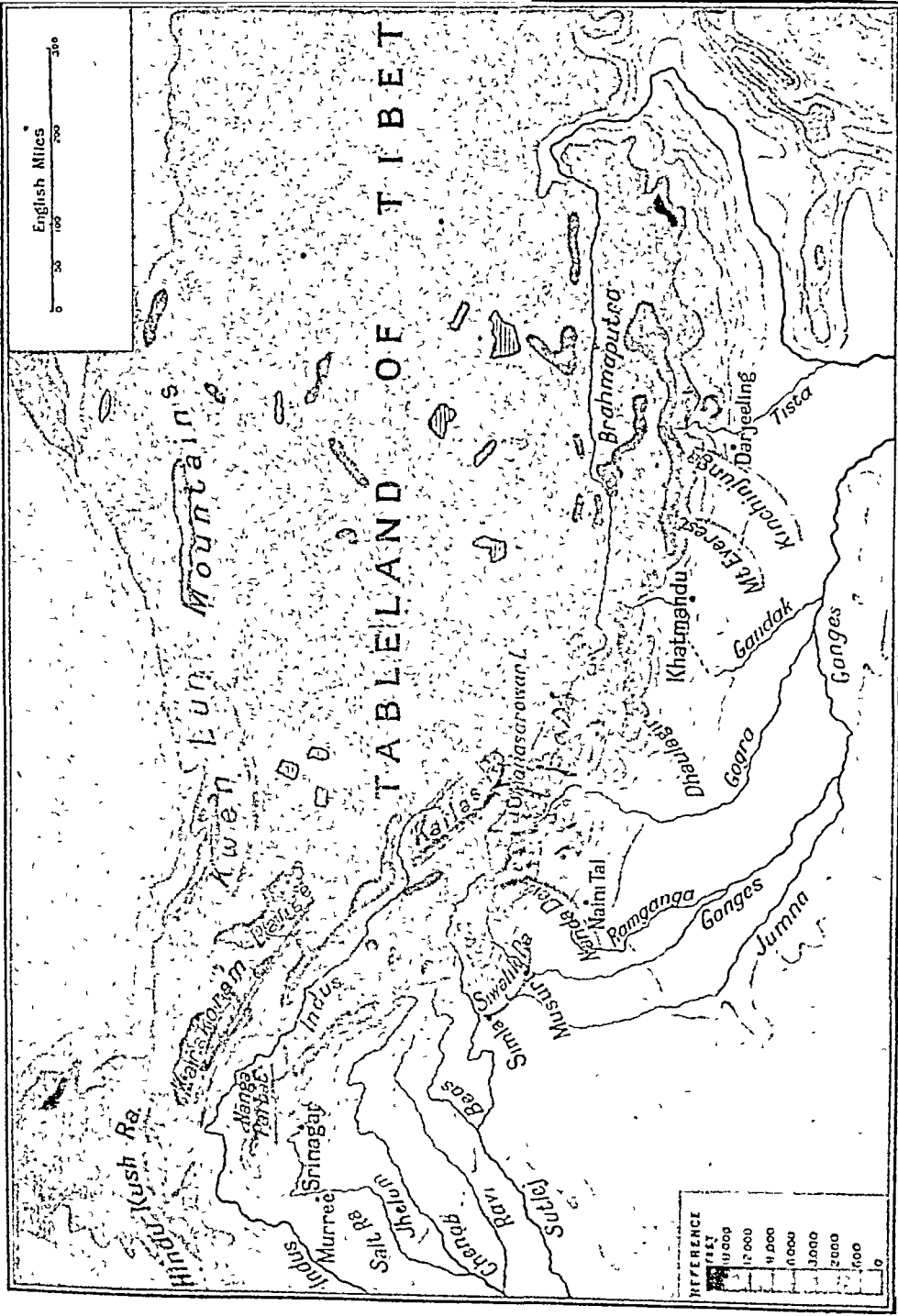
28,000 feet above sea-level.) These are, however, only a few of the highest. There are, besides, hundreds of other giants, many of which have not yet received names.

The Himalayas, unlike many mountain ranges, do not contain broad fertile valleys and table-lands with smiling villages and peaceful lakes. The only important exception is the beautiful Kashmir valley in the west. We must picture them in our minds not as a line but as a great mass of mountains ranged rank behind rank running along the whole of northern India. (They are divided at their base by narrow, steep, and rocky gorges) almost hid from the sun's rays (where the snow-fed streams find their way down to the plains.) In these narrow gorges (the heat is great) (bamboos and other tropical plants flourish. Higher up on the slopes we find coarse grass growing and trees such as the oak, the pine, and the fir. Still higher up, all plant life, and therefore all animal life, disappears, and the silence of the snows begins.) "Himalaya" in Sanskrit means "The Abode of Snow." All around there is nothing but the pure white snow and gleaming ice where the lofty peaks pierce the clear sky.

But, (besides the three great ranges of the Himalayas proper, there are, beyond them, other great mountains which we may call the Farther Himalayas or the Trans-Himalayas.) Some are in India and some are not. If we look at the map we can see them marked—The Kailas or Gangri Mountains, the Karakoram Mountains, the chief peak of which is Mount Godwin Austen, the Kwen Lun Mountains, and the great Hindu Kush Range.

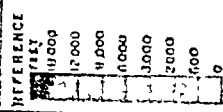
§ II.—The Work of the Himalayas.—Now all these mountains—the Himalayas and the Trans-Himalayas—do a great work for India, and we must see what that work is.

I. These mountains act as a rain screen: that is, they prevent the rain which the monsoon brings from the Indian Ocean from passing away out of India altogether. These mountains are so high that the clouds cannot pass them, and are forced to give up all their moisture which falls as rain and snow. We can easily see what a difference this makes by looking at the map. (On the south side of the Himalayas where the monsoon comes we see many rivers and rich plains with many cities and villages where millions of people



English Miles
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TABLELAND OF TIBET



MOUNTAIN REGION. THE HIMALAYAS.

live. On the other side of the Himalayas, where the monsoon rains do not reach, we see there are very few rivers and hardly any towns either large or small. Here, in the country of Tibet, there is very little cultivation and there are very few people—mostly wandering shepherds and herdsmen.)

2. (These mountains are the birth-place of great rivers and a storehouse or reservoir of water for the plains of India.) In the cold weather these great masses are covered with snow which melts in the spring months and feeds the rivers. (In the valleys of the highest of these mountains there are great fields of ice called glaciers. The lower edges of these glaciers melt in the hot weather and feed the rivers in the lower valleys.) Besides, as we saw, the monsoon gives very heavy rain on these mountains.

(Thus the snow, the ice, and the heavy rainfall on the southern slopes of the Himalayas make great rivers.) It is very lucky for India that (all the rain which falls, and all the snow and ice which melts on the Himalayas, both on their northern and on their southern flanks, comes at last into India in the form of rivers.) If we look at the map we see that two great rivers completely clasp themselves, like arms, round the Himalayas so that no water can escape. These rivers are (the Indus and the Brahmaputra.) They (both come from behind the outmost range and rise near the sacred Manasarowar Lake. The Indus first flows north-west, then makes a sharp turn round Mount Nanga Parbat, and then runs nearly south through India to the ocean. The Brahmaputra, on the other hand, flows eastwards along the back of the Himalayas and bends sharply round their eastern end before it enters India. Thus no water on the Himalayas can escape—it must all come by rivers into India at last.) What a difference it would make to India if the Indus were to change its mind and flow into Afghanistan or if the Brahmaputra broke away eastwards into China!

But there are other rivers which, by a shorter cut, carry the rainfall and melted snow and ice of the Himalayas into India. (The Sulej (look at the map) rises near the Manasarowar Lake and cuts across the Himalayas into India: the Gogra, rising near the same place, does the same thing in a different direction.) (There are other rivers which rise not beyond the Himalayas but among them, and



MOUNT GODWIN AUSTEN IN THE KARAKORAM MOUNTAINS.

carry water into India. (Thus in the western part we see the Punjab rivers, the Jehlum, the Chenab, the Ravi, and the Beas all draining into the Indus. From the Hindu Kush comes the Kabul River.) In the middle part of the great Himalayan range, the mighty Ganges has its source and (carries its waters through the plains into the Bay of Bengal. It is fed by the Jumna, the Ramganga, the Rapti, and the Gandak which drain the same part of the Himalayas. Farther east again we can see some feeders (e.g. the Tista) draining the rainfall of the Himalayas into the Brahmaputra.)

From all this we see what an enormous quantity of water is brought by rivers from the Himalayas to fertilise the plains of India.

3. But (the Himalayas) do more than keep the rain from going out of India: they also (prevent the cold winds from coming in). They are a wind-screen as well as a rain-screen. The table-land of Tibet behind the Himalayas is less than 200 miles from the plains of India, but, in the cold season, the climate there is quite different. (Piercingly cold blasts blow from the north) the water in the streams freezes, and the people go about covered up with thick sheep-skins. As long as this weather lasts of course no crops can grow. Now (the Himalayas keep off these cold winds from the north, save India from the wintry weather of Tibet, and so allow crops to grow all the year round.)

4. Another thing (the Himalayas) do is this. They (separate) and have always separated (the countries) and peoples of India from the countries and peoples beyond. No army could ever come across the mighty barrier of the Himalayas. There are only a few very difficult passes, and even these few are blocked with snow and ice for many months of the year. (Thus the Government of India is saved the expense of keeping soldiers and guns on the northern frontier of India.) We read in history of pilgrims crossing these mountains, and in modern times there is a little trade carried on the backs of yaks. But the land beyond the Himalayas has always been very little known to the people of India. It was only with great difficulty that a peaceful mission, sent by the Government of India in 1903, reached Tibet, and from that mission we have learned more of the country than we ever knew before. A traveller in Tibet has recently discovered a whole new range of mountains 2000 miles long.



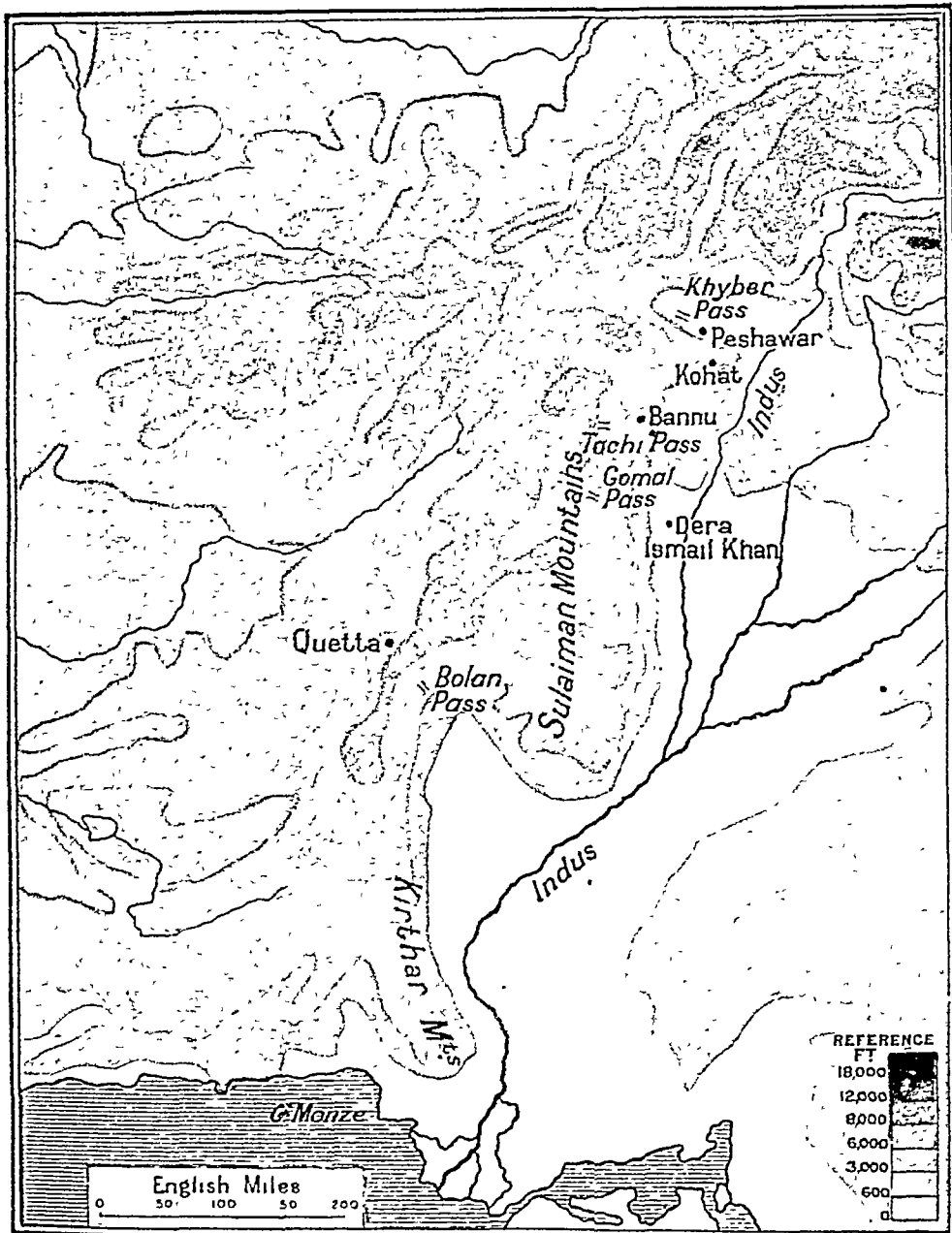
CARAVAN CROSSING THE KWEN LUN MOUNTAINS.

Crops.—We can easily guess that very few crops are grown on these mountains. On the high peaks, of course, nothing can grow at all on account of the cold, and on the Trans-Himalayas where the monsoon does not reach there is very little moisture, so that the hill-sides are bare. Among the Himalayas a little rice is grown in terraces cut in the sides of the hills, there is some pasturage for sheep and cattle, and trees such as the cedar, the fir, and the pine grow on their slopes. But, on the whole, very little of the mountain region is cultivated. Therefore there are very few inhabitants and



SIMLA.

very few towns. In the west, where the outer and inner ranges separate from each other, there is the beautiful valley of Kashmir watered by the Jehlum, on which stands the city of Srinagar. This is the only large town in the mountain region: it is important because it is the centre of trade between India and the country lying beyond the Karakoram mountains. There are, however, many hill-stations on the lower spurs of the Himalayas, *i.e.* small towns where Englishmen and their families can go in the hot weather. Of these Simla is the most important, because the viceroy and the chief officers of the Indian Government live there during the hot season. On a good map of India we can see some other hill stations marked—Murree, Mussoorie, Naini Tal, and Darjeeling. The capital of Nepaul.



Bartholomew, Ed/nt

MOUNTAIN REGIONS, WEST. SULAIMANS AND KIRTHARS.

Katmandu, about which little is known, can also be seen marked among the mountains.



THE KHYBER PASS.

§ III.—Other Mountains.—We must now consider the other mountain ranges which form the natural boundary of the Indian Empire.

On the West.—The Sulaimans and Kirthars. If we compare these ranges with the Himalayas we see some points of likeness and some points of difference.

(Like the Himalayas they are not single ranges. If we look at a good map of India we shall see that the valley of the Indus is fenced off by several parallel ranges of Sulaiman and Kirthar mountains from Afghanistan and Baluchistan in the west.

(But these mountains are unlike the Himalayas in almost every other way.)

1. They run in a different direction, *i.e.* nearly north and south.
 2. They are not nearly so high, and therefore they do not prevent winds from blowing over them into India—in the hot weather hot winds blow over them from the west.)

3. (These mountains are quite outside the pathway of the monsoon, and, therefore) unlike the Himalayas, they are not the birth-place of great rivers.) If we look at the map we see that very few rivers come into India from these mountains, and not one of them is nearly so large or so important as any of the Himalayan rivers we have mentioned. (For the same reason these mountains are) unlike the Himalayas, (almost bare of vegetation.) In the cold weather they receive the cold winds from Afghanistan and in the hot season they get very little rain.) In pictures of the Himalayas we see great forests growing on the slopes of the hills, but in pictures of Afghanistan and Baluchistan the hill-sides have scarcely any trees or grass and only a few bushes.

4. These mountains are much lower than the Himalayas, and therefore they are much easier to cross. There are several passes leading from Afghanistan and Baluchistan into India through these mountains.) In the map we see some of those marked, (*e.g.* The Bolan Pass, the Gomal Pass, the Tochi Pass, and the Khyber Pass (north of the Sulaimans). This is the side on which India must be most strictly guarded from invasion, and that is the reason why there are so many forts and fortified places among these mountains or near them. Quetta lies high up among the mountains: it is very strongly fortified and guards the entrance from Afghanistan to the Bolan Pass.) Peshawar lies near the Khyber Pass on the main route to Kabul, and it is therefore important as a military centre

in case of war, and as a trading town in time of peace.) The map shows three other smaller places of the same kind—Kohat, Bannu, and Dera Ismail Khan.

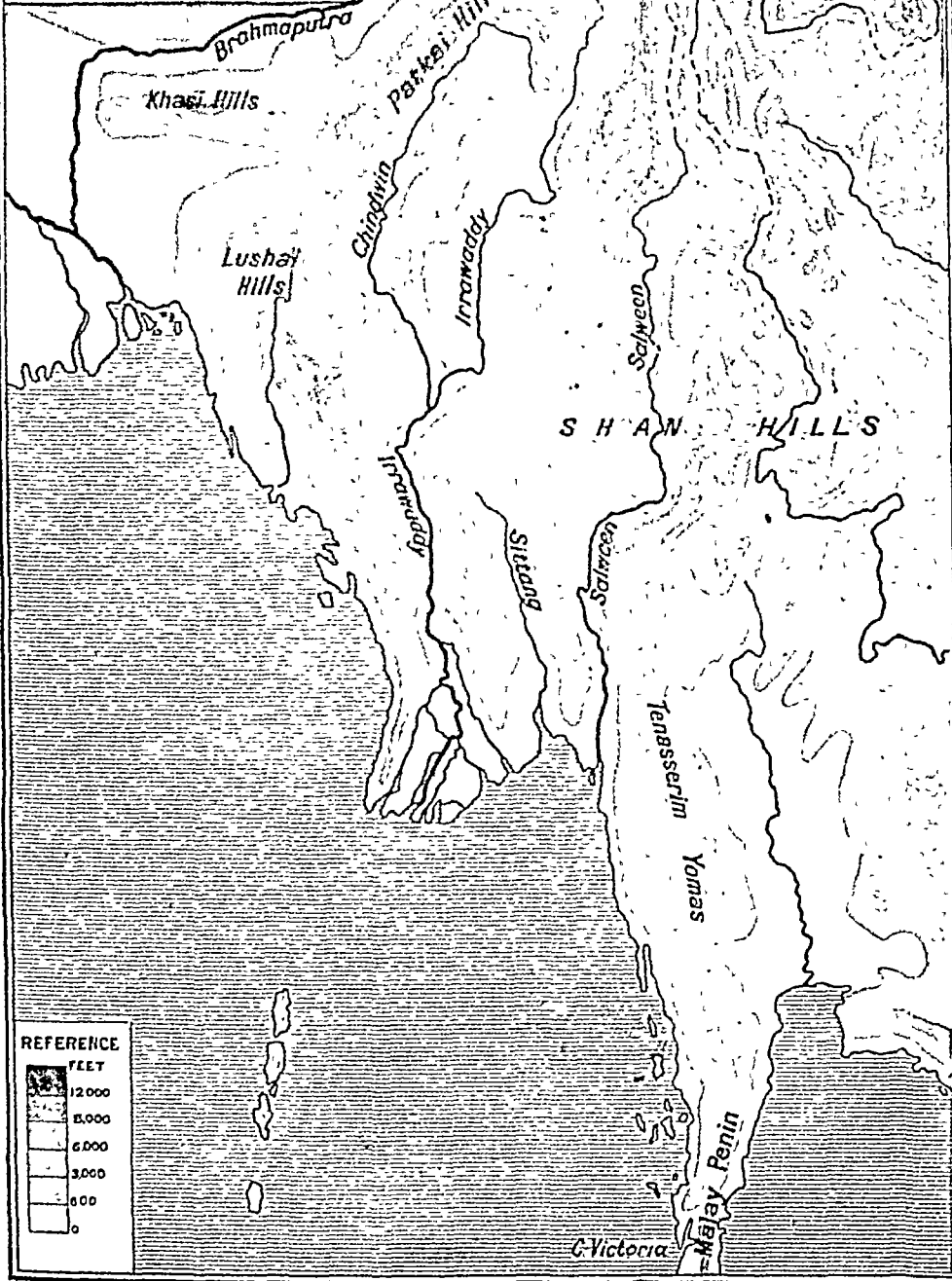
(With so many mountains and so little rain this part of India is of course very thinly populated.) There are more people in Madras city than there are in the whole of Baluchistan. (In the valleys the people grow a little millet, but the chief business of the rude tribes is the grazing of cattle and sheep, the breeding of camels, and a little robbery when they get the chance.)

On the East.—All along the eastern boundary of Burma the map shows mountains and hills. In the north they are seen in parallel ranges running north and south. Farther south they are more irregular, being broken up into high table-lands which we can call the Shan Hills. Farther south still the mountains thin off into a single range called the Tenasserim Yomas which runs down the Malay Peninsula to Cape Victoria. The map shows another range, the Patkai Range. This range runs from near the eastern end of the Himalayas south-westwards. Its line is continued in the long parallel ranges of the Lushai Hills. (It is important to remember the Patkais and the Lushais, because they separate India from the great province of Burma which is part of the Indian Empire but not a part of India itself. We shall study Burma separately later on. These ranges of mountains along the east and the north-west of Burma are not, of course, nearly so important as the Himalayas. In the first place, they were not nearly so great a barrier, for it is not difficult to get over the Shan Hills from China into Burma, and caravans are always passing across. The Patkais and Lushais, however, have always kept the people of Burma separate from the people of India—separate in blood, language, religion, and customs.) The mountains on the east of Burma as well as the Patkais and Lushais are, however, important as the birth-place of rivers, for they receive much rain. The Irrawaddy and its chief feeder the Chindwin, drain these mountains.) These ranges are, however, little known: on account of the heavy rainfall they are covered with forest and jungle: a few rude tribes, pasturing cattle, live among them, and of course there are no towns.

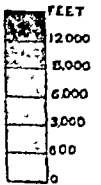
We have now gone over the great belt of mountainous country

English Miles

0 100 200 300



REFERENCE



MOUNTAIN REGIONS, EAST.

Bartholomew, Edin'

which forms the landward boundary of the Indian Empire. We have found that, like other mountainous regions, (it is very little cultivated and that, therefore, it is very thinly populated, and that there are very few towns—only some hill stations in the Himalayas and some fortified places in and near the Kirthars and Sulaimans. The Himalayas and the Burmese mountains are important as the birth-place of rivers which flow into the provinces of the Indian Empire, fertilise them, and form highways of water-traffic through them. The mountain regions on the west, *i.e.* the Sulaimans and Kirthars are important for another reason, namely, because they form a natural barrier to defend India against invasion. By guarding and fortifying the passes over them the Government of India can shut the door on an enemy.)

§ IV.—Life on the Mountains.—It is well known that people who live among mountains differ in many ways from those who live in plains. In the first place they are separated from each other by deep gorges and swift mountain torrents, so that they cannot mix freely and join together to build towns and have common laws and customs like people in the plains. In the same way they differ much in the languages they speak. In the rest of India we find languages spoken over wide areas, but among mountains, almost every district has a tongue of its own. And people living among mountains are not only separated from each other, but also from the rest of the world, so that, as a rule, they are backward and old-fashioned, and it takes a long time for new tools or machines or for new ways of doing things to be known and used among them.

(In the second place people in mountains live a harder life.) (The climate is colder, they must climb over rocks, and steep and dangerous paths to get from one place to another in hunting wild animals, or in looking after their flocks and herds.) Their daily work, too, is severe, for the soil which grows their scanty crops is not fertile or easily tilled. (This kind of life makes them brave and hardy,) and in this way they differ from the peoples of the flat plains, where life is easier and food more plentiful.

All over the Mountain Region of the Indian Empire, from the Kirthars and Sulaimans in the west to the Yomas of Burma in the

east, there are many hill tribes. The Baluchis and Pathans west of the Indus valley are wild and rude like the bare, craggy mountains among which they live. The Gurkhas or Nepalese have their homes among the Himalayas and are very hardy, brave, and warlike. Many of them serve as soldiers in the Indian army. In Burma, too, up in the Lushai, Chin, and Shan hills, and in the Yomas, there are many wild half-civilised tribes who have been kept by their mountains and forests from learning the laws and arts of the people of the plains.

CHAPTER V.

The Plains of India.—We now come to a part of India which is quite unlike the mountainous regions in every way. (This part is called the **Great Indo-Gangetic Plain**, or simply **The Plains**.)

Boundaries.—Its boundaries on the west are the line of the Kirthars and Sulaimans up to the Salt Range where the Indus enters the plains. On the north it is bounded by the great curve of the Himalayas from the Salt Range right up to where the Brahmaputra enters the Assam valley. On the east it touches the western edge of the Lushai Hills. If we draw a line from the top of the Gulf of Cambay to the northmost part of the Aravalli mountains near Delhi, and from that draw a curved line keeping just south of the Jumna and Ganges to the Ganges delta, we have the rest of the boundary. Thus on all sides the plain region of India is bounded by mountains or by hills.)

(This great tract of country has been formed by the mud washed down by rivers from the surrounding high lands, especially from the Himalayas. For thousands of years the frost has been splitting up the rocks on these mountains, the ice has been grinding down their sides, the melting snow and the heavy rain have formed great rivers) which rush down their steep slopes (carrying mud and silt and sand,) spreading it year after year over the great plain and) throwing some of it into the sea (at the mouths of the Indus and Ganges.) As we shall see this is the most important region of India, and we must remember certain things about it.

1. This great plain, like the rest of India, has a hot climate and is watered in most parts by rivers. The Ganges, Brahmaputra, and Indus and many smaller streams flow through it in different directions: therefore, owing to its warm climate and its rivers, it is very fertile.)

2. Again this great plain is very flat. It is possible to travel

along the middle of this vast level valley from the Ganges delta to the Indus delta without seeing the smallest hill, or ever rising 700 feet above sea-level. Thus the town of Agra, half-way between the two deltas and 1300 miles by river from the sea, is only 500 feet above its level. From this flatness we can tell certain important things about the plains: (a) In the first place the flatness makes the rivers flow very slowly. The map shows this, for we can see that many of the rivers wander about like snakes, and when water does this it is a sure sign that there the land is flat. (One great benefit of slow-flowing rivers in a hot country is that instead of passing away rapidly to the sea they have time to soak into the soil and fertilise the land thoroughly.) Some parts of the plains of India are very fertile indeed. (Another advantage of slow-flowing rivers is that they are more useful for navigation.) It is always easier and safer to steer boats in slow-flowing than in fast-flowing rivers. For this reason the Ganges has more boat-traffic on it than any other river in the world except the Yangtse-Kiang in China.)

(b) In the second place it is very easy to make roads and railways over flat land, and the great plain south of the Himalayas has therefore more roads and railways than any other part of India.)

3. (The flatness also helps the rivers to fertilise the country in another way. The many rivers coming from the mountains bring with them fine sand and mud) which they have washed down from the hills. In the rainy season the rivers spread this over the flooded plains, which, being flat, are covered every year with a new and very fertile surface-soil. And we must remember that this has been going on for hundreds of thousands of years, so that this rich mud is very deep. In some parts of the Ganges delta engineers have dug down 500 feet into the mud without coming to rock or stones, and it is said that a person can travel from the Ganges delta along the plains to the mouth of the Indus without finding even a small stone. Calcutta sends, or used to send, to Madras for stone to metal its roads.

We must remember, too, that the plains are very large. They take up about one-third of the total area of India, and contain about two-thirds of the population.)

A large part of the plains, on account of the fertility of the soil, is very thickly populated, and, owing to its many rivers, canals, and

railways, which make transport easy, it has by far the most trade of any part of India. On the whole it is the most important region of India and we must therefore study it very closely.

In the first place we see (it has two slopes—one slope takes water into the Ganges and the other takes water into the Indus). We shall first study the eastern or Gangetic half of the plain stretching eastwards from the Jumna down to the mouth of the Ganges and up the Brahmaputra and Surma valleys.

CHAPTER VI

§ I.—Eastern Plains.—Now what kind of climate does this great flat region enjoy? We may be sure that (from its position close to the Tropic of Cancer the heat will be very great in the hot season, and that the farther inland we go the greater will be the heat. On the other hand, in the cold season those parts farther from the sea will be colder than those near the coast.)

But (the most important thing about the climate of this part of India is the monsoon.) As we have seen, (in the months of June, July, August, and September, clouds, heavily laden with rain, come sweeping up from the Bay of Bengal, cross the whole breadth of the delta of the Ganges, and then rush over the plains till they reach the Himalayas. Here the rain-clouds, as they cannot go farther north, are divided, some going up the Brahmaputra valley and some rushing up the Ganges plain. In this way we see that most rain falls on the part of the plain nearest the Himalayas, and there is less and less rain the farther we go up the Ganges valley.) This can be clearly seen on the rainfall map. (For example, Dacca, a town at the head of the Ganges delta, receives about 50 inches of rain during the monsoon, while Peshawar, at the other end of the plains, receives only 4½ inches in the same time. Again, Agra, half-way up the plain, but on the south side of it, gets 23 inches, while Bareilly, on the north side and nearer the Himalayas, gets 36 inches.)

Now (from these two facts (1) that the monsoon becomes weaker and weaker as it passes up the plain, and (2) that more rain falls on the Himalayas and on the country near them than on the south side of the plain, we can understand why there are more rivers at the eastern end of the plains than at the western end, and also why there are many more left-bank feeders than right-bank feeders of the Ganges. All that part of the plains that lies east of Benares is splendidly supplied with rainfall and rivers.)

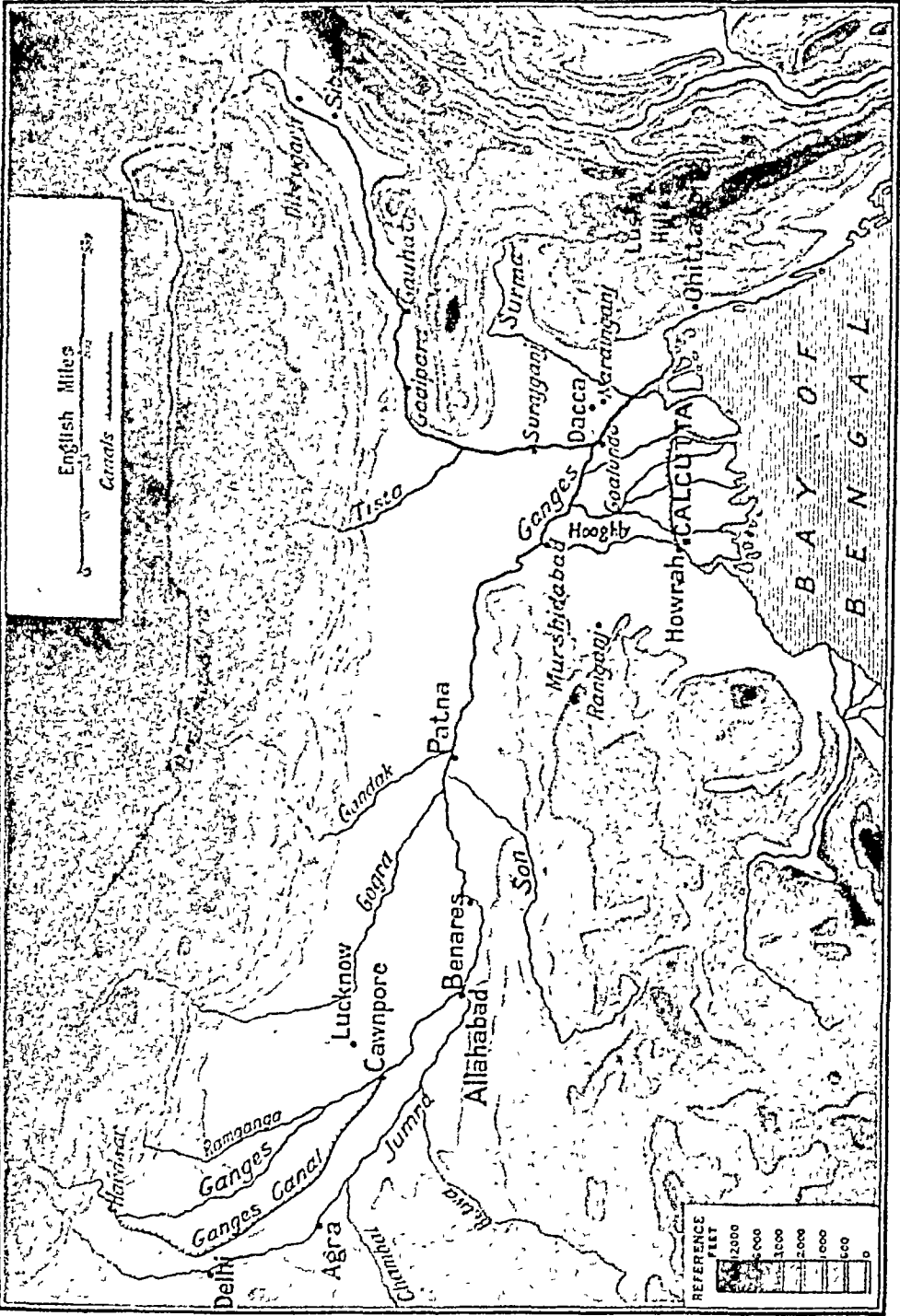
The upper part of the eastern plains, that is, the country lying between Delhi and Benares, being farther up the valley, does not receive so much rain, but it has both the Ganges and the Jumna flowing through it. Therefore, as the land is flat and soft, canals, which make up for the want of a heavy rainfall, have been made from these rivers. The largest of these is the Ganges Canal, which runs from Hardwar to Cawnpore. Throughout this region, owing to the rainfall, it is also easy to get water for cultivation by sinking wells.)

The whole of this part of the country, therefore, eastwards of the Jumna, is well watered, mostly by Nature, but partly also by man's help. The climate is hot and the soil is made up of rich alluvial mud, much of which is renewed yearly by the flooded rivers.)

We can therefore understand that in the plains of the Ganges and the Brahmaputra and in the Surma valley, the land is very fertile: it produces more food than the whole of the rest of India put together.) Let us look at some of the crops.

§ II.—Crops.—Rice.—Paddy requires a great deal of water for it to grow well: it thrives best where the fields can be flooded, and where the climate is warm and damp. Now these conditions are exactly what is found in the eastern plains, in and around the great delta of the Ganges, and up the valleys of the Ganges, Brahmaputra, and Surma. Here therefore we have the great rice-lands of India, and here more rice is produced than in all the rest of India put together. As we go up the Ganges valley the rainfall becomes less and so does the area sown with rice.)

(Besides paddy, millets, maize, and pulses, which make up the chief food of the people of India as a whole, are very largely grown either as a second crop, or where there is not enough rainfall or irrigation for rice. Hence they are sown more largely in the upper or drier parts of the valley than round the delta. Oil-seeds, such as gingelly, linseed, mustard, castor, and earth-nuts are also very widely grown on the fertile soil of the plains. Sugar-cane, which requires much moisture and a rich soil, is another large crop in the plain region: it is more largely grown in the lands irrigated by canals between Delhi and Benares than in the very damp plains and delta of the



Bartholomew & Co.

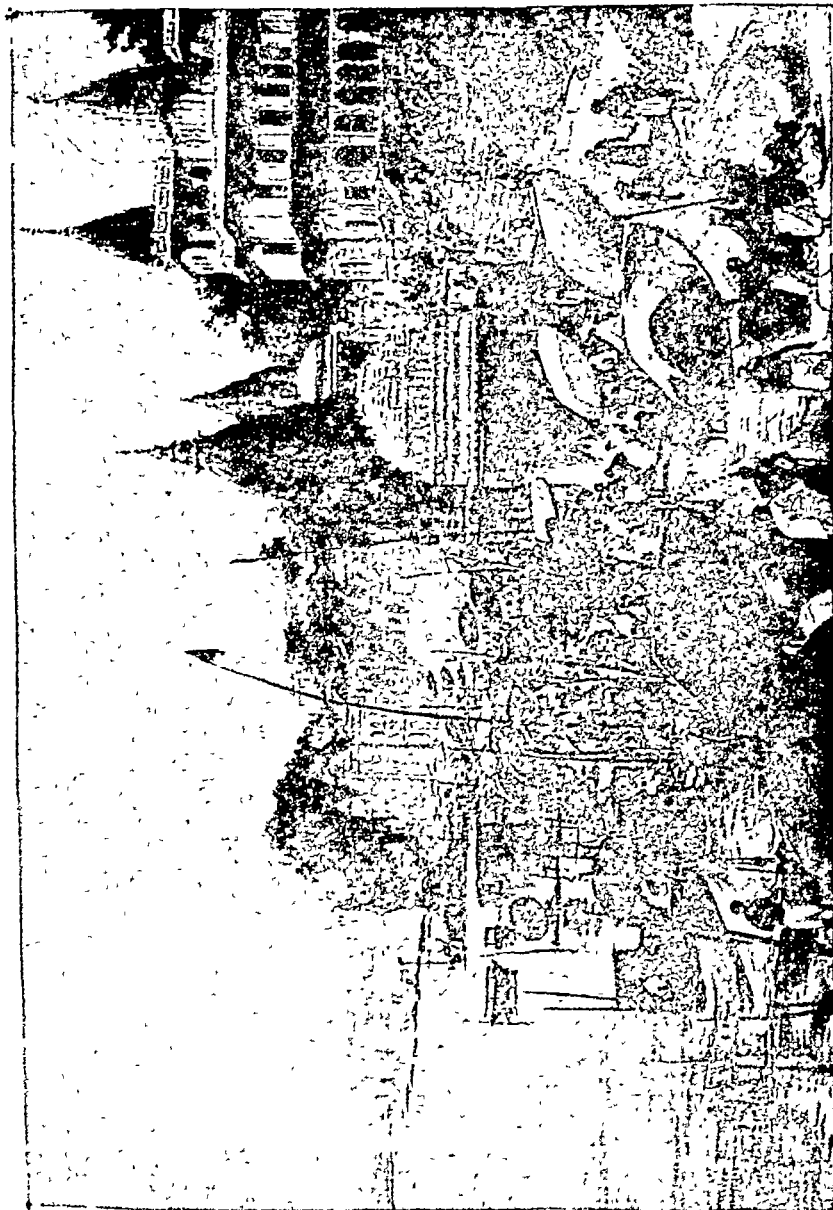
THE EASTERN PLAINS.

Ganges, because it cannot thrive in a waterlogged soil.) The eastern plains produce about 80 per cent. of the total crop of sugar-cane in India. (Wheat) is a plant which does not like dampness: it thrives best where it can sprout in a dry cold climate; but, once above ground, it does not object to heat to develop and ripen it. Wheat therefore will not grow well in the damp warm climate of the Gangetic delta. Higher up the valley, however, farther away from the sea where there is a good dry cold-weather season, wheat grows well. The chief country in India for its production is the great Indian plain westwards from Benares right up to the Indus. It is of course only grown as a winter crop. The hot weather of the plains would soon kill it.

Besides these food crops there are three others which grow well in this part of India—namely, jute, opium, and indigo. (Jute is the fibre of a plant which grows in damp soil. It takes a great deal of nourishment out of the ground and so can only be grown where the soil is constantly renewed by alluvial mud. Hence it is chiefly grown on the lower valleys and deltas of the Ganges and Brahmaputra where the soil is renewed every year by flooded rivers. This part of India, round about Dacca, may, in fact, be said to be the world's garden for the supply of jute.) Opium, the prepared juice of the poppy, is only grown on certain lands under licence from Government. The chief centre for its cultivation is in the plain round about Benares and Patna. Indigo is grown on very nearly the same tract of country as opium. When the indigo plant is steeped and beaten a kind of powder falls to the bottom of the vessel. This powder makes a beautiful dye. Indigo is not now grown so largely as formerly, since a cheaper way of making indigo dye from chemicals has been discovered.

There are several other crops grown. And we may say that the eastern parts of the plains of India, being favoured by a warm climate, a good rainfall, and many rivers and canals, are the most highly cultivated and most productive part of the Indian Empire. Famine very seldom visits this part of India and never comes to the richly watered delta districts. Here almost every plant which can form the food or clothing of man can be grown in plenty.

Population.—From the abundant supply of food it produces we



BENARES. THE SACRED CITY ON MOTHER GANGES

can see why this part of India is the most thickly populated.) There are many large towns on the map, but almost the whole of this part of the plains is covered with villages which the map does not show. Very few parts are uncultivated.

§ III.—Towns and Trade. (Another great advantage of this region is that the land is flat and consequently the rivers are slow-flowing, and therefore easily navigated. The great Ganges and its tributaries were, in ancient times (before roads were made or railways invented), the chief highways of trade, and it is therefore on the banks of these rivers that we find the famous old capitals of India. Pataliputra (Patna), Maghada, Ajodhya, and Benares are some of the old Hindu capitals, and in Mohammedan times Delhi, Agra, Lucknow, Murshidabad, Dacca, and many others were famous.)

(Delhi, the modern capital of British India, was the capital of the Moghal Empire and is the most famous town in the history of India. Agra with its beautiful fort and the famous Taj Mahal was another capital.) (Benares has always been the religious capital.) It yearly attracts thousands and thousands of pilgrims who go there to bathe in the sacred Ganges.

(In modern times trade has grown rapidly, and the flatness of this part of India has, as we saw, made it easy to construct roads, railways, and canals. In this way goods are easily and cheaply carried.) If we look at a railway map we shall see that there are more railway lines in this part of India than in any other. (The only difficulty has been to build bridges over big rivers,) such as the Ganges and Brahmaputra. The map shows that every town in the eastern part of the plains has one or two railway lines joining it with other towns. Delhi, Agra, Cawnpore, and Allahabad are large railway centres, and most of the traffic of this part of India passes through one or other of these towns. (Patna was in former times a great trading centre, for,) as the map shows, (it is near the place where the Gogra, the Gandak, and the Son enter the Ganges. In those days most of the trade of this part of India passed through Patna in boats, but in modern times the railway has taken away much of its trade.)

(Allahabad has been helped by its position at the junction of the Ganges and Jumna: it is now a great railway centre of the Ganges plain








EASTERN PLAINS

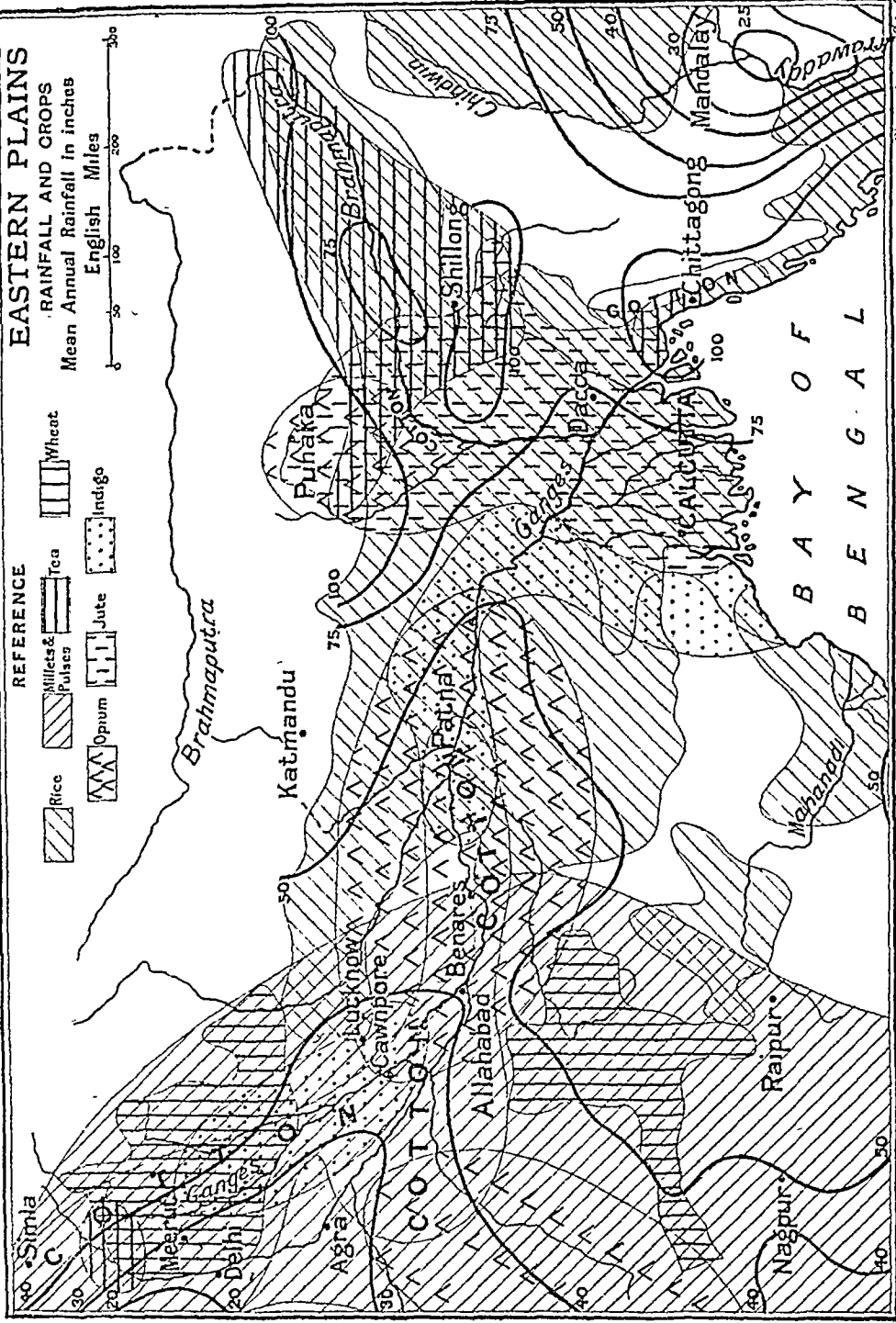
RAINFALL AND CROPS
Mean Annual Rainfall in inches

English Miles



REFERENCE

-  Rice
-  Millets & Pulses
-  Tea
-  Wheat
-  Opium
-  Jute
-  Indigo



EASTERN PLAINS. RAINFALL AND CROPS.

Of course in all the towns which we see on the map small manufactures or handicrafts are being carried on. (The old capitals such as Delhi, Agra, Lucknow, Benares, and Murshidabad still have the old industries of their courts, such as silk-weaving, ivory-carving jewellery, lace-making, and gold and silver work; but, on the whole the large towns are centres of trade rather than of manufactures. There is one town, however,

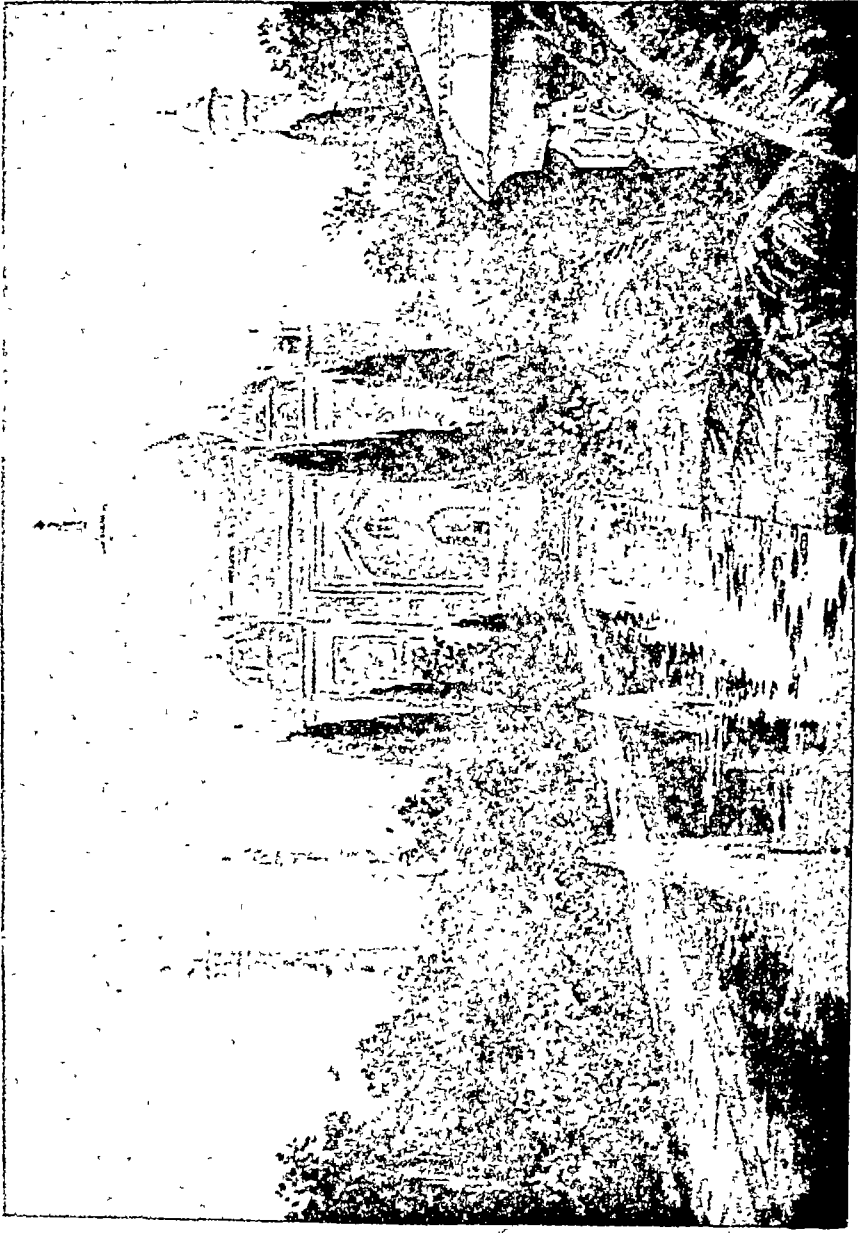
Cawnpore, which is very like a modern manufacturing town in England or America. Unlike most towns in India it is not old. Here there are large cotton and woollen mills, a jute mill, and large tanneries and leather works. Government here gets the saddles and tents wanted for the army. (In fact Cawnpore is the largest inland manufacturing town in India.)

Jute Towns.—Round the head of the Ganges delta there are several towns, such as Dacca, Sirajganj, Goalanda, and Narayanganj, which are centres of jute traffic in the jute country.)

(In the Assam valley Goalpara, Gauhati, Sibsagar, and Dibrugarh are centres of river traffic in tea, rice, and timber.)

§. IV.—Again, a country like the eastern plains with such fertile soil, many productions, and a dense population, is bound to have a large trade with foreign countries. It exports large quantities of the produce of its fields and imports in exchange manufactured goods such as cotton cloth, machinery for its railways and mills, and all kinds of iron goods, copper, brass, silver, and mineral oil. (Now where should we expect all this trade to pass through? Surely somewhere near the meeting-place of the great highways of commerce, that is, where the rivers and railways meet the sea.) And if we look at the map we shall see that (just at this point,) that is, near the edge of the Ganges delta, there is a large trading town, the largest city of the Indian Empire—namely Calcutta.

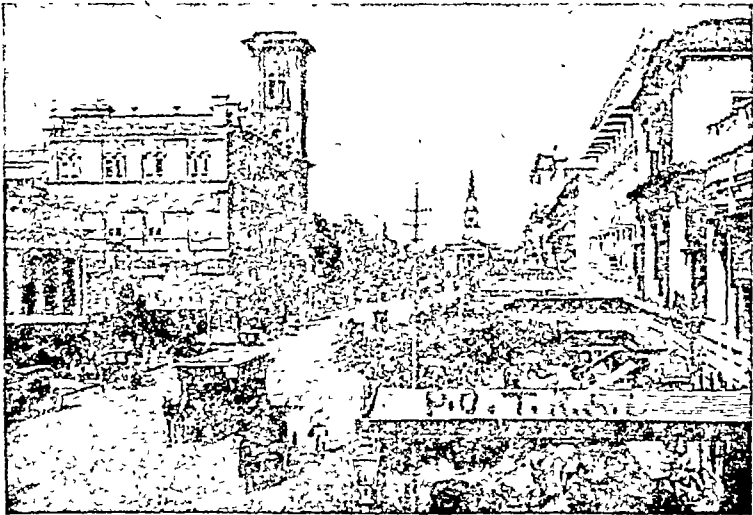
Calcutta stands about 70 miles from the sea up the estuary of the Hooghly, which is one of the mouths of the Ganges, and which can take in large steamers. It stands at the spot where all the surplus produce of this great plain, such as rice and other grains, indigo, oil-seeds, opium, and the tea of the Assam hills, can find an easy outlet to all parts of the world, and where the manufactures of



THE TAJ MAHAL AT AGRA.

other countries can easily enter and be sent up-country by railways, rivers, roads, or canals. This favourable position for commerce, at the outlet of the great fertile plains, has made Calcutta the most important seaport in India.)

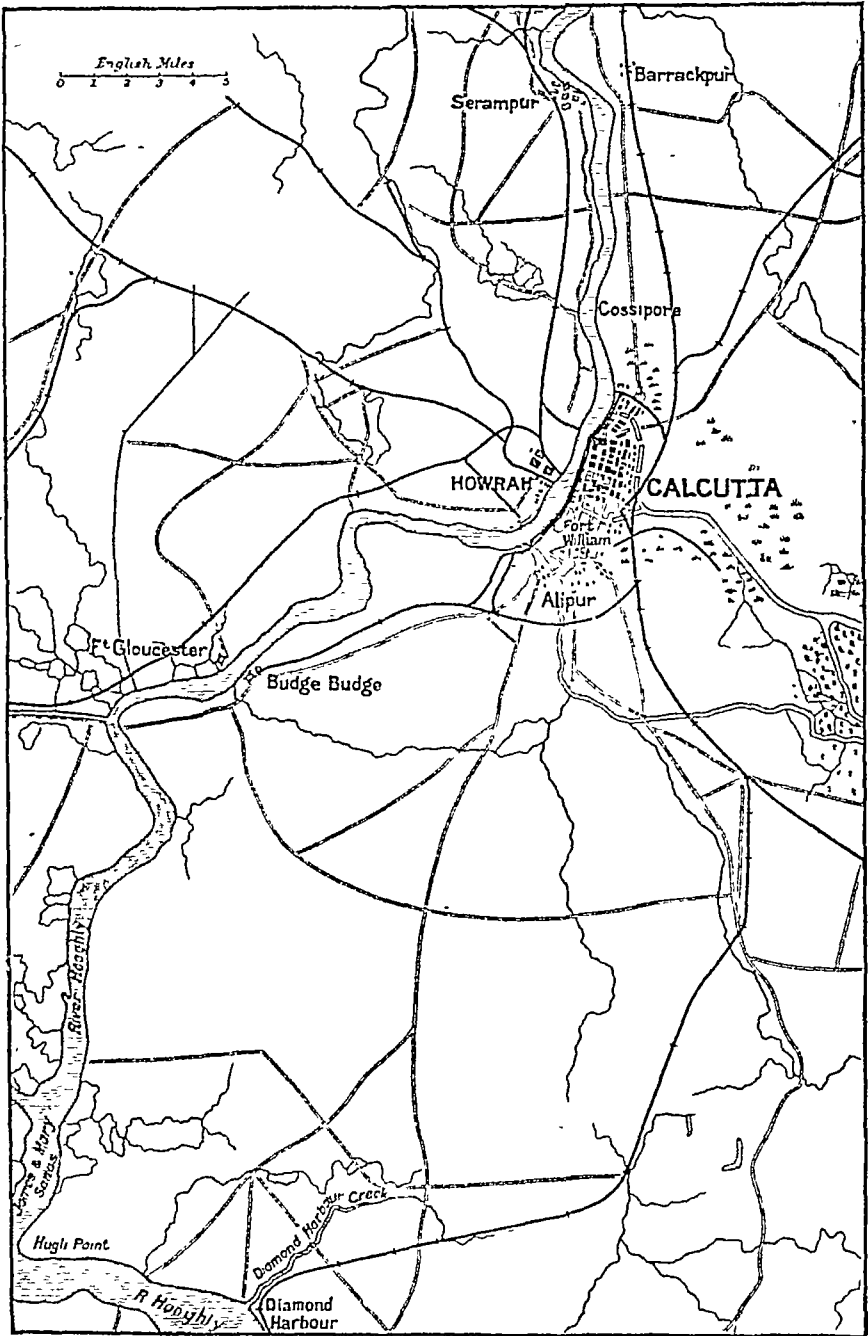
But (Calcutta is a great manufacturing town also. Its chief manufacture is the spinning and weaving of jute. Calcutta has become the supplier of jute-cloth and gunny-bags to the whole world. The jute grows,) as we saw, (quite close to the town in the lower Brahmaputra and Ganges valleys. The people of Bengal are very



IN CALCUTTA.

quick-witted and easily learn the work of manufacture. Quite close to Calcutta, at Raniganj, is the great coal-field) from which abundance of fuel can be got for engines and mills. (Thus with a crop of jute growing close by, plenty of cheap skilled labour, and plenty of cheap coal, Calcutta has a very great advantage in all manufactures and especially in jute.) It makes many other things besides jute-cloth, such as ropes, paper, cotton-cloth, and some machinery. (It is like a large manufacturing town in England.) For miles along the banks of the Hooghly there are mills with their tall smoking chimneys.

(On the other side of the Hooghly stands Howrah—really a part of Calcutta. It also has large manufactories, such as jute-mills,) rope-



Bartholomew, Edinburgh.

CALCUTTA AND HOWRAH ON THE HOOGHLY.

works, iron foundries, and railway workshops, and it has an increasing foreign trade.

(East of the Ganges delta stands another seaport Chittagong, with a good harbour, which makes it also a centre of trade) but of course on a much smaller scale than Calcutta. (Its position close to the jute country makes it a jute port, and as it is now connected with the Brahmaputra valley by railway, and as its harbour is being improved, it is fast becoming an outlet for the great tea trade of Assam.)

CHAPTER VII.

§ I.—Western Plains.—We now go on to study the rest of the plains of India, *i.e.* the Western Plains.

(These plains lie between the Aravalli Hills on the east and the line of the Kirthars and Sulaimans on the west,) and they slope, as we can see by the flow of the rivers, from the Himalayas in the north to the Arabian Sea in the south. (They occupy the drainage area of the Indus in the plains, and cover nearly the whole of the provinces of the Punjab and Sind, and a part of Rajputana.)

1. Like the eastern plains they are almost flat, but their slope is nearly south-westwards instead of south-eastwards.

(2. This region being, on the whole, farther from the sea, is **hotter in the hot weather, and much colder in the cold weather** than the Ganges plain. There is also a great difference between the **rainfall** of the western and eastern plains. As the monsoon which comes up the great valley from the Bay of Bengal is nearly spent before it reaches the Punjab, the rainfall here is **very much less**. It gets less as we go west and also as we go farther from the Himalayas.)

3. Another great difference between the western and eastern plains is this. In the eastern plains, as we saw, the rainfall is greater and the rivers are more numerous as we go down the valley and nearer to the sea: in the western plains, as we go down the plain to the sea, the rainfall is much less and the rivers are reduced to one. Thus, even Lahore, in the north of the plain, only receives some twenty inches of rain in the year while some parts of Sind in the south get less than three.) In the north we see six rivers flowing through the plain: in the south there is a single river—the Indus. In one part of this region, (far from the Himalayas, where the rainfall is very light, and where the Indus has turned away westwards, the map shows us a great stretch of utterly barren, sandy desert called The Thar. This is the most dreary part of India, and south of it we come to the dry

wastes round the Rann of Cutch. Here, indeed, there is a river, the Luni, but it is a shallow, salt stream, dried up in the hot season.)

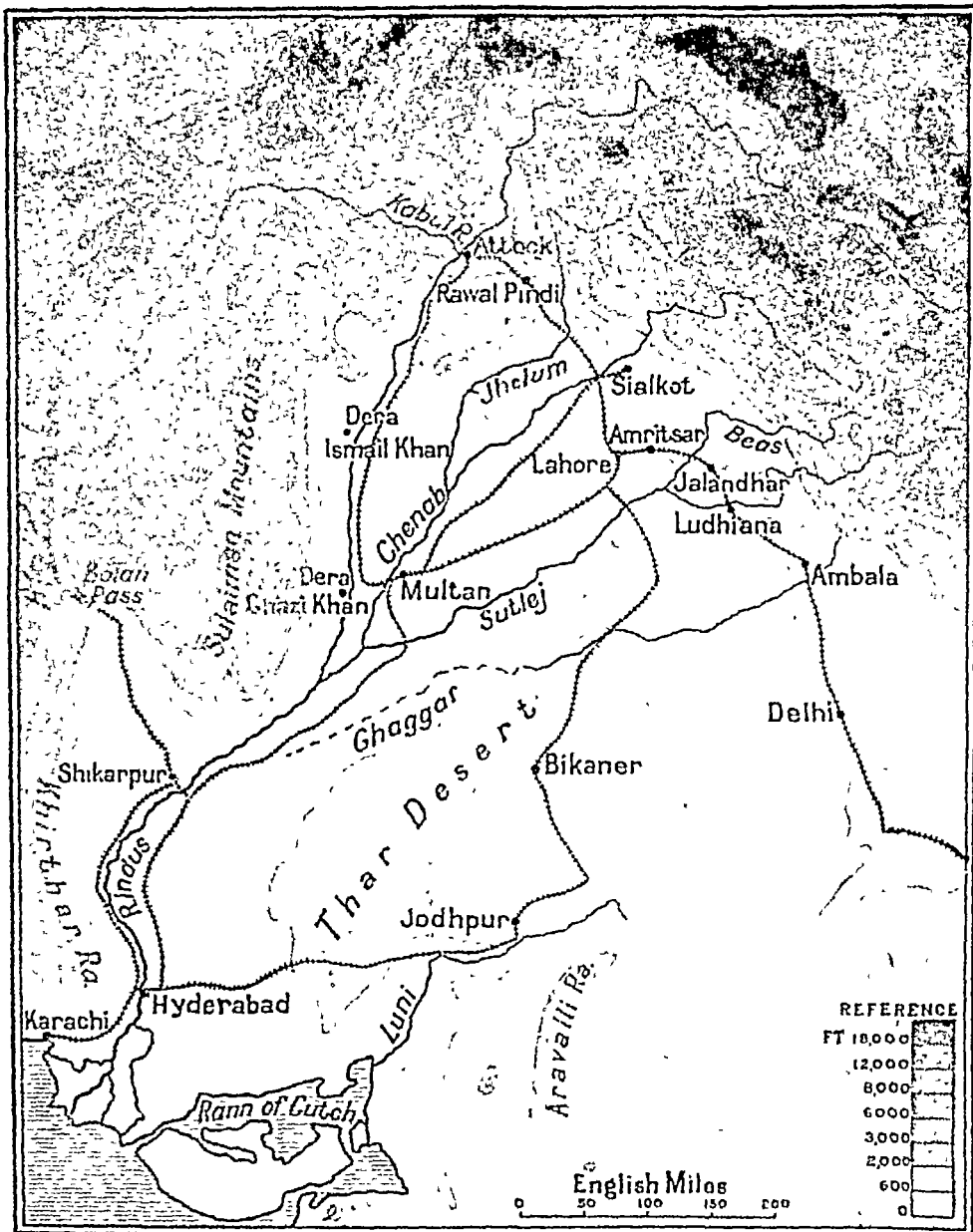
The map gives us a proof of the very light rainfall in this region for we see that (no rivers rise in this part of India and two rivers, the Ghaggar and the Saraswati, which come from the Himalayas, lose themselves in the dried up deserts. The surface of the western plains is so flat, the soil is so thirsty, and the sun is so strong, that only a small part of the rainfall ever reaches the rivers at all.)

And we can tell another thing, Since so little rain falls in this part of India, and since it is so very hot in the hot season, we can guess that the rivers will gradually become smaller and smaller as they go on, owing to the sun sucking up the water.

§ II.—Irrigation.—(But though there is such a small rainfall on the plains themselves we must remember the Himalayas in the north.) (They save this part of India from being a barren desert.) As we saw, they are a natural storehouse of water which never fails, and the map shows us that (the mighty Indus is joined by the waters of five great rivers, the Jhelum, the Chenab, the Ravi, the Beas, and the Sutlej, on its left bank, and by one fairly large one, the Kabul, on its right—all coming from the Himalayas or the Trans-Himalayas.) We can thus say that (the western plains are different from almost every other part of India. The rivers flowing through them do not take water out of the country, but rather bring it in.) They do not drain the country, for owing to the heat and the small rainfall, they have no tributaries: (they rather irrigate the dry country just as a ryot irrigates his dry fields from a distant tank.) Now this is a very important fact—the most important fact to remember about this region of India.

(But man has helped these rivers very much. The Punjab, the country of the Five Rivers (*panj ab*), is that part of India where irrigation on the largest scale is carried on. No country in the world has such a magnificent system of canals.) If we look at an irrigation map we see that nearly the whole cultivated area of this part of India depends for its crops on canals made by man. Where these canals cannot be dug crops cannot grow and the country is a desert.

The story of the irrigation work of the Punjab reads like a fairy-



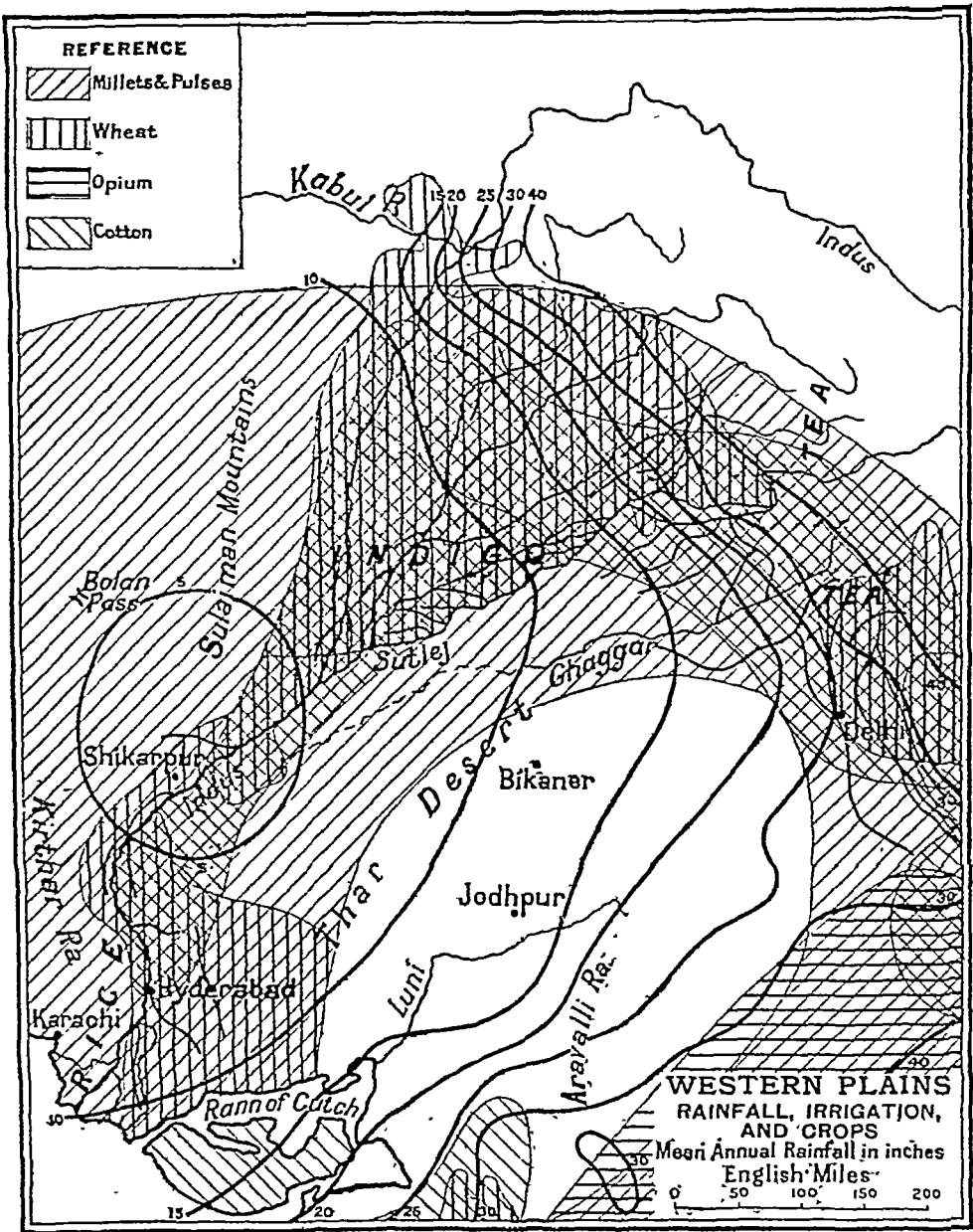
WESTERN PLAINS.

tale. (The Government engineers have) like wizards juggled with the five rivers, and by leading their waters on to the land, they have made crops grow where before there was nothing but sand and scrub. Here they (have set up "colonies" of cultivators in villages where a few years ago there was a parched desert. The chief of these are the **Chenab and Jehlum Colonies**.)

Reasons for this.—It is not difficult to understand why this part of India has so many canals. (The chief reasons are (1) The soil being alluvial, it is fertile; so, if water can be brought to it, it pays the Government to make canals here; (2) The land is very nearly flat which allows canals to be made easily and cheaply)—if a country is rocky or steep canals are impossible. (3) (The rivers which hold the water are spread over the country like the fingers of an open hand and the engineers lead the water of one river across the land to another so that the region is crossed and recrossed with canals. (4) Lastly, there is plenty of water, the five rivers and the Indus itself come from the great storehouse of water—the Himalayas: even in the hot season the sun melts the snow on these mountains and so fills the rivers.) (But lower down the plains where there is only the single river, the Indus, it is not so easy to make canals. Here channels are dug from its banks on to the land, and when the river is flooded these channels (which are called flood-canals) are filled, and water the fields along the banks.) But of course this kind of irrigation only works when the river is flooded and waters only a narrow strip of country near the river-bed.

(On the whole, therefore, we can say that these western plains are only thinly cultivated: the only fertile parts of the country are those which get a fair amount of rain or which are well irrigated, that is, the parts close to the Himalayas or in the doabs of the rivers.) The rest of the region is very little cultivated and, (in Sind, owing to the very small rainfall, the country is a desert except close to the banks of the Indus.)

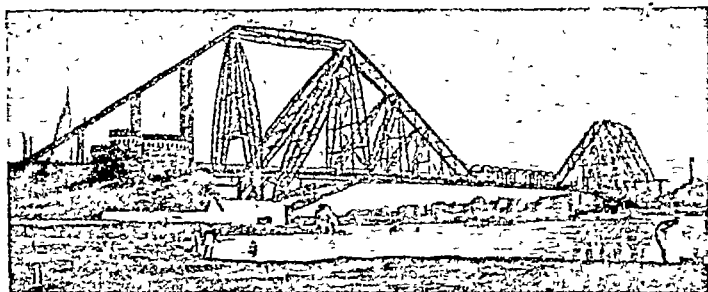
§ III.—**Crops.**—From the climate of these plains we can easily understand what the chief crops are. (The region having, on the whole, a small rainfall, those crops will be chiefly grown which can thrive with little moisture, such as millets and pulses.) It is a hopeless



WESTERN PLAINS. RAINFALL, IRRIGATION, AND CROPS.

Note that rainfall decreases as we come down the Plain to the sea.

country for rice except in the places where there is good irrigation on the banks of the rivers and canals. Thus Bengal with its heavy rainfall grows fifty times as much rice as the Punjab. (In the cold weather the air is dry, which is exactly the kind of climate to suit the growing of wheat.) In this region of India there are therefore immense crops of wheat, and the great irrigation works have greatly increased the area sown with this crop. (The Punjab grows more wheat than any other province of India and is now one of the great wheat granaries of the world. The country also produces a large crop of cotton: Egyptian cotton has been lately planted in Sind.) On the whole, however, owing to the large tracts of barren land, the western plains do not grow great crops in proportion to their size.)



BRIDGE OVER THE INDUS AT SUKKUR

§ IV.—Population.—From what has been said about the scanty rainfall and cultivation of this region as a whole, we can understand that the population also is sparse. In fact (it is only in the north-east where there is a fair rainfall that we have any large towns. These are Lahore and Amritsar. Lahore is the old capital of the Sikhs and is now the capital of the Punjab Province. Its chief importance is that it is a large railway centre.) Amritsar, built round a sacred tank, means “lake of immortality,” and is the holy city of the Sikhs.)

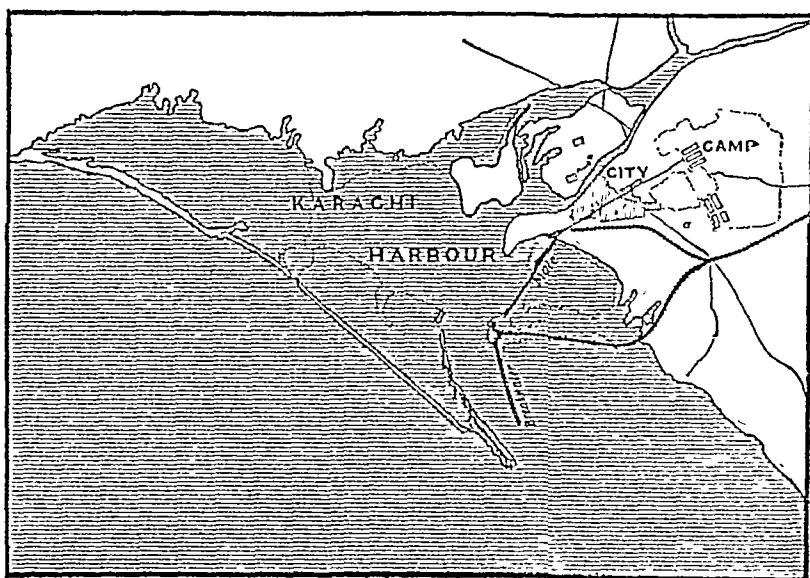
Military Towns.—But there are reasons why we find a number of small towns in this part of India. (The Punjab was, until quite lately, on the frontier next to Afghanistan and so it has a number of military stations where troops are kept ready to defend India in the north-west. Attock, Dera Ismail Khan, and Dera Ghazi Khan

are on the Indus, guarding points on the river where troops can cross on bridges or boats.) (Rawal Pindi is an important garrison town in the north : troops are also kept at Ambala, Ludhiana, Jullundur, and Sialkot.)

Trade Towns.—(This part of India has also some centres whence trade routes start for Afghanistan and Kashmir.) (Multan has, since the days of Alexander the Great, been a great centre from which caravans start across the frontier to Kandahar.) (Amritsar, mentioned above, is a centre for the trade with Kashmir.) (Hyderabad being at the head of the Indus delta is also favourably situated for trade, and) the map shows that it is now a railway centre.) (Shikarpur is another town which has thriven by trade owing to its position on the trade-route leading to Baluchistan through the Bolan Pass.) In the east of the western plains, in the desert country, are two fairly large towns, Jodhpur and Bikaner. In modern times no one would ever think of building towns in such desert places, as they have very little cultivation near them and are not well situated for trade. But in old days when the Rajput chiefs were driven out of the Gangetic plain by the Mohammedans they took refuge in the deserts of Rajputana. Jodhpur and Bikaner are two of the towns which those chiefs and their followers built round their forts.)

§ V.—Trade.—If we look at the map again we can see the western plains are hemmed in on two sides by desert country. On the west there are the long parallel ridges of the Kirthars and Sulaimans, bare of vegetation and very difficult to cross except by a few passes. On the east there are the great deserts of the Thar and of Rajputana extending right down to the Rann of Cutch. We can see therefore that the traffic of the western plains will go chiefly to the north or south and very little to the east and west.) By the map we can see that the chief railways run up and down the plain, not across it.) Before railways were built this part was cut off from the rest of India and the only trade was carried on by caravans of camels or on boats up and down the Indus. But the railway has made a great difference. (All the traffic of the north-west and west of India now goes up and down the great Indus Valley Railway.) We can easily guess that the point where this railway touches the seacoast, Karachi, will be an important one.) And so it is. (Karachi is) by far the

most important city in this part of India and is already the fifth, if not the fourth, (most important seaport in the Indian Empire. The railway and irrigation have made Karachi. It has no manufactures like Calcutta or Bombay: it has not close at its back a large fertile country like Calcutta; the river Indus is not of much use for navigation, so that naturally Karachi is cut off from the country behind it. But since the railway was made connecting its fine harbour with the Punjab, and since irrigation works were made to increase the production of the land of the Five Rivers and Sind



KARACHI AND ITS HARBOUR.

Karachi has grown enormously in importance. Wheat is a grain which is much wanted for food in England and other countries, and Karachi is now the chief port for sending abroad the wheat crops of the Punjab and Sind. After a good wheat harvest in the north-west Karachi harbour cannot hold all the large vessels waiting for cargoes of wheat for Europe. Karachi has, besides, the advantage of being the nearest Indian port to England. It is also the port from which troops from Great Britain can be most quickly sent up country to the north-west frontier in case of India being attacked from that side.

CHAPTER VIII.

§ I.—Region of Table-lands.—We now come to a third great region of India—the Region of Table-lands, which is quite unlike the Plain Region and the Mountain Region.

This region takes up nearly the whole of the great peninsula of India lying south of the plains. We can divide it into two parts—(1) The table-land of the Deccan, (2) The table-land of Central India.

i. The table-land of the Deccan is shaped like a triangle with one angle looking south, and is bounded on three sides by mountains; on the west by the Western Ghats, on the east by the Eastern Ghats, and on the north by the double line of the Vindhya and Satpura mountains. This part of India is quite unlike the flat low-lying plains. (It is everywhere 1000 feet above sea-level, and in some places, e.g. in Mysore, it is over 3000 ft. high. The western side is the highest.) Here the Western Ghats are in some places more than 4000 ft. high, and run in a long line close to the sea with only one or two passes over them. (On the eastern side are the Eastern Ghats. These are much lower than the Western Ghats; they have several breaks, do not keep close to the sea, and allow rivers to pass through them. By the way the rivers flow we can see that the Deccan table-land slopes down from west to east.)

2. The table-land of Central India lies to the north of the Deccan and is also shaped like a triangle, but its point does not look south but east. On the west this table-land is bounded by the Aravalli Hills and on the south by the Vindhyas. On the north it has no hills but slopes gently down to the Jumna and Ganges valley. The map shows it is much smaller than the Deccan table-land. Its south-west corner between the Aravallis and the Vindhyas is called the Plateau or Table-land of Malwa.

§ II.—We may consider these two table-lands of the Deccan and

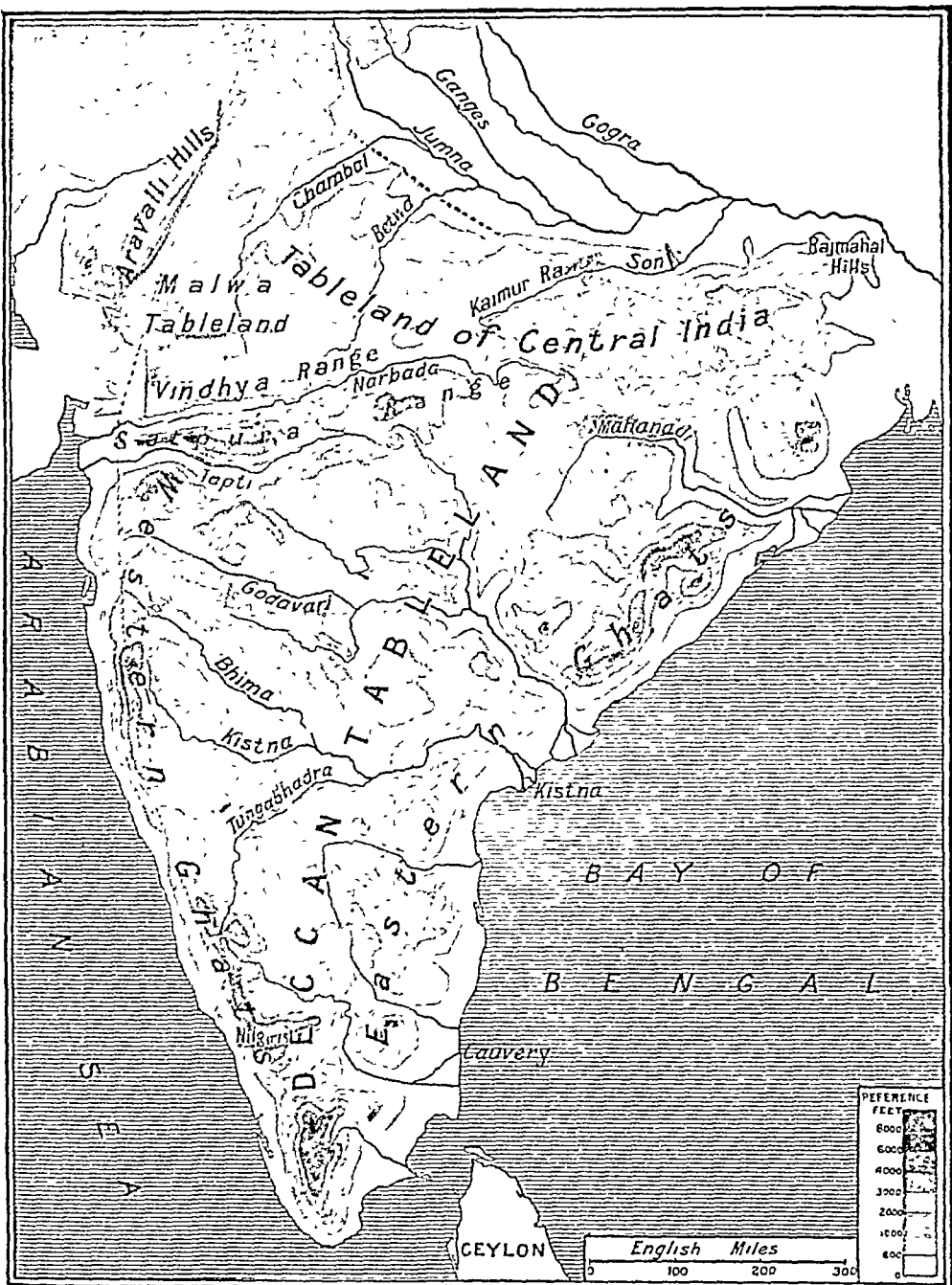
Central India together) for they make up one great high tract of country unlike the rest of India.

The first thing we notice about (this region of India is) that it is not smooth and flat like the plains. On the map we see hills almost everywhere. Besides the Aravallis and the Eastern and Western Ghats, on its edges, there are) two well-known ranges of mountains running partly across it—the Vindhya and the Satpuras. The map also shows many low ranges of hills running in different directions almost all over the table-land.) The names of some of these, and their position, should be learned from the map—(such as the Kaimur and Rajmahal Hills stretching from the Vindhya towards the Ganges; and the Mahadeo, Amarkantak and Maikal Ranges, which form part of the Satpuras.)

A glance at the physical map shows us (this region is not a flat plain: it is really a table-land raised between 1000 ft. and 3000 ft. above sea-level. Among the hills are narrow valleys where rivers rise, and these rivers find their way to the sea in all directions. As a rule these rivers are rapid and rocky with only a narrow strip of cultivation on their banks. The hills and mountains are usually covered with forest and jungle where wild tribes live by pasturing cattle, goats, and sheep. Many parts of the table-land region are therefore famous as hunting places for big game such as tigers, bears, and bison; but, unluckily, some parts of the hill jungles are very feverish. We can describe the region shortly by saying (it is a table-land broken by narrow valleys and forest-covered hills.)

(The drainage of this great table-land is quite unlike that of the plains. In the plains all the water finds its way to two points—the delta of the Indus in the west and the delta of the Ganges in the east: but in the table-land the rivers,) instead of all joining together, enter the sea at many widely separated points. By noticing how the rivers flow, e.g. The Chambal, Betwa, and Son: the Mahanadi, Godavari, Kistna, and Kavari, we can see that the slope of the Central India part of the table-land is nearly northwards down to the Ganges, and the slope of the Deccan part eastwards into the Bay of Bengal.) Two rivers, the Nerbada and Tapti, flow westwards in narrow valleys to the Arabian Sea.

There is another thing we could almost guess by looking at the



Bartholomew, Edin.

TABLE-LAND REGION. PHYSICAL FEATURES.

physical map—the table-land is not alluvial. It is built up of hard rocks covered with shallow soil) except in the valleys where the rivers have cut channels for themselves and washed mud along their banks. In travelling through the country we are constantly seeing great rocks sticking out of the table-land, on many of which forts were built in former days.)

§ III.—But (the most important thing about this part of India, as about every other part, is the rainfall. Does it have a good monsoon? The summer monsoon comes across the Deccan in the months of June, July, August, and September.) As we saw, this monsoon strikes the long range of the Western Ghats on their western or seaward side and the clouds are condensed and fall as heavy rain on that side and on the tops of these mountains. Unluckily for the Deccan table-land the Western Ghats, in this way, take away almost all the moisture from the monsoon clouds, so that, after they cross the mountains, they have very little left for the table-land. For example, on the western face of those Ghats the rainfall is over 100 inches in a year—in some places 200 inches—but on their eastern side, just a few miles inland of them, it is only about 20 inches.)

(At the northern end of the Western Ghats the Vindhya and Satpura mountains run, not along the coast, but at right angles to it. Here, therefore, the monsoon clouds are able to get farther inland and so this part of the table-land receives more rain than the part inland from the Ghats farther south. Again in the north-east part of the Deccan, in the country lying between the Godavari and the Ganges, there are many broken hill ranges. These catch the rain-clouds which come across from the Arabian Sea and also those which come in from the Bay of Bengal. So in this part of the Deccan the rainfall is much heavier than in the rest of it. The result of this is that there are here many rivers and large forests.)

(In the Central India table-land the rainfall is light. It is far from the Himalayas and there are no high hills to catch the rain-clouds.)

We can see therefore that, on the whole, the rainfall of the table-

land region is light but that it is fairly heavy on the north-east part of it, in the Central Provinces. During the rest of the year, that is from October to May, very little rain falls on the table-land region.

§ IV.—From the build of the country and its rainfall we can tell some important things about it.

1. The rivers of the table-land region are smaller and fewer than those of the plains because the rainfall on the table-land is much less. We may notice, however, that (the Central Provinces which have the heaviest rainfall of this region are the birth-place of many rivers.)

2. In the hot dry weather, from March to June, when the Gangetic rivers are fed by the melting snows of the Himalayas, the rivers of the table-land are nearly dried up, as they do not have their rise in snow-covered mountains.

3. (Owing to the rocky nature of the soil the rain that falls on the table-land does not soak deep into the ground, but quickly runs off into the rivers. This explains why the rivers of the table-land rise in flood and fall again so quickly. The Chambal, the Son, and the Mahanadi are famous for great floods.)

4. (Again, as the surface of the table-land is rocky and sloping it is very difficult to lead canals from the rivers to irrigate the country.) Engineers cannot easily make canals where the ground is full of rocks or where the country is not flat. (There are therefore no canals of any importance in the table-land region.)

5. (As the rivers run nearly dry in the hot season and as they flow through rocky country they are not suitable for water-traffic.) Even the great Godavari is blocked by rocks at certain points. These rivers are therefore quite unlike the rivers of the Gangetic plain which are used by numberless boats. We can even see this from the map, for (while in the Gangetic plain many towns have been built on the banks of the rivers because they are convenient high-ways of trade, in the table-land region very few of the towns are built on rivers, because they are of little use for navigation.)

From the small rainfall of the Deccan, and from its soil and shape, we can see that the work of irrigating the fields there will be quite unlike that in the plains of the Ganges.

IN THE GANGES PLAINS.

1. There are many snow-fed rivers flowing through soft soil over a flat surface, so there are *many canals*.

2. As there is a good rainfall and a soft clay soil there is plenty of water near the surface. Therefore there are *many wells* and they need not be dug deep.

3. As the surface is very flat and the ground soft it is difficult to catch water in *tanks*.

Thus in the Ganges plain the ryot irrigates his fields from many rivers, canals, and wells and so can grow paddy crops nearly everywhere. In the Deccan he uses tanks and few wells, and so on the whole grows "dry" crops such as millets, gram, and cotton, but paddy only where he can make a tank or dig a well, or get water from a river-bed.) $3\frac{1}{2}$

IN THE DECCAN TABLE-LAND.

1. There are fewer rivers, they nearly dry up in the hot season, and the ground is rocky therefore there are *no canals*.

2. There is a much smaller rainfall so there are *fewer wells*; the ground is rocky, so *wells are difficult to dig*.

3. The surface is uneven and the ground rocky so *tanks* can be made to catch surface water in hollows. } $3\frac{1}{2}$
25

§ V.—Crops.—From the scanty rainfall, and because there are very few canals, we can see that this part of India will not be nearly so fertile as the Gangetic plain. It is in the table-land region of India that famine most often occurs. There is not enough rain to grow rice (which requires much water) except near the river-banks. The chief crops are, therefore, those which can grow with little rain such as millets (jowar or cholam, bajra or kumbu and ragi), and pulses such as dal and gram: (The height of the table-land above sea-level and the dryness of the winter and early spring months make the part of the table-land north of the Godavari suitable for wheat, which is, of course, grown only in the cold season.) (In some parts of the Deccan, especially in Bombay Province, in Berar and in Hyderabad state, there are large tracts of rich black soil which does not require manure and keeps in moisture for a long time. This soil is particularly suitable for growing cotton and is therefore often called black cotton soil.)

(On the whole, however, the table-land region of India is not nearly so fertile as the plains. In the plains the whole country is cultivated, but in the table-land most of the country is grass-land, with dense forests and jungle on the hills of the Central Provinces and cultivation in the river valleys.)

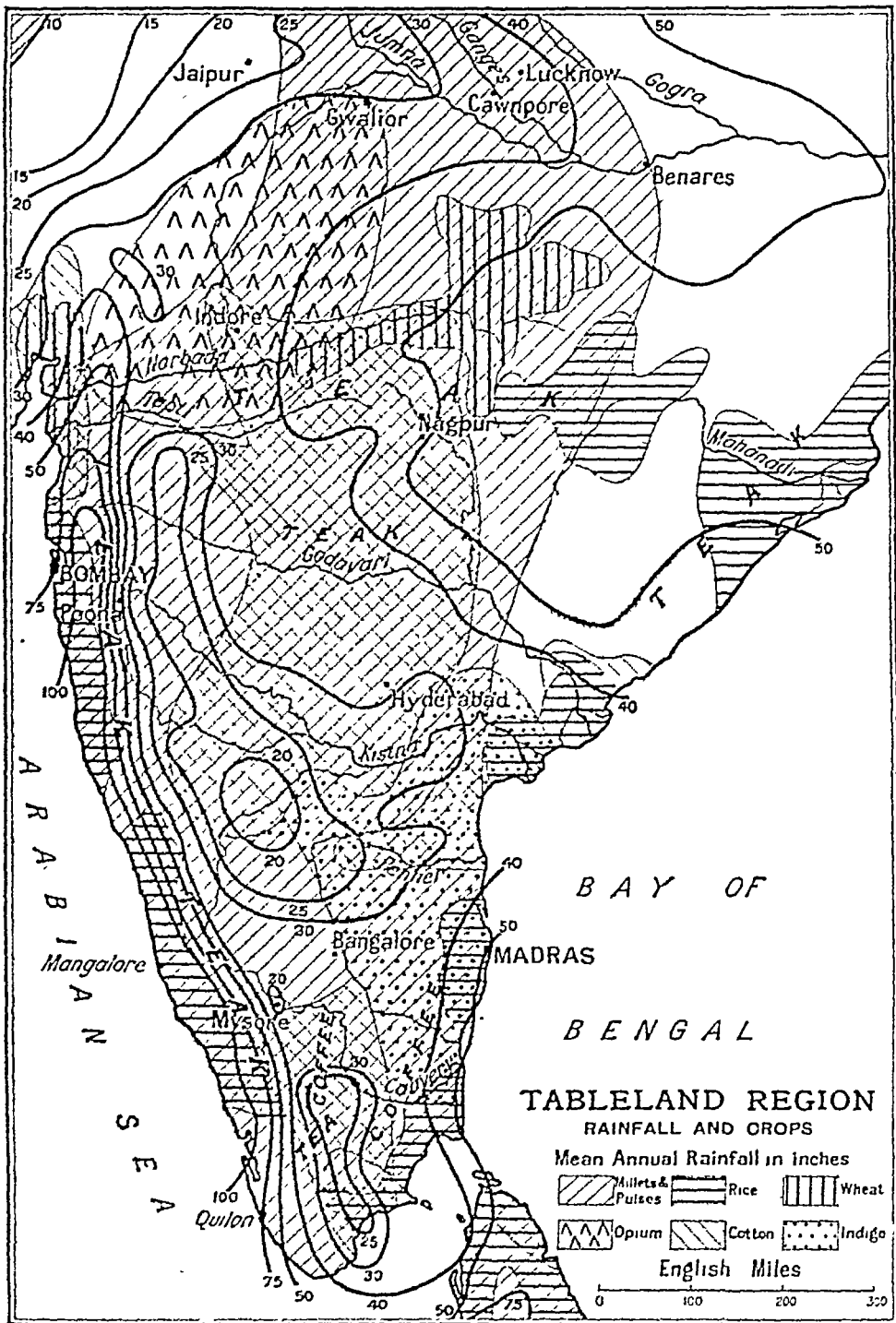


TABLE-LAND REGION. RAINFALL AND CROPS.

Bartholomew, Edin^r

Population.—From the poverty of the soil of the table-land region it is easy to understand that the population is not thick.) There is not enough food grown to feed a large number of people, and drought and famine occur pretty often. If we compare the population of this region with that of the plains we find that there are four times as many people living on each square mile of country in the plains as there are on each square mile of the table-land.

§ VI.—**Towns and Trade.**—Again, we see by the map that in the table-land region there are fewer large cities than there are on the plains. In India there are twenty-six cities, each with more than a lakh of inhabitants. Nearly one half of these twenty-six cities are on the plains and only five on the table-land, viz., Hyderabad, Poona, Bangalore, Nagpur, and Jaipur.) And, besides, these five cities are of a different kind from those of the plains. (Most of the towns on the plains such as Calcutta, Cawnpore, Delhi, Agra, and Benares are growing in size and are large centres of modern trade.) (But the towns on the table-land are mostly old capitals with but little trade.) Thus in the Central India table-land the towns which are the capitals of different states such as Jaipur, Udaipur, Chitor, Jaisalmer, Gwalior, Indore, and Bhopal have little trade.) (They are old towns, founded long ago in troubled times for protection, and in modern days of peace they have but little business. (Hyderabad, the capital of the Nizam's dominions, is a very large city with but little trade for its size. The other towns in Hyderabad state such as Secunderabad, Golconda, Aurangabad, Bidar, Daulatabad, and Warangal are old independent capitals, where chiefs had their courts in former times, but which are not busy centres of trade at the present day.) Nagpur and Poona are old capitals of the Marathas. Nagpur is unlike most of the other Deccan towns. Owing to its position on the main line of railway and at the centre of a fertile plain it is growing quickly.) Bangalore is the largest town in Mysore state, but it has very little trade for its size, and Mysore town has almost none.) We cannot expect in an agricultural country like India that towns which lie in a region where there is little rainfall and only scanty crops should be prosperous centres of trade. As cotton is such an important crop in this part of India we may notice one or two towns which

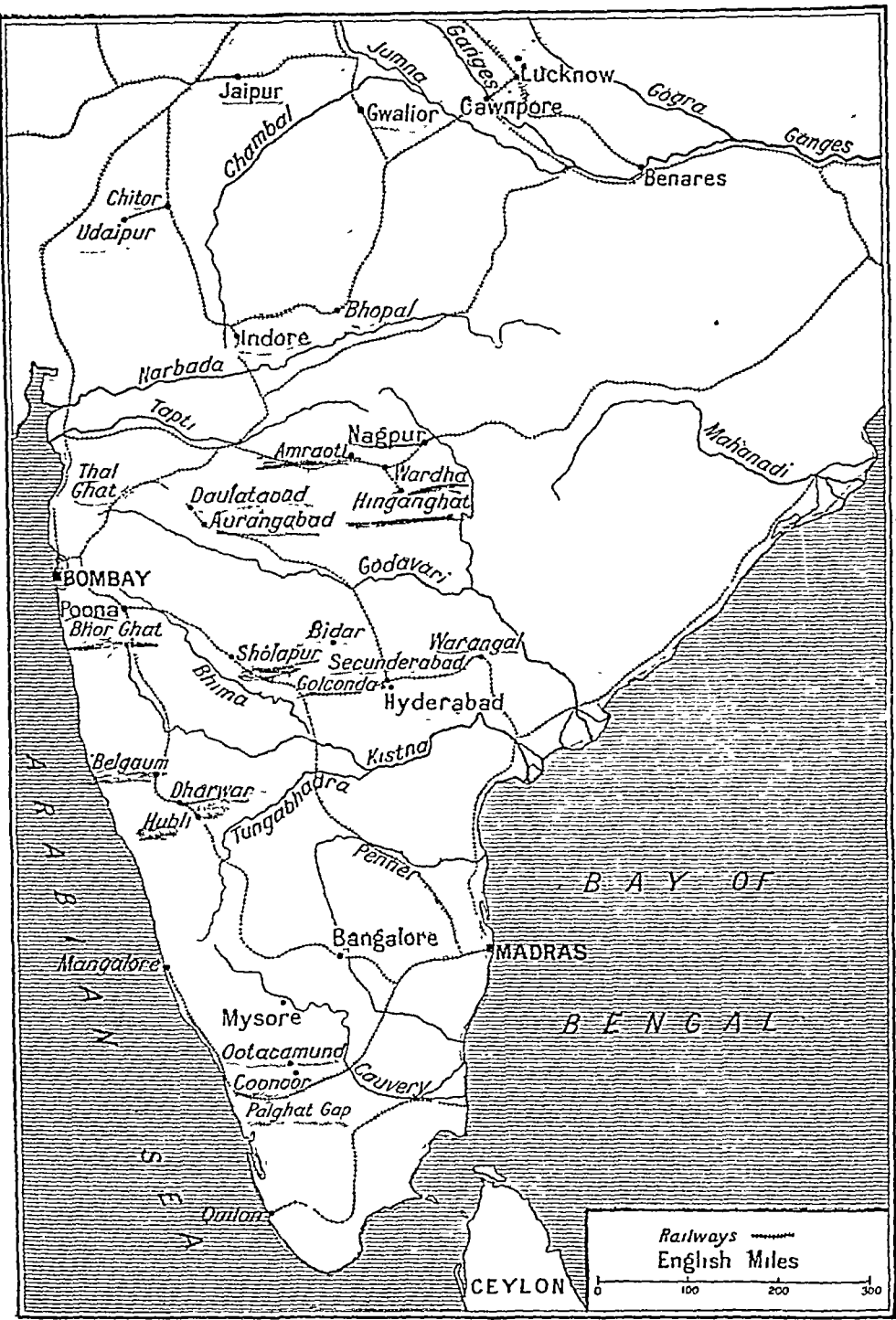


TABLE-LAND REGION. TOWNS AND RAILWAYS.

Butcher & Co., Edin^r

are cotton centres. Amraoti is the centre of the Berar cotton trade : in the valley of the Wardha river lie Wardha and Hinganghat : in the part of the Bombay Presidency near the Ghats are Sholapur, Hubli, Dharwar, and Belgaum. These towns send their cotton to the Bombay mills.)

We can tell that the table-land region has not much trade by another sign. If we look at the map we see there are very few railways.

In former days it was very difficult to reach this part of India from the coast. On the western side we see the steep and rocky slopes of the Western Ghats which cut it off from the sea. On the eastern side there are, as we have seen, four large rivers, but they are useless for navigation except by small boats for a few miles up. In those days we must remember there were no roads. In modern days railways have been made, but they are very few compared with those of the plains. The Ghats have been crossed by two railways from Bombay, one going to Calcutta up the Thal Ghat and the other to Madras by the Bhor Ghat. Another line leads inland from Goa. But there are very few others.

'It is of course not so easy to build railways over a rocky table-land as it is in flat plains with soft soil,') But if the country were very fertile with a thick population and many wealthy growing towns, railways would somehow be built. So, when we see few railways it is another sign that the country, as a whole, is not fertile and that there is not much trade.

In the highest part of the table-land, just where the Western and Eastern Ghats meet, up on the Nilgiri Hills, are two small hill stations, Ootacamund and Cooonoor.

CHAPTER IX.

§ I.—**Region of Coast Strips.**—We next come to a fourth region of India quite unlike the other three, viz., the **Region of Coast Strips**. All along the coasts of the peninsula of India there is a flat strip of country lying between the edge of the table-land and the sea.

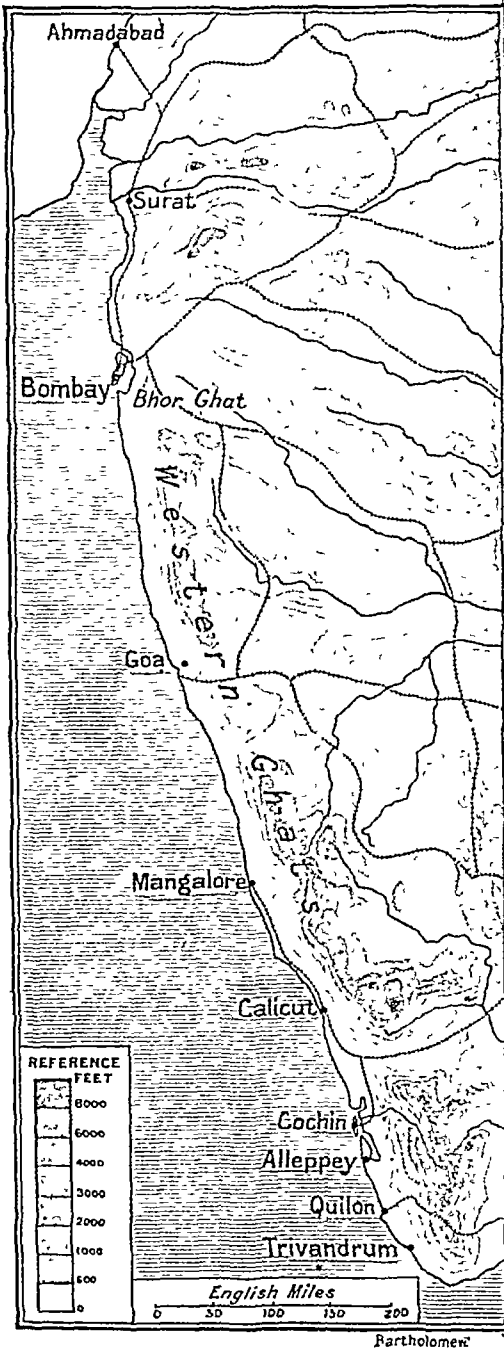
The west coast strip is very narrow, because here the Western Ghats are very near the sea. It extends from the Gulf of Cambay right down to Cape Comorin. On the east coast the strip is much broader, because the Eastern Ghats do not keep close to the sea but turn inland across the peninsula to meet the Western Ghats. This strip extends from the delta of the Ganges down to Cape Comorin. It is broadest in the south where it stretches right inland to that part of the Western Ghats which runs down to the end of the peninsula.

The whole of these coast strips—both the west and the east—is alluvial, i.e. the soil is largely made up of mud washed down by the rivers flowing from the table-land.

§ II.—**The West Coast Strip** is, as the map shows, narrow. We must remember, however, that this is the part of India which receives the full force of the south-west monsoon. The clouds, full of moisture, come up from the Arabian Sea in June, July, August, and September and strike the coast and the steep and rocky Western Ghats lying a few miles inland. Here therefore there is a very heavy rainfall—on the whole over 100 inches a year, and, in some parts, nearly 200 inches. There are therefore many rivers in this coast strip, but, as the mountains on which they rise are close to the coast, they are very short and rapid, and therefore unimportant.

The heavy rainfall, however, makes the soil on this coast strip very fertile and well-suited to the growth of rice. There are rich paddy lands and in some parts three crops a year are reaped. All kinds of palms* thrive, especially the cocoa-nut, which likes a sandy

* Except of course the date palm, which likes a dry climate.



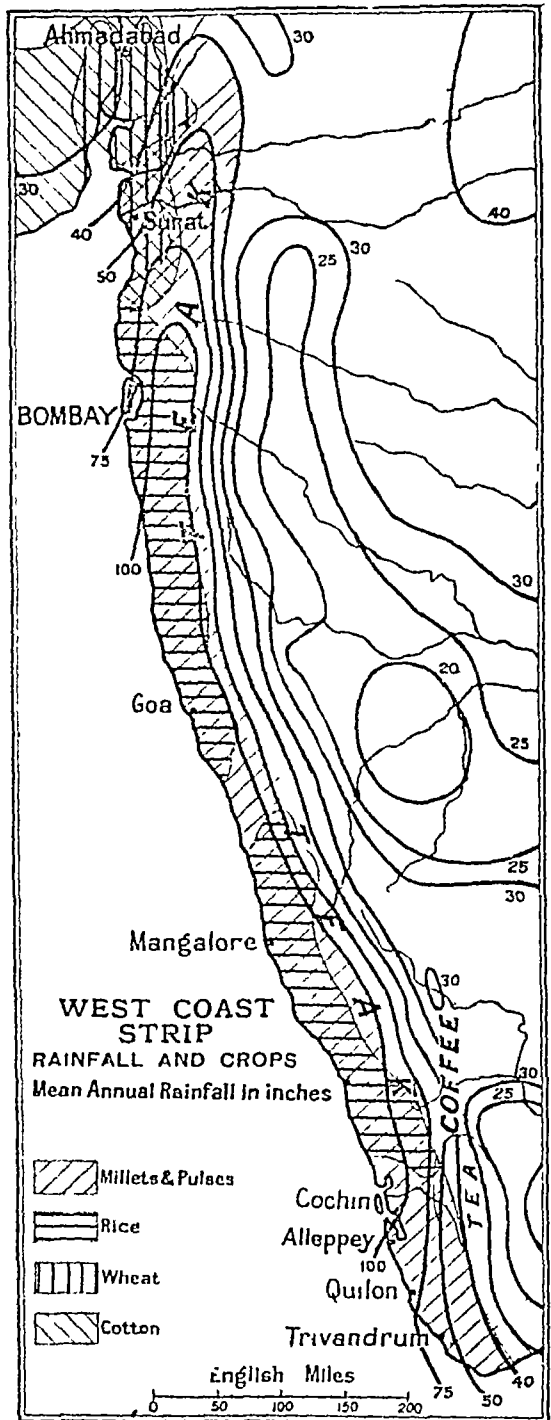
sea-coast and plenty of rain.) From it are got a fibre (coir), the dried flesh of the nut (copra), and the shell. (The areca-nut palm is also plentiful. The heavy rainfall likewise helps the growth of timber and the Ghats here are covered with forests, teak being the chief tree. This coast has always been famous for spices: pepper (the dried fruit of a creeper), ginger (a dried root), and cardamoms are three of the chief of these. (On the hills, inland from the sea, coffee and tea are largely grown, and the india-rubber tree has lately been widely planted.)

(Owing to the fertility of the soil, the population is very dense. The whole of this coast strip is filled with villages lying in the midst of cocoa-nut groves and rice fields. There are no large towns except Ahmadabad, Bombay, and Surat, but a few smaller places such as Alleppey, Trivandrum, Cochin, Calicut, Mangalore, and Goa are well known.) (Ahmadabad stands on the neck of the Kathiawar peninsula: it is a flourishing town in the centre of a fertile cot-)

Bartholomew

THE NARROW WEST COAST STRIP.

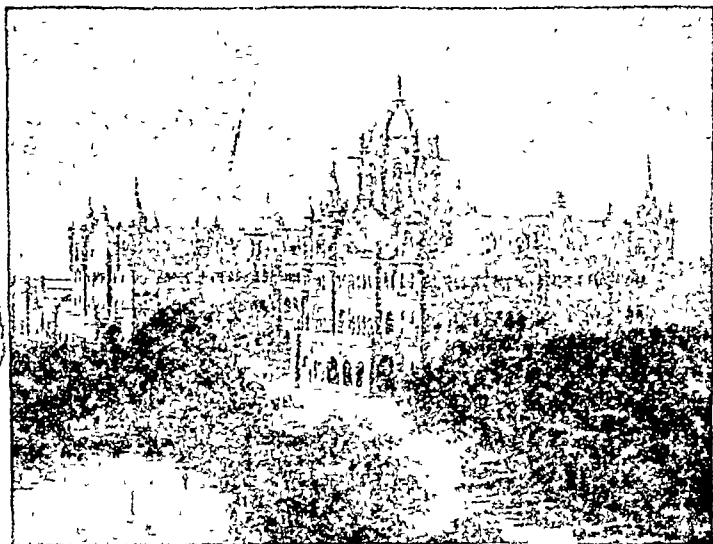
to: growing country. (Surat was the first place in India where the English built a factory.) In former days Arab, Dutch, Portuguese, and English merchants used to trade largely with this coast, and in the small towns along the shore there are old forts which were built to protect their factories. Goa is still in the hands of the Portuguese. But (except Bombay) there are no harbours large enough to take in the big steamers of modern days, so the trade of this coast is mostly a coasting one. That is, small vessels collect the copra, coir, coconuts, rice, pepper, and ginger of the low country and the tea, cardamoms, coffee, and teak of the hills, and take them to big harbours such as Colombo, in Ceylon, or Bombay, where they are transhipped to large vessels and sent abroad. (A railway now runs, as the map shows, along most of this coast.) The trade of the south part of this coast strip is very much helped by backwaters or lagoons, connected with the sea, which run along the coast for miles. Cochin is the chief port of the Malabar coast, partly because



WEST COAST STRIP. RAINFALL AND CROPS.

of its good harbour for small vessels, and partly because it is connected by these backwaters with the rest of the coast. The Cochin backwater is 120 miles long.

§ III.—By far the most important town on this coast is **Bombay**. Bombay owes this importance to its position. It is built on the lee side of an island of the same name which shelters its harbour so that the largest vessels can there lie in calm water even during the storms of the monsoon. It is thus the only harbour, except

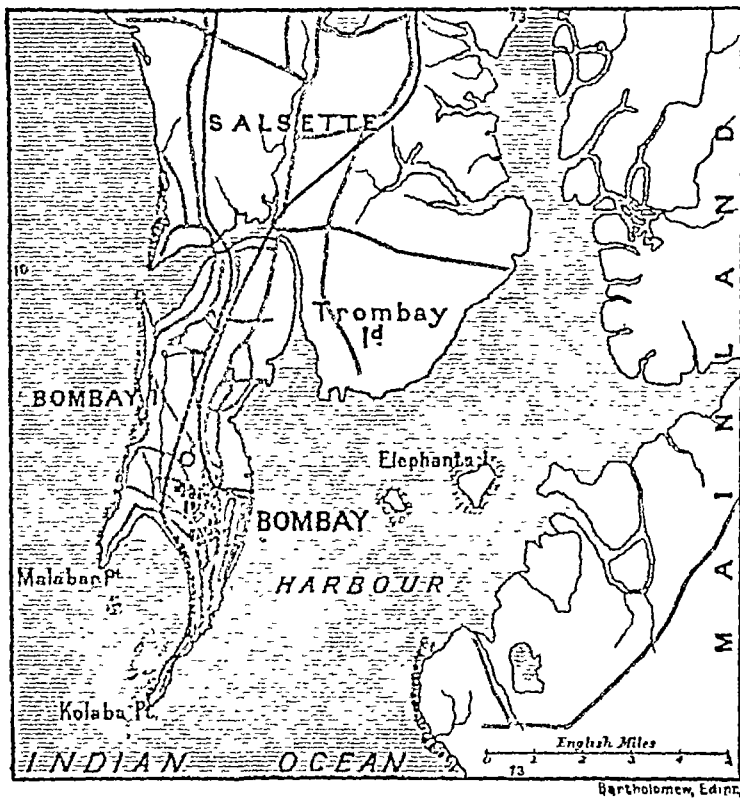


RAILWAY STATION, BOMBAY.

Karachi, on the west coast of India that can take in large ships. It is nearer to Europe than any other Indian port except Karachi, and it is the centre through which most of the trade of India with Europe and Africa passes. On land, Bombay is nearer the centre of India than any other port, and it therefore draws traffic from a larger area than any other Indian seaport. (Besides, Bombay is the greatest manufacturing city in India. It lies near the cotton-growing districts of Gujarat, Berar, and the Deccan, and this has helped it to become the chief seat of the cotton-spinning and cotton-weaving industry of India. The damp air* of this coast is also very suitable

* In places where the air is dry it is found that the cotton fibre breaks easily and cannot be spun or woven properly.

for spinning and weaving cotton.) Half of the total quantity of goods brought into Bombay from up-country consists of raw cotton for its mills. A great deal of the cotton spun and woven in Bombay is sent out to Africa, the Straits, China, and Japan. (Bombay, like the rest of the west coast, is cut off from the interior by the Western Ghats. But railways have overcome this disadvantage. Two



BOMBAY ON ITS ISLAND.

railways connect it with the rest of India over steep passes leading across these mountains east to Calcutta and south-east to Madras. Another line runs north through Surat into the rich country of Gujarat.)

(The long west coast strip has the disadvantage of being cut off from the rest of India by the high range of the Western Ghats. Thus the customs and the language of the people on the Malabar coast differ greatly from those of the rest of India.) The mountains have

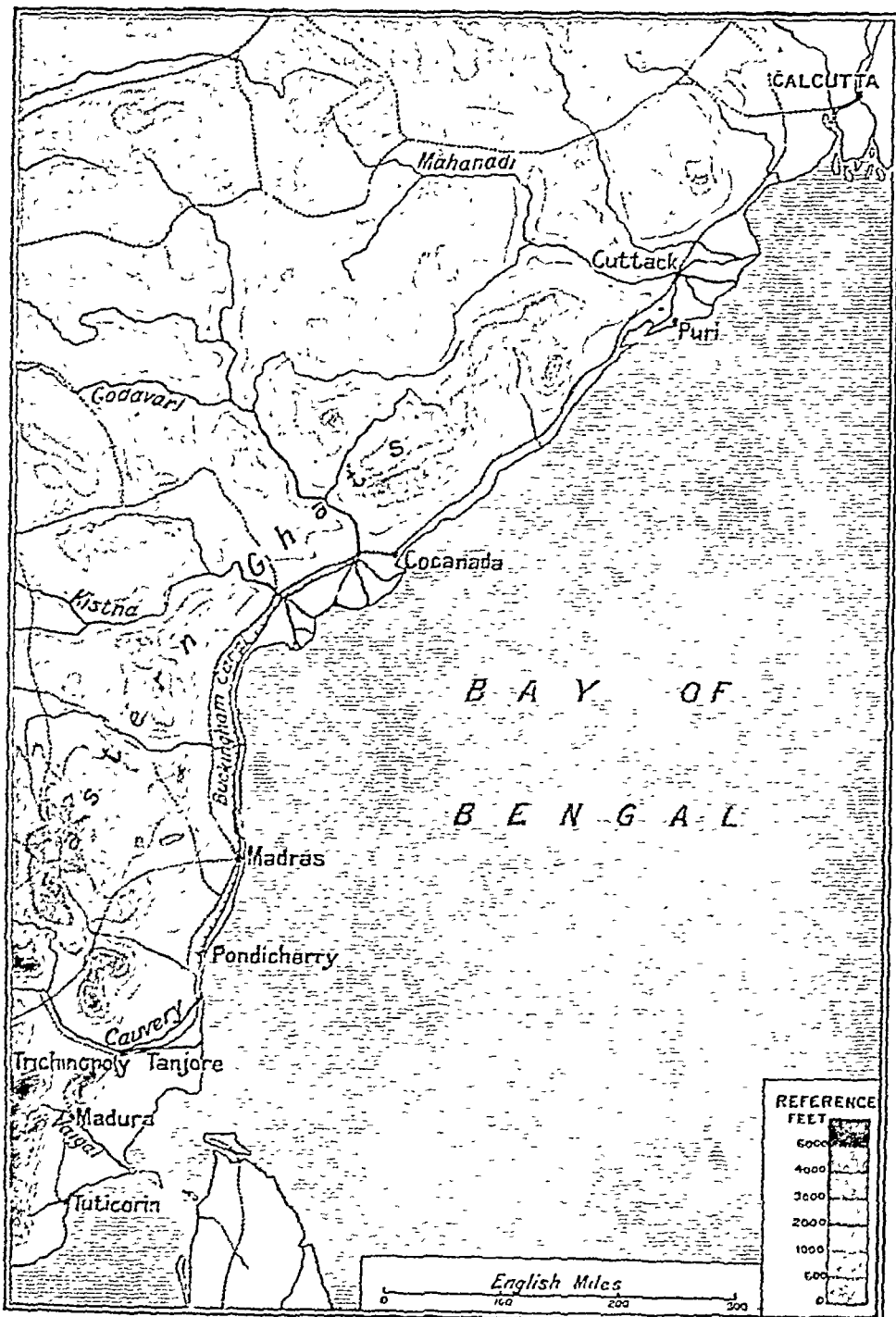
also prevented traders from easily passing across. (In modern times railways have overcome this difficulty. One line, we see by the map, runs from Mangalore and Calicut to Madras, another in the south now joins Quilon with Tinnevely; Goa is also connected with the



BHOR GHAT. WESTERN GHATS.

interior by railway, and Bombay has, as we saw, two lines over the Ghats and one northward along the coast.)

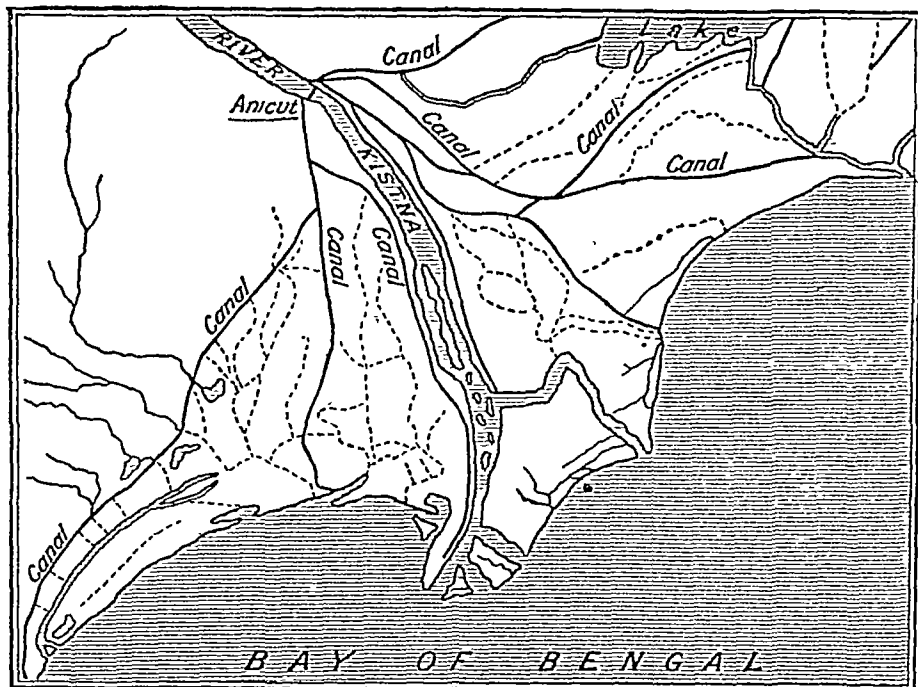
§ IV.—The East Coast Strip is, as the map shows, (much longer and, at its southern end, much broader than the west coast strip.) The most important thing to notice about it is that the rainfall is much less than on the west coast strip, being only from 40 to 50 inches in the year. The upper half, that is the part north of the Kistna, receives most of its rain during the south-west monsoon: the southern half gets rain chiefly during the winter or "north-east" monsoon. But this coast has one great advantage. Owing to the slope of the land many large rivers flow into it, and each of them has a delta. We need notice only the four largest ones—the deltas of the Mahanadi, Godavari, Kistna, and Kavari.) After leaving the table-land these great rivers flow across the flat coast strip and split into large



THE EAST COAST STRIP.

bartholomew, Edin^g

deltas. (In these deltas anicuts have been built across the rivers and the water has been led by many canals and smaller channels to irrigate, and enrich the soil for miles on either side. On these fertile deltas almost everything will grow, and they therefore supply a large part of the food of the people on this coast. (Owing to the plentiful supply of water paddy is, of course, the chief crop, and sugar-cane and tobacco also grow well in the rich soil.) In the other parts of this coast strip



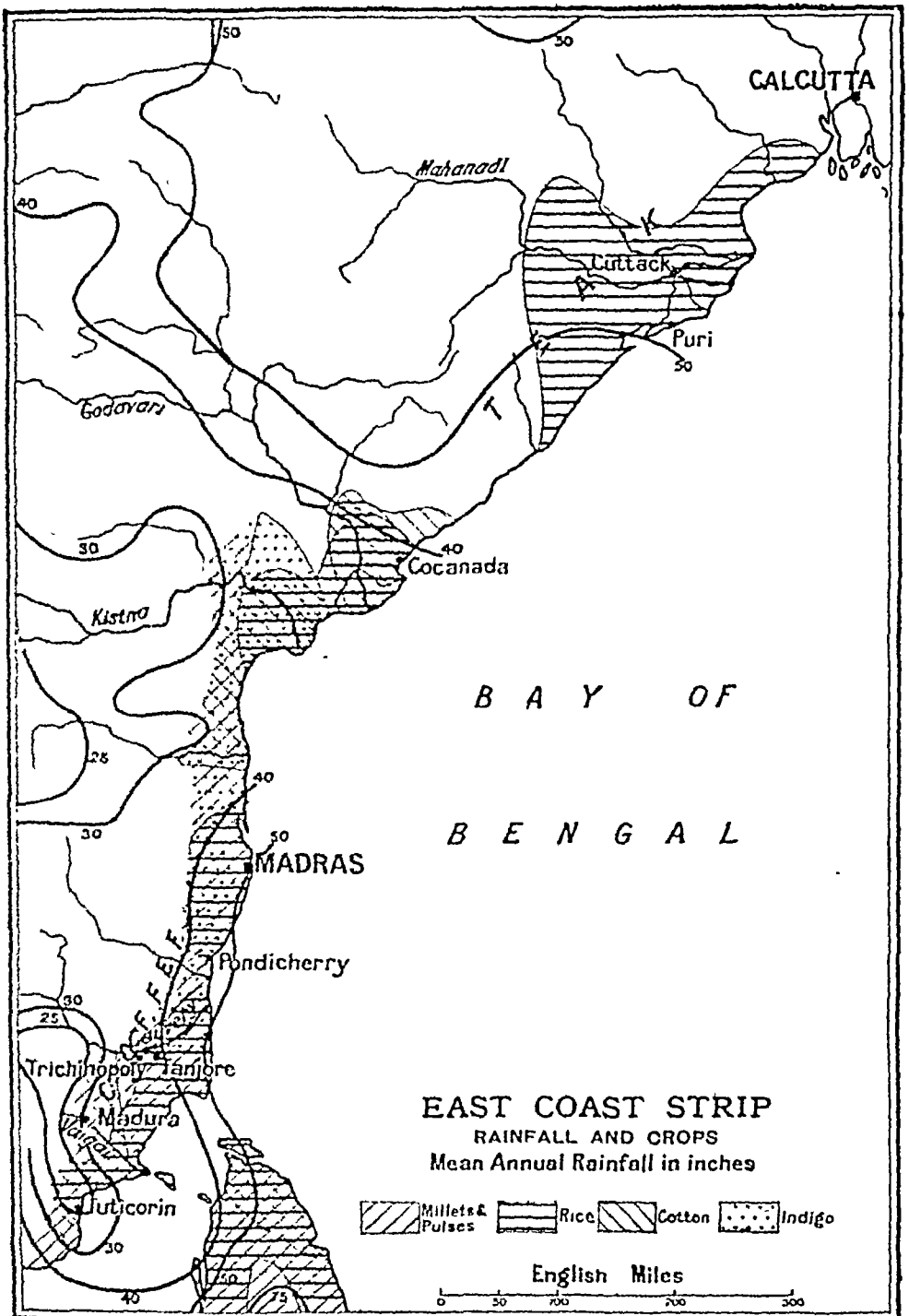
Bartholomew, Edin'

AN EAST COAST DELTA, THE KISTNA.

What man has done. This map of the Kistna delta shows how the water of the river is taken from it above the anicut by canals and spread over the land. The dotted lines are drains leading from the canals to the fields.

where water can be stored in natural hollows of the ground, *i.e.* in tanks, or pumped from wells, paddy is again largely grown: (in drier parts, millets, pulses, and oil seeds which require much less water are widely cultivated.)

The Madras Government have carried out a wonderful plan of irrigation on the Vaigai River. They have built an anicut or dam

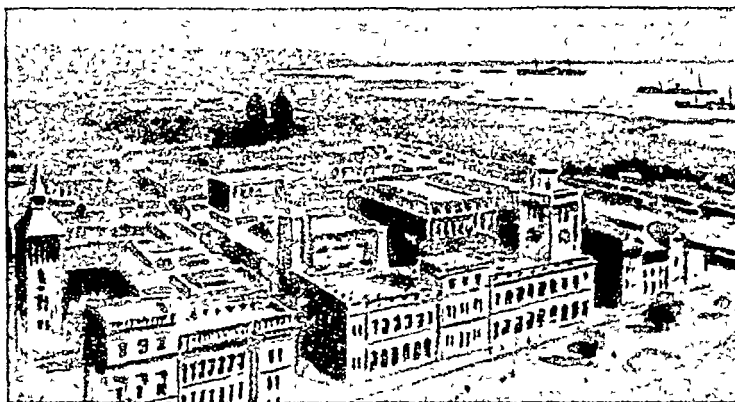


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EAST COAST STRIP. RAINFALL AND CROPS.

across a river, the Periyar, flowing down the west side of the Western Ghats. Then, by cutting a tunnel through these hills, they have made the water run eastwards to irrigate a large tract of country and then flow into the Vaigai. In this way water which before ran uselessly into the Arabian Sea is led across the peninsula into the Bay of Bengal enriching the country through which it flows.)

There are no important backwaters here as there are on the west coast, but on the Mahanadi delta there are many navigation canals used by boats. The Buckingham canal, running close to the coast, connects the Kistna delta with Madras city and with the coast farther south. A railway line runs right down this flat coast strip from

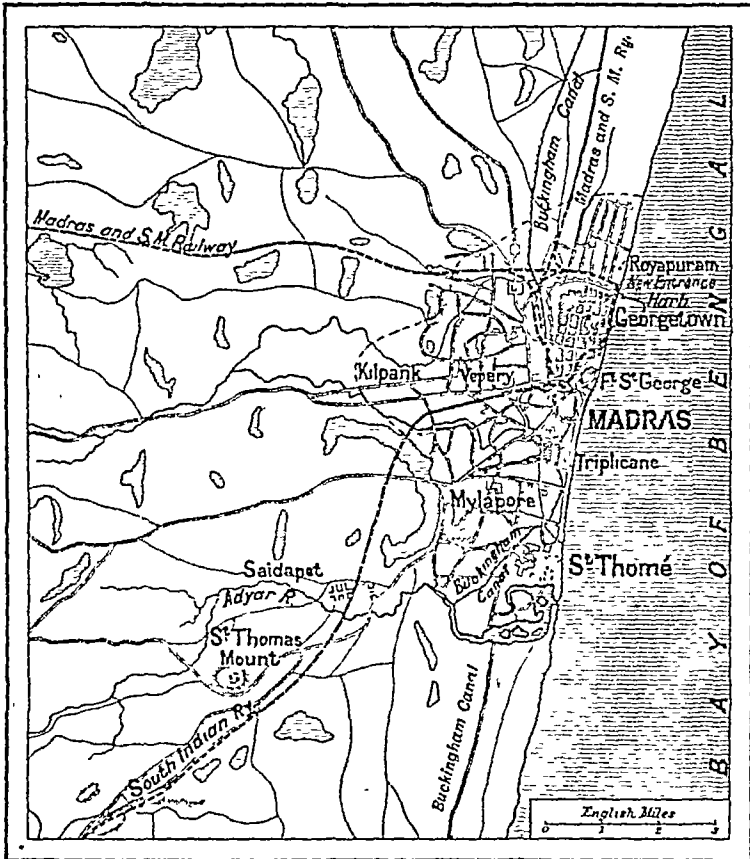


MADRAS AND ITS HARBOUR.

Calcutta to Madras, and then on to Tuticorin in the extreme south. Two main lines connect it with the west coast—one from Madras to Bombay and another from Madras to Calicut and Mangalore.)

§ V.—As there is a good rainfall and good soil, and as the coast strip is not taken up with mountains, the population is pretty thick, especially in the rich deltas. Cuttack lies in the middle of the Mahanadi delta and is the centre of its trade. Near it is Puri, one of the most sacred spots of the Hindu religion, and therefore a great place of pilgrimage. On the Godavari delta lies Cocanada, a town which on account of its position as the port of this fertile tract is growing very rapidly. Tanjore and Trichinopoly are two large growing towns on the fertile delta land of the Kavari. Owing to its fine

irrigation works the delta country round Tanjore is sometimes called "the garden-of South India." Madura, another large town, lies on the Vaigai, a small river, which irrigates a wide area of rice lands. Madura, Trichinopoly, and Tanjore are all old towns: they each have famous temples and so are great religious and educational



Bartholomew, Edinr.

MADRAS ON ITS FLAT COAST.

centres. On this strip are also many coast towns which can be studied from the map. Of these Pondicherry is a French port; it ships to Marseilles the ground-nuts which are largely grown in the country round it. Tuticorin in the far south is important because it is the seaport through which the trade between India and Ceylon passes. But much the largest and most important town on this coast strip is Madras. (Madras is the third largest city in India,

but it is not a great trading or manufacturing place like Calcutta, Bombay, or Cawnpore: it does not spin and weave cotton on a large scale like Bombay, nor jute like Calcutta. Nor, in spite of its size, is it nearly so important a seaport as either of these towns. One reason for this is that its harbour is an open one and does not give good shelter for ships, and, besides, it is constantly silting up. Another reason is that it does not, like Calcutta, have behind it a fertile plain growing wheat, jute, opium, or rice which foreign countries want. A third reason is that all along the east coast of the peninsula there are many ports (as the map shows) which take away a share of the trade. Madras is thus not so lucky as seaports such as Calcutta and Karachi. By their position at the sea outlet of great plains these towns are the gateways for the foreign trade of nearly the whole of Northern India. But in Southern India, owing to the shape of the land, the foreign trade is divided up among many seaports lying on both coasts, so that Madras gets only a share along with several others. But its harbour is now being deepened and guarded from storms and from the sea currents which fill it with sand, so that it will become more important. If the harbour could be joined to the Buckingham Canal its trade would be much helped. (Madras is, however, the largest and most important city in Southern India.) As we can see by the map, it is connected with Calcutta by a railway along the flat east coast, and by another railway with Tuticorin which is the port for Ceylon. Two other lines join it with the west coast, one going across the Deccan to Bombay, and another over the Palghat Gap to Calicut and Mangalore. Madras has several tanneries and exports many hides and skins; there are also some cotton-spinning, weaving, and dyeing works. It is a great centre of education, and has a university and many colleges and schools.

CHAPTER X.

§ I.—The Coasts and Islands of India.—If we look at the map we see that the coast of India is unlike the coast of almost every other country in two ways.

(a) It has very few inlets.

(b) It has very few islands round it.)

Inlets of the Sea.—The chief of these are the mouths of the Indus, the Ranns of Cutch, the Gulf of Cutch, the Gulf of Cambay, and the Backwaters of Malabar (already mentioned)—all on the west coast; the Palk Strait and Gulf of Manaar between India and Ceylon; the Pulicat and Chilka Lakes or lagoons on the east coast, and the mouths of the Ganges.)

In other countries inlets like these are usually the places where harbours are built because they are protected from storms. Why is it then that in these inlets in India we scarcely find a single important harbour? We cannot find out the reason from the map, for the map does not show us the depth of water. But if we looked at a sailor's map, or *chart* as it is called, we should see that the water in all these inlets is very shallow, and is not deep enough to take in the big steamers of modern days. The reason of this is that during the monsoons a strong sea-current runs along both the west and the east coasts of India carrying sand with it. This sand is laid down all along both coasts, and makes the water close to the shore very shallow.) This has been going on for hundreds of thousands of years so that (now, all along both coasts, there is not enough water for big steamers to float. They must remain some miles off shore and take in and put out their cargo by the help of small boats from the land.) Small vessels can, of course, get nearer the land and into some of the small harbours. (But during the south-west monsoon all along the west coast of India even these small vessels cannot use the harbours because the sea is then so stormy.)

The **Ranns of Cutch** and the **Gulf of Cutch** are quite shallow, and parts of them are dried up in the hot weather. The **Gulf of Cambay** is getting shallower every year owing to the sand that is drifted into it, and, in consequence, the towns on its shores, e.g. **Surat**, have lost nearly all their former trade. In the same way (steamers cannot make use of the straits between **India** and **Ceylon** partly on account of the shallow water, and partly because the ridge of rocks called **Adam's Bridge** almost blocks the passage. The **Pulicat** and **Chilka Lakes** on the east coast are quite useless for even small ships on account of their shallowness.) By looking at the map we might think that the mouths of the Ganges would be very useful for ships. But this is not so, because the mud brought down by the current of the river meets the current of the sea and falls to the bottom making the shore very shallow. Therefore big steamers cannot use the mouths of the Ganges as waterways to sail inland, and small ships can only do so during the rainy months when the channels are flooded. (There is, however, one river-mouth here which is a great water highway. This is the Hooghly, up which large vessels can go as far as **Calcutta**. But even here there are difficulties. The channel of the Hooghly must be carefully watched and constantly dredged, to keep the passage clear of mud and silt.) If this were not done **Calcutta** would, in a few years, have no outlet to the sea for large vessels. (The navigation of the Hooghly is also much helped by the tide, which is here very strong. Without the tide only small or half-laden vessels could go up and down the river. But twice every twenty-four hours the tide rises (or "flows") from the sea up the river making the water deep, so that large vessels can go right up to **Calcutta** safely.)

§ II.—**Islands**.—Another way in which **India** differs from most other countries is in its want of islands. The large island of **Ceylon** lies to the south, though no doubt long ages ago it was joined to the mainland. Then there are two groups of islands lying to seaward in the west (the **Laccadives** and the **Maldives**.) By the map we might imagine they are important, but they are not so. (They are very flat islands, built up by the coral polyp or worm, which makes a kind of skeleton of itself out of the lime of the sea-water in warm oceans. (These islands are nearly barren except for the

cocoa-nut palms that grow there.) There are one or two flat mud-islands at the mouths of the Ganges. These are really broken parts of the Ganges delta, and are not important. We must not, however, forget the island of Bombay, which, though very small, is by far the most important island of India; as it and the island of Salsette act as a huge breakwater or bund, and form the splendid harbour of Bombay. Here the largest vessels can lie at anchor and they are perfectly sheltered from the high winds and heavy seas of the monsoon. Without this harbour Bombay would not be the great trading centre she is.

(On the whole) therefore, we can say that (the coasts and islands of India are not of much use for helping ships and sea trade. All along the coasts of the peninsula the map shows many small ports—Bimlipatam, Vizagapatam, Cocanada, Masulipatam, Pondicherry, Negapatam on the east coast; Tuticorin opposite Ceylon; Alleppey, Cochin, Calicut, Mangalore, Karwar, and Goa on the west coast. But they are all open to the sea, and none of them can take in large ships, which, owing to the shallow water, must lie off-shore.)

Fish.—India and Burma have one great advantage in their shallow sandy sea-coasts. Shallow seas are the best breeding places for fish of all kinds and therefore there are plenty of fish to be caught all round the sea shores. The people, however, do not use fish as food so largely as do the people of Europe.)

(In the shallow calm water in the strait between India and Ceylon there are many beds of oysters, a kind of shell-fish from which pearls are taken.)

CHAPTER XI.

§ I.—Burma.—We now cross the Bay of Bengal to study the great Province of Burma. The geography of this country is very easy to understand: the map shows it lies between the sea and the great eastern off-shoots of the Himalayas. All the inland part of the country in the north and east is made up of mountains: out of these mountains come three ranges and three rivers running due south.

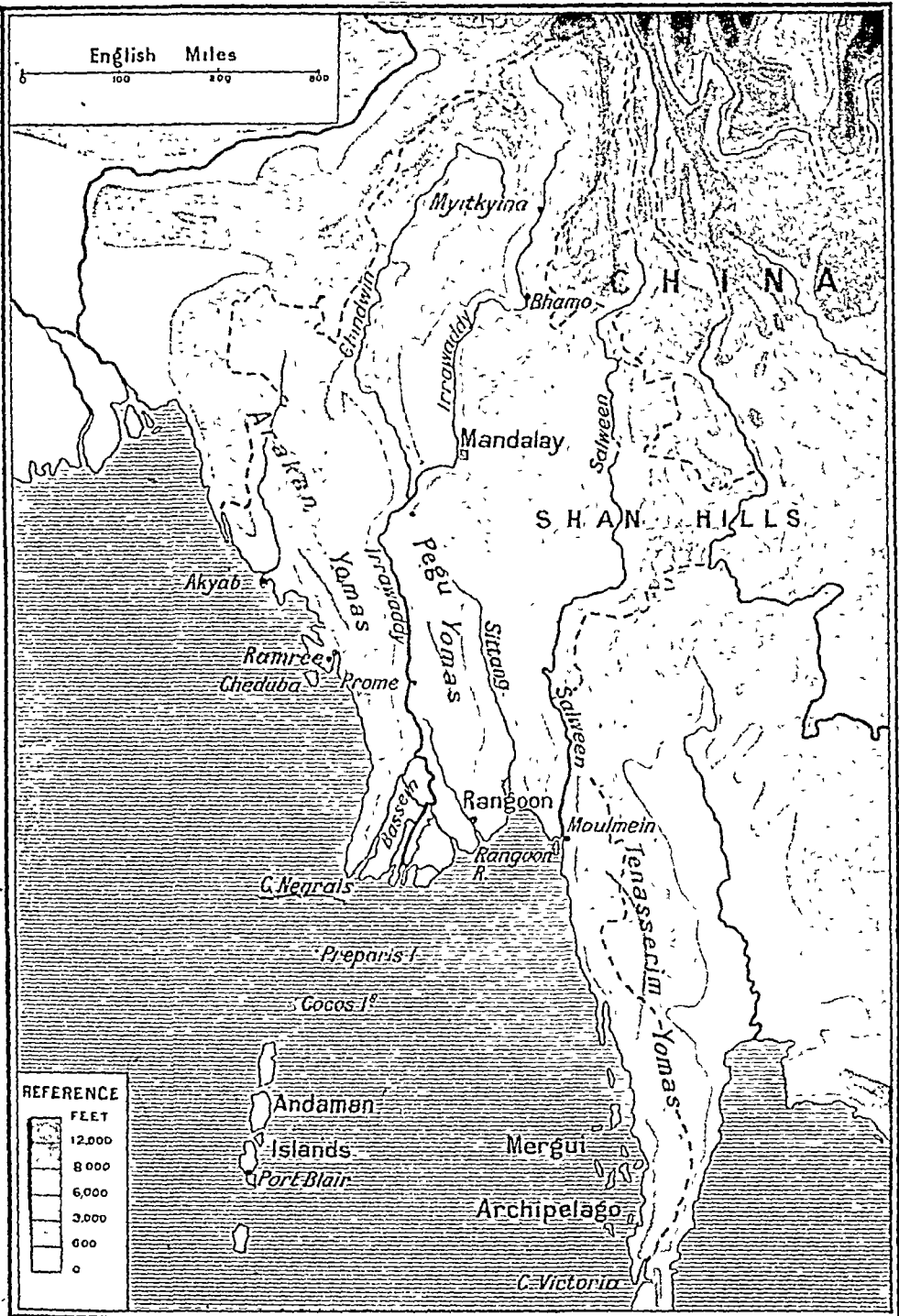
The three ranges or ridges are the three Yomas (a word which in Burmese means a bone), and these ridges, or backbones, form the skeleton of Burma.

1. In the west the Arakan Yomas come right down from the Patkai mountains to Cape Negrais. This range, like the Western Ghats in India, cuts off a narrow coast strip.

2. The whole of Eastern Burma is filled up with mountains running north and south. We call these the Shan Hills, but where these hills in the south run along the coast in a single range they are called the Tenasserim Yomas: these Yomas, just like the Arakans, also cut off a narrow coast strip.

3. Between these two big ranges there is a shorter and a much lower range called the Pegu Yomas.

The three rivers are the Irrawaddy, the Sitang, and the Salween. Of these the Irrawaddy is by far the most important. Along with its feeder, the Chindwin, it drains, as we can see, nearly the whole of Burma. The Salween is a much longer river than the Irrawaddy: it rises in Tibet and flows along the eastern boundary of Burma. But if we look at the map we see its course is among mountains, so that its valley is very narrow and has no room for large feeders. Besides, as it flows among mountains, we can guess it has a very rocky bed so that it is of very little use for boats and of no use for steamers. On the whole, therefore, it is not nearly so useful to Burma



Bartholomew's Edn.

BURMA. PHYSICAL FEATURES.

as the Irrawaddy.) Another river, (the Sitang, flows into the sea between the Irrawaddy and the Salween. It is much shorter than they are, and is not of much use for boats as it is **blocked up with sand-banks** for most of the year. It has however a flat valley, and therefore this valley, as the map shows, has been used as the route for the main railway inland into the heart of the country. For these reasons the Irrawaddy is the chief waterway of Burma.)

§ II.—**Rainfall.** (Burma receives a great deal of rain. The south-west monsoon strikes the long line of the Arakan and Tenasserim coast strips and the delta of the Irrawaddy, and here, therefore, the rainfall is very heavy—in some places as much as 200 inches. The mountains which fill up most of the interior of the country also receive much rain, though not, of course, so much as the coast strips. Only in a small part of Burma is the rainfall scanty. Round Mandalay, where the Arakan Yomas keep off the full strength of the monsoon, very little rain falls. These mountains are very like the Western Ghats. They have a very wet coast strip on their western side and behind them a dry region for which they act as a rain screen.)

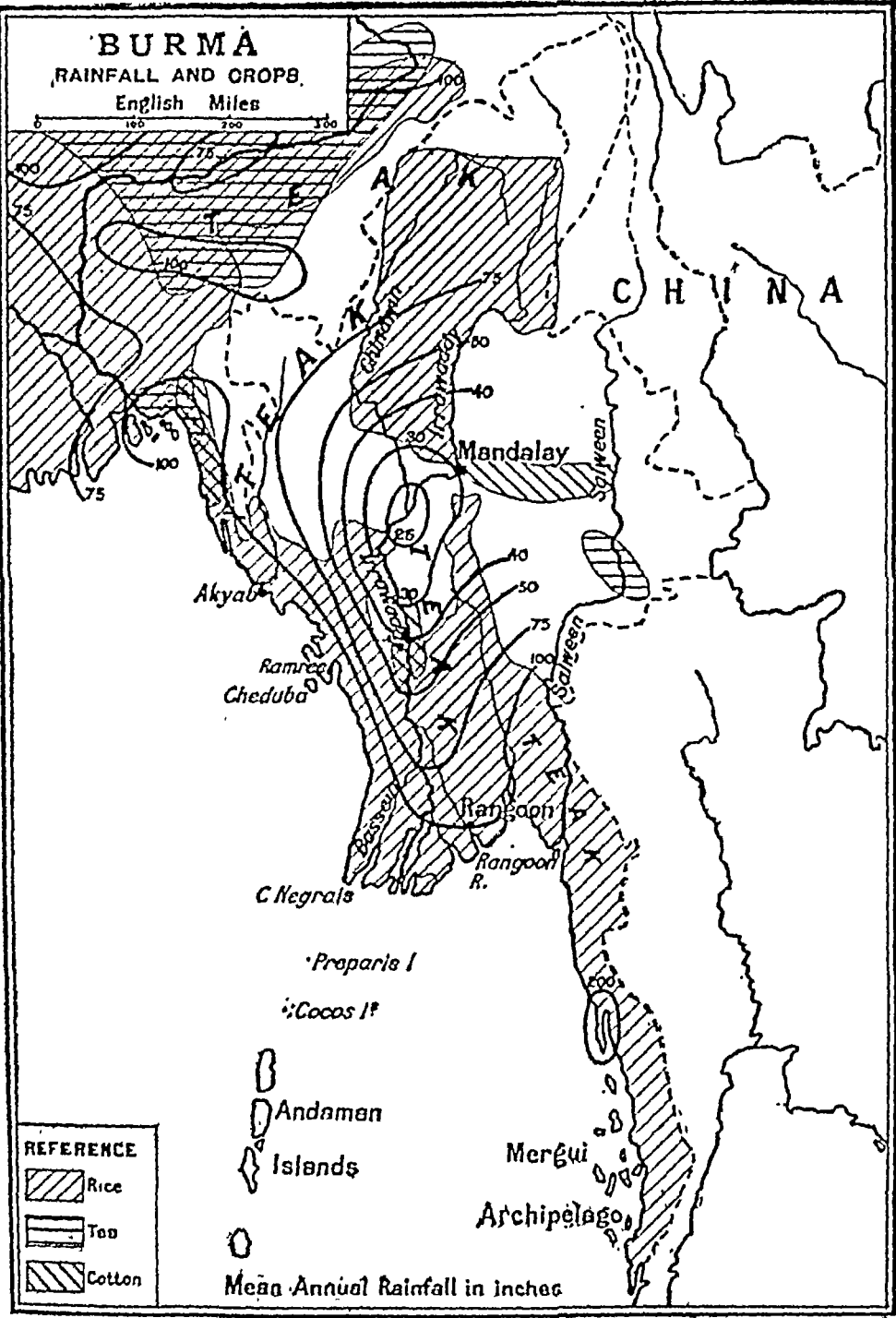
(From the heavy rainfall we can understand that the Irrawaddy is a large and deep river. The mud it has brought down and spread over its banks makes its valley very rich. In the same way its large flat delta, made up of soil brought down by the river, is also very fertile. We can also understand that the Irrawaddy is a great highway of trade.) Up as far as Mandalay the river is a quarter of a mile wide even in the dry weather. (Flat-bottomed steamers go up as far as Bhamo, 900 miles from the sea; smaller boats go up much farther. The Chindwin, its largest feeder, which enters it on the right bank, is used by steamers and boats for many miles. (The Irrawaddy has two main outlets to the sea—the Bassein River on the west, and the Rangoon River on the east.)

§ III.—**Crops.** (The heavy rainfall tells us that paddy is the chief crop of Burma. On the Arakan and Tenasserim coast strips and on the deltas of the Irrawaddy and Sitang, all of which face the south-west monsoon, there are miles and miles of the finest paddy land. Paddy is also grown on the lower Irrawaddy and Sitang valleys. On

BURMA

RAINFALL AND CROPS

English Miles



Mean Annual Rainfall in inches

Bartholomew, Edin'

BURMA. RAINFALL AND CROPS

the mountains the heavy rainfall suits the growth of trees, so that Burma is the greatest forest country in the Indian Empire. The chief tree is the teak, but the rubber-tree has lately been largely planted.)

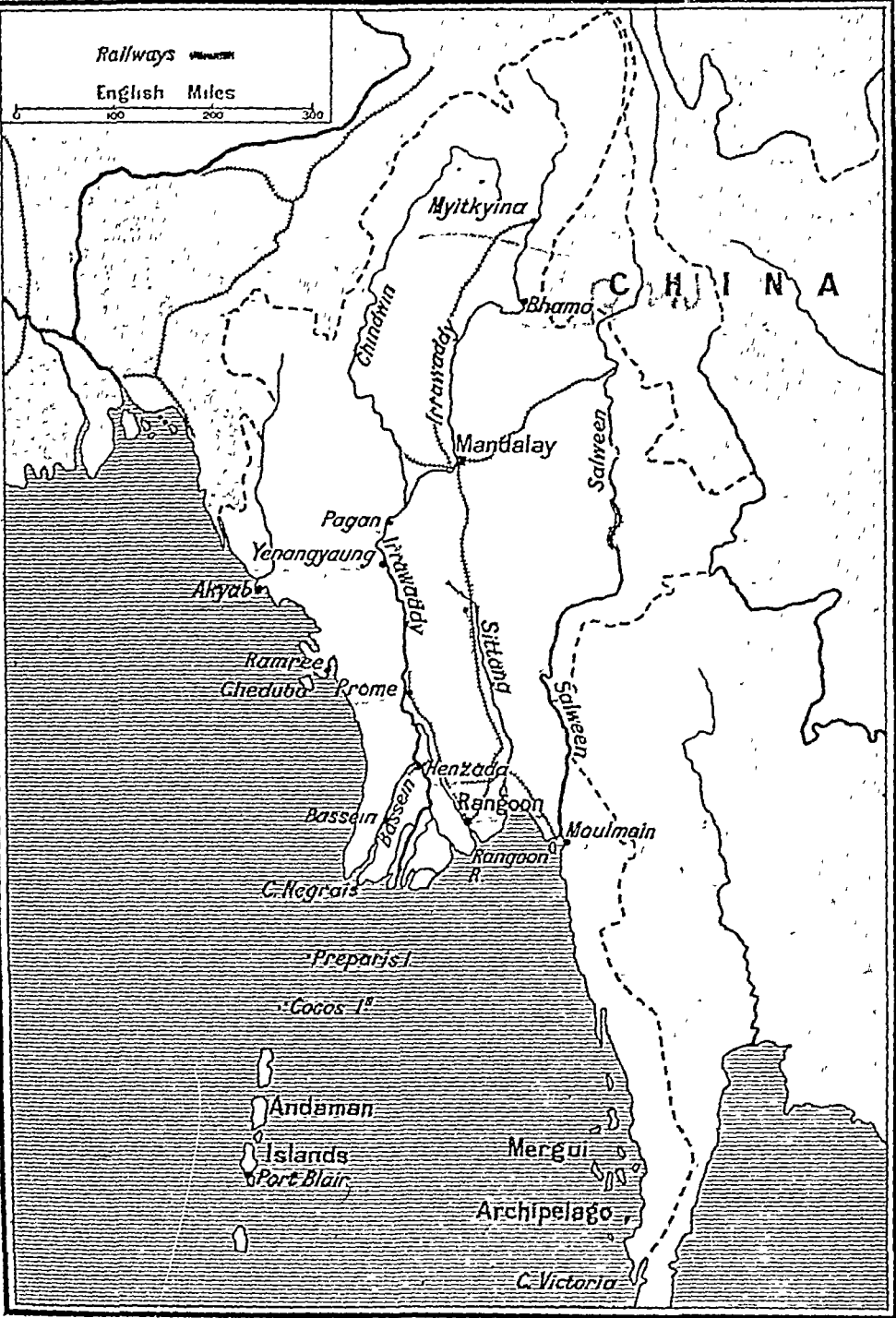
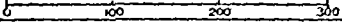
§ IV.—Inland Trade.—From the line of the mountain ranges we can see two things: (1) that Burma is cut off from India by mountains; (2) that it is very difficult to get across country from west to east. The line of the rivers and river-valleys shows us that most of the traffic will go, not east and west, but north and south, partly by river-boats and partly by railway up and down the valleys.)

(The Irrawaddy is the greatest highway of Burma. It is the sea outlet for the great crops of rice which are yearly brought down in boats, and of the teak) which is felled in the hill forests and floated down-stream in huge rafts. (Far up the Irrawaddy at Yenang-yaung are great wells of petroleum from which oil is pumped) this oil is brought in pipes to the river's banks and then taken down the river in steamers specially built to hold it. (The Irrawaddy is therefore the great waterway for the chief products of Burma, rice, teak, and oil) In the same way it takes foreign goods up-country—cotton goods, metals, such as iron, brass, copper, steel, and machinery (for Burma does not produce these herself), silk, of which the Burmese are very fond, and all kinds of provisions, for, as they have no caste; the Burmese use a great many kinds of foreign foods such as tinned milk and biscuits. The other rivers are not nearly so important as the Irrawaddy. The Sitang is much smaller and, for most of the year, it is of no use for navigation. The Salween, though longer than the Irrawaddy, flows down a narrow rocky valley among mountains and is therefore not used as a highway of traffic.)

§ V.—River-ports and Sea-ports.—Burma has) only become an important country since it came under British rule. In former days it was badly ruled by its kings, so that, although it is a fertile country, the population is very thin. Even yet it (is not thoroughly opened out by roads and railways.) We can easily understand (therefore) why (the towns of Burma have grown up at places where trade takes root most quickly, that is, either on the rivers or on the sea-coast. On the Irrawaddy there are many river-ports.) The following should be

Railways

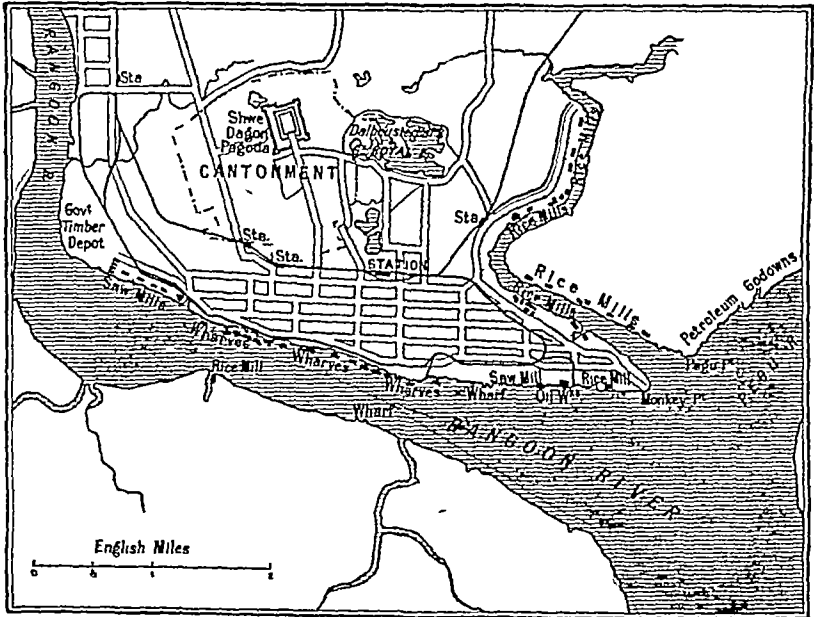
English Miles



BURMA. RAILWAYS AND TOWNS.

Bartholomew, Edin'

pointed out on the map, Myitkyina (pronounced Mitchina), Bhamo, Mandalay, Prome, and Henzada. Myitkyina is far up the river and is on the railway: beyond it is jungle and forest. Bhamo, lower down, is only twenty miles from the frontier of China, and, therefore, most of the trade between China and Burma passes through it. Henzada lies on the delta and is therefore a mart for the rice grown there.) (There are four important seaports.) (Moulmein at the mouth



RANGOON.

Note.—The regularity of the streets by the river shows that this part of the city is modern.

of the Salween is an important rice port, collecting the paddy that grows on the Tenasserim coast strip.) It is also a great teak port, for the Salween, though useless for the navigation of steamers, floats down to the sawmills of the town great (rafts of timber from the forest-covered mountains.) (Bassein, on the most westerly channel of the Irrawaddy delta, takes in big steamers and (is one of the chief ports for exporting the rice crop of Burma.) (Akyab, on the Kaludan River, exports the rice grown on the fertile Arakan coast strip.)

But by far (the most important seaport of Burma is Rangoon.) (By looking at its position on the map we can easily see the reasons for this.) (It lies on the Rangoon River which is one of the mouths of the Irrawaddy. Big steamers helped by the tide* can come up here; therefore Rangoon is the gateway for the foreign trade of Burma. Again, behind it lies the fertile delta and valley of the Irrawaddy. With this valley it is directly connected both by railway and by the splendid river.) (The railway runs right inland nearly up to the northern boundary, and, on the river, flat-bottomed steamers can go for over 900 miles. In this way Rangoon is the outlet both by rail and river for the produce of the great delta and valley of the Irrawaddy. It is the greatest rice-shipping port in the world. Here almost all the foreign and inland trade of Burma meet.) Rangoon has a great advantage in its position over other seaports such as Akyab and Moulmein. These ports are shut off from the interior by ranges of mountains, but Rangoon has behind it an open valley and a river highway.) (Besides being a large seaport, Rangoon is also a manufacturing city. The rice brought down the river is cleaned for export in large mills, the teak is sawn into timber in sawmills, and the mineral oil from up-country is refined into kerosene and made into candles.)

(Mandalay) is another large town. It (was the capital of King Thebaw, the last ruler of Upper Burma) and contains his palace and many Buddhist pagodas. It lies at the broadest part of the Irrawaddy valley and just where other valleys join it. Mandalay is therefore well placed for catching the inland trade of Upper Burma, and, as the map shows, is the centre of railways which run up these valleys.

§ VI.—A Voyage up the Irrawaddy.—We can get a good idea

* Unfortunately there is very little tide on the coasts of India and Burma. Tides are always highest where the shore is shallow and where there are straits or narrow arms of the sea to coop up the current of the tide and make it deep. The coasts of India and Burma are but little broken and face the open ocean, so that, as a rule, there is scarcely any tide. In narrow openings, however, such as the Hooghly and Rangoon Rivers, there are daily tides, ten or twelve feet deep, by the help of which large vessels go up and down the river. These tides are of course of the greatest use to the sea-trade of Calcutta and Rangoon, for without their help large vessels could not reach their harbours.

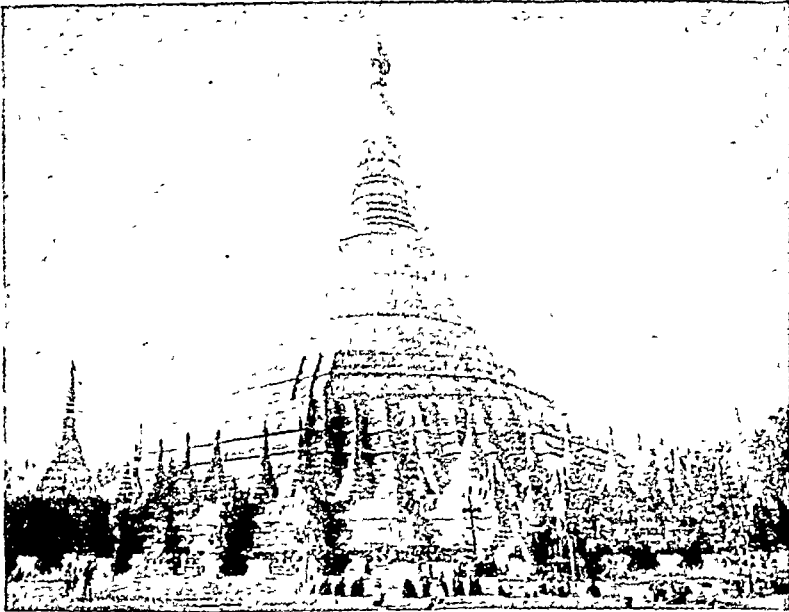
of Burma by sailing up the Irrawaddy in one of the flat-bottomed steamers. We start from Rangoon, which is one of the busiest ports of Asia. There are steamers lying in the river which have come from all parts of the world, bringing cotton goods, machinery, and things made of iron from England, silk and silk goods and matches from Japan, and gunny-bags from Calcutta jute mills. Other steamers are waiting for cargoes of rice, of sawn teak, and of petroleum oil. Rangoon lies on a branch of the Irrawaddy, and we have first to go down this river before we reach the main stream up which we are to



RIVER-SIDE VILLAGE IN BURMA.

make our voyage. Soon the busy harbour is left behind, and we lose sight of the glittering golden Shwe-Dagon pagoda, on a hill behind the city, which is a landmark for miles. Presently we are passing through the flat rice-lands of the delta, dotted with villages on its low banks. At every landing-place, in the harvest season, we see boats piled with paddy, ready to sail for Rangoon, where their cargoes will be cleaned in the rice-mills. When we pass the delta the splendid valley of the great river opens before us with the low hills of the Pegu Yomas on our right hand, and the distant Arakans on our left. Every now and then we meet great rafts of teak logs floating slowly down

the stream, and steamers full of oil coming from the oil-wells far up the river. In the villages at which we stop or which we pass on the voyage, we see many monasteries and pagodas, for the Burmese are Buddhists, and it is a pious act to build such holy places. Everywhere in Burma these pagodas are seen glittering white in the sunshine, and every now and then we hear the sound of the monastery bells. Everywhere, too, we see the yellow robes of the shaven monks who are the teachers of the people. As all boys are expected to attend



THE GREAT SHWE-DAGON PAGODA AT RANGOON.

a monastery school for some years the Burmese are better educated than the people of India. After reaching Prome we have passed through the paddy-growing country, and very few paddy boats are seen. A voyage of two or three days brings us to the old city of Pagan, with its hundreds of pagodas reflected in the clear waters of the river. The city is now empty, but hundreds of years ago it was full of busy life. Farther up we pass the mouth of the Chindwin, the great feeder of the Irrawaddy, where thousands of teak logs are seen lying waiting for the floods to take them down the river. At last we reach Mandalay, the capital of Upper Burma, where can be

seen Thebaw the former king's palace and gardens in the middle of a great square fort. Here, too, of course, are many pagodas and monasteries. Mandalay is nowadays becoming a large modern town with fine streets and tramways. Here we can take train and return to Rangoon by rail, or go across country nearly into China. The Irrawaddy at Mandalay is still large enough to float steamers, and we can continue our river journey right up to Bhamo. The country through which we pass soon becomes mountainous, and we come in sight of the high ranges which the map shows running down the north of Burma. Soon, too, we meet many people, who, as we can see by their looks and dress, are not true Burmans. When we reach Bhamo, a town close to the Chinese frontier, we see many Chinese who have come from their country and settled here as shopkeepers. The town is the meeting-place of traders from the hilly country round about.

CHAPTER XII.

§ I.—Coasts and Islands of Burma.—A good map shows us that the coast of Burma is much more broken both by inlets and islands than the coasts of India. There is no province in the Indian Empire where there are more natural waterways for inland navigation : in consequence the Burmese are famous boatmen and boatbuilders. Every house near a river has a boat or a canoe, and every child can swim. We have seen that the Irrawaddy is a splendid waterway right into the heart of the country. (Its tributaries, especially the Chindwin, are also used by flat-bottomed steamers; so also are the many channels which run through its delta and connect the sea with the main river. In the rainy season small steamers go up the Sitang. The Kaludan River on which Akyab stands is navigable) for ninety miles by steamers in the rainy season. There are many small rivers which can be used by steamers for shorter distances in the rains, as well as many creeks and backwaters all along the coast. (The great disadvantage of Burma, however, is that the interior is cut off from the sea by the Arakan and Tenasserim Yomas running near the coast. Most of the rivers are therefore short and boats cannot go far up-country by them. The Irrawaddy is the only natural gateway into the heart of Burma.)

(There are also many islands off the Burmese coast) Stretching from Cape Negrais right down to near Achin Head in Sumatra is a line of islands. (These) as the map shows, (are divided into four groups, the Preparis, Cocos, Andamans, and Nicobars. The last two are the largest and most important. Port Blair on one of the Andaman Islands is the place to which convicts are sent from India. Off the Arakan coast are the islands of Ramree and Cheduba; off the Tenasserim coast is the group of islands called the Mergui Archipelago. The islands off the coast of Burma are not coral islands like the Laccadives and Maldives) they are supposed to be the tops of mountains under the sea connecting the Arakan Yomas with Sumatra. They are thinly peopled and are not of much importance.

CHAPTER XIII.

§ I.—^vThe Political Geography of the Indian Empire.— Every country is divided up into parts in order that it may be more easily governed. By the **political geography** of the Indian Empire we mean the different parts into which it is divided. These divisions have not of course been made by chance. We can best understand them by studying the **history** of India which tells us that at different times different parts came under the rule of the East India Company and afterwards under the Government of India which rules the Indian Empire in the name of the King-Emperor. Some parts of India came under British rule by purchase or gift and some by conquest, so that now (the whole of India and Burma form one Empire under the Government of India.) But while the Government of India is responsible for the safety and peace of the whole of this Empire, (certain parts of it called Native States are governed by their own princes and chiefs and have their own law-courts and their own laws. But these princes and chiefs have not full powers, for example, they cannot make war or peace, and they cannot correspond with foreign nations, so they are not fully independent.)

On a political map of India we see certain parts, usually coloured red or pink, which make up British India, and other parts, usually coloured yellow, which make up the Native States.

§ II.—The Provinces of India.—On the map we see that nearly the whole of the region of plains is a part of British India, and is taken up with five large provinces, Assam, Bengal, Bihar and Orissa, the United Provinces of Agra and Oudh, and the Punjab. Most, but not all, of this large, fertile, and very thickly peopled country was acquired by the East India Company in war. (After the battle of Buxar in 1764 the Company obtained possession of nearly all the plain country from the Surma to Benares. After this more

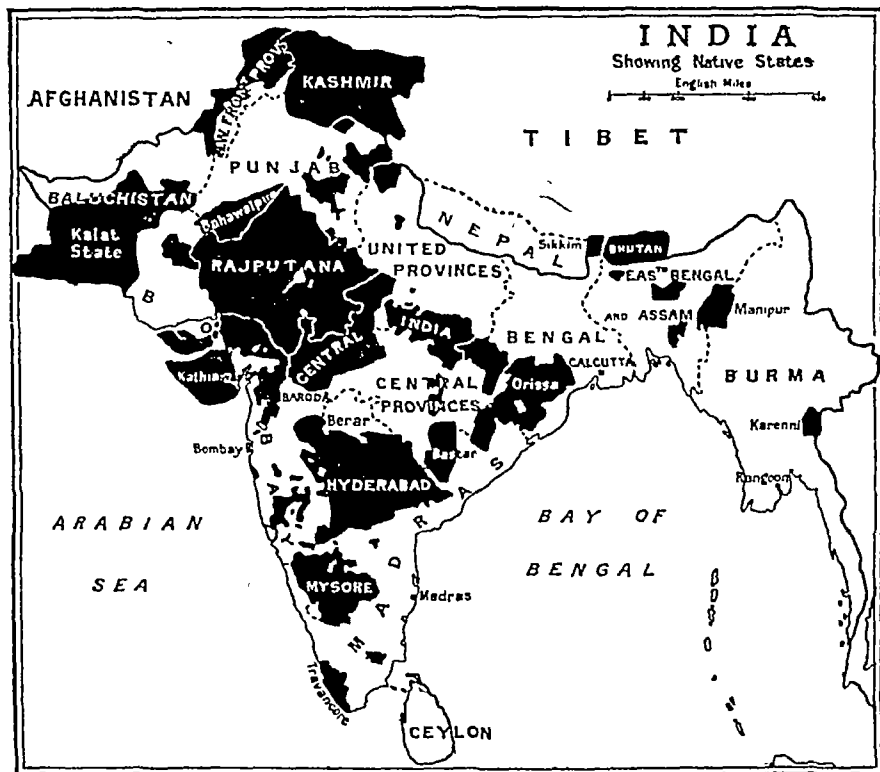
land was got from the Nawab of Oudh and from Sindhia of Gwalior, which extended the Company's rule up the valley beyond the Jumna. In 1803 the Raja of Nagpur ceded the country of Orissa, including the Mahanadi delta. In 1816, after the Nepal war, some hill districts in the Himalayas were added. After the first Burmese war (1824) the upper Brahmaputra valley was taken in, and in 1856 Lord Dalhousie deposed the king of Oudh and annexed his territory. In 1849 after the two Sikh wars the Punjab was annexed. Thus in 1856 the whole of the plain country from the Surma and Mahanadi to the Sulaimans was part of British India. This great tract has been differently divided at different times. At present it makes up the five large provinces already mentioned—Assam, Bengal, Bihar and Orissa, the United Provinces, and the Punjab, which together include the most fertile and most important part of India. The boundaries of these provinces can be best studied and remembered from the map.

If we draw a slanting line from the Chilka Lake up the Kistna and Tungabhadra to the opposite coast and then cut out the Travancore and Mysore Native States, we have the large province called the Madras Presidency. This province, as we can see, includes a large part of both the east and west coast strips and a small part of the Deccan table-land. In 1639 the Company received a small bit of land on which they built Fort St. George in Madras, and in the wars with Tippu Sultan and by gifts from the Nawab of the Carnatic, the Nizam, and the Raja of Tanjore they increased their territory till, in 1801, the Madras Presidency stood very nearly as it stands to-day.

The Bombay Presidency takes up nearly the whole of the west coast of India, a part of the Deccan table-land east of the Western Ghats, and Sind which is in the plain region. The first two places acquired by the East India Company were Surat and Bombay island, the latter being given by Charles II. who had received it as a dowry with his Portuguese wife. The three Mahratta wars added more territory along both sides of the Western Ghats, and in 1843 the province of Sind was annexed by Sir Charles Napier.

Just north of the Godavari there is a large tract of British territory called the Central Provinces, the whole of which lies in the

table-land region. Part of this province was taken from Sindhia and the Bonsla Raja of Nagpur after the Pindari war of 1818, and the rest "lapsed" after the death of Raghuji Bonsla in 1853. In 1902 the Nizam of Hyderabad leased Berar for twenty-five lakhs a year to the Indian Government and it is now attached to the Central Provinces.)



THE NATIVE STATES OF INDIA.

(The small province of Coorg, in the Western Ghats, was, by the wish of its people, brought under British rule in 1834.)

§ III.—The Native States.—(In India there are about 650 native states—most of them small but a few large and important.)

Hyderabad, or the Nizam's dominions, is a large state lying in the centre of the Deccan table-land. After the death of Aurangzeb

in 1707 there was no strong hand at Delhi to keep the Moghal Empire from breaking up, and the Subadar or Governor of the Deccan became independent and his successors have remained so by treaties with the British.)

(Mysore is another large state lying in the southernmost and highest part of the Deccan table-land between the Eastern and Western Ghats. From about 1760 to 1799 it was ruled by a Moham-medan, Hyder Ali, who gained the throne by force, and by his son



UDAIPUR.

Tippu Sultan. On the fall of Seringapatam, where Tippu was killed in 1799, the Government of India gave back the country to the former ruling family. Owing to the bad government of the Maharajah) the administration of the state was taken over by the Indian Govern- ment in 1831, but given back again in 1881 to an adopted son of the former Maharajah.)

Rajputana is the name given to a group of twenty native states the rulers of seventeen of which are Rajputs. This country lying on both sides of the Aravalli Hills is, as we saw, the land into which the Rajputs fled for refuge when the Afghans invaded the Gangetic

valley. It was never really conquered by the Moghals. After the Mahratta wars the chiefs gladly came under the protection of the British. Udaipur, Jodhpur, and Jaipur, are three of the largest states.)

(Central India is the name of another group of states lying on the Central India table-land.) This country had been over-run both by the Mahrattas and the Afghans, but, after the third Mahratta war, the British allowed every chief, who claimed the right, to remain the ruler of his state under their protection. (Central India contains 143 states, the chief of which are Gwalior, Indore, Bhopal, Panna, and Rewa.)

In three other parts of India there are native states, the names of which should be remembered. (In Gujarat, *i.e.* in the fertile coast country north of Bombay, is the important state of Baroda, ruled by its enlightened Gaekwar. On the fertile west coast strip lies Travancore, and in the Kathiawar and Cutch Peninsulas there are many small states. In the Indus valley are two large states, Bahawalpur and Khairpur, and in the Central Provinces is Bastar.)

§ IV.—Frontier India.—Outside of India proper, but forming a part of the Indian Empire, there are one or two divisions) which we should notice. Some of them are British territory and some are not. It is so important that India should be safe from enemies on her borders that the Government of India have made arrangements to protect her on the outside. Thus (in the north-west where danger is most to be feared treaties have been made with the chiefs of Baluchistan by which they have come under the protection of the British Government and have also given up some of their country) touching Afghanistan) Thus some parts of Baluchistan are coloured yellow as the mark of a country protected by the Indian Government, and some parts are coloured red to show that they belong to India. In the red part (the map shows) (the strong fortress of Quetta guarding the Bolan Pass and the railway leading up to it from India) By this arrangement the Indian army can meet an enemy invading India on the outside slopes of the mountains looking down into Afghanistan instead of on the inside slope of these mountains looking into India. It is much easier to stop an enemy from coming into a country when he is going up a hill than when he is coming down.

In the same way (the Government of India in 1901 made a new province farther north which can be seen on new maps. This is called the **North-West Frontier Province**.) In this province, which is really outside of India proper but forms a part of British India, the brave and warlike **Pathans** are being trained by British officers to defend their mountains and guard the passes that lead into India.)

(Still farther north there is a large country, **Kashmir**, which also forms part of the frontier of India) but it does not touch any country from which India has anything to fear. (Kashmir is full of mountains and is a native state) just like any other (under the protection of the Government of India.)

(In the north of India among the Himalayas there are two very mountainous states, **Nepal** and **Bhutan**. These are, in name, independent,) and so, perhaps, we should not include them in the Empire of India. (But they are really under the protection of the Government of India, who would not allow any enemy to enter them.)

§ V.—**Burma**.—(Burma) does not of course form part of the geography of India, but politically it is a part of the Empire of India and is under the Government of India. By the three **Burmese wars** (in 1824, 1852, and 1886) the country was, bit by bit, brought under the rule of the Government of India and forms part of the Indian Empire.)

§ VI.—**Foreign Possessions in India**.—Two European nations, (the **French** and the **Portuguese**, hold small portions of land in India. The chief settlement of the **French** is **Pondicherry** on the Madras coast, and the chief settlement of the **Portuguese** is **Goa** on the Bombay coast.)

By treaties with France and Portugal the British have arranged that these places shall not be used as garrisons for soldiers by which the peace of India may be disturbed. (The French and Portuguese agree to keep only a few soldiers and policemen in their possessions in India.)

CHAPTER XIV.

§ I.—The Peoples, Religions, and Languages of the Indian Empire.—The Peoples.—Long long ago, before history began to be written, India was inhabited by tribes who were rather short with very dark skins, hair, and eyes, and broad noses. These were the Dravidians. Learned men who have studied the matter say that (the Dravidians did not come from another country but were the first inhabitants of India. In the south they were highly civilised.) The old books and songs written in the Tamil language tell us (they had regular laws and wise kings and rajahs.) Then, many centuries ago, India was invaded from the north-west by a branch of the great Aryan race who were tall and light-skinned, with fine straight noses. These invaders did not come at one particular time but in separate bodies, one after the other, like waves of the sea. Now, by looking at the map, we shall see how the shape of the country helped or hindered these invaders. After coming through the passes in the north-west, e.g. the Khyber Pass, they would have no difficulty in passing down the great flat plain region of India, and they would naturally settle in the richest parts of the country first. Learned men have tried to answer the question whether these Aryans killed the Dravidians they found in the country, or married with them or made slaves of them. We cannot be sure, but we know that (if the Aryan conquerors did not bring their wives and families with them they must have married with the Dravidians into whose country they came.) The Rajputs are descendants of Aryans who brought their wives with them into India, and they are, therefore, of pure Aryan blood.) (But the Himalaya mountains in the north and the Vindhya in the south prevented the Aryans from leaving the plain region in great masses. Some small bodies did go south into the Deccan and peninsula as conquerors, traders, priests, or exiles, so that, south of the Vindhya, we find a mixture of Aryan blood among the Dravidians,

and many Brahmins in the south of India are nearly pure Aryans. But, on the whole, India south of the Vindhyas is inhabited by Dravidians.)

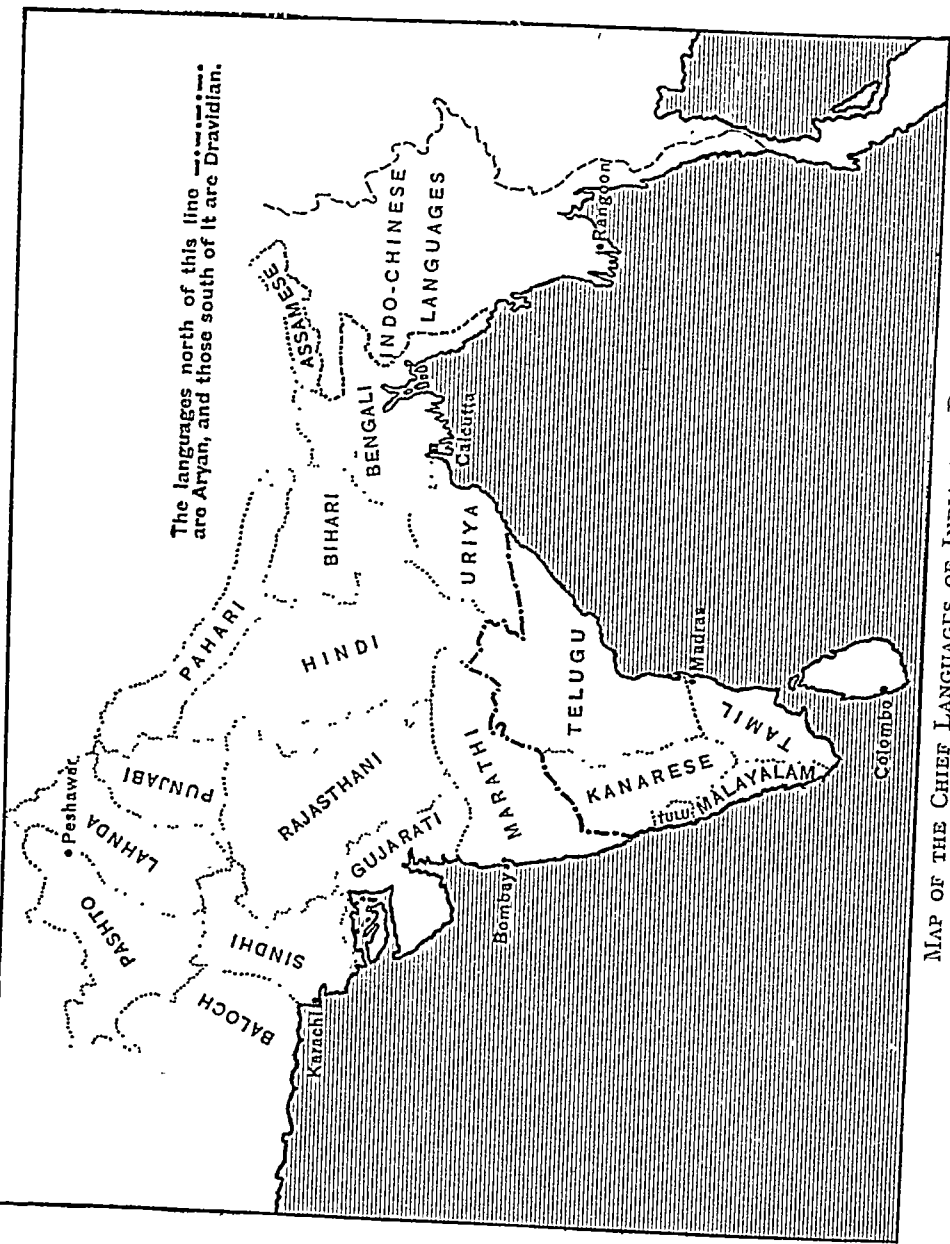
(On the north and east India touches the great Mongolian region of the world (Tibet and China). (The Mongolians are short, with dark yellow skins and flat faces, and their eyelids are often slanted. The people of Nepal, Assam, and Burma are nearly pure Mongolians. Farther inland, in Eastern Bengal and Orissa, we have a mixture of Mongolian and Dravidian blood.)

§ II.—Religions.—As the Aryans conquered and intermarried with the Dravidians so they gradually converted them to their religion. The Dravidians were Animists—that is, they believed that we are surrounded by spirits dwelling in the rivers, rocks, and waterfalls, and that these spirits must be made friendly by magical ceremonies. Now when the Aryans brought their higher and purer religion among these people, it was certain that they would not altogether give up their old beliefs.) The Aryan ceremonies might be performed, but the people would still believe in the spirits. Therefore, just as the mass of the people of India is of mixed race, so (their religion is the mixed religion which we call Hinduism.) Every one in India who observes caste customs and ceremonies and reverences the Brahmins is a Hindu, but his religious beliefs may be anything. He may be highly educated and believe in one God, or he may be ignorant and think there are spirits or devils in every bush and river and rock. But (there are still many tribes in India living by themselves in the mountains who have not yet become Hindus. They have no caste and their religion is to perform magic to keep off evil spirits, e.g. the Khonds in the Deccan and the Todas in the Nilgiri Hills.)

The Mohammedans.—Many hundreds of years after the Aryans came, new hosts of conquerors entered India from the north-west in invasion after invasion. These were the Mohammedans, and they brought with them the religion of their prophet Mohammed. Their descendants and the descendants of the people they converted to their faith are the Mohammedans or Mussulmans of India.

(Buddhism is the religion which, as we read in the history of India, was founded some 2400 years ago by Gautama.) Though this religion

The languages north of this line are Aryan, and those south of it are Dravidian.



MAP OF THE CHIEF LANGUAGES OF INDIA AND BURMA.

has spread over a great part of Eastern Asia, it has nearly disappeared in India itself. (The people of Burma are, however, nearly all Buddhists.) Hinduism and Mohammedanism are the two chief religions of India : Buddhism is the chief religion of Burma. (There are, besides, a few Sikhs, Christians, and Parsis.)

§ III.—Languages.—Just as we see there are three great races who make up the peoples of the Indian Empire, so there are three great families of languages. (1) (The Dravidian languages, spoken in the peninsula, of which Tamil, Telugu, Kanarese, and Malayalam are the chief. (2) The Aryan languages, derived from the Prakrit or spoken tongue of the Aryan invaders, which are now spoken over the rest of India. (The chief of these are Hindi, Bengali, Uriya, Gujarati, Punjabi, and Marathi. (3) The Indo-Chinese languages are spoken in the hill country east of the Ganges plain and throughout Burma—Burmese is the most important of them.)

CHAPTER XV.

§ I.—How the Peoples of the Indian Empire earn their bread.—As we have seen, by far (the largest part of the people of India live by agriculture, i.e. by tilling the ground, by pasturing cattle, and by working in the forests. We may say that every village in India depends on the soil, *i.e.* the villagers either till the ground themselves or make things which the workers in the fields require. Thus every hamlet has its carpenter, blacksmith, and potter. In this way it has been counted that nine people out of ten in the Indian Empire live by the land.) We have already seen what crops are grown and what parts of the country suit each kind of crop.

(But besides these crafts which have to do with agriculture, there are others which are found in almost every village. The chief of these are weaving of cotton cloth in handlooms, silk-weaving, handloom weaving of woollen goods, wood-carving, and metal working.) As every one in India wears cotton cloth, handloom weaving of this cloth has always been a very important business in India. Silk is spun and woven chiefly in Bengal where the silk-worm thrives, but wood-carving and metal working are carried on all over India and Burma. Every one has seen the beautiful sandal-wood boxes, toys made of bamboo, and the ivory and horn ornaments which are made in India, and the teak carvings of Burma. (Brass and copper vessels are also made in many places out of metal sheets brought from Great Britain. Madura and Benares are famous for this kind of work.)

§ II.—Besides these kinds of work which have been carried on in India for long ages there are other newer kinds which are carried on by machinery driven by steam. Of these, however, there are only two of great importance.

1. Cotton-mills.—By far the greatest manufacture of India is

the spinning of raw cotton into thread or yarn and the weaving of the yarn into cloth. (Almost all the cotton mills in India are in the Bombay Presidency, and most of these are in Bombay city.) We have seen that Bombay, being near the cotton growing districts, has a great advantage in this work. The mills of Bombay not only supply the people of India with yarn and cloth but also send them abroad. Unluckily Indian cotton is not so fine as American cotton, so that the finest cloth worn in India has to be brought from England where it is made out of cotton grown in America.

2. Jute-mills.—We have also seen how (the country round the delta of the Ganges is very well suited for growing the jute plant. Nearly all the jute mills of India are, therefore, in or near Calcutta) where the jute fibre is spun into coarse cloth and gunny-bags, a great quantity of which is sent abroad.

There are other kinds of work carried on by steam machinery but they are not nearly so important. (In the cotton growing districts there are machines for cleaning and pressing the raw cotton into bales; in paddy-growing districts (e.g. in Rangoon) there are mills for cleaning and husking the rice; in the Punjab, Sind, and the United Provinces, where wheat is largely grown, there are steam mills for grinding the corn into flour; in most large towns there are steam printing presses; and in places like Burma and the Malabar coast where timber is plentiful there are large steam saw-mills for cutting the trees into logs.

§ III.—Mines and Minerals.—(One reason why India and Burma are not great manufacturing countries is that there are few coal and iron mines in them. Coal.—The chief coal fields of India are at Raniganj in Bengal within 200 miles of Calcutta. The only place where iron is mined on a large scale in India is also at Raniganj, because owing to the nearness of the coal mines the iron can there be easily smelted.) In other parts of India where iron is found there is no coal near it to separate it from its ore.

Mineral-oil.—The great oil-fields (in the Irrawaddy valley in Burma yield 98 per cent. of the oil produced in the Indian Empire and the output is increasing.

Gold is mined chiefly at Kolar in the Mysore State. Manganese

(used in making steel) is found in large quantities in the Central Provinces and Mysore and in the northern parts of the Madras Presidency. It is the only metal exported in large quantities from India.

Salt.—This most valuable substance is dug up in the form of (rock salt in the Salt Range near the Indus.) It is also got from a lake and salt pits in Rajputana. Along the coasts (salt is made by evaporating the salt water of the sea.)

§ IV.—**Trade and Commerce.**—But (a great many people in India and Burma earn their living not by making things, either with their hands or by machines, but) by sending goods from one part of the country to another or from India to other parts of the world. We have seen where the chief rivers, railways, roads, canals, and sea-ports of India and Burma are, and we know that in those parts many people live by carrying or sending goods, *i.e.* (by Trade and Commerce. The trade which every country carries on is of two kinds—home trade or internal trade and foreign trade) or external trade. People do not exchange goods without thinking they will make some gain, and it is because people expect gain that they trade.

Now, if we remember what kind of countries (India and Burma) are, we can easily tell what kind of trade they will carry on with the rest of the world. They are agricultural countries and they have few mines and manufactures. Therefore they will send abroad the crops of their fields and forests and take in exchange the goods which other countries make easily but which are difficult to make in India.

Exports.—The chief crops of India are millets and pulses) but India sends very little of these abroad as they are required to feed her own people. But (large quantities of wheat, rice, oil-seeds, raw cotton, raw jute, opium, tea, indigo, and coffee are sent to different parts of the world.)

(Wheat goes from Karachi and Bombay to Great Britain where it is made into bread, the chief food of the people there.) (The rice is sent out, chiefly from Burma, to rice-eating countries such as China, Japan, East Africa) it is also sent to Europe to make starch. (Oil-seeds and copra,) the dried kernel of the cocoa-nut, are sent to

European countries. France takes large quantities to make into candles, soap, and sweet-meats.) (Raw cotton goes to Japan, where it is spun and woven into cloth, and also to Europe); (raw jute is sent to Europe and Great Britain) where it is woven into coarse canvas. The Chinese buy a large quantity of Indian opium every year, though it is said that the Chinese Government wish to stop this trade. It is a curious thing that English people are almost the only drinkers of tea among Europeans. The French, Germans, Austrians, and Italians, and the people of the United States, do not drink tea but coffee. The Russians are very fond of tea but get it from China. In this way (Great Britain, Canada, and Australia are the countries to which Indian tea is chiefly sent.) (Most of the coffee sent from India goes to Great Britain and to France) where the people are great coffee drinkers. Of the manufactured goods made in India and sent abroad we saw that cotton cloth and jute cloth were much the most important.)

Imports.—(By far the most important import into India and Burma is cotton goods which come from the Lancashire mills in England.) There are nearly thirty crores of people in the Indian Empire and they all wear cotton cloth. We can therefore understand why so much of this should be brought into it from abroad.*

Next in importance to cotton goods come a great number of (things manufactured out of iron and steel, metals which are but little mined or worked in India.) Thus India and Burma import bars, beams, bolts, rods, screws, nails, iron sheets and wire, also many kinds of machinery, engines, and railway materials, knives and tools of all kinds. (Almost all these iron and steel goods come from Great Britain.) (India also imports large quantities of silver;) all the silver used in India as money or ornaments has come from abroad at some time or other, (for there are no silver mines here.) It is a curious thing that (India does not grow enough sugar for her own use : she imports cane sugar from the islands of Java and Mauritius and beet sugar from Germany and Austria.) (The mineral-oil (kerosene) which is so largely used in India (comes from Russia and the United States) —countries with large oil-fields—but Burma is supplying more and

* Thus India imports large quantities of fine cotton cloth and sends abroad large quantities of coarser cotton cloth made chiefly in Bombay mills.

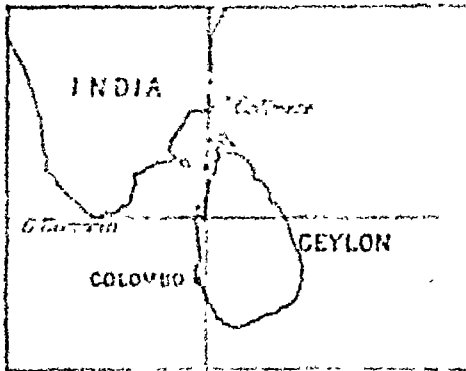
more every year.) The well-to-do people of India and Burma are very fond of wearing silk, which is supplied by Japan and China, France and Great Britain.) Horses come from Australia and Arabia; matches from Japan, Sweden, and Norway; enamelled iron-work from Austria; clocks and watches from Switzerland and France; and camphor from Japan.) The great mass of the people of India and Burma are poor and so cannot buy many foreign goods. Cotton cloth, kerosene oil, and matches, are almost the only foreign goods found in every house.

CHAPTER XVI

CEYLON.

§ I.—We now cross Palk's Strait to (the island of Ceylon,) which lies south-east of the peninsula of India. Its rocks, its soil, its plants, and animals are very like those of India, and therefore it is thought that long ages ago the island was part of the mainland.)

Position, Shape, and Build.—It is easy to fix in our minds the position of Ceylon on the map. A line drawn due south from Point

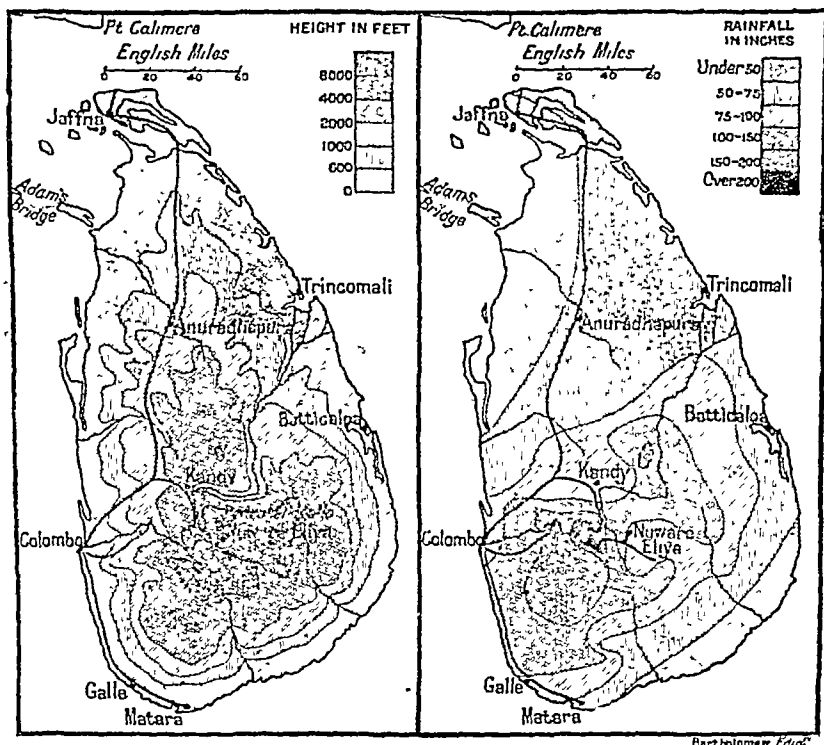


CEYLON. POSITION.

Calimere just touches its western coast, and another line drawn straight east from Cape Comorin cuts off about a third of it. In shape it is rather like a mango or a pear. A good physical map shows that its build is also easy to remember. Not quite in the centre of the island, but (a little to the south of the centre, we see a mass of mountains) rises up to a height of 6000 or 7000 feet. (From this mass as a centre the land slopes very gradually down to the sea on all sides, till all round the coast it is quite flat.) As the mass of mountains is a little south of the centre of the island we can see that the slope is steeper on the south and more gentle on the north. In the far north the land ends in a long flat peninsula and a few flat

islands off the coast. (The chief mountains in the centre are Mount Pedro and Adam's Peak.) Ceylon is thus a mango-shaped plain with high land near the middle.

§ II.—Coasts and Islands.—The map shows us that (the coasts are very like those of southern India, especially those of Malabar.



CEYLON. ELEVATION AND RAINFALL.

They are very little broken * by inlets and there is only one good wide opening, the Bay or Harbour of Trincomali, on the east. This bay has deep water and therefore large ships and steamers can lie in it in safety. But all the rest of the sea-coast is flat and sandy with very shallow water so that no ship can lie near the land. Just as in Malabar, there are many lagoons or backwaters separated from

* A good map shows many long narrow openings, but these are only shallow lagoons of no use for ships.

the sea by a bund of sand thrown-up by the ocean waves. These backwaters are in some places joined together by canals, so that boats can sail along them nearly all round the island. At Batticalloa on the east coast there is a large shallow lagoon thirty miles long; the peninsula and town of Jaffna in the far north are separated from the mainland by another large shallow backwater, and on the west coast almost all the towns and villages on the sea are joined by these lagoons and by canals.

§ III.—Climate and Rainfall.—After studying the climate of India it is easy to understand that of Ceylon. (In the first place, as the island is nearer the equator it will, on the whole, be hotter, and as the sun is nearly overhead all the year round it will not have a cool season. Again, being surrounded by the sea the island has a regular or equable climate which is never very hot—never so hot, for example, as places in India which are farther from the equator but which lie far inland. Once more, the island lies in the pathway of both monsoons—of the south-west blowing from June to September, and of the north-east blowing from October to February. Thus the mountains in the centre receive very heavy rain and feed the rivers that flow from them in all directions.) The rest of the island, being flat, receives less rain. (The wettest part is in the south-west corner which gets the full force of the south-west monsoon, and it is therefore the most fertile and the most thickly populated.) (The other parts have only a short wet season and the sun sucks up the moisture very quickly.) Thus the rivers which flow out in all directions from the central mountains are almost all dried up except in the rains and are of but little use even for navigation by boats. As they enter the sea on a flat shallow coast the ocean-currents block up their mouths with banks of sand. The longest river is the Mahaweli Ganga (great sandy river) flowing down the long slope to the north-east.

§ IV.—Crops.—From the climate we can understand what (the crops) are: on the whole they resemble those of southern India. (The soil of Ceylon is not fertile, and about three-quarters of the island is uncultivated, the most fertile part being) as we saw, (in the south-west corner; large tracts are covered with forest. (Ceylon largely depends

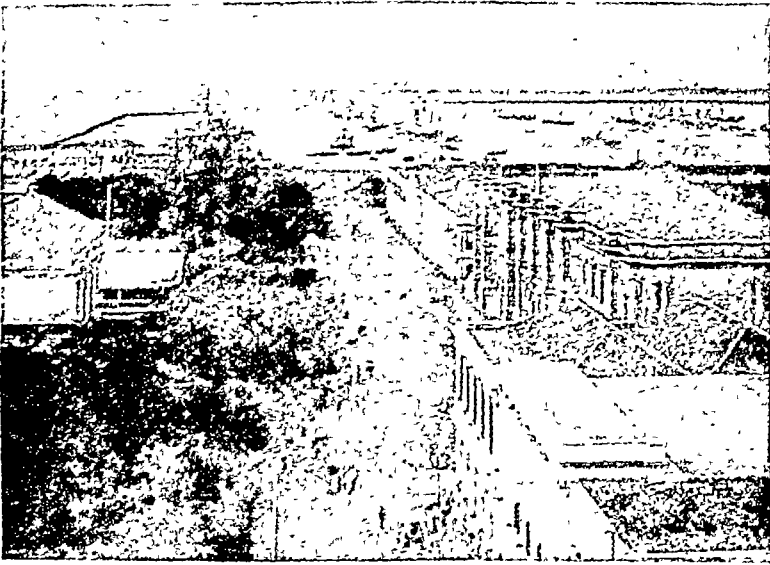
on three plants—cocoa-nut, paddy, and tea.) (The cocoa-nut tree loves sandy, salt soil, and therefore it is very largely grown along the flat sandy seashore) and on the banks of the backwaters and canals. Farther inland we find large stretches of (paddy-fields) (wherever water can be collected in tanks or drawn from rivers.) (The high hills are covered with plantations of tea) a shrub which grows best under a tropical sun on easily drained slopes of high ground where rain often falls. This is just what it gets on the rainy hills of Ceylon and therefore the island is a great producer of tea. (Ceylon has long been famous for spices such as ^{the} cinnamon (the bark of a tree), nutmegs, cloves, pepper, and cardamoms.) (The cacao tree) (from the fruit of which cocoa and chocolate are made) (also flourishes.) The large forests supply much timber, and the india-rubber tree has recently been widely planted.

§ V.—How the People Live.—(Ceylon has but few minerals and these are not largely mined. Plumbago, a kind of carbon used in making lead-pencils, is perhaps the most important.) We can therefore guess that (the people almost all get their living by agriculture, *i.e.* by tilling the soil, grazing cattle and goats, and working in the forests, or by fishing along the coasts. There are therefore, just as in India, many villages but very few towns.) All along the sandy shores and shallow backwaters the people are either fishermen, cultivators of the cocoa-nut tree from which they obtain coir and oil, or boatmen on the lagoons and canals. In the flat hot plains they grow rice or work in the forests, and on the hills thousands are employed in the numerous tea-gardens* which are managed by European overseers.

§ VI.—Population and Towns.—(As so little of the soil is cultivated, and as there are so many forests, the population is not so dense as in most parts of India.) As we saw, (it is thickest in the wet and more fertile south-west corner, and here the map shows a string of small towns and villages) joined by backwaters and canals, (and, for most of the way, by a railway, by means of which they

* For many years before 1880 the chief crop of Ceylon was coffee, not tea; but in that year the coffee plants were attacked with a leaf disease which soon destroyed them all and ruined the coffee-growers

carry on trade with each other and with the chief town Colombo.) Colombo is the only large town on the island. Here the Portuguese and, after them, the Dutch had a fort to protect their trade with the coast and up-country. But in those days Colombo was not so important as Galle on the south coast, which has a good though small and rocky harbour, suitable for large vessels. But in 1885 the large harbour of Colombo was completed by building huge walls or breakwaters, like arms, into the sea (and thus protecting a wide space of deep water for large modern steamers. In this way Colombo became the chief seaport of Ceylon and soon grew very rapidly in size and in

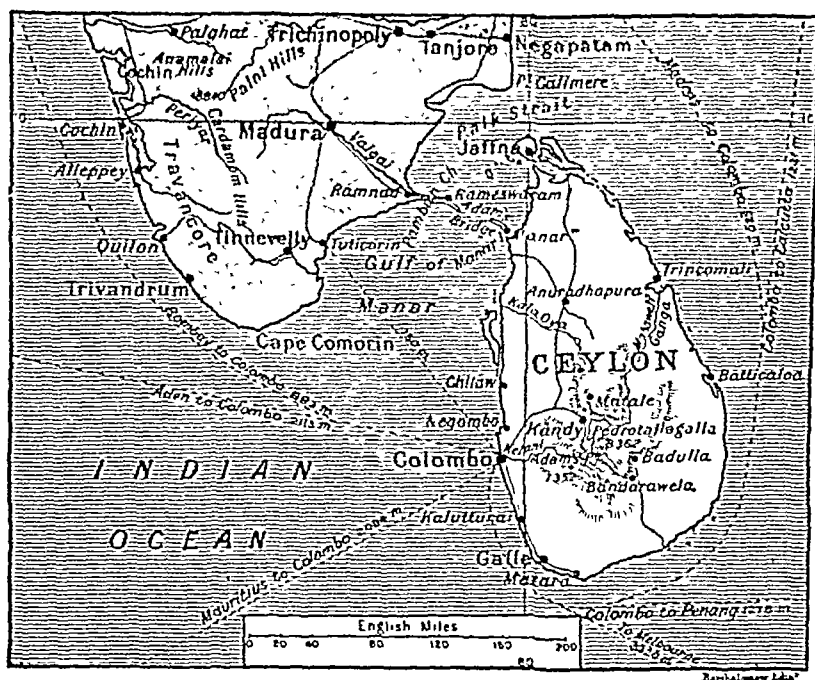


COLOMBO HARBOUR.

trade.) The map shows it is connected with the up-country parts by two railways, one of which goes right up the middle of the island to Jaffna. Another railway we see runs along the coast to the southernmost part of the island. In this way Colombo is the centre of the coast-trade in cocoa-nuts and of the up-country trade in tea. Most of the trade from foreign countries also passes through Colombo.)

But there is another reason why Colombo is such an important seaport. If we look at a map of the Eastern Hemisphere we see that Colombo lies very near the middle of it. It is thus the ocean meeting-place of four continents, Europe, Asia, Africa, and Australia,

and like a half-way house between East and West.) Now all steamships require coal and they cannot carry enough of it for long voyages. Therefore Colombo is very suitable as a coaling station for steamers taking long voyages, say from Europe to Australia or China or Japan, or from the Cape to Calcutta and the Far East. (In this way Colombo is a great meeting-place of steamers not trading with Ceylon but stopping there for coal.) This coal is brought in specially-built vessels



SAILING ROUTES TO AND FROM COLOMBO.

from England, and the bringing of this coal is one of the largest items in the trade of Colombo. (Trincomali, though it has a splendid deep natural harbour, is little more than a village because the country behind it is neither fertile nor easily reached, and therefore it has no trade.) It has been abandoned as a naval station. (Galle on the south coast has a small natural harbour. Its importance grew less after the harbour of Colombo was built.)

(Kandy, among the central mountains, was an old Sinhalese

capital and is still a place of Buddhist pilgrimage.) (Nuwara Eliya on the slopes of Mt. Pedro, is a cool hill-station)

(In the north centre of the island lies Anuradhapura, which is one of the wonders of Ceylon.) (Here there are many ruined Buddhist pagodas, monasteries, and bathing tanks) which tell us that long centuries ago it was a large flourishing city where civilisation had made great progress. (It is now quite deserted) and almost overgrown with jungle. } 25 $\frac{1}{2}$ 24

§ VII.—Trade.—The trade of Ceylon is easily understood if we keep in mind that it is an agricultural country. (It sends to other countries cocoanuts, coir and copra, spices and tea) which are best suited to its soil and climate. (In exchange it takes from other countries cotton cloth, metals and all kinds of iron goods) which they can make or produce more cheaply. But there are two special items which we should notice. As we saw, (a great deal of coal is brought from Great Britain to supply the steamers calling for it at Colombo harbour.) (Again, the soil not being very fertile the island does not grow enough rice for its people.) It is cheaper to grow tea on the mountain slopes and buy rice from abroad than to grow paddy. (Thus Ceylon takes a great deal of rice from India and Burma. Most of its trade is with Great Britain and India.)

§ VIII.—Peoples, Languages, and Religions.—(Most of the inhabitants of Ceylon are Sinhalese—people of Aryan blood speaking a language akin to Sanskrit.) They are supposed to have come from northern India many hundreds of years ago, and, as we read in history, (they were converted to Buddhism soon after Gautama's death.) Ceylon being close to India, a great many (Indian Tamils have come across at different times.) At first they came to help the Sinhalese kings and taught them how to make tanks like those in their own country. Afterwards they came as invaders into the northern part of the island where they settled. In modern times many thousands of them have come to work as coolies on the tea-estates and in making roads. (They are of course Dravidians in blood and Hindus in religion.)
(There are also many) (descendants of the Portuguese and Dutch)

who formerly had forts and factories on the sea-coast. (At the present day some thousands of Europeans, chiefly British, make their living by tea-planting and in Government service.) (Up-country there are a few Veddas who are thought to be the original people of the island. They are quite uncivilised and live by hunting, and, like hill tribes in India and Burma, (they are Animists) *i.e.* they believe in spirits and devils.

§ IX.—Government.—Ceylon is quite separate in government from the Indian Empire. It is ruled by a Governor and Council of its own in the name of the King of Great Britain. In order to make this work more easy the island is divided into nine provinces. Ceylon has belonged to Great Britain since 1802, when it was given by the Dutch in exchange for the island of Java.

APPENDIX.

How to Draw the Outline of India and Burma.

1. Take a sheet of paper rectangular in shape and place it before you so that the shorter edges are the east and west.

2. About a third of the length of the paper from the left-hand edge draw a straight line **AC** perpendicular to the top and bottom edges and nearly joining them.

3. Find the middle point of this line (**I**).

4. From **I** draw a line **IX**, eastwards, perpendicular to **AC** making **IX** equal to **IC**. Join **AX** and **CX**.

5. With centre **C** and radius **CX** draw a semicircle to the north of **IX**, and with centre **A** and radius **AI** draw another semicircle cutting the former one to the left of **AC** in **K**. Join **AK** and **KC**.

6. Produce **CX** to **S**, making **CS** equal to **CA**. Produce **AX** to **M** making **AM** equal to **AC**.

7. Produce **XI** to meet **KC** at **P**. Half-way between **I** and **P** mark a point **G**.

We thus get an irregular four-sided figure **AKCX**, with two straight lines **XS** and **XM** sticking out from the right-hand corner. This figure gives us the frame for an accurate map of India and Burma. Join **SM**.

A stands for the northernmost point of India in Kashmir, **K** for Karachi, **C** for Cape Comorin, **X** for Chittagong, **M** for Moulmein, **S** for the northernmost point of Burma where the Salween enters it, **I** for Indore, **P** for the end of the Kathiawar peninsula, and **G** for the head of the Gulf of Cambay.

The figure gives us all the boundaries :—

1. Landward.—(1) North-west boundary : guiding line **AK**. (2) North boundary : guiding line **AS**. (3) East boundary of Burma : guiding line **SM**.

2. Seaward.—(1) West coast of India : guiding line **KC**. (2) East

coast: guiding line **CX**. (3) West coast of Burma: guiding line **XM**. The line **XS** gives a rough guide to the frontier between India and Burma.

1. **North-west boundary: guiding line AK**. The guiding line **AK** gives us the general line of the Indus, and the valley of the Indus is the natural boundary of India proper: but beyond the Indus Baluchistan and the North-west Frontier Province have been added so that the actual boundary is now far west of that river. This boundary between India and Afghanistan must be studied from the map.

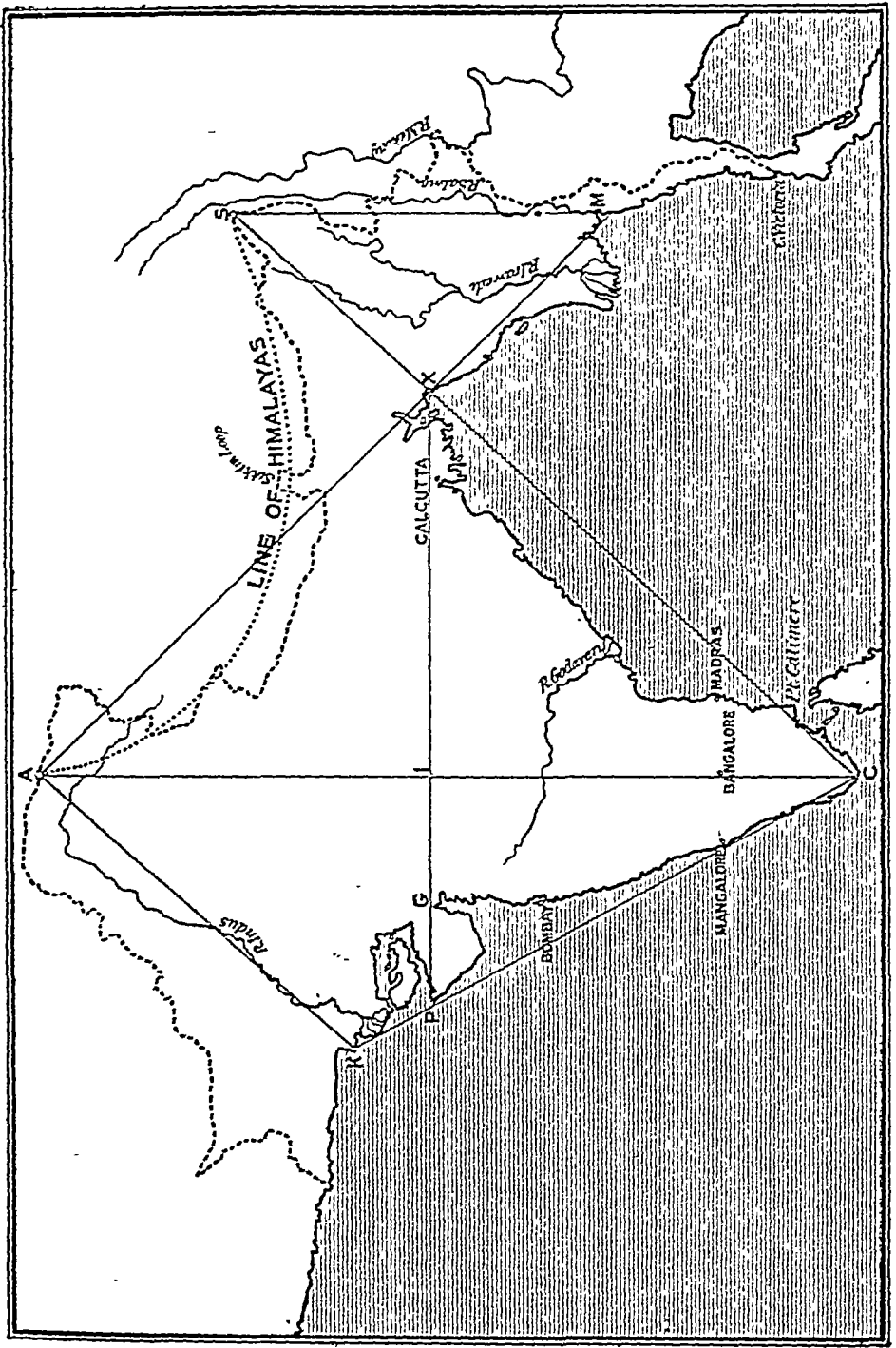
2. **The Northern boundary: guiding line AS**. India is bounded all along the north by the Himalaya mountains but the actual frontier line lies sometimes to the north and sometimes to the south of the great peaks. If we draw a downward curve from **A** to **S** we get the general line of the Himalayas, but, as the skeleton map shows, the boundary is at some places to the north and at most places to the south of this line.

3. **Eastern boundary of Burma: guiding line SM**. The guiding line is roughly the line of the Salween River. South of this the boundary passes along the tops of the hills which run down the middle of the Malay peninsula.

4. **The West Coast: guiding line KPC**. The secret of drawing this coast correctly is to fix a point on the guiding line two-thirds of the distance between **P** and **C**. This is Mangalore, and here the guiding line cuts the coast line. A semicircle dipping south joining **P** and **G** gives the north coast of the Gulf of Cambay. The outline of the Rann and the Gulf of Cutch, both east of the guiding line, must be remembered by the eye.

5. **The East Coast: guiding line CX**. The coast runs roughly along the guiding line to Point Calimere, and does not touch it again till it reaches **X**. The shape of the figure made by the guiding line and the coast line should be carefully studied and remembered by the eye.

6. **The West Coast of Burma: guiding line XM**. This coast is made up of two parts of nearly equal length, of which the lower (from the Gulf of Martaban), lies well east of the upper. The two parts are joined by the line of the Irrawaddy delta. **Cape Victoria**, the southernmost point of Burma, is nearly opposite **Point Calimere**, and the delta of the Irrawaddy is nearly opposite that of the Godavari.



HOW TO DRAW THE MAP OF INDIA AND BURMA.

AREA AND POPULATION OF THE INDIAN EMPIRE.

BRITISH TERRITORY.

British Territory.	Area in square miles.	Population in 1901.	Population in 1911.	Population per square mile in 1911.
Durma.....	230,839	10,490,624	12,115,217	52
Assam.....	53,015	5,841,878	6,713,635	127
Bengal.....	78,699	42,141,477	45,483,077	578
Bihar and Orissa —				
Bihar.....	42,361	23,360,212	23,752,969	561
Orissa.....	13,743	4,982,142	5,131,753	373
Chota Nagpur.....	27,077	4,900,429	5,605,362	207
Total Bihar and Orissa	83,181	33,242,783	34,490,084	415
United Provinces:—				
Agra.....	83,109	34,859,109	34,624,040	417
Oudh.....	24,158	12,833,168	12,558,004	520
Total United Provinces.	107,267	47,692,277	47,182,044	440
Ajmere-Merwara.....	2,711	476,912	501,395	185
Punjab.....	99,779	20,330,337	19,974,956	200
N.-W. Frontier Province ..	13,418	2,041,534	2,196,933	164
Baluchistan.....	54,228	382,106	414,412	8
Bombay:—				
Bombay.....	75,993	15,304,766	16,113,042	212
Sind.....	46,986	3,210,910	3,513,435	75
Aden.....	80	43,974	46,165	577
Total Bombay.	123,059	18,559,650	19,672,642	160
Central Provinces.....	82,057	9,217,436	10,859,146	132
Berar.....	17,766	2,754,016	3,057,162	172
Coorg.....	1,582	180,607	174,976	111
Madras.....	142,330	38,229,654	41,405,504	291
Andamans and Nicobars.....	3,143	24,649	26,459	8
Total British India.	1,093,074	231,605,940	244,267,542	223

Year.	Area	Population.*
1851	776,000	178 50
1861	856,000	196 00
1871	860,000	195 84
1881	875,186	198.86

Year.	Area.	Population.*
1891	064,993	221.17
1901	1,087,204	231.89
1911	1,093,074	244.26

* Population in millions and two decimals.

NATIVE AND FEUDATORY STATES.

State or Agency.	Area in square miles.	Population 1901.	Population 1911.	Population per square mile.
Hyderabad.....	82,698	11,141,142	13,374,676	162
Baroda.....	8,182	1,952,692	2,032,798	248
Mysore.....	29,475	5,539,399	5,806,193	197
Kashmir.....	84,832	2,905,578	3,158,126	37
Rajputana.....	128,987	9,853,366	10,530,432	82
Central India.....	77,367	8,497,805	9,356,980	121
Bombay States.....	63,864	6,908,559	7,411,675	116
Madras „.....	10,549	4,188,086	4,811,841	456
Cent. Prov. „.....	31,174	1,631,140	2,117,002	68
Bengal „.....	5,393	740,299	822,565	153
Bihar and Orissa States.....	28,648	3,314,474	3,945,209	138
United Prov. „.....	5,079	802,097	832,036	164
Punjab „.....	30,551	4,424,398	4,212,794	115
Baluchistan.....	80,470	428,640	420,291	5
Assam (Manipur).....	8,456	284,465	346,222	41
N.-W. Frontier Province (Agencies and Tribal Areas)	25,500	83,962	1,622,094	64
Sikkim State.....	2,818	59,014	87,920	31
Total States....	709,583	62,755,116	70,888,854	100
TOTAL INDIA....	1,802,657	294,361,056	315,156,396	175

Population in 1911 of the twenty-nine cities of India with over a lakh of inhabitants.

(A lakh is 100,000.)

Over ten lakhs.	Over a lakh and a half—continued.
Calcutta, including Howrah and suburbs 1,222,313	Cawnpore... 178,557
	Allahabad... 171,697
	Poona... 158,856
	Amritsar... 152,756
	Karachi 151,903
	Over a lakh.
	Mandalay... 138,299
	Jaipur... 137,098
	Patna... 136,153
	Madura... 134,130
	Bareilly... 129,462
	Srinagar... 126,344
	Trichinopoly... 123,512
	Meerut... 116,227
	Surat... 114,868
	Dacca... 108,551
	Nagpur... 101,475
	Jubbulpore... 100,651
Over five lakhs.	
Bombay... 979,445	
Madras... 518,660	
Hyderabad... 500,623	
Over two lakhs.	
Rangoon... 293,316	
Lucknow... 259,798	
Delhi... 232,837	
Lahore... 228,667	
Ahmadabad... 216,777	
Benares... 203,804	
Over a lakh and a half.	
Bangalore... 189,485	
Agra... 185,449	

QUESTIONS FOR FURTHER STUDY.

The following questions are meant for the use of teachers. They are not taken directly from the text, as examination papers on the book itself can be framed without difficulty. They are rather intended to illustrate the subject matter, and to suggest lines along which the teacher with the text-book as starting point may proceed to amplify the instruction to be conveyed, and to make it more vivid and interesting.

Maps.

1. *Physical* means "belonging to Nature," and *political* means "belonging to government." Use these two meanings to show the difference between a physical and a political map.

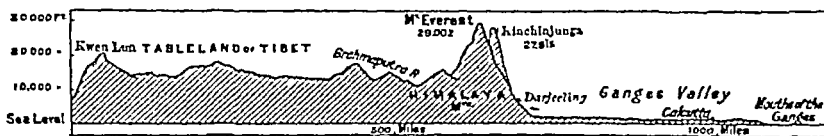
2. Do political maps change? If so, how? Has the political map of India been changed in recent years? Explain.

3. What is a relief map? What is a contour map? Why does a contour map give a truer idea of a country than a relief map? Why do the section diagrams printed below not give a true picture?



SECTION ACROSS THE MIDDLE OF THE DECCAN.

4. On a relief model of India pour some mercury round the Manasarowar lake and watch where it flows.



SECTION ACROSS THE TABLE-LAND OF TIBET, THE HIMALAYAS, AND THE PLAINS.

What Geography Teaches.

1. Geography means a description of the earth's surface. How does this description help us to know something about man's life on the earth?

2. In the map of India the Ranns of Cutch look very important. Are they really so? The river Indus measures more than ten times the length of the river Thames. Is it ten times more important?

3. On the map the Palk Strait looks very large and important. Is it really so? On every cape in Great Britain there is one (and often more than one) large lighthouse. On Cape Comorin, which is the most important cape in India, there is only a lamp on a pole: can you explain this?

Shape.

1. Draw a sketch map of the Indian Empire marking in the mountains which form its landward boundary and the ranges which separate India from Burma. On either side of these ranges write down the name of the race, of the language, and of the religion of the people living there.

Climate.

1. Climate depends on slope: how does the slope or slant of the sun's rays make a difference in the climate of different parts of the world?

2. In what part of India or of Burma does your school stand? Is it in the Tropics? If so, at what times of the year is the sun straight overhead at noon?

3. How far is your school from the sea? Does the shade temperature in December differ much from the shade temperature in May? By how much does it differ?

4. How is temperature measured? What do you mean by shade temperature? What is mean temperature?

5. The mean temperature for June in Calcutta is 84° , and the mean temperature for December is 65° . For Lahore the corresponding figures are 95° and 55° .

Explain (1) Why Lahore is hotter in June than Calcutta.

(2) Why Calcutta is hotter than Lahore in December.

(3) Why the difference between the figures for Lahore is greater than the difference between the figures for Calcutta.

6. How high is your school above sea-level? Does this height have any effect on the climate of your place? Compare it with the climate of other places in the same latitude which lie higher or lower.

7. On October 1, 1908, the highest shade temperature of Bombay was 88° , and the highest shade temperature at Ootacamund on the same day was 65° . Explain this difference?

8. What would you *guess* to be (1) the mean temperature for December; (2) the mean barometric pressure for the year of the following places. They should be looked out on the map.

Answers.

Quetta	Elevation,	5501 ft.	.	.	.	41° and 24.59 in.
Leh	"	11,500 ft.	.	.	.	23° and 19.66 in.
Ootacamund	"	7250 ft.	.	.	.	51° and 23.18 in.
Agra	"	555 ft.	.	.	.	62° and 29.24 in.
Calcutta	"	21 ft.	.	.	.	65° and 29.78 in.

Rainfall.

1. What is rain? Where does it originally come from? What becomes of it? How does it precisely act on vegetation? How is rainfall measured?

2. Examine carefully the following table for Nagpur—

- (a) Which is the hottest month?
- (b) In which months does least rain and most rain fall?
- (c) What is the total rainfall for the year?
- (d) What is the mean temperature for the year?
- (e) In what months is the barometer lowest? Can you connect this with the rainfall of these months?
- (f) In July, August and September the difference (or the range) between the highest and lowest shade temperature is very small. Can you account for this? (Look at the cloud column.)

NAGPUR (REGION OF TABLE-LANDS).

ELEVATION 1025 FEET.

	Shade Temperature.				Cloud Proportion.	Rainfall.	Barometer.
	Mean.	Mean Max.	Mean Min.	Mean Daily Range			
					Mean.	In Inches.	Mean.
January	69	83	55	28	2 2	0.6	28.97
February	73	89	59	30	2.0	0.4	.91
March	82	99	67	32	2.5	0.6	.83
April	89	105	75	3	3.1	0.5	.73
May	93	108	80	28	4.1	0.8	.64
June	86	98	78	20	7.1	8.8	.56
July	79	88	75	13	8.6	13.3	.56
August	79	88	75	13	8.3	8.9	.61
September	79	89	73	16	7.4	7.8	.67
October	77	90	68	22	4.0	2.3	.82
November	71	84	59	25	2.6	0.4	.94
December	67	80	54	26	2.4	0.5	.98

3. Examine the following table carefully :—

- (a) State which place has the greatest rainfall for the year, and which has the least. Can you explain this difference?
- (b) What is the mean monthly rainfall for each of these places?
- (c) Draw on squared paper a curve showing the variations in monthly rainfall of Bombay and Madras; and account for differences in these curves.

TABLE OF RAINFALL.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Bombay . . .	0.1	...	...	...	0.5	20.8	24.7	15.1	10.8	1.8	0.5	0.1
Madras . . .	1.0	0.3	0.4	0.6	2.2	2.1	3.8	4.4	4.7	10.8	13.7	5.1
Rangoon . . .	0.2	0.1	0.1	1.8	10.9	18.4	21.3	18.6	16.0	8.1	3.4	0.1
Karachi . . .	0.6	0.3	0.2	0.2	0.1	0.2	3.1	1.8	0.9	0.1	0.1	0.2

4. Account for the difference of rainfall in June between Cochin and Madras, Calcutta and Peshawar, Akyah and Mandalay.

5. The annual rainfall decreases as we go up the Gangetic valley, and increases as we go up the Indus valley. Account for this.

6. There is a very heavy rainfall on the southern slopes of the Himalayas, and on the western slopes of the Western Ghats, and yet these places do not grow large food crops. Why is this?

7. What is the annual rainfall of your town or village, and where is the rain gauge kept? Does this amount of annual rainfall correspond with the figures for your part of India given in the rainfall map?

8. If in India the rainfall were spread over the whole year so that rain fell every day, would that make any difference (1) to the growing of crops, (2) to the growth of pasture and the rearing of cattle?

9. In the Deccan table-land the annual rainfall is (about) 30 inches. If it were divided equally throughout the year how much would fall every twenty-four hours? Would the rainfall thus divided be enough (1) to fill tanks, (2) to grow paddy, (3) to feed wells, (4) to grow grass?

10. Take a blank map of India and Burma. Indicate by shading the density of population, and then mark in—in figures—the approximate rainfall of each large area.

11. In the following table the monthly rainfall for nine places in India and for nine places in Great Britain is given.

- (a) Find out the total rainfall of the Indian places and of the British places, and then the difference between them.
- (b) Find the total monthly rainfall of the two sets of places (*i.e.* add the columns vertically).

- (c) On a piece of squared paper draw a curve showing the monthly variation in each list.
- (d) How do these curves differ?
- (e) Suppose the Indian places had the rainfall of the British places. Why would this rainfall not have the same effect on vegetation in India as it has in Britain?
- (f) If the rainfall at Madras were distributed like that of Glasgow, would it make any difference to the agriculture of the former place?

TABLES OF RAINFALL.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Bombay . .	0.1	..	.	.	0.5	20.8	24.7	15.1	10.8	1.8	0.5	0.1	74.4
Cochin . .	0.9	0.7	2.1	4.4	12.7	30.7	22.7	12.4	9.4	12.1	5.1	1.9	115.1
Calcutta . .	0.4	1.0	1.3	2.3	5.6	11.8	13.0	13.9	10.0	5.4	0.6	0.3	65.6
Nagpur . .	0.6	0.4	0.6	0.5	0.8	8.8	13.3	8.9	7.8	2.3	0.4	0.5	44.9
Simla . .	2.8	2.7	3.0	2.8	4.7	7.9	19.3	18.1	6.0	1.4	0.3	1.1	70.1
Benares . .	0.7	0.5	0.4	0.2	0.5	5.0	12.8	10.7	6.5	2.1	0.1	0.1	39.6
Madras . .	1.0	0.3	0.4	0.6	2.2	2.1	3.8	4.4	4.7	10.8	13.7	5.1	49.1
Trichinopoly	1.0	0.5	0.7	1.8	3.8	1.3	2.2	4.4	5.3	7.8	5.2	3.1	37.1
Madura . .	0.7	0.4	0.6	2.0	2.8	1.6	1.7	4.7	4.5	8.7	5.1	2.2	35.0
London . .	2.4	1.7	1.4	1.9	1.7	2.3	2.4	2.3	2.4	2.6	1.9	2.4	25.4
Cardiff . .	4.5	3.4	2.4	2.4	2.5	2.5	2.6	2.9	3.4	3.3	2.8	3.3	36.0
Leeds . .	2.0	1.8	1.8	1.9	1.8	2.1	2.6	2.4	3.0	2.8	2.3	2.7	27.2
Bolton . .	4.0	3.4	3.1	2.3	2.4	3.3	4.2	4.4	5.3	5.5	4.6	4.7	47.2
Edinburgh . .	2.5	2.1	1.6	2.0	1.9	2.1	2.8	3.1	2.8	2.1	2.5	2.3	27.8
Glasgow . .	6.1	4.2	3.1	2.7	2.4	3.0	3.4	4.1	5.0	5.0	4.3	5.3	48.6
Portree (Skye)	10.2	7.4	5.7	4.2	3.8	4.8	5.0	5.4	7.4	9.2	8.3	9.8	81.2
Belfast . .	3.3	2.6	2.1	2.0	2.2	2.1	3.0	3.1	3.3	3.8	3.0	3.1	33.6
Cork . .	5.1	8.3	2.9	2.7	2.3	2.9	2.3	3.2	3.7	3.8	3.9	4.2	45.3

Rivers.

1. What is the work of rivers? How are their courses determined? Illustrate from the Irrawaddy and the Narbada.

2. What is a delta? How is it formed? Why are deltas flat? Give three examples of deltas on the east coast of India and one example in Burma.

3. Draw an imaginary or typical map of a delta showing how the water is spread out both naturally and artificially. Draw a transverse section of such a delta.

4. What is precisely meant by saying a river is navigable? A traveller can make a voyage by steamer from Madras to Bhamo; what do you really mean by this?

Crops.

1. What are the chief crops grown in your district, and how do the soil and climate favour their cultivation? What becomes of these crops after they are reaped?

2. What kinds of climate best suit the growth of tea, rice, and jute? Why is wheat not cultivated in Southern India. Does it grow in Northern India all the year round? If not, why not?

3. Where are the chief forests of India found? Name some of the most important timber trees of the Indian Empire. What climate and soil best suit the growth of the cocoa-nut palm?

Soil.

1. What is soil composed of? What does *alluvial* soil mean, and in what parts of India and Burma is it chiefly found? What is "black cotton soil"? Has it any peculiar properties? Where in India is it chiefly met with?

2. The Narbada and Tapti basins are made up of black cotton soil: less than one per cent. of the surface drainage of these basins is used for irrigation. Can you connect these two statements?

Towns and Villages.

1. What is the population of your nearest town or village? Has it any advantages of position? Does its position favour its trade?

2. Explain why towns and villages grow up round sacred places, and give examples.

3. Railways increase the importance of some towns and decrease that of others. Explain.

4. In what way does the fact that a town is the headquarters of a district or the capital of a province attract people to go and live there?

5. Does the importance of a town depend on its mere size?

6. In the Indian Empire only one person out of every ten lives in a town; in Britain seven persons out of every ten live in towns. Explain this difference.

Canals.

1. What are the conditions that favour the making of canals in any district or province?

2. Why are the irrigation canals of India more numerous than the navigation canals?

3. By looking at the map can you find a reason why the Buckingham Canal is of little use for irrigation?

4. In a perfectly flat country it is useless to make tanks. Tanks are most useful where the rainfall occurs in short periods during the year. Explain these statements.

Railways.

1. It is proposed to build a railway from A to B. What geographical considerations must the engineers take into account when they reckon its probable cost?

2. Why are railways sometimes made by Government even though they do not pay at first?

3. On a good railway map point out the lowest spot on the river Ganges where it is crossed by a railway bridge.

4. The South Indian Railway derives almost all its revenue from *passenger* traffic. Explain this. [Temples—crops for *local* consumption—comparatively long sea-board, and many small harbours—narrow hinterland.]

Harbours.

1. What are harbours, and how are they useful to navigation? What are docks?

2. In modern days the foreign sea trade of India and Burma is carried on chiefly through four or five ports only. Why is this? Name the ports.

3. What are the chief advantages (1) on the side of the sea, (2) on the side of the land that favour the growth of seaports? Illustrate from Calcutta, Rangoon, Bombay and Madras. How do tides help harbours?

The Himalayas.

1. Write a short account of the Himalayas describing (a) their position; (b) their size and extent; (c) their vegetation.

2. Account for the following facts—

(1) The inhabitants of the Himalayas are backward in civilisation.

(2) They are few in number in proportion to the area of these mountains.

(3) Leh (in the north of Kashmir), on the farther side of the Himalayas, receives 2 inches of rain in the year, while Simla, on the south side, receives about 70.

(4) Tibet, on the north, with an area of 463,000 square miles, has a population of 6½ lakhs, while the Gangetic valley on the south, with an area of 220,000 square miles, has a population of over 11 crores.

(5) There are no strong forts on the Himalayan passes.

(6) The rain that falls on the Himalayas comes ultimately to India and not to Tibet. (Illustrate with a sketch map.)

3. Describe the appearance of the Manasarowar lake in winter.

The Sulaimans and Kirthars and Eastern Offshoots of the Himalayas.

1. Why does the Indus in the plains receive only small feeders on its right bank?

2. Why are there so many forts on the passes over these mountains? (Illustrate with a sketch map.)

3. Draw a map of the Eastern offshoots of the Himalayas to show how these ranges cut off Burma from the rest of Asia. Trace in the rivers that flow from these mountains through Burma.

The Region of Plains.

1. Draw a sketch map of Northern India marking in the Kirthars, Sulaimans, Himalayas, the Jaintia, Khasi and Garo Hills, and the Aravalli Range. Then draw a line from sea to sea marking the southern boundary of the Plain Region.

2. Give geographical and climatic reasons to explain why the Plain Region of India is the most important part of India.

3. Look at table marked "Area and Population of the Indian Empire" given at the end of this book.

(a) Add up the population of the Provinces lying in the Plain Region, and find out what percentage of the total population of the Empire your total represents.

(b) Find out how many of the cities of India with over a lakh of population are situated in the Plain Region.

4. Draw a sketch map of the Ganges and Brahmaputra basins. On this map mark in Allahabad, Benares, Cawnpore, Delhi, Agra, Patna, Dacca, Gauhati, Calcutta.

5. What are the advantages that favour Calcutta (1) as a seaport; (2) as a manufacturing city. Has it any disadvantages of position compared with Bombay?

6. Look at a map of the Eastern Hemisphere, and state whether you think the opening of the Suez Canal helped Bombay or Calcutta more.

7. How could you by simply looking at the physical map tell that more rain falls in the northern than in the southern half of the western plains; and that the mountains east of Attock receive more than those west of it.

8. Why do we find so many canals made in the western end of the Plain Region, and so few in the eastern end?

9. What is meant by flood canals? Illustrate with a diagram. Their chief disadvantage is that their flow cannot be regulated. Explain this.

10. Read an account of the Chenab Colony.

Table-land Region.

1. Draw a sketch map of Peninsular India dividing it into two triangles—one containing the watershed of the Ganges and Jumna tributaries, and the other the watershed of the rivers flowing into the Bay of Bengal. Mark in the mountains that form the sides of these triangles.

2. Compare the rivers of the Table-land Region with those of the plains in regard to—

(1) The rainfall which feeds them.

(2) The nature of the country through which they flow.

Hence contrast their usefulness as means (1) of irrigation; (2) of navigation.

West Coast Strip.

1. In what ways is this region favoured and handicapped by the Western Ghats?

2. It is calculated that one-sixth of the total rainfall of India is *wasted* on this strip. Explain.

3. How does its position favour Bombay (1) as a seaport; (2) as a manufacturing city?

4. What does the trade of this region consist of? How is it helped or hindered by the geographical features?

East Coast Strip.

1. Draw a sketch map of this region marking in the deltas with the chief towns on them.

2. Draw a detailed map of any one of these deltas. Explain why these deltas, though on the east coast, are flooded in the south-west monsoon.

3. Explain why Tuticorin is an important seaport entirely on account of its position.

Burma.

1. Give reasons why the Irrawaddy is the chief highway of Burma. How far is it navigable, and what are the most important goods sent up and down stream?

2. The chief towns of Burma are either seaports or river ports. Explain why this is so, and give four examples of each.

Political Geography.

What is meant by a native state? Name the two largest of them. Is Rajputana a native state?

Trade, Commerce, &c.

1. India and Burma are agricultural countries: England is an industrial country. What does this mean? Give reasons to explain the difference, and show how it is illustrated in the distribution of population, the callings of the people, and the sea trade of the countries.

2. Draw a sketch map of India showing the chief railways joining Bombay, Allahabad, Calcutta, Lahore, Karachi, Madras, Tuticorin and Calicut.

3. On a map of Burma mark the chief railways. By what route would you propose to connect Rangoon with Calcutta?

4. The trade of Bombay, Karachi and Chittagong has been greatly increased since *railways* were made. Explain clearly.

Ceylon.

1. Draw a sketch map of Ceylon showing its relation to the Indian Peninsula, and its mountain region. Draw sections of the "mango" lengthwise and crosswise.

2. Describe the climate of Ceylon.

3. In what respect does the sea trade of Colombo differ from that of Indian seaports?

4. Have we any reason to think that Ceylon was once joined to India?

Appendix.

In the skeleton map take the line AC = 2000 miles and calculate from this the area (roughly) of the Indian Empire.

Suppose you were to publish a fully illustrated edition of this book. Make—

- (1) A list of the pictures found in the books of your school library which you would use for each chapter.
- (2) A list of the facts illustrated by each picture.

THE END

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