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A MANUAL OF HUMAN GEOGRAPHY

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TARAMA RAO, B.A., L.T.

A MANUAL OF HUMAN GEOGRAPHY

A MANIFESTO OF HUMAN CHOICE

Ramachandra English Series (7)

A MANUAL OF HUMAN GEOGRAPHY

FOR IV, V & VI FORMS

BY

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AUTHOR OF PHYSICAL AND REGIONAL GEOGRAPHIES IN TELUGU

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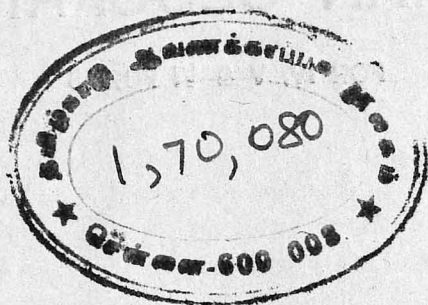
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PREFACE

This manual has been written in accordance with the Revised Syllabus issued by the S. S. L. C. Board, and I have tried my best to keep the 'human aspect' of the subject always in view. At every stage, the relation between cause and effect has been emphasised, and I have pointed out how human life is largely affected by environment, though I did not overlook the fact that the '*human factor*' also helps to modify the environment, in highly civilized regions.

Having had to teach the subject even in the days of Matriculation, when Mr. J. A. Yates was the Inspector of Schools Northern Circle, I received considerable enlightenment on the subject from that ardent enthusiast. I have since then kept myself in touch with the subject and published a number of books in Telugu, all of which have been approved by the department. I need not say that in writing this book, I have fully availed myself of my twentyfive years' experience in teaching the subject.

Geography is one of those subjects having extraordinarily flexible limits. From the excellent material that is now available in all good libraries, it is possible to write a volume on each continent. But the requirements of the Public Examination, and the time the readers can afford to spare for this subject among several others, ought to make every enthusiast to pause and reflect before writing a text-book. This, I venture to state, I have attempted to do. Without entering into minor details, I have taken a general survey of each

continent on a regional basis, and I have made the language as simple as possible.

A number of pictures and diagrams have been introduced, and there is scope for some more. But a good atlas is absolutely necessary for an intelligent study of the subject, and constant reference to the atlas and the large school-room maps will so fix facts in memory as no mere book-study can.

Tabular statements are given here and there, and there is scope for improvement in this direction also.

Suggestions for the improvements of this book will be most thankfully received from all persons interested in the subject.

M. S. R.

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HUMAN GEOGRAPHY

INTRODUCTION

Solar System.

The Sun is our visible god, and from him we derive all energy. He is now a burning ball 867,000 miles in diameter. In the centre is perhaps a solid core, but on the outside he is a mass of burning gas, whose flames extend thousands of miles. He is the centre of a system. Round him revolve a number of bodies, the biggest of which are called Planets. These, it must be noted, were once parts of that huge burning mass.

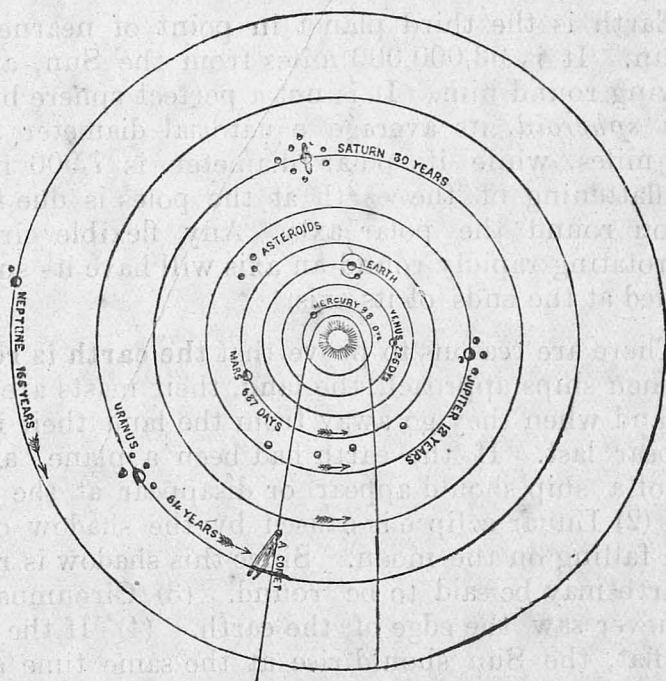


Fig. 1 Planets.

Of these planets, Mercury, Venus, The Earth, Mars, Jupiter, Saturn, Uranus and Neptune are the best known at present. There may be some more at greater distances, and when more powerful telescopes are invented it may be possible to know their existence. Uranus and Neptune are planets discovered in the last century. (See fig. 1).

The diagram (1) indicates the comparative sizes of the planets and their approximate distances from the Sun.

Moon which we have been considering as a planet is only a **Satellite**, one that goes round a planet. *Jupiter* is said to have four **Moons** revolving round him.

Besides these planets, there are minor bodies moving round the Sun, and these are called **Asteroids**.

Earth as a planet.

Earth is the third planet in point of nearness to the Sun. It is 93,000,000 miles from the Sun, and is revolving round him. It is not a perfect sphere but an *oblate spheroid*, its average equatorial diameter being 7,926 miles, while its polar diameter is 7,900 miles. This flattening of the earth at the poles is due to its rotation round the polar axis. Any flexible circular body rotating rapidly round an axis will have its surface flattened at the ends of its axis.

There are reasons to prove that **the earth is round**.

(1) When ships approach the land, their masts are first seen, and when they go away from the land their masts disappear last. If the earth had been a plane, all the parts of a ship should appear or disappear at the same time. (2) Lunar eclipse is caused by the shadow of the Earth falling on the moon. Since this shadow is round the earth may be said to be round. (3) Circumnavigators never saw the edge of the earth. (4) If the earth were flat, the Sun should rise at the same time at all places. As a matter of fact, the Sun rises earlier at places towards the east. (5) All planets are round, and the earth also may be round.

Movements of the Earth.—The earth moves round the Sun and it spins round itself. It has thus two motions. (1) A **Rotation**, movement round itself. This takes place once in 24 hours, and one half of the globe is in front of the Sun, while the other half is

behind or in darkness. It is this rotation that causes day and night. (2) A **Revolution** round the Sun. The earth moves round the Sun once in $365\frac{1}{4}$ days, and this causes a year.

It has been said above that the earth spins round itself once a day. The imaginary line round which it spins is called its **axis**, and its ends are called the Poles—the North Pole in the North, and the South Pole in the South. An imaginary line running round the earth midway between the poles is called the **Equator**. The equator thus divides the surface of the globe into two *hemispheres*, the northern and the southern. North and south of the equator the polar circumference is divided into 360 equal parts called degrees, and imaginary lines are drawn parallel to the equator. These are called **Parallels of latitude**, *the Latitude of a place being its angular distance from the equator*.

Similarly imaginary lines are drawn round the earth *through the poles*. These are called **Meridians**, because places on the same meridian have their mid-day at the same moment. It will be evident that these meridians cut the equator and all the parallels of latitude at right angles. In all maps that we have, the meridian on which Greenwich stands is taken as zero, and all meridians are measured east and west of this zero meridian. As *angular distance* is measured there are 180 meridians east, and 180 meridians west of the zero meridian. Thus the **Longitude** of a place is its angular distance east or west of the *zero meridian*.

The rotation of the earth causes days and nights. "This succession of light and darkness has given man and many animals the habit of working by day and resting by night. The period of earth's turning furnishes a natural unit of time easily recognised and counted and everywhere constant."

Seasons.

If the axis of the earth had been at right angles to the plane of its revolution, days and nights would everywhere have been of equal duration. But it is not so in our experience, and the reason for this variation lies in the fact that the axis of the earth cuts the plane of the earth's revolution, and always maintains this angle of inclination. (See figs. 2 and 3).

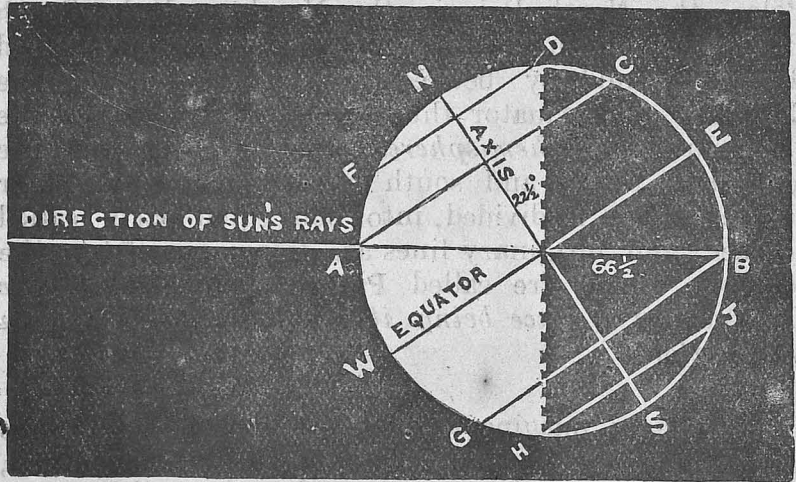


Fig. 2

In the course of its revolution, earth occupies two positions as shown in figure. From the left figure it becomes clear that in June, the summer season to the northern hemisphere, the Sun's rays not only reach the north pole but they also reach $23\frac{1}{2}^\circ$ beyond it, *i.e.*, to the *Arctic circle*. For the same reason the Sun's rays do

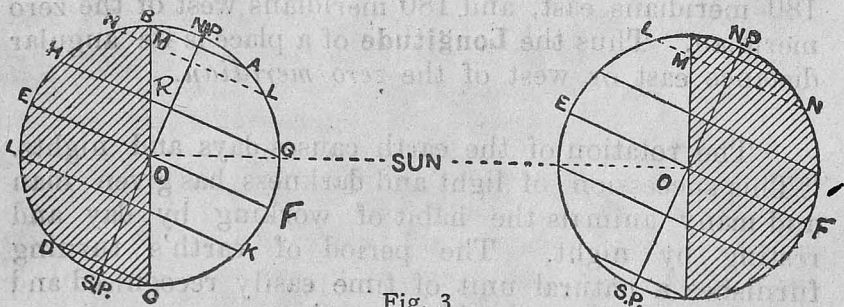


Fig. 3

not reach the south pole at all and they fall short of it by $23\frac{1}{2}^{\circ}$. Hence regions in the northern hemisphere receive more *vertical rays* of the Sun and he shines longer too during the day. In the case of the southern

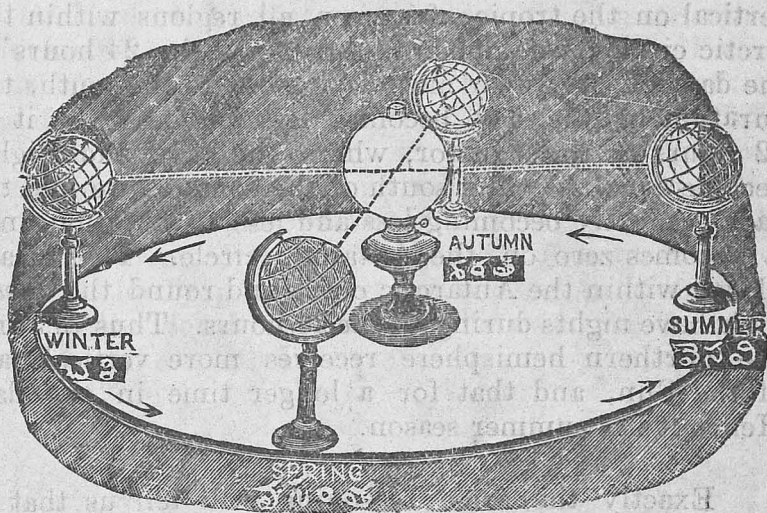


Fig. 4

hemisphere, it receives *slanting rays*, and they shine only for a short time in the day. For these reasons the northern hemisphere receives greater warmth from the Sun, and so it has its summer then, while the southern hemisphere has its winter.

In the right figure the situation is different. The Sun's rays now reach the south pole and go $23\frac{1}{2}^{\circ}$ beyond it, i.e., to the *Antarctic circle*, when they fall short of the north pole by $23\frac{1}{2}^{\circ}$. Hence the south pole receives more *vertical rays*, and that for a longer time in the day. Hence it has its summer.

It will be clear from the figures that the Sun is directly overhead on the **Tropic of Cancer** on the 22nd of June, and on the **Tropic of Capricorn** on the 22nd of December. Midway between the two positions, the Sun is between the two tropics and in fact shines vertically on the equator on the 22nd March and the 22nd September, when places in the whole world have equal days and nights. These are called **equinoctial days**.

Day and Night.

At the equator days and nights are always of equal length, namely 12 hours. But this is not so of other places. For instance in June, when the Sun shines vertical on the tropic of cancer, all regions within the Arctic circle have sunshine during all the 24 hours of the day, but as we go more and more to the south, the duration of the day becomes less and less till it is 12 hours at the equator, where the days and nights become equal. Going south of the equator, we find the days gradually becoming less and less in duration until it becomes zero on the Antarctic circle. That means places within the Antarctic circle and round the *South Pole* have nights during all the 24 hours. Thus in June, the northern hemisphere receives more vertical rays of the Sun, and that for a longer time in the day. Hence it has summer season.

Exactly the same reasoning will tell us that in December the southern hemisphere will have summer as then it receives the vertical rays of the Sun and that for a longer time.

It becomes clear that near the Polar regions people have one long summer and one long winter each of six months. In the middle latitudes, say in England and other European countries, the year is divided into four seasons each of three months duration—spring, summer autumn and winter. In tropical countries like India, the year is divided into six seasons each of two months duration.

As in these seasons the climate and rainfall vary, the vegetation and productions also vary. Hence the mode of life of people also varies. Thus instead of a dull monotonous life all round the year, there is much variety, and this is due to the changing seasons, which in their turn are due to the inclination of the earth's axis.

Zones.

From what has been said, the following parallels of latitude get defined: (1) the equator, (2) the tropics between which the Sun moves north and south, (3) the arctic and the antarctic circles, the limits within which polar regions have 24 hours of light. From a consideration of these parallels, the earth is divided into 5 zones. (1) The **North Frigid Zone** between the North Pole and the Arctic circle, (2) the **North Temperate Zone** between the Arctic circle and the Tropic of cancer, (3) the **Torrid Zone** between the Tropics of cancer and the capricorn, (4) the **South Temperate Zone** between the Tropic of capricorn and the Antarctic circle and (5) the **South Frigid Zone** between the Antarctic circle and the South Pole. (See fig. 5).

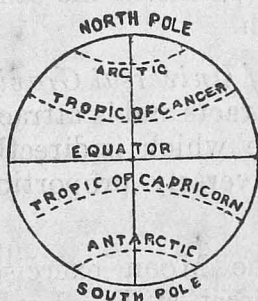


Fig. 5

Tides.

The sea water rises twice and falls twice everyday. The rise of water is called the **flow** and the fall is called the **ebb**.

These are caused by the attraction of the Sun and the Moon. The Moon being much nearer exercises greater power in this respect than the Sun.

Let us suppose that the earth is all surrounded by water. Then the earth will appear as in figure below.

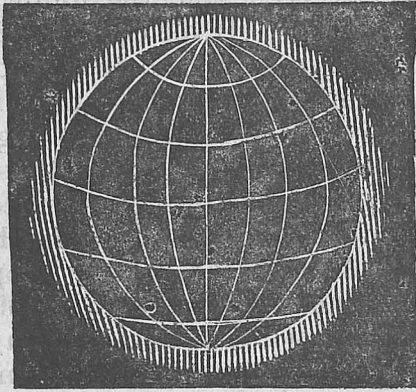


Fig. 6

In the next figure M is the Moon, E is the centre of the earth. A and B are two points in the same line but on opposite sides of the earth.

Now according to the *Law of Universal Gravitation* every particle in the universe attracts and is attracted by every other particle with a force which is directly proportional to their masses and inversely proportional to the square of their distances.

In virtue of this law, the Moon exercises the greatest attraction at A and least at B. Let us for simplicity's sake suppose that the Moon's attraction at A is represented by 6, the attraction at E by 4, and that at B by 2. It thus means that the mass of water moves 6 ft. towards the Moon at A, while the centre of the earth will move only 4 ft. The net result of this is the pulling up of water by 2 ft. towards the Moon. When this happens water from N and S must come and occupy the vacant space. Thus at A water rises up and at N and S it falls. (See fig. 7).

Now considering the point B, water is drawn towards the Moon say by 2 ft. but the earth as already stated is drawn 4 ft. towards the Moon. In other words water at B lags 2 ft. behind and to fill up the void,

water from N and S rushes in. Thus another rise is caused on the side away from the Moon.

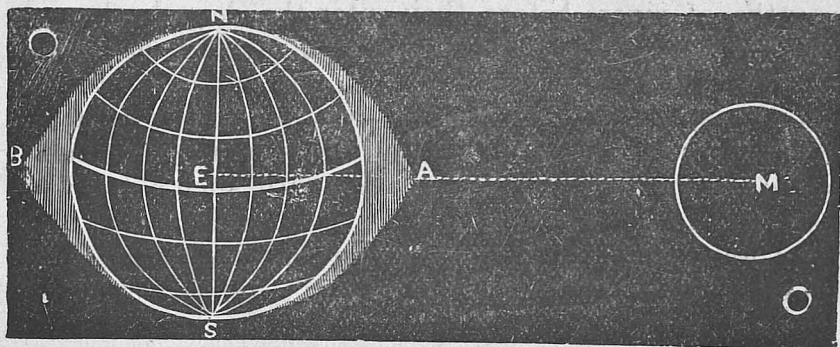


Fig. 7

Thus the attraction of the Moon causes the bulging up of water on either side of the earth opposite to the Moon, and a fall at two places on the surface of the earth at right angles to the line of attraction.

But the earth turns round itself once in a day, and so these tidal waves also travel round the earth. If the Moon had been at rest, these tidal waves would be seen twice in 24 hours. But as the Moon also is moving round the earth, a place to come under the influence of the Moon after one complete rotation of the earth would take another 54 minutes, which forms one lunar day. Thus in every lunar day of 24 hours and 54 minutes there are two high tides and two low tides.

When the Sun and Moon are in one and the same line either on the same side as on New Moon day or on either side of the earth as on Full Moon day, the combined pulling force of the two will be greater and the tidal wave rises higher. This is called the **Spring tide**. This happens on New Moon and Full Moon days only.

But when the Sun and Moon are in quadrature and pull at right angles, the tides are low, and they are called **Neap tides**.

If the surface of the earth had all been water this tidal wave would pass from east to west but the configuration of the land makes the tidal wave change its course in different directions.

Uses of Tides.—(1) This periodical rise of water enables ocean steamers to enter the somewhat shallow mouths of rivers before they enter the deep harbours. (2) This tidal wave flows up the mouths of rivers, and when it recedes carries back the silt far into the sea, thereby preventing the silting up of river mouths. But when a tidal wave runs up a narrow funnel-shaped mouths of rivers, it rushes with such a terrible velocity that it is dangerous to small craft. (3) The tidal waves mixes up sea water, so that its salinity may be more or less the same everywhere. (4) By removing the organic and inorganic impurities of the coastal shorelands into deeper parts, it improves their Sanitation.

Ocean Currents.

In addition to the movements of waves and tides, we find streams of water flowing in the ocean as on land. These are called **ocean currents** and are really large rivers flowing in the ocean.

Causes.—The water in the equatorial regions gets naturally heated by the vertical rays of the Sun, and therefore they become more heated and become less dense. In addition to this, more water goes off in the form of vapour. To replace this loss of water, cold water from the polar regions flows as an **under current** to the equator, while warm water from the equatorial regions flow towards the poles as a **surface current**.

There should thus be a North warm upper current and a south cold under current. But in actuality it is not so. On account of the rotation of the earth, the current flowing from the north to the equator is deflected to the right and a current from the south is deflected to the left. (2) Lands very often obstruct the flow of the current. The equatorial current in the Atlantic is split up into two currents flowing north and south. The same thing happens in the Pacific ocean where the equatorial current is turned by the East Indies.

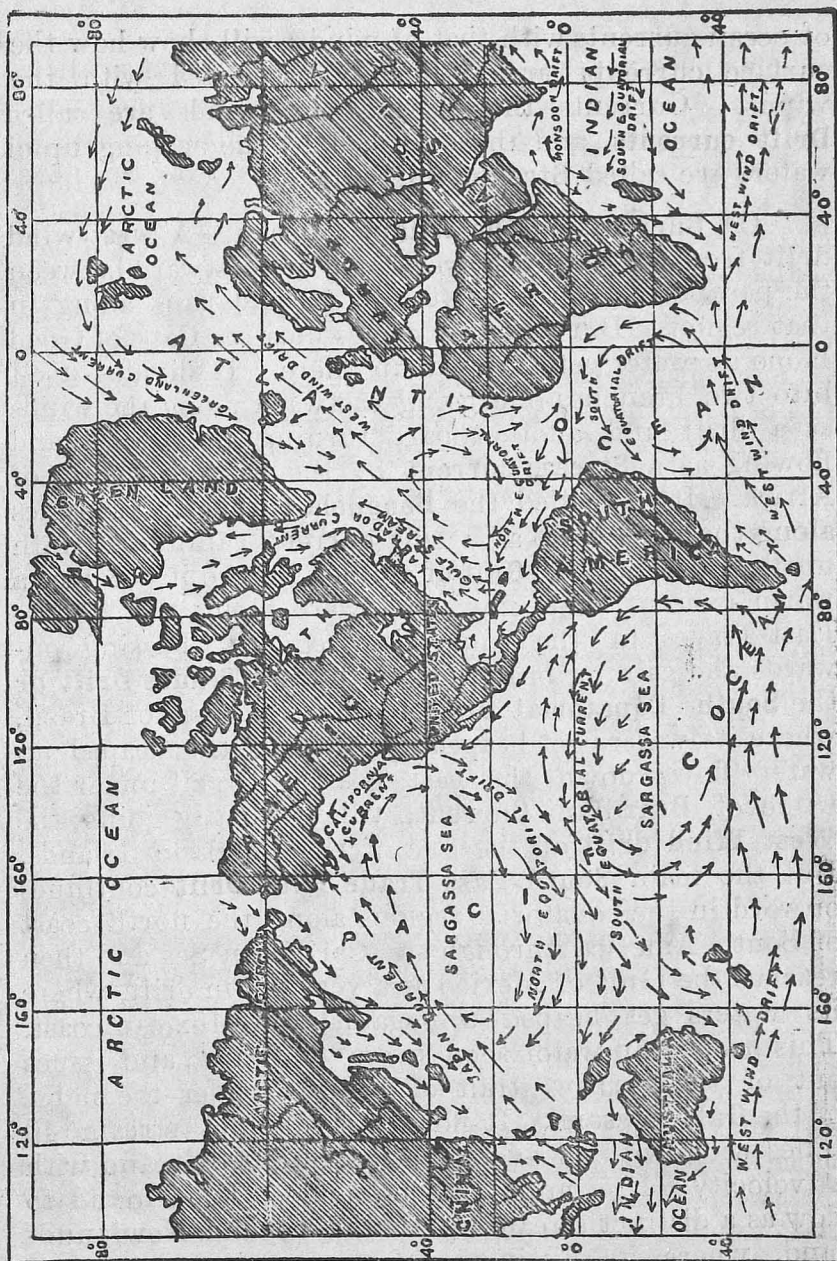


Fig. 8 Ocean Currents

Winds seem to be the most potent cause for the formation of ocean currents. A comparison of the Map

of ocean currents with that of winds, will show how the surface currents are intimately associated with the winds. Currents thus formed by winds are called **Drift currents**, and those formed by the heaping up of waters are called **Stream Currents**.

(1) **Currents in the Atlantic Ocean.**—A **west-wind drift** from the Antarctic regions flows eastward between the parallels of latitude 40 and 50 and runs along in that region. But when it comes near the Cape of Good Hope its water gets heaped up there. It divides itself into two branches one going eastward along the winds as a drift and another part turning northward and flowing as a **Stream current** by the western shores of Africa. It is called the **Benguela current**. It passes along the west coast as a cold current gaining warmth until it reaches the **Gulf of Guinea**, where it becomes a warm current, and flows westward along the South-East-Trades in the equatorial regions. Passing onwards and gaining heat this **South-East Trades Drift** or the **South Equatorial Drift** reaches the coast of Brazil, where its waters get heaped up. Hence the heaped up water flows down the east coast of Brazil under the name of **Brazilian Current**, till it finally joins the **West Wind drift** off the east of the Falkland Islands. But the main **South-East Trade Wind Drift** continues onward in the equatorial regions along the north coast of South America through the Caribbean Sea and then reaches the Gulf of Mexico as a very warm drift, where its waters get heaped up against the Mexican coast. This heaped up water then turns eastward, and issues out of the narrow strait of Florida under the name of the **Gulf Stream**. It flows as a distinct stream 40 miles wide, with an average depth of 3,000 ft. and with a velocity of 5 miles in the middle. It is found to flow as a distinct stream up to and beyond Newfoundland, where its distinctive features of velocity and colour disappear, and remains simply as warm water. But then it is now in the region of the Westerlies, which carry off these warm waters as **West Wind** or

North Atlantic Drift to the western shores of Europe. Here part of the water comes under the influence of North-East Trades and a drift under the name of the **Canaries Drift** flows towards the equatorial region to join the **North Equatorial Drift**. But a part of the west wind drift flows past the British Isles and Norway into the Arctic ocean, and the heaped up waters there drive the cold polar current along the east coast of Labrador. It is this **Cold Labrador Current** that brings icebergs, cod fish, seals, besides the tiny vegetable matter, a kind of food for fish so abundant in the polar seas. Owing to meeting of this cold current with the warm gulf stream, off the shores of Newfoundland, icebergs melt and the debris brought by them is deposited along the banks of Newfoundland now called **the Great Banks**. This shallow region is an important fishing centre. **Cod** is caught here, from which **Cod-liver oil** is made. So many people are engaged in this industry that 'Bankers' in these parts mean the 'fishermen working on the Great Banks.' Fishing goes on all along the coast of Labrador where seals are also caught. (See fig. 8).

The meeting of the warm moist air over the gulf stream and the saturated air over the cold current off Newfoundland, causes thick fogs, and navigation therefore becomes dangerous, especially as this region is most likely to have icebergs floating in it.

(2) **Currents in the Pacific Ocean**.—As in the Atlantic, the west winds start a drift in the Antarctic Ocean and this **West Wind Drift** flows eastward till it comes against the southern part of South America, where a portion of the drift continues round Cape Horn and enters the Atlantic Ocean.

Another part of this cold drift current flows by the west coast of South America under the name of the **Peruvian current** and continues westward in the equatorial regions as **South-East Trades Drift** or the **South Equatorial Drift** up to the East Indies, where a part of it turns southward and passes by the east

coast of Australia to join the **West Wind Drift**. Another part of this mixes with **North-East Trades Drift** or the **North Equatorial Drift** and goes north passing by the Philippines, the east coast of China and Japan under the name of the **Kuro Sivo**. There it comes under the influence of the Westerlies and flows as **West Wind Drift** towards British Columbia. From there it comes south as **Californian Drift** to join the **North-East Trades Drift**. It is this warm **Kuro Sivo** that keeps Japan's eastern harbours free from ice, but like the east coast of North America, China does not derive much benefit from this, as winds blow from the land towards the sea in winter.

(3) **Currents in the Indian Ocean.**—The **West Wind Drift** following the Westerlies enters the Indian ocean and flowing onwards turns north near the west coast of Australia forming the **Australian current**. Then being driven by the South-East Trades it forms the **South Equatorial Drift** flowing westwards to **Madagascar**, where a part of it turns south to join the cold **West Wind Drift**. The northern part goes into the northern

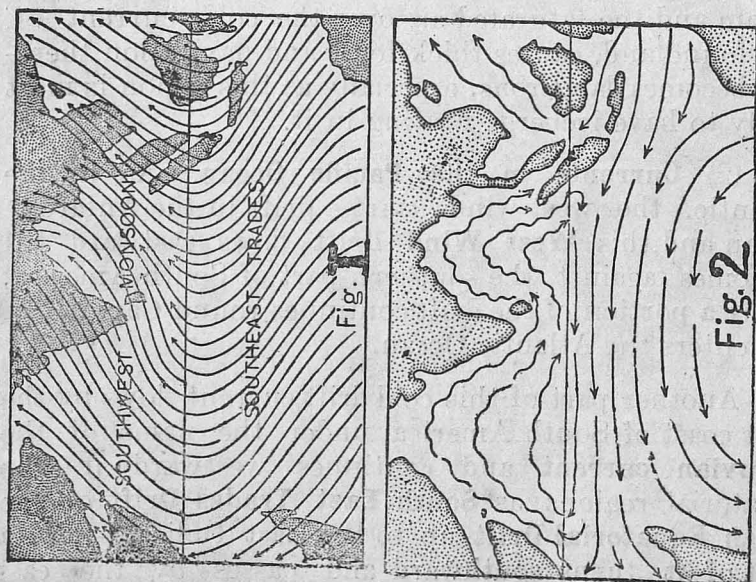


Fig. 9 Indian Ocean Currents.

part of the Indian Ocean and flows along the Malabar and Coramandel coasts and reaches the equatorial drift. All this happens in June. (See fig. 9).

But in December, in the northern part of the Indian ocean the current flows in the opposite direction along the Coramandel and the Malabar coasts, and joins the **South Equatorial Drift**. (See fig. 10).

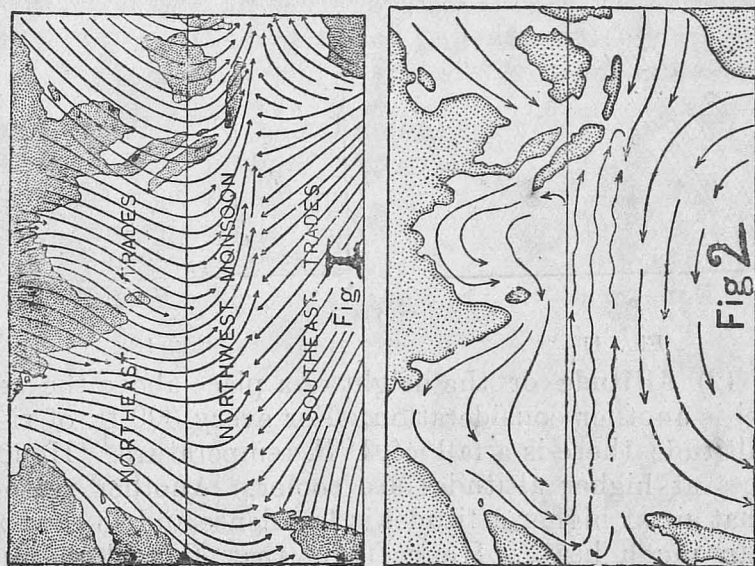


Fig. 19 Indian Ocean Currents

Use of Ocean Currents.—(1) These flowing from the warmer parts of the world give warmth to colder region which otherwise would be intensely cold. (2) They tend to equalise the temperature and density of sea water all over the globe and carry food to several creatures living in the sea such as coral, polyphs and fish. (3) Above all, they show that this earth is a unity, an organic whole, each part of it being dependent upon some other part or parts and no part being completely independent.

Climate.

The climate of a place depends upon the following factors :—

(1) **Latitude** or the distance of a place from the equator. The Sun shines more or less on the equator and his rays fall vertically there. But places north and south receive slanting rays whose heating effect becomes less. Hence places farther from the equator will be cooler. The poles being farthest from the equator are so intensely cold that they are covered with ice.

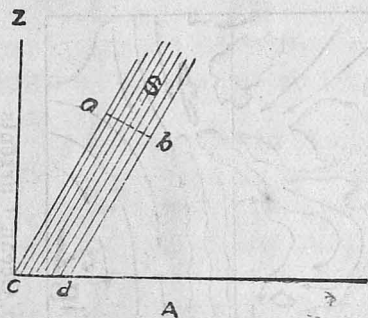


Fig. 11

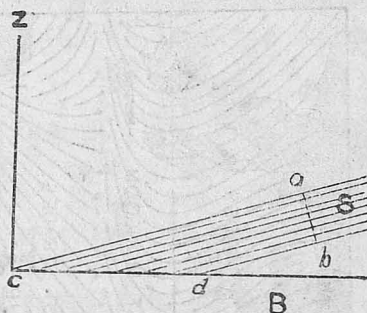


Fig. 12

(2) **Altitude** or the height of a place above the sea level is another consideration. For every 300 ft. of rise in altitude there is a fall of 1°F. temperature. Hence places at higher altitudes are cooler. Another reason is that air at higher altitudes is less dense and so cannot retain much heat. Hence it is that Bangalore and Ooty are cool in summer when the plains are very hot.

(3) **Nearness to the sea.**—Places which are near the sea have sea and land breezes which moderate their temperature. For this reason Islands in the sea have an **equable** climate, *i.e.*, they will not be very cold in winter nor very hot in summer, and the difference between their summer and winter temperatures will not be great.

(4) **Winds** have a great effect upon climate. Winds blowing from warm currents carry moisture and warmth inland. Cold winds blowing from the Polar regions have the chilling effect as in North America.

(5) **The situation of Mountains** is an important consideration. The cold winds from Tibet do not affect India because the Himalayas protect them. For the same reason the warm monsoon winds do not affect Tibet at all. For want of mountains running east and west, the central parts of North America suffer from either intense cold or intense heat. The range of temperature at certain places there is about 70°F . Such places are said to have **Extremes of climate**.

(6) **Ocean Currents** form another factor. The western countries of Europe are kept warm by the **Warm West Wind Drift** and **Labrador** has an intensely cold climate on account of the cold **Labrador Current**.

(7) **Slope of the land** is another consideration. The southern slopes of mountains in the northern hemisphere and the northern slopes of mountains in the southern hemisphere, inasmuch as they receive the Sun's rays less slantingly, are warmer than the other slopes.

(8) **Nature of the soil**.—Sandy soil absorbs and radiates heat more quickly than clayey soil. Hence in the sandy regions, the days are very hot and the nights very cool. The range of temperature between day and night will be very great. But in regions where the soil is clayey both days and night will be more or less equally hot and the range of temperature between day and night will be much less.

(9) **Vegetation** has a great effect upon the climate of a region. Forests for instance prevent the ground from being heated. Evaporation therefore becomes less. The air above the forests will be cooler, and consequently moisture-laden winds blowing over them are more likely to precipitate their moisture. But in a desert region like the Thar Desert, the moisture-bearing winds instead of being cooled get further heated by the hot air over the desert region, and precipitation becomes therefore impossible. In regions, such as Egypt and New Zealand, the destruction of forest seems to have made the climate more dry. Hence it is that in all civilized countries forests are being conserved.

The World's Climate.

The diagram No. 13 shows the Isothermal lines for the month of January. The Sun in this season is

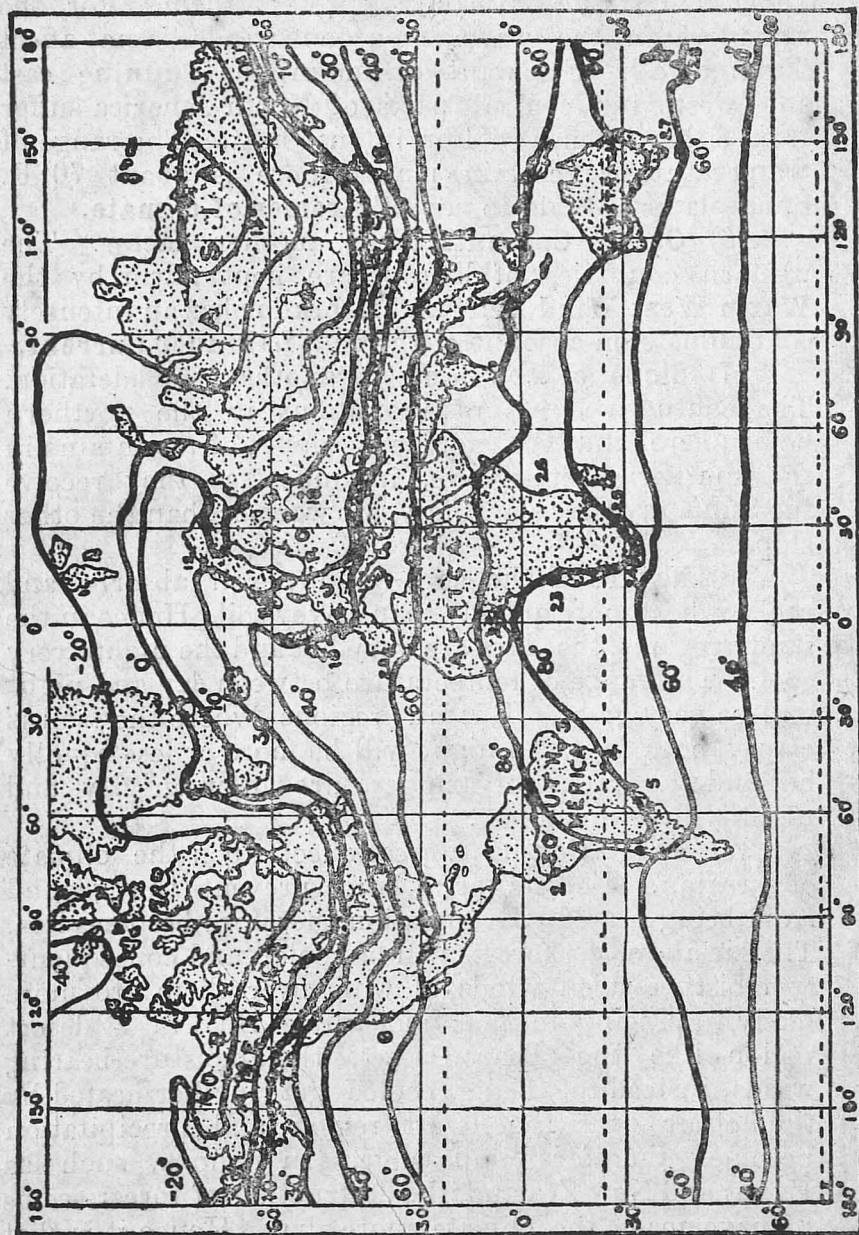


Fig. 13. Isotherms January.

directly overhead on the Tropic of Capricorn. Hence the northern hemisphere has winter, while the southern hemisphere has summer. We know that water does not

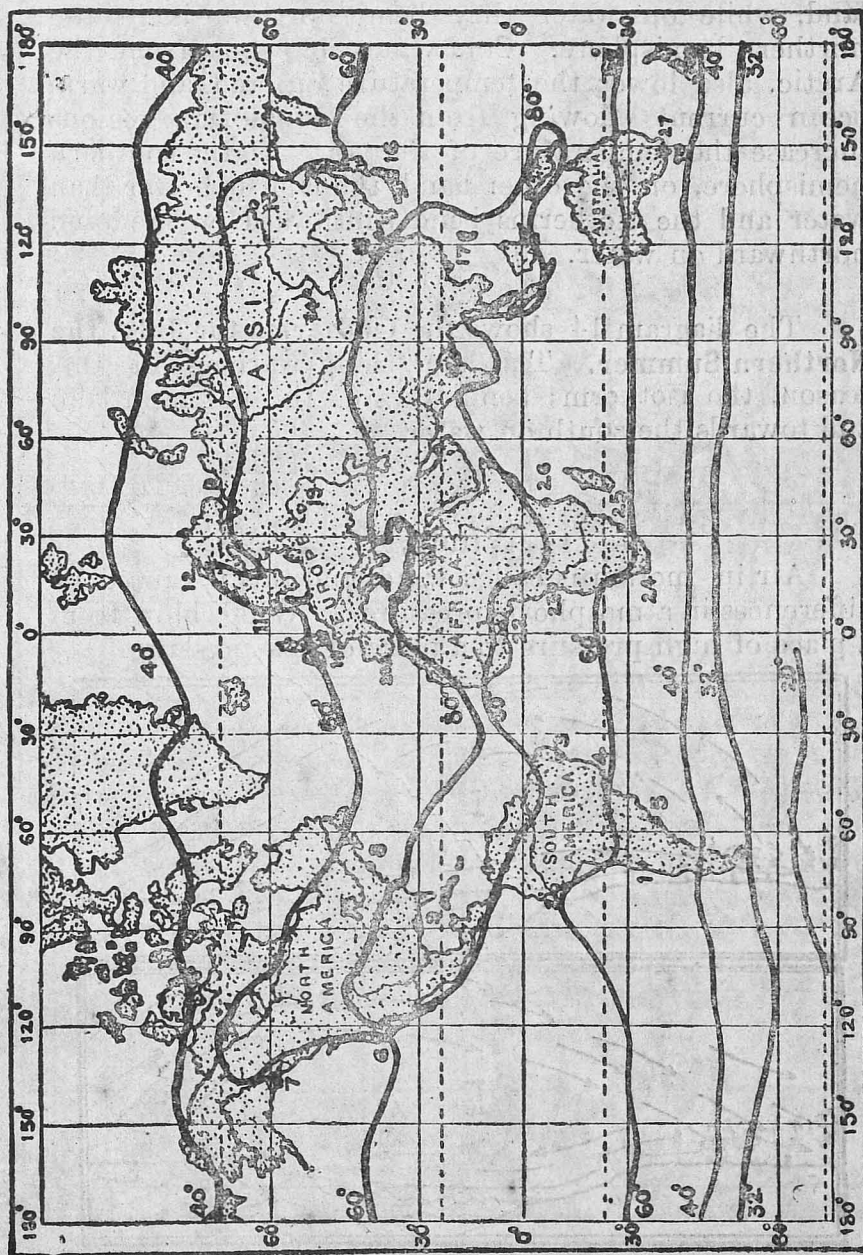


Fig. 14. Isotherms July.

lose heat as quickly as land. Hence in the winter season, the sea is warmer than land. For this reason you find all the isotherms bending to the south on land, while on water they bend northwards in the northern hemisphere. Cold winds blowing from the Arctic, also lower the temperature on land, and warm ocean currents flowing from the equatorial regions increase the temperature of the sea. In the southern hemisphere, on the other hand, the land is hotter than water and the isotherms bend southward on land and northward on water.

The diagram 14 shows the **Isotherms for July, the Northern Summer.** The land being warmer in this season, the isotherms bend towards the north on land and towards the south on water.

Winds.

Air in motion is called wind, and this is caused by differences in atmospheric pressures. Winds blow from a place of high pressure to a place of low pressure.

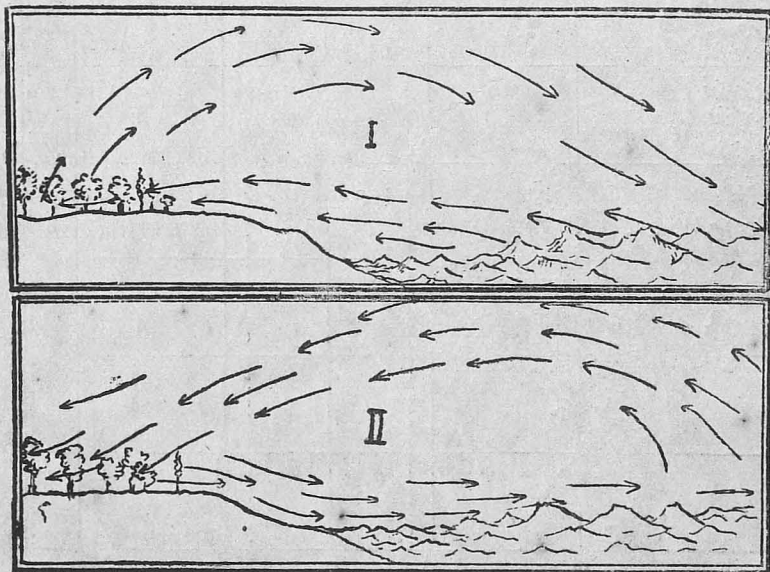


Fig. 15. Land and Sea Breezes.

Sea Breeze and Land Breeze.

People living near the shore experience during the day a cool wind blowing from the sea, and during the night a warm wind blowing from the land towards the sea.

The diagram No. 15 illustrates them.

During the day time, on account of the heat of the Sun, land becomes more quickly heated than water, and so the air on land takes up this heat and becomes more hot than the air on the sea. This hotter air expands, becomes less dense, and rises into the air, and the colder and heavier air rushes from the sea forming the **Sea Breeze**. These breezes blow most powerfully at about 1 p.m., when the heating power of the Sun is greatest. This goes on throughout the day, but in the evening the land loses heat more quickly than water, and at a certain stage the temperature of the water and land becomes more or less the same. The temperature of the air on land and water being also the same there will be no wind at all, and the atmosphere will be quiet. But later as cooling continues, the land becomes more quickly cool, while the sea remains warmer than the land. Hence the air on the land becomes cooler and therefore denser, and so it rushes towards the sea, where the air is warmer and so lighter. Thus a current of air is set up from the land towards the sea, and this is called the **Land Breeze**. The warm land breeze blows towards the sea during night, and the cool sea breeze blows towards the land during the day, the sea breeze being stronger than the land breeze, because of the difference in temperatures being greater during the day than during the night.

Planetary Winds.

Following the same line of argument, we shall consider about the winds of the earth in general.

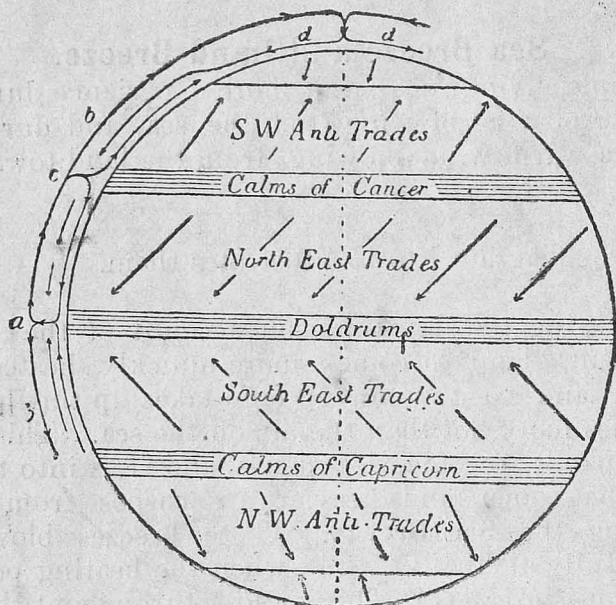


Fig. 16. Winds.

Though the Sun is the source of heat for the earth, yet some parts receive more heat than others and so regions of different atmospheric pressures are formed. Thus for instance the equatorial regions receive the **Vertical** rays of the Sun, and they consequently become more hot, and so the air over those regions must be hot. As a result of this, equatorial regions become regions of low pressure. Geographers have by careful examination found the following **three regions of low pressure** on the globe. (See fig. 17).

(1) **The Equatorial region of low pressure.**—This is caused by the almost vertical rays of the Sun heating the region throughout the year. Added to this is the enormous quantity of vapour which is mixing with the air in this region. These two make the air lighter, and so the air rises vertically upward.

(2) There is a **region of low pressure on the Arctic circle.** This is perhaps caused by the rushing of the air towards the equator on account of the earth's rotation.

(3) For the same reason another region of **low pressure is on the Antarctic Circle.**

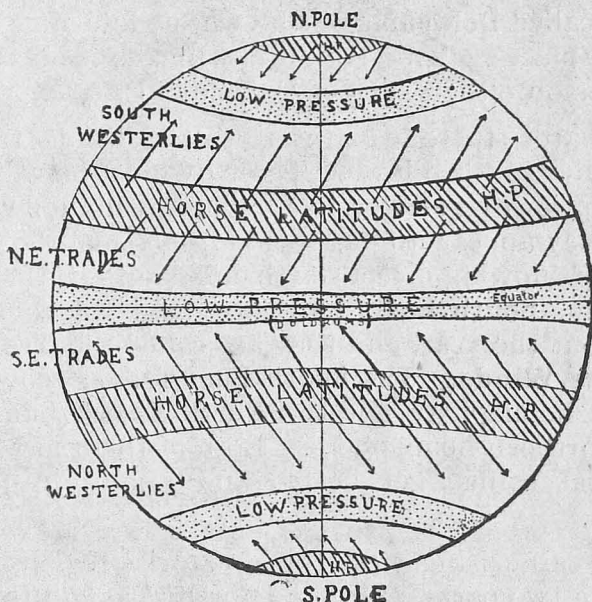


Fig. 17. Low and High Pressure areas.

There are **four regions of high pressure** (1) one at each pole. These are caused by the intense cold of the regions, where the air contracts and becomes very dense. Hence these are **areas of high pressure**.

(2) Two more areas of high pressure are found on the earth, and they are **on the Tropics**, one on the Tropic of Cancer and the other on the Tropic of Capricorn.

Let us now consider in detail the movement of winds. On account of the great heat and the accumulation of moisture in the equatorial regions, the air becomes lighter and rises high into the air, and there it begins to flow towards the north and the south. To take the place of this heated air, air from the north and south rushes towards the equator as **surface currents**, and these are felt by the people. These air currents, in their turn, get heated in the equatorial regions and rise high into the atmosphere. As these rising currents of air do not help the sailing ships, the sailors called these regions **a belt of calms**. These **Equatorial calms**

are also called **Doldrums**. The word *doldrums* means sleeping places. This region of calms extends to about 100 miles on either side of the equator.

Towards these equatorial calms winds from the north and south blow. These winds blow from a region of **lower velocity** to a region of **higher velocity** and so they appear to lag behind. Hence the winds, instead of blowing direct north and south, form **North-East** and **South-East** winds. These blow steadily throughout the year, and they are called the **Trades** or the **Trade Winds**. The **South-East Trades** blow in the southern hemisphere and the **North-East Trades** blow in the northern hemisphere. Both of them meet in the Equatorial calms, get heated and rise up into higher attitudes.

The air rising near the equatorial regions divides itself into two parts, one going northward and the other southward as **Upper Currents**. After going some distance, they become cool and consequently descend on the tropical regions. As, in these regions, air descends, there are no winds to help the sailing ships. Hence these regions are also called **the calms**. There are two regions of this kind, (1) the **Calms of Cancer** (2) the **Calms of Capricorn**. (See fig. 16).

From these regions winds blow north and south. We have already spoken of the winds blowing towards the equator and called them the **Trade Winds**.

Let us consider winds blowing from the **Tropic of Cancer to the north**. Here the wind moves from a region of higher velocity towards one of lower velocity. Hence the wind, instead of **lagging behind**, goes **forward** and forms a south-westerly wind. As these winds blow in a direction contrary to the Trades, they are called **Anti-Trades** or simply **Westerlies**.

In the southern hemisphere we have similar winds flowing from the north-west. As there is very little land in the southern hemisphere, these winds blow **more steadily and more strongly**, and hence they are

called the **Brave Westerly Winds** or the **Roaring Forties**, as they blow within the parallels of latitude 40° and 49° south of the equator.

We have thus winds blowing from the Tropic of Cancer towards the Arctic Circle and the equator. Those which blow towards the Arctic Circle are the **Westerlies or South-West Anti-Trades**. Those that blow towards the equator are called the **North-East Trades**. As there is much land in this hemisphere, these winds are not very strong, nor are they very steady. They change their direction according to local conditions, which we shall see in a later chapter.

The second system of winds is seen blowing from the **Tropic of Capricorn**. Those that blow towards the equator are called the **South-East Trade Winds** and those that blow towards the Antarctic Circle are called the **North-West Anti-Trades or Westerlies**. As there is comparatively little land here, these winds are more powerful and more steady. **The Trades and the Anti-Trades** thus constitute the **Planetary Winds**.

Owing to the revolution of the earth, the Sun seems to swing north and south of the equator between the two tropics. Hence along with the Sun, these wind belts also move north and south, causing rainfall in certain regions in one season and in others in the other season.

Besides these, there are local variable winds corresponding to different seasons. These are called **Monsoons**.

To understand these, let us look at the following map. This shows the winter conditions of the globe. The areas of high and low pressure and the direction of winds are here marked. From the diagram you will find that the low pressure areas are (1) to the east of Japan, and the winds from the High Pressure Area of Central Asia blow towards this low pressure region. Another low pressure region is south of Greenland and the Westerlies turn towards it and do not blow strongly

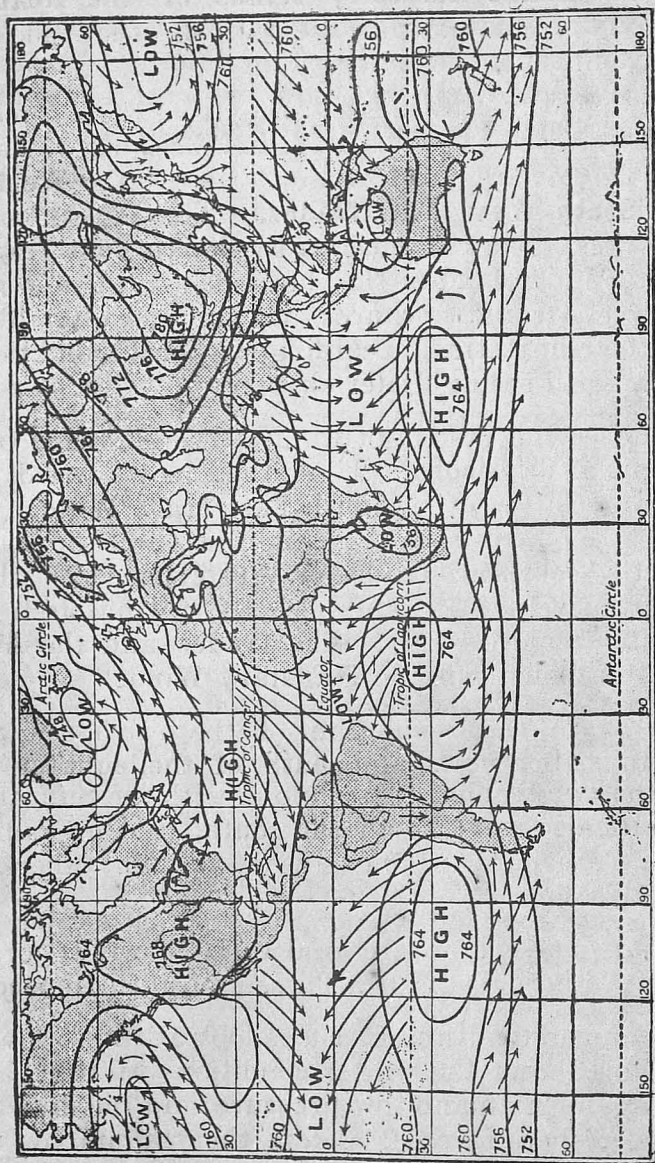


Fig. 18. Winter Conditions.

over the north European plain. (3) A third low pressure region is West of **Canada**, and the Westerlies blow powerfully towards it.

The equatorial areas of low pressure are just south of the equator, and so the south-east Trades in the Pacific blow as usual, but when they approach Australia there are drawn into the low pressure region there, where they appear as **North-east Monsoon**.

In the Indian Ocean, the north-east Trades blow over the Bay of Bengal and the Arabian Sea as north-east monsoon and meet the south-east Trades south of the equator. At this time Southern Africa is a region of low pressure and so the south-east Trades are drawn inward. In the Atlantic Ocean however, both the trades meet on the Amazon basin and give immense rainfall. The Westerlies in the southern hemisphere blow steadily giving rain to the southern part of Chile in South America. South Africa and South Australia being beyond the range of these winds, they do not get any rain.

Now in July these conditions change. The Sun is on the Tropic of Cancer, and the Planetary Winds also swing towards the North. In addition to this, the huge land mass comes under the vertical rays of the Sun, and therefore forms a low pressure region.

Look at the map. The **low pressure region** is in central Asia and the winds are therefore drawn inward. The North-East Trades in the Pacific rush towards Asia and give rains to Eastern Asia. The South-East Trades in the Pacific drawn by the low pressure region cross the equator and merge more or less with the North-East Trades.

In the Indian Ocean, on the other hand, the low pressure region in India does not allow the formation of the North-East Trades. And the South-East Trades drawn by the low pressure region cross the equator and turning **eastward** blow as the **South-West Monsoon** across the Arabian Sea and the Bay of Bengal. These are helped by the high pressure regions in Australia and the South Indian Ocean.

In the Atlantic Ocean the low pressure area is north of the equator and the North-East Trades blow

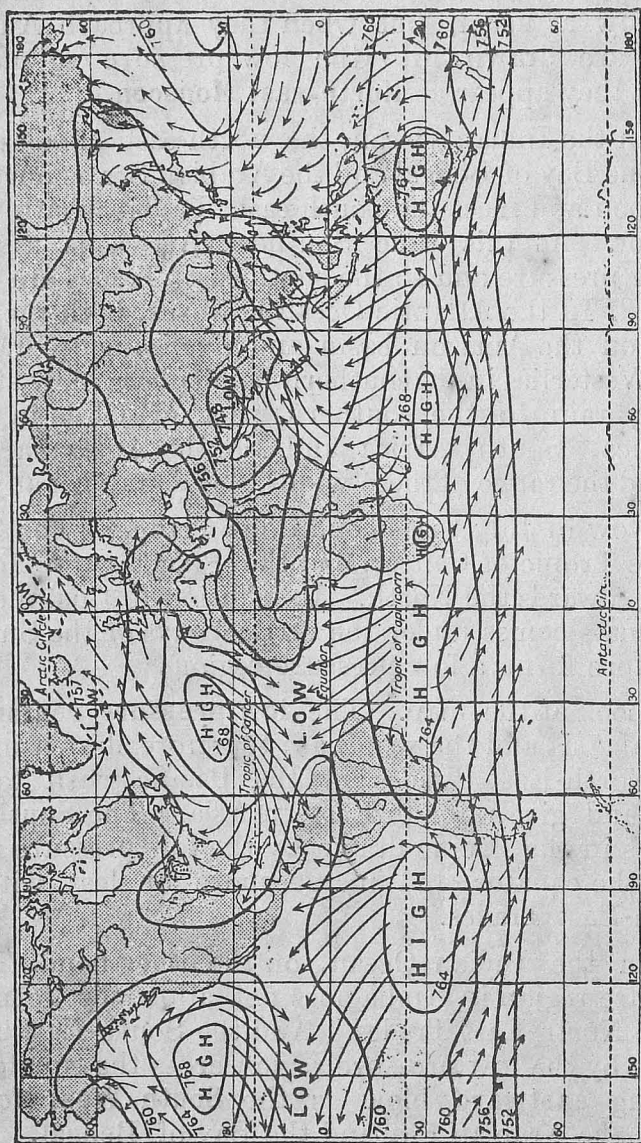


Fig. 19 Summer conditions.

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steadily over the West Indies and Central America. The South-East Trades blow over the Amazon region.

The Westerlies in the Atlantic Ocean swing farther north and blow steadily giving rain to the northern parts of Europe, while the Mediterranean lands are left practically without rain.

The Westerlies in the southern hemisphere also swing Northward and give rains to **Central Chile, South-west corner of South Africa, and the south-west part of Western Australia and Victoria.**

Importance of Winds.

(1) They mix up the air in different regions and make its composition more or less uniform ; otherwise certain regions would have more carbonic acid gas than others. (2) Winds cause the ocean currents. (3) They regulate the temperature of lands by carrying moisture and depositing it in the form of rain, and then by supplying the much needed water for the growth of plants and animals. In fact if there were no winds, the moisture from the sea will fall back into the sea only, and life on land would become impossible. (4) Winds no doubt supply energy to windmills. But when they blow with violence, as in storms, they cause immense damage.

Clouds and Rain.

The Sea is the great reservoir of water. On account of the Sun's heat, water is evaporated, and the vapour so formed is mixed with the air and is carried by winds on to land, where it falls as rain.

Conditions of rainfall (1) There must be enough of moisture in air and this is possible when winds blow from the sea. Winds blowing from the land will be dry winds. (2) It is not enough if we have moisture only. There must be some means of condensing the moisture before it falls as rain.

The higher the mountain, the greater will be the cooling, and so more vapour gets condensed and heavier rainfall will result. Rainfall caused in this way is called the **Relief Rain**, and the regions behind the hills get dry winds and so they have little or no rainfall.

These regions are therefore said to be in the **Rain shadow** of those mountains. For instance, when the south-west nonsoon is forced up the western ghats, much of the rain falls on the western side of the western ghats, and the eastern side gets very little rain. Hence the central part of the Deccan is said to be in the **Rain shadow of the Western Ghats**.

The following diagram illustrates the point.

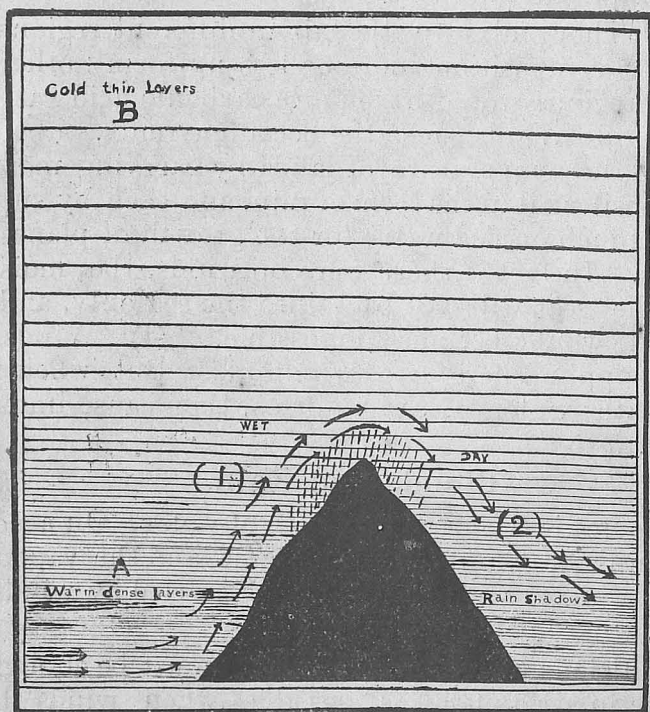


Fig. 20

Another way in which condensation takes place is this : on the equator when the North-East and South-East Trade Winds meet, they get heated by the Sun, they expand and rise into the air. In so doing they carry with them enormous quantities of moisture contained in them into the **higher and therefore cooler** regions. **Consequently precipitation takes place, and rain-falls in abundance.** These rains are called **Convectional Rains**, and are common in the equatorial regions.

Distribution of Rainfall.

Remembering the conditions of precipitation let us study the rainfall of the globe as a whole.

The North-East Trade winds blow between the Tropic of Cancer and the equator, and the South-East Trades blow between the Tropic of Capricorn and the equator. Both of these meet on the equator, get heated and rise into the higher and therefore cooler regions. As these winds pick up much of moisture from the oceans over which they blow, there is **heavy precipitation all round the year** in the tropics. This region of tropical rainfall swings north and south slightly according to the movements of the Sun. These **convictional rains** fall in the **East Indies, the Congo Basin, Central America, the Amazon Basin** and the **West Indies**, besides many other islands in the tropical regions. From these winds, it is the east coasts of these regions that get the heaviest rainfall.

There are the Westerlies or the South-West Anti-Trades in the northern hemisphere. These blow from the west between the latitudes of 30° to 50° , and all regions in this latitude get rainfall on the western sides. In North America, for instance, **British Columbia** gets heavy rainfall, but as the Rockies are very high, the region east of them lies in the **Rain shadow** of the Rockies, and so they get very little rainfall. Europe on the other hand depends entirely upon these westerlies, and the **North-Western Countries of Europe** including the **British Isles** get their rainfall from these rain bearing winds. The rainfall of course becomes less and less as we go into the interior more and more from the west coast. On account of the immense land masses in this region, these winds are not so steady and so powerful as the Westerlies in the southern hemisphere. The regions that get rainfall from these winds are **British Columbia, the British Isles, Norway, France, Portugal** and the rest of northern Europe.

The Westerlies in the southern hemisphere blow over vast oceans, and consequently they blow more steadily and more powerfully, and the lands that get rainfall from these are the **Central and Southern Chile**, the **South-west part of South Africa** and the **southern part of West Australia, Victoria, Tasmania and New Zealand**. One peculiarity of these Westerlies is to be noticed. Along with the Sun and the other system of winds, these **Westerlies** also swing **north and south** with very important results.

In July when it is summer in the northern hemisphere, these Westerlies move northwards and regions like **California**, and the **Mediterranean countries of Europe and Africa** will just be beyond their range. Hence these temperate regions have **warm, dry summers** with **no rainfall**.

For the same reasons, the Westerlies in the southern hemisphere move northward, and regions like **Central Chile**, the **south-west of South Africa**, the **south-west of Western Australia**, and **Victoria** receive rainfall. This is their winter and they have fairly good **Winter Rainfall**.

In January the Sun is on the Tropic of Capricorn, and the general system of winds swings southwards. The **Westerlies** also swing southwards.

Thus **California** and the **Mediterranean countries of Europe and Africa** just come within the influence of these Westerlies in the northern hemisphere. They have therefore good rainfall, and it is winter in these parts. Hence these regions have a good **Winter Rainfall**.

The Westerlies in the southern hemisphere move southwards, and **Central Chile**, the **south-west of South Africa**, the **southwest of Western Australia** and **Victoria** will be beyond the range of the Westerlies. Hence they have no rainfall. As it is summer for them, they have **dry, warm summers**.

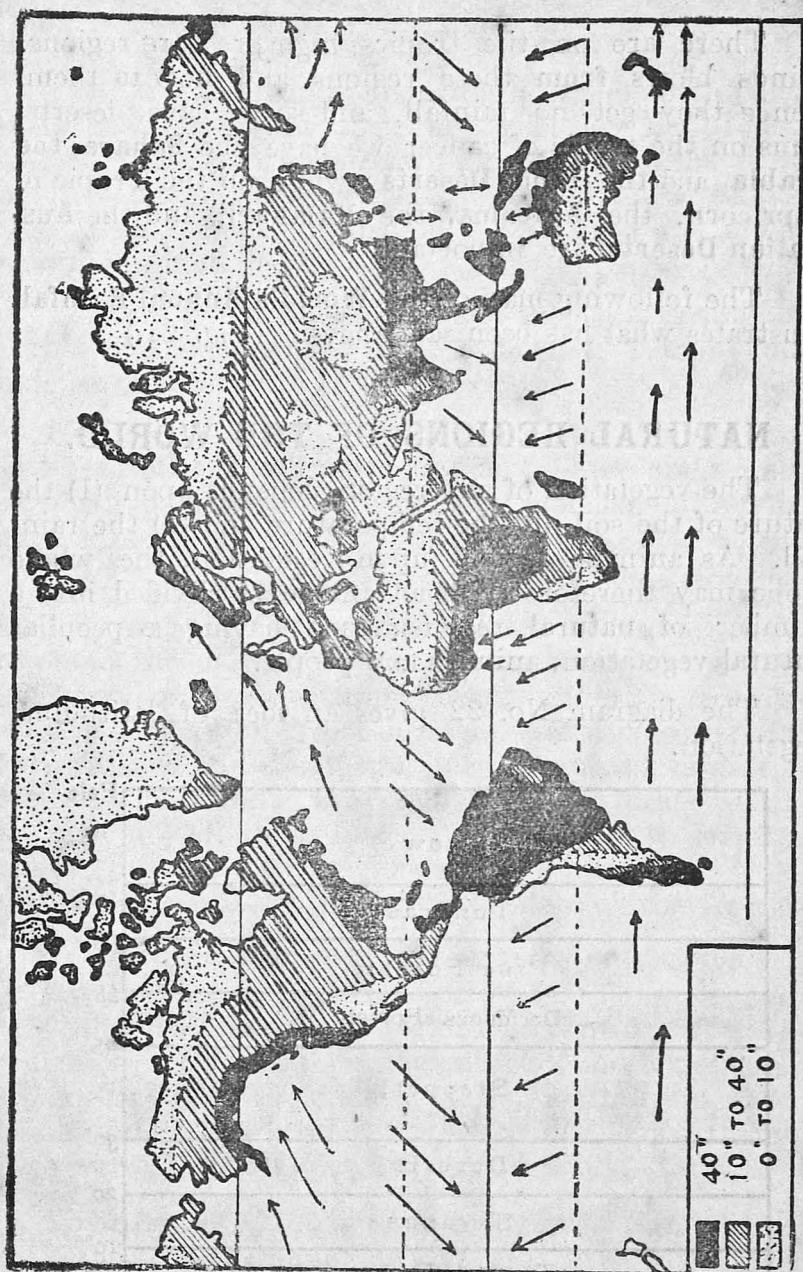


Fig. 21. Annual Rainfall.

Thus we find, in the region of Westerlies, temperate lands which have **wet winters** and **dry summers**. These are said to have the **Mediterranean** type of climate, and are therefore called **Mediterranean lands**.

There are on the tropics high pressure regions. Winds blow **from** these regions and not **to** them. Hence they get no rainfall, and so we have deserts. Thus on the tropic of cancer we have the **Sahara**, the **Arabia** and the **Sind Deserts**; while on the Tropic of Capricorn, the **Atacama**, the **Kalahari**, and the **Australian Deserts**, are important.

The following map of the **World's Annual Rainfall** illustrates what has been said above. (Fig. 21.)

NATURAL REGIONS OF THE WORLD.

The vegetation of any region depends upon (1) the nature of the soil, (2) the temperature and (3) the rainfall. As animals depend upon vegetation, the whole globe may therefore with advantage be divided into a number of natural regions, each having a peculiar natural vegetation, animals and people.

The diagram No. 22 gives an idea of latitudinal vegetation.

Snow	Pole
Tundras	75°
Pine Forests	65°
Deciduous Forests	55°
Steppes	45°
Deserts	30°
Savanas	20°
Tropical Forests	10°
	0°

LATITUDINAL ZONES OF VEGETATION ON WESTERN
SIDE OF CONTINENTS

Fig. 22.

(1) Tundra and Ice Cap.

(a) Far away from the equator, near the north pole, where cold is greatest there are what are called Ice Deserts. These are covered with ice all round the year, and in summer when ice melts here and there, people go to these regions for fishing. Seals, cod and other fishes are caught.

Eskimos live in this region and their life is similar to that of the **Lapps**, **Finns**, **Samoyads**, **Yakuts** and **Tunguse** mentioned in the next region.

(b) South of these ice bound regions, there are what are called the **Tundra Lands**. These are round the north pole north of Russia in Eurasia, in North America north of Canada.

In winter they are frozen with ice, but in summer they are wet marshy lands. Then moss and lichen grow and this is just enough for the **Reindeer** which is the only domesticated animal here. All other animals living in this region are flesh eaters. **Arctic fox**, **Polar bear**, **Walrus** and **Seal** are the important animals living in this region. **Ptarmigan** is the typical bird of this region. All these live on fish and other smaller animals, but the ultimate food of all is medusae a tiny creature so abundant in the cold waters of the Arctic Ocean.

Lapps, **Finns**, **Ostyaks**, **Samoyads**, **Tunguses** are the people that live these regions. Hunting is their occupation. Flesh is their natural food, and bones are, till very recently, their tools. Their clothing is made of skins, and all their energy is spent in keeping themselves warm. Hence they are very short.

Their houses are skin tents in summer. In winter they either live in the hollows covered over with skins or build ice houses with low entrances and a small hole at the top for smoke to go out. Timber is very rare, and so they have no fires, and the only way they cook is on the tiny lamps which are fed by the fat of the

animals they kill. For this reason they eat meat more or less raw, and to keep themselves warm they devour a lot of blubber.

These people have thus no settled life. They are therefore nomads moving from place to place on sledges with their herds of **Reindeer**, their most valuable possession.

People living in such hard conditions cannot be expected to develop any taste for arts or learning, and therefore they must be in a state of low civilisation.

Under the hard conditions of life these people live, there is not much scope for them to develop the feeling of pity, and so old people and the weak who cannot help themselves are left to perish.

(2) The Cold Forests.

South of the Tundra region there is a region called the **Taiga**. This is the Arctic or the cold forest, consisting of coniferous trees such as **pin**es, **firs**, **spruces**, and **larches**. This forest region extends over vast areas in the north of Canada, Norway, Russia in Europe and Asia.

The climate of this region is very cold and rainfall is moderate. In such a climate as this, trees must be well protected against chill winds blowing from the north. Their leaves are therefore very small and needle-shaped, and are rolled lengthwise, with thick leathery skin and of fibrous structure. The trees grow tall like cones, with branches which are short, and they become shorter and shorter as they go up the trees. They are very woody, and the leafy surface is almost nothing compared to the size of the wood, in which all nourishment in the form of starch is stored up for use in their usual bleak winter.

In such climate, undergrowth is naturally not possible, as the ground freezes sometimes to a depth of four to five feet. The stunted bushes growing here and there are protected by a covering of snow. All the

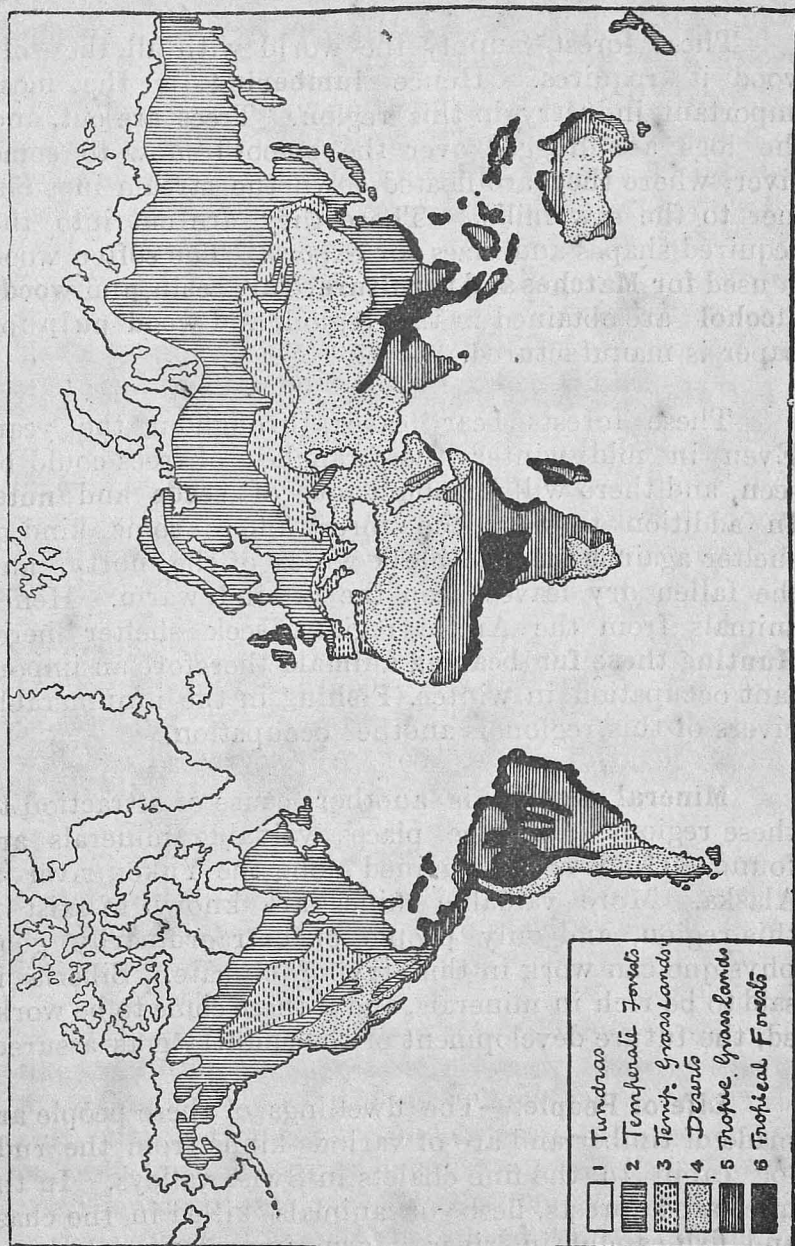


Fig. 23. Natural regions of the world.

same, the undergrowth is so scanty that the forest looks like the pillars of a huge cathedral. One peculiarity of this region is that only a few varieties of trees grow in it. Very often for miles and miles one kind of tree is to be seen.

These forests supply the world with all the soft wood it requires. Hence **lumbering** is the most important industry in this region. Trees are cut, and the logs are dragged over the smooth snow to some river, where they are floated down the stream in summer to the saw mills. There they are cut into the required shapes and sizes for export. The softer wood is used for **Matches and furniture, Tar, resin, and wood-alcohol** are obtained in this region, and **wood pulp** for paper is manufactured.

These forests bear leaves throughout the year. Even in mid winter the branches of trees could be seen, and there will be abundance of **seeds and nuts**. In addition to this, the forest offers some kind of shelter against the cold bleak winds of the north, and the fallen dry leaves keep the ground warm. Hence animals from the Arctic regions seek shelter here. **Hunting these fur bearing animals** therefore an important occupation in winter. **Fishing** in the innumerable rivers of this region is another occupation.

Mineral wealth is another cause of attraction to these regions. In some places valuable minerals are found. Gold is now mined along the Yukon river in Alaska. More valuable mines are known to exist in this region, and only people of extraordinarily good physique can work in this trying climate. Siberia is said to be rich in minerals, and if these come to be worked, the future development of the country gets assured.

Life of People.—The dwellings of these people are made of timber and are of various kinds from the rude log cabin to the fine chalets in Swiss valleys. In the uncleared forests, flesh of animals killed in the chase and fish caught in rivers form important articles of diet, but in the clearings of forests hardy grains such as rye, barley form the staple food. Their clothing is generally made of skins and furs, but modern trade is bringing them many articles manufactured elsewhere.

(3) Temperate Forests.

These are found south of the Arctic forest, where the temperature is warmer. This forest region is found in Russia and extends up to the Urals. It reappears in Eastern Asia, in the Amur region and is found in Japan. In North America, on the other hand, it is found east and west of the Alleghany mountains and stretches across the Laurentian plateau up to the lake region. In the southern hemisphere these forests are found in Patagonia and Southern Chile.

These trees have broad leaves, and they shed them in winter. In spring they put forth fresh buds, and in summer they have green leaves. The most important trees are oaks, ashes, breeches, maples, birches and elms.

These forests have a fair mild temperate climate but the winters are usually severe. Hence the foliage is less and the trees from a large quantity of wood, in which is preserved plant food in the form of starch to enable the trees to live in severe winter.

These forests are being cleared everywhere, and the clearings are being used for agricultural purposes. The forests supply both hard and soft woods, and the clearings grow a variety of crops.

Life of People.—Life in this region is more or less like the life in the coniferous forest. But in this case more forest is cleared and more lands are brought under cultivation. Hence the people's whole time is not spent entirely in procuring their food. As agriculture gives them enough and more food, they do not live a precarious kind of life. On the other hand the surplus food that they have in the shape of grain gives them some leisure, which people utilise for the development of arts and crafts. Hence people in this region are in a state of advancement.

(4) Temperate Grass Lands.

South of this broad leaved temperate forest belt, which has considerable rainfall from the Westerlies, there is a region where the rainfall is meagre. Hence trees cannot grow. **Grass** is the only vegetation in this region, and it grows with surprising rapidity to the height of man. Here neither the deciduous trees nor the evergreens can stand the extreme chill of the strong dry winds blowing over these regions. The soil is too fine and too compact to allow of aeration of the subsoil for the growth of trees.

These grass lands bordering on the Anti-Trade Wind regions are called by the general name of **Steppe lands**. In Asia they are known as the steppes, in North America as the **Prairies**, in South America as the **Pampas**, and in Africa as the **Veld**.

Life of people.—In these regions where rainfall is scarce, agriculture is impossible. The grass however feeds large herds of wild and domesticated horses, asses, sheep and cattle. Hence **cattle rearing** is an important occupation. But the supply of grass gets soon exhausted, hence the herds have to be taken to other regions. So people living here have to lead a nomadic life. **Horses and camels** are therefore of the greatest importance, and riding is only a play for them.

As people are nomads, their houses are **leather tents**; and leather bottles and bags form their utensils, which are very light and do not generally break. During the winter season, they build houses with grass and mud near places where they have water supply. As these people have to obtain everything for themselves, and they get trained to **habits of independence**. Their nomadic life and the consequent sufferings it entails make them **very kind to strangers**.

In the **steppes of Russia** and in the **Prairies of America**, hundreds of thousands of **cattle** are reared, no doubt, but the people are not entirely cattle rearers. One reason for this is that people there are of European

origin and they are accustomed to farming. Besides, there is water supply in these regions. Hence though cattle rearing is an important occupation, much of the

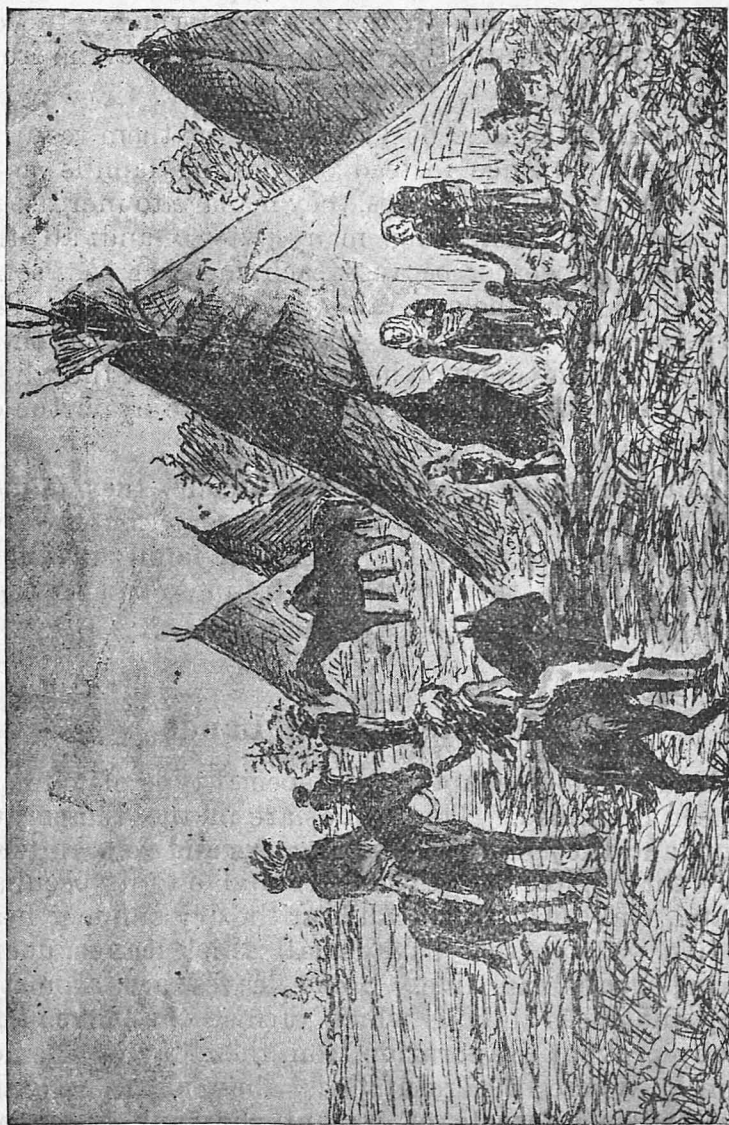


Fig. 24 American Indians:

land is being brought under cultivation, and **Wheat and maize** are extensively grown and exported to the European countries which need them.

Rearing of large flocks requires the help of the horse, without which they can neither round up the animals easily, nor carry their tents and baggage from place to place. Hence it is that they prize horses very much, and every man there is a good rider. Indeed riding is the education given to children even from their fourth year.

Looking after huge flocks and milking them requires many hands. Hence instead of limiting families as is done in all civilised countries, they manage to increase it. This is done by marrying many wives, and all the members live together because each member does some work or other for the general good of the family. The grown-up sons after their marriage live with their parents rendering as much help as they can for the whole family. The father thus becomes absolute by virtue of his experience, and his word is law.

As these steppe dwellers are nomadic, they do not like settled life. They are therefore very conservative in their outlook of life. But the large family in which they live teaches them brotherly feelings, and so they are hospitable and kind to strangers.

(5) Mediterranean Lands.

In a previous chapter, this special type of climate has been described. These lands are in the **temperate region, and they have warm summers and wet winters.** Hence this region has vegetation suitable to its peculiar climate. Only plants that can bear the dry summer heat can live. Those that have **small thick leaves, deep-striking roots** can live. Some leaves are aromatic giving out juices and oils which varnish **the leaves and thereby prevent evaporation** from them during the hot season. Where the rainfall is abundant as in Italy and Portugal, **forests of walnut, chestnut, green oak and cork trees** are very abundant. **Fruits** form the typical product of this region, and they become ripe in the open air.

The chief varieties are **mulberries, grapes, oranges, lemons, figs, olives and apricots**. Hence **fruit canning and drying** are the most important occupations of the people. Silk worms feed on the mulberry leaf and yield much **silk**. Olives give **olive oil**. Grapes yield much juice. From these are manufactured **silk fabrics, soap and wines**.

These regions are so sufficiently productive that man is able to produce all his requirements. He has therefore ample leisure for developing **arts and crafts** and for **higher and noble thinking**. Hence in these regions civilization advanced, and philosophers sprang up. Greece and Rome are the best examples of countries that contributed much to the civilization of the European continent.

(6) Desert Lands.

As we proceed from the Mediterranean lands towards the equator, we enter regions of high pressure and so desert conditions prevail. These lands are on the tropics and are situated on the western margins of every continent. The heat is terrible and the rainfall is almost nil. Hence during the day the land becomes intensely hot, while at night the heat gets so rapidly radiated that the temperature falls very low. Indeed the range of temperature between day and night is so very great, that the rocks like a highly heated chimney gets suddenly cooled and so breaks into pieces. These pieces break into smaller ones till the whole region is covered with a very fine sand.

This sand is blown hither and thither by the wind, and the ever-shifting sandhills form the natural feature of the desert region. But when the dreaded **Simoom** or the sand storm blows, the drifting sand buries man and beast alive.

In the midst of the desert region, fertile spots are sometimes seen. These are the **Oases**. The presence of water either in springs, wells or rivers, makes the



Fig. 25. Oasis.

region fertile, and **date palms**, **rice** and **millet** are often grown. The presence of such fertile spots in the Sahara Desert made it possible for caravans to travel across this desert.

The natural vegetation in the desert region consists of thorny plants and shrubs and prickly acacias, which manage to send their roots deep down. And the only animal that is adapted to the desert region is the **camel**. This can store up water in its stomach and travel in these deserts for days without fresh supplies. In oases and on their borders, sheep cattle and goats are also reared.

People.—Settled life is impossible in this region except in oases. The most important occupation there is agriculture, cattle rearing and trade. Making of woollen goods such as rough blankets and carpets, drying of dates are some of the secondary occupations. People in oases live in mud houses or palm leaf huts.

The **nomads** of this region live on the poor grass land on the margin of the desert. They roam over the desert, and are engaged in camel driving. Their houses are rude leather, grass and brushwood tents. As caravans are often attacked by robbers, even women go armed, and they enjoy much freedom and mix freely with other men.

As they have to be moving about in trackless sandy wastes in caravans, proper guidance is of the utmost importance and, may mean life or death. Hence the eldest member of the group is made the leader and his will is law.

(7) Hot Grass Lands.

Travelling towards the equator from these deserts, we come to regions which are hot but have some rainfall. The rainfall being scanty only grass can grow, and trees are found along rivers and places where water collects. In these regions they have summer of eight or nine months with a short rainy season.

These hot grass lands are called the **Savannas** in Africa. They are on either side of the region of the equatorial rainfall, and extend north and south as far as the tropics. This region is more or less a level plateau,

and along the margin of rivers trees are found particularly Baobab. But **grass** being the natural vegetation, Zebras, Giraffes, Antelopes, Elephants, and Rhinoceroses are found in large numbers. Preying upon these are Tigers, Lions and Pumas living in wooded jungles near by.

In this region are the swift running birds such as Ostriches, Emu and Rhea.

In South America on either side of the great Amazon Forest, there are tropical grass lands called **the campos** in Brazil, and **the uanos** in Venezuela.

In Australia, all round the desert region in the north is the tropical grass land, and cattle are reared in their thousands, though this part of the continent is yet thinly populated.

(8) Equatorial Forests.

We have said already that the equatorial regions have convectional rains all the year round. This with the high temperature is the cause of extensive forests.

These are in the **Congo Basin**, the **Coast of Guinea** in Africa, in the **Amazon Basin** of South America, **East Indies**, **Malaya** and **Ceylon**. The forests are thick and very often impenetrable. Various **kinds of timber** and **rubber** trees are the natural products of these regions. In places where lands are cultivated, **Rice**, **Sugarcane**, **Cocoa**, and **Bananas** are chiefly grown. But these regions are unsuitable to white population, and coloured races therefore are the inhabitants of these regions. Owing to damp heat the climate is generally unhealthy, malaria being the commonest disease. Attempts are being made to effect improvements in this direction and, if they succeed, there is every chance of these regions being thickly populated.

Coast strip of Guinea.—The region round the gulf of Guinea is one of the forest regions. Here the Niger enters the sea. **Oil palms Rubber** and **Cocoa** are the most important products and their **collection** is the most important occupation of the people.

Congo Basin is another huge forest area. Lofty trees are found in this region with thick undergrowth, so much so, that the forest is impenetrable for man and beast. Elephant is the only animal that lives here and even this lives on the margins of the forest.

Life of People.—**Pygmies** live in this region. They are short, and dark and live in the interior of the forest.

Hunting and collecting rubber and ivory are their chief occupations. They do not build houses nor have they cooking utensils. Nets and weapons are the only things they can make, and they are not far above the animals they hunt. They seem to be short on account of the fact that they get very little sun light in the gloomy forest.

The **Amazon forest** is by far the biggest one in the world. This is also thick and impenetrable even to sun light. The lower parts of the forest get submerged in the rainy season. Hence big animals do not live at all here. Only birds, monkeys, reptiles such as snakes live on the top of trees and go from place to place without touching the ground.

Very few people are in this region, and these live on the banks of water courses. They are hunters and they collect **rubber and gum**. If this region is brought under cultivation, it will by itself be able to supply all the necessities and luxuries to the whole world.

In **Malaya** and **East Indies**, the forest regions are inhabited by different kinds of people. In **Ceylon** forest clearings are used for the growth of **Tea**. **Java** grows **Sugarcane, Cocoa and Rice**. **Cocoanuts and Sago palms** are the most important food plants there.

People in these regions are generally dark in colour and wear little clothing. They live in huts built in a circular form and covered with leaves. Their food consists of the forest produce which they procure very easily. The men are hunters and the women cultivate, do cooking and spinning in their rude huts. Cultivation is difficult, for the forest though cleared once, grows so rapidly in these regions that it is difficult to maintain it in fit condition, unless constant attention is paid to it.

(9) Monsoon Lands.

In addition to the equatorial regions where there is constant rainfall, there are regions where rain falls only in certain seasons. These are called **Monsoon Lands**. The great heat in summer makes the lands very hot and so they become regions of **low pressure**. Hence moisture bearing winds from the sea are drawn inwards, thus causing seasonal or **Monsoon rains**. These regions have a hot climate, abundance of rainfall in summer, and a drought of five or six months. On hills and in regions where there is much water, forests are found. These forests are not so thick as the tropical forests and are more open. There is no struggle for light as the trees are farther apart. In the dry season they shed their leaves, and as they have more light they do not grow tall, on the other hand the trees and their branches grow more stout.

These forest regions are healthier and are more easily cleared and cultivated than the tropical forests. Sal and **Teak** are the typical trees of these regions, though other kinds of timber grow as well. Whenever the forest is cleared, irrigation is easy and crops like rice, sugarcane, and bananas can easily be raised.

Among the monsoon lands the following are classed. **India, Burma, Indu Chinese Peninsula, China, Malaya, Madagascar, East Coast of Africa, Central America and North Australia.**

On the **Western ghats** and in **Burma**, **Teak** is abundant. Indeed more teak is exported from Burma than from any other country in the world. Assam is thickly forested, but much of it is now cleared, and **Tea plantations** have taken the place of the forest. Southern China grows much tea.

The West Indies and Central America supply **Cinchona, Mahogany** and **logwood** from their forests, while the plains grow much sugarcane.

In Burma **wild elephants** are found in herds, and these are caught and trained to haul huge logs of teak. Indeed the teak industry of this country owes not a little to the elephants, which are so useful in transporting this valuable wood.

Rice is an important product in all the deltas and in low-lying plains. In higher regions **Coffee and Tea** are extensively grown. **Assam and China** produce excellent **tea**, and the Western Ghats produce **coffee**, though the **Brazilian Highlands** grow more than fifty per cent of the world's production of this commodity.

Life in these regions is more varied and complex. As the regions are productive, people are engaged in various occupations, and live in dwellings of various kinds from the rude thatched hut to a pucca brick building. Ample leisure gives people time to develop arts and crafts, and people are more civilised than in some of the regions mentioned already.

(10) High Mountain and Plateau.

The High Mountains and Plateaus of the world form a separate region. The Himalayas, the Andes and the Rockies, and the Alps are the high mountains of the world. Among the high plateaus may be classed **Tibet and Bolivia**.

Mountains have, on account of their altitude, a variety of climate. As the temperature falls with the rise in altitude, mountains even in tropical regions have different zones of vegetation according to their height, soil, exposure and drainage of its several parts.

In the case of mountains like the **Himalayas** situated near the tropical regions, the lowest portion is hot and moist, and there is much supply of water from rains and mountain streams. Consequently this region is a

thick **forest** inhabited by wild animals such as the tigers alligators and serpents. Being water logged, it is unhealthy and malarial. As we go up the mountain, the region of forest disappears, and grass land becomes predominant. At a height of about 5,000 feet, **ever green oak forest** appears, and this continues up to a height of about 9,000 feet, when it gets replaced by the **coniferous** trees, as the climate there becomes colder and colder. This **coniferous forest belt of Pines** extends to about 12,000 feet, giving room to scanty vegetation like **moss and lichens**. This belt of scanty vegetation finally ends in a region of **everlasting ice and snow**. It is this snow that feeds many of the Himalayan rivers, and makes the Indo-Gangetic basin the rich plain that it now is.

The **Andes** extend north and south from the equatorial regions. On the eastern slopes of the mountains near the equator, the climate is extremely moist as the Trade Winds meet. Hence the forest region extends to a great height. The remaining zones of vegetation are more or less similar to the Himalayan zones. On the western side, however, there is only a scrub jungle because there is no rain. As the mountains extend southwards, the snow line descends, tropical vegetation disappears giving place to the several mountain zones referred to above. Thus the Andes in Bolivia is the home of the **Alpaca**.

The **Alps** are so far away from the equator that the climate even at their foot is cold. Hence conifers are found at the base of the Alps, and as we go higher, its vegetation becomes more or less like that of the **Tundra**. Moss, lichens are found on the middle slopes, while on the higher altitudes snow and ice form the covering. Hence it is that **glaciers** are found in the Alps at lower altitudes.

All occupations in the mountains are possible. In the lower slopes land can be cultivated in **terraces**, and

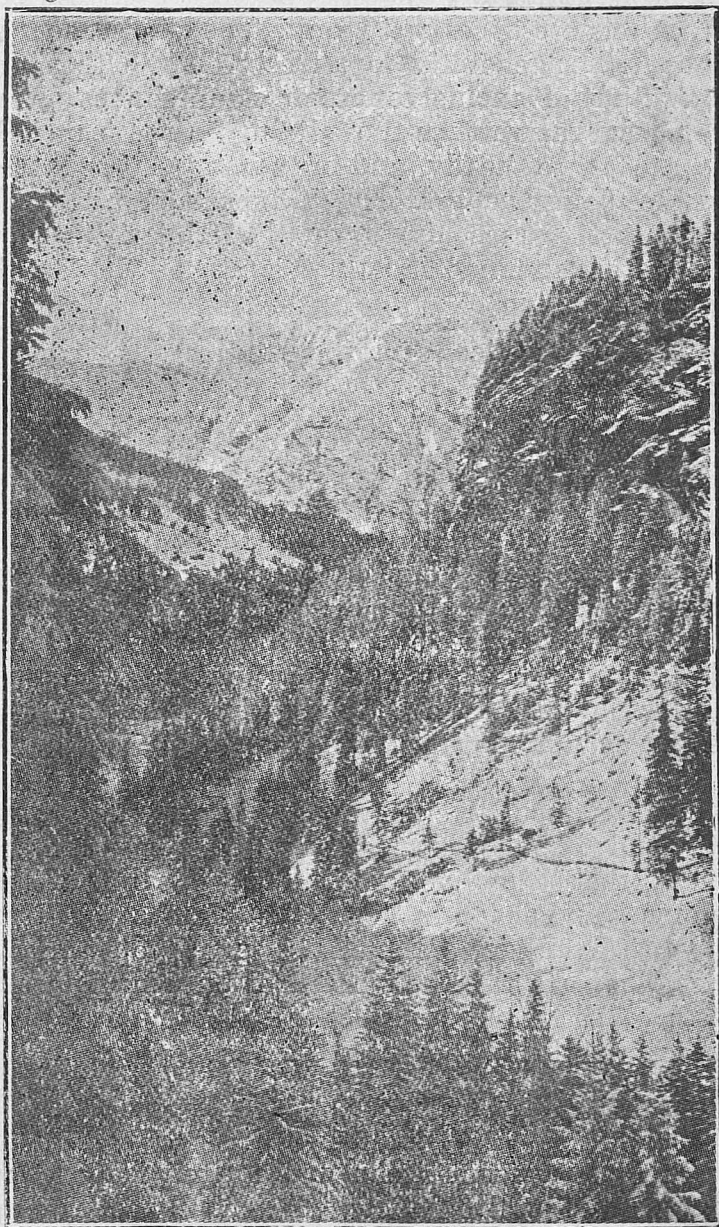


Fig. 25. Alpine Scenery.

in the higher regions, sheep and cattle can be reared. But the productions being limited, there will not be

much scope for a large population to settle. As communications are necessarily limited, people in mountain regions do not generally mix freely and so they develop a kind of **exclusiveness** or **clannishness** and are more **conservative** than those living on the plains. But they are more **hardy and brave** and more **patriotic** than the plain dwellers. The **Ghurkas** of Nepal are a hardy martial race living on the Himalayan slopes, and the highlanders of Scotland are known for their martial qualities.

The **high plateaus** of the world are (1) **Tibet and the Pamirs** in Asia and (2) the high plateau from Peru to Middle Chile. These plateaus are over 112,000 ft. in height.

Owing to their great elevation, the atmosphere is very rare, and there is very little moisture to moderate the heat of the sun. Hence noons are very hot, while at night the temperature falls to the freezing point of water. These extremes of temperature are very common, and strong icy winds blow throughout the whole year. Evaporation in the rarified air is very great, and therefore salt or alkaline tracts are frequently seen.

In this peculiar climate, only **grass** can grow in tufts, and population can only be very thin. The animals that can live on this poor herbage are **yaks, wild asses and sheep in Tibet, and Llamas and Alpacas** in South America. These also give people meat and milk. They are also their beasts of burden. Indeed the wealth of these plateau dwellers is calculated by the number of animals they possess.

(11) People and their Occupations.

In primitive times man was entirely dependent on nature and natural products. He merely collected products such as fruits, leaves and roots and lived upon them. In later stages he must have become a **hunter and fisherman** depending upon the products of the chase.

Cattle rearing became perhaps the next occupation.

At this stage more help was needed, and then man married many wives; and the big families that came thus into existence made this kind of life possible. But after all it is a nomadic life, and the difficulty of moving about and the precarious nature of livelihood must have taught people to take to **farming**. This must have been in a very primitive condition in early days. But as man developed his intelligence, he made several improvements, and **agriculture** has now become the most important occupation of many people. Numberless improvements have been made and are being made in this import occupation.

Modern occupations. We have traced briefly in the last few pages, the several stages through which man passed in coming to the present stage. He was then entirely dependent upon nature, and was in fact a slave to it. But it is not so now. He knows the secrets of nature, and is intelligent enough to harness her forces for his own ends. For instance Australia and North America had been peopled by men who knew nothing of nature and lived only on the products of the chase. But the continents are now quite different. After the advent of the Western nations, though the natural conditions have not changed, they are quite different from what they were. Much forest has been cleared, and many products are now grown. Roads, railways and canals have made their appearance, and everywhere are smiling fields and happy population. A waterfall was an object of dread to the original inhabitants, but modern people make waterfalls do their work. Seas were a terror to the primitive people, but they are now the highways of commerce. Thus man by his intelligence has changed the face of nature, and made the natural forces his servants.

All this does not mean that he **can overcome** nature. He cannot for instance grow rice in the polar regions, nor can he make all the African deserts very

fertile areas ; but he can by a knowledge of nature work in such a way as to improve the natural resources by working according to the laws of nature not against them. Though as a result of man's improvement new industries have risen, it cannot be said that the primitive occupations are given up.

Hunting and collecting the forest produce, we said, were the primitive occupations. These occupations are even now carried on. The people living in the Congo and the Amazon basins still collect the forest produce of which the most important is **rubber**. For the sake of **ivory** elephants in the African forests are still hunted, and **ostriches** are caught for the sake of their valuable feathers. While this is going on, we find side by side **rubber plantations** and **ostrich farms** wherefrom future supply of these can be assured. Man is therefore not only a destroyer but has also turned out to be a preserver.

Fishing is still practised by many people. This is done almost everywhere. But there are places which have become specially important.

(1) The **Dogger Bank** in the North Sea is an important fishing ground. In the sea weeds there, fish lay their eggs and hatch their young ; and so many kinds of fish are caught here. Many fishing villages are for this reason on the east coast of England, and all the bordering European nations take advantage of this fishing ground.

(2) The great waters of the Fiords of Norway are also famous fishing places, as well as the **Lafoden Isles** which are near them.

(3) Newfoundland is another great fishing centre giving occupation to as many as 60,000 people. The coasts of Labrador and Greenland are famous for their **seals**.

(4) May rivers in America such as the **Frazer**, the **Columbia** and all the Canadian Fiords have **Salmon** and these are caught in abundance.

Cattle rearing is still an important occupation for some people. This is now done in the steppes of Asia, the prairies of America, in Argentina and Australia. In fact Australia boasts of 'Shepherd Kings,' men who have grown enormously rich by this primitive occupation, conducted more efficiently with the help of modern knowledge.

But the most stable occupation is **agriculture**. This is practised in all warm regions wherever there is sufficient water supply either natural or artificial. For this purpose canals and wells have been dug, barrages constructed to impound water behind them, and to supply it by means of canals to distant parts, so that this honourable occupation may be practised without any let or hindrance. All the deltas and the coastal plains in warmer regions, the grass lands of the world are now made into smiling fields with crops of all kinds and the people live upon them.

(12) Modern Industries.

All these are primitive and natural occupations, improved somewhat by modern knowledge.

Natural products as we find them are not used as such. We don't eat paddy and wheat as they are. Sugarcane is not used as such. Nor are wool and cotton so used. All these have to be subjected to certain operations before they become finished products fit for human consumption. Hence arose modern industries, which have revolutionised the life of the people bringing with them advantages and disadvantages.

In early times human and animal labour was enough. For instance the pounding of paddy and the grinding of wheat, spinning and weaving were being done by human labour. But after the discovery of steam power and the ease and quickness with which it can do work, machines have come to take the place of man. Though human labour is still necessary to guide and control the machinery, yet much of the hard work is now done by machinery and that within a very short time. Hence everywhere we find mills being started, and industries carried on by the help of machines.

In all advanced countries, ploughing, sowing, reaping, etc., are being done by machinery. Spinning and weaving are done by them. In fact there is not an industry in the world, which does not employ some kind of machinery to increase its output.

As machinery requires some kind of fuel to work them, those countries which have fuel of some kind or other have the advantage of starting industries earlier. The most important sources of energy are **coal**, and **oil**. Of late **Electricity**, got cheaply from waterfalls, is being utilised. Hence countries which have an abundance of them have become industrialised.

But coal or oil alone are not enough. A liberal supply of **iron**, with which machines are made, is also necessary. Hence **coal and iron** may be said to be essential for the development of industries. No doubt other metals are also needed, but these can be got even from a distance, now that means of communication are being increased, improved, and perfected.

Cheap labour, easy transport, nearness of markets all contribute to the development of industries.

Remembering what has been said in the foregoing pages, we may proceed to consider the industrial situation of the several continents.

(1) Europe.

Foremost in industries is the continent of Europe. It has inexhaustible supply of coal and iron in certain regions.

Germany has abundance of coal and iron. The **Silesian** coalfield, the **Saxony** coalfield and the **Rhine** coalfield are the most important.

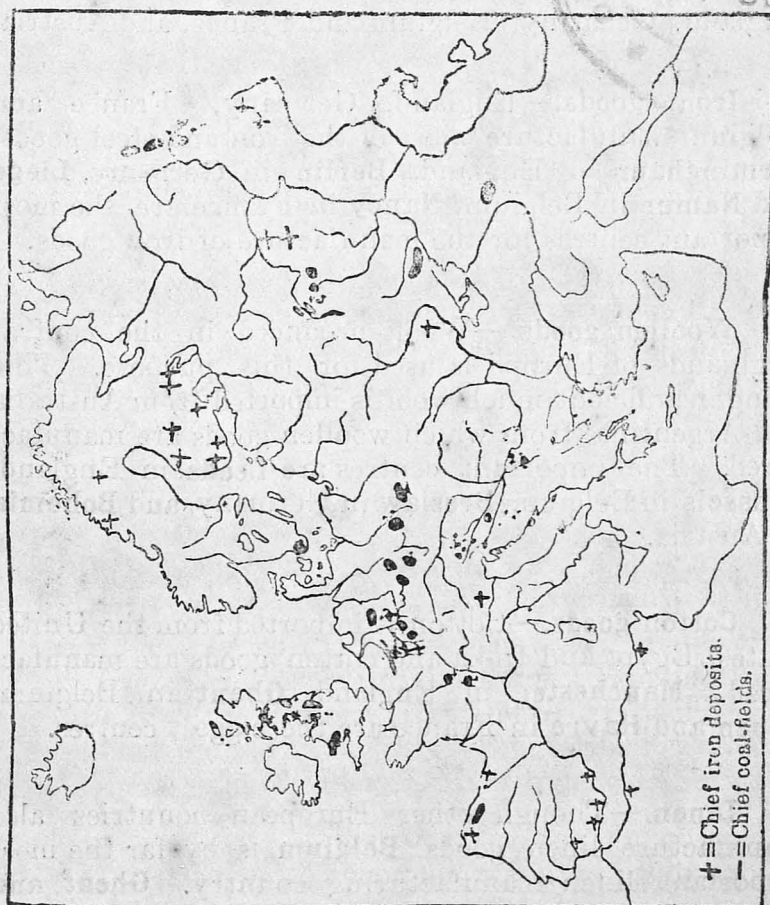


Fig. 26. Europe Coal and Iron fields

France and Belgium have got coalfields also.

(1) **Noral Coalfield** on the border between France and Belgium with **Liege** as centre. (1) **St. Etienne Coalfield** are important.

Austria has coalfields in **Bohemia**.

Russia has coalfields in the **Urals** and in the centre of the country near **Tula**.

The chief manufacturing areas are therefore in England, Germany, Belgium and France, and Austria.

Iron goods.—England, Germany, France and Belgium manufacture most of the iron and steel goods. **Birmingham** in England, **Berlin** in Germany, **Liege and Namur** in Belgium, **Nancy** in France are the most important centres for the manufacture of iron goods.

Woollen goods.—Wool produced in the central Highlands of Europe is used for this purpose. This being insufficient much wool is imported from Australia and Argentina, from which woollen goods are manufactured. The important centres are **Leeds** in England, **Brussels** in Belgium, **Breslaw** in Germany, and **Bohemia** in Austria.

Cotton goods.—Cotton is imported from the United States, Egypt and India and cotton goods are manufactured. **Manchester** in England, **Ghent** in Belgium, **Rouen and Havre** in France are the biggest centres.

Linen.—Though other European countries also manufacture linen goods, **Belgium** is by far the most important linen manufacturing country. **Ghent and Bruges** are the most noted centres. Home grown flax and that imported from the Baltic provinces are used here.

Silk—Italy produces much of raw silk and so does France in its southern parts. But the greatest manufacturing centre is **Lyons** in France in the St. Etienne coalfield. France imports raw silk from China and Japan.

Switzerland also is engaged in this. It has water power, and this is converted into electricity. **Basle** and **Zurich** are the important silk centres.

Germany also has silk manufactures but they are of inferior quality as cotton and inferior kinds of silk are used for the fabrics.

Timber industries are carried on in **Norway** and **Sweden**, where saw mills are worked near waterfalls. **Paper pulp** also is manufactured.

Chemicals are manufactured by Germany. Indeed glass, dyes, photographic materials are manufactured on very large scale. Other countries are far behind Germany in these industries.

(2) North America

Next in importance to Europe comes America in industrial affairs. This is mainly because it was recently discovered. It has considerable mineral wealth. Coal, Iron, Kerosine, Natural gas are all found in large quantities in the Eastern Highlands. The rich deposits of coal are found in the district round about **Pittsburg**, the Birmingham of America. It is in thicker seams and is found very near the surface. Hence it is worked very easily. Considerable quantities of coal are found in Calgary and British Columbia. This is used for railways. Large deposits of copper are in the Lake Superior region. Costly metals such as **gold** and **silver** are abundant in the Rocky Mountains.

America is therefore a great manufacturing continent. It has not only minerals but it has also considerable quantities of raw products. Temperate climate and large enlightened population all contribute to the extraordinary development of industries particularly in the United States. Canada no doubt has mineral wealth, but thin population, bleak climate are now impediments for the country's progress.

Iron goods. All kinds of iron and steel goods are manufactured at **Pittsburg** on a very large scale. **Birmingham** has smelting works and **Chicago** and **Philadelphia**, **Montreal** make locomotives and agricultural implements. Besides these there are other iron manufacturing centres also.

Cotton is manufactured in New England States on account of their damp climate and the cheap water power available there. Many towns on the fall line are also manufacturing cotton goods at present.

Woollen goods are also made in the New England States. **Boston** is an important centre. **Philadelphia** is another important centre.

Leather goods are made in **Chicago**, **Philadelphia**, **Boston**, and many other places.

Paper pulp from the timber of the Canadian and Newfoundland forests is manufactured at **Boston**.

Minneapolis in the dry central part of America has the largest **flour-mills**.

Richmond and **Baltimore** manufacture cigarettes from the Virginian tobacco. They are largely exported to other countries.

(3) Asia.

So far as industries are concerned, Asia is in a backward condition though there are possibilities. Japan till very recently unknown, has now become sufficiently industrialised to export several kinds of manufactured goods. It has large supplies of coal and iron, and it manufactures cotton, silk, glass and other goods.

India too has coal and iron and has started manufacturing, but her manufactures are in a state of infancy at present. But the possibilities are great if her sons take to industrial careers as raw materials are at hand.

China has magnificent **coalfields** much bigger than all the European coal fields, put together. It has plenty of **iron ore**. Her **population** is very dense. If her mineral resources are properly worked, with her cheap and efficient labour it has infinite possibilities. Being also an agricultural country it can manufacture many kinds of goods sufficient not only for her teeming millions but also sufficient for export to other countries.

The other countries of Asia are in a more backward condition.

(4) Africa.

In industrial matters Africa is very backward. The native population are still uncivilised, and the continent has been parcelled out by industrial European nations. These are making efforts to develop the resources of the country to feed the mills of Europe with the raw products they require. Hence its industrialization is not a matter to be thought of at present.

(5) South America.

The condition of South America is more or less the same. It is at present a store house of raw products, and it has to remain in this condition for a long time till useful minerals are discovered and worked.

(6) Australia.

It is now occupied by the Western Nations. It is at present producing raw products for the consumption of the mother country. It has mineral resources, but not in sufficient quantity to manufacture all her needs. Hence for some time to come it must supply raw products and receive manufactured goods in return. But, as her people are civilised, a time may come when she can manufacture her own goods.

Regions of the Empire.

In the foregoing chapter our globe was divided into a number of typical regions. Let us now see how many of these regions are in the British Empire.

It is a common saying that the sun never sets on the British Empire. This means that parts of the empire are scattered all over the globe, so that the sun will always be shining on some part of the empire or other. We may as well say that the empire contains in it all the Natural regions of the globe.

(1) We find extensive **Tundra** lands in Canada. These are covered with ice during a large part of the year and are inhabited by the nomadic Esquimo.

(2) South of this Tundra we have a very extensive region of **Coniferous forest** the abode of fur-bearing animals and the store house of soft wood for the world.

(3) South of this Taiga are the mixed **Temperate forests** in Canada. Oak, Beach, Ash, Maple, Birch are the important trees in this region. These do not taper to a point like the conifers, but spread out wide like an umbrella. Hence they cast shade on the ground and therefore there is little undergrowth in these forests. These forests are near the Lake region of Canada, in New Foundland and in the Maritime Provinces.

(4) **Temperate Grasslands** are called **Steppes**. Those in Canada round about Winnipeg are called **Prairies**. These grow enormous quantities of wheat, but the dry western parts of this region grow only grass, on which thousands of cattle are fed.

(5) There are certain **Mediterranean lands** also in the empire. **Central Chile** in South America is one of them ; the south-west part of South Africa, the south-west part of Australia and south-west part of Victoria are other regions of this type.

(6) **Deserts**. **Thar Desert** in India, the **Great Australian Desert** in Australia, and a great part of the **Egyptian Sudan** are desert regions.

(7) **Equatorial Forests** are found in **Nigeria** along the coast of the Gulf of Guinea, in the **lower regions** of the **Tenganiyaka** territory, and in the **Strait Settlements** and **North Borneo** in Asia.

(8) **Tropical grasslands** are found in the north of Australia, west of the Australian Alps, and in the **Karoos** of South Africa.

(9) **Monsoon lands**. India, Burma, and North Coast of Australia are of this type.

Thus the British Empire has in it almost all the typical regions of the globe.

AUSTRALIA

History

No one knew anything about this continent till 1769. But in that year the English were defeated by the Americans in the American War of Independence. Till then the English had been sending their convicts to America, but after this defeat they did not know what to do with them. Just then **Cook** made his discovery of **Australia** known to the **English**, and the English began to send their convicts to that continent. Some time later a French Warship also came to Australia, but finding that the land had already been occupied by the English, the French left her shores. Thus Australia became a **British** possession.

In 1785 a settlement was formed on the east coast, and convicts were regularly sent. In 1813 happened a terrible famine. Water became very scarce, and so some brave men ventured over the mountains and discovered the central plains.

The stream of convicts from the mother country continued to arrive, and there were frequent riots among them. The more thoughtful of the settlers protested against this system, and in 1840 the British Government gave up sending convicts to Australia, but they advised the unemployed to seek employment in Australia.

This went on very slowly, and settlements were found on the south and the east of the continent. But nobody ventured to go either to the north or to the

central parts, because the former was hot and moist, and the latter had no water supply. The settlers that remained in the south and the east became shepherds, and the more adventurous of them went to discover what was in the interior. A few of them returned, while many died in the waterless desert. This for a time discouraged the settlers, and emigration from the mother country steadily diminished. There was thus a fear that the population in the new continent would gradually decline.

Just then **gold mines were discovered** and fabulous accounts of the richness of the mines reached England. The imagination of the people was thus stirred, and they in their thousands wanted to grow rich all on a sudden. Shop-keepers closed their shops; farmers gave up agriculture; shepherds left their flock; and all rushed to Australia in search of gold.

The gold mines were no doubt worked; but they could not give employment to all the immigrants. When this gold fever abated, people began to see their own foolishness and gradually settled down to take up other occupations. Towns grew near the mines, and ships came from the mother country to supply them with all the necessities. These ships carried back the **wool produced in Australia**, and in a short time the settlers found it to be a profitable business. Thus the settlers began to produce more wool, and in course of time when **cold storage was invented**, they began to export meat to England. Thus the first settlers became rich, and more people came from England to take up this occupation.

Situation

Australia is situated 10° South of the equator and extends to the 40th parallel of latitude. It extends east to west from meridian 115 to 155. The area is roughly 330 thousand square miles. This is about three fourths of Europe in area. **New Guinea and Tasmania** are islands on the continental shelf.

Situated as the continent is in the southern hemisphere, it has **summer when northern continents have winter**. Hence all summer products required in England **can be easily** exported by this continent. Besides it has easy communication with North America, Europe and England through the Panama Canal. It can trade with India and Africa and has therefore unique facilities for commerce with these countries. But as the continent is mainly engaged in agriculture and sheep rearing, it supplies raw materials to Britain and other manufacturing countries. Its trade with other agricultural countries is therefore very little.

Surroundings

This is an island continent and the coast line is so little broken that the sea is far away from the central parts of the continent. The result is that the sea does not exercise its moderating influence on much of the continent, which has a climate of extremes.

North coast.—If you look at a Physical Map of Australia, you will find on the north a wide bend in the coast line. This is the **Gulf of Carpentaria**.

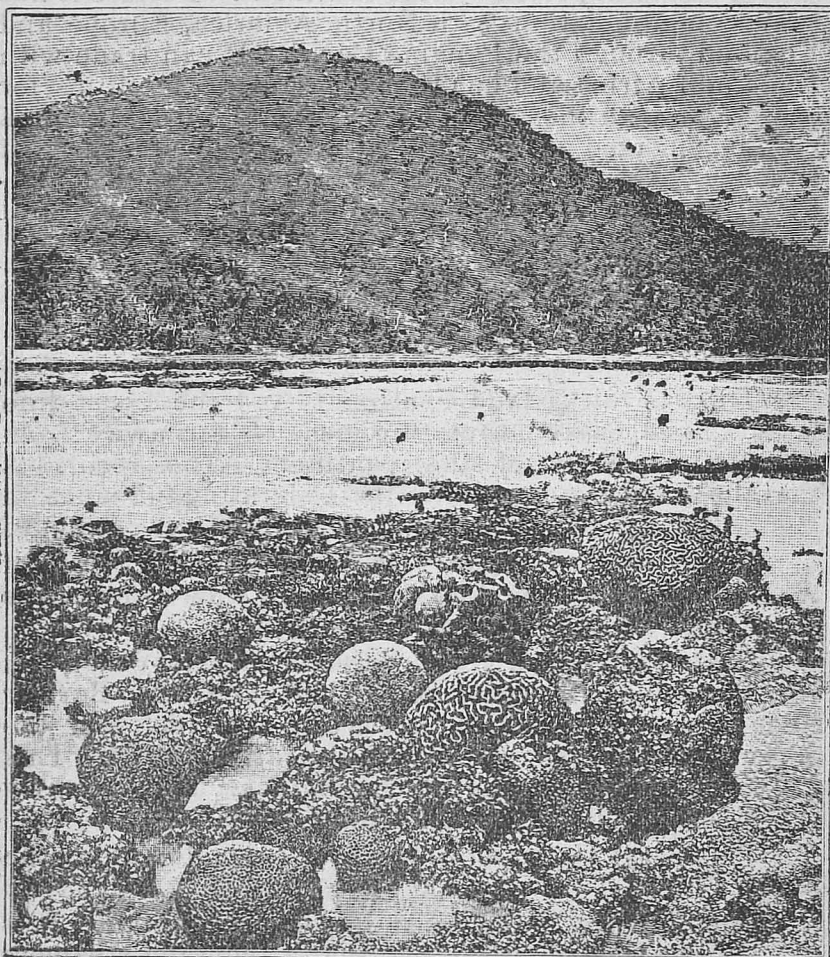
East coast.—Run your eye along the east coast, you will find along the continental shelf the **Great Barrier Reef** of coral formation. Between this reef and the continent is the sea, which is comparatively calm. This has been a safe means of communication from early times, besides being a good fishing ground.

This coral reef extends to about 1200 miles along the coast.

Port Jackson is the most important harbour. It is so spacious an arm of the sea that **a thousand steamers can safely lie at anchor in its quiet waters**. The mineral and other wealth of the east has made this harbour very important.

The South Coast.—Passing through the Bass Strait which is between the continent and Tasmania, we reach

Port Phillip the most important harbour of Victoria. **Encounter Bay, Spencer Gulf** are some of the openings



— Part of the Great Barrier Reef of Australia (as seen at low tide, looking towards the mainland).

in the coast line. Passing the **Great Australian Bight**, where the coast is steep, we go round **Cape Lewin** and reach the west coast.

The West Coast.—**Freemantle** is the most important harbour on this side. It is in connection with the gold mines of **Coolgardie** and **Kalgoorlie**. **Shark Bay** is the next opening in the coast line. Then passing by **Port Darwin**, which has telegraphic communication with the south across the arid middle of the continent, we reach the Gulf of Carpentaria on the north.

Relief

Look at the Physical Map of Australia. Like Africa it is a huge saucer-shaped plateau with the depression in the centre, and the edges of the continent forming the rim. The continent therefore gradually slopes inland.

1. On the east, there is a range of mountains called the **Great Dividing Range** running from north to south. This is called the **Australian Alps** in Victoria, and **Blue Mountains** in New South Wales. Between this long range and the sea there is a narrow plain.

2. From this range the continent gradually slopes westward rising again to form the Western Plateau, thus forming the **Central Plain** which slopes gradually south. This is the **Murray-Darling Basin**, the southern part of which is called the **Riverina**. It is very fertile and is watered by the Murray.

3. The Western part is a plateau with an inland drainage. Here is the **Great Australian Desert** where the summer heat is so great that candles are preserved only by keeping them underground.

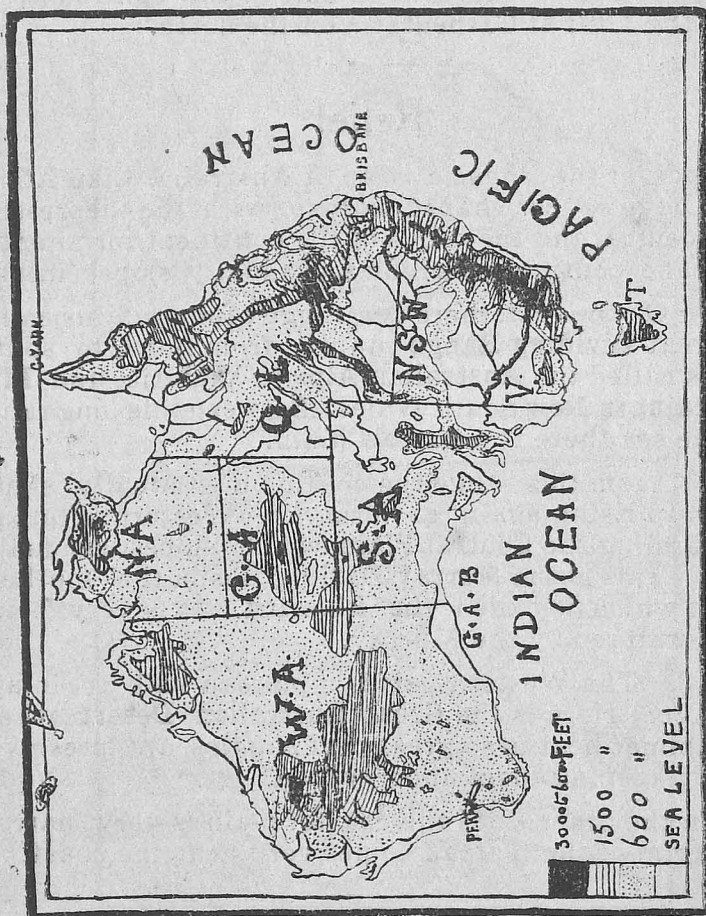
On the other sides the coastal plain is very narrow as the rim of the plateau comes very near the coast.

Climate and Rainfall

Look at the map and notice that the Tropic of Capricorn passing through the middle of the continent cuts it into two halves. The northern half of the conti-

nent is therefore within the torrid zone, while the southern half is in the temperate zone.

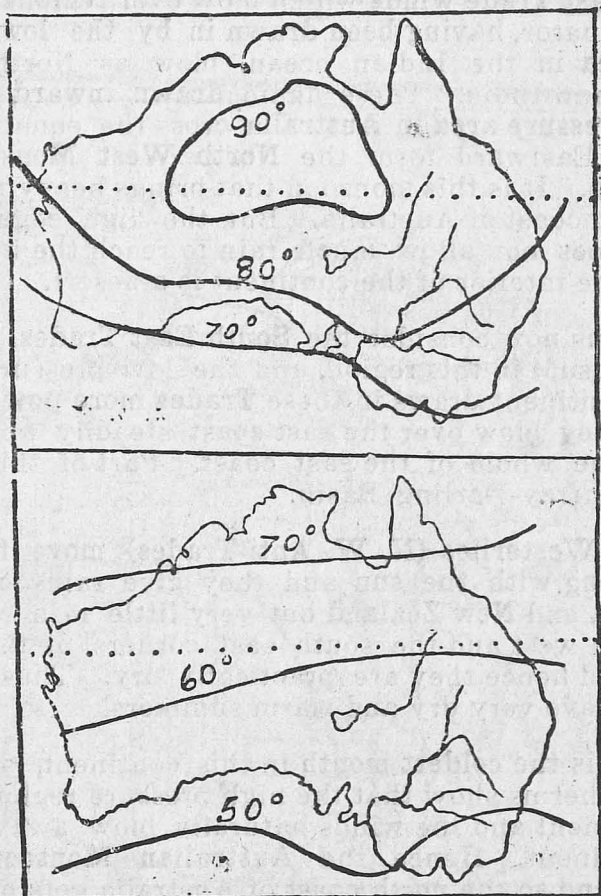
January is the hottest month in Australia, and the earth is some 1,50,00,000 miles nearer the sun at this



RELIEF OF AUSTRALIA

time. Besides this, the continent extends East and West to a great distance and hence the sun shines on this continent during a greater part of the day. In addi-

tion to this the continent is **very compact**. There are not many openings in its coast line and so the moderating influence of the sea is not at all felt except near the coast strips. For these reasons the **Australian desert** is **hotter than any other desert in the world**.



Look at the map of Isotherms in January. Notice the central region having an average temperature of 90°. This central region is the hottest in summer. The land therefore becomes very hot and the air over it gets heated and consequently this region

becomes an area of low pressure and so winds blow towards the centre of the continent from all sides. Just at this time, remember, the sun would have swung towards the south and the general system of Planetary winds also must have swung to the South. So the **North East Trade** winds which blow over regions north of the equator, having been drawn in by the low pressure area in the Indian ocean, blow as North East Monsoon in India. These again drawn inward by the lower pressure area in Australia cross the equator and turning Eastward form the **North West Monsoon** of Australia. It is this monsoon that brings heavy rain to the north coast of Australia. But the high edge of the coasts does not allow much rain to reach the interior. Hence the interior of the continent is a desert.

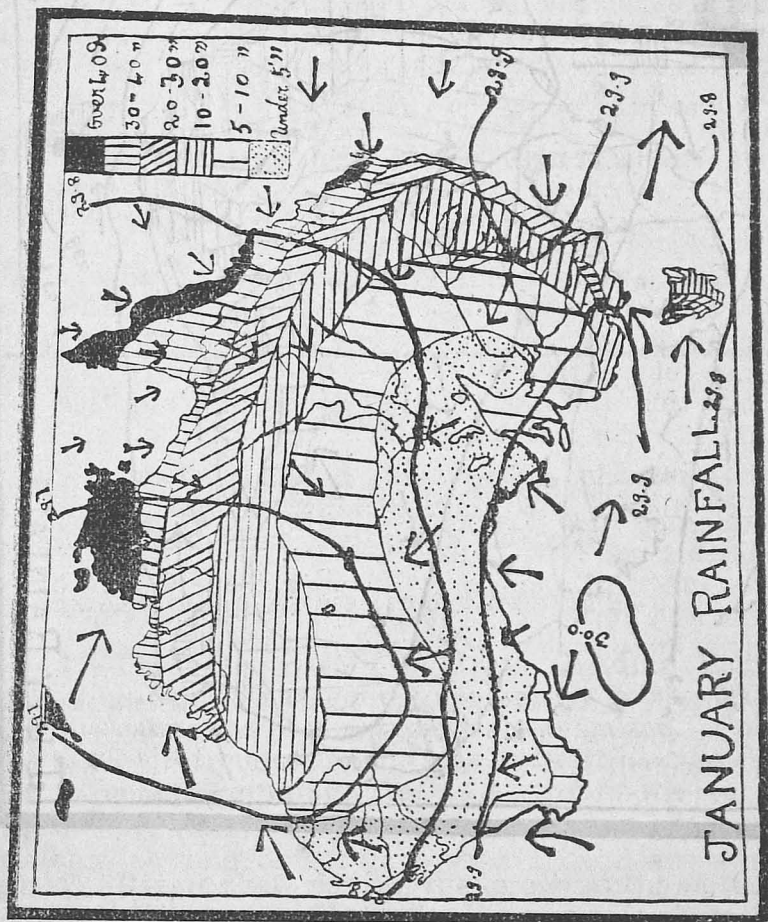
Let us now consider the **South East Trades**. They blow as usual in this region, and the low pressure area in the continent draws in these **Trades more powerfully** and so they blow over the east coast steadily and give rain to the whole of the east coast. Part of this falls in the Murray-Darling Basin.

The **Westerlies (N. W. Anti-Trades)** move farther south along with the sun and they give rains only to **Tasmania and New Zealand** but very little rain reaches the south west and the south east corners of the continent and hence they are practically dry. Thus these regions have very dry and warm summers.

July is the coldest month in this continent, and the July Isotherms show that the high pressure region is on the continent and the winds naturally blow away from the continent. Hence the **Australian Monsoon disappears** and so the north coast of Australia gets no rain. While the S. E. Trades continue to blow as usual and give rainfall on the east coast but not as heavily as they did when the low pressure area drew them inside.

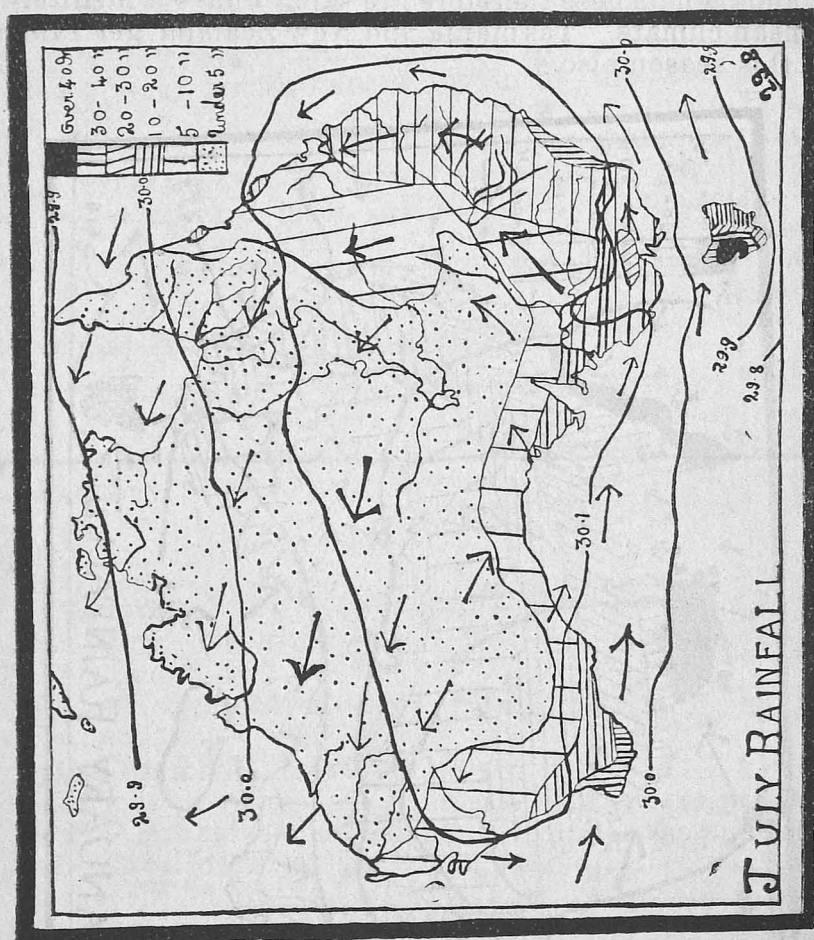
The **Westerlies** now swing north along with the sun and so the south west and south east parts of the con-

continent now come within their influence and hence they have rainfall in this season. Thus the south west and the south east regions of Australia situated in temperate regions have winter rains (July) and summer droughts (January). These therefore are said to have a **Mediterranean climate**. Tasmania and New Zealand get rains in this season also.



It will be seen that the central and western parts of Australia get no rainfall, first because the Great

Dividing Range drains away all the moisture in the inblowing wind, and secondly because it is on the Tropic



of Capricorn, which is generally an area of high pressure (C. F. Kalahari and Atacama deserts of the northern hemisphere).

TABLE OF TEMPERATURES AND RAINFALL
DURING THE 12 MONTHS OF THE YEAR

		1	2	3	4	5	6	7	8	9	10	11	12
Sydney.	{ T.	52	55	59	64	67	70	72	71	69	65	65	59
	{ R.	4.7	3.2	3.0	3.0	3.1	2.5	3.6	4.9	5.1	5.6	5.6	5.8
Melbourne.	{ T.	49	51	54	58	61	65	67	67	65	60	60	54
	{ R.	1.9	1.8	2.3	2.7	2.3	2.3	1.9	1.7	2.1	2.4	2.4	2.1
Perth.	{ T.	55	56	58	61	66	71	74	74	71	66	66	61
	{ R.	6.2	6.6	3.3	2.1	0.8	0.6	0.0	0.8	1.8	1.7	1.7	4.9

Rivers

What has been said in the previous chapter about the rainfall and its distribution, will enable us to understand the nature of rivers in Australia.

The Australian Rivers are of three kinds.

1. Those that rise on the **Great Dividing Range** and flow eastward. These must necessarily be **short and rapid** and cannot be of much use for navigation. They bring much silt from the mountains and fertilise the east coast. There are similar streams all round the continent.

2. Rivers that rise on the mountains and flow westward. This is the **Murray**. It has two tributaries the **Murrumbidgee** and the **Darling**, and with them it forms a huge basin called the **Murray-Darling Basin**.

3. The Rivers like the **Cooper** flowing into inland lakes like **Eyre**.

(3) Vegetation and Animals

Look at the map of Rainfall. In the north and north-east, we have a heavy rainfall by the North-West Monsoon. The temperature is high. We have thus a humid tropical region and therefore tropical monsoon forest is found everywhere.

1. In the forests of Australia gum trees are important. **Red Gum** and **Blue gum** trees are abundant and it is from these that **Eucalyptus** oil is got. They grow to a height of two or three hundred feet and have long narrow leaves. These either hang up or down or stick out with one edge toward the sky and the other toward the ground. Hence they give no shelter from the sun. Instead of shedding leaves, these trees shed their bark every year, a very peculiar feature. Most of these yield valuable timber but the **Jarrah** is the most durable kind of wood. It is not eaten by white ants and hence it is imported into India to take the place of the dearer teak wood. **Karri** wood is used for the railway sleepers and for paving purposes. Various kinds of casuarina trees are found in this region.

2. On the east coast, Trade Winds give rainfall throughout the year and it has a temperate climate. This region has therefore luxuriant vegetation. Forests are found on the slopes of mountains, where the lowlands are used for crops of various kinds.

3. On the western side of the Great Dividing Range the rainfall becomes less as we proceed more and more to the west. Hence this region—the Murray-Darling basin—is suited for pasture and we have in this region extensive grass land extending from the south coast right up to the north. This region may be divided into two parts—(1) the northern tropical grass land; (2) the southern temperate grass land.

4. A fourth natural region is the plateau on the west. The rainfall here is almost nil, and the region is practically a desert having desert vegetation (vide Introduction). **Malle Scrub** and **Mulga Scrub** and other acacias form the natural vegetation of this region.



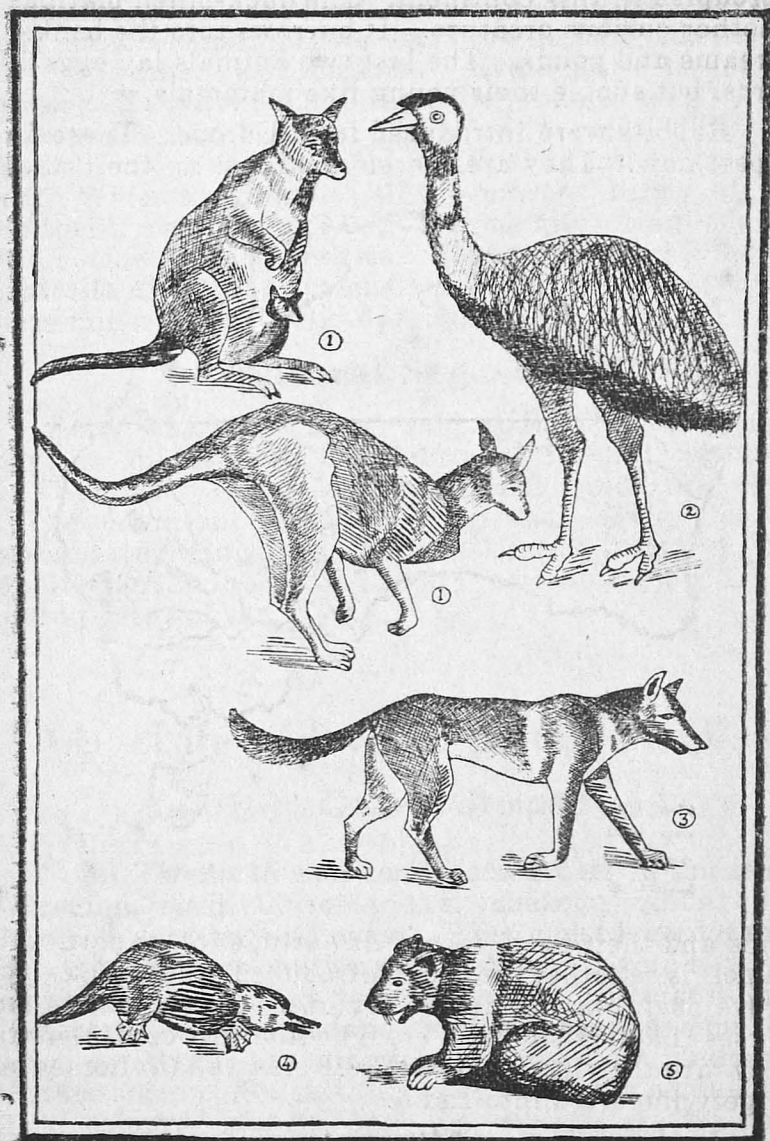
5. Then comes the southern part of the continent particularly the south west and the southern regions of Australia. This region is in the temperate zone and has its rains in winter, while its summers are dry and warm. Hence this region is said to have a **Mediterra-**

nean type of climate, with vegetation peculiar to that region. This map shows the important products of Australia. Of these some information will be given under each region.



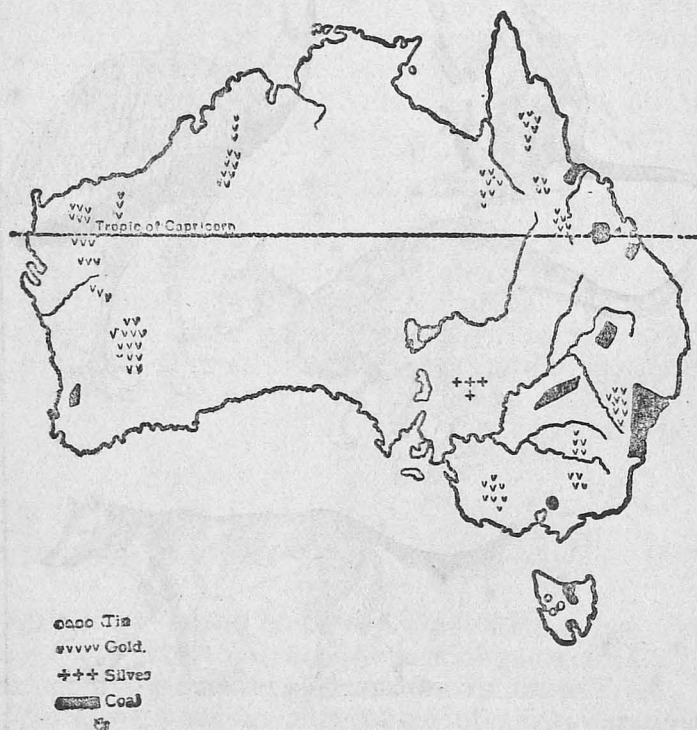
Animals.—These are very peculiar. The native quadrupeds in this continent are pouched animals. This means that the female animals carry their young ones in a sort of pouch. The chief of these animals is the **Kangaroo**, of which there are several varieties. It is a grass eating animal which moves on by long leaps on its hind legs, which are longer and stronger than its fore legs. Its tail is very strong and muscular and serves as a kind of third leg when sitting upright.

The Opossum is another pouched animal. It lives in the hollows of trees. Twisting its tail round branches and taking swings, it goes from one branch to another.



Dingo is a kind of wild dog. There is an **ant-eating porcupine** in this continent. The duck-billed **platipus** is another curious creature. It burrows into the banks of streams and ponds. The last two animals lay eggs like birds, but suckle their young like mammals.

Rabbits were introduced from Europe. These form a pest now. They are therefore killed in their thous-



ands and their flesh forms an article of export. The **camel** is another animal introduced and is likely to prove useful in the desert regions. Sheep, cattle and horses have also been brought into this continent and they are thriving everywhere. Australian horses are largely imported into India.

Minerals

There is considerable mineral wealth in Australia.

It is the presence of **gold** that originally attracted people to this continent in large numbers. When gold in the upper layers has been exhausted, people took up other occupations. Even now the gold mines of **Kalgoorlie** and **Coolgardie** produce nearly four times as much gold as our Kolar gold fields. **Victoria** has gold mines of some value. **Coal** is mined in New South Wales and supplies all the present needs of the continent, while supplying the neighbouring islands with considerable quantities. **Copper** is found in **South Australia** and **tin** in Queensland. As yet however all these mines are not fully developed.

Natural Regions

From what has been said already the continent may be divided into the following natural regions—
 1. The coast strips on the North and the East
 2. The mountain region of Australia
 3. The Central lowland including the Murray-Darling basin
 4. The Mediterranean lands
 5. The dry plateau region
 6. The mining areas of the West.

(4) Life and work of the People

(a) Coast Strips

(a) **The north and north-east coasts** in the tropical region. It is subject to the monsoon winds. It is therefore very hot and moist. This moist heat does not suit the Western nations, and so this region is thinly populated though it is very productive. In addition to the **forest produce**, the land is being cleared, and **rice**, **maize**, **sugarcane** are grown in the clearings. Highlands produce some coffee. All this is being done with the help of the **coloured labour**, and the whites are trying to acclimatize themselves to this region so that, in course of time, the coloured races may be eliminated com-

pletely from the continent. This region is very thinly populated and much of the cultivable land remains undeveloped.

Brisbane the capital of Queensland is in this region. It is so far south that other ports like **Rockhampton** which have railways going into the interior of the continent are developing more rapidly.

(b) **The East Coast.**—This region is towards the east of the Great Dividing Range. Like the Malabar coast it is narrow; and like it, this has heavy rainfall from the South East Trades. All the rain falls on the mountain slopes, and flows through small rivers into the sea. This narrow coast strip therefore is well watered, and the silt that is brought by the numerous streams makes the region fertile. The northern part of this region which is warmer grows rice, maize and sugarcane. Bananas and pine-apples grow luxuriantly here and fruit-growing is an important industry in this region. But all these are carried on by coloured races. This region grows cattle in large numbers and their flesh is exported in large quantities. **Brisbane** is the most important town in this region and it is the capital of Queensland.

The middle part of the coast strip is naturally cooler. As in the northern part rice, maize, sugarcane are grown but maize forms an important production. **Fruit growing** is an important industry also, but **oranges** and **lemons** gradually take the place of bananas and pine-apples. The climate being cooler more sheep are reared than cattle.

Coal is obtained in this region in plenty. The output of coal is sufficient not only to meet the country's needs but to supply other places near about. **Sydney** on Port Jackson is the most important town in this region. It is situated on an excellent harbour. **Newcastle** exports much of coal from this region.

The Southern part of this region is cooler still and has the largest population. On the coast strip much

maize is grown. In the cooler parts of the mountain slopes, **sheep-rearing** is an important occupation of the people; while on the west of the mountains, in the plains below, huge quantities of **wheat** are produced.

Fruit growing industry is an important occupation. Grapes grow in abundance in Victoria, from which wine is made. Railways run on the east coast and have branches going inland. These bring the produce to the coast towns, whence goods are exported to other countries more particularly to Britain.

(b) The Murray-Darling Basin

This is the region west of the Great Dividing Range. As all the moisture brought by the Trades is deposited on the edge of the mountains, very little rain reaches this region. Hence this region is deficient in rain-fall and the winds are generally dry. But the rain-fall on the mountains gives rise to a few rivers. The **Murray** with its tributary **Murrumbidgee** drains the southern part of the plain. The **Darling** river flows in the northern part. This with the **Murray** drains the whole of the plain, which may be called the **Murray-Darling basin**.

The northern half of the central plain is drained by a number of streams, all of which disappear in the lakes of inland drainage.

The **Murray-Darling basin** is the most developed at present as its climate suits very well the white population. The mountain region is wooded and as we proceed westward, the country slopes gradually inland and becomes more and more dry. The dry hill slopes afford pastures for sheep and thousands upon thousands of them are reared there.

West of this region is a belt where there is enough of moisture. Hence **wheat** is grown in large quantities. Wimmera in Victoria grows wheat by irrigation. The belt of land west of this **wheat** region is too dry for successful agricultural operations. **Grass** is the natural

vegetation of this region. In the Darling basin there is a kind of **hardy bush** called the **Salt bush** which is very much relished by sheep. On this millions of sheep are fed. **Merino sheep** originally introduced into this continent thrive so well that very large quantities of **fine-wool** are exported from this region. The invention of **cold storage** has been taken advantage of by the Australian sheep owners, and they export ship loads of **mutton** to their mother country. In fact the richest people in Australia are the 'shepherd kings' who own millions of sheep on their extensive sheep farms.

But they have to contend against two disadvantages—1. drought 2. floods. None of the rivers of Australia are snow-fed, and perennial supply of water is impossible in them. When rain falls, they swell up to great dimensions and flood the surrounding country causing immense damage, and in the dry season they become mere dry beds without any water in them. Hence in the drought season thousands of animals very often perish and reduce the owners to poverty.

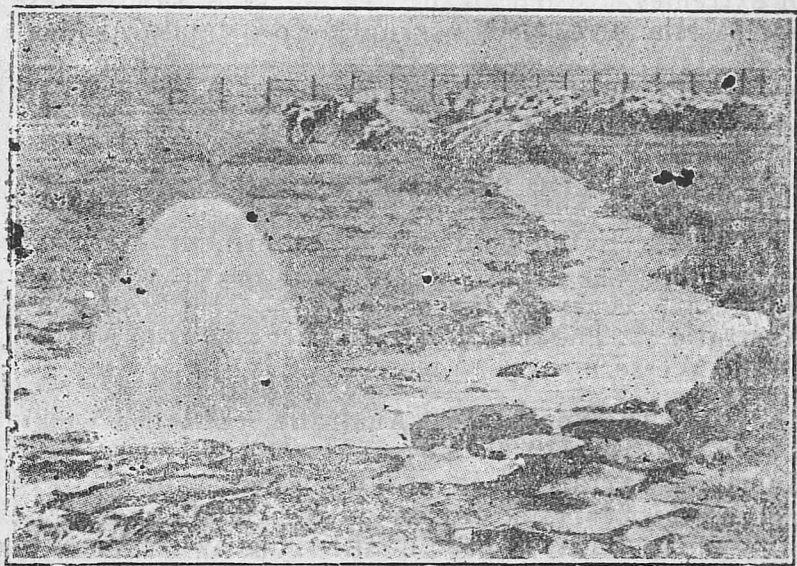
To overcome these difficulties attempts are being made to find a steady supply of water. Dams are being proposed to be constructed across rivers to store up water for use in the dry season. One across the Murray has been completed, and the waters stored up are being sent in channels to the surrounding regions to supply water to sheep as well as to irrigate lands. Thus the District of Wimmera in Victoria is irrigated.

But more important than these expensive dams are the **Artesian Wells** dug in this region. Of the heavy rain that falls on the Dividing Range a considerable quantity sinks down and is collected between two impervious layers deep down the earth. When this layer is tapped, water rushes out in a never-ending stream, and this water is utilised for sheep as well as for agricultural operations. Thousands of artesian wells have already been sunk, and water obtained therefrom is being utilised. Many more wells of this kind

are needed, and when that is done, what is now a thinly populated region will in course of time become a smiling field with orchards, vegetable gardens and contented population.

(c) The Mountain Region

This region extends from north all along the east coast. The highest part is in the south where it is snow-capped and hence the Murray which rises in this region has a better supply of water from its melting snows than any other river in



ARTESIAN WELL

Australia. As this Mountain Range is in the direction of the S.E. Trades, there is heavy rain-fall throughout the year, the eastern slopes being naturally wetter than the western. The region is therefore thickly forested, the northern part being tropical while the southern portion being temperate. Several kinds of

Eucalyptus trees are found in this region from which Eucalyptus oil is prepared.

On the higher slopes of mountains, pasture is found in large quantities. Cattle are reared in damper regions, while sheep find their pasture in the cooler parts.

This region supplies considerable quantities of minerals. Coal and iron are found in New South Wales.

(d) The Western Plateau Region

This is practically rainless and the climate is one of extremes. Much of this region is a sandy desert and Malle and Mulga scrubs form its natural vegetation. It is believed that there is underground water which, if tapped, will make the region more productive, and so efforts are being made in that direction.

(e) The Mediterranean Region

This is to the south of the continent and is the region where rain falls in winter. (See the winter rainfall map). It is in three parts 1. The South West Australia 2. The South-eastern part of South Australia 3. The Western part of Victoria.

1. The South-West Australia.—The coast region where the rainfall is heavy is thickly forested, and **Karri** and **Jarrah** pines are the most valuable trees. Behind this forested region is a belt of agricultural land where wheat of good quality is grown. **Vines** and other Mediterranean fruit also grow in abundance and these are exported to Britain when Britain has winter. Behind this agricultural belt of land we have a region of grass land which gradually merges into the desert region. Here are sheep farms where many thousands of them are reared.

The presence of valuable gold fields near **Kalgoorlie** and **Coolgardie** adds to the population of this region.

Perth the capital of Western Australia is situated in this region. It has a good artificial harbour at **Freemantle** with which it is connected by rail.

Albany is the best harbour on the West coast and is connected by rail with the capital and with the gold mines mentioned above, through which runs the main line going to Victoria.

2. **The South Eastern part of South Australia.**—This region is round about the **St. Vincent and Spencer Gulfs**. The winter rains and the warm summers make it very useful for wheat cultivation. The quality and quantity of wheat produced in this region is such that it is called the **Granary of Australia**. All the wheat of this region is exported from **Port Augustus** at the head of **Spencer Gulf**. **Adelaide** the capital is on the gulf of **St. Vincent** and is an important mail packet station. It is on the railway line connecting Perth on the west with Melbourne in Victoria on the east. Passengers land at this place and go to New South Wales by train earlier than they can by Steamers.

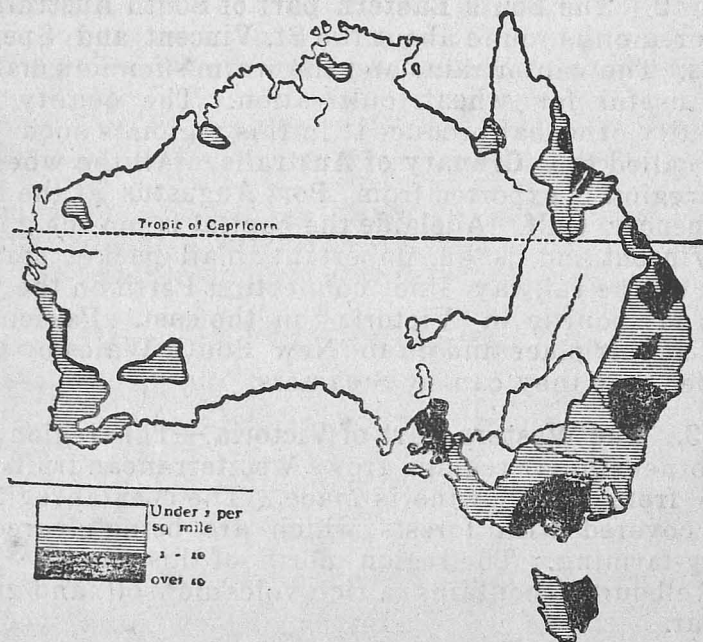
3. **The Western Part of Victoria.**—This region like the other similar regions grows Mediterranean fruits and vine from which wine is made. The coastal region is still covered with forests which are being cleared for dairy-farming. The region north of this on either side of Melbourne contains a rich volcanic soil and grows wheat.

Melbourne.—the capital of Victoria is situated on the Yerrayerra where it enters Port Phillip Bay. A canal connects it with the town and the goods can therefore be taken into it. Railway lines from the gold mines of **Ballarat** and **Bendigo** meet at Melbourne and make the town populous. **Geelong** is an important port exporting wheat and wool.

People and their Occupation

Australia is a very thinly populated country. The original inhabitants of Australia are only about 50,000 and they are fast dying out.

The settlers are of European stock, and they are mostly distributed on the east and the south of the continent. It is this region that is found suitable



POPULATION

to the Europeans. Much of the continent, even the most productive regions of the north are very thinly populated. These are too hot for Europeans. But they do not want coloured races to settle in their country. Hence these regions continue to be thinly inhabited. No doubt the Europeans are trying to acclimatize themselves to the tropical regions and if science helps them, it is then that these parts are likely to be more thickly populated. But till then they must remain as they are.

Occupation.—The convicts that first came to this continent saw the extensive pasture lands. Therefore they brought in horses, cattle and merino sheep, and settled on the eastern margin. Soon these animals multiplied in numbers. Their wool gave them good profit. Then they discovered the extensive Murray-Darling Basin with its salt bush. Thousands upon thousands of sheep and cattle are being now reared. The fine soft silky wool now produced in Australia is in such a great demand that the continent is not able to fully meet it. Besides wool, **mutton** is an important article of export. It is sent fresh in cold storage chambers and shiploads of it leave Australia for Britain. Cattle rearing gives rise to dairy industries.

Wheat growing is another occupation particularly in Victoria, South and West Australia where winter rains fall. This is extended to the damper parts of the Murray-Darling basin.

The Mediterranean lands of the south and the south east margin of the east coast afford considerable scope for **fruit cultivation**. Orchards are found in these regions. Grapes, peaches, apples, lemons and oranges are grown in large quantities and are exported to Britain when, on account of winter, supplies from the northern countries become scanty.

Mining is another occupation already mentioned.

Lumbering is an occupation which some people have in the forests of South West Australia. Karri and Jarrah timber is exported from there to India and Ceylon.

Manufacturing industry is not very much developed though there are possibilities for it. The main reason for this is that raw materials are required by the mother country, which in its turn supplies manufactured goods at a cheap rate. But when labour becomes cheap and coal is obtained in plenty, Australia may manufacture all that she needs from the raw materials that are produced by herself.

Means of communication

The east coast region which is more developed has a railway running north to south. This has branches leading to the interior so that the products of the Murray-Darling Basin could be easily got to the eastern ports across the mountains. A line runs from Perth to the gold mines in the west; and this goes eastward across the continent to Adelaide and is connected with Melbourne in Victoria. From Adelaide a telegraph line goes across the desert regions to **Port Darwin** in the north. On account of different gauges, journey by rail is tedious at present.

There are no water-ways at present. Murray is navigable only for a short distance and the only water-way that is used at present is the sea. Now that aerial navigation is an accomplished fact, it is possible that **airways** will be established in Australia especially because long stretches of unproductive desert lands have to be crossed.

Political Divisions

The continent is divided into seven crown colonies—**Victoria, New South Wales, Queensland, South Australia, Central Australia, Western Australia** and **Tasmania**. These form the Commonwealth of Australia governed by a Governor General appointed by the King of Britain.

Victoria is in the region between the Trade and Anti-trades and it gets its rainfall in both the seasons. But Wimmera which is to the west of the mountains is in the rain shadow. Consequently irrigation works are necessary.

The climate of Victoria is cool. The mountainous parts form fine pasture grounds to millions of sheep. Hence it exports wool, meat and fat in large quantities. Rye on the hill slopes and wheat in the plains are its important products.

Melbourne is its capital and it manufactures wool-len cloths to some extent. Half the population of the state is concentrated in this city. **Ballarat** is the richest gold field in the state.

New South Wales is to the north of Victoria. It is in three regions namely (1) the narrow coast strip, (2) the central mountain region (3) the gently sloping western plain.

1. The east coast strip is hot and moist and grows considerable quantities of sugarcane, maize, bananas and oranges.

2. The mountain region to the west has a number of plateaus between the several ranges. On these plateaus wheat and vine are grown.

3. The dry western slopes have salt bush in abundance. Sheep are reared in large numbers and here are a number of artesian wells. Wool is therefore largely exported.

Sydney on Port Jackson is the capital. **New-Castle** exports large quantities of coal. **Paramatta** on Port Jackson is noted for its oranges. Horses are reared in this region and are sent to India for military purposes. These are called 'Walers.'

Queensland is to the north of New South Wales. This is a tropical region having heavy monsoon rains. Rice, sugarcane, maize and cotton are its principal products. Cattle are reared in damper parts, while sheep farms are found in the cooler regions. But the region is not developed as it is thinly populated.

Brisbane is the capital but **Rockhampton** is an important port.

South Australia.—The narrow strip of land along the St. Vincent and Spencer Gulfs receives winter rainfall and have grown large quantities of wheat and fruit. **Adelaide** is the capital.

Central Australia is a desert and the few inland lakes dry up in summer leaving salt on the surface.

Northern Australia is in the region of Tropical monsoon rainfall, and all the products of that region can be grown. But it has not developed owing to want of population.

Western Australia.—Much of this is a desert but the south-west corner of it is in the region of winter rainfall. It grows therefore fruits and wheat. Karri and Jarrah trees grow in this region only.

Perth is its capital and is connected by rail with the gold fields in the interior.

The political capital of Australia is **Canberra**. It is situated in a tract of land in New South Wales set apart for this purpose. There was rivalry between Melbourne the former capital, and Sydney, the capital of New South Wales, as to which should be the **capital of the Commonwealth**. After a good deal of discussion and heartburning a compromise was made, the result of which is that a new city between the two was chosen and it is to be connected by rail with Jervis Bay, on which a seaport town will be built.

(6) **Tasmania** is an island on the continental shelf of Australia. It is separated from the mainland by Bass Strait. It is hilly in the centre, and has a healthy and temperate climate, and is therefore visited by the Australians in summer.

It is in the region of the Westerlies and has therefore good rainfall. **Wheat** is grown in considerable quantities. Timber is plentiful in the forests. Tin is mined in the island. **Fruit culture** is the most important industry and **Jam** is exported in large quantities.

There are two peculiar flesh eating animals here—one is the wolf with the stripes of a tiger, and the other is the Tasmanian Devil, which is about the size of a bear but ugly in appearance. This kills birds and sheep.

Hobart is the capital and has fine harbour and Jam factories. Launceston is an important harbour exporting tin and wool. It is like England in many respects and the mountainous part of it reminds one of Scotland.

Papua or New Guinea is under the Australian Government. It is a tropical island, and has good rainfall. The interior is covered with forests, which yield valuable timber like **ebony** and **sandalwood**. Coconuts, coffee, tobacco and rice are grown. This tropical island is mostly peopled by coloured races, with a sprinkling of Europeans who are either officials or planters. **Port Moresby** is the chief town.

(5) Favourable Position

Australia is a land of possibilities. It has a very favourable position for trading with lands around.

Look at the globe and notice the position of this continent. On its western side it has the Indian Ocean and India and East Africa are therefore easily accessible. On the north and east there is the Pacific Ocean; and the eastern countries of Asia, East India Islands are easily reached. There are innumerable islands in the Pacific Ocean with which it can have trade relations. Unfortunately the continents of North and South America are far away and even then it is the backs of these continents that are turned towards Australia.

But as matters stand Australia has not much trade with any of these for the simple reason that like many of them it can supply only raw materials and food products. For this reason it trades mainly with manufacturing countries such as the United Kingdom, the United States, Western Europe and Japan. But the bulk of her trade is with the United Kingdom. If Australia improves its mineral resources and harnesses her waterfalls and thereby becomes a manufacturing region, it has great possibilities of trading with Africa, India, China and the Pacific Islands. But till then like the Asiatic countries it must grow raw products, and export them to Britain and other manufacturing countries.

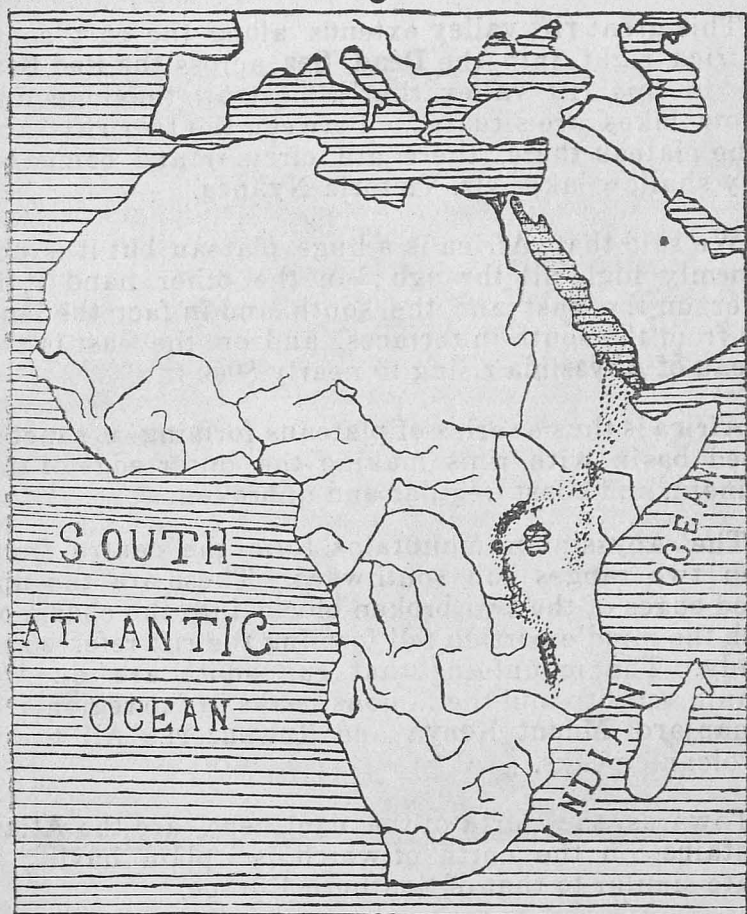
AFRICA

Africa for a long time was called the **Dark Continent** first because it was peopled by darker nations and mostly because much of the continent was not known to the European nations. This is due to the fact that they had to cross the Atlas Mountains on the north, and behind these mountains there was an **impassable desert**. Those who attempted to get into the continent up the rivers could not do so on account of waterfalls and the hostility of the original inhabitants. Added to these was the unhealthy nature of the coastal regions, and the absence of roads or other means of communication. The thick forests of the interior also contributed to the difficulty of travel and so Africa remained for a long time a **dark continent**.

(1) Structure

Ages ago, Africa formed a part of the **Gondwana land**, an ancient southern continent formed of the present Brazilian Highlands, Africa, The Deccan and the plateau region of Australia, with the intervening seas. In the course of ages, owing to the submergence of certain parts, the continents became divided and what now remains forms the **plateaus of unfolded strata**. Africa is one such **plateau of unfolded strata**. Hence it is very compact, and the coast line is very simple and

unbroken. The sea becomes abruptly deep, and there is no **continental shelf** of any kind round this continent. It is the absence of deep openings and outstretching



RIFT VALLEY REGION

peninsulas in the coast line that kept the continent **in-accessible** for so long a time.

Another structural feature of the continent is the

Rift Valley. This is formed by the breaking up of the horizontal strata in two places A and B, and the falling of A B down into the crevice formed by this sudden break in the earth's crust.

This great rift valley extends along the east coast of Africa right into the **Dead Sea** across the **Red Sea**. It is in this rift valley that almost all the long and narrow lakes are situated. Between the two rifts and on the plateau there, there are circular and comparatively shallow lakes viz. Victoria Nyanza.

We said that Africa is a huge plateau but it is not uniformly high all through; on the other hand it is higher on the east and the south, and in fact the land rises from the south in terraces, and on the east is the **Plateau of Abyssinia** rising to nearly 8000 ft.

Africa is thus a series of plateaus forming a saucer-shaped basin with rims making the outer edge of the continent, and coast regular and unbroken.

The Abyssinian mountains form the centre from which two ranges run southward. These are the up-turned edges of the two broken blocks into the chasm of which the middle portion fell forming the rift referred to already. The mountains that run south are due to volcanic activity and the famous peaks in the region are **Kilimanjaro**, **Mount Kenya** and **Ruwenzori**. All these are volcanic peaks.

Towards the north of the continent, are the **Atlas Mountains**, on the north of which is a plain having a climate similar to that of Southern Europe.

Africa is divided into two halves by the equator, and it extends 33° north and south of it. There are thus two regions on the tropics, one in the north and the other in the south.

Look at the Isotherms in July, when the Sun is on

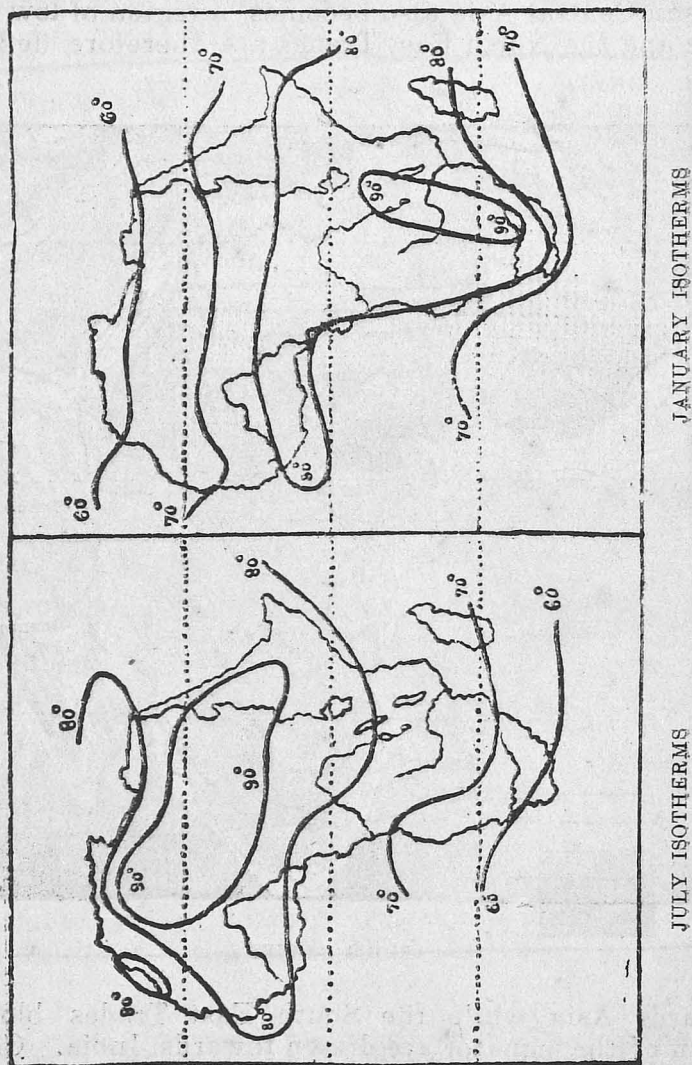
the Tropic of Cancer. The central part of Africa becomes intensely hot, and therefore it is a region of low pressure, and winds from all sides are drawn inward. In this season Central Asia also becomes a region of low pressure and the North East Trades are therefore deflected



AFRICA RELIEF

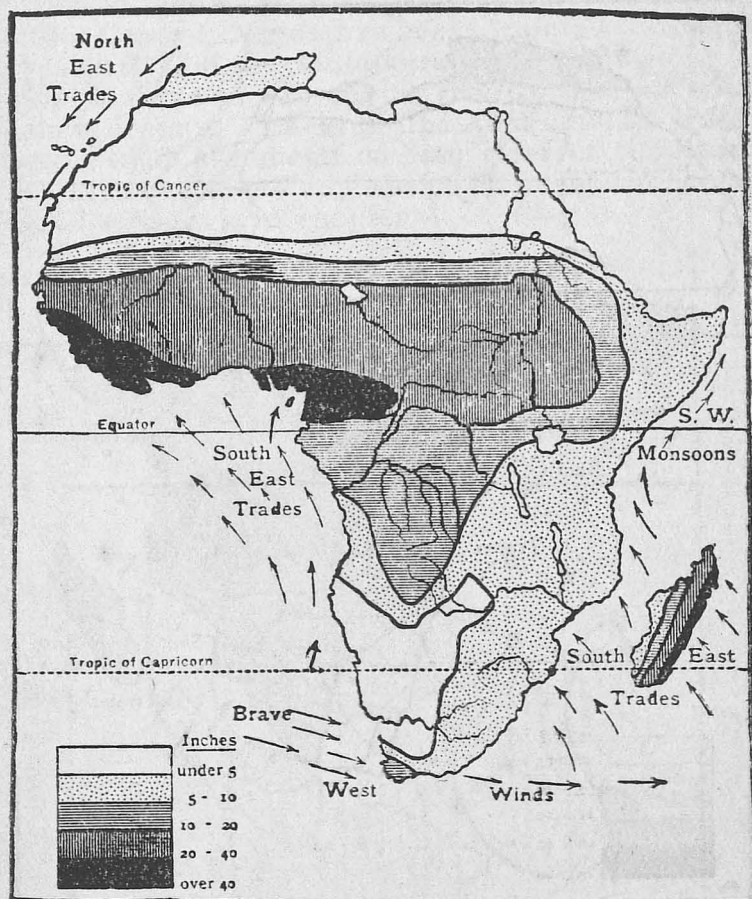
towards Asia while the South East Trades blowing south of the equator are drawn towards India. Consequently much rain does not fall on the east coast of Africa in this season. But the South East Trades blowing in the Gulf of Guinea are drawn inward and

the Niger region gets considerable rainfall as shown in the map below.



The North East Trades, blowing in the comparatively narrow Mediterranean, give about 5—10 inches of rain

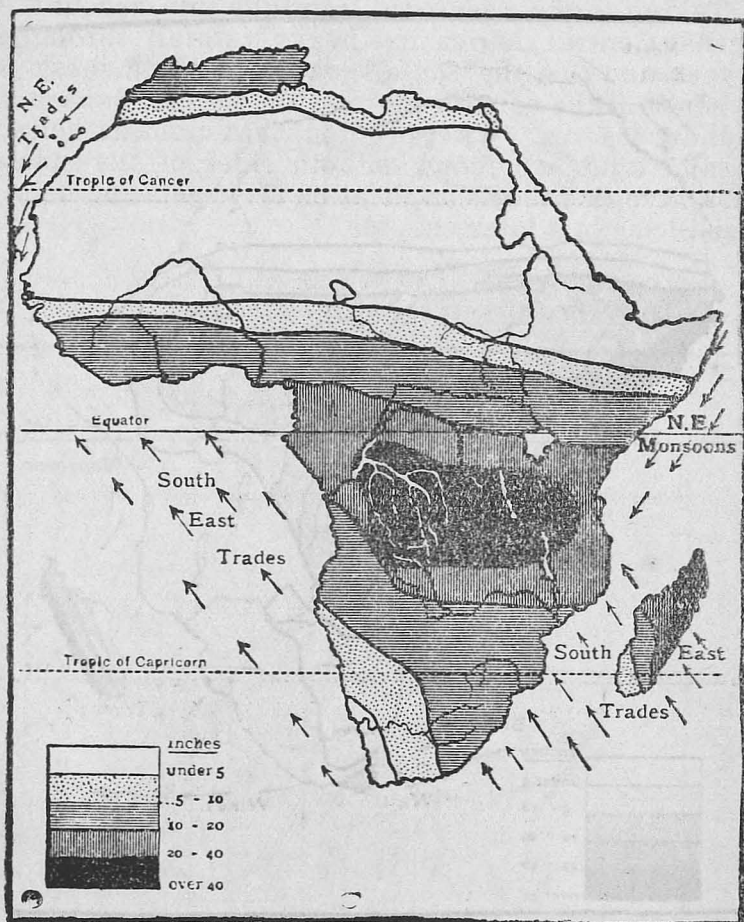
to the western part of the Atlas region, but the same blowing over land give no rain at all to the Sahara region.



JULY RAINFALL

In January, however, the sun shines directly on the Tropic of Capricorn, and along with the sun the system of planetary winds swings towards the south. Now the areas of low pressure are in South Africa,

Australia and the Indian ocean and the winds are drawn towards them. The North East Trades blow steadily now. Those blowing south of Cape Comorin are drawn into Australia; winds blowing in the Arabian



JANUARY RAINFALL

Sea are drawn into this region. And the South East Trades now blow powerfully into this region of low pressure. Consequently there is heavy rainfall in the central and southern parts of Africa.

The North East Trades, blowing a little more powerfully now, give to the African lands bordering on the Mediterranean, their winter rains.

Taking the two seasonal rainfalls into account, we find that Central Africa has heavy rainfall throughout the year, and that the rainfall gradually diminishes north and south of the equator giving rise to the Sahara and Kalahari deserts. We thus find that climatic belts of the same kind are found on both sides of the equator. These give rise to the duplication of vegetation belts as we shall see in a later chapter.

TABLE OF TEMPERATURES AND RAINFALL
DURING THE 12 MONTHS OF THE YEAR

		1	2	3	4	5	6	7	8	9	10	11	12
Cape Town	R.	55	55	58	61	64	68	70	70	67	63	59	55
	T.	2	2	1	1	—	—	—	—	—	1	1	2
Lake Victoria	R.												
	T.	2	4	4	6	6	2	2	2	2	2	4	4
Zazibar	R.	78	79	81	85	86	86	81	86	86	85	81	80
	T.	4	4	4	12	6	—	1	—	1	1	10	2
Cairo	R.	60	60	63	69	71	78	80	80	80	77	70	63
	T.	0.3	0.2	0.2	5.1	0.1	0.0	0.0	0.0	0.0	0.2	0.2	0.3

(2) Drainage and Rivers

Having carefully observed the maps of rainfall and the relief of the continents it is possible for us to understand the direction of rivers.

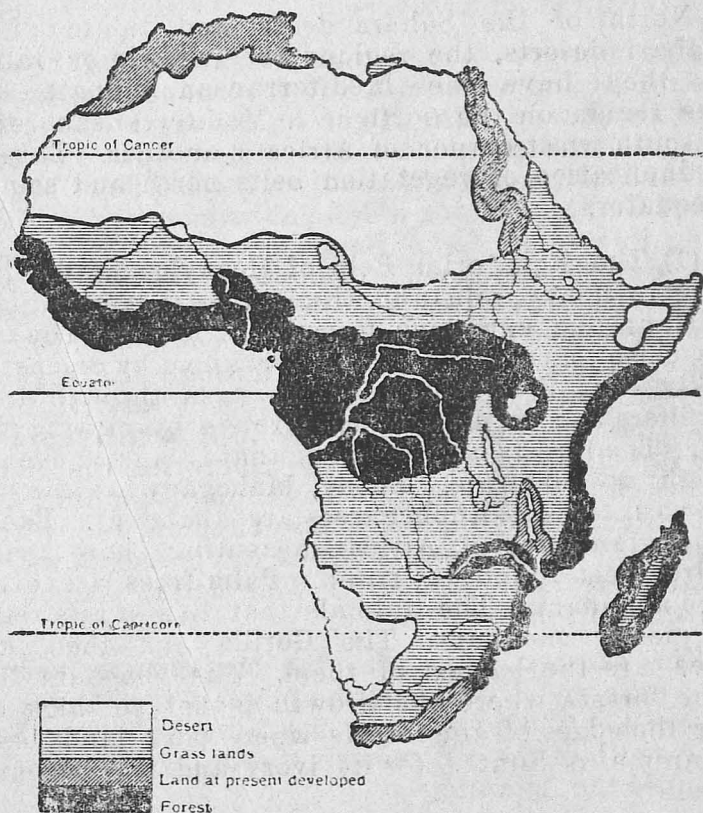
The continent being a high plateau most of the rivers have rapids and waterfalls, and they generally flow in a round about way. **The Niger** on the west coast takes its rise very near the coast, then it flows into the continent, and taking a slight bend southward flows into the **Gulf of Guinea**, forming a delta at its mouth. The Congo taking its rise in Lake Bengwelo in the lake region, flows towards the north. Then passing through **Stanley Falls** it turns westward and then descends the plateau at **Livingstone Falls**. Then after a course of 200 miles it enters the sea. As it flows through the region of heavy rainfall it carries great volume of water into the sea. The river **Nile** takes its rise in **Albert Nyanza** and flows directly north, receiving tributaries the **Atbara** and the **Blue Nile** from the Abyssinian mountains. It flows directly north into the desert region, and without a single tributary there, it enters Egypt and flows into the Mediterranean through a wide delta. Egypt thus forms the gift of the Nile.

The Zambesi flows into the **Mozambique channel**. Just where the river leaves the plateau, it plunges into a chasm 450 ft. deep forming the famous **Victoria Falls**. In the south of the continent is the **Orange River**, which flows into the Atlantic.

Lakes

Africa is known for its magnificent fresh water lakes. Situated at high altitude, these are not commercially very important. **Nyasa**, **Tanganiaka** and **Albert Nyanza** are long and narrow lakes as they are situated in the rift valley, while **Victoria Nyanza** and **Bengwelo** are shallow and broad, because they are situated on the plateau between the rifts.

Lake Chad is an inland lake, which grows extensive in the rainy season but shrinks up into a marshy region in the dry season leaving a layer of salt on its bed.



(3) Natural Vegetation and Animals

Vegetation of any continent depends upon its climate and rainfall. Africa situated on either side of the equator has enough of sunshine and so vegetation depends entirely upon rainfall. Therefore central regions which have heavy rainfall have **tropical forests**. As rainfall decreases as we go farther north or south of

the equator, the tropical forest gradually gives place to tropical woodland and grass land. These in their turn end in deserts, **Sahara** in the north and **Kalahari** in the south.

North of the Sahara desert and south of the Kalahari deserts, the regions receive winter rainfall and they have the **Mediterranean climate**. The Atlas region on the north is a Mediterranean region. The south west corner of Africa is another. Thus we find duplication of vegetation belts north and south of the equator.

(1) **The Equatorial Belt of Heavy rainfall**.—Here owing to heavy rain and tropical heat, vegetation is luxuriant and extensive forests are found. The trees grow close together and are intertwined by creepers so thickly that it is impossible to pass through them. Travellers had to make way through by cutting with axes. The forests are so thick that it is hard even for sunlight to penetrate. **Ebony**, **Mahogany** are the most important trees. **Rubber** trees are abundant. **Baobab** is the giant tree of Africa, measuring more than a hundred feet round its trunk. **Palm-trees** are everywhere abundant. The animals that live in this region are mostly monkeys. The **Gorilla** and the **chimpanzee** are the biggest of them. The **Elephant** lives in the forests where the growth is not so thick and along the edges of the forests where park lands begin. This animal is hunted for its ivory and it is becoming scarce.

The accompanying map shows the important productions of Africa.

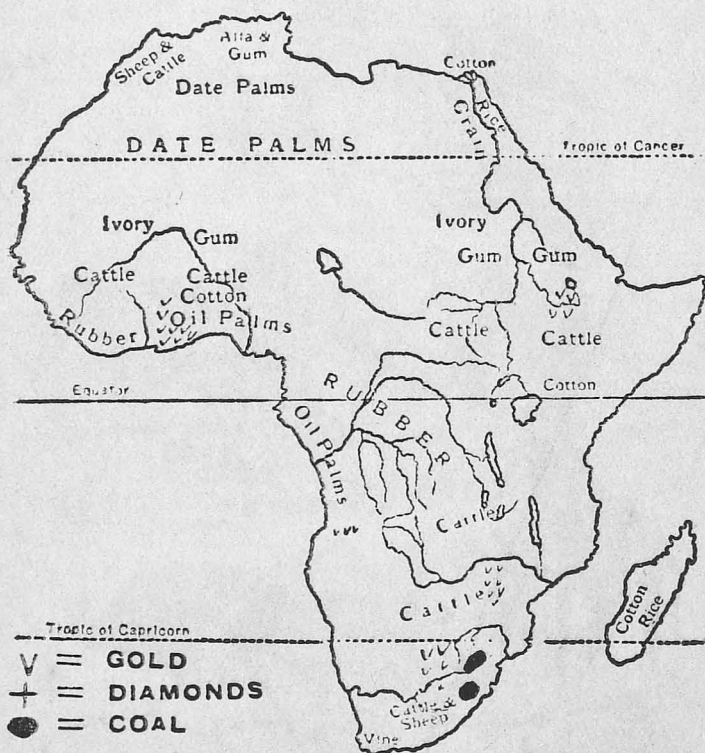
(2) **Park lands**.—On either side of the central forest belt there is the **Savannah region**. Here grass grows abundantly and trees also are found, though not so thickly as in the forest. Here therefore live **Zebras**, **Giraffes**, **Antelopes**, **Elephants**, and wild asses in large numbers. **Lions** and **leopards** live on them. **Ostriches** are found in this region



AFRICAN ANIMALS

and they are hunted for the sake of their feathers. But now ostrich farms are started, and by improved methods of incubation, many ostriches are reared for the sake of their valuable feathers.

In rivers and lakes in the hot parts of Africa, live **Rhinoceros, Hippopotamus and Crocodiles**. Locusts



frequently destroy crops. Mosquitoes are abundant in the marshy regions, and tsetse fly is very common in South and East Africa. The bite of this fly is so fatal to all domestic animals that in the region infested by them human beings are, for the most part, the beasts of burden.



AFRICAN ANIMALS

(4) Chief Natural Regions of Africa

(a) The Mediterranean Region or North Africa

This is to the north of the Atlas mountains and along the coast of the Mediterranean Sea. As has already been said it has winter rains, warm dry summers and a temperate climate. **Fruits** like, lemons, oranges, grapes and figs, wheat and barley grow in this region.

On the slopes of the Atlas mountains **Esparto grass** grows, which is exported to Europe for the manufacture of **paper**. On the cool heights of the mountain slopes, sheep are reared in large numbers and they supply **wool and leather**.

Morocco on the west of this region is an independent state ruled by the Sultan. **Tangier** is the capital, and **Fez** manufactures woollen caps called Fez caps.

Algeria to the east of Morocco belongs to the French. **Algiers** is its best harbour. In addition to **fruits and grass**, it grows **cork trees** from the thick bark of which corks are made.

Tunis which is to the East of Algeria belongs also to the French. **Tunis** is its capital. It is a **caravan centre**.

Tripoli to the east of Tunis belongs to Italy. **Tripoli** is its capital and is a caravan centre of great importance.

(b) The Sahara Desert

This is an extensive region as big as Europe. It is nearly three million square miles in area.

It is not a level lowland region. It is only a low plateau with hills and dales on it. It is the scene of shifting sandhills with salt water lakes here and there.

This region gets very little rainfall. The winds blowing over the Mediterranean deposit their moisture on the Atlas mountains, and those from the Indian Ocean do not give rain because there is no high mountain region to cool the moisture. On the other hand the moisture-laden air becomes hotter in this region (c. f. The Thar desert) and no precipitation takes place.

During the daytime the region becomes **extremely hot**, but during night so much of heat is radiated into space that the land becomes **intensely cold**. It is on account of these sudden changes of temperature that stones split up into smaller and smaller fragments until very fine sand is formed. It is this fine sand that covers up most of the region and forms the shifting sandhills.

In times of storms however some rain falls, and this sinks into sand and is collected between impervious layers of rocks. Here and there it comes up to the surface where what we call **oases** are formed.

Productions.—In oases where water is abundant, **Date palms** grow luxuriantly. Cotton, rice and wheat are sometimes cultivated. But the date palm is the most important as it supplies food, shelter and timber to the desert tribes.

Camel is the only animal that can thrive in this region. It is so constituted that it can travel without water for days and days in the midst of sandstorms. Camel caravans carrying **rubber, ivory, ostrich feathers, gold dust and skins** travel in this region from one oasis to another till they cross the desert.

This caravan trade will become less important in course of time. Tropical regions are being connected with the coast towns which are regularly visited by steamers. Tropical products can therefore be **very easily sent to distant places direct**. Motors capable of running over sand are being devised and they may take the place of camel caravans. Above all the recent developments in **aerial navigation** may revolutionize

this mode of transport, and tropical products may hereafter be sent direct from their place of production to distant countries in airships.

(c) Nile Region

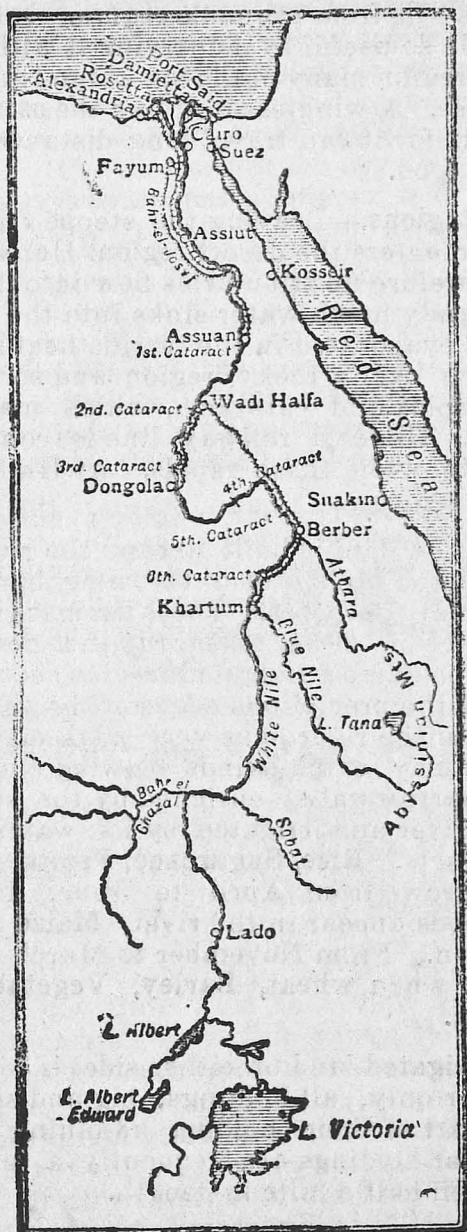
To the east of the great Sahara region and in continuation with it is Egypt, which but for the Nile would have been like the Sahara in every way. This region has very little rainfall and is equally hot but the Nile makes all the difference.

The Nile taking its rise in **Albert Nyanza** where there is heavy tropical rainfall, flows in a northerly direction. As the river flows out of the huge lake, its waters are clear and free from any sediment.

Savanna region.—At **Lado** it enters the **Savanna** or the region of tropical grassland. In this region the river flows so slowly that **Sudd** a kind of vegetation is found so thick on the river that steamers cannot ply on it. This is now cut by wires tied to steamers and a passage for them is made.

This region is full of grasses of all kinds with trees here and there forming a parkland. **Antelopes, Buffaloes, Zebras, Giraffes and Elephants**, live in herds in this region. Lions and Leopards lie in wait in bushes and near water courses, and make a prey of these grass eating animals. The Nile abounds in **crocodiles** whose leather forms an important article of export. Papyrus reed growing on the banks of the river is used for making a rough kind of **paper**. In this region the **Bahrel Ghazel** from the west and the **Sobath** from the east join the Nile.

Steppe Region.—The river then enters the steppe region, where the rainfall becomes scantier. Trees disappear and the park land gradually merges into **steppe-land** where there is thin grass. In this region the **Blue Nile** from the Abyssinian Mountains with its heavy load of silt joins the Nile at **Khartum**. Another the **Atbara**



THE NILE

flows into the Nile from the same region. It is these that make the Nile so useful by supplying it with water and silt. In this region many of the big animals disappear as grass is sparse. A wingless bird like the **ostrich** can live in this region, for it can travel long distances in search of grass and food.

Desert Regions.—Leaving the steppe region at Berber, the river enters the desert region. Here the rainfall is nil and therefore no tributaries flow into the Nile. The land being sandy much water sinks into the ground and much of it is evaporated in the terrific heat here. Here the river flows over a rocky region and so there are a number of rapids and cataracts, which make navigation difficult. Hence a railway line is constructed in this region to avoid these rapids. At Halfa the river enters Egypt.

At **Aswan** a dam is built across the river and the water thus stored up is sent to the neighbouring lands for irrigational purposes. These irrigated lands lie along the river on either side of it and not far away from it, for this narrow irrigated region is bounded on either side by the precipitous edges of the valley. Hence boats plying in the river have very high masts in order that the sails may catch winds blowing over the high land. This narrow valley enriched by the silt brought down by the river and irrigated by its water grows all kinds of products. **Rice, Sugarcane, Fruits, Vegetables** and **Cotton** grow from April to June. In July to November floods appear in the river. **Maize** and **Millets** are then grown. From November to March the winter season lasts, when wheat, **Barley, Vegetables, beans** etc are grown.

As the irrigated land on either side is to get water from the river only, all holdings, big and small, must have some part of their holding adjoining the river. Hence it is that holdings are frequently a few yards in width and often half a mile in length.

The cultivators called **Fellahins** live either in the

valley in places above flood level or on the adjoining high ground. Their houses have mud walls and their flat roofs are made of mud spread over cotton stacks and other materials. These have no windows except small holes and doorways. This keeps the houses cool perhaps (C. F. houses in the dry regions, Anantapur and Bellary) in the hot summer.

The Delta Region.—The Nile branches off into several small streams at **Cairo**, which is at the head of the delta. The soil in this region is all alluvial, and grows all kinds of crops. **Rice, Sugarcane, Cotton and Tobacco** are abundant. The farmers are called **Fellahs** and they live in flat mud houses as in the long valley. They live in villages in groups to allow as much space as possible for agriculture.

Cairo is the capital with a beautiful citadel of its own. It is at the head of the delta and commands the produce of the entire delta. **Alexandria** at the mouth of a Western branch is the chief seaport on the Mediterranean. It is the meeting place of **Europe, Asia and Africa**. Hence all races are to be found in the market place of this important town.

(d) The Eastern Plateau of Abyssinia

It is 8000 ft. in height and descends rather abruptly to the east ending in what is called the **Somali land** bordering on the gulf of Aden. This tableland is cool on account of its elevation but the marginal strips are hot and moist. It is the birth place of **coffee** which grows wild. But it is more important on account of the **Atbara** and the **Blue Nile** that flow into the Nile. Much silt is carried from this region to Egypt, which may be said to be the gift of Abyssinia also.

(e) The Sudan

The Sudan or the land of the **Blacks** is the region between the Sahara desert and the tropical forests of the

Congo and the Niger. The desert of Sahara as we go Southward is changed into **Scrub land** and gradually merges into the **Savanna** region. Farther South the **parkland** becomes more and more wooded as rainfall increases and finally it merges into the tropical forests. This region, as has been already said, is the home of Giraffe, Deer, Zebra, Elephants and Lions. In the clearings **agriculture** is the important occupation of the people. Wheat, maize, groundnuts, cotton and indigo are grown, in the wetter regions. On the drier regions horses, cows, sheep, goats, camels and asses are reared. Huge wooden fences are made in which these animals are kept protected from wild beasts.

The natives of this region have reached a comparatively high civilization; and they have towns in this region, most of them being market towns used for barter. These people have **dark skins** and **woolly hair**, a sort of protection against the heat of the place.

Timbuktu is the most important town. Caravan routes across the desert meet here. Being on the river **Niger**, the produce of the Niger region easily reaches this town. **Manufactured articles** such as cloth, arms, tools, coffee, tobacco are brought to this place and rubber, ivory, ostrich feathers, rice and honey are taken away from this place.

Now attempts are being made to develop ocean routes, though at present there are no good harbours, and the coast region is full of forest growth. **Port Harcourt** is the best port and is near coal, which is found in the interior. Hence it is very likely to develop very rapidly.

(f) Tropical Forest Region

This is on either side of the equator. The tropical heat and rainfall has made vegetation grow so thick that the forest on this region is impenetrable. Only monkeys which go from branch to branch live in this region. Big game is found along the edge of this forest

region. **Rubber** is the most important product here. **Ivory** and **Palm oil** are other products. Here and there clearings are made in the forest and **cotton**, **Cacao** and **tobacco** are successfully cultivated, but much more is yet to be done to make this region really productive.

In the interior of the Congo Forest, Pygmies, a race of short people live. Some are engaged in agriculture but many of them are still savages living by hunting. They live in huts made of leaves and very often have no dwellings at all.

Leopoldville on the Congo is the capital. **Boma** is its chief port.

(g) The Lake Region

This is the high plateau region on which heavy rain falls. Though it is on the equator, on account of its high altitude, it has a very cool climate. Hence this region is very healthy for white people, while the lowlands lying to the east of the region have tropical and moist climate. On the Western side, the region descends to the Congo basin.

The low lands on the east have heavy rainfall, and the tropical heat there makes them unhealthy. Tropical produce such as **rice**, **bananas**, **spices** are grown in abundance, and all along the coast there are **cocoanut** plantations yielding **copra**. These are worked by the coloured races.

As we go up from the plain, we come across scrub-lands and these abound in antelopes and zebras. Lions and other wild animals are found in this region and so they form fine hunting grounds. The scenery in this region is very grand, and people who go by rail from **Mombasa** on the coast to **Port Florence** on **Lake Victoria** enjoy the beauty of it. The same is true in the case of people who travel from **Dar-es-Salam** to **Ujiji** on **Lake Tanganyika**.

The upland regions have volcanic soils and are

exceedingly fertile. Excellent **pasture lands** are found, where **sheep** and **cattle** are reared by the natives, who are nomads. The wetter parts in these region are used for agricultural purposes, **cotton**, **coffee** and **tea** are grown and some Europeans have settled in this region. On account of its healthy climate, it is possible that white races will permanently settle in this region. This lake region with the low marginal land is divided into **Uganda**, **Kenya colony**, **Tanganiyaka territory**, **Zanzibar Protectorate**, **Northern Rhodesia**—all under British rule. The **Portuguese East Africa** is similar to this lake region with however a lower plateau and a wider marginal plain. The river **Zambesi** flows in this region. **Mozambique** is the capital situated on the coast. **Zanzibar** is an island on the east coast. Formerly it was the centre of the **slave trade**. But now it exports large quantities of **cloves** and **cocoanuts** are abundant.

(h) South Africa

This is the high plateau in Africa, the southern part being higher than the northern part.

South of the equatorial region as in the case of the north we have **park land** with trees here and there and tall grasses. This region is covered by the Portuguese **Angola**, **Northern Rhodesia** and the **Zambesi region**. This park land is the home of **Antelopes**, **Zebras**, and **Giraffes** as has been mentioned already. In the borders of this region and where there is thick growth of trees in wetter parts, there are **elephants** and other big game.

Further south the park land gradually disappears and merges into **grass land** as in the case of Sudan. This region becomes entirely pastoral and **sheep** and **cattle** are reared.

Farther south even grass disappears and gives rise

to the **Kalahari** desert. But here the desert is not so extensive nor is it so barren. The reason for this is that the continent here is narrow and stretches into the sea. Hence S.E. Trade winds coming from the Indian Ocean give rains to the eastern part and so the desert region is limited to the western part and does not extend to the east as the Sahara does because in the case of the Sahara desert there is no water but land to the east, and N.E. Trades blowing in that region are land winds.

In this region **Bushmen** live on small animals and the products of their chase. In this desert water is found in pits in the dry season, and streams of women and cattle can be seen going morning and evening for water.

South of this Kalahari region, we have a **Mediterranean** region, where rain falls in winter particularly in the south west corner of the continent.

The country from **Cape Agulhas** in the south rises abruptly in terraces, each terrace forming a kind of plain called **Karoo**. Here a kind of stunted bush called the **Karoo bush** grows. This forms a good food to **sheep**. Hence these Karroos form the home of millions of **sheep**. This land is inhabited by the Bantu-speaking **Negroes**, the **Kaffirs** and the **Zulus**. These are cattle rearing tribes, and move from place to place for the sake of grass. For this reason they live in circular shaped thatched huts the materials of which can be easily removed. These huts are built in a circle, with a circular thorny enclosure round them. In the inner space surrounded by the huts there is a circular hedge within which animals are kept at nights.

These Bantu races have settled occupations also. Here and there where water is available, they cultivate **maize and tobacco**. Among these tribes women do much of the light work and men look after their cattle and do such hard work as building huts and hunting.

After the advent of the white races, this region has made good progress. Wells have been sunk and water

storage has been improved with the result that large number of sheep are now reared in the Karroos. In addition to sheep, **ostriches** are also reared in farms of their own, where the ostrich eggs are hatched in incubators. Ostrich feathers form a very valuable article of export in this region.

In the south-west corner, where there is the **Mediterranean type of climate**, wheat and fruit are grown and this fruit finds ready sale in England as, on account of winter, her fruit supply gets limited. **Vine** and **Tobacco** also are grown in this region.

Valuable mines have been discovered. The **gold mines of Johannesburg** and the **diamond mines of Kimberly** have attracted large population to this region.

This region is politically divided into a number of parts.

1. **The Cape of Good Hope Province.** This is the southern most part of the continent. It has the **Mediterranean climate**. Grain, fruits, wine, wood and diamonds are its principal products. **Cape Town** the capital is on the Table Bay. It is an important coaling station. **Kimberly** is the centre of diamond mines.

Natal on the eastern coast is an agricultural province to which many coolies from India go. **Durban** is the chief port and **Petermaritzburgh** in the interior the capital.

The Orange Free State and Transvaal are in the interior. **Johannesburg** is the capital and the centre of the gold mining industry.

Basuto land, Bechuana land, Rhodesia, Swaziland, are some of the other divisions.

(5) Peoples of Africa

There are several kind of people in this continent. They belong to four great races. 1. **The Hamites** live in the north and north west part of Africa. 2. **Semites**

in Egypt. 3. **The Negroes in Sudan**, south of the Sahara. 4. **The Bantus** in the tableland of Southern Africa. The Hamites and Semites belong to the **Caucasian** family while the Bantus and the Negroes belong to the **Ethiopic** family.

The African population are of different shades of colour from jet black to light brown, a few being almost as white as the European nations.

People living in the Atlas region and Egypt are Arabs who have been traders from very early times. They profess Mohamadanism. In Sudan the people are Negroes belonging to the Ethiopian family. They are black in colour with woolly hair, thick lips, white teeth and flat nose. Their black colour and woolly hair protect them from the intense heat of the place they live in.

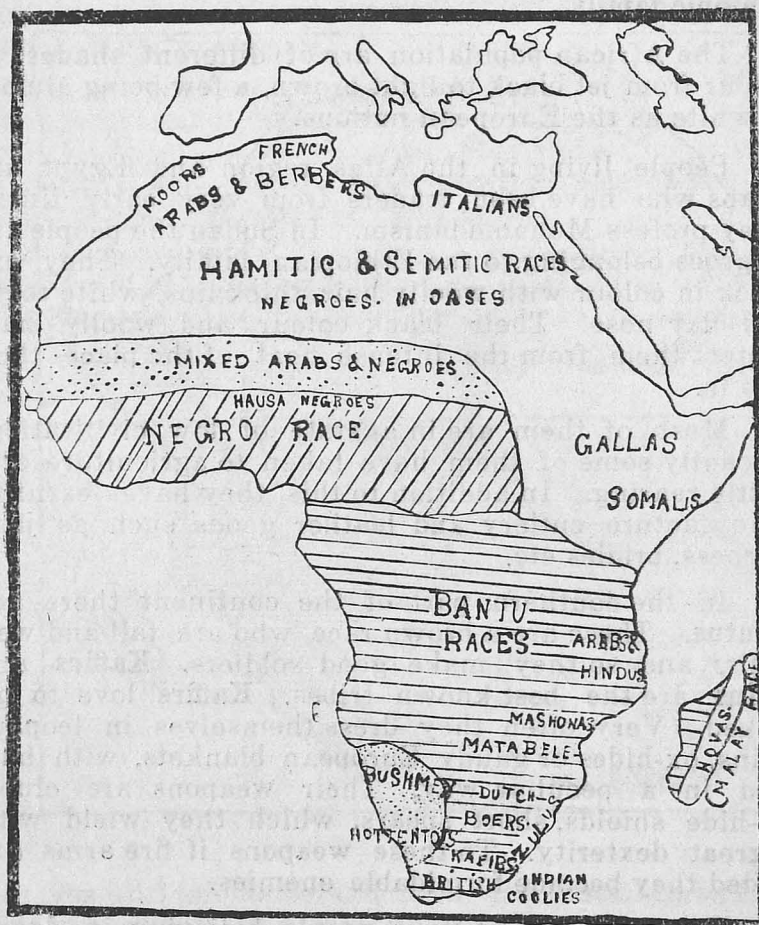
Most of them are in a state of low civilisation. Recently some of them have taken to agriculture and cattle rearing. In addition to this they have learnt to manufacture cutlery and leather goods such as jars harness, bridles etc.

In the southern part of the continent there are **Bantus**. These are a brown race who are tall and well built, and so they make good soldiers. **Kaffirs** and **Zulus** are the best known tribes. **Kaffirs** love to go naked. Very often they dress themselves in leopard skins, ox-hides or gaudy European blankets, with hair tied in a peculiar way. Their weapons are clubs, ox-hide shields, short spears, which they wield with a great dexterity. To these weapons if fire arms are added they become formidable enemies.

They are superstitious people believing in devils and witchcraft. These are not steady workers. When a Kaffir obtains enough to buy some cattle, he will not work any more.

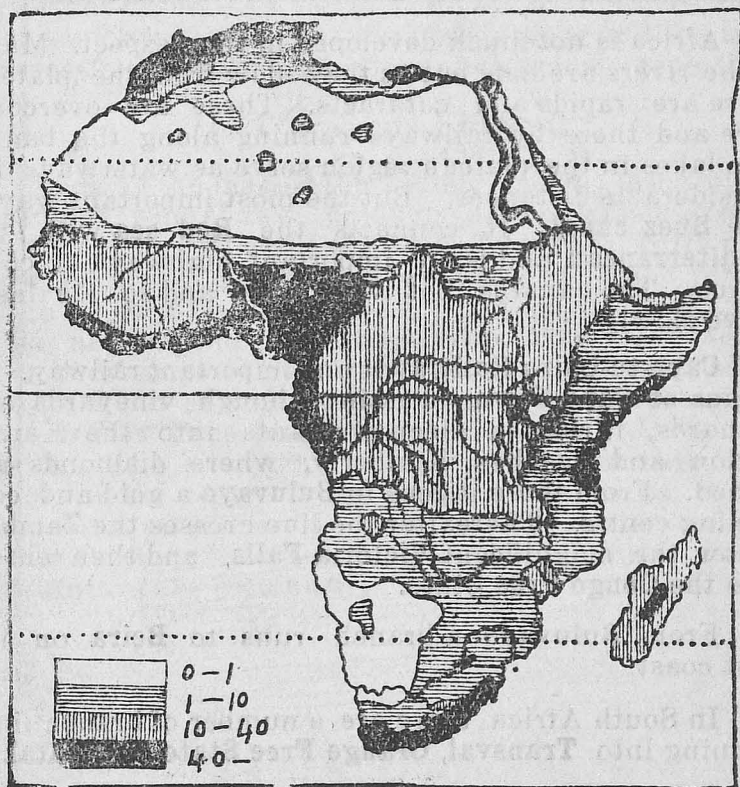
Zulus are the most warlike of the African races and live north of Natal. They have a system of military

training which makes them formidable enemies. Under the leadership of Catevaygo they gave a lot of trouble to the English. But finally they were subdued and are now under British Authority.



The **Hottentots** seem to be the aboriginal inhabitants. They are like the Negroes but with yellowish brown faces. They love to smear their bodies with grease and paint. They live in beehive-shaped huts of grass.

Bushmen belong to the same stock as the Hottentots but of a smaller stature. They use poisoned arrows, and so they were much dreaded by the first white settlers but they were hunted and only a few of them are found hiding in deserts and caves.



POPULATION

The continent has been divided among the several European nations, England having a greater part of the continent. Many **Indians** have gone to South Africa where they have settled. These are living there under many disadvantages and they are trying to get equal privileges with the Western nations.

This diagram shows the distribution of population

in Africa. Africa north of the Atlas mountains, the long Valley of the Nile, the Lower Guinea and South Africa are better populated than others.

Means of communications

Africa is not much developed in this respect. Many of the rivers are long but as they flow from the plateau there are rapids and cataracts. These are overcome here and there by railways running along the banks. The lakes in the plateau region serve as waterways for considerable distances. But the most important way is the **Suez canal**. It connects the **Red sea** with the **Mediterranean** and is an important highway of commerce. The canal is not very wide and so steamers move slowly in it.

Cape-to-Cairo Railway is an important railway. It begins at **Cape Town**. Passing through vineyards and orchards, it rises in steep gradients into the Karroo region and reaches Kimberly, where diamonds are mined. From there it goes to **Buluvayo** a gold and coal mining centre. Thereafter the line crosses the Zambesi below the magnificent **Victoria Falls**, and then enters into the **Congo Free State**.

From **Buluvayo** a branch runs to **Beira** on the east coast.

In South Africa there are a number of branch lines running into **Transval**, **Orange Free State** and **Natal**.

On the East a line from **Dar-es-Salam** connects **Ujiji** on **Tanganika**, another from **Mombasa** to **Lake Victoria** via **Nairobi** the capital of **Kenya** colony.

There is a railway line running from **Alexandria** in the north to **Aswan** on the Nile via **Cairo**. From **Aswan** to **Wadi Halfa** there is a break. From **Wadi Halfa** to **Khartoum** a railway line is laid, while a branch connects it with the Red Sea at **Port Sudan**. If the intervening gap is filled, it is possible to travel from **Cairo** to

Cape Town. At present more lines are being constructed to connect the interior with the ports on the east and west of Southern Africa.

Across the desert there are caravan routes to some important oases. As aerial navigation improves, most of these routes may lose their importance and the most inaccessible parts of Africa may then become accessible.

(6) Indian Ocean

Look at the map of the Indian ocean. Australia a continent where raw products are obtained exports wool, mutton, wheat and fruits to Great Britain in large quantities either via Aden or Cape Town, receiving in its turn manufactured goods from Great Britain. India has considerable trade with Africa. Steamers from Bombay go to Zanzibar, where they take on board a cargo of cloves and supply cotton goods and rice. The East Indies have considerable trade with India and Ceylon. The situation of India in the northern part almost in the centre is very advantageous as it can trade with all the lands lying on the borders of the Indian Ocean. If India improves her manufactures, a great future lies before her.

SOUTH AMERICA

Like Africa that we have just studied, South America is in the southern hemisphere. It tapers to the south and has its broader portion towards the north. Like Africa S. America is a compact continent. But it extends further south than Africa. The Equator divides Africa almost into two equal halves whereas it passes only through the northern part in S. America.

S. America is a compact continent. It has very few openings in its coast line, when compared with its extent. But for the fiords on the south west of the continent, the coast line would have been shorter still. Hence South America has very few harbours, and even the few are not very safe. Some of them are at the mouths of the rivers and so they are likely to be silted up, but they have easy communication inland. On the western side all the rivers are mountain torrents and it is impossible to have good harbours at their mouths. Even if there be some, the hinterland being mountainous, there is not much prospect of their development.

North Coast. In this region the mouth of the **Orinoco** is an important means of communication inland. **Maracaibo** between the spurs of the Andes is a safe harbour. The Amazon forms an excellent means of communication to a great distance inland, but it has no good harbour at its mouth. **Para** is the only harbour inland of some importance and it exports rubber called **Para Rubber**.

On the east coast with the Brazilian Highlands behind these is a good harbour This is **Rio de Janeiro**,

one of the best harbours in the world. Its healthy dry climate, its fertile hinterland growing **coffee** and the production of **gold** and **diamonds** near by, have made this harbour important. **Buenos Ayres** near the mouth of the **Laplata** is another port. It is the outlet for the **wheat**, **wool**, **cattle** of the Plate River region. (c.f. Calcutta.)

On the **Western** side, in the region of the **Anti-Trades**, there are many **fjords** caused by the breakers beating against the rocky shore. (c.f. Norway, Scotland). These are so far south and the hinterland is so unproductive that no harbour has come to any prominence. Further north is **Valparaiso** the best natural harbour in this region. It is the chief port of **Chile**. **Gulf of Guayaquil** is the next important opening in Equador.

Like Africa this has no islands very near the coast line. The **West Indies** belong to North America. In the south there are the **Falkland Islands**. But these are so far south that they are not of much importance to the continent. However its harbour **Port Stanley** is useful for the steamers that pass through the Magellan strait. As grass is abundant in this region, **sheep** are reared here and their **mutton** is supplied to the ships. Whales are caught near its shores. On the western side far away from the coast are the islands of **Juan Fernandez** and **Galepagos**.

(1) Structure and Relief

South America extends from 12° N. to 55° S. It is about 4700 miles from north to south and 3300 miles east to west, having an area of about 7 million square miles.

We have **Gold Mountains** on the west and the eastern highlands are the remains of the **block plateau** of the old **Gondwana** land.

Relief

1. The most notable feature in the relief of the



continent is the great mountain system of the **Andes** running north to south in parallel ranges.

2. On the eastern and the northern sides, there are the old worn out **plateaus of Brazil and Guiana** the remnants of the old block mountains. 3. Between these are the plains of the **Amazon** and the **Orinoco** in the north, and of the **Plate River** in the south.

The Andes Mountains

These extend from **cape Horn** in the south to **Panama** in the north a distance of 5,000 miles. These are **Fold mountains** like the Himalayas and are higher than they in average height. Hence it is difficult to cross the Andes and men, donkeys, and Alpacas are the only beasts of burden. The construction of railways is found to be difficult and expensive.

This mountain runs north from **cape Horn** for about 2,000 miles in the form of a single chain. There it breaks up into two and extends northward enclosing between the two ranges a **huge plateau** 500 miles in width. On this plateau of Bolivia is **Lake Titicaca** the highest lake in the world. From the western bend here, the chain breaks into three ranges and goes northward with peaks rising 20,000 feet. **Chimborazo** was an active volcano causing great havoc. **Cotopaxi** is still active. In the eruption of 1879 it covered all the surrounding region with pumice and ashes. **Aconcagua** is another high peak from which glaciers come down. All along this chain earthquakes are common.

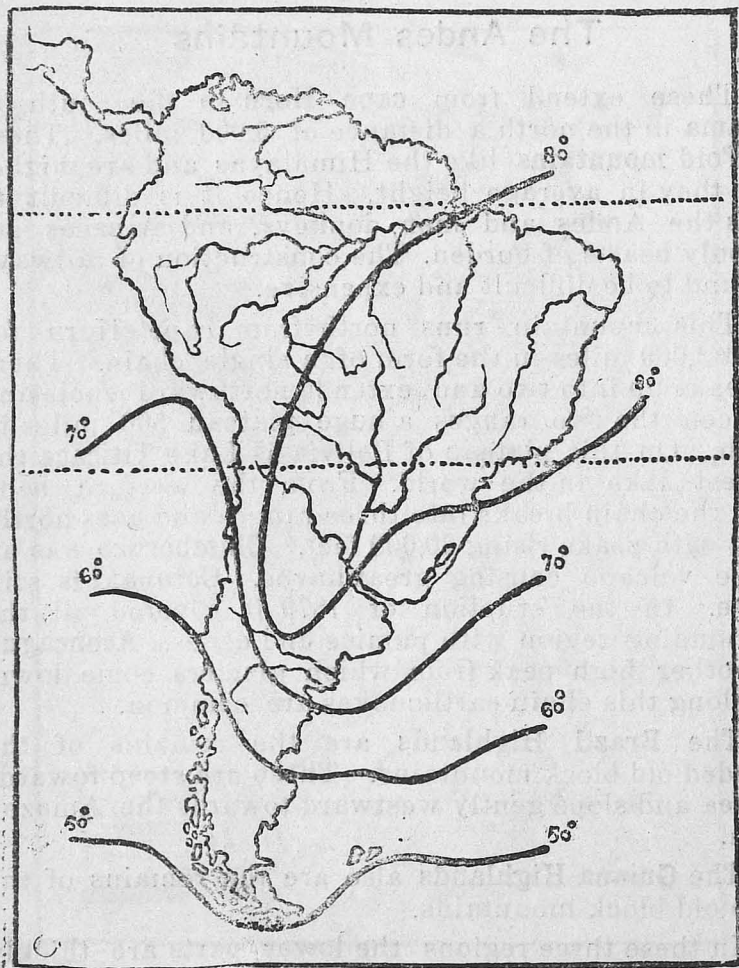
The Brazil Highlands are the remains of the denuded old block mountains. These are steep towards the sea and slope gently westward towards the **Amazon basin**.

The Guiana Highlands also are the remains of the same old block mountains.

In these three regions the lower parts are thickly wooded, the upper parts being grasslands. In all the three, minerals are abundant. In the Andes, **gold, silver, copper and platinum** are found, and in the **Guiana and Brazil Highlands diamonds and gold** are obtained.

(2) Climate and Rainfall

Notice that the equator passes through the northern part of the continent, the tropic of cancer being far away from the continent. Hence we do not find in



JANUARY ISOTHERMS

South America any duplication of climatic and vegetation belts north and south of the equator as in Africa.

Look at the map of the Isotherms in January. The sun is directly on the tropic of capricorn. Hence the region of low pressure is the Amazon region. Consequently winds blow inward.



JANUARY RAINFALL

This being the region of the **Trade Winds**, both the trades meet in this region and rise high, giving **convectional rains**. The Warm Brazilian and equatorial currents flowing on the east and the north of the conti-

nent serve to charge the Trade Winds with a great amount of moisture, and the combined effect of the two Trade Winds is to give a deluge of rain to the regions east of the Andes. The Andes on the west offers a



JULY RAINFALL

barrier to these winds, and so when the winds rise high to cross them, all the moisture in them is precipitated giving rise to heavy rain on the eastern slopes of the

mountain. The winds that cross the Andes are therefore dry and no rain falls on the western slopes.

The North West Anti-Trades blowing in this season, swing southward and give rain to the west coast at the southern part, leaving a belt of comparatively little rain on the west of the continent on the tropic of capricorn.

Look at the map of the July Isotherms. The sun is on the cancer now, and the continent as a whole has the winter season. The equatorial region of low pressure swings northwards and so the effect of the South East Trades is felt in the Amazon region, while the North East Trades blow strongly over Central America. Hence the Amazon region gets rainfall from the South East Trades only, and so it is not so heavy in this season.

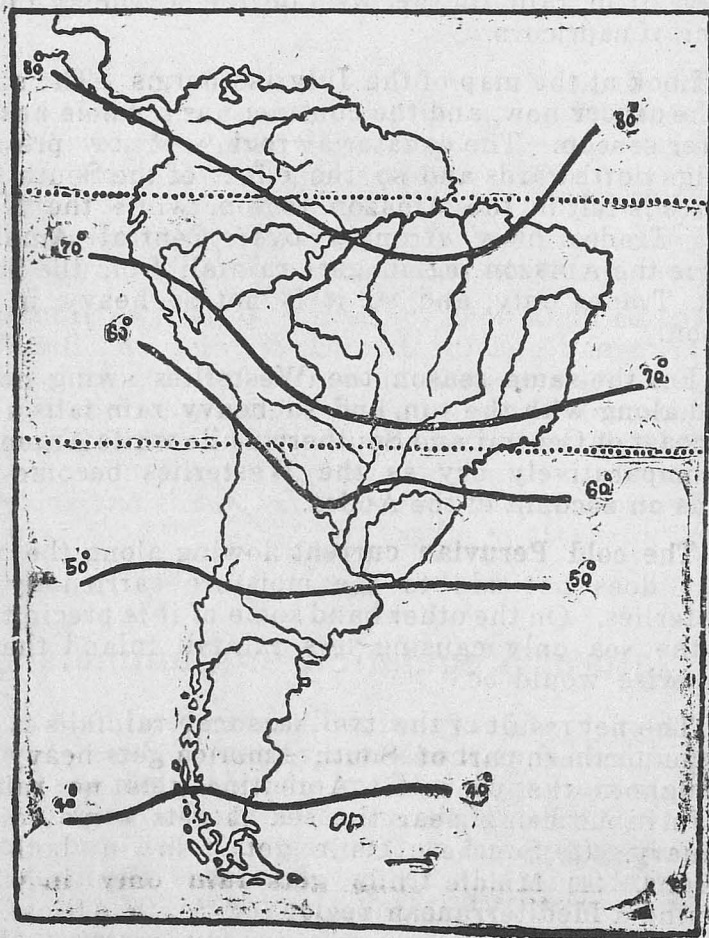
For the same reason the Westerlies swing northward along with the sun, and so heavy rain falls along the coast of Central and Southern Chile while Argentina is comparatively dry as the Westerlies become dry winds on account of the Andes.

The cold Peruvian current flowing along the west coast does not add to the moisture carried by the Westerlies. On the other hand some of it is precipitated on the sea only causing less rainfall inland than it otherwise would be.

The net result of the two seasonal rainfalls is that (1) the northern part of South America gets heavy rain throughout the year. (2) Argentina gets no rainfall in July but being near the sea it gets some rain in January. (3) Southern Chile gets rain in both the seasons. (4) Middle Chile gets rain only in winter forming a Mediterranean region (cf. South Africa). (5) Northern Chile gets no rain in any season. Hence it is a desert called the Atacama Desert.

Rivers

The rainfall mentioned in the last chapter and the configuration of the land give rise to three big river basins, the Amazon, the Orinoco and the La Plata.



JULY ISOTHERMS

The Amazon

This is the biggest river in the world. Eight of its tributaries are over 1000 miles in length. It takes its

rise in the Andes and flows through forests into the Atlantic Ocean a distance of 3500 miles, carrying into the sea more water than any other river in the world. It receives tributaries from all sides, **Rio Negro**, and the **Madeira** being the most important of them. Ocean steamers can go up the river up to the **Rio Negro** and small vessels can ply on its tributaries, which thus form magnificent waterways.

The Orinoco river drains the northern part of the continent. It has many tributaries, and carries a large volume of water into the sea, where a broad delta has been formed. The water-parting between this and the Amazon is so low that in the flood season it forms one vast maze of waters, while at other times communication from one to the other is easy.

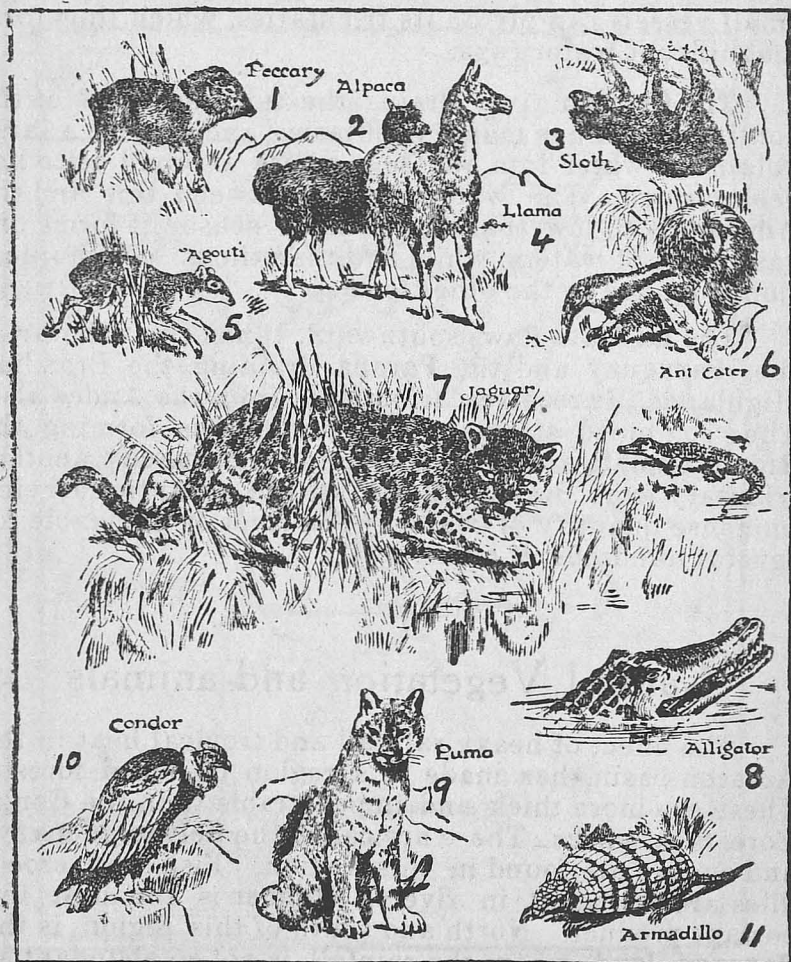
The La Plata flows southward. It has two tributaries the **Paraguay** and the **Parana**, draining the Brazilian Highlands. It receives tributaries from the Andes also. The combined stream flows southwards forming the **Rio-de-Laplata** and then receiving the **Paraguay** another tributary from Brazil, it flows into the Atlantic carrying immense quantity of water. The river is navigable for several hundreds of miles.

Natural Vegetation and animals

The effect of heavy rainfall and tropical heat in the Amazon basin, has made it a region of dense forests. These are more thick and impenetrable than the Congo Forests in Africa. These are called the **Selvas**. Monkeys and snakes are found in this region. Fish and crocodiles are abundant in rivers. **Rubber** is the most important product. North and south of this region is the **Savanna land** where the rainfall is not so abundant as to allow thick forest growth. But it is sufficient to form parkland with trees here and there and a thick growth of grass between. These are called the **Llanos**. These

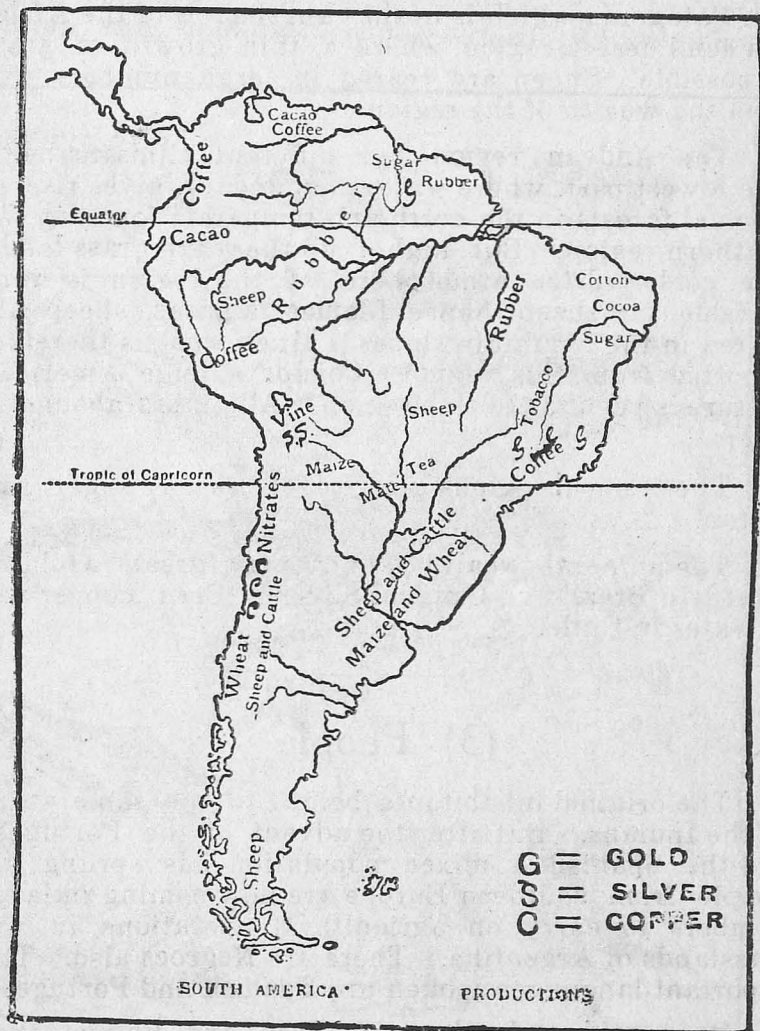
are found in the Orinoco basin and on the **Highlands of Brazil**.

South of the Brazilian Highlands, the rainfall



becomes considerably less. Here trees disappear except along the rivers, and the region is one sea of waving grass. These are called **Pampas** and are similar to the

Veld of South Africa. Deer are found in herds, and Rhea the South American ostrich is peculiar to this



region. **Coffee** is the most important product of this highland region.

On the West of the continent, north and south of

the great bend in the coast line, there is the **Atacama** desert, which has been sending **Saltpetre** and **guano** to other parts of the world.

Patagonia which is in the rain shadow of the Andes is a semi desert region, where a thin growth of **grass** is possible. Sheep are reared in large numbers and form the wealth of the region.

The **Andean** region has different climatic belts. The lowest part, where water is abundant, gives rise to tropical forests in the north and temperate forest in the southern region. But higher up there are **grass lands**. The cooler, drier atmosphere of the region is very suitable for **sheep**; hence **Llamas**, **alpacas**, sheep are reared in the mountain slopes. Much **wool** is therefore exported from this region. **Condor** a huge American vulture is peculiar to this region. **Alligators** abound in rivers.

The tropical regions grow **coffee**, **cocoa**, **sugar** and **cotton**.

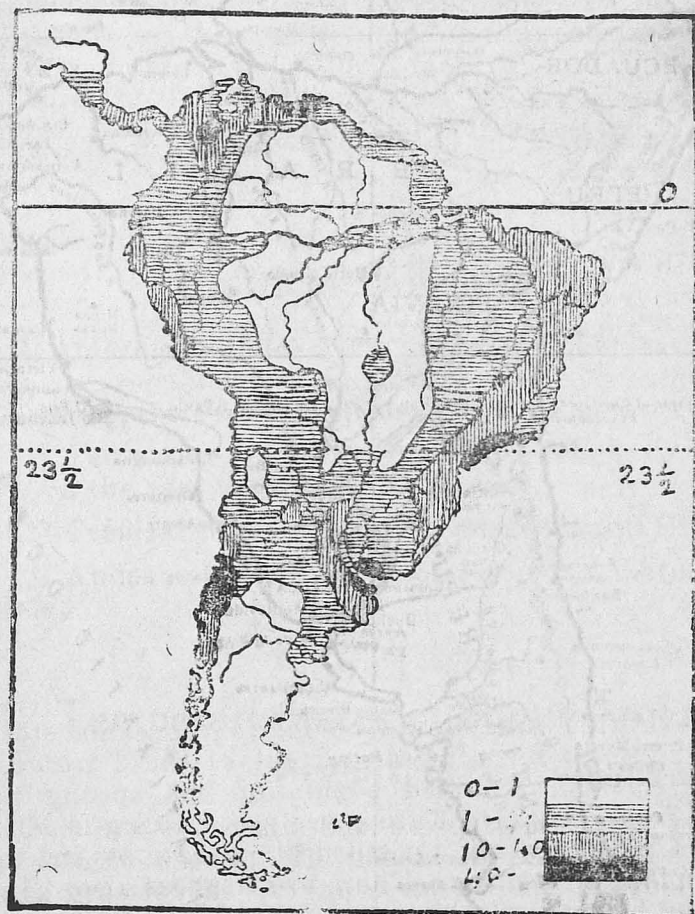
The mineral wealth is not very great. Gold is mined in Brazil and Guiana, Silver in Peru, copper and Nitrates in Chile.

(3) People

The original inhabitants belong to the same stock as the Indians. But after the advent of the Portuguese and the Spanish a mixed population has sprung up. People from southern Europe are now coming in large numbers to carry on agricultural operations in the grasslands of Argentina. There are **Negroes** also. The important languages spoken are **Spanish** and **Portuguese**.

It is **gold** and **silver** of Peru and Bolivia that attracted the Spaniards to this continent. Though much gold and silver had been taken away by the Spaniards, even now there is considerable mineral wealth in the

Andes. The silver mines of **Potosi** have been producing silver during the past 300 years, and the silver they produced is estimated to give each man, woman and child in this world one solid silver spoon. The mines are even now rich though the output is not so great.



POPULATION MAP

But unfortunately this mineral wealth is not properly exploited (1) because the mountain region is not easily accessible, and the states have till recently been in a



state of constant warfare. Now that railways have been constructed it is probable that in course of time mining may become an important industry in this continent. But more than this there are immense possibilities of its development in other ways. There is so much land that is yet to be cultivated. So much has yet to be done to improve irrigational facilities and so much to clear forests. If this is done there is a great possibility for developing the continent and increasing the population in this continent.

Political Divisions

S. America is divided into a number of states all of which are republics except **Guiana** which is subject to the English, the French and the Dutch.

(1) Temperate states :—Argentina, Uruguay, Paraguay on the east and Chile on the west.

(2) Tropical states :—Brazil, Venezuela and Guiana.

(3) Andean states :—Columbia, Ecuador, Peru, and Bolivia.

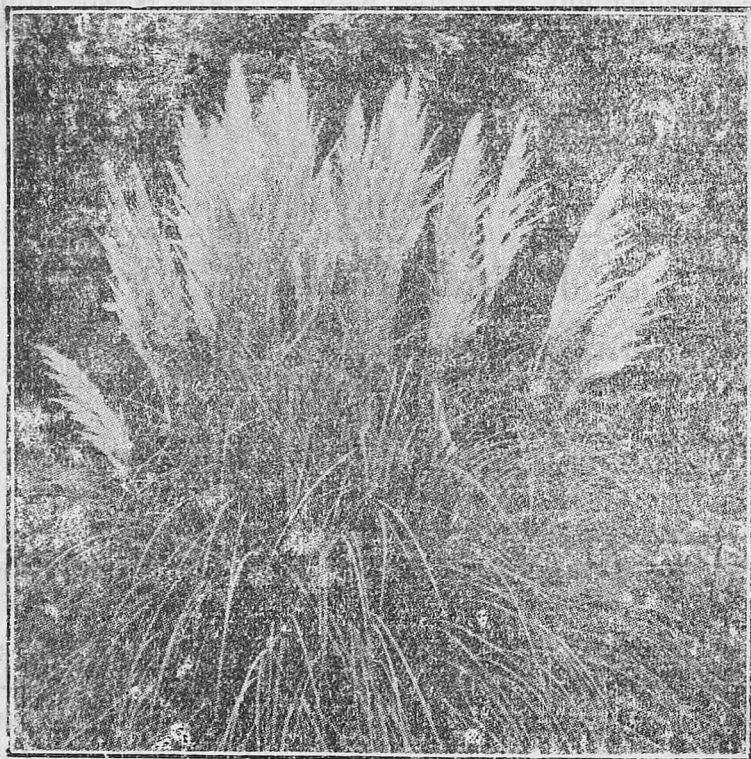
(4) Temperate States of South America

Argentina

This is a huge plain but the southern most portion is a shingle desert. On the northern side there are **Pampa grasslands**. As far as the eye could reach, it is an ocean of green waving grass nine feet high. As the plain reaches the slopes of the Andes, it becomes dry and the grass becomes very sparse till at length only thorny bushes are found. In the rainy season there will be here and there pools of salt-water.

Here in this region hundreds of thousands of **cattle**

are reared. High wooden hedges are constructed into which cattle are driven, and they are branded to show to whom they belong. From these places they are sold to butchers. **Meat** and **essences** of meat are the most important products of this region.



Gauchos or cowboys are expert horse riders and these never go about walking. Even beggars ride on horses, as they are so plentiful in this region. For this reason in front of each house, a number of spare saddles are always kept ready on the hedge.

These **Gauchos** are experts in riding and in fact this is the only education they receive from their boyhood. Riding on horse back, he can lasso a wild horse or the South American ostrich as easily as we can

walk. He has got by heart the whole region and he can tell us where is what. If for instance any one has lost his way in this great grass region, a gaucho will, by smelling the soil and tasting the grass, tell him where he is and in what direction he should go to find a particular place. On the western parts of the region where the land is higher and drier, **Llamas**, **Alpacas** and **sheep** are reared in their millions. The fine shining silky **Alpaca** wool used for garments is exported from this region.

Depending upon the cattle of this region is the **Jaguar** or the South American tiger. It is a ferocious animal capable of climbing trees and swimming. **Puma** is the South American lion. It kills cattle, but rarely attacks men. There is an **ant-eater** a kind of bear, which with its sharp claws bores holes into the huge ant-hills found in this region. When the ants go to bite its tongue, they stick to its gummy surface and the animal coolly swallows them.

Now much of this region is brought under cultivation and huge quantities of **wheat** are grown and sent to Britain in winter, when they have no wheat supply from the northern hemisphere.

Buenos Ayres at the mouth of the La Plata is the capital of Argentina. It exports all the produce of this region such as **wheat**, **tinned meat**, **oxo**, **bovril** and **skins**.

Patagonia, as the southern part of Argentina is called, is rather a semi desert but **grass** grows thinly over this region. Being further south, it is cool and it gets some rainfall from the Westerlies, as the Andes are not high in this region. **Sheep** therefore are reared in great numbers. The climate being very healthy there are many thousands of flourishing farms in this region. With improved machinery and other appliances which are being now used, this region will supply more **wool** and **meat** in future, the farmers leading a healthy and comfortable life.

Uruguay

Uruguay is a more hilly tract and it has fairly good rainfall. But the atmosphere is neither too dry nor too moist, and therefore it is very healthy. But there is not enough of water supply for cultivation; hence **cattle rearing** is the most important occupation of the people. As it is more expensive to export live cattle, they are killed here and the meat is sent in tins. **Monte Video** is the capital and 25000 cattle are annually slaughtered in this town. At **Fray Bantos** there is a meat factory which slaughters from 200 to 400 cattle every day to manufacture the essence of meat called **Oxo**, **Bovril** etc.

Paraguay

Paraguay is a more hilly tract of land. On the slopes of these hills there are many orange gardens. **Oranges** of excellent quality are exported in heaps from this region. **Yerba mate** or Paraguay tea is an important product used by the Spaniards. **Cattle rearing** is an important occupation. Meat, hides, tallow, matte tea, are its exports. **Asuncion** is the capital connected by rail with Buenos Ayres.

Argentina is the most developed region of the continent. Originally it was a cattle producing region and now many of the cattle farms on the eastern side have given place to wheat and maize. Immense quantities of **wheat and maize** are now grown, for the export of these railways are absolutely necessary. Hence it is that there is a net-work of railways in this region. The important sea-port towns, **Monte Video**, **Buenos Ayres** and **Bahia Blanca** are the centres from which railways radiate in all directions across this level country without an embarkment or cutting. A line runs over the Andes to Valparaiso in Chile thereby avoiding the tedious and dangerous voyage round Cape Horn, and bringing the two most progressive countries together.

Chile

It is called the **Great Britain** of the South. Like Britain it has a long coast line, a great navy, and much mineral wealth, with a stable Government, the country is taking much interest in educational matters.

This is a long narrow strip of land less than 100 miles in width extending over 2,000 miles north and south along the west of the Andes. For this reason it must have different kinds of climate. Indeed it may be divided into three regions (1) the northern, (2) the southern and (3) the central.

1. The northern region gets very little rain. For it is on the tropic of capricorn, a region of high pressure. Though in the way of the South East Trades in July, it is in the rain **shadow** of the high Andes and hence no rain falls here. (2) The Westerlies do not blow over it. Hence this is an arid region called the **Atacama** desert.

It is thinly populated, but **Saltpetre** is collected in abundance on the surface of the soil. This is an important article of export to all parts of the world. Another is **guano** the dung of innumerable sea birds living in this region. There are rich **copper** and **silver** mines but they are not much developed yet. Even drinking water has to be brought at a great cost from the far off mountains.

2. The southern part is in the way of the Westerly winds. Hence it gets rainfall throughout the year. It is not too cold. Hence the region has a thick forest. This region is thinly populated and **hunting** and **fishing** are the chief occupations of the people. As it is so far away to the south there is not much of lumber industry either.

3. It is only the central region that is fit for human occupation and it is here that a large number of people live. This narrow strip of land has a low mountain range on the west. It then forms a sort of valley

between the low mountain range on the west and the high Andes on the east. Much of the rainfall that is brought by the Westerlies, (only in winter *i.e.* July), is deposited on the low western range, and the valley therefore is comparatively dry. But it is not deficient in water supply for the high Andes on the east catch the moisture from the Westerlies, and have immense stores of snow on their peaks, from which enough of water flows into the valley. Irrigation in this region is therefore very easy.

The climate being dry is very healthy. It has warm summers and wet winters. Hence it has a **Mediterranean** type of climate. **Wheat, fruits and vegetables** grow in abundance. **Honey** of a very fine quality is obtained in this region. Wine is made from **grapes**. **Fruit and vegetables** are exported through the Panama Canal to New York where they find a ready sale as it is winter there. **Wheat** is exported to other parts of the continent.

Valparaiso is the chief port built on 20 hills, one has to ascend a flight of steps to go from one part of the town to another. It has a good harbour, which however requires to be improved.

Santiago is the capital of **Chile**. It is high enough to have a cool climate, and is so situated that it commands fine views of the Andes and their snow-capped peaks.

Chile is another of the states that has developed considerably. A railway line runs north and south connecting the several parts with **Valparaiso** their most important harbour. Another line climbs over the Andes to connect it with Argentina, which is in a state of rapid development.

The Tropical Countries

Brazil

Brazil is the biggest of the tropical states in South America. It is in two natural regions, (a) the hot and wet basin of the **Amazon** and (b) the eastern Highlands.

The Amazon Basin

As has already been explained this is the region of the heaviest rainfall in the continent, and so we have the biggest river. The Amazon is about 3500 miles in length. There are rivers longer than this, but when we take into account its drainage area and the volume of water it carries to the sea, we cannot find another river like this. In the lower parts, this river is 50 miles wide, and it carries so much water into the ocean, that a ship can draw its fresh water at its mouth even at a distance of 200 miles from the land.

The Amazon with its numberless tributaries drains a region, which in area is as big as India.

All this region is one continuous forest. The trees grow so high and the undergrowth is so thick and tangled that ingress is impossible. Even sunlight cannot penetrate. Neither human beings nor big game can live in this region. Monkeys and tree serpents live on trees here. Fish and crocodiles are abundant in the rivers. Several birds of beautiful plumage live on trees.

Very few people live in this hot, moist and therefore unhealthy region. A few of the native Indians live along the banks of rivers in their mud huts catching fish and turtle in their canoes. In the clearings here and there we find banana plantations. The most important occupation of these people is the collection of rubber which is an important article of export. There are fine timber trees, but as the region is still unknown and undeveloped, the timber is uncared for. If the forest in this region is cleared and the land cultivated,

this region alone can supply the whole world with all the necessities and luxuries.

Manaos at the junction of the Rio Negro with the Amazon is an important rubber trading centre in the interior, while **Para** near the coast is another place exporting large quantities of India rubber.

The second and better developed region is the plateau of Brazil to the south and east of the Amazon basin. This is like the Deccan tableland a remnant of the old block mountain cut up into hills and dales by the enormous rain brought in by the S. E. Trades. There are therefore forests. The **red fertile soil** of the region, with the **vegetable manure** that is abundant, is particularly suitable to **coffee**, which is grown in large quantities. Indeed four fifths of the world's supply of coffee is grown in this region. All this coffee is exported from **Rio de Janeiro**, so much so that 'Rio' often means coffee just as 'Havannas' mean cigars.

Tobacco is another product exported from **Bahia** on the east coast. **Pernambuco** on the north exports sugar. Brazil has some minerals, gold and diamonds, but mining is not very much developed at present.

Guiana

Guiana is another tropical region. Parts of it belong to the Dutch, the French and the English. This is a region of heavy rainfall, and the delta is fertile. It grows **sugarcane, cocoa, cotton and rice**. The French part of this state exports chillies commonly called **cayenne pepper** from **cayenne** the capital of French Guiana.

Venezuela

This is another tropical state bordering on the **Caribbean Sea**, forming practically the basin of the Orinoco. Physically it is in four parts.

1. Hilly tract on the north, being the eastern spur of the Andes.
2. The Llanos region of the Orinoco.
3. The highland region.
4. The Forest region sloping towards the Amazon.

The uplands of the first region are more thickly inhabited because they form the healthiest part of the country. The lower slopes bordering the sea grow **coffee**. **Sugar-cane** and **cocoa** are grown in the lowlands. The **Llanos** of the Orinoco have herds of cattle and therefore they supply hides. Rubber comes from the Amazon slopes. **Caracas** is the capital situated 3000 feet above the sea level. **La Guayra** is the seaport. Though it is only 3 miles from the capital, the railway that connects it with the capital is 23 miles long on account of the many curves it takes to rise to that height.

Panama

This was a part of Columbia but recently (1903) it asserted its independence. It receives tropical rains and its volcanic soil makes it really very fertile. **Rubber**, **coffee**, **cocoa**, **bananas** are grown in abundance and these are the chief exports. Panama canal passes through this narrow region connecting the Atlantic and the Pacific Oceans. The Atlantic ports of North America are thus brought nearer to the Pacific coasts of North and South America.

Andean States

Columbia

This is on the Andes but it has a low hot coastland where **cocoa** is grown. The upper regions being healthy, the capital **Bogota** is on a plateau 9000 ft. high. **Coffee**, **cocoa** and **bananas** are the chief exports.

Euador

This is situated on the equator. But the lowlands produce much **cocoa**, which is the chief export of this region. **Quito** is the capital situated at an altitude of 9,000 feet.

Peru

This is a high plateau though on the west there is a sandy shore. This region receives no rainfall. On the plateau are produced **sheep** and **Alpacas** from which wool is collected. On the eastern side there is the forest which grows **rubber, cinchona**. It is rich in mines. **Silver and iodine** are obtained. **Lima** is its capital. **Callao** is its port. Lake Titicaca the biggest lake in this region is the highest lake in the world.

Bolivia

This state has no coast line. It is a high plateau situated between the folds of the Andes. It is rich in mineral wealth. The **silver mines of Potosi** are very famous and have been worked during the last 300 years. They are still rich. **La paz** is the capital situated on the plateau. It is connected by a railway with **Argentina**.

NORTH AMERICA

This continent is much better developed than South America in the new world. Liberty-loving Pilgrim Fathers came first to this continent and gradually worked their way inland against the opposition of the Red Indians, the primitive inhabitants of the continent. In their wake came up the other European nations, who settled in several parts. The construction of railways made travelling easy, and the rich interior became accessible. So many people settled in the interior and soon became rich farmers owning extensive lands. Along with the development of agriculture, mining was improved. Coal and iron found so plentifully in this continent gave rise to a number of industries. At present this continent may be said to be self-contained. It produces more or less all the raw products it requires, and manufactures most of their needs and sends the surplus to other countries.

(1) Structure and Relief

Look at a physical map of North America, and note the following physical divisions.

(a) Laurentian shield in the north (b) the Western Highland Region (c) the Eastern Highlands, (d) the Central Plains (e) the Coast Strips.

The Laurentian Shield is the region round the Hudson Bay. This is one of the oldest parts of the

continent. It is low on account of denudation going on for ages. In this region there are several lakes. These are due to the erosion of the land by the huge sheets of ice during the ice age and the shield sank down owing to the immense weight of the ice. Hence



the north coast is very much broken, and innumerable harbours can be had there, but unfortunately, being near the polar regions, they are all ice-bound during almost the whole year.

A number of rivers flow in this region. All these take their rise on the **Great Divide**, and flow northward into the Arctic Ocean.

The Western Highland Region.—This region extends from Alaska in the north to the Andes in South America. In fact the Andes form an extension of this great fold in the earth's crust.

This region has two edges, one on the west and the other on the east. The western edge is formed by what is called the **Coast Range**, which in different regions is known by different names, as the **Cascade**, the **Sierra Nevada** and the **Sierra Madre**. The islands of Vancouver and the **Queen Charlotte** islands are simply the submerged parts of this Coast Range.

The edge of this plateau on the east is formed by a loftier range called the **Rocky Mountains**, and they extend north and south. The two ranges mentioned above enclose between them a **high plateau**, which is not a level ground. Spurs of the main mountain mass extend over the plateau, so much so that a relief map of this region looks like an irregularly ploughed piece of land.

This plateau is not uniformly wide everywhere. It is widest in the middle, and as it goes north and south, it becomes narrower as the mountain edges come nearer. Where these mountain edges meet, we find very high peaks (cf. Doddabetta in South India). **Mount McKinley** in Alaska is four miles high, and from it descend glaciers on all sides. The scenery in British Columbia is therefore magnificent. In the south on the Mexican Plateau are **Orizaba** and **Popocatepetal**, two lofty volcanoes.

One special feature in this region must be noted. Here on this plateau flow a number of rivers which take their rise on the Rocky Mountains. But as they flow in a region of **no rainfall**, they have cut away their beds lower and lower by constant erosion, and the result

is that we have here wonderful canyons whose sides steeply rise to a height of even a mile. The **Colorado** has such a wonderful Canyon. The **Columbia** and the **Frazer** have similar canyons. This beautiful scenery draws a number of visitors every year.

But the Yellow Stone river has a more wonderful scenery. Like the other rivers it has very fine canyons, and the region being volcanic, it has **geysers** and hot water springs. The United States Government have made this a **National Park** and it is called **The Yellow-Stone Park**.

This Highland region though very young is very rich in **mineral wealth**. Valuable metals such as **gold**, **silver** and **copper** are available in this region. Gold was first found in **California**, later in **Columbia** and now it is worked in the **Yukon Valley** near Alaska.

The Eastern Highlands.—From the physical map we can understand that the Eastern Highlands are lower than the Western Highlands. This is because they are older and consequently more denuded. Hence they do not form a barrier for communication inland. This region may be divided into two parts (1) the **Laurentian Highlands**. (2) the **Appalachian Region**. Of these the second is the more important. Here though valuable minerals like gold and silver are not found, yet coal, iron, natural gas, and kerosine are abundant. Hence this part has become a very important manufacturing region. **Pittsburg**, the American Birmingham is in this region.

The Central Plain

Between the Eastern and the Western Highlands there is an extensive plain made up of the alluvial soil brought down by the rivers. The **Mississippi** is the most important river. It flows into the gulf of Mexico. The **Missouri** its tributary flows from the Rocky Mountains. This drains the whole of the United States, and there-

fore carries so much of silt that a huge delta is formed at its mouth.

(2) Climate

Let us apply the principles of climate to this big continent and see what its climate is likely to be.

1. **Latitude.** The continent extends from the Tropic of Cancer to the North Pole. Hence the northern parts are very cold, while the greater part of the continent is in the temperate zone. Look at the map of Isothermal lines. See how the temperature becomes less and less as we go more and more to the north.

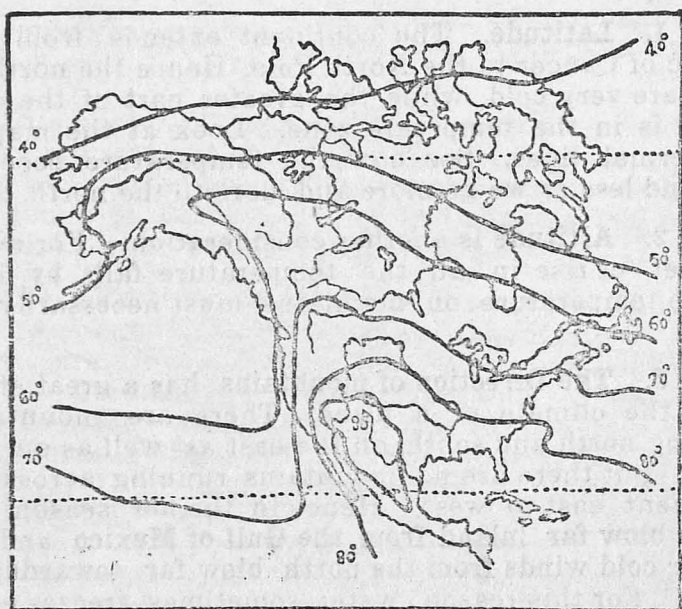
2. **Altitude** is another consideration. For every 300 feet of rise in air, the temperature falls by 1° F. Hence temperature on mountains must necessarily be lower.

3. **The Direction of mountains** has a great effect upon the climate of a place. There are mountains running north and south, on the east as well as on the west. But there are no mountains running across the continent east to west. Hence in the hot season, hot winds blow far inland from the Gulf of Mexico and in winter cold winds from the north blow far towards the south. For this reason, water sometimes freezes even at the Mouth of the Mississippi, and the orange gardens of Florida are affected. The Isotherms of January have all a southern bend, while those of July indicate a northern bend.

Neither the cold winds of the north, nor the warm winds of the south have any effect upon the coast lands because they are protected by the mountains. Thus British Columbia, behind the Rockies, is not affected by the cold winds. For the same reason the orange gardens in North Carolina are not affected by the cold winds of the north. While British Columbia is

warm because it is near the sea and warm winds from the sea blow over it. **Manitoba** which is on the eastern side of the Rockies suffers from extremes of climate.

4. **Nearness to the sea** is another cause that influences climate. Those that are near the sea enjoy the moderating influence of it : i.e., their summers will not be hot, nor their winters cold. **St. Louis** in the

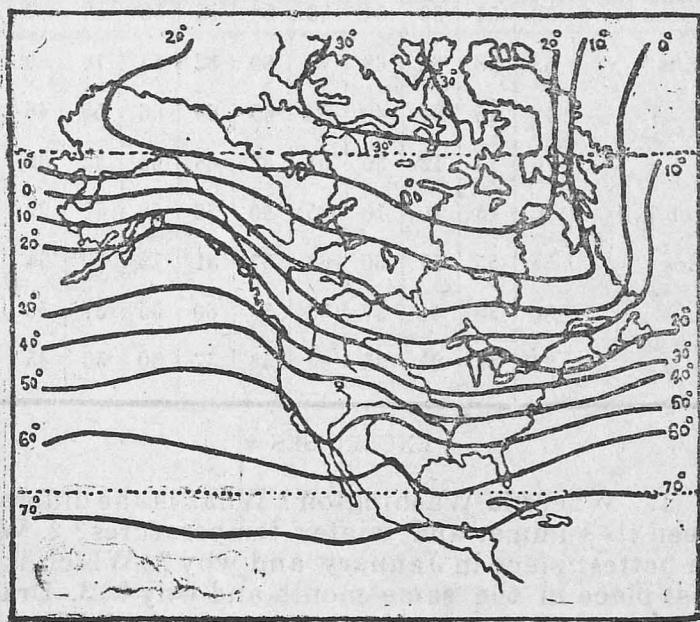


JULY ISOTHERMS

centre of the continent suffers from extremes. **Washington** in the same latitude has more or less an equable climate.

5. **Ocean currents** also affect the climate of a place. The cold **Labrador current** flowing from the Arctic Regions makes the north east coast intensely cold. The warm **Gulf Stream** flowing from the Gulf of Mexico makes the east coast warmer. The warm **Kuro Sivo** or the Japan current makes the north-west

coast warmer than the corresponding part of the east coast. For this reason Alaska though nearer to the North Pole than Labrador is a forest region. Near **Newfoundland** the cold **Labrador current** and the warm **Gulf Stream** meet. Hence the moisture in the air is condensed and fogs are formed, which make navigation in this region dangerous. The icebergs brought down by the Labrador current melt in the warm waters of the



JANUARY ISOTHERMS

Gulf Stream, and the debris they bring goes down to the bottom. Thus the **Great Banks of Newfoundland** are formed, and these have become **Great fishing grounds**.

Study carefully the maps of Isotherms and answer the following questions. 1. Why are the lines bent in the centre of the continent in winter? 2. Why are they crowded in the Yukon Peninsula? 3. Why are these lines bent northwards in summer?

TABLE OF TEMPERATURES IN THE FIRST 12 MONTHS

	1	2	3	4	5	6	7	8	9	10	11	12
Washington	33	35	41	53	63	73	76	74	67	56	44	36
St. Louis	30	35	43	56	65	75	78	79	69	57	43	35
San Francisco	50	51	53	54	56	58	58	58	60	59	56	51
New Orleans	53	58	62	69	74	80	82	81	78	69	60	55
Montreal	12	15	24	40	54	65	68	66	58	46	31	19
Winnipeg	6	11	12	35	51	62	66	63	52	38	18	3
Fort Church hill	20	15	10	10	35	50	59	58	42	29	8	10
Los Angeles	54	55	57	60	63	67	51	72	70	64	60	56
Vancouver	34	35	44	47	55	58	60	55	57	50	43	36
St. Johns	22	22	27	35	44	52	57	50	50	45	40	30

EXERCISES

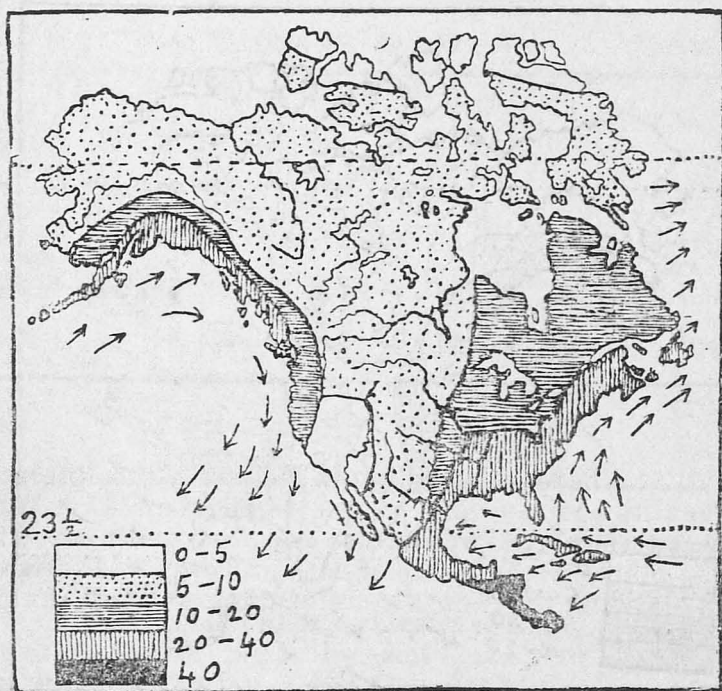
1. Where is Washington? What is the difference between its summer and winter temperatures? 2. What is the hottest place in January and why? Which is the coldest place in the same month and why? 3. Draw a graph showing the monthly temperatures of Winnipeg and Los Angeles. Explain their difference.

Rainfall

Excepting Central America and a small part of Mexico the rest of the continent is north of the Tropic of Cancer and the only planetary winds that affect the continent are 1. the N. E. Trades 2. the S. W. Anti-Trades.

Let us consider the conditions of the continent in January, when the Sun is on the Tropic of Capricorn. The land naturally becomes a region of high pressure and the regions of low pressure will be on the seas. (See Jan. Map of winds).

The S. W. Anti Trades move a little farther South, and give rain to British Columbia and California. But the high Rockies are in their way. Hence all the rain

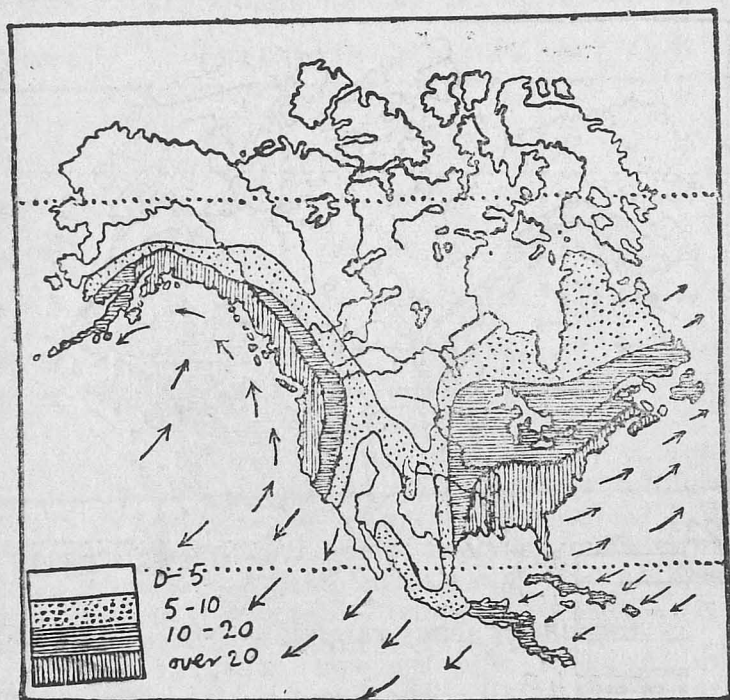


JULY RAINFALL

falls on the windward side, and the wind crossing the mountains and entering the central part of Canada is a dry wind called the **Chinook wind**. This dry wind, instead of giving rainfall, sucks up moisture and blows across the country and continues blowing over the Atlantic, picking up moisture to be deposited in the Western countries of Europe. Thus the Laurentian

Region gets no rainfall as the winds flow from land towards the sea. By these winds **British Columbia** and **California** get rainfall in winter.

The N. E. Trades also swing a little towards the south, and their full effect is felt on Central America and South America. Hence those regions get heavy rainfall. But the east coast of the United States gets



JANUARY RAINFALL

also some rain. But the greater part of the continent does not get much rain.

In July on the other hand, the planetary winds swing northward, and the central part of the continent becomes a region of low pressure. Hence the N. E. Trades blow more vigorously over the continent and give heavy rainfall. In addition to this, **Cyclones** start

from the Gulf of Mexico and run into the interior of the continent giving heavy rainfall throughout except the **Great Basin** high up the Rockies.

The S. W. Anti Trades give heavy rain to British Columbia but as they have swung northward, **California** will be just beyond their range. Hence there is no rainfall there, and it therefore has a warm dry summer, the typical Mediterranean climate.

TABLE OF RAINFALL

	1	2	3	4	5	6	7	8	9	10	11	12	
St. Louis	2	3	3	3	4	5	4	3	3	2	3	2	37
Winnipeg	1	4	1	2	2	3	3	3	2	2	1	1	25
New Orleans	5	4	5	5	4	6	6	6	4	3	4	4	56
Vancouver	8	8	3	4	2	5	0	1	3	4	8	8	54
Lós Angeles	3	3	3	1	0	0	0	0	0	1	2	3	16
San Francisco													

From what has been said above N. America may be divided into

1. **Regions of heavy rainfall.**—British Columbia, Central America and the east coast of Mexico. 2. **Regions of no rainfall.**—The Great Basin region. 3. **The regions of winter rainfall.**—California. 4. The rest of the continent may be said to have moderate rainfall.

Drainage and Rivers

The rivers of N. America can be divided into three kinds 1. Plateau rivers 2. Rivers of the central plain 3. the East coast rivers.

1. **The Plateau rivers**—**The Columbia, The Colorado and the Frazer** are the most important. All these rise on the Rockies and flow westward into the Pacific Ocean. As they flow over a region of no rainfall, they have cut for themselves deep beds with almost perpendicular sides. These deep beds are called **canyons**. The canyon of the Colorado is the most famous for its grand scenery, and none of these rivers are of any use for irrigation. But they are full of fish. The **Frazer** is famous for its **Salmon** which are caught in such large numbers that they are used as manure also.

2. **The Rivers of the Central Plain**—At the **Great Divide** or the central ridge between Canada and the United States, the rivers of the central plain divide themselves into two systems 1. those flowing north and east and 2. those flowing south into the Gulf of Mexico.

1. Of the rivers flowing north, the **Yukon** is 1400 miles long, of which 1000 miles are navigable. The **Mackenzie** flows through Lake **Athabasca**, the **Great Slave Lake**, and the **Great Bear Lake**, the river being navigable for 4000 miles. But these are not of much importance as they flow towards the ice bound Arctic Oceans and as they themselves are ice bound during a greater part of the year.

The St. Laurence flows eastward through a magnificent system of lakes—**Superior, Michigan, Huron, Erie and Ontario**. Large ocean steamers can go up the river up to Montreal, and small steamers can travel in these lakes for 2000 miles up. But this river freezes in winter and has no delta at its mouth, since all the silt is deposited in the lakes through which it flows.

The **Mississippi** is the only big river flowing into the Gulf of Mexico. This is nearly $2\frac{1}{2}$ times as long as the Ganges. The Missouri is a great tributary flowing from the Rockies. As the river brings down much silt, it has a huge delta at its mouth. The **Yellow stone** river and the **Arkansas** flow eastward from the plateau to join the Mississippi.

The Ohio drains the Alleghanies. Practically the whole of the United States is drained by the Mississippi, which forms an excellent means of communication into the interior. The **Rio Grande-del-Norte**, rising in the mountains of Colorado, flows eastward into the Gulf of Mexico. It forms the boundary between the United States and Mexico.

3. **The east coast rivers**—The coast strip here is narrow. All the rivers rise in the Alleghany plateau and as the plateau abruptly descends into the plain at what may be called the **Fall line**, these have **Waterfalls**, which are made use of as sources of power. The lower courses of the rivers are fairly navigable and at their mouths are harbours. Hence these are useful for trade with Europe. The **Hudson**, the **Delaware**, the **Potomac** are the important rivers on the east coast.

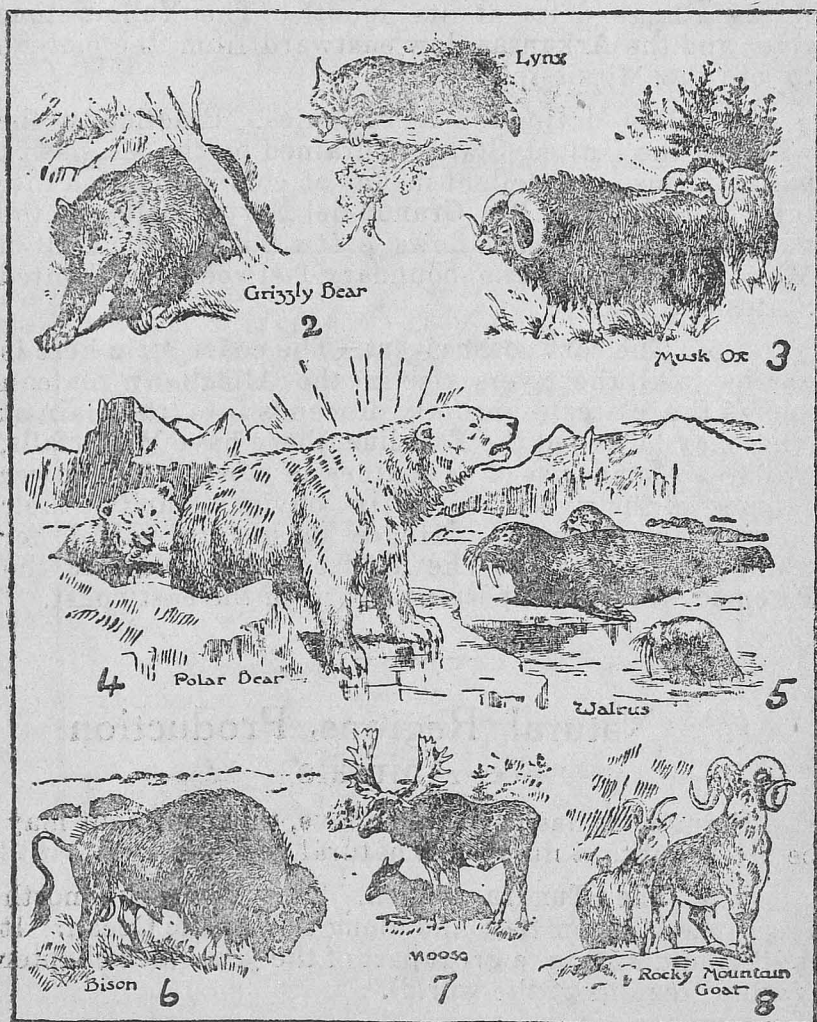
(3) Natural Regions, Production & Animals

From what has been said above, this continent may be divided into a number of natural regions.

1. **The Tundra region.** This is in the north round the Hudson Bay and along the Arctic Ocean. It is icebound during a great part of the year. (See chapter Natural regions of the world).

2. South of this Tundra region is the **Taiga**, the **Coniferous Forest Region** of pines, birch, spruce and hemlock.

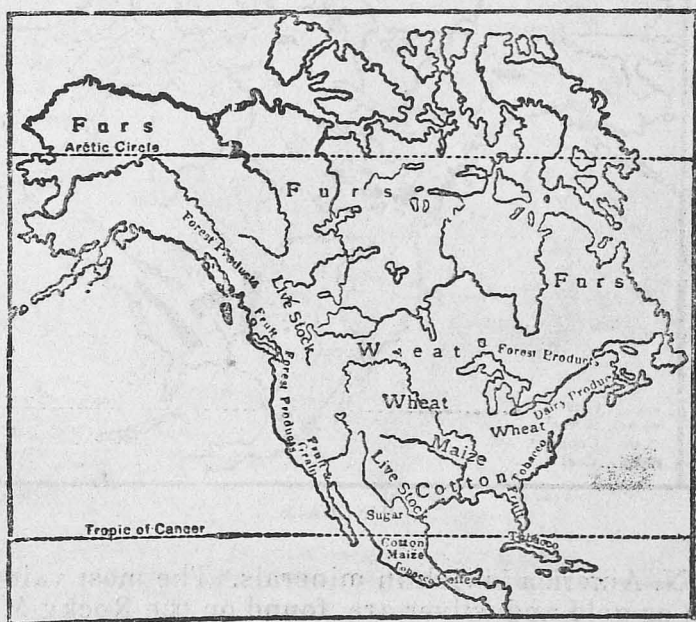
3. South of this, towards the lakes, and along the Alleghanies is the temperate forest of oak, beech and elm trees.



4. In the centre are the rolling plains where grass is the natural vegetation. These are the **Prairies**, once the home of the bison but now of innumerable cattle.

5. The plateau region of the **Cordilleras**. This includes the **Great Basin** in the United States and Mexico.

6. The **East Coast** strip on the Atlantic and the low marginal plain round the Gulf of Mexico.

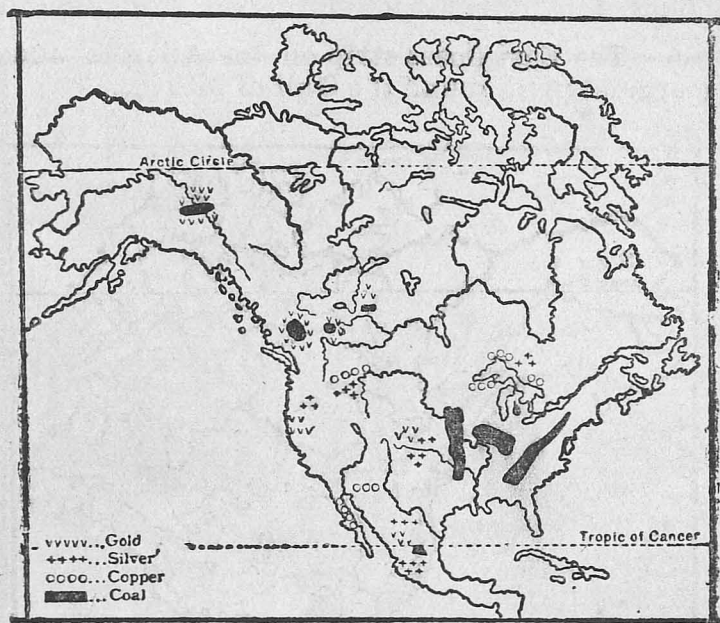


7. The **Pacific shorelands** including British Columbia, which has rainfall through the year and California which has winter rains and summer drought.

Animals. In the cold, Tundra and the Arctic forests are the Polar Bear, Walrus, Moose. In the prairies are the Bison, and on the Rockies, mountain-goats. The

forests have Grizzly Bears, and the ordinary domestic animals are common everywhere,

The following map shows the important productions of N. America. These will be dealt with under the several regions.

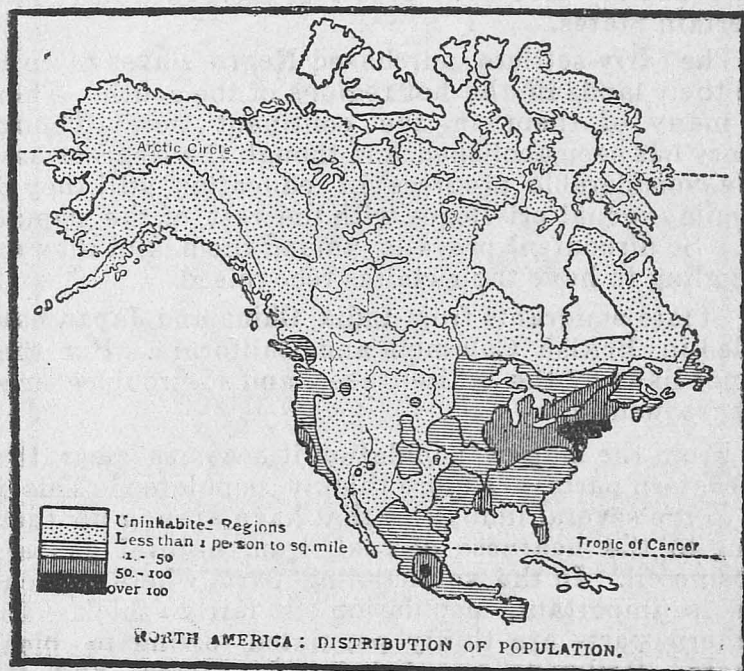


MINERALS

N. America is rich in minerals. The most valuable, such as gold and silver are found on the Rocky Mountains. Copper is mined round Lake Superior. The most useful minerals such as coal, iron, kerosine, natural gas are found in the Alleghany mountains. Hence the eastern part of the United States specialised in several industries.

(4) Population

Before the Europeans settled in this continent, there were several tribes of **Red Indians** in it. They were mostly hunting tribes living on the products of the chase. **Bisons** were numerous in the prairies, and these were hunted by them both for their flesh and their



POPULATION

skins, which they used for tents and clothing. They are so clever in hunting that they could shoot even running animals.

Then came the **French** who occupied the eastern part of Canada.

Later came the **English**. The **Pilgrim fathers** were the first to settle in the **New England States**. In course of

time the English and the French came into conflict, in which the English finally came out victorious. Then took place intermarriages among them, and the race distinctions gradually disappeared. Later on many other European nations came as settlers, and at present the population has become mixed. Before these civilised nations, the primitive Red Indians could not stand, and they gradually died out. A few of them are still living in certain States.

The early settlers purchased **Negro** slaves to cultivate their lands in the hot regions of the south. There are many of them in the continent now. Though slavery has been abolished, and though the Negroes have made considerable progress in education, still they do not enjoy equal privileges with the rest of the population. So discontent prevails among them, and they are struggling to have their claims recognised.

Of late emigrants from **India, China and Japan** have settled in British Columbia and California. But they are not liked by the white races, and so troubles arise very frequently.

From the map of population it becomes clear that the eastern parts are more thickly populated. This is due to the several industries that have sprung up there owing to the nearness of coal, iron, natural gas and kerosine oil. In the surrounding parts where agriculture is important, population is fairly thick. The northern parts are thinly populated owing to bleak climate. Railways are being constructed, and the interior is brought nearer to the coasts, thereby making it convenient for more people to settle in this thinly populated region.

Immigration—This continent being newly discovered has very few peoples. Europe, famous for centuries, is so thickly populated that many of them find no occupation there. All the cultivable land there has been brought under plough, and by improved methods more crops are raised. Still there is not food

enough for the growing population. Though many people are engaged in several industries, many of them do not find a paying occupation. This surplus population is being induced by the American Government by special facilities to go to America, where millions of acres are awaiting cultivation and where with industry and frugality, they can become rich and lead a happy life.

(5) Political Divisions

North America is divided into

1. Canada or British North America, 2. The United States which has purchased Alaska, 3. Mexico, 4. Central America, 5. The West Indies.
-

Dominion of Canada

It consists of the whole region north of the United States except Alaska in the north west, which belongs to the United States. This is divided into a number of self-governing provinces under a Governor-General appointed by the King of England.

Canada is more than twice the size of India, and is nearly as large as Europe. It is thinly populated at present, but it is making rapid improvements in this direction.

This is divided into four natural regions. (1) Eastern Canada consisting of (a) the St. Lawrence Basin (b) the Maritime States and New Foundland. (2) The Central Canada or the Prairie Provinces. (3) British Columbia (4) the Northern Taiga or the coniferous forest region, with the **Tundra** still farther north.



(1) Eastern Canada

(a) **The Basin of the St. Lawrence.**—The original French settlers on the coast went up the St. Lawrence and occupied the interior basin. This river with the lakes through which it flows and the region which is drained by the river forms this important basin.

All these are fresh water lakes, and are formed in the hollows scoured out by the huge ice sheets in the Ice age.

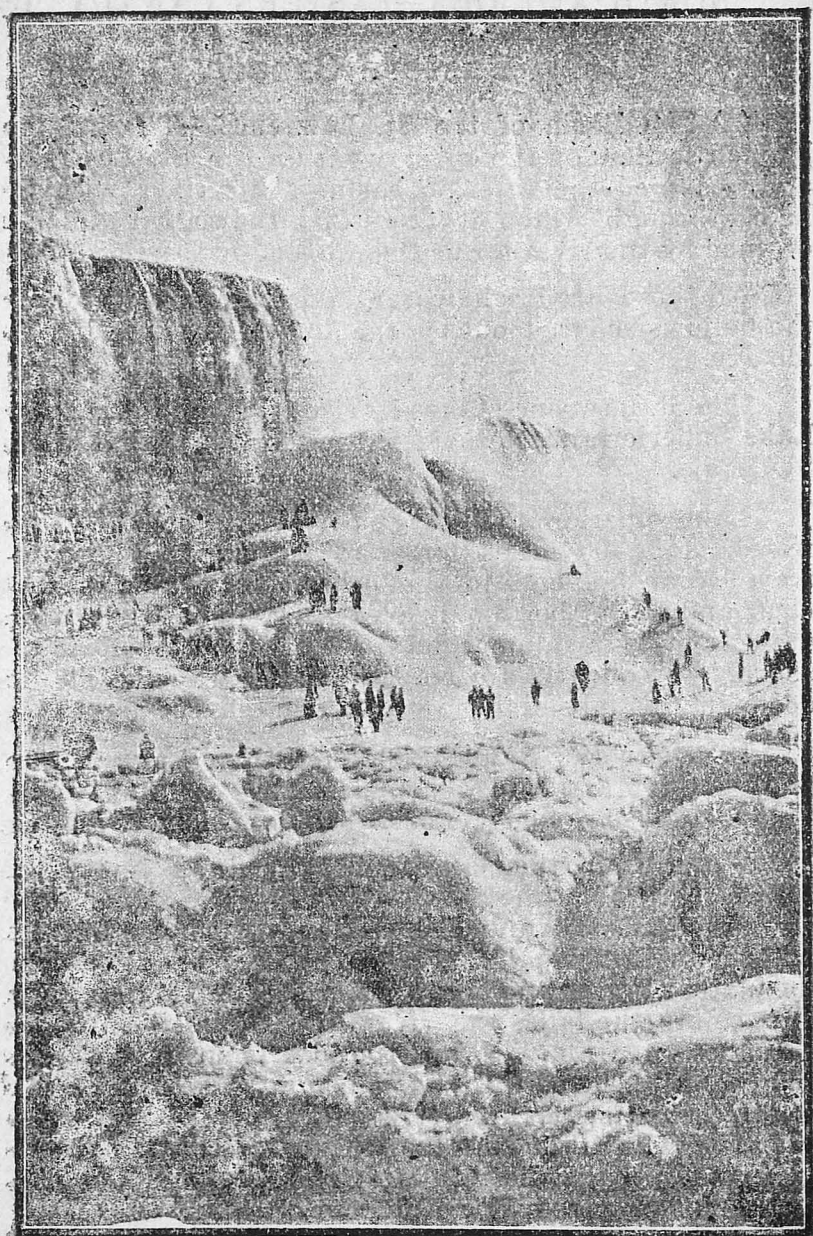
The St. Lawrence takes its rise in the highland near **Lake Superior** and flows into it under the name of the St. Louis.

Lake superior is the largest fresh water lake in the world. It is 400 miles long and it takes 20 hours to travel from one end to the other. Its water is very clear and so the bottom is clearly visible. Its waters are cold even in summer but in winter water near the shore is frequently frozen. In winter terrific storms occur in this lake and the waves rise 20 feet high.

Lake superior is 20 feet higher than **Lake Huron**, and the St. Mary which connects the two has rapids. To avoid these rapids a canal with locks has been dug.

Water from this lake then next flows into Lake St. Clare, through the St. Clare river. The stream that flows from this lake into **Lake Erie** is called **The Detroit**. After passing through this lake, the river has to descend the plateau region and here are the famous **Niagara Falls**. Just before the falls, the river divides itself into two branches in front of an island. Then it descends 160 feet into the boiling chasm below. The roar of this fall is heard several miles away. This is one of the grandest falls in the world, and from it Electric power is generated. To avoid this waterfall **Welland Canal** is dug and is provided with a number of locks.

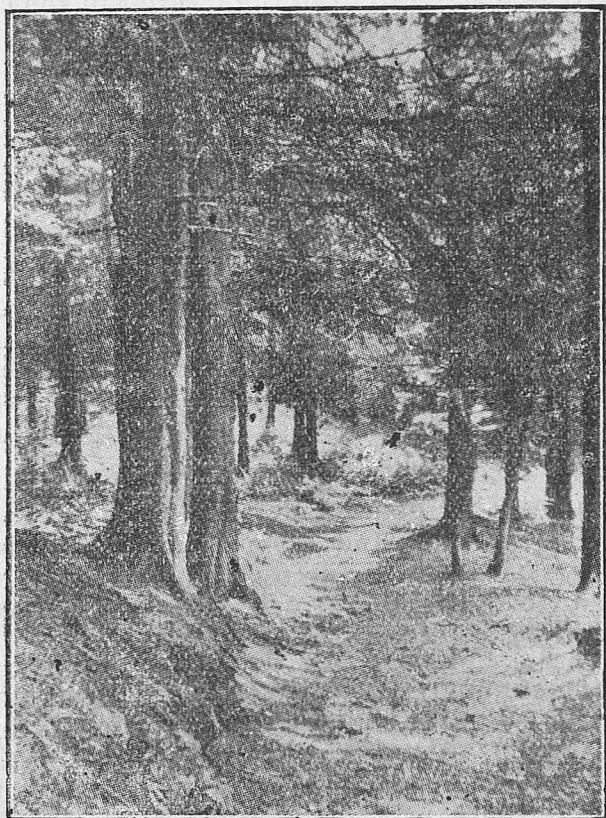
During winter, the falls get frozen and then they present a remarkable sight.



NIAGARA FALLS FROZEN

From there the stream flows into **Lake Ontario** and here it is called the **St. Lawrence**. In this region are **Thousand Isles** a veritable fairyland, to which tourists go in large numbers.

From here the river flows to **Montreal** as an ever widening stream, and after a distance of 600 miles it



TEMPERATE FOREST REGION

enters the sea by an estuary 25 miles wide. One remarkable feature is that it has **no delta** at its mouth for the simple reason that it flows through many lakes, where the sediment gets deposited.

The **Ottawa** is the most important tributary flowing from the north through the forest region. Much timber is floated down the river to the saw mills at Ottawa.

The St. Lawrence, with the lakes it flows through, forms a magnificent system of waterways, the like of which is not found in any part of the world. To add to this convenience and to open the interior of the country there is the **Canadian Pacific Railway**. However fertile the central plain may be, and however superior the wheat grown there may be, no farmers would have settled if his produce does not find a ready market. This, the railway does in such a highly satisfactory way, that every year there are on an average a thousand people going to Canada to settle in it.

This Railway starts at St. John on the Atlantic coast and goes to **Vancouver** on the Pacific. The train takes one week to cover this distance, and hence the carriages are so built that all conveniences can be commanded in them. In the winter season the carriages are heated by hot water pipes, and telegraphic news of the world are pasted on them.

Climate.—This country extends even to the Arctic regions, and the cold winds from the north blow into the heart of the country. So many of the rivers and lakes are frozen for two months. The river St. Lawrence freezes and flakes of ice are sawn for export.

During summer, hot winds from the south blow into Canada and make the country warm. Though the rainfall is not much, yet so much of moisture from the sea-like lakes is precipitated as snow in the surrounding region, that there is a huge forest area in it. Here hunting, trapping and felling trees were important occupations.

But now the forest is being cleared and the clearings are cultivated, so that agriculture is gaining in importance.



SAWING ICE ON THE ST. LAWRENCE

Mining also is a flourishing industry. **Iron ore** mined near Lake Superior is sent to **Pittsburg** which has coal very near. Rich deposits of **copper** and **nickel** are also being worked.

The most important part of this region is the **Lake Peninsula**, the southern most part of the country almost surrounded by the lakes. This is naturally the warmest part of the region, and the soil is fertile. Hence this is **thickly populated** and the most important occupations are **agriculture, cattle raising and fruit growing**. Oats are grown in abundance, **dairy cattle** are reared on the rich pastures of this region, and **grapes, peaches and apples** of very superior quality are grown. **Toronto** is the chief town and is a University centre.

Ottawa is the capital of Canada situated on the **Ottawa river**. It has important **saw mills**. **Paper pulp and paper** are also manufactured by the help of **water-power** which this city has.

Montreal is the largest city in Canada on the **St. Lawrence**. The deepening of the river makes it possible for the ocean steamers to go to this city. Railways from New York in the South, and from **Ottawa** in the west meet here. **Fur** comes from the north, and so this is an important trading centre. But it has one drawback and that is that the river freezes in winter when all its activity gets transferred to **St. John** or **Halifax**.

Quebec famous in history is a manufacturing centre. Boots and shoes and leather goods are made in this city.

(b) The **Maritime Provinces**, which are on the East, though politically a part of Canada are geographically like the New England States of the United States. Like them they have been heavily glaciated and have undergone submergence. Hence there are **waterfalls**. Being farther north they are not so warm as the New England States.

This region is thickly forested. **Fir, hemlock, spruce-pine and cedar** are the most important trees in this region, and **lumbering** is the principal occupation of the people.

Nova Scotia is rich in minerals. **Coal and iron** are found abundantly in it. Hence **mining** is another occupation. But **agriculture** is more thriving than all the rest. As the forest is being cleared, the land is being cultivated. **Oats, barley, potatoes** are the chief crops, as wheat can be had more cheaply from the prairies. **Fruits** such as **apples** are grown. **Dairying** is another industry and **cheese** is exported from this region.

Fishing is one of the earliest industries. **Cod and herring** are largely caught in the sheltered bays and openings on the coast.

St. John and Halifax are the two chief towns. Both are free from ice, and are therefore the winter ports of Canada.

Newfoundland at the mouth of the **St. Lawrence** is one of the earliest settlements on the east coast. This with the **Labrador Coast** forms the crown colony of Newfoundland. Physically it is like the Maritime Provinces of Canada and the New England States of the United States.

On account of recent submergence, its coast is very much broken and many harbours are possible. But **St. John's** is the most important harbour.

The cold **Labrador current** meets the warm **Gulf Stream** very near this island, and so fogs are common. For this reason navigation is dangerous.

The **Labrador current** brings with it icebergs, and these when melted in the warm waters of the **Gulf Stream** deposit the debris brought by them. Thus the **Great Banks** of Newfoundland are growing. Along with the cold current come, **Seals and**

cod, and the **Great Banks** therefore form important **fishing grounds**. **Fishing** therefore is the most important industry, on the coast of Labrador, where 4000 Eskimos manage to live by fishing. **St. John's** the capital is the centre of the fishing industry.

The forests yield good timber. Much of this is used in the manufacture of **paper and paper pulp**. Timber in big logs is floated down the rivers for export.

Mining is another occupation. Iron and copper are mined near St. John's.

Prairie Provinces

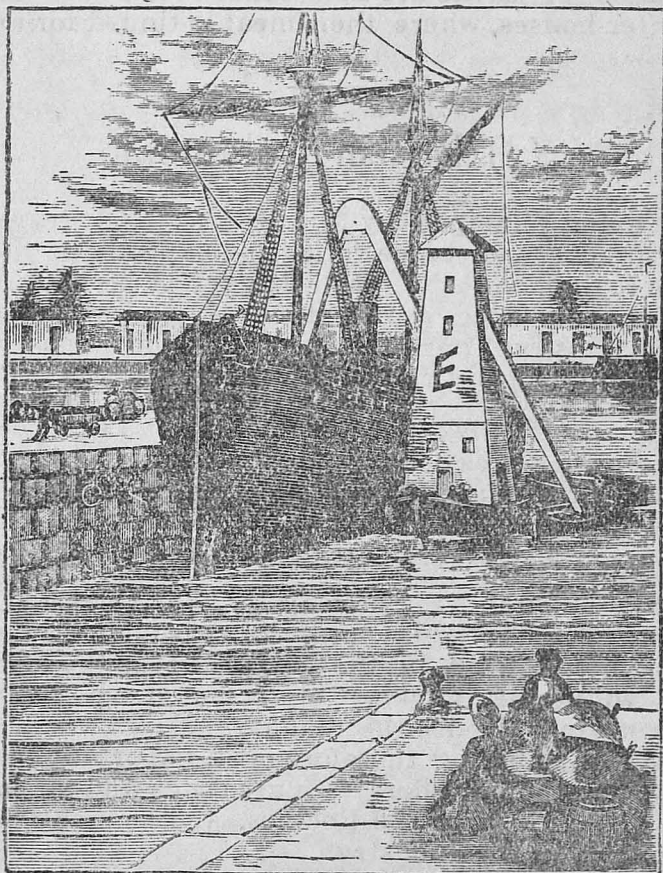
These are west of the lake region and they extend to the Rockies. This is a grassland and is only the continuation of the United States Prairie region. The central lower parts have enough of water and so they have become **wheat lands**. The region in and around **Manitoba** with its black fertile soil is the centre of the wheat growing region.

The cold winds from the north blow into this region and make the winters severe. For weeks and weeks the rivers will be frozen and the ground will be covered with snow to a height of at least two feet. Still the region is not unhealthy. With changes of clothing suitable to the season one keeps oneself very healthy.

Early in April snow begins to melt and flows down the rivers in the form of flakes. As the temperature increases, grass makes its appearance everywhere. It grows quickly and soon dries into hay. The **collection of hay** is an occupation to the people.

More important than this is **farming**. In this black soil region extending for miles and miles **wheat farming** is the most important occupation. For this purpose settlers from the thickly populated continental regions

come here annually. With the help of machinery, ploughing, harvesting and threshing are done and the wheat is stored up in huge **elevators**, and from there exported to foreign countries.



FLOATING ELEVATOR

Winnipeg, the centre of wheat growing region, is an important town. Nine railway lines coming from the several wheat growing areas meet here. **Fur**, timber

and other products of the north are brought to this place.

West of this wheat region are the drier lands reaching up to the Rockies. In this grassland thousands upon thousands of **cattle are now reared** and are sent to slaughter-houses, where their meat is tinned for export.

(3) British Columbia

Leaving **Winnipeg** by the C.P.R. and travelling westward over a distance of 800 miles through the flat prairie region, one can reach **Calgary** at the foot of the Rockies. This is the centre of a coal mining area, and railway lines run north and south to the mines. **Calgary** is an important railway workshop of the C.P.R.

Here the railway begins to climb up the Rockies. Passing over ledges of rocks and crossing giddy heights, and running through tunnels, the railway runs on and on until it enters the **Frazer Valley**, and then reaches **Vancouver** the capital of British Columbia.

This region is in the way of the Westerlies, and rain falls abundantly in both the seasons. The warm Pacific Drift flowing in the ocean keeps the country warm, while the Rockies protect it from the cold northern winds. Hence the mountain slopes are densely forested. **Lumbering** therefore is an important occupation of the people. There is a great demand for timber in the Region east of the Rockies, and so many people are engaged in this industry.

Hand in hand with lumbering there is some **agriculture** also in this hilly region. **Fruits** are grown and **apples** are the most important. Wheat is grown in smaller quantities. **Mining** is another occupation. **Coal** is mined in Vancouver; **gold** and **silver** are also obtained. **Gold** is obtained near the **Yukon** river.



C. P. R. ASCENDING THE ROCKIES

The coast is indented and there are many inlets. **Fishing** is a very important occupation here. The **Frazer** river like the Columbia is famous for its Salmon. Several people are therefore engaged in **canning** industry, the centre of which is **Esquimalt**.

(4) The Taiga or Coniferous Forest belt

North of Canada there is an extensive forest of coniferous trees. This extends from Alaska on the West to Chesapeake Bay on the east, a distance of 3000 miles. North to south it is 600 miles. This is the Taiga.

The climate of this region is one of intense cold. Cold winds from the north blow furiously in this region, and snow falls in heaps. This snow covers the ground like a blanket and preserves the heat of the tree roots. In this trackless region the hardened snow serves as a smooth road. When summer begins, the snow melts and supplies water to the roots. It is this water that helps the growth of trees.

Coniferous trees are peculiarly suited to this region. In the first place they grow like cones with branches becoming smaller and smaller. Hence snow does not accumulate on the branches to break them by its weight. Moreover they are able to resist the powerful gales in this region better than tropical trees which grow extensive crowns on the top. In addition to this, the leaves are thin and needle like and are covered with thick skin. The mass of wood is greater than that of the leaves, and it is in the wood that all the starch needed by the tree in the cold weather is stored up. Moreover the bark is thick and serves to preserve the heat of the tree.

In these regions where sunshine is limited, the trees grow up and up to get as much benefit as possible. They have therefore very few branches and they grow

straight up. Nor is there much undergrowth as is found in the tropical regions. The result of all this is that the trees in the forest look like the pillars of a cathedral.

Another fact to be noted is this, that in an arctic forest, there are only a very few varieties of trees extending for miles and miles.

It is these forests that supply to the world all the soft woods they require. Hence **lumbering** is the most important occupation in this region. In summer, trees are felled and floated down rivers to the saw mills, where it is cut into required lengths. This is used for **matches** and carpenters work. **Tar** and **wood-spirit** are obtained from these, and **Paper pulp** is made of this. **Ottawa** therefore manufactures much of paper pulp.

Trees in this region do not shed all their needle-like leaves in winter. However deep the snowfall, the branches will still be visible and fruit and nuts will always be available. Not only this, the forest mitigates the biting cold of the Arctic Winter. The dead leaves on the ground keep the ground warm, and the tree-holes and thick bushes offer protection to small animals in winter. Hence **animals in the Tundra region seek shelter** in these forests.

Of these the Reindeer, Elk, the Arctic hare, live on vegetation. The Polar bear, the Arctic fox, and several kinds of birds live in the forest. For the sake of feathers and furs hunters and trappers visit these forests in winter. **Fishing** is another occupation. But more important than these is **mining**. These regions are said to be rich in minerals. **Gold** for instance is now profitably mined in the **Yukon** valley near Alaska, and **Dawson city** has sprung up in that bleak region where the thermometer records—70° F. of cold.

(5) The United States

This is the extensive central part of America extending from the Atlantic on the east to the Pacific on the west. Its northern boundary is Canada, and on the South, Mexico and the Gulf of Mexico form the limits of this country.

This was originally colonized on the east by the Pilgrim Fathers. The colonists gradually extended more and more into the interior, and eventually made the country their own. The country is at present divided into a number of states, each of which is practically independent, as far as internal matters are concerned. But on general questions of policy, each sends its delegates to the congress, the supreme executive head of which being the President.

The country can be divided into the following natural Regions. A. The Atlantic slope consisting of
1. the northern Industrial and commercial region
2. the south-eastern plantation region. B. the central farming region C. the western plateau or the basins and mining regions of the Rockies. D. the Pacific shorelands.

(A) The Atlantic Slope

The Atlantic slope is divided into two natural regions 1. the north-eastern industrial and commercial region 2. the south-eastern plantation region.

(1) The North-eastern Industrial Region

This region extends from St. John roughly to Charleston in the south of the coast. It gets naturally divided into two distinct parts 1. **the New England States** up to the Hudson forming the northern part and 2. **The Appalachian Region and the Atlantic border** forming the southern part.

(1) **The northern part** forms the New England States. This is the narrow coastal plain to the east of the North Alleghanies, which in this region extend 200 miles north and south, up to the break formed by the **Hudson River** flowing through the mountains.

In the ice age, when the northern part, i.e. the **Laurential shield** became submerged, this region also became submerged up to the Hudson, where perhaps the mountain range broke, thereby forming a gap in them, through which the Hudson River now flows north and south. On account of this submergence, **this narrow plain** with innumerable openings in it and the Island of **Newfoundland** were then formed. Then the southern land was raised, and the Appalachian Plateau and the broader coastal plain to the east were then formed.

When in 1620 the Pilgrim Fathers landed in this region, the land had been scoured by the ice sheets, but there was not much of soft soil. On the other hand the region was full of boulders. The region was very cold and the Alleghanies were covered with impenetrable forest. Added to this the Primitive Red Indians showed their hostility towards the new comers. For these reasons the Pilgrim Fathers found it difficult to get on. Some died in this struggle, but a few able-bodied persons made up their minds to remain there only.

Felling the trees became their first occupation. This was necessary for building their houses and feeding their ovens. To take the trees felled to their settlements, they had to make some kind of road in the forest. With timber they built ships, with whose help they began to export timber.

The clearings in the forest were gradually cultivated and wheat was grown, but as the supply of wheat from the prairies became assured in later times, they are now growing **fruits, vegetables, potatoes and dairy produce**. **Nova Scotia** which is protected from cold winds grows excellent **apples**. The innumerable openings in the sea enabled the early settlers to take to

fishing which became an important occupation. Gradually the yield became great, and we find many of them engaged in fishing.

There are **waterfalls** here; and their energy is used to drive machinery. As they found it difficult to import heavy raw materials, this region specialised in the manufacture of **light and delicate** articles. **Waterbury** and **Waltham** have become **watch** manufacturing centres. Cotton is imported from the southern regions and **cotton goods** are also manufactured.

Boston is the most important town in this region, situated on an excellent harbour. This town is built on a peninsula, and all parts of the town are accessible to steamers. There are forests very near, and water-power is abundant. Hence **paper making**, **tanning leather**, and **shoe-making** are the most important industries. A tunnel constructed in the mountains west of the city makes communication with the prairies very easy. Hence it has become an important commercial centre.

Very near Boston is **Harvard**, the centre of a famous University.

(2) South of this region separated by the Hudson river is the **Appalachian Region**. As it is in a warmer zone, there are no glaciers here, and the soil remains what it was, though underneath this soft soil there is the harder rock.

Now when the whole land was upheaved, what was formerly a **continental shelf**, became the coastal plain, and rivers flowing from the plateau gradually eroded the soft soil, and the rivers began to fall over the edge of the hard rock down into the plain. Thus **waterfalls** were formed, and all these are found along the edge of the plateau which is called the **Fall line**. Towns situated near this line used the cheap water power and became manufacturing centres. **Philadelphia**, **Washington** and **Baltimore** are such towns.

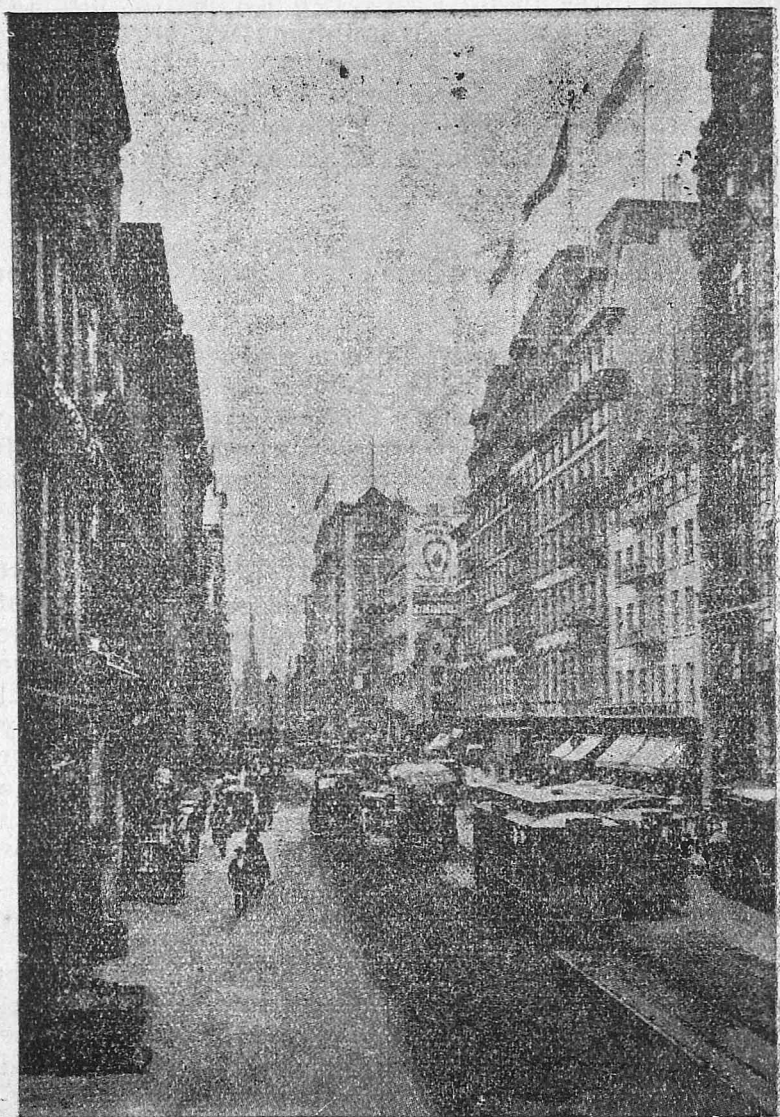
The coastal strip to the east of the Alleghany plateau has three advantages 1. It has a healthy climate, 2. It has easy means of communication through the **Hudson** river with the **St. Laurence**, and through the **Mohauk** river with the prairies. 3. The region is rich in coal which can be had in layers very near the surface. Very near this coal of excellent quality, there is iron ore. In addition to these **Petroleum** and **Natural gas** are abundant.

Hence this region became the centre of a number of industries.

Pittsburg is the centre of iron and steel industries. As the iron ore near is not sufficient, it is brought from the shores of Lake Superior in boats. Its situation on the **Ohio**, and the easy means of communication all round, make it possible for it to export the manufactured goods to all parts of the country.

In such an important industrial region sea port towns are necessary. **New York** is the most important of them. This is second only to London. It is on the **Long Island** at the mouth of the Hudson. This may be called the **Gateway of the continent** as it serves all parts of the continent. Other parts there are, but they are useful only to the region in which they are. After the construction of the **Erie canal**, the products of the Lake Region and the wheat of the Prairies find an easy way through the Hudson-Mohauk valley to New York. Railways from all parts of the continent bring goods to this port.

The harbour of New York is a big one and it is never frozen. Any number of steamers can lie at anchor and load or unload goods very easily. Hence the town is very thickly populated. Being on an island it has no space for lateral expansion, and so it is growing up. Houses with thirty to forty stories called **Sky Scrapers** are very common in this city, which can be said to be the **commercial capital** of the continent.



NEW YORK STREET

Philadelphia on the Delaware is connected with **Pittsburg** by rail. Hence it exports iron goods, coal and kerosine brought to it in pipes.

Baltimore is another port situated on the Chesapeake Bay. The hinterland produces fruits, tobacco and vegetables. It is a great iron and cotton manufacturing centre.

Washington is the political capital of the States. Here the senate meets in the **Capitol**, the chief government building.

(2) The South-eastern Plantation Region

All round the Gulf of Mexico there is a lowland extending from the **Rio Grande del Norte** on the west to **Charleston** on the east coast. This is a hot moist region and so rice is grown in the lowlands where water is plentiful. In the more elevated regions sugar-cane is grown.

In the drier region cotton plantations are found. Cotton is of two varieties, the long stapled and the short stapled. The latter kind grows without much irrigation but it is not of a fine quality and is therefore used for rough cloths. The long stapled variety is the best, as it yields a long silken fibre and this is used for fine fabrics. This kind of cotton is grown in this region.

The cotton yield does not come all at one time. It has to be picked up pod by pod when it is ripe. This requires manual labour, and so many Negroes are employed in this region. Originally these were slaves. But slavery is now happily gone and the Negroes are getting themselves educated and are trying in every way to imitate the white races, but the dark colour of the skin has not left them and this is now their only drawback.

Next to this cotton plantation they have tobacco plantations. **Virginia** is the state towards the east which specialises in this. **Richmond**, in Virginia, has a number of factories in which the leaf is cured and cut and made into cigarettes which are exported to all parts of the world.

New Orleans is the chief cotton port. It is situated on the Mississippi and railways from east and west converge upon it.

(B) The Central Farming Region

Towards the west of the Alleghany Mountains and between the Rocky mountains, there is a huge plain. This central plain as it is called extends right up north to the Arctic region and south to the plantation region in which it gradually merges. The lowest part of this region is marked by the Mississippi. From its bed the land rises gradually east and west. On the west the land rises to a height of 4 to 5 thousand feet and merges with the Rocky Mountains, while on the east it becomes continuous with the Eastern Highlands, which are not so high.

The climate of this region is one of extremes as there is no mountain barrier across the plain to prevent either the north cold winds or the hot moist south winds in winter and summer.

In summer the rain brought by the southern winds is deposited nearer the coastal region, and they blow more and more inland. They being drier and drier, deposit less and less of moisture. Hence the eastern slopes of the Rocky mountains are grassy plains called the **Prairies**. This was the region where bison were found in numerous herds, but after the advent of the whiteman, these are replaced by cattle. Thousands upon thousands of cattle are now reared in this region, and their meat is packed in tins and exported to all parts of the world. **Chicago** on the Lake Michigan

specializes in this industry. More than 150,000 cattle are slaughtered every day in this city.



BISON HUNTING

The wetter parts of this region are utilised for the growth of wheat. As land is of uniform level and

holdings are very large, the land is ploughed with the help of machinery and the seed is sown in April and reaped in August. The reaping is done by machinery, and the grain is stored up in elevators and exported to England. **Duluth** at the western end of Lake Superior, **Chicago**, **Minneapolis** are all important wheat exporting centres in this region.

Chicago is the most important city here. This is the meeting place of the north, east, south and the west. It is the greatest railway centre in the world. Thirty-nine different railway lines meet at Chicago. Being on Lake Michigan it has an excellent harbour. It is a big manufacturing centre. It makes rails, and engines. It exports wheat, maize, timber in large quantities. It has the biggest meat market in the world.

In the warmer and damper parts of this region maize is grown in considerable quantities. Bread is made of maize but most of the maize is used in fattening cattle and making beer. The states south of the lake region viz., Ohio, Indiana, Illinois, Iowa, Missouri, Kansas and Nebraska are the chief maize growing states, though other crops such as wheat, oats etc., are by no means unimportant.

It will be seen that the Physical conditions of this region are as they were before; but the land now is quite different from what it had been while the Indians had occupied it. The white nations that came here knew the secrets of nature. They improved the means of communication and improved agriculture, finding for the farmer ready markets for his produce and helping him in many ways.

(C) The Western Plateau

Or the basins and Mining Regions. The region west of the central plains is the great Tableland. The eastern edge of this table land is formed by the Rocky Mountains and the western edge is formed by the coast range. Between the two is the huge table land extending from

British Columbia in the north to Central America. The widest part of the plateau is in the United States, and the peculiar feature here is that a huge area of **inland drainage** is formed. This is called the **Great Basin** and into this flow a number of rivers. There are a number of lakes small and big, but the biggest one is the **Great Salt Lake**. Its Waters are so saltish that a man cannot sink in its waters.

The climate of this region can be readily understood. It is high enough to be cool but it receives no rain as the region is within the **rainshadow** of the Rockies on the east and of the **Coast Range** on the west. The dryness of the region is not therefore favourable for agriculture, but still **Mormons** a peculiar sect of people who settled in this region, have by careful irrigation improved certain parts in the region, where agricultural operations on a limited scale are now carried on.

But the most important industry of the plateau is **mining**. **Gold**, and **Silver** are abundant in the Rockies and mines are worked in places, to which access is even now possible only by mules. But the mines are so rich that a large population is attracted to this region. **Denever** to the east of the Rockies is the collecting centre, where the miners sell the metals and buy the necessaries. This town has grown in importance and it has a dozen railway lines meeting near it to distribute the gold. From the surrounding plains cattle are sent to the place and food materials come from the neighbouring farms. Hence this place has become a very important trade centre.

Salt Lake city on the Salt lake is the centre of that religious sect called the **Mormons**, who have made the city what it is, with a rich farming land around it.

(D) The Pacific Shorelands

West of this plateau the land slopes down to the Pacific ocean and we have a **narrow coastal region**.

This is **California**. But the most important human region of this is the **valley of California** between the coast Range and the Sierra Nevada. Two rivers the **Sacramento** and the **San Joaquin** flow into this region and the silt brought by them and other streams has made this valley very fertile. (C.F. Central Chile).

This valley is in the borderland of the S.W. Anti Trades. In July when the sun is on the Tropic of Cancer, this valley is out of the west wind belt, and consequently it has no rainfall, but in January when the Sun is on the southern Tropic, the westerly winds also move southwards and this region being in their way gets ample rainfall. This summer heat and the winter rains give the region a **Mediterranean type** of climate.

This rain falls on the coast range and some of it reaches the high mountains of Sierra Nevada on the east. Hence the valley does not receive much rainfall but is irrigated by the Sacramento and San Joaquin and other streams. (C.F. Central Chile).

Hence this valley is most suited for wheat, which is grown in abundance. **Fruits** such as oranges, grapes, figs, pomegranates, apples, grow and ripen to perfection in the warm summer. Hence people are engaged in the **growing** as well as **exporting industries**. Fresh fruits are sent in cold storage chambers. In the dry heat of summer, fruits are **dried** and exported. Some are converted into **Jam** and exported in tins.

San Francisco, the capital is situated on a peninsula surrounded by a bay on one side and the Pacific on the other. Hence its harbour is very safe, commodious and free from ice. In fact within 1500 miles on this coast there is no harbour as good as this. This is the meeting place of railways from north, east and south. It is the outlet for the produces of the valley and carries on trade with China, Japan and other eastern Asiatic countries. When the central plains of the continent

have an intensely cold weather, this region supplies them with fruits and vegetables.

It has no **coal** but it has the best supply of **oil**. Hence its manufacturing work will increase in course of time. The opening of the **Panama canal** will certainly improve the trade of this port.

The northern part of California bordering on British Columbia receives heavier rainfall. This and the coast lands are covered with **forests containing soft wooded trees**. As wood is very much in demand in the plains bordering the Rockies, **lumbering** is an important industry in this region. Sawmills are worked, and planks are exported in large quantities. Some of the towns like **Tacoma** have their streets paved with wood.

Fishing is an important industry also. As in the Frazer, the Salmon are abundant in the **Columbia**, where shoals of them are found. They are so prolific that it is said that people can walk on their backs. These are therefore caught, cut and cleaned by the **Chinese** and the **Japanese labourers** and canned in the factories along the banks of the river and exported in large quantities to other parts.

In the southern and drier part there is the town of **Los Angeles**. It has a clearer air and brighter sunshine. **Kinema Films** are made in this town, and a large population is attracted to this region. It is a very healthy place.

(6) Mexico, Central America, West Indies

(a) Mexico

This is simply the southern extension of the Western plateau region, with a narrow strip of low coastal region on the west and the east. The country slopes gradually east till it ends in the hot moist coastal

strip, whereas on the west the slope is rather precipitous. **Veera Cruz** is an important harbour, but it is not quite a safe one as in the stormy weather, steamers have to lie at anchor in the open sea. But it is the only harbour that exports the tropical produce of the moist plain, though it is thinly populated on account of dampness and the consequent prevalence of **yellow fever**.

The west coast is more healthy, but as the hinterland is mountainous and unproductive none of the harbours have gained any importance.

Relief.—Mexico is a plateau in the tropical zone. It can be divided into three natural regions. 1. the hot moist low coastal plain. 2. the temperate slopes between 3000 and 5000 ft. in elevation, where the ever green oak is found. 3. the plateau proper up to 10,000 feet, where pine trees alone are found.

In this country where the two mountain edges meet there are a number of active Volcanoes, of which **Ozizaba** (18,300 ft.) and **Popocatepetel** are the most famous.

Climate.—Mexico is in the tropics, and as it is in the region of N.E. Trades, it gets heavy rainfall in July. All this rain falls on the mountains forming the edge of the plateau. Hence the plateau is comparatively dry and cool and therefore healthy. It is this region that is more thickly populated.

Productions.—In the hot moist coastal region **coffee**, **sugarcane**, **bananas**, and **rubber** are the most important products. **Jalap** powder used for motions in hospitals comes from the bark of a tree here. In the hilly parts where the soil is made fertile by the fallen leaves, **coffee** grows. On the cooler plateau **grass**, **wheat** and **barley** are the products. **Sheep-rearing** is an important occupation.

This country is rich in minerals, but for want of easy communications, **mining** has not become an important industry as yet. **Silver** is mined just at present,

and the railways that have been constructed may in future improve this industry.

Towns.—**Mexico** on the plateau is the capital. It is situated on Lake Tuzcuco and was built by the Aztecs, to whose ancient civilisation it still bears testimony. Like modern Venice, its roads were canals, and there were a number of floating gardens moving from place to place in the lake. But under the Spanish Rule, all these disappeared. This town is healthier than **Veer-cruz**, its harbour on the east.

Government.—Mexico is divided into a number of states, each having a local self government of its own. But all these are united to form a **Federal Republic**.

(b) Central America

This is the narrow piece of land between Mexico and South America. Being **volcanic**, the surface of the country is subject to frequent changes. But the land is **fertile** and it receives heavy rainfall. So it is full of huge forests, in which fine **cabinet wood, mahogany and logwood**, is obtained. In the central plateau grass is abundant and **cattle and sheep** are reared. **Coffee, cocoa, maize, tobacco**, and **rice** are the products of low hot regions.

Central America is now divided into five small **Republics**.

(a) **Guatemala** is the biggest of the Central American States. **Coffee, rubber and bananas** are the chief products. Its capital is **New Guatemala**.

(b) **Honduras** is to the east of Guatemala. **Bananas** form the chief product here. **Tegucigalpa** is the capital.

(c) **San Salvador** is full of Volcanoes and hence very fertile. It is thickly populated. **Coffee and indigo** are the chief exports. This indigo is considered to be the best in the world.

(d) **Nicaragua** is full of forests. Rubber **Mahogany** are the chief exports. A canal through the lakes of Nicaragua and Managua is under contemplation. **Managua** is its capital.

(e) **Costa Rica** is another small state with **San Jose** as its capital.

(f) **British Honduras** is a small British colony on the Caribbean Sea. It exports large quantities of **Mahogany**, logwood, cedar and other kinds of fine cabinet wood. **Belize** is its capital. **Bananas** and **cocoanuts** are other exports.

(c) The West Indies

When Columbus first discovered the islands, he thought that they were near India and so called these Indies. As they were west of Europe they were called the West Indies. These islands are in three groups (1) The **Bahamas**, (2) the **Greater Antilles** and (3) the **Lesser Antilles**.

In former geological periods, the Eastern Mountain Ranges in both North and South America formed one continuous Range. On account of changes in the earth's crust, these mountains became sunk, and on some of these sunken parts, as warm equatorial currents are flowing, **coral islands** were formed. Thus a few of these are **coral Islands** and the rest are simply the peaks of the ancient volcanic hills now submerged.

Climate.—These islands are therefore mountainous and are within the warm equatorial ocean currents. Hence the climate is **warm and equable**. Trade winds give them heavy rain and some of the islands have **volcanic soil**. For these reasons **forest produce** such as **cabinet wood**, **Gum**, **Rubber**, **resin**, tropical products such as **Coffee**, **Cocoa**, **Sugarcane**, **spices** and **Tobacco** are largely obtained. **Maize**, **yams** and **cassava** are the staple food crops. **Fruits** such as **Pineapples**, **oranges**, **limes**, **coconuts** and **bananas** are very plentiful, and these are

largely exported in return for **manufactured goods** of all kinds to the United States and to Britain.

Cuba is the biggest island. On the western coastal plains, **Tobacco** and **sugarcane** are largely grown. In the centre is the forest region which supplies **Mahogany**, **Ebony**. **Havanna** the capital is famous for its cigars called **The Havannas**. Next to cigar making, **sugar** industry is important.

Haiti otherwise called **San Domingo** is next in size. This is mountainous, and on the mountain slopes it grows **coffee**, in the supply of which it is next only to **Brazil**. **Port-au-Prince** is the capital of the western **Negro Republic**. **San Domingo** on the eastern side is the capital of the **Spanish Republic**.

Jamaica belonging to **England**, is an island with a mountain range running east and west. **Coffee**, **Tobacco**, and **sugarcane** are its chief products. From **sugarcane**, **Rum** of the best quality is manufactured here. **Kingston** is its capital.

Trinidad is another island to the east, and receives the full benefit of the Trades. It is the the healthiest island, and so more thickly populated.

Trinidad is an island noted for its **pitch** which is found in a large lake. From this lake huge quantities of **pitch** are taken for the manufacture of **Asphalt** required for paving purposes. This has been going on for several years, and yet there is very little diminution in the supply.

Population.—All these islands are in the tropical regions, and they are quite unsuitable to the white races. Hence the majority of the people were originally **Negro slaves**. Slavery is no doubt abolished, but the **Negroes** have not obtained equal privileges with the white population, who are mostly **Spaniards** with a sprinkling of the **English**. All these islands being extremely productive are coveted by the less productive, industrial nations of the west. So we find these islands i

the possession of one or another of the European nations.

(7) Transport and Communications

Unlike Australia, Africa, and South America, this continent has a fine system of means of communication. No continent in the world has such a magnificent system of **water ways**. **St. Lawrence** with the lakes through which it flows is a magnificent one. The deepening of the river here and there, and the construction of several canals to avoid its rapids and waterfalls, add to the convenience of this grand water way. Steamers can now go to the very heart of the continent. All the rivers on the east coast are navigable up to the Fall line, and the Hudson-Mohawk valley gives great facilities for communications with the eastern Industrial region. On the South we have the **Mississippi** with its tributary the **Missouri** taking us to the heart of the continent from the south. As the Divide between Canada and the United States is not very high, communication by canals between the two water basins is very easy.

The construction of the **Panama Canal** brings the eastern and western parts of the continent very near and the trouble, expense, and time involved in the Cape Horn route are avoided.

To supplement these water-ways, roads are everywhere constructed, and the invention of Motor vehicles brings all inland towns and villages very near one another.

North America has a wonderful system of **Trans-Continental Railways**. In Canada we referred to the C.P.R. forming a part of the **All red route** (English) round the world. It has numerous branches, particularly in the triangular wheat region west of **Winnipeg**. A railway is now projected to **Port Church Hill** on the

Hudson Bay, which if completed will bring the forest produce to the very doors of the consumers.

In the United States there are many **Trans-Continental Railways**, connecting East and West, such as The great Northern, the North Pacific, The Union Pacific, The central Pacific, and the Southern Pacific Railways. All these meet at **San Francisco**, from where steamers go to all parts of the world.

In addition to these there are a number of branch lines connecting these with one another. Another line goes south to Mexico, while a line on the east coast plain brings several towns into closer commercial relationship. **New York, New Orleans** are the most important harbours on the east coast which trade with many countries in Europe.

EURASIA

Eurasia is the biggest landmass in the northern hemisphere. Asia, the bigger eastern part, and Europe the smaller western part so resemble each other that they look like twins given birth to by nature. But the twins have developed an individuality each of its own, and though joined by nature into one inseparable whole, they have attained such distinctive features as would justify their being treated as two distinct continents, Europe and Asia.

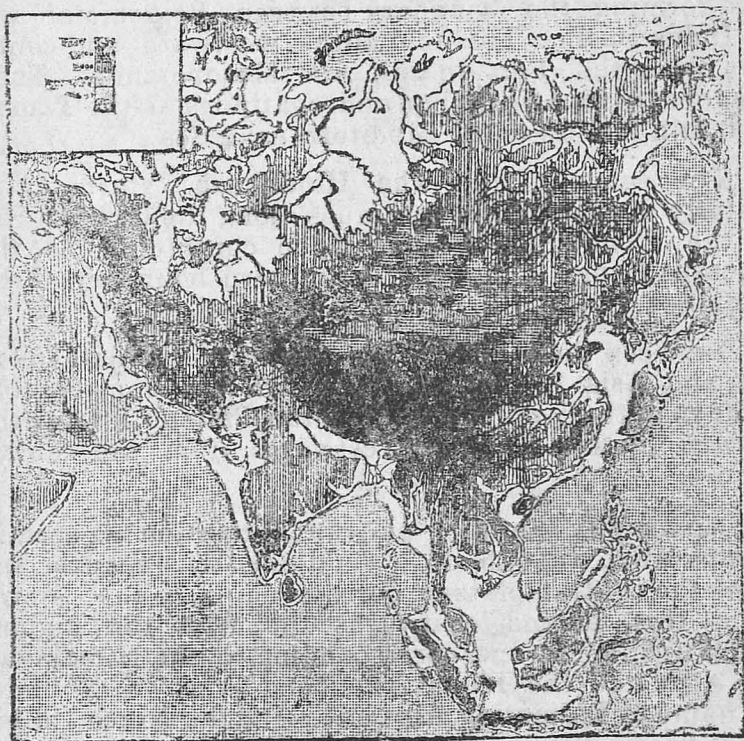
(1) Surface, Relief, Etc.

Let us now see the build of Eurasia and see how the two parts resemble each other.

Eurasia may be divided into two distinctive regions. (a) the central Highlands and plateau (b) the coastal lowlands.

(a) **The Central Highlands and plateau.**—The central Highland mass is found in both Asia and Europe. This is formed by the **fold mountains** extending east to west in both the continents. In each of the continent there is a central **knot** from which radiate the mountain folds. In Asia the **Pamir knot** forms the centre. From this radiates 1. the **Himalayas** the southernmost fold. It is the highest mountain in the world, and extends 1500 miles eastward in the form of a sickle. Near Burma it breaks itself into a number of branches extending

southwards as far as the **Malaya Peninsula**. 2. The next fold is formed by the **Karakoram**, **Kuenlun**, **Altyn tagh** ranges going eastward and enclosing between them the huge tableland of **Tibet**, the highest plateau in the world.



ASIA—RELIEF

3. Still farther north is the **Tian-shan**, whose continuations, **Altai**, **yeblanoi** and **Stanavoi** extend as far as the **Bering Strait**. Between this fold and the **Altyn Range** is the lower plateau of the **Tarim Basin** and **Mongolia**, whose eastern edge is formed by the **Kinghan Mountains**, the upturned edge of which forms the steep slope to the **Manchurian plain**. We have thus to the east of the **Pamir knot** two plateaus 1. the higher **Tibetan Plateau**

and 2. the lower plateau of the Tarim basin and Mongolia, and these slope down to the plains of Manchuria and China.

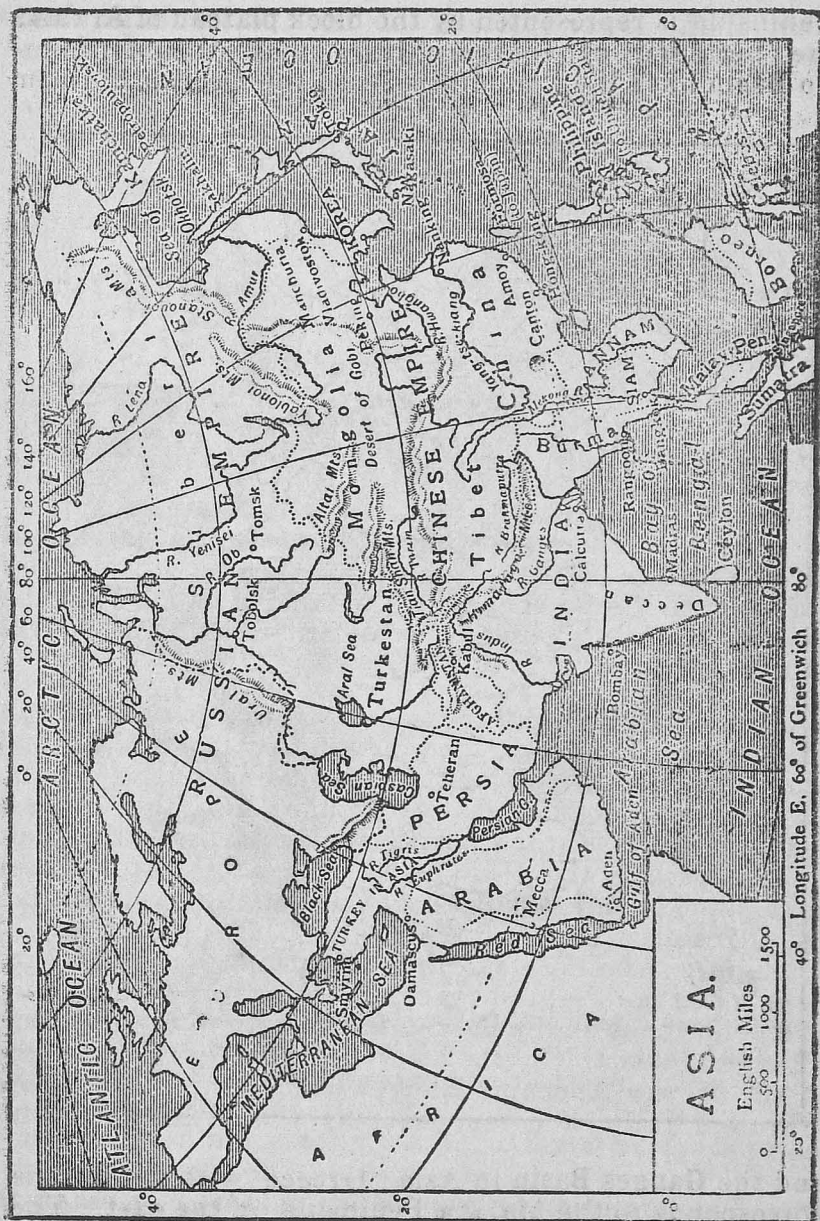
From this central Pamir Knot, two folds extend Westward. 1 The **Sulaiman mountains** extend southward forming the boundary between Beluchistan and the Indus Basin. This fold turns westward and continues along the Persian gulf and Mesopotamia. Then it reappears in Asia Minor and continues as the **Taurus Mountain fold** up to the Mediterranean Sea.

The second fold '**The Hindukush**, starts in a westerly direction, and continues along the Caspian Sea as the **Elburz Mountains**. Then continuing as the **Caucasus Range** it forms the southern boundary of the Black Sea.

Between these two folds, there are the plateaus of Iran and **Asia Minor**, both of which are considerably lower than the Pamir or the Tibetan Plateau. Thus the western plateau extends westwards from the central Pamirs.

An exactly similar plateau formation is seen in Europe also, though on a smaller scale. Switzerland forms the central plateau corresponding to the Pamirs. From this, extend eastwards the Alps the highest mountains in Europe corresponding to the Himalayas. The Alps like the Himalayas bend southwards under the name of **Dalmatian Alps** enclosing the North Italian and Adriatic Basins (cf. Ganges Basin and the Bay of Bengal). Another fold the **carpathians** goes eastward enclosing the Plain of Hungary. This turns southward and continues as the **Balkan Range** to join the **Caucasus Range** in Asia. On the west of this plateau is the fold of the **Appenine Range** which runs southward through Italy and reappears as the **Atlas Mountains** in Africa.

The formation of Peninsulas in Asia is similar to that in Europe. The old **block plateau** of the Iberian



Peninsula is represented by the **block plateau of Arabia**; the highland of southern Italy with the northern **Po Basin** have their counterparts in the Deccan Plateau



EUROPE—RELIEF

and the **Ganges Basin** in Asia; Greece with its islands corresponds to the Malaya Peninsula in the east. The peninsula of Jutland has its counterpart in Korea, while

the Scandinavian Peninsula is similar to the Peninsula of Kamchatka.

(b) The coastal lowlands

1. **Northern lowlands.**—There is a stretch of lowland in the north in both the continents. In fact one extensive plain runs from east to west with the low Ural mountains in the middle. These divide the plain into two parts (a) the western **European plain** and (b) the **Eastern Siberian plain**.

(a) The European plain slopes towards the Arctic ocean, the Baltic and the Black and the Caspian seas. **The Northern Dwina** flows into the Arctic ocean. **The S. Dwina**, the **Niemen**, the **Vistula**, the **Oder** flow into the Baltic. The **Elbe**, the **Weser**, the **Rhine**, the **Seine**, flow into the **North Sea**, while the **Loire** and the **Garonne** flow into the Bay of Biscay.

The River **Volga** drains the eastern part and flows into the Caspian Sea, while the **Dnieper** flows into the Black Sea. Hence this region is accessible from all sides.

(b) The **Siberian Plain** is drained towards the Arctic ocean by the **Ob**, the **Yenesi**, and the **Lena**, the southern edge of the plain being the desert table land of Mongolia with its mountain edge. Hence this region is not so important as the western plain, which is more fertile and more populous and has more easy communication from the west and the south. While the Siberian rivers are all ice bound, the Russian rivers in the south are for the most part free from ice.

2. **Southern lowlands**—Eurasia has plains in the south. The plain of the **Po** in Italy and that of **Rhone** in France are important in Europe. The **Indo-Gangetic plain**, and the plain of the **Irrawady** are important in the south in Asia. China on the east is the most fertile and thickly populated plain. This is watered by the **Amur**, the **Hoyang-po**, the **Yangtse-Kiang** and the **Sikiang**.

(c) Inland drainage

There are certain areas of inland drainage in Asia. One is Lake Lob-nor into which the **Tarin** flows. The other is the Caspian Sea into which the **Ural** and the **Volga** flow. The Aral Sea is a lake into which the



Syr-Daria and the **Amu-Daria** flow. The **Jordan** flows into the **Dead Sea**, which has no outlet. All these are salt water lakes and these are becoming more and more saltish. The **Dead Sea** is the saltiest lake in the world, as it is in a hot region, where evaporation is very great.

2. Climate of Eurasia

Eurasia is a huge continent extending from the equator to the north pole. Hence the northern regions are very cold, while the southernmost parts must be very hot. The central part of the continent is a high tableland and so it is cold and dry. Added to these is the consideration that several parts of the continent are far away from the moderating influence of the sea. This continent is affected by the Anti-Trades on the western side, and the European part of the landmass comes under its influence, while the N.E. Trade winds affect the eastern part of the eastern land-mass. Added to these are the **Monsoons** which are peculiar to this region, and these have a remarkable effect on the rainfall of the eastern part. In addition to these, the North Atlantic Drift flows along the western side of Europe into the Arctic ocean, and this helps to make even the north coast warm and free from ice. The Japan Warm current on the east has a moderating influence on the eastern part of Asia in summer, but in winter as winds blow from the land, the effect of the warm current upon land is reduced to a minimum. There is the cold Kamchatka current flowing on the east.

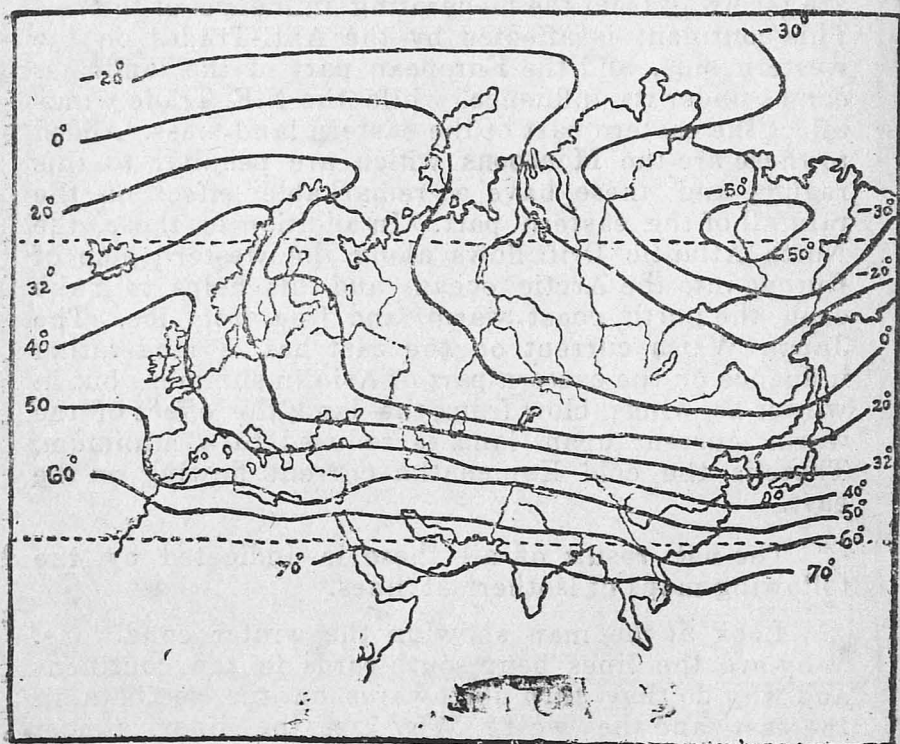
The net result of all these is indicated by the following maps of isothermal lines.

Look at the map showing the winter conditions. Why are the lines bent southwards in the continent and why do they turn northwards on the sea both in the east and the west? Why are the lines almost parallel north of the British Isles? The coldest part in this season is towards the north east of Asia.

The next diagram shows the summer temperatures. The Isotherms in this case bend downwards over the sea indicating that the land gets more quickly heated than the sea. From the map we see that the hottest region is in the middle of the continent. Hence it

becomes an area of low pressure, and winds are drawn in. The Westerlies blow more powerfully over Europe.

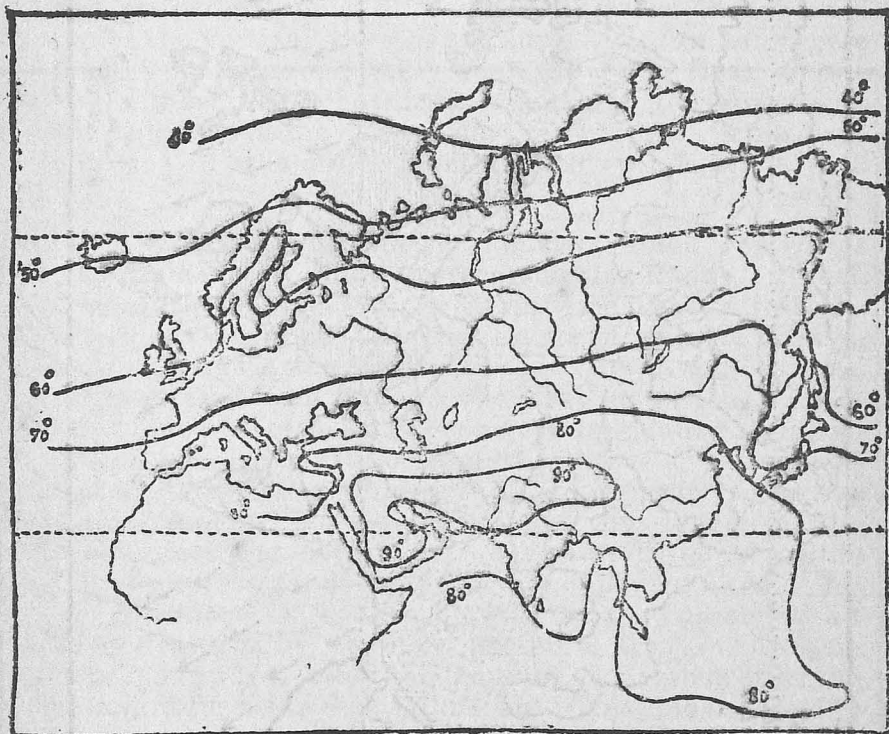
Hence in the winter season, the continent is as a whole cooler than the surrounding seas, and so it becomes an area of **high pressure**. The winds therefore blow from the land. The Sun in this season is south of the equator, and the Planetary Winds would have



WINTER ISOTHERMS

swung southwards. Hence the N.E. Trades instead of blowing in their usual direction are drawn towards the **low pressure** area in the south and in Australia. Hence they blow over Eastern China and the East Indies as more or less southerly winds. Then they cross the

equator and turning eastward blow as N. W. Monsoon over Australia. The same N. E. Trades blow uninterruptedly as N. E. Monsoon in the Bay of Bengal carrying moisture and giving rainfall to India south of Madras. Hence Asia gets very little rain in this season except on its eastern margin. Eastern China, and Indo

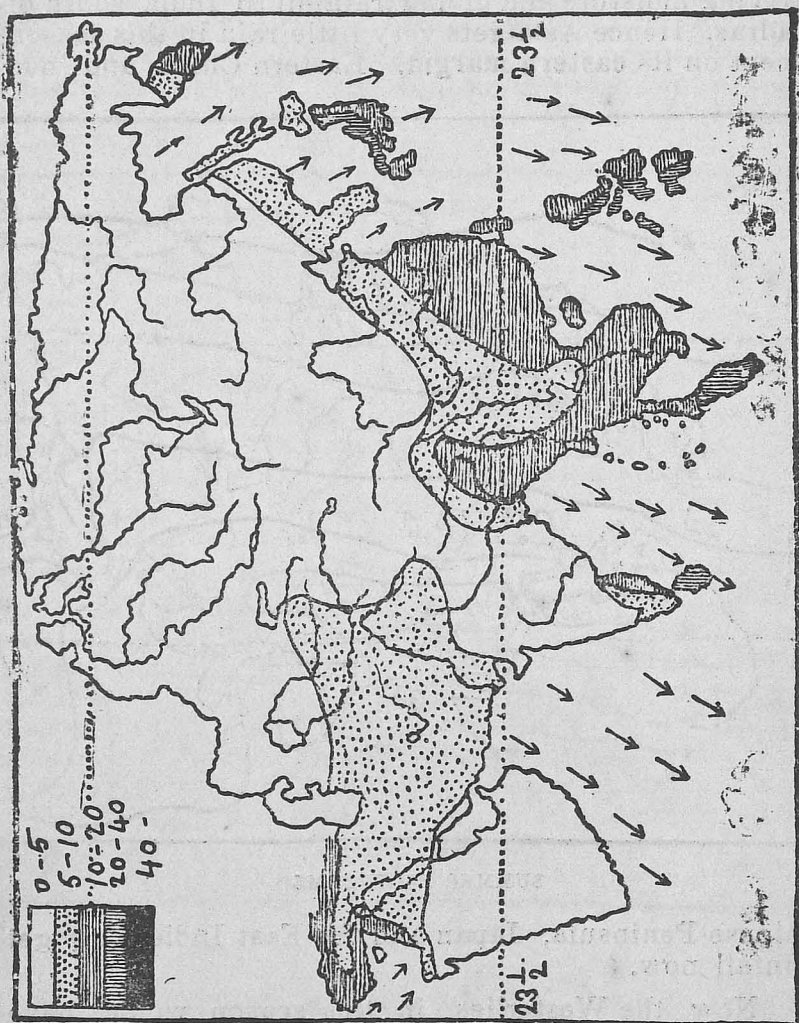


SUMMER ISOTHERMS

Chinese Peninsula, Japan and the East Indies only get rainfall now.

Now the Westerlies in this season would have swung southwards, and they are not drawn in so powerfully into the continent as in summer. Hence they blow over the western part of Europe without carrying much moisture far into the interior. It is in this season

that the Mediterranean lands come within the influence of the Westerlies and they have their rainfall. The British Isles get heavier rainfall now.



WINTER RAINS

Thus in winter the interior of Eurasia does not get any rainfall. It is only the eastern and western

marginal lands of this huge continent that get some rainfall in this season.

These conditions change in summer. Look at the summer Isothermal lines.

The sun has swung northward and is directly shining over the Tropic of Cancer. Eurasia thus comes under the vertical rays of the sun, and the land gets heated much more quickly than the sea. Look at the 80° Isotherm. See how farther north it goes over land. For this reason the central part of this great land-mass becomes an area of low pressure, and winds are drawn in.

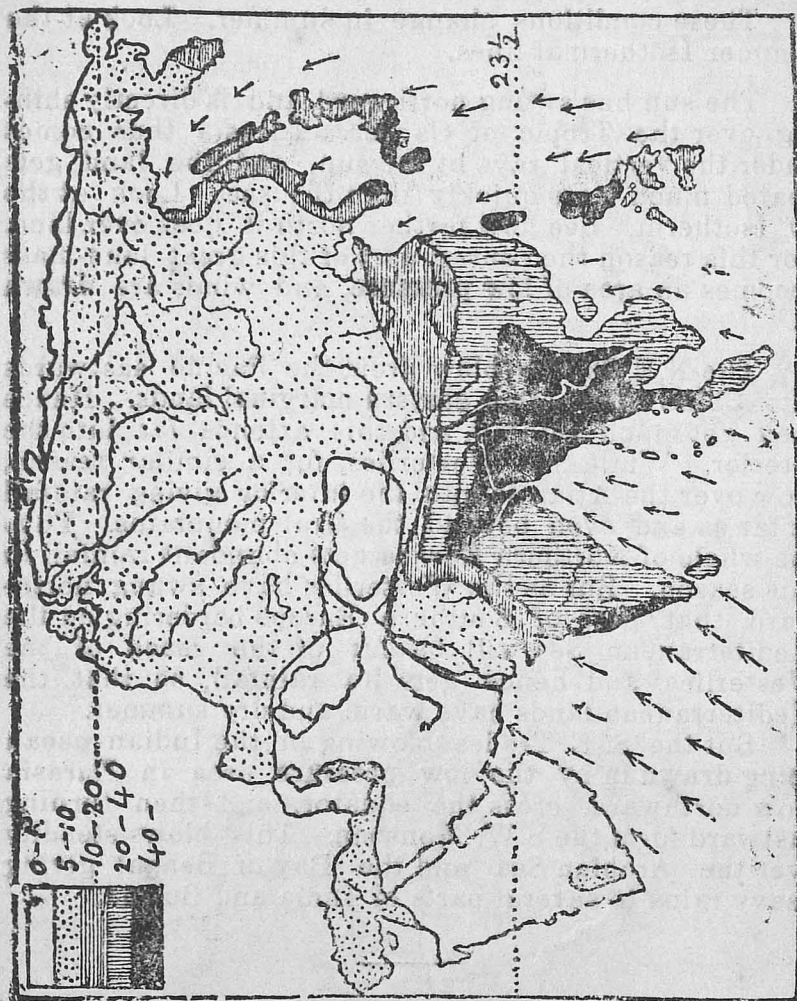
The N.E. Trades blow from the Pacific eastwards into China and other eastern marginal lands. Hence they get much rainfall, and this extends far into the interior. While the Westerlies, for a similar reason, blow over the Atlantic into the interior giving rainfall as far as and even beyond the Ural mountains. Thus the whole of Northern Europe gets abundant rainfall in this season. But as the Westerlies have swung northward, that part of Southern Europe bordering on the Mediterranean Sea will be out of the reach of the Westerlies, and hence gets no rainfall, so that the Mediterranean lands have warm and dry summer.

But the S. E. Trades blowing in the Indian ocean being drawn in by the low pressure area in Eurasia blow northward, cross the equator, and then turning eastward form the S.W. Monsoon. This blows steadily over the Arabian Sea and the Bay of Bengal giving heavy rains to several parts of India and Burma.

Vegetation and animals

In a huge land-mass like Eurasia extending from the tropical region to the Arctic Ocean, there will be a great variety of vegetation and animal life.

The vegetation regions are shown by the following diagrams.



SUMMER RAINS

1. In the north along the Arctic ocean there is a belt of Tundra land, with its characteristic animal the Reindeer. Polar bears, Seals and Walruses live in the seas.

2. South of this, is the coniferous forest extending from Norway to the Pacific Ocean. This supplies the world with soft wood, resin, and turpentine, and is also a hunting ground for fur-bearing animals.

3. South of this Taiga is the steppe, a grass land region, the home of the camel, horse and sheep. Here nomadic tribes live engaged in pastoral occupations.

4. South of this region is the sandy desert. This occupies the central part of Asia. In the oases here, dates, wheat and rice are grown.

5. South of this, bordering on the Indian Ocean, and east of the land-mass bordering on the Pacific are the monsoon lands with immense forests and cultivated areas. These regions are very productive and thickly populated.

Natural Divisions

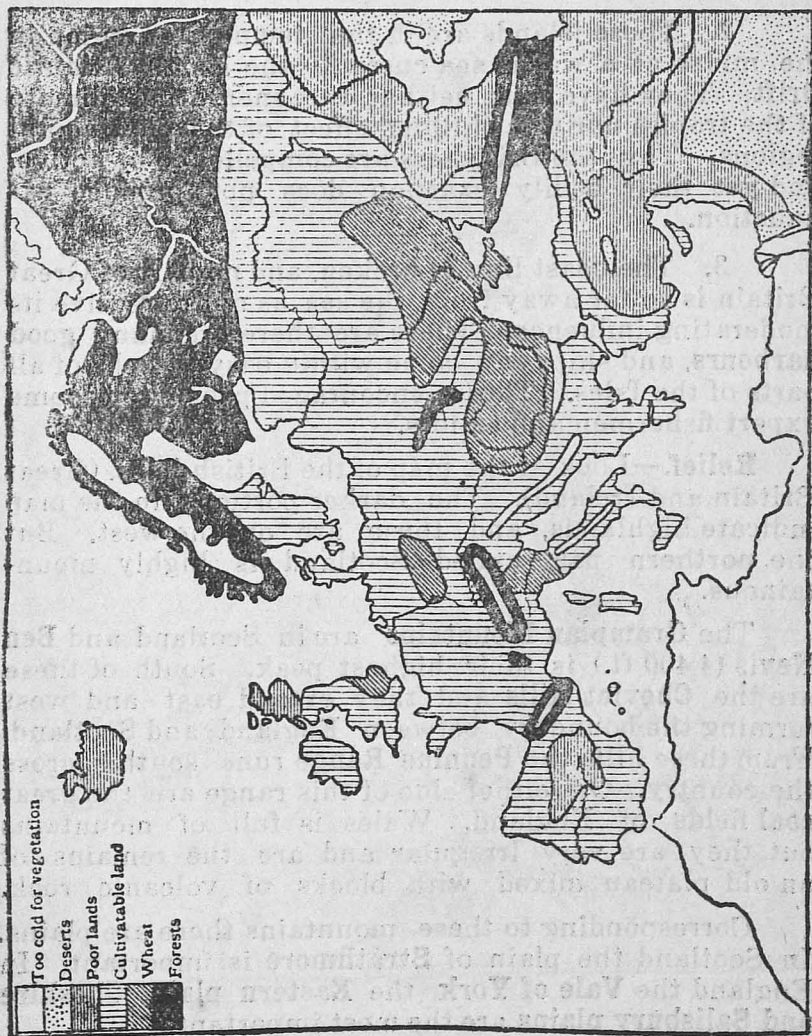
Eurasia may conveniently be divided into the following natural regions. 1 The British Isles, 2 Western mainland of Europe. 3 The Baltic region. 4 Central Highlands of Europe. 5 The Mediterranean region. 6 South-Western lands of Asia. 7 The Central and Northern Eurasia. 8 The Chinese Republic 9 The Empire of Japan. 10 South-east Asia and the East Indies.



(3) The British Isles

These islands once formed a part of Europe, but on account of the submergence of land, they have become separated and are on the continental shelf of Europe. The sea on all sides is shallow, and it is more so on the eastern side. Here are the famous **Dogger Banks**, shallow regions where sea weeds have accumulated in the still waters. Here fish lay their eggs, and so these

have become very important fishing grounds. All the European nations are engaged in this important industry, and Britain takes full advantage of it.



Situation.—These islands have an advantageous position. They are very near the European countries

to take part with them in all trade relations but sufficiently far away to be free from political troubles. To preserve their insular position, they have to maintain a strong navy.

2. These islands are in the temperate region in the midst of a warm sea current—the **North Atlantic Drift**. They have thus neither the enervating climate of the tropics nor the chilling effect of the continental regions. Thus the Britishers are compelled to be active, and yet their bodily exertion does not produce exhaustion.

3. The coast line is broken, and no part of Great Britain is so far away from the sea as not to receive its moderating influence. There are therefore many **good harbours**, and ships can come within easy reach of all parts of the Isles. These encouraged people to become expert fishermen and sailors.

Relief.—Look at the map of the British Isles. (Great Britain and Ireland). The darker portions in the map indicate highlands, and these are on the west. But the northern part called Scotland is highly mountainous.

The **Grampian Mountains** are in Scotland and **Ben Nevis** (4,400 ft.) is their highest peak. South of these are the **Cheviot Hills** and they extend east and west forming the boundary between England and Scotland. From these hills the **Pennine Range** runs south across the country. On either side of this range are the great coal fields of England. Wales is full of mountains but they are very irregular and are the remains of an old plateau mixed with blocks of volcanic rock.

Corresponding to these mountains there are plains. In Scotland the plain of **Strathmore** is important. In England the **Vale of York**, the **Eastern plain**, **Cheshire** and **Salisbury plains** are the most important.

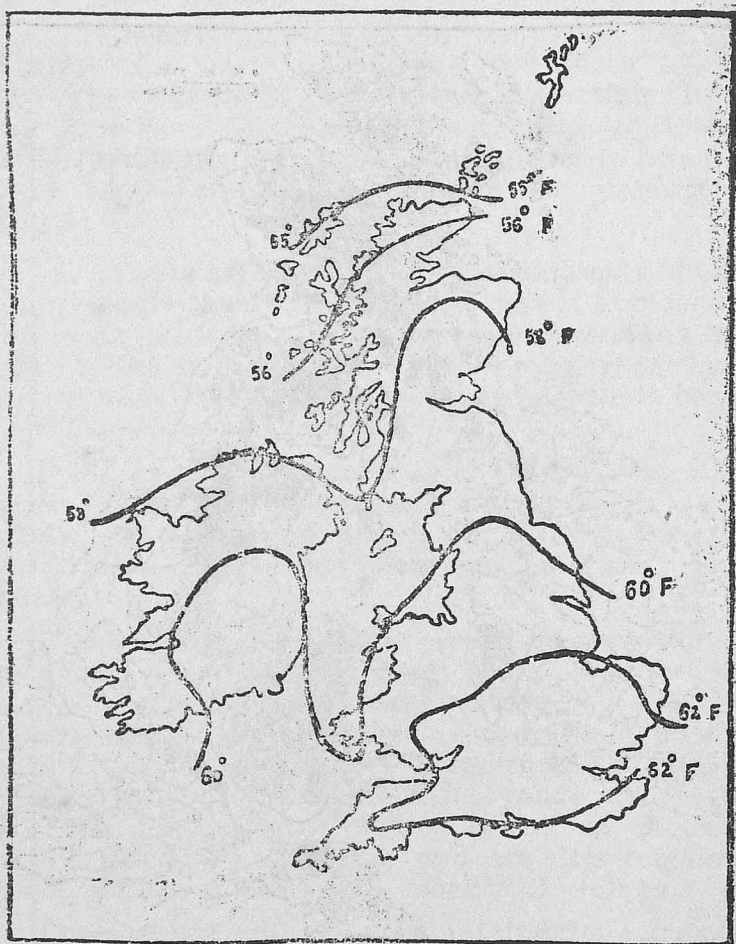
Ireland is a small island with mountains forming its edges. The central plain is a lowland with bogs

here and there, and the **Shannon** is the largest river. These bogs contain decayed vegetable matter, compressed and hardened into peat which is largely used as fuel.



But neither the hills nor plains in Britain are as big as those in India. The highest peak Ben Nevis is not as high as our **Doddabetta** in the Nilgiris, and the

plains cannot but be small as the British Isles are only as big as our Madras Presidency, without the Mysore Province.

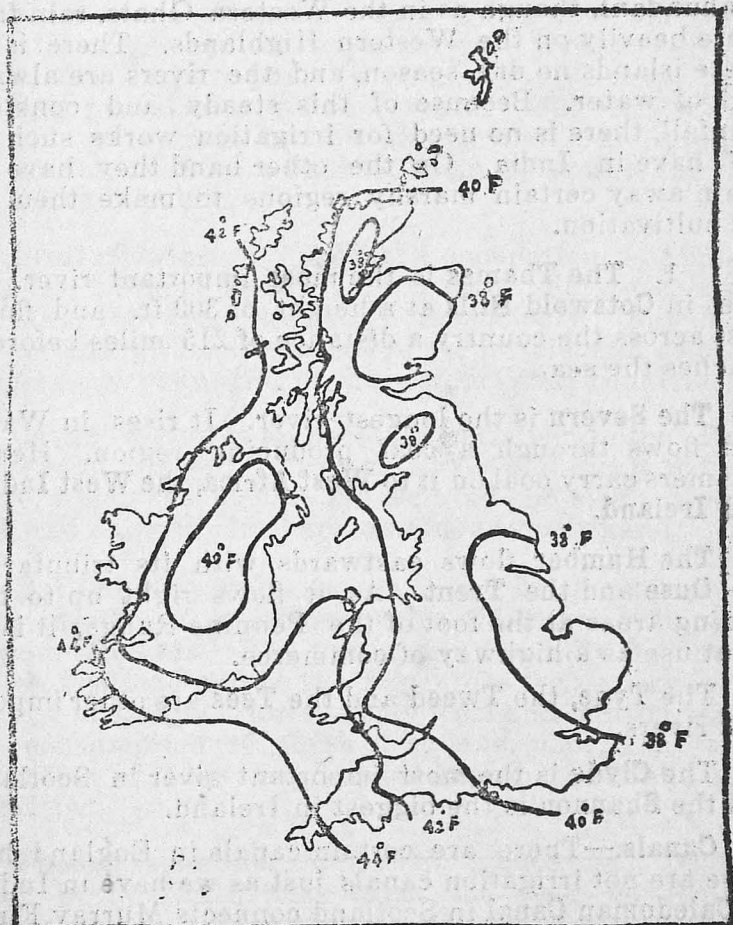


JULY ISOTHERMS

Climate.—The British Isles are in the midst of the sea and in the north Temperate Zone. They are in the region of **Westerlies** which blow over the warm North

Atlantic Drift carrying warmth and moisture with them.

The following diagram shows the July Isotherms. The land being warmer, the isothermal lines bend upwards over the land, the warmest part of the country being to the south.



JANUARY ISOTHERMS

The winter conditions are shown by the next diagram. The isotherms run north and south. The

land is comparatively cold, but the warm winds from the west blow over the isles. Hence the western parts are warmer than the eastern, and so the isotherms run north and south.

Rainfall and Rivers—As the islands are, in both the seasons, within the influence of the Westerlies, rainfall is abundant, though as in the Western Ghats, rain falls more heavily on the Western Highlands. There is in these islands no dry season, and the rivers are always full of water. Because of this steady and constant rainfall, there is no need for irrigation works such as we have in India. On the other hand they have to drain away certain marshy regions to make them fit for cultivation.

1. **The Thames** is the most important river. It rises in **Cotswold Hills** at a height of 300 ft. and flows east across the country a distance of 215 miles before it reaches the sea.

The Severn is the longest river. It rises in Wales and flows through a coal producing region. Hence steamers carry coal on it to **West Africa, the West Indies and Ireland.**

The Humber flows eastwards with its tributaries the **Ouse** and the **Trent**. As it flows right up to the mining areas at the foot of the Pennine Range, it is of great use as a highway of commerce.

The Tyne, the Tweed and the Tees are other important rivers.

The Clyde is the most important river in Scotland and the **Shannon** is the biggest in Ireland.

Canals.—There are certain canals in England but these are not irrigation canals just as we have in India. (1) **Caledonian Canal** in Scotland connects Murray Firth with Lock Linhe. This saves ships the trouble of going round the stormy northern coast of Scotland.

2. **The Manchester Ship Canal** is constructed

from **Liverpool** to **Manchester** with the object of having **cotton** taken directly to the mills of Manchester, thereby saving trouble and expense of loading and unloading cotton and cotton goods at Liverpool.

Productions and occupations—The productions of any country are dependant upon its climate and rainfall. On account of the warm current, **Wheat** is grown on the dry eastern part in summer, and from this, **Reading** manufactures fine biscuits. But the wheat grown is not enough for the people, and large quantities are imported from **Canada**, **India**, **Australia** and the **Argentine Republic**.

Fruit growing is another occupation. Apples, Peaches, Plums are widely grown. Potatoes, oats and other root crops are grown extensively. But these are not enough for the needs of the people, and so they import large quantities of these from other countries.

Cattle rearing is an important occupation too. Part of the land is used for growing clover and grass to feed cattle, which everywhere are well fed and sleek. Hence milk and dairy produce are obtained everywhere.

But **Cheshire** specialises in this. The local produce being insufficient, large quantities of **butter** are imported from **Denmark**. The **pastures** in the hilly regions of **Wales**, **Scotland** and on the **Appenines** feed a very large number of **sheep**. These supply **wool** and **mutton**. But the consumption of these is so enormous, that vast quantities of these are imported from **Australia** and **Argentina**.

Fishing is another important occupation. **Dogger Bank** in the North Sea forms the most convenient fishing ground. Some of the east coast towns such as **Aberdeen**, **Hull**, **Grimsby** are specially engaged in this, and the fish caught form an important article of food to the teeming millions in the British Isles. These fishing grounds in addition to supplying the country

with food, form the most important training grounds for a race of excellent sailors.

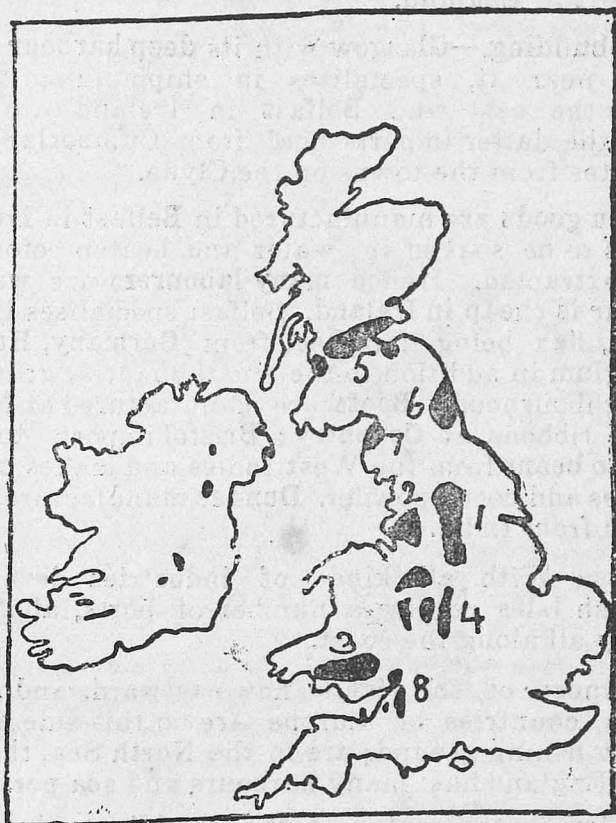
Industries—More than all these, the people are engaged in the manufacture of finished goods. **Coal and iron** found in such abundance, and the cool healthy climate have encouraged manufactures to an extraordinary degree. Added to this, there are men who devote their lifetime to the improvement and perfection of machinery, and this not a little increases production. Thus in this country, human labour is reduced to a minimum, and machines do all the work. Hence the quantity of output of any kind of goods is really enormous.

The diagram below indicates the important coal areas in Great Britain 1. **Northumberland Durham field** east of the Pennines 2. **Lancashire field** west of it. 3. **South Wales field** 4. **The Midland coalfield** 5. **Scotland Valley field** 6. **Bristol coalfield**.

The Northumberland Durham coalfields are situated east of the Pennine Range. In the Northumberland region woollen goods are manufactured. The necessary wool comes from the sheep on the Pennines, and the **Tyne and the Wear** flowing from the hills supply pure water for cleaning the wool. **Leeds** is the centre of the woollen industry and **Halifax** and **Huddersfield** are other centres. Most of the wool required to feed the mills comes from **Australia and Argentina**.

Iron and steel goods are manufactured in the **Midland coal region**. **Birmingham** is the centre of this industry. Here iron is melted at night and cast into moulds. For this purpose so much coal is collected in this region that the country is known by the name of **The Black Region**. **Wolverhampton, Dudley, Walsal** are other towns that manufacture iron goods. **Sheffield** specialises in the manufacture of knives and razors, because very near it are found stones suitable for sharpening them.

Barrow-in-Furness has very fine iron ore and so has shipbuilding and gun factories. As coal is abundant in England fine iron ore from **Sweden** and **Russia** is largely imported.



Cotton goods—Lancashire coal field specialises in the manufacture of cotton goods. 1. The cheap supply of coal, 2. The damp climate of the region 3. The ease with which American cotton is imported,—all contribute to the growth of this industry. **Manchester** is the centre of the industry, and the **Manchester ship canal** brings cotton direct to the mills. The damp air enables the mills to make very fine yarn, and weave it into fine

cloth. The existence of **Indian and other Asiatic markets** encourage the manufacture of these goods. **Bolton, Preston, Blackburn** are some of the important towns making cotton goods, and **Liverpool** is the greatest cotton port in England.

Shipbuilding.—**Glasgow** with its deep harbour and a coalfield near it, specialises in shipbuilding. **New castle** on the east and **Belfast** in Ireland are other centres, the latter imports coal from Cumberland and steel plates from the towns on the Clyde.

Linen goods are manufactured in **Belfast** in Ireland. Flax has to be soaked in water and beaten before the fibre is extracted. Hence many labourers are wanted. As labour is cheap in Ireland. **Belfast** specialises in this industry, flax being imported, from **Germany, Holland and Belgium** in addition to the small quantity grown in the neighbourhood. **Boots** are manufactured at **Northampton**; ribbons at **Coventry**; **Bristol** imports tobacco and cacao beans from the West Indies and makes cigars, cigarettes and cocoa powder. **Dundee** manufactures **Jute** imported from India.

Ports.—With all kinds of industries developed, the British Isles require a number of ports, and there are many all along the coast.

As most of the rivers flow eastward, and as the populous countries of Europe are on this side and as the great fishing grounds are in the North Sea, the east coast of England has many harbours and sea ports.

London is the centre of the world's trade, and is the capital of the British Empire. Situated on the river **Thames**, it has excellent docks, into which all oceanic steamers have easy access at high tide. It has easy communication inland. There are at least ten railways radiating in all directions. Thus it has become the biggest commercial city in the world.

Goole at the mouth of the **Humber**, and **Hull** are important harbours. 1. Abundance of coal behind them

2. Woollen goods manufactured at **Leeds** 3. **Timber and ice** imported from Norway 4. **Flax** imported from Russia and Germany 5. Fish caught on the Dogger Bank, have made these ports very important.

New-castle at the mouth of the Tyne is a great coal exporting station. **Port Said** and **Colombo** get their coal from this port.

Edinburgh in Scotland is its capital. It is only an educational centre, not a trading centre. Book printing is the most important industry here. **Leith** is the chief port.

Glasgow at the mouth of the Clyde is an important harbour. **Liverpool** and **Manchester** have already been mentioned. **Bristol** at the mouth of the **Bristol Channel** imports sugar, cacao beans, tobacco from the West Indies and exports manufactured goods. **Cardiff** is a bigger coal exporting station than Newcastle. **Portsmouth**, **Plymouth** and **Chatham** are important naval stations.

Ireland is more an agricultural country, its speciality being dairy products. **Dublin** its capital is an important port, and **Belfast** is a ship-building centre. **Greenwich** has an observatory and **Oxford** and **Cambridge** are big educational centres.

Great Britain is a great industrial country and has to depend for raw products upon other countries of the world.

Imports

Food Products.—Wheat and wheat flour come from the United States, Canada, Russia, the Punjab and the United Provinces; **Barley** and **Oats** from Russia and the United States; **Butter**, cheese and eggs from Holland, Denmark and Belgium; **Mutton** from New Zealand, and Australia in cold storage chambers, and live cattle from North America; Sugar from the West Indies, Tea

from Ceylon and Assam; **Coffee** from India, Brazil and Central America; **Tobacco** from the **West Indies** and the Philippine Islands; **Wine** from France, Spain and Portugal.

Raw materials to feed the mills.—1. **Cotton** comes from India, Egypt and the United States. 2. **Silk** from China, India, France. 3. **Wool** from New Zealand, Australia, Cape Colony and Argentina; 4. **Timber** from Canada, Sweden and Burma 5. **Iron** from Sweden and Spain.

Exports

Coal is the only native product of British Isles exported to Norway, Sweden, Denmark, Holland, Spain and Egypt. India of late is not importing much coal from England. **Cotton and Woollen goods, Machinery** and all other manufactured articles are exported to Australia, Africa and Asiatic countries, which have not yet been industrialised. **Cheshire salt** is sent to India as ballast.

People.—The British Isles are inhabited by the Saxons, Danes, Normans, all of whom have now become one nation. The people of Ireland are called Irish, and they form an independent nation. Great Britain is thickly populated. More people live in towns than in villages, as many industries attract people to them.

4. The Western Mainland of Europe

This is a huge plain extending from the west and has in it the following countries—France, Belgium, Holland, Denmark and Germany. All these are within the influence of the **Westerlies** and so they have steady and sufficient rainfall. The southern parts of some of

these countries are mountainous, while the northern parts form a plain sloping northwards.

(a) France

France is farther south than Great Britain and therefore it is a warmer region. Hence agriculture is more important in France than in Britain, though pastoral work and industries are not neglected. France has gained in importance on account of its location on the overland route to the east.

Relief.—France forms the western end of the plain. But the central mountain mass extends into France also. Thus we have the **Central plateau**, the eastern edge of which is formed by the **Cevennes Mountains**. On the eastern side there are the **Alps**, and on the south the **Pyrennes** forming the northern boundary of Spain. Between the central plateau and the Alps there is the valley of the **Rhone and the Saone** and the rest of the country slopes northward and westward, forming a big plain, drained by many rivers most of them being navigable, the **Seine, Loire, and Garonne** being the biggest among them.

Climate.—France extends farther south than England and has therefore a very warm climate. Being on the borders of the Atlantic, it receives the full benefit of the Westerlies and so it has heavy rainfall. Brittany receives the heaviest rainfall, but the **Garonne valley** being in the rainshadow of the Pyrennes receives much less. The plain of Normandy being exposed on the east to the cold northwinds is very cold in winter.

Productions.—The soil of France is generally very fertile, and hence more than one half of the population are engaged in agriculture. Each family has a small holding, which is cultivated with the help of the family members. Hence there has not been much scope for improved methods of agriculture such as the introduction of machinery and the like.

The most valuable crop is the **Vine**, which is grown in the warm regions of the river basins. 1. The valley of the **Garonne** makes **claret**, 2. the valley of the **Maine** exports **Champagne** 3. and the valley of the **Saone** manufactures **Burgundy**. The latter is called the **Golden valley**, as farmers can, by cultivating **Vine**, grow very rich.

Brittany and **Normandy**, which are not warm, grow apples from which **cider** is made.

Wheat is the chief food crop. It is grown all over the plains, but the **Loire Basin** grows so much of it, that it is called the **Granary of France**. **Barley**, **oats** and **maize** are other food crops in the colder regions. **Fruit**, **flowers** and **vegetables** are grown in the northern plain for home consumption.

The valley of the **Rhone**, on account of its moist warm climate, specialises in the growth of **Mulberry** trees, on which are fed silk worms. Much **silk** is therefore obtained from this region.

West of the river **Garonne** and in the rainshadow of the **Pyrennes** is a region called the **Landes**. It is much overrun with sand drifted by the westerly winds. To prevent further inroads, **pine trees** have been planted all along the coast, and these extend to about 150 miles yielding **turpentine**, **timber**, **resin** and **gum**. The land being moist people live in houses built on trees and walk on stilts. **Sheep grazing** is an important occupation in this region, and this is done by people walking on stilts and doing needle work, leaning on a third stilt for support.

France has **industries** also. There are many **coal fields** in France, but the **Franco-Belgian** coalfield on the north-east is the most valuable. **Lille** manufactures **linen goods** from the fine **flax** imported from **Belgium**. **Cambrai** and **Rouen** manufacture **cotton goods** from the cotton imported from **America**.

Lyons, in the south, manufactures **silk goods** not

only from the silk grown in the Rhone valley but also from that imported from **China, Japan and India**. **Coal** in the **St. Etienne** coalfield helps this industry.

Towns.—**Paris** is the third largest city in the world, and is the seat of all modern fashions. It is situated on the **Seine** at its junction with the **Marne**, in the centre of the great **Paris Basin**. It is the meeting place of all roads, railways and waterways and hence it has become what is called a **Focus Town**. It therefore became the capital of France and continues to be so. Paris is a fine city with its beautiful parks, palatial buildings, and broad streets. Theatres and Cinemas are everywhere in the city. Nice scents, beautiful jewels, and delicate fabrics of silk and lace are manufactured here.

As it is the centre for fashions, it attracts all pleasure-loving people, for whom this is a veritable paradise on earth.

Havre at the mouth of the Seine is the most important harbour in the north. It imports cotton and other raw products from America and has much trade with England.

Marseilles is the most important port of France on the Mediterranean. As the delta of the Rhone is growing fast owing to the great quantity of silt brought down by the river and to the absence of tides in the Mediterranean, the harbour is constructed on a more firm land situated to the east of the delta. The river is not much used as a means of communication, but its valley has a railway line leading to Paris through Lyons. Hence Marseilles became the most important seaport, trading with all the countries of the Mediterranean, with China, India and Australia, after the opening of the **Suez Canal**. It refines oil and has many soap factories.

Government.—France is a republic. Once in seven years a President is elected. Every man above 18 who

is not weak or disabled must undergo compulsory military service and be ready to serve the country in times of need.

Foreign possessions.—Medagascar, Algeria, Senegal, Niger, Congo Territory in North Africa; **Cayenne** in South America; **Pondichery** in India; **French Cochinchina** in Asia are the important foreign possessions of France.

(b) Belgium

This is a small country to the north east of France. It is very **thickly populated** on account of the several industries that are thriving in it.

This is hot in summer and cold in winter on account of the northern winds. The westerlies give it sufficient rainfall, and therefore there is no lack of water supply.

It may roughly be divided into three regions. (1) The northern **Plain of Flanders** (2) The central **Sambre-Meuse Valley** (3) The southern **Plateau of Ardennes**.

1. **Plain of Flanders**—This is along the coast line which is not more than 40 miles. This is the region that is under cultivation. In matters of agriculture, Belgium is one of the **most advanced countries in the world**. The Belgian farmers plough every foot of the ground either with a plough or with a spade, manure it, and grow their crops. It is on account of the great care and hard work of the farmers that Belgium is able to grow many crops. **Rye** forms the staple food for human beings, and **oats** are for horses. **Potatoes, beet root, flax and wheat** are other products. The flax of Belgium feeds the linen mills of **Ghent** which manufactures also **cotton goods**, and is called the '**Manchester of Belgium**.'

2. **The Sambre-Meuse Valley** is at the foot of the **Ardennes plateau**. It is rich in **coal and iron** and

it is called the **Franco-Belgian coalfield**. 'The presence of iron and coal and the cheap water route, have made this an important industrial region. The chief towns in this region are **Namur and Liege**. At Liege coal is abundant and foundries and factories are everywhere to be seen. This city supplies the world with guns and cannon. It has also glass factories. The industrious Belgians are manufacturing all iron and steel goods in competition with the English. All our railway plant comes mostly from Belgium.

Liege has a huge fortress. This is because the **Sambre-Meuse Valley** alone affords an easy passage into France; and almost all the European wars were fought on the Belgian fields. For this reason Belgium is called the **cock-pit of Europe**.

In this region therefore all towns are more or less fortified, and each has a bell-tower, with which they summon the people to be ready for fight. For this reason **archery** is a sport to them and all people specialise in it.

3. **Ardennes plateau** provides pasture for sheep. But attempts are made to grow some food crops wherever possible.

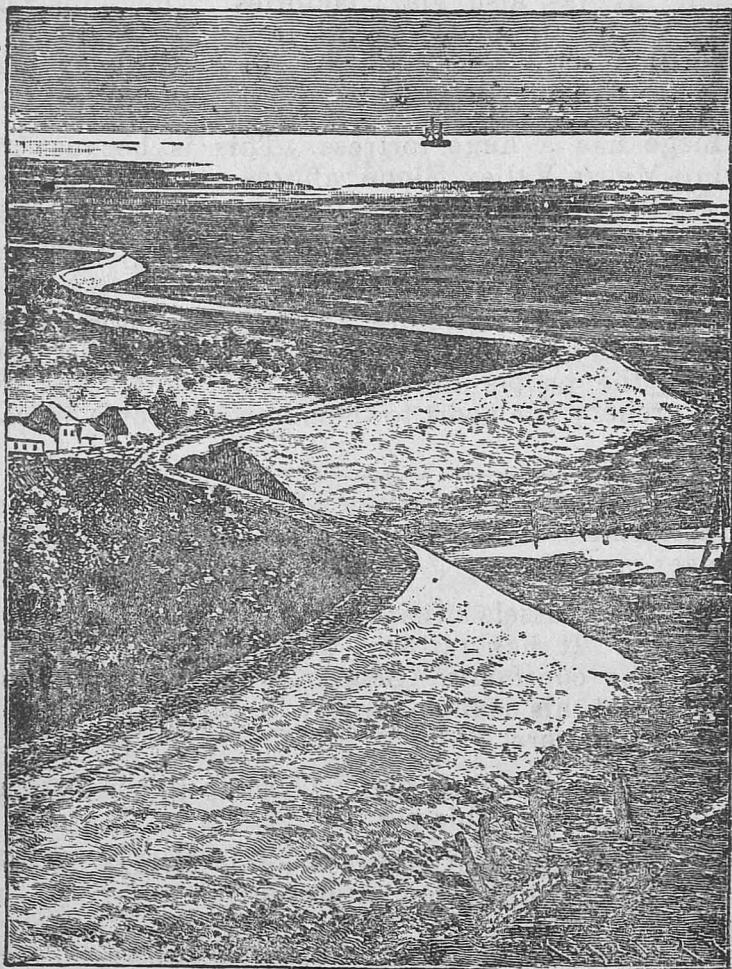
Towns—Brussels situated in the plain of Flanders is the capital. It has railway communication with all parts of the continent. Belgian women manufacture fine lace, and this is done largely in this city. Carpets are also made here.

Antwerp is the chief port. German goods also find their outlet through this port.

Belgian Congo in Africa is the only foreign possession, which the country has at present.

(c) Holland

The word Holland means hollow land. This is situated to the north east of Belgium, and it is practically the delta of the Rhine and the Meuse. The country is



DYKES IN HOLLAND

lower than the bed of the river and the sea, and so there is always the danger of its being inundated. Hence the people are compelled to learn to be cautious.

The low lying land therefore is divided into **Polders** by embanked and elevated canals, which carry water into the rivers. Water from the low lying polders is pumped into these canals by the help of **Windmills**, which form a common feature in the scenery of Holland. The sea is prevented from rushing into the land by **Dykes** which are huge bunds, and in this way the Dutch people have been reclaiming extensive areas from the sea.

From what has been said, it is clear that the country must be very damp and intersected by canals, which are the chief means of communication in this country. Being farther east, the influence of warm westerly winds becomes less, and that of the cold arctic winds becomes more. Hence the rivers and the canals freeze in winter, when travelling is done by means of sledges, and **skating** becomes an enjoyable sport.

The land being damp, food grains are not grown except where the land is dry. The **Polders** grow grass and cattle are fed thereon. **Dairy produce** is therefore important and $\frac{1}{2}$ is exported. Vegetables and Flax and potatoes are also grown.

Fishing in the numerous canals and the sea is another occupation of the people, and they are therefore expert sailors. In a delta region like Holland, one cannot expect to find any mineral wealth, and manufactures are therefore nil. But from its colonies she gets large supplies of **coffee, spices and tobacco**, which are distributed from her ports among the several European countries.

Towns—**Hague** is the political capital and the seat of the **International Conference**.

Amsterdam, the former capital, is on the coast. It is the centre of the **diamond cutting industry**, in which

the Dutch have won a name. **Rotterdam** is the most important seaport town at present.

The people of Holland are called the **Dutch**, and they are famous for their industry and patriotism. Their chief foreign possessions are: **Java, Moluccas**, parts of **Sumatra, Celebes and Borneo, New Guinea and Surinam**.

(d) Denmark

This is a peninsula jutting into the Baltic sea. This includes the peninsula of Jutland, and the islands of Zealand, Funen, Laaland, Bornholm. This forms a part of the great European plain, and nowhere is it higher than 500 ft. Here and there, there are marshy lands. On the western side sand dunes formed by the westerly winds have made inroads into the country, but the clever Danes have planted trees to stop them as in the Landes of France.

The country is surrounded on all sides by the sea, and the westerlies blow freely, and so the rainfall is abundant. Consequently the soil is damp. The cold winds from the east often freeze the soil. Hence food grain is not grown. **Grass** is the only product here, and **cattle rearing and dairying** are the most important occupations of the people though barley, rye and oats are grown in the drier parts. This **Dairy Industry** is carried on successfully in virtue of the spirit of **co-operation** which the people have developed. Co-operative societies are everywhere to be seen, and are worked so successfully, that they form an object lesson to the nations of the world.

Every day a milk cart goes round, and collects the milk from each household, and takes it to the factory, where, under most hygienic conditions, the milk is skimmed and **butter** is taken out. This butter is tinned

and exported to other countries, more particularly to England.

The buttermilk that is left after the butter is removed, is given to pigs, which are to be fattened. For this purpose **Soya beans** are imported from **China, Japan** and **Manchuria**, and these are made, in their factories, into **feeding cakes** for the pigs, which are fattened on these. **Bacon** therefore is an important article of export.

Besides this, they import grain, on which are fed thousands of **fowls**, from which millions of **eggs** are exported every year to England.

From very early times, the Danes have been skilful sailors, and **fishing** is therefore an important occupation to many of them.

Copenhagen is the capital of the country situated on the narrow **Sound**, and has an excellent harbour, unaffected by either adverse sea currents or sand banks. All ships that go into or out of the Baltic sea have to go by this harbour. Besides this, Sweden is very near, and the trade of Denmark, Russia and Sweden are centred in this capital, which has therefore become a great city. Many of its streets are canals and it has a famous university. **Iceland, Faroe Islands** and **Greenland** are its only colonies.

We, Indians, ought to learn a lesson from the Danes. Their country is small, subject to extremes of cold and not very productive. And yet the people by their industry, intelligence and enterprise have made it one of the richest countries by working on **co-operative lines**, and are enjoying a measure of independence not yet possible in the Eastern lands. India is a huge country with excellent climate and much natural wealth, and yet we are not able to manufacture our own needles, though once our country had been in a flourishing condition.

(e) Germany

This is to the east of Holland, Belgium and France. It extends from the Baltic coast to the central Highlands and so it may be said to be in two regions (1) the lowland region of the north and (2) the Highland region of the south.

Germany is so far away from the broad ocean, that its moderating influence is not very much felt. The summers are fairly warm, but the winters are somewhat severe owing to the cold arctic winds. The Baltic ports freeze in winter, and even the River Rhine freezes at its mouth. The hills generally get heavy rainfall, and the plains have fairly good rains. There is thus no drought in Germany, and so it can grow enormous crops.

(a) **Agriculture.**—Near the Baltic coast, there are sand dunes and marshy places. But the rest of the plain is fertile and the clever and industrious Germans are making use of every inch of the available land for the growth of some crop or other. In the cold somewhat damp climate of Germany rye, oats and barley are the principal food grains. Wheat is also grown in the drier and warmer parts. Potatoes are grown in poor lands, and sugar-beet is a very important product from which sugar is made and exported in large quantities. Tobacco and hemp are also grown. Agriculture therefore is the occupation of nearly a third of the population.

(b) **The development of forests** is a speciality with the Germans. They know the value of the forests, and all the plateau region which is not fit for agriculture is planted with forest. Only selected trees are felled, and replanting goes hand in hand with the cutting. They know that forests yield valuable timber, store up water in the fallen dry leaves, prevent the denudation of fine mountain soil, and harbour game.

Bavaria and Wurtemburgh, supply so much timber that toys, furniture, and fiddles are manufactured in abundance.

(c) Above all, the Germans are famous for their industrial activity. This is due to the great mineral wealth which the country has. Two big coalfields are in this country (1) **Rhur coalfield**. (2) the **Saxony coalfield**. These regions are very thickly populated, and all kinds of manufactures are possible. There is no article that the Germans do not make. From a small pin to a big engine, Germany manufactures all goods and the industries are so well organised and carried on that they are able to flood the world markets with their goods.

In the **Ruhr region** all industries are carried on. **Textiles, steel and iron works and glass and chemicals** are manufactured at several centres, and the manufactured goods are cheaply transported over the Rhine. **Barmen and Crefeld** are Textile centres. **Essen, Dortmund** and others are steel and iron manufacturing centres. **Dusseldorf** is the centre of chemical industries. In this region **dyes** are manufactured, which are the best in the world. Specialists devoted their lifetime and have succeeded in making these **Aniline Dyes** from coal-tar.

In the **Saxony Coalfield region**, **Chemnitz** manufactures textiles; **Dresden** is famous for **Chinaware**; **Magdeburg** has sugar refineries; **Leipzig** specializes in book-making.

Berlin on the river **Spree** is the capital. It is situated in the centre of the plain at the junction of a number of railways. It is the centre of a famous University and has a large population.

Hamburgh on the estuary of the **Elbe**, some 60 miles from the sea, is the most important harbour, from which German goods are sent to all parts of the world. Being very near the end of the **Kiel canal**, it has easy communication with the Baltic ports, and imports raw materials from all parts of the world.

Breslaw on the **Oder** is the second largest city in Germany and is the seat of linen manufacture. It has the largest woollen fair in Europe.

Germany was an empire of considerable area with foreign possessions in Africa. During the recent European war, it lost all the possessions, and the non-German parts secured independence. It is now a republic but its population being entirely German has a solidarity peculiarly its own. As a result of the War, it suffered losses, but its recuperative power is indeed so very great, that it is trying to regain its trade and former wealth. The Germans are intensely practical people with an educational system of a very high order. Germany has made education compulsory, and has opened very many schools and colleges for arts and crafts.

(5) The Baltic Region

The states that are included under this title are (1) Finland (2) Estonia (3) Latvia, (4) Lithuania (5) Poland (6) Scandinavia. Of these Finland, Estonia, Latvia formed part of the Great Russian Empire before 1918, but are now **Independent Soviet Republics**. Poland had been parcelled out among the three powerful neighbours, Russia, Germany and Austria. But in the last great war, these powers were forced to give up their control, and Poland declared its independence to the great joy of the Poles, who, with a united effort, had been working for their **national unity** and independence for a long time.

The Baltic Sea is an arm of the Atlantic Ocean extending far inland with a narrow mouth. Being in the colder region evaporation is little, and it receives much more water from the several rivers that flow into it. Hence the water of the Baltic Sea is fresher than that of the Atlantic Ocean. For this reason in the winter season when cold arctic winds blow, it freezes so hard that an army can with safety walk over it. Hence the Baltic harbours are ice bound in winter and are practically useless.

The Baltic Region is far away from the Atlantic, and the effect of the warm Westerly winds is not felt here. So this region has a continental climate. **Finland** extends as far as the Arctic Ocean and contains extensive coniferous forests. The ground is covered with snow from November to April and consequently is not suitable for agriculture. However, here and there in the forest clearings, hardy grains like **rye**, **oats** are grown. But the most important occupation is **forestry**. The timber is felled and exported. From the softer woods, **wood-pulp** is made, from which paper is manufactured. **Helsingors** is the capital and exports **timber** and **paper pulp** in large quantities.

Estonia, **Latvia**, and **Lithuania** are a little farther south along the Baltic Sea. These are small republics, and like Finland have coniferous forests. But being farther south they are somewhat warmer, and in the forest clearings more **oats** and **rye**, and also **flax** and **potatoes** are grown. Hence **Agriculture** is also an important industry. Flax that is grown here is exported to Belgium. **Timber** and **paper-pulp** are also exported so that a large number of people are engaged in **timber** industries. **Lithuania** is engaged in **poultry-raising** and therefore exports **eggs** in large quantities. **Reval**, **Riga**, are the capitals and timber ports of **Estonia** and **Latvia**.

Poland has a small strip of land along the Baltic coast. But for this it should have been considered along with **Russia**.

Poland forms a part of the great central plain. Being far from the Atlantic Ocean, it has a climate of extremes and so hardy grains like **oats**, **barley** and **rye** grow here. **Sugar-beet**, **potatoes** and **Flax** are grown in large quantities. **Cattle** are reared in large numbers.

Warsaw in the centre of the plain is the capital, and it is on the railway line connecting **Russia** and **Germany**. **Iron**, **steel**, **leather** and **textile industries** are important.

All these find an outlet through the free port of **Danzig** on the Baltic Sea.

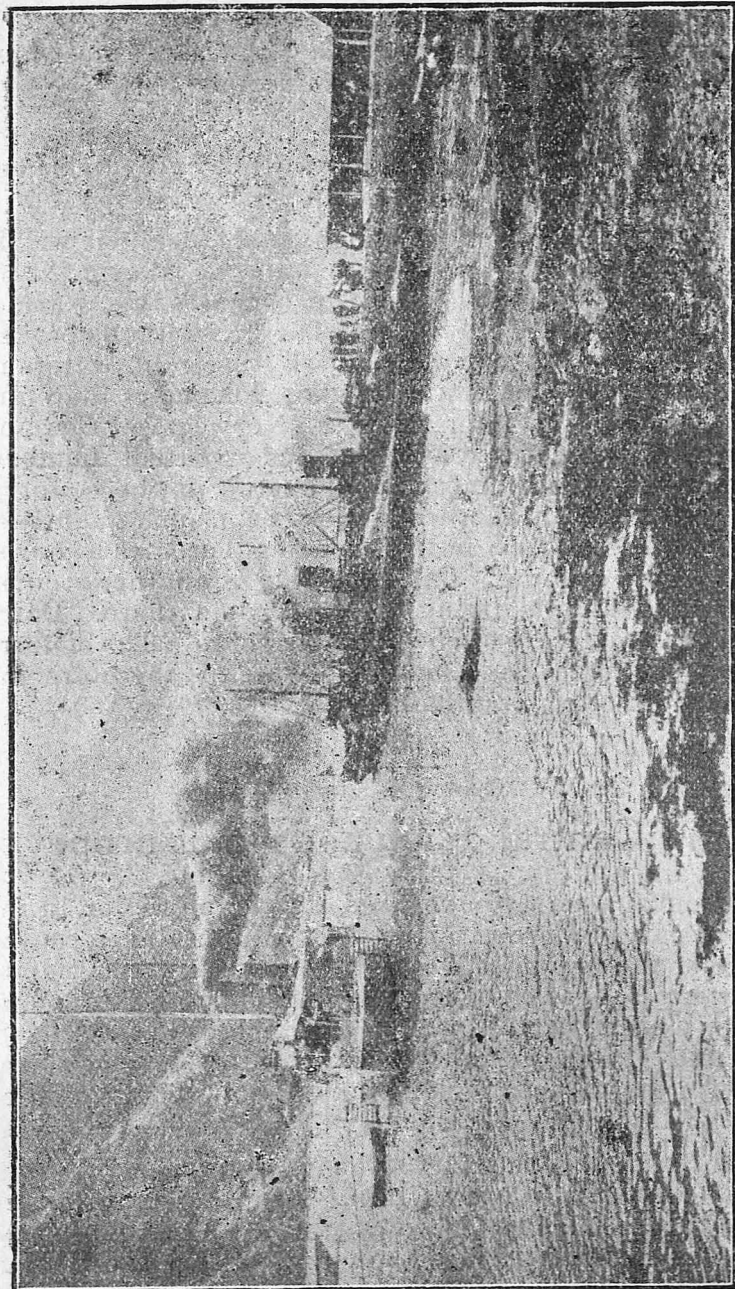
The Southern part of Poland is known as **Galicia**. This extends into the **Carpathians** and is thickly forested. Near **Lemberg** there are oil and coalfields. Hence **Timber, paper-pulp, paper, and sugar industries** are carried on.

Sweden is on the western side of the Baltic sea. It is mountainous on the north and west, on the east the plain is narrow but on the south it is wider. It thus forms a part of the Great Northern plain, though it is separated from it by the Baltic Sea.

The western part being mountainous, Sweden does not receive the warmth and rain from the westerly winds. On the other hand, it is exposed to the cold winds of the north. Hence it is, like the other parts of the Baltic region, cold in winter and the rivers also freeze sometimes. Hence grass, rye and oats are the important products. **Cattle rearing and dairying** are the most important occupations.

On account of the heavy rains falling upon the mountains, many rivers flow in Sweden. As there is a **thick forest** in this region, **timber** is felled and floated down the rivers to the saw mills, where it is cut into rafters, beams and planks. From these, door and window frames and other articles of furniture are made. **Wood pulp** is made here, from which paper is manufactured. **Match-making** is another industry. Though there is not much coal, the **waterfalls of the rivers** are made use of in generating electricity, with which all the local industries are carried on. **Gellivara** is famous for the best **iron ore**, in the world. It is at present exported to England to feed its iron mills. In course of time, Sweden may manufacture iron goods herself, when her **water power** is fully developed.

Stockholm built on islands in the Baltic sea is very near Lake Malar. As some of its streets are canals, it is called the Venice of the North. All the sea



A NORWEGIAN FJORD

and land routes from the north and the south meet here and therefore it has become an important port.

Norway is the mountain region west of Sweden. Both of these formed Scandinavia and were under one King. But now each has its own King.

The country is a mountainous plateau, and is within the influence of the Westerlies and the Warm North Atlantic Drift. Hence its western coasts are warmer than the east coast of Sweden. The coast line is broken by innumerable **fjords**, which, with the calm waters in them form excellent **fishing grounds**. **Fishing** is therefore a very important industry of the Norwegians. **Cod and herring** are caught and are dried and exported. **Lumbering** is another very important industry in the country. **Wood pulp** is manufactured for paper in such quantities that what was a tree in the morning becomes a newspaper in the evening. **Cattle rearing** is another occupation which affords living to the people there. **Dairy produce** is therefore of considerable value. The country grows very little grain, much of which is therefore imported from other countries.

(6) Central Highlands of Europe

From the map you will see a highland region in the central part of Europe. The Alps Mountains form the centre of the regions. From this central mass, radiate mountain ranges east and west, enclosing plateaus and a river plain. In this region are included (1) Switzerland, the Alpine region. (2) Austria, (3) Czecho-Slovakia with the plateau region of Rumania (4) Hungary or the Mid-Danubian plain.

This region comes within the influence of the Westerlies, and so it has heavy rain. As the mountains are above the **snow line**, there is always a covering of snow on them, and **glaciers** are abundant. From these innu-

merable glaciers many rivers rise and flow in all directions spreading fertility everywhere. **The Rhine** rising in the Alps flows north through Germany, and enters the sea in Holland through a huge delta. Very near its source, rises the **Danube** which flows eastwards through the **Plain of Hungary** and enters the Black Sea. Another river, the **Po**, takes its rise and flows southward through Italy, fertilising the **Plain of Lombardy** with silt and water. **The Rhone** is another river and it flows into the Mediterranean Sea.

(1) The Alpine Region

Switzerland forms the high **Alpine Region**, and it is called the **Playground** of Europe, because so many visitors come to this country to enjoy its beautiful scenery and to improve their health in its bracing climate.

Like Tibet in Asia this is also a high plateau, but it is not so high as Tibet, nor is it so barren and extensive.

The Alps are not one range but a series of ranges running parallel to one another. Hence there are many Valleys between them. Between the **Bernes Alps** and the **Penine Alps** there is the plain of the **Rhone**. North of the **Bernes Alps** and between the **Jura-Mountains** which form the boundary between Switzerland and France, is the **Swiss Plateau** with the beautiful lakes of **Geneva**, **Constance**, **Lucerne** and **Zurich**, all of which are famous for their magnificent scenery.

Mount Blanc is the highest peak in Europe, and **Matterhorn** is famous for its grand scenery. This is snow covered all the year round, and the evening sun gives a grand rosy hue to the snow heights. On the slopes of these mountains are pines, which offer shelter to the numberless goats that live in this region. It is the giddy heights of these ranges that form the grazing grounds to **Chamois** a kind of deer peculiar to the Alps.



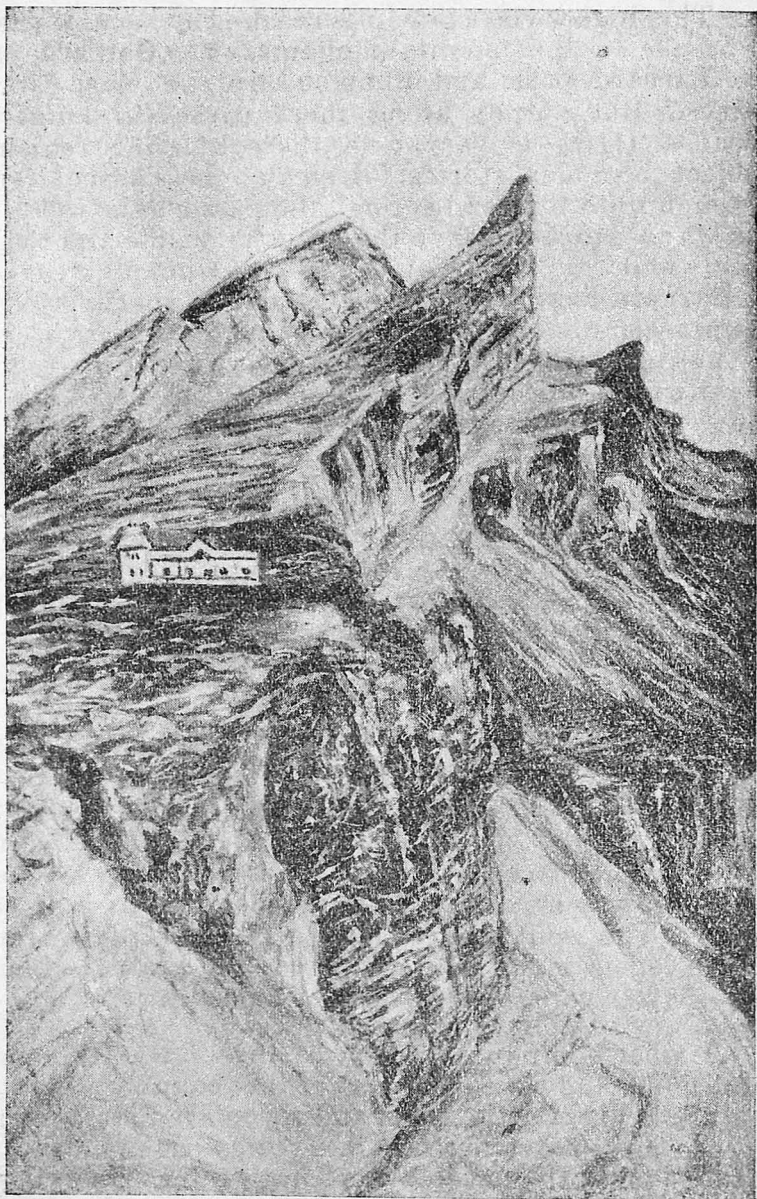
ALPINE GOATS

This high swiss plateau is reached by several passes or breaks in the mountain chains. **St. Gothard pass, St. Barnard pass, and Simplon** are the most famous passes. But journey along these passes is dangerous because (1) It is very cold there, (2) the region is subject to sudden storms, (3) Avalanches descend from the mountain tops and entomb the passengers and block the way. Hence to save the unlucky people and to give them first aid an hospice is constructed near the **St. Barnard Pass**, where trained dogs of a special kind are maintained to detect by scent the unfortunate victims to snow and storm. But now-a-days the construction of railway tunnels under the important passes has made the journey easy and safe. Roads have been improved and motors have shortened the journey.

Hence many tourists go to this Playground of Europe in summer to enjoy the beautiful scenery of lake, mountain, forest and glacier. To serve the needs of these tourists so many **hotels** are maintained on the high mountains that their income is estimated at 90 crores of Rupess a year. Hence this forms an important **occupation** to the people of Switzerland.

The country being mountainous, much of the fertile soil is being washed away by rivers to the lower valleys, where the soil is fertile. But on the whole, the soil is generally poor. The climate is continental and the winters are generally very cold owing to the northern parts being much exposed to the cold north and east winds. The southern valleys are generally warmer. Hence vegetation is limited to **trees and grasses**, though in the lower valleys there is some **agriculture**.

Timber is produced in the basins of the Rhine and the Rhone, and the major part of the country is only a **pasture-land**. **Cattle, goats and sheep** are reared everywhere. These move to the higher regions in summer, and come down to the lower valleys in winter. **Dairying** is the most important industry of the people, **Condensed Milk and cheese** being their chief exports.



ALPINE HOTEL

The country is not famous for minerals like iron and coal. But they have innumerable waterfalls, from which they get electricity, which is made use of for their manufactures. But they have no raw materials, and importation of heavy raw materials into a mountainous country is very expensive. The Swiss being very skilful workmen, they manufacture delicate but costly things like **Watches** which are famous all the world over. From a pound of steel that they import, they can make hair springs worth 15,000 rupees, or screws worth as much as 6 lbs of pure gold.

As electricity can be sent to distant places, there is no need to have big industrial centres as in England. All the disadvantages of over-crowding, in sanitation are therefore avoided. Cottage industries such as lace-making, silk-weaving and embroidery are other occupations of the people.

Basle, Zurich, Lucerne, which have waterfalls very near, are famous for silk manufactures, and **Geneva** is noted for **Watches** and musical boxes.

The people are industrious and intelligent. Though they speak different languages and belong to different stocks, and have different customs in different valleys, politically they still form one nation and are very interested in maintaining their independence.

(2) Czecho Slovakia

This is the plateau north of the Danube; and it gained independence in 1918 after the Great War.

This is physically divided into three regions (1) **The plateau of Bohemia** on the west, sloping towards Germany in the north and having easy communication with it. (2) The lower region of **Moravia** sloping south towards Austria and having easy communication with it. (3) To the east of this is **Slovakia**, which is mountainous and which has easy communication with the

Danubian plain. As these three parts have not easy means of internal communication, the administration of the country is somewhat difficult, but the patriotic spirit of the people overcomes all these defects.

This region is famous for industries. **Coal** is abundant and other **minerals** are in plenty. Hence all industries are carried on. But **Cotton weaving**, **Glass** and **Chemical Industries** are very famous. There are **huge forest** areas, and **saw mills** and **paper mills** are located near them. **Bent-wood** furniture is exported in large quantities.

If the forests and minerals in the Carpathians are fully developed, there is much room for more industries. They have one disadvantage of having no harbours of their own. For this reason the **Danube**, the **Elbe**, the **Oder**, and the **Rhone** have all been internationalized, and so traffic of all nations can freely pass along them.

Agriculture is not however neglected. In the upper parts of the **Moravian Plain**, barley, sugar-beet, and in the lower regions fruits and **maize** are extensively grown.

Prague on a tributary of the **Elbe** is the capital and centre of all the Bohemian trade. It has two universities. **Brunn** the chief city in Moravia is the centre of woollen manufactures.

(3) Mid-Danubian Plain

This is **Hungary**, the river plain in the midst of mountains. This region has extremes of climate and the winters are severely cold. The rainfall is limited to about 25 inches but there is no dearth for water, as the region is well supplied with rivers. **Agriculture** is the most important industry of the people, though formerly **cattle rearing** was very important. **Maize**, **sugar-beet** and **tobacco** are extensively grown.

People live in large towns for self protection. **Tobacco, sugar making and milling** are the important industries. The dry air is very suitable for milling.

Fouls are reared in large numbers, and **eggs** are exported in millions. **Tokay Wine** also is an important product of this region.

The Danube is the most important highway of commerce. **Budda-Pesth** on both sides of the river is the capital and the centre of the **milling industry**. Railways radiate from this in all directions and keep the city in touch with the whole country.

(7) The Mediterranean Region

This was the centre of civilisation in early times in Europe. Many nations thrived and many empires flourished, and the Mediterranean sea was the highway of commerce in those days. In later times Alexander invaded India. The Portuguese and the French made attempts to form empires in India in more recent times. Finally India came under the sway of the English. The construction of the Suez canal brought Europe nearer to India and other Asiatic countries, and the importance of the Mediterranean as a highway of commerce became greatly increased.

This region lies between north latitudes 30° and 47° , and so it is in the temperate zone. The northern part of it is to the south of the central mountain ranges and so the cold winds of the north do not affect it; nor do warm winds from the south cross the mountains to give their warmth to other regions. Hence this region is warm enough except on the mountain tops.

This region has rains in winter but summers are dry (Vide Intro.). Hence this peculiar climate is known by the name of the Mediterranean climate.

The vegetation that is adapted to this climate is also peculiar. Plants must have long roots to suck up water in the dry summer, or their leaves should be thick or oily. Hence **fruit trees** grow very well, and in the warm dry summers fruits ripen in the open air. **Vine, olives, figs, pomegranates, chestnuts, oranges** are the most important fruit trees. On the dry lands of Algeria and Spain, **Esparto grass**, thorny bushes without leaves are found. But in the well watered plain of Lombardy **mulberry trees**, maize and rice thrive well.

The Mediterranean lands in Europe are (a) The Iberian Peninsula, (b) Italy (c) The Balkan Peninsula.

(a) The Iberian Peninsula

This includes Spain and Portugal. The Pyrennes form the northern boundary of the country, and as they are high, railways are constructed at their extremities. But in 1928 the mountain has been tunnelled for the construction of a railway from the **Ebro** to **Pow** in France for the easy conveyance of fruits.

There are not many openings in the coast line of this country. As there are sunken rocks along the coast, and as it is subject to frequent storms, navigation is not quite safe. But **Lisbon** at the mouth of the **Tagus** is the most important harbour. **Gibraltar** on a rock is an important British naval station.

This is mainly a block plateau of ancient formation, and the country presents the appearance of a ploughed land with ridges and valleys running across. Only at the edges of this plateau in the south and west there are lowlands.

Being near the Atlantic, the country has the full benefit of the wet Westerlies. But all the rain falls at the western edges, and the interior receives very little of it. So the plateau is dry and cold in winter and dry and hot in summer. On the whole the climate is one of

extremes, and the plateau rivers have not much water in them, and those that have flow in such deep channels, that their water cannot be brought up for irrigation. They are not good as means of communication. Hence the plateau can grow grass. Sheep and goats are reared in large numbers. Fine merino wool is the chief product of Spain.

In the lower regions of the Duro, the Tagus and the Ebro, wheat and vine are the principal products. Portugal on the coast gets heavy rain and cork trees thrive well. From the bark of these trees corks are made. Oporto at the mouth of the Tagus exports Port Wine.

Fruit growing is an important occupation of the people. All kinds of Mediterranean fruits are grown here. Seville is noted for its oranges. Esparto grass grows everywhere, from which mats, baskets and ropes are made. It is exported in large quantities to England for the manufacture of paper.

Many minerals are found in this country but for want of coal they are not worked, and no industries on a large scale are possible. Iron ore is exported to Wales. As there is some coal near Bilbao and Toledo, the latter manufactures sword blades. Most of the people are agriculturists and the population is thick on the coastal regions, where there is considerable rainfall. Madrid the capital is situated almost at the centre of the country, and is connected by rail with all the chief towns in the Peninsula. The introduction of motors has made the capital more accessible. It is very cold in winter and very hot in summer.

(b) Italy

This extends into the Mediterranean and it resembles India in some respects. As in India it is bounded on the north by the high Alps mountains and

south of it is the basin of the Po, corresponding to the Ganges Basin. South of the basin is the **Peninsular Italy** (with the Appenines running along the centre similar to the plateau of the Deccan.) Thus there are two regions. (1) The Basin of the Po (2) The Peninsular Italy.

Surrounded almost by sea, its climate is influenced by the sea and the high mountain barrier prevents the cold northern winds from blowing over the country. Hence the country has a warm temperate climate, with a cool rainy winter and a hot dry summer.

1. The most fertile region is the northern Italy or the **Po Basin**. It has fine alluvial soil brought down by the Po, and it is well watered by the river and its many tributaries. Hence it grows all kinds of products. **Wheat, Maize, Rice and Mulberry trees** are the most important. Silk worms are fed on the mulberry leaves, and large quantities of silk are therefore produced. Grapes are grown everywhere and wine is made in considerable quantities. **Dairy farming** is an important occupation of the people, and **cheese** is an important article of export. The dry air is very suitable for **poultry-farming**, and millions of eggs are therefore exported to other countries.

Lombardy plain is most thickly populated and has many towns. The people are agriculturists, industrious but not rich. As coal is not found in this region there are not many industries, but the use of water power from the many waterfalls is becoming common. Coal is also imported from Britain and the United States of America. Hence a few towns have become industrial centres.

Iron ore is worked at the foot of the Alps, and is used in the engineering work at **Milan and Turin**, which manufacture motor cars, tyres and engines.

Milan is situated on the river Po at the head of its basin. Here meet seven railways, coming from (1) France and Geneva through the Simplon pass (2) from

Switzerland through the St. Gothard pass (3) from Germany through the Splugen pass (4) from Venice and the Far East (5) from Boulogne (6) from the harbour of Genoa in the south (7) from Turin. This is the centre for the linen and silk industries.

Turin, west of Milan, is also on the Po. Here three ways, one through St. Bernard pass, another from Mt. Cenis pass, and the third from the south, meet. It is near sheep pastures and so specializes in **woollen manufacture**.

Genoa at the head of the gulf of that name is a very good harbour, and a railway has been made over the low Ligurian Apennines to Milan. Hence it has become an important port of the Lombardy plain.

Venice was formerly an important port. All products from the east came to Venice, and from there they were sent to the several parts of Europe. It is situated on a group of islands and its streets are canals. It has fine buildings, and is one of the finest cities in Europe.

2. South of the Lombardy Plain is **Peninsular Italy**. The Apennines run southward in the middle forming the back bone of the region, leaving narrow marshy lowlands on the east and the west. These lowlands are generally malarial and so unhealthy. But the mountain slopes have sweet **chestnut trees** whose nuts form the chief food of the people of the south. There are **pine forests** also on the mountain slopes, and these yield fuel and nuts for the inhabitants.

On the hills sheep and goats are reared on the sparse grass that is found in summer, and these give **milk** and **wool** to the hill farmers. In the southern parts **fishing** is the most important occupation as the mountains are bare of vegetation. All plains grow **maize** and **grapes** and other fruits which are largely exported.

Rome situated some 14 miles up the Tiber is the

capital of Italy. It occupies the central part of the Western plain and is built on seven hills. Roads from Rome go in all directions and so it was the capital of the old Roman Empire. It is the seat of the Pope and has a number of splendid buildings. It was the capital of the ancient Roman Empire, and had once within its rule almost the whole of the Mediterranean region. The present European civilization is not a little due to the Rome, whose history is even now a source of inspiration to all thoughtful people.

Naples, on the bay of Naples, is the largest town in this region situated in a healthy part of the country. The land behind is hilly and is clothed with orchards. The town offers a very grand appearance to tourists. Ten miles from this is **Vesuvius** the famous volcano.

Brindisi, on the Adriatic sea, is a port at which people from the East land and take train to Paris or London to reach those places earlier.

Sicily, an island south of Italy, is famous for oranges and lemons. **Etna** is a volcano in it, and sulphur is obtained very near it. **Palermo** is its capital and chief port.

(c) The Balkhan Peninsula

The following states are included in this peninsula.
(1) Yugo-slavia (2) Bulgaria (3) Albania (4) Greece and (5) Small part of Turkey.

This region extends from the Mediterranean sea in the South to Rumania in the north. Hence the northern parts which are really a part of the Russian plain have continental climate *i.e.*, their summers are hot and winters severely cold owing to the cold arctic winds. For this reason the mouths of the Danube are often blocked by ice for weeks. Rainfall is more or less plentiful, but as in the northern plain this receives heavy rains in summer.

The southern part of this region has a more mild climate, and the rains fall mostly in winter. Greece which is the southern most part of the region has warm wet winters, but its summers are hot and dry like the rest of the Mediterranean lands.

1. **Yugo-Slavia.**—This is in two parts (1) The river plain of the Danube in the north (2) the mountainous part of the south.

1. The low region of the Danube is very fertile and wheat and maize are the important products. **Belgrade** the capital is on the Danube, and is the most important commercial centre.

2. The mountainous south is well forested. **Beach, oak and fir** are some of the valuable timber trees, and **timber industry** forms an occupation to some of the people. The mountain slopes have orchards and vineyards. Oranges, olives, figs and other fruits are grown.

2. **Bulgaria.**—This is a small state bordering on the Black Sea. It is divided into two river plains by the Balkhan mountains running in the middle. The Danube plain in the north is exposed to the cold winds of the north and its productions are limited to hardy plants like **oats, barley, rye and potatoes**. But the southern river plain being warmer has fields of **wheat, maize, vineyards, orchards** and even **cotton**. **Roses** are specially grown for distilling the **attar** of roses. **Sophia** is its capital and is on the main line going from Constantinople to Paris.

3. **Albania** is a mountainous land not much developed. **Cattle rearing** is the most important occupation.

4. **Greece.**—This is surrounded on all sides by the sea and has typical mediterranean climate. Being warm it is best fitted to grow fruits. **Grapes** are dried and exported. **Wheat, maize, cotton and tobacco** are also grown. **Athens** is the capital but it has lost all its former glory.

The small Turkish territory in Europe has Constantinople (Stamboul) as its capital.

(8) The South-Western lands of Asia

This is one huge plateau extending from the Pamirs westwards to the Mediterranean. This may be said to be bounded by the Black Sea, the Caspian Sea, the Mediterranean Sea, the Red Sea and the Persian Gulf. This huge plateau slopes towards the middle and the lowest portion forms the Persian Gulf with the river plain of Mesopotamia or Iraq.

This region is on the calms of cancer and is in fact the continuation of the Sahara desert, though here and there, there are cultivated areas. This region is politically divided into (a) Turkey or Anatolia, (b) Syria (c) Palestine (d) Arabia (e) Mesopotamia or Iraq (f) Persia (g) Afghanistan. (h) The Caucasian Republics of Georgia, Armenia, Azerbaijan which have joined the Soviet Republic of Russia.

(a) Turkey

This is called Anatolia. It is on the borders of the Mediterranean sea, and is therefore subject to winter rains and dry summers. It has therefore the mediterranean type of climate and productions.

The country is roughly in two parts (1) The coastal lowlands (2) central plateau. The coastal lowlands therefore are fit for agriculture which is the most important occupation of the people there. Cotton, wheat, rice, tobacco, maize, raisins, figs and olives are grown.

Smyrna the biggest city on the west coast exports

large quantities of dried figs, sponges and tobacco, and is an important trading centre in that region.

2. The plateau region does not receive much rainfall and it is very cold in winter. Hence **pasture** is the only vegetation in this region. **Rearing of sheep and goats** forms an important occupation of the people. Much **wool** is exported and **woollen rugs, carpets and leather goods** are made here. **Angora**, famous for Angora goats exports their **silky wool and shawls**. It is also an important trading centre on the plateau.

During the recent war, Turkey has lost all its territory in Europe except **Constantinople** and a small piece of land round about it.

(b) Syria

South of Turkey is Syria, which is now under French Mandate. This is bordered on the west by the Mediterranean, and the Euphrates is the most important river. The coastal region is very fertile. **Fruits such as oranges, grapes, olives** are largely grown. **Mulberries** are cultivated and silk is produced. Cotton and wheat are other productions. The French have constructed good roads.

Aleppo is the chief city in the northern part and is an important railway centre. **Damascus** the chief town is noted for sword blades and roses. It is the meeting point of routes from Mesopotamia, Mecca and Palestine. **Beirut** is the port of Damascus.

(c) Palestine

This is under the British control. Marshy lands are being drained, and Eucalyptus trees are planted to drive away malaria. The coastal region with its hill

streams is fit for agriculture, and so it grows wheat, maize and tobacco. But the plateau part of it is only a grassland, and so large flocks of sheep and goats are reared. The **Jordan** is the most important river flowing into the **Dead Sea**, the lowest and the saltiest lake in the world. This is in the **Rift Valley** which continues into Africa. **Jerusalem** is the capital and it is here that Christ was crucified. **Bethlehem** is a small town which is famous as the birth place of Christ.

(d) Arabia

Being still further south, Arabia is more or less a hot and dry desert like the Sahara. But here and there there are oases. **Yemen** is one of them, and is famous for its coffee (Mokha coffee). Wheat and dates are grown in this oasis.

The Nejd Plateau has certain oases, where grass is abundant. Here the famous **Arabian horses**, and **camels** are reared.

Mecca is the capital of Arabia and is the birth place of Mohammed. It is therefore a great place of pilgrimage to the Mohammedans. **Jeddah** is its port. **Aden** belonging to Britain is a coaling station at the entrance of the Red sea. This rose in importance after the construction of the Suez Canal, which has made communication with England and Europe very easy. Aden is so dry, that drinking water is to be got from sea by distilling it. There are also wells cut in rocks to collect rain water that sometimes falls when storms occur. **Bahrein Islands** in the Persian Gulf belong to Britain. They are noted for pearl fisheries.

People.—Bedowin Arabs living in Arabia are nomadic people. **Dates** form their staple food, and **horses and camels** form their wealth.

(e) Mesopotamia (Iraq)

This may be considered to be a huge oasis in the desert region. It is watered by the Tigris and the Euphrates, and the region is one big level plain sloping towards the Persian Gulf. This region on account of its alluvial soil is very productive. But the productivity is limited for want of rainfall. Only those parts on either side of the river which can be easily irrigated are now productive. But if dams are constructed across the river and water directed to the surrounding lands by canals, there is a great possibility of this land becoming a rich agricultural area. At present wheat, rice, sugarcane, figs and grapes are grown. **Date palms** are planted along the banks of the river, and they yield rich produce. Hence in this region **agriculture** is the most important occupation.

This river basin gradually slopes upward on either side as well as to the north, and so the higher regions cannot be irrigated for want of rains. **Grass** is the only product possible. **Sheep rearing** is the most important occupation of the people. **Wool** in large quantities is exported.

Baghdad is the capital, and is situated on the Tigris, up to which river boats can easily go. It is very near the junction of the Euphrates with the Tigris, and is connected with Basra by rail. Caravan routes go from Baghdad in all directions, and it has now an airway connecting it with Cairo. Motors now run regularly between Damascus and Baghdad. Hence it has become a very important trade centre.

Basra at the head of the Persian Gulf is the chief seaport with extensive date plantations. Steamers ply up the river to Basra, a distance of about a mile from the Persian Gulf, and export enormous quantities of dates.

Mosul on the Tigris was once noted for its fine muslins. It is now a big caravan centre.

Silk weaving and leather making are other occupations, and the petroleum industry is making rapid strides.

(f) Persia

This country is between the Persian Gulf in the south and the Caspian Sea in the north, while Iraq forms the Western and Afghanistan and Beluchistan the eastern boundaries. **Elburz Mountains** with **Demavind** its highest peak form the northern edge of the central plateau. The interior of the country is a **high plateau** having extremes of temperature.

The coastland on the Caspian Sea is the most fertile part of the country, and it produces **silk, cotton, sugar, wheat and rice**. Here and there, there are underground canals, by means of which certain tracts are irrigated, and these form fertile oases in the country. **Date palms** are grown along the Persian Gulf, and dates are produced in large quantities. Fruits are also grown in many parts, and they are of excellent quality.

The central plateau on account of its extreme climate and poor rainfall can only have pasture, and this supports **camels, goats and sheep**. Hence people are engaged in **pastoral occupations**. Persian carpets and shawls are very famous.

Persia has no roads of any importance. Camels and mules are the beasts of burden, and so communication is rather difficult.

Minerals are abundant but they are not worked. **Petroleum** is obtained in large quantities from the western part of the country.

The people are Mohammadans and their language is very melodious.

Teheran on the plateau is their capital, and is the

centre where a number of caravan routes meet. **Shiraz** east of the Persian Gulf is noted for its roses and wine. **Bushire** is an important seaport town on the Persian Gulf.

(g) Afghanistan

It is only an extension of Persia as far as its physical features and climate are concerned. It is a high barren and rocky plateau. The **Kabul** a tributary of the Indus is the chief river. The **Helmand** flows into a swampy inland lake.

Pasture is the natural vegetation. Hence horses and sheep are reared. In the fertile tracts here and there, fine fruits are grown. So horses, grapes, wool, dried fruits and **asafoetida** are exported to India.

Kabul at the head of the Khaiber Pass is its capital and is of strategic importance. It is a beautiful town surrounded by gardens.

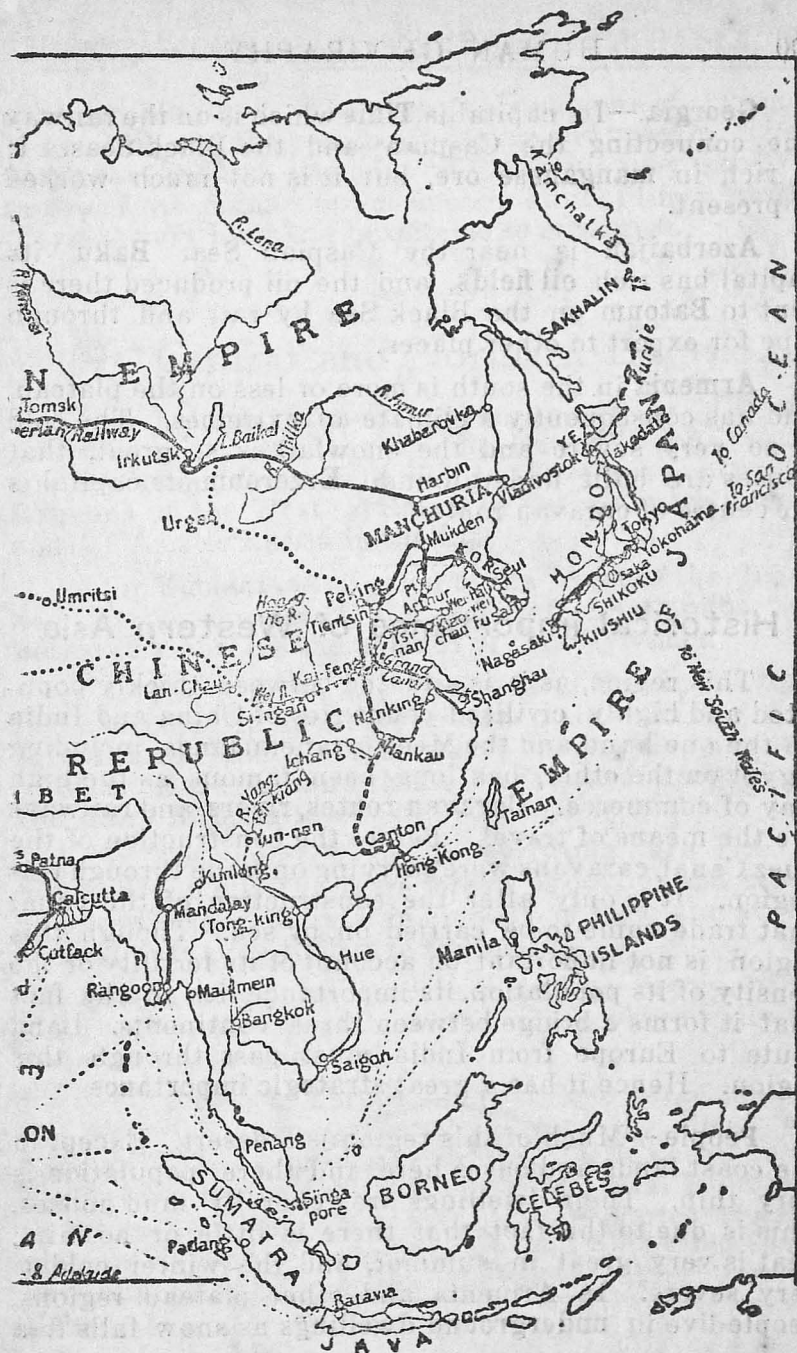
Kandahar is another important town on the route to Quetta, at the head of the Bolan Pass in **Beluchistan**.

(h) Trans-Caucasian Provinces

During the great war of 1918, certain states near the Caucasus mountains which were under the sway of Russia declared their independence and have joined the Soviet Republic of Russia. These are **Georgia**, **Azerbaijan** and **Armenia**. All the three are in the valley of the **Kur** separating the Caucasus Mountains from the plateau of Anatolia.

Owing to the protection of the Caucasus range from the cold Arctic winds the valley is warm, and so it is productive. Corn, wine and other Mediterranean fruits are grown in abundance.





Georgia.—Its capital is **Tiflis** which is on the railway line connecting the Caspian and the Black Seas. It is rich in **manganese ore**, but it is not much worked at present.

Azerbaijan is near the Caspian Sea. **Baku** its capital has rich **oil fields**, and the oil produced there is sent to **Batoum** on the Black Sea by rail and through pipe for export to other places.

Armenia in the south is more or less on the plateau, and has consequently a climate of extremes. The cold is so very severe and the snowfall is so great, that houses are built underground. **Erzeroum** its capital is the centre of caravan routes.

Historical importance of Western Asia

This region, as it is situated between thickly populated and highly civilised countries of China and India on the one hand and the Mediterranean lands including Egypt on the other, has long been famous as the high way of commerce. **Caravan routes, rivers and railways** are the means of travel. Before the construction of the Suez Canal, caravans were carrying on trade through this region. It is only after the construction of the canal that trade came to be carried on by sea. Though this region is not important on account of its fertility or the density of its population, its importance lies in the fact that it forms a bridge between three continents. Land route to Europe from India must pass through this region. Hence it has a great **strategic importance**.

People.—Much of this region is a desert. Except in the coast lands and oases here and there, population is very thin. Their dwellings are generally mud houses. This is due to the fact that there is little or no rain; heat is very great in summer, and the winter cold is very severe. In Armenia and other plateau regions, people live in **underground dwellings** as snow falls to a

considerable depth. The climate though one of extremes is healthy, and the people are strong and sturdy. They are accustomed to nomadic life, and so they are well aware of the difficulties of such a kind of life. Hence they are very kind and hospitable to strangers.

(9) Central and Northern Eurasia

This extends from Rumania, the lower Danube Basin, to the coast of the Pacific Ocean in Asia. It is one vast plain, and may be divided into three regions. (a) Rumania on the West (b) Russia in Europe in the middle and (c) Asiatic Russia in the east.

(a) Rumania is situated to the West of the Black Sea. It consists of (1) the plain of the Danube and Bessarabia and (2) the uplands of Transylvania.

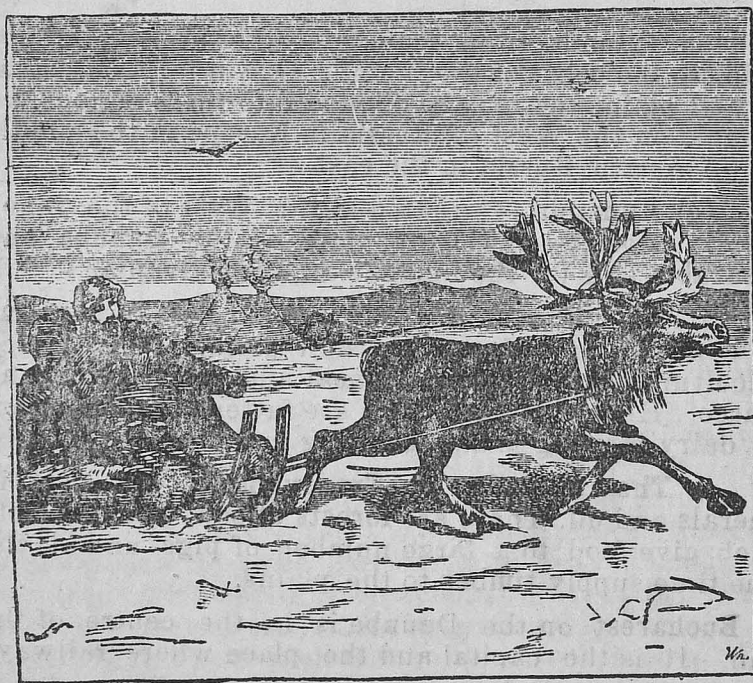
1. The plain of the Danube and Bessarabia form the continuation of the Russian plain. It is a rich agricultural land yielding wheat and maize, vine and tobacco. Here pigs and cattle are fattened upon maize and dairy farming is also growing in importance.

2. The uplands of Transylvania are rich in minerals and oil. There are forests of oak, fir and beech, which give food to a large number of pigs and at the same time supply timber to the plains.

Bucharest on the Danube is in the centre of the plain. It is the capital and the place where railways and waterways meet.

(b) Russia in Europe. This is one large plain in the east of Europe extending from the Black and Caspian Seas in the south to the Arctic ocean in the north, from Rumania in the west to the Ural Mountains in the east. The central part of the country is a low plateau, sloping north, south and west and giving rise to two important rivers the Northern Dvina and the Volga.

The country is so far inland that it does not enjoy the moderating effect of the sea. It is on the other hand subject to the biting cold winds from the north and has therefore a **climate of extremes**. The summers are short and fairly hot, but the winters are long and intensely cold so much so that many of the Russian rivers and lakes freeze in winter. Sledges are used for travelling over snow and ice.



RUSSIAN SLEDGE.

The country may be divided into six natural regions, (1) The Tundra (2) The Taiga, (3) The mixed forest south of the Taiga (4) The Black earth region (5) The steppe land in the south east (6) The Mediterranean land of **Crimea**, and the coastal region of the Black Sea.

1. The Tundra land is on the borders of the

Arctic Ocean. Nothing but moss and lichens are found here. **Reindeer** is the only domesticated animal and the people are **nomads** living a **precarious** life (vide Introduction). They cannot therefore have any permanent dwelling houses, and no towns are therefore possible in this region.

2. South of the Tundra region is the **Taiga** or the **Arctic Forest** of coniferous trees. Here the people have two occupations (1) **lumbering** and (2) **hunting** fur-bearing animals. These furs are exported to England and other European countries. In the clearings here and there, hardy grains like oats and rye are cultivated. (Vide Introduction). Even here there are no towns. **Archangel** is the most important port from which timber is exported.

3. South of the Taiga is the region of **mixed** forests of oak and beech. This region is being cleared and the land is being cultivated. **Flax** and **hemp**, **rye**, **oats** and **potatoes** and **sugar-beet** are grown here. Here and there some wheat also is grown, but the region is too cold for growing wheat on an extensive scale.

4. South of this, is the **Region of Black Earth**. It extends from Rumania in the west to the Volga on the east. This soil is made up of **fine alluvium** formed in the ice age, and is therefore very fertile. Dry parts of this region grow enormous quantities of **wheat**, while the damper regions grow **maize**. In addition to these, **barley**, **oats**, **potatoes** and **sugar-beet** are also grown. This is therefore the **most densely peopled** region and **all the people** are **agriculturists**. Wood from the northern regions is used for their cottages, while straw from their fields forms the roofing material. **Odessa** on the Black Sea is the chief port for wheat.

5. The south-east part of **Russia** near the **Caspian** Sea is very dry. It receives no rain, as it is surrounded by mountains, but it is very cold, as it is exposed on the north to the cold Arctic winds, though hot for a short period in summer. Hence it forms a **steppe** region with

a thin growth of grass. Hence sheep, goats, horses and camels are reared and the Kirghis lead a nomadic life. Wool, skins and meat are largely exported. Leather bottles, carpets, rugs are made. These together with butter are exchanged for tea and flour, brought by the caravans (Vide Introduction.)

6. The shorelands of the Black Sea enjoy a warm Mediterranean climate, and so they grow fruits of various kinds. These are exported in great quantities to Russia. Sevastopol in Crimea is an important town. It is the Russian naval station in the Black Sea.

Minerals.—Russia has much mineral wealth. Coal and Iron are found in 3 areas (1) North of Azov Sea, (2) Near the Oka in the Central part of the country (3) near the Ural Mountains. The Ural Mountains have stores of gold, silver, Platinum and other valuable metals. Valuable oil fields are near Baku as already stated. This has led to certain industries, the chief centres being Moscow and Leningrad. Textiles are manufactured from local products—wool comes from the steppe region, flax from the Baltic region, and cotton from Russian Turkistan. Iron goods are also manufactured in Tula. But the country on the whole is agricultural, and agriculture forms the chief occupation of a large percentage of the population.

As the people are mostly agriculturists, there are not many towns. Moscow in the centre of the plain is the soviet capital. A number of waterways and railways meet at this city, and so it is a big market centre. It has cotton and wool industries. The Trans-Siberian Railway starts from this city and goes to Vladivostock on the Pacific Ocean.

Leningrad, formerly called Petrograd and St. Patersburg, is at the mouth of the Neva and the former capital of Russia. It is built on piles driven into the ground and is a beautiful city.

Nishni-Novgorod at the junction of the Oka and the Volga is the biggest agricultural centre, where an

annual fair is held for nearly two months. This is the biggest fair in the world. **Astrakhan** on the Caspian Sea is a famous fishing centre. The Ural River and the Caspian Sea and the several waterways are so rich in fish that fishing is an important occupation to many people. Astrakhan is famous for sturgeon fisheries.

(c) **Asiatic Russia.**—This includes (1) Russian Turkistan and (2) Siberia.

1. **Russian Turkistan or Turan** is the land near the **Caspian and Aral Seas**. This region is surrounded on all sides except the north by mountains and so it receives practically no rain. On the other hand it is exposed to the cold northern winds. Hence the climate is very cold in winter, and as rainfall is very little, this region forms a semi-desert with only a thin growth of grass. Hence pastoral occupations are possible. Sheep, horses, camels are reared here.

There are however some rivers flowing into this region, and many of them disappear in the thirsty soil. Only two rivers **Syr Daria** and **Amu Daria** flow into the landlocked **Aral Sea**.

Where land can be irrigated by the river water, and in oases where water can be had, wheat, rice, barley, cotton, tobacco are grown. Fruits such as apples, pears, grapes etc., are also cultivated. All these are required for home consumption.

Towns in this region are situated in the fertile regions. All these are market towns. **Rugs, Persian carpets and fruits** are the local products sold. **Cloth** from Russia, **horses** from Persia go here for sale. Camel caravans carry goods from one town to the other, and this is facilitated by the **Central Asian Railway** built by Russia to connect these towns. **Merv, Bokhara, Samarkand and Tashkent** are the principal towns in this region.

(b) **Siberia.**—Siberia may be divided into the

following regions (1) The Tundra in the north. (2) The Taiga (3) The steppe lands.

These regions are similar to those in North America, but they have not been developed as well as those in America. In America the sea is not far away, and hence foreigners have easy access to the country. In America the eastern and southern parts are thickly populated, and so many people go to the central regions to find a comfortable living there. In Asia much of the southern region is a desert and a high plateau. The climate is one of extremes and the rivers though big all flow towards the Arctic ocean, and are frozen during a great part of the year. Hence development has been slow.

The construction of the **Trans Siberian Railway** has improved the condition of Siberia. This railway passes through the third region—the steppe—which is the most important. In this region, the Russians have started colonies. **Wheat, barley and rye** are grown. **Cattle rearing** is an important occupation, and **butter and cheese** are made. **Omsk** is the centre of the wheat-growing area. **Tomsk** on the railway is noted for its gold mines. **Vladivostok** is the Russian port on the Pacific, but it is ice bound for four months in the year, and so **Port Arthur** to the south of it, forms an important harbour.

(10) Chinese Republic

(a) China (b) Tibet, (c) Eastern Turkestan (d) Mongolia and (e) Manchuria form the **Chinese Republic**.

(a) China

China is the most thickly populated country in the world possessing a very ancient civilisation. For a long time it had no communication with the people outside, and they constructed a wall round China to prevent the

Tartar invasions. But recently the western nations managed to get what are called **Treaty ports**, wherein they were permitted to start their trading centres.

Look at the physical map of China. You will see that its coast is very much indented while on the west and north the land rises into a plateau of immense area, and it has therefore many suitable places for harbours. But China, being satisfied with her own natural products had no need to go elsewhere. It has not become a sea-faring nation, and so many harbours have not been constructed. When her industries increase and when she is in a position to export her manufactured products, China will perhaps construct more harbours.

Climate—China is in the temperate zone. But as the country is a huge one extending north and south, east and west, it has a variety of climate. The northern parts are very much colder on account of the cold north winds, the southern parts being comparatively warm, while the midland region will neither be so hot nor so cold. China is **one of the moonsoon lands** and so moist winds blow into it in summer. Hence the coastal regions are warm and wet, while the interior uplands are dry and cold.

The country can roughly be divided into three important river basins. (1) The Hoang-ho basin (2) the Yang-tse-kiang basin (3) the Si-kiang basin.

1. **Hoang-ho basin** is in the north, and is smaller than that of the **Yang-tse-kiang** in the middle. This river flows from a high plateau in the west, and the basin is one level plain. Hence all the silt that it brings gets deposited on its bed, which is therefore gradually rising over the surrounding surface. For this reason embankments are constructed on either side of the river to prevent it from flooding the surrounding country. In spite of this, it has changed its course so often and destroyed life and property so completely, that it is called 'China's Sorrow.' There are no large towns at all on its banks for this reason.

This river basin is covered with 'loess' a kind of fine yellow earth. The river daily carries such enormous quantities of it to the sea that the silt has made the coast very shallow, and fishermen walk on stilts for miles and miles in the sea.

This yellow silt makes the plain very fertile, but unfortunately the river has cut such deep channels in its upper course that it is difficult to water the surrounding land. However, much of the land is irrigated and enormous crops are raised to feed the teeming millions in this richest and one of the most thickly populated regions of the world. **Rice, wheat, barley and cotton** are extensively grown. **Birch, oak, beech**, are the trees, and apples are the fruits grown in this region.

2. **The Yang-tse-kiang** flows in the middle part of China. It has like Hoang-ho its source in the Tibetan plateau with a length of about 3000 miles. After a course of about 1400 miles through mountain gorge, it flows into lakes, which with the river forms navigable waterways. This region is marked by red soil, which is also very fertile. **Rice, cotton, sugarcane and tobacco** are grown. Being warmer than the northern region, rice and wheat are extensively cultivated. **Tea and bamboos** are abundant, and **mulberry trees** give rise to **silk industry**. The central part forms the granary, and the western uplands supply timber from the extensive forests.

3. South of this, separated by highlands, is the basin of the **Si-kiang**. This is a smaller region, but it is warmer than the other two. Hence rice is grown in larger quantities. **Date palms, Bananas and fine apples** are very common here.

Yunnan, the plateau where the river rises is very rich in minerals. **Tin** at present is mined and exported in large quantities.

Minerals

China is rich in minerals. Coal is abundant in China. Indeed in Shansi West China there is the largest coalfield in the world. Iron also is found near coal. Coal is now being worked along with some minerals also. But the country as a whole is still an agricultural country and the people are agriculturists.



Means of Communications

There are not many roads in China, for the Chinese do not like to waste their fertile land for dry ways, when they have waterways to serve their purpose. The

Imperial Canal extends from the **Peiho** to the mouth of the **Yang-tse-kiang**. This was constructed to save the danger of a voyage in the stormy Yellow Sea. Rivers form waterways, and small canals exist in such a large number that a net work of waterways are formed. All along the ways, lotuses and lilies are so abundant that the country is called 'The land of Flowers.'

The Chinese are so very economical in the use of water that even the drainage water is not wasted, and every inch of available land is used for cultivation. From Peking to Hankow a railway line has been constructed. **Hankow** will soon be connected with **Canton**. There will thus be one line running north to south. This will in course of time have a number of branches running west to east, and connecting some important harbours on the east.

People and Occupations

The people are yellow coloured, with oblique eyes and flat noses. They are short but sturdy. As in India most of them are agriculturists, and with them farming is an honourable occupation. Their methods of farming are more or less like those of ours, and their implements are rude, but they are experts in the matter of manuring their fields. The peelings of fruits, hair, and even rotting grass are carefully collected and made into manure. Next to agriculture, **sericulture** is an important occupation. Mulberry trees are grown everywhere and silk worms are reared from which silk is prepared.

Next to silk comes tea. It is grown almost wild in China, and it is exported to Russia in the form of 'Brick Tea.'

Chinaware-making is another industry, and **Fishing** is done in all rivers and streams and in sea. This is done with the help of trained **cormorants** which live in water and catch fish, but they cannot swallow them on account of a ring (round its neck) put by the owner.

The Chinese are excellent sailors and swimmers and swimming is as natural to them as to the fish in their rivers. Many of them live in boats only.

The people are very industrious with trading instincts ingrained in them. But they are not all educated. This is due to the fact that much time is spent in learning their alphabet. They consider that short feet are a beauty in women and so they compress their feet from childhood though it is a painful process. They have no caste distinctions, and though their language differs in different places, they are on the whole a **homogeneous** people with no communal or religious bitterness. There is therefore greater unity among them.

Towns.—Most of the towns in China are in the interior and this is due to the fact that their country is rich in natural resources and that they had not much need to trade with other countries. It is only when foreign nations entered the country for purposes of trade, coastal towns came into prominence. It is 'scarcity of food and lack of opportunity for development' that generally induces people to take to the sea as fishermen, pirates or traders.

Peking is the capital of China. It is the old Manchu capital and is situated on the **Peiho** river. It is the meeting place of three important routes (1) from Manchuria, (2) from Mongolia and (3) from Hankow and Shansi in the South and West. It is so far situated inland to be free from attacks from pirates or foreigners. But to suit modern conditions, **Tientsin** at the mouth of the Peiho has been made its port. It is an important railway centre, and the starting point of the Great Imperial Canal going to the south.

Peking is in two parts. One part is inherited by Manchur the ruling race. In this part is the **yellow city** where government officials live. The **Red city** is the dwelling place of the Emperor. This with variously

coloured roofs looks indeed very beautiful. But the second part of the Chinese city is not so charming.

Canton on the Si-kiang is an important modern town. It is one of the treaty ports, to which foreigners can freely go for purposes of trade. It is situated at a place where three rivers from the north, east and west meet. It therefore commands the products of the three river valleys, of which the western one is the most important. Vast quantities of rice, wheat, barley, bamboo, silk are sent to this place for sale and export.

This is the largest city in China. It is in three parts. (1) the Chinese City on the bank with its narrow lanes (2) another city on the river where many thousands live in boats. In this water-city floating markets and floating theatres are frequently seen (3) The third part is on land, where Europeans live in fine houses. This part has broad streets kept clean and tidy.

Near the mouth of the Si-Kiang, is **Hong Kong**, an island belonging to the British. It is not only a trading centre but an important British **Naval Station**, having an excellent harbour.

Between Peking and Canton is **Han-kou**. It is situated in a fertile plain on the Yang-tse-Kiang, to which big Ocean steamers can go. It is the centre of rice and tea growing area. It is also in the centre of iron industry recently developed. In this region, the Yang-tse-Kiang flows through big lakes which act as filters and reservoirs, so that the floods in the river are regulated by them. **Shanghai, Ning-po and Foochow** are some of the treaty ports.

Government was for a long time despotic, but it has now become a **Republic**, though stable government is not fully established.

With the inexhaustible natural resources both mineral and vegetable, with an immense population who are both strong and industrious, and with a surprisingly strong spirit of union among them, it is possible

that China may one day flood the world markets with its goods and become a formidable rival to the western industrial countries. That is why the cry of 'Yellow peril' is frequently heard.

(b) Tibet

This is the highest plateau in the world, and it is difficult to reach it, as it is bounded by high mountain ranges on the south, west and north. It is somewhat more easily reached from China on the east. Dr. Swen Hedin travelled in disguise in this country and has given us an interesting account of this country in his 'Trans-Himalayas.'

Tibet is so high that it has long and cold winters. Its summers are short. Added to this, there are frequent storms of snow which make the climate unbearably cold. Hence grass is the only possible vegetation in this region. In the sheltered valleys of the south oats and barley grow to some extent, and these form the staple food of the Tibetans. Sheep, goats, camels and yaks are the domesticated animals. The last animal gives all that they want, milk, flesh and wool. The droppings of the animal form their fuel, and it is their beast of burden.

In summer the Tibetans wear long woollen gowns tied at the waist, but in winter they wear skins with the wool turned inwards. During winter for want of pasture the yaks would be very weak, and milk becomes scarce. So in summer the natives prepare butter and preserve it for winter use, when they mix it with tea, which is their beverage.

The Tibetans are Buddhists. The Dalai Lama is their religious head, and he lives in Lhasa the capital of Tibet situated at an elevation of 12,000 ft. in the Sanpu Valley. The palace of the Dalai Lama is on a hill, and his votaries prostrate themselves even at the foot of the

hill. Lhasa is the Benares of the Buddhists, and streams of pilgrims will always be seen going there.



YAKS UP THE HIMALAYAS

(c) Eastern Turkestan

Eastern Turkestan lies to the north of Tibet. This is called Sin-kiang by the Chinese. This is a lower plateau but as it is surrounded by mountains, it receives no rain, and so it is a desert. In summer the sand becomes unbearably hot, and the winters are severely cold. The **Tarim** river which rises in the snow-clad mountains loses itself in the sandy region of **Lake Lop-nor**. Here and there, land is irrigated growing grain and fruit. But many people rear animals. **Kashgar** and **Yarkand** are the chief trading centres. Caravans over the **Karakoram** mountains meet at **Yarkand**, which is therefore an important trading centre.

(d) Mongolia

North east of Sin-kiang is Mongolia, a basin shaped plateau surrounded by mountains. There is very little rainfall in the interior. The climate is one of extremes, hot in summer and extremely cold in winter. Hence the interior is a desert 1500 miles in length, and on the edges there is thin growth of grass. The country is consequently thinly populated by the nomadic **Tartar** and **Kalmack** tribes. Cattle, horses and camels are reared. Camels and horses are the beasts of burden. The **Tartars** are skilful horsemen, and these fierce warriors invaded the plains of China so often that the Chinese constructed a huge wall 1500 miles long to prevent their invasions.

Urga is the chief town and an important caravan centre. (Vide Introduction).

(e) Manchuria

East of Mongolia is Manchuria drained by the **Amur** and its tributary the **Sungari**. The country may roughly be divided into (1) western plain and (2) the

eastern highland. In summer, there is considerable rainfall on the eastern highlands while the western plain has only a moderate rainfall. Hence the Eastern Highlands are thickly forested, **pine, oak and beech** being the most important trees. The low land of Sungari is used for purposes of **cultivation**, while the sloping lands on either side form **grasslands**.

A railway has been constructed, and so many Chinese settlers have gone to Manchuria, with the result that **millet, soya beans, rice and wheat** are grown in large quantities. The forests supply timber, but **fur** is the most important export from that region, where **hunting** forms an important occupation to many people. **Pigs** thrive well on acorns in the oak forests, and **dogs** are reared for their skins. **Mukden** is the capital, and is an important railway junction, from which a line runs to **Seoul**, the capital of **Korea**. **Dairen** on the Liao-tung peninsula has **steel works and oil factories**. These are worked with the coal mined at Mukden. There is considerable mineral wealth in the country, but it is still undeveloped as in China.

(11) Japan

This is an Island Empire consisting of nearly 3000 islands. From the **Kurile Islands** in the north to **Formosa** in the south, all the islands belong to Japan. **Korea** on the mainland also belongs to Japan and the southern portion of the **Liaotung Peninsula** has been taken on lease from China. The total area of these islands comes to 1,76,000 square miles.

Coast line—This is an island empire and the coast line must have many openings to make good harbours. Through the Bearing Strait, a cold water current flows southwards, and a warm current called the Kuro Sivo flows on the eastern side of Japan.

Relief—These islands are mountainous, and even to day there are active volcanic cones. **Fujiama** is the most famous volcano. Earthquakes are so frequent that there is a saying in Japan that every seven years one town becomes destroyed.

Climate—The climate of the northern parts will naturally be cold, central parts being warmer while the southern islands—Formosa for instance—are very warm. There is rainfall everywhere, but the eastern parts receive much more rain. The central parts being mountainous, the rivers are all very short and rapid and they bring down much silt to render the harbours more and more shallow.

Productions—The land being volcanic is very fertile, and there is ample supply of water and sunshine, and the people are clever agriculturists. Hence **rice** is grown in the plains, **tea** on the hilly tracts, and **mulberry** trees everywhere. Rice is their staple food, and tea and silk are largely exported. Beans, wheat, cotton and tobacco are also extensively grown.

Bamboo grows luxuriently everywhere. It has a thousand uses. Its seeds and tender shoots are used as food. Paper is made from its pulp. Baskets, chairs, cots and other kinds of useful articles are made from it.

Gardening is a very favourite occupation in Japan. Every house has a flower garden and of all the flowers **crysanthemum** is their favourite one. Thus the Japanese who have learned to appreciate beauty in nature are naturally very forward in manufacturing artistic lacquer ware.

In addition to the above vegetable resources, Japan has **minerals** of considerable value. **Coal** and **iron** are found plentifully in **Yezo** and **Kyushu**. **Copper** is mined and **sulphur** is abundant. Hence the Japanese have constructed railways and steamships, and Japan has become a Naval power in Asia.

People—The Japanese are a short sturdy race like the Chinese. Their loyalty to the king, and their patriotism are wonderful. They love children and so they love to play with them.

Japan is subject to frequent earthquakes, and so the houses in Japan are built of light materials, so that even if they are destroyed they can be rebuilt without much trouble and expense. A house in Japan is generally a single hall during the day, but at night it can be divided into rooms with paper screens. Furniture like chairs and tables are not found in their houses. Only a fine mat is used over which a carpet or soft grass mat is spread. At night a block of wood is used for a pillow and two or more thick sheets complete their bedding at night. Rice is their staple food. Tea is their beverage. Though fish are eaten, they are on the whole vegetarians.

They are Buddhists and there are Christians also. But differences in religious beliefs are matters of no importance. The members of the same family may profess different religions, but this does not affect their natural love or affection.

The Japanese till very recently were a conservative people without any broad outlook. They were very superstitious, and they believed that all their earthquakes were caused by some evil spirits whom they failed to propitiate. But their contact with the west opened their eyes. Their young men were sent to the western countries where they picked up Science and Scientific methods of agriculture and manufacture. Equipped with this knowledge, they returned to their native land, and introduced the necessary changes, with the result that Japan has become a model to all the Asiatic countries.

Occupations—Agriculture is an important occupation in Japan, and every inch of their fertile land is made to yield its maximum by intensive cultivation. Lacquering is another occupation. Paper making

from the bamboo pulp is another. **Matches and china ware** are also manufactured. **Fishing** is an important occupation, and fish form an important article of diet. There are several varieties of fish in the Japanese waters, and the supply of fish is so great that they are used as manure for lands.

Tokio is the capital of Japan. It is, like Calcutta, at the end of a fertile plain. Its harbour is not a good one, and it has been silted up by the mud brought down by the river. Hence **Yokohoma** is its harbour. **Tokio** is a big manufacturing centre. **Matches, lacquer ware, procelain toys and machinery** are manufactured here.

Osaka is the Venice of Japan. It is situated on a low plain at the head of a gulf. It is the meeting point of roads from east and west, and as it is on a level plain canals flow through it. It gets hydro-electric power from the water that flows down from Lake Biwa, and its moist climate makes it suitable for **spinning and weaving of cotton fabrics**. This is therefore called the **Manchester of Japan**. It is also of strategic importance and hence a big fortress with moat is constructed here.

Kyoto is an ancient capital situated in the midst of mountains. This was important when Japan was not a naval power. It is the centre of tea and **silk producing** region and 900 Buddhist temples are near it. It is also an educational centre.

Nagasaki on the west coast of **Kyushu** has a splendid harbour. It has a fertile hinterland behind it, which supplies also coal of the best quality. It has thus become an important **ship building** centre, and as it is at the entrance to the Sea of Japan, it is an important naval station of great strategic value.

Korea on the mainland forms a part of Japan. It is rather a mountainous country having a harbour, **Fusan** on the east, nearest to Japan. **Chamulpo** on the west trades with China. The mountains are rich in minerals, coal, gold and iron, but they are not developed

yet. **Mulberry** trees are grown in this region, and **silk culture** is the occupation of many families.

The western part of the peninsula is a lowland. Hence rice is grown in large quantities. Cotton, tobacco and hemp are other products, and the eastern mountain region affords **pastoral occupations**.

There are 80 millions of people in this land. These are strong and sturdy people. They honour their women and love their children. They grow their hair till marriage, and then cut the hair to be sent to China for sale. The presence of immense forests accounts for the **paper industry** in Korea.

Seoul is the capital situated in the centre of the western plains. It is a fortified city with a wall 30 ft high and 14 miles long running all round it. At sunset a warning bell is given, and all the gates are shut but these are opened only at 3 A. M. **Chamulpo** is an important harbour on the west which is connected with the capital by a railway.

Importance of Korea—The possession of Korea is of great value to Japan. As it is situated on the mainland and extends into the sea nearer to Japan, it makes Japan the mistress of the intervening sea. **Vladivostock** in the north, the terminus of the Trans Siberian Railway is an important Russian naval station but it is ice-bound in winter. But the Korean harbours are free from ice and have trading facilities with China, and Russia, while the sturdy Koreans form a valuable asset to Japan in times of war. Korea is therefore of great importance to Japan in times of peace and war.

Formosa is an island east of China. It is hilly and grows large quantities of tea on the hills, while the lowlands grow rice and sugarcane. But the most valuable product is **Camphor** obtained from camphor trees planted in this island.

Japan is frequently called the '**Britain of the East**'. Like Britain it is a group of islands, having good

harbours, and rich in coal and iron. There is a warm current as in Britain and has therefore a warm climate. It is an industrial country like Britain and possesses a navy to protect her interests in the Pacific ocean.

(12) South East Asia and the East Indies

Indo-Chinese Peninsula forms the south east part of Asia. Burma, Siam, Annam, Cambodia and Cochin China are the political divisions in it.

All these are monsoon lands. As rainfall is heavy, all the rivers carry alluvium to the lower regions and form deltas. Hence rice grows abundantly. Hills are forested with teak. Siam exports large quantities of teak. Annam grows coffee. Cochin China with its wet hot climate grows rubber and pepper vine.

Bankok the capital of the independent kingdom of Siam, is at the mouth of the Menam which is not sufficiently deep for ocean vessels to reach. **Teak** and tin are its principal exports. People live in boats and rafts.

Hanoi is the capital of **Tongking** in the north. As this is connected with Yunnan by rail it has considerable trade.

Hue is the capital of Annam. **Saigon** is the capital of Cochin China.

People—Like the Chinese the population belong to the Mongolian race. Their chief occupation is agriculture and rice is the important production. All this region is moist and hot. So they build houses on raised platforms, the lower parts being used for cattle. Bamboo is the building material, and leaves and grass are used for roofing purposes. Their clothing is scanty,

a cloth to cover their loins is all that they require. **Rice, fruits and fish** are the principal articles of diet.

There are not good roads and high wheeled carts are used. But as the waterways are many, people generally live in their boats on houses built on rafts.

The East Indies

The islands between Asia and Australia constitute the East Indies. The peninsula of Malaya near these islands may be taken as one of these. The chief islands are (1) the **Sunda Islands**, (2) **Philippine Islands** (3) **New Guinea** and (4) **Malay Peninsula**.

As these islands are on the equator, they get **convectional rains** in all seasons from the wet trade winds that meet here. There are many volcanoes in these islands; and the volcanic soil makes them extremely fertile.

Productions—Rice is cultivated in all lowlands and **Bamboo, Teak, Cocconut and Areca palms, and Spices** grow luxuriantly everywhere. **Rubber** plantations are common. The **Sago palm** yields sago which is made from the pith of the tree. **Breadfruit Tree** is another invaluable tree, four or five of which can easily support a family. **Jack fruits and Pine apples** are abundant. In fact all the tropical products are grown here.

People of this region are **Malays**, a dark brown race with a small flat nose, wide mouth and dark hair. Though short they are strong. Most of these are agriculturists, some are fishermen and a few are cannibals and are in a low state of civilization.

In this damp region which is also subject to floods, houses are built on piles driven into the ground. People live on the higher parts, which are reached by ladders. As the country is hot, there is very little need for clothing and people are satisfied with a loin cloth.

Sumatra island is famous for **Camphor**, guttapercha, and **Pepper**. **Taper** is an animal like an ass which can move its nose. **Orang-outang** a long-armed anthropoid ape is peculiar to Sumatra and Borneo. **Coffee**, tobacco and pepper are the chief exports.

Java—The soil of the island is very fertile, **Rice**, **Sugar**, **Coffee**, **Pepper**, tobacco and cinchona are produced in great quantities. **Batavia** is its capital noted for its oranges.

Borneo—This is like Java. The northern part grows **Sago**, and rattan cane. **Camphor** and tobacco are the important products. **Sarawak** is the chief town under an English Raja. **Celebes** and **Molucas** are noted for nutmegs, mace and cloves.

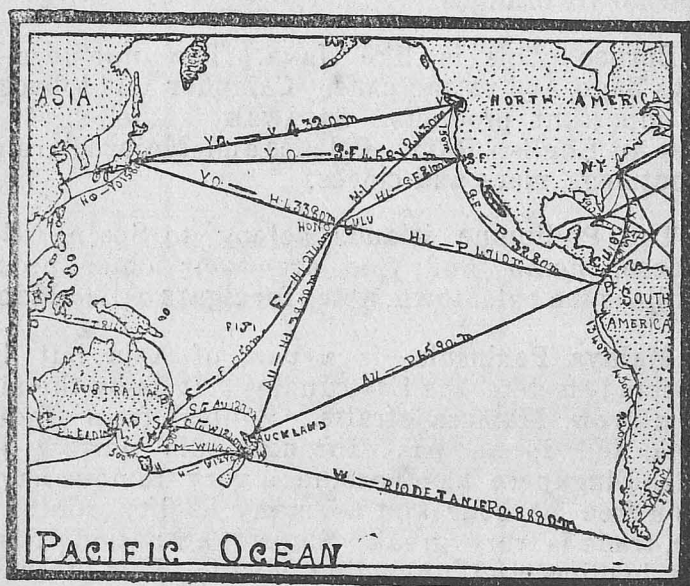
The **Philippine** islands belong to Spain. **Sugar**, **Tobacco**, hemp and rice are their chief products. **Manilla** is the chief town, noted for cigars called **Manillas**.

Malaya Peninsula—is a part of Asia but in all respects it is like the East Indies. It is by the side of the narrow **Malacca** straits. Routes from India to China and Japan pass through this narrow strait. Hence **Singapore** has become a very famous harbour. It is a free harbour and as many as fifty routes meet here, trade is very great. Ships of all nationalities are here loading and unloading goods. This harbour is under the control of the English, and it is a place of great strategic importance.

(13) Islands of the Pacific

In addition to the East Indies studied in the previous chapter, there are many islands in the broad Pacific ocean. These island groups are called by the general name of **Oceania**.

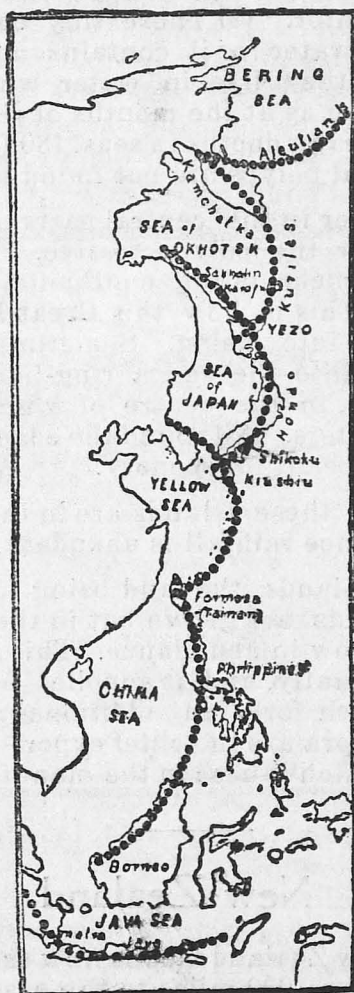
The Pacific ocean extends from the Bearing Strait in the north to the Antarctic ocean in the south, from Americas on the east to Asia and Australia on the west. This area is roughly 75 million square miles, nearly a third of the water surface of the globe. Its average depth is about $21\frac{1}{2}$ miles. There are in this ocean here and there submerged plateaus and high mountains. On the latter are most of the islands. These islands are of two kinds (1) volcanic and (2) of coral formation.



(1) Volcanic Islands

Look carefully at the map and notice on the western margin of the ocean, island chains extending north to south. **Aleutian, Kurile, Japan and Philippine Islands** form a chain east of Asia. These enclose between themselves and Asia deep seas, which have from ancient times been useful for navigation and fishing. **Bering Sea, Okhotsk Sea, Japan Sea and Yellow Sea** are of this kind. These enabled China and Japan to take to the sea in early times. All these island festoons are

Volcanic in nature, and hence they are very fertile and fairly well populated.



THE ISLAND FISTONS OF ASIA.

The East Indies which form part of the volcanic girdle have already been referred to.

Besides these volcanic islands, there are Coral Islands all over the middle region.

Certain conditions are necessary for the formation of coral islands. (1) Water should be warm and so coral islands cannot be formed beyond 30° north and south of the Equator. (2) These tiny coral polyps can not live in fresh water for it contains no food for them. (3) Neither can they live in water which is calm or where silt is found as at the mouths of rivers. (4) They cannot live at greater depths in seas. 180 feet is the depth below which coral polyps are not found to exist.

Origin—Water in the central parts of the Pacific is warm enough for the polyps to live. These begin to build on sunken rocks on the continental shelf, till the reef comes up. This is how the **Great Barrier Reef** of Australia came into being. Sometimes when these coral reefs sink into the sea, a ring-like islands called **Atolls** are formed, in the centre of which there will be sea with calm waters. All round the edges are cocoanut palms forming a beautiful scenery.

Climate—All these islands are in the midst of the warm sea and hence rainfall is abundant.

In volcanic islands, the land being fertile, all kinds of tropical products are grown but in the coral islands only cocoanuts grow in abundance. This is the only tree that grows luxuriantly, and it supplies all the needs of the islanders. **Fish** form an additional article of diet. **Cocoanuts** and **copra** are the chief exports. From these, oil is prepared, which is used in the manufacture of soap.

New Zealand

The word New Zealand means new sea land. These islands are nearly a 1000 miles to the east of Australia, and the Dutch gave this name to them when they were newly discovered by them.

New Zealand is made up of three islands. (1) **The North Island**, (2) **the South Island** and (3) **the Stewart**

Island. All these are in the temperate region and are mountainous. The mountains in the South Island are to the west, while in the North Island they are more to the east. These are called the **Southern Alps**. The mountains are snow-clad, with glaciers descending from them, and the scenery is therefore very grand.

The North Island is an active volcanic region, and from the volcanoes there, molten lava, steam and earth will be coming up. There are many hot springs also. Some of them are used for bathing, and in some they cook their meat. This hot mineral water is a good remedy for skin diseases, and so many patients go there for treatment.

As the western coasts of these islands are exposed to the brave Westerlies, there are no good harbours on that side. There are some on the south but the hinterland being mountainous, they have not grown in importance. It is the sheltered east coast that has good harbours.

Climate—These islands have a temperate climate and they have rainfall throughout the year. Hence famines are unknown. Wheat, barley and Oats grow in abundance, and cattle are reared in the plains. The plain of Canterbury has wheat fields and orchards. In the mountains and forests, **Kauri pine** is the most valuable tree, yielding timber and gum from which a kind of varnish is made. On the mountain slopes where the air is cool and clear, sheep are reared in their thousands and these supply wool and frozen meat, which are exported to England. Butter and cheese are other exports from the plains.

Wellington is the capital having an excellent harbour. As this is subject to frequent earthquakes, all houses are made of timber.

Auckland is the biggest and finest town. **Dunedin** is the chief commercial town, with valuable gold mines in its neighbourhood.

People.—The original inhabitants are the **Maoris**.

They belong to the Malay race. They are tall, strong and intelligent people. After the island became an English Colony, it developed so quickly that it is in some respects more advanced than the mother country. Women there have franchise and are eligible for pensionable posts in the government service. European settlers now outnumber the native population, who are also making progress.

The **Fiji islands**, are Volcanic islands more than 200 in number. All kinds of tropical products grow here. But **rice, rubber, sugar and cocoanuts** are the most important products. **Surea** is the chief town having a good natural harbour.

Hawaiian Islands are of Volcanic origin. **Mouna Kea**, and **Mouna Loa** are the largest Volcanoes in the world. **Rice, Sugarcane, pine apples** are the chief products. This is the halting station for steamers going from America to Asia and Australia through the Panama canal. **Honolulu** is the capital and the chief port in the Pacific ocean.

There are many other islands in the Pacific, too numerous to be mentioned.

People living in these islands belong to two tribes, **Melanesians**, and **Polynesians**. The former are shorter and darker in complexion, while the latter are taller and of brown colour. The great fertility of these islands attracted the industrial nations of Europe and they have occupied them. Some missionaries are working amidst them with a view to civilize them. Some of the people have become Christians but along with these civilizing influences, drinking and other evils have crept in. Whether these islanders become better or worse are matters which time alone can solve. But the richness of the soil and the healthy equable climate are such great attractive features that there is keen rivalry among the European nations as to who should possess them.

THE INDIAN EMPIRE

The land in which we live is now called India. Formerly it was called **Bharata Varsha**. This country extends from Afghanistan on the West to Siam on the east, from the Himalayas on the north to the Indian Ocean in the south.

Ours is a great country. It may not be the biggest country in the world in point of extent and population, but it is in no way behind many of the countries in the world in respect of natural wealth. This is no doubt a part of Asia, but considering its position and boundaries, the nature of its climate and its area, and the varieties of languages and customs, it is apt to be considered to be a small continent. In area it is one half of Australia and in population it is bigger than Africa. Its boundaries are clear and definite, on the north we have the mighty **Himalayas**, the abode of Gods, with its grand scenery of snow-covered peaks and glaciers, and with its branches extending east and west to form practically a huge rampart on the north. On the south, east and west, the Indian ocean forms a deep moat. The variety of its climate is indeed astonishing. From the tropical regions of the south to the polar cold of the Himalayan peaks, from the dry desert of the Thar to the hot humid climate of Assam and Bengal, we have a variety of climate, with the corresponding variety in animal and vegetable life that is found on the globe. India is thus an epitome of the world.

In spite of this variety in nature and the variety in dress, customs and languages, there is an underlying

unity of ideas and ideals. The high ideals of Hinduism appeal to all the people of the land. The Ramayana, the Mahabharata and the Bhagavad Gita are sources of inspiration to the Hindu India from the Himalayas to Cape Comorin, from Assam on the east to the Punjab and Sind on the west. That this is so is illustrated by the never-ending streams of pilgrims going to and coming from places of pilgrimage like Badri Nath, Benares, Gaya, Tirupathi and Rameswaram.

This Unity is not however fully realised as yet by all the Hindus, not to speak of the other religionists who have made India their home, and a time will come when the brotherhood of Indians will be realised by all before the attainment of that Universal Brotherhood which is the aim of all true religions.

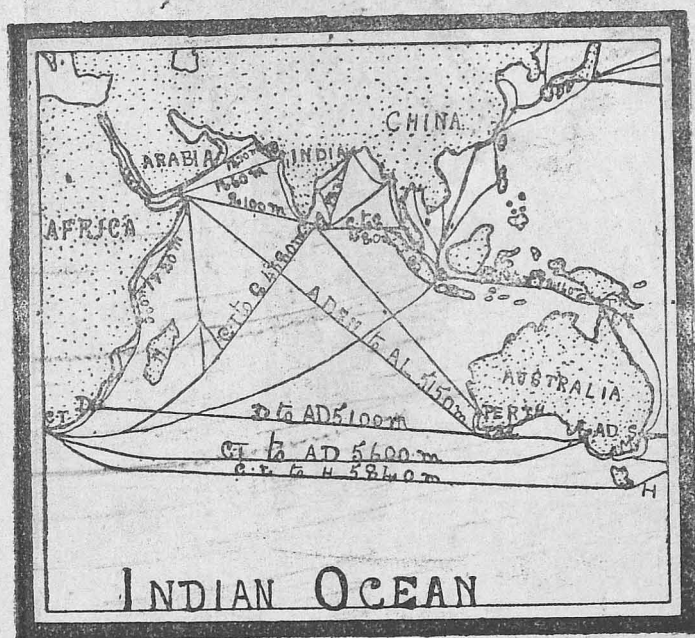
1. Position, Relief, Soils, etc.

Position.—If we look at a map, we can see how advantageously India is situated. It occupies the central position in southern Asia, at the head of the Indian ocean. It can trade with Africa and Europe on the one hand, and with Australia, Eastern Asia, China and Japan on the other. Its harbours are always free. Hence if India increases its output of natural products and succeeds in converting the raw products into finished goods, it can establish trade relationship with all the countries round the Indian ocean, not to speak of Europe and America which after all are not at a very great distance.

Surroundings.—India is surrounded on the three sides by the sea. Its coast line is about 5000 miles and yet there are only four harbours. This is no doubt a great disadvantage, but in these days of engineering, a number of artificial harbours can be easily constructed; railways can be multiplied and canals dug to

improve the means of communications, and thus help trade both internal and external.

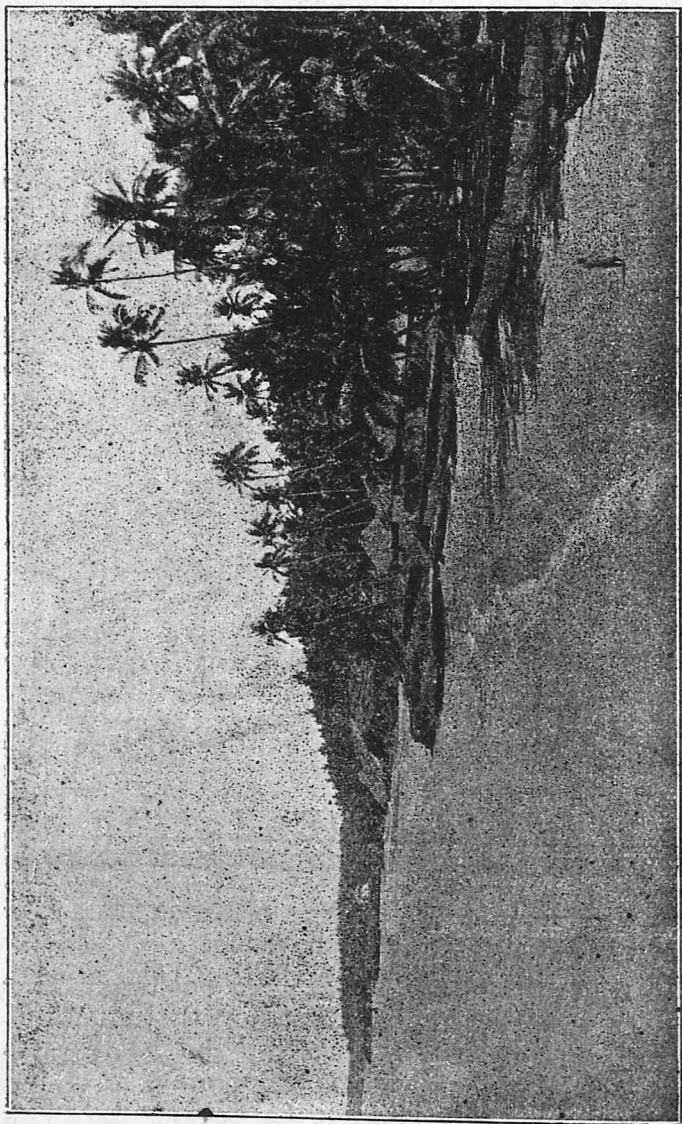
On the western side, where the Indus joins the sea, there is an artificial harbour at some distance from its mouth. This is **Karachi**. It is the nearest port to England and Europe, and the hinterland—the Punjab—produces enormous quantities of wheat and cotton, which are exported through this harbour.



The next opening is the **Ran of Kutch**, but it is too shallow to be of any use as a harbour.

The **Gulf of Cambay** is the next opening. Though it is not now a good harbour, **Surat** at the mouth of the **Tapti** was once an important port. But its importance declined after Bombay became prominent.

The **Harbour of Bombay** is indeed the best in India. This is situated behind an island which forms a natural protection to the inner sea. It is the nearest safe



MALABAR COAST.

harbour to England, and is more or less the central port of India. Besides, it has a rich cotton producing area behind it, and so it has become an important commercial centre with a number of mills and factories, which make one think that it is an industrial town of the west.

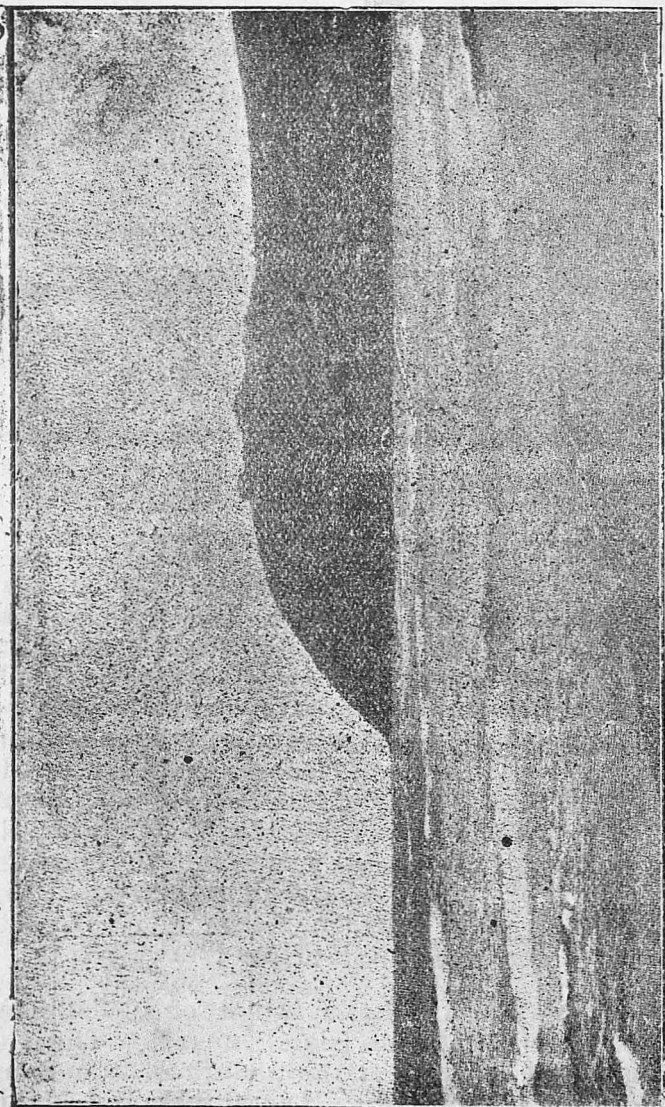
Goa and Calicut are the next ports. But they are not good harbours. There is an attempt to improve the harbour at Calicut. There are openings in the coast line farther south, called the **Back waters of Cochin and Malabar**. These are shallow openings of the sea and they are useful for small boats which travel all along the west coast avoiding the rough Arabian Sea. All this region is full of cocoanut trees which give **copra**, an important article of export.

Further south is the Gulf of Mannar, and the narrow **Palk's strait** with Rama's bridge. This is too shallow for big ocean steamers, which have therefore to go round about Ceylon.

Tuticorin is the next port from which Tamil coolies go to Ceylon to work in the **Tea and Rubber** plantations. **Pulicat** and **Chilka** lakes are the shallow arms of the sea. Near **Vizagapatam** the sea is deep near the shore as a spur of the Eastern Ghats—the **Dolphin's Nose**--juts out into the sea. Here a harbour is being constructed, which when complete, will tap the resources of the forest region in the Vizagapatam district and the manganese ore of the Central Provinces. **Diamond Harbour** is at the mouth of the Hugli. As it is silting up, a dredger is always at work and the passage to Calcutta is kept clear. The **Gulf of Martaban** is the next opening, and **Rangoon** harbour is important, situated as it is at the mouth of the Irrawady.

The coast line of India is not only deficient in openings, but it has also no islands near it. The islands of **Bombay** and **Salsette** at the mouth of the Bombay Harbour make it a safe one. **Laccadives**, and **Maldives**

are coral islands situated away from the coast. These are famous for cocoanuts. The island of Rameswaram in



DOLPHIN'S NOSE.

the south is an important place of pilgrimage. **Ceylon** to the south of India is famous as the abode of Ravana. It is near this island that there are **pearl fisheries**. **Diamond Island** is near the mouth of the Ganges and the **Andamans** away from the coast, formed the Penal Settlement.

In the Bay of Bengal and the Arabian Sea there are ocean drifts. These drifts flow along the coast in the direction of the monsoons and deposit sand at the mouth of harbours in the shape of sandbars.

From what has been said, it becomes clear that the conditions which induce people to maritime activities viz., natural harbours, islands near the coast, do not exist and so the Indians did not take to the sea. More than these, the people in virtue of the country's fertility and its natural resources—animal, vegetable and mineral—could lead a kind of contented life and were not, like the Greeks and other maritime people, compelled for want of sufficient food to eat, to eke out their livelihood by taking to the sea early in their life as fishermen, pirates, sailors and traders.

Relief

India can be divided into the following natural regions. 1. A high mountain region on the north. This is the Himalayan region 2. South of it is the Great Indo-Gangetic Basin. 3. South of this is the triangular Deccan Tableland bounded on the east by the **Eastern Ghats**, on the west by the **Western Ghats**, and on the north by the **Vindhya and Satpura mountains** extending as far as the Kaimur Hills in Bengal. 4. The east coast plain on the east. 5. The West Coast Plain on the west 6. Burma 7. Ceylon.

Soils and Minerals

Every one knows that soil is not the same everywhere. One place is rocky, another is sandy, a third is clayey and a fourth is full of salt earth. In the same way India has different kinds of soil. The following are the general kinds.

1. The Himalayas on the north is a region of newly formed fold mountains, buttressing the ancient plateau of Tibet. Before these folds were formed the land was under the sea. It was only after these fold mountains were formed that the Ganges river and its basin came into existence. This region therefore consists of a hard rocky soil.

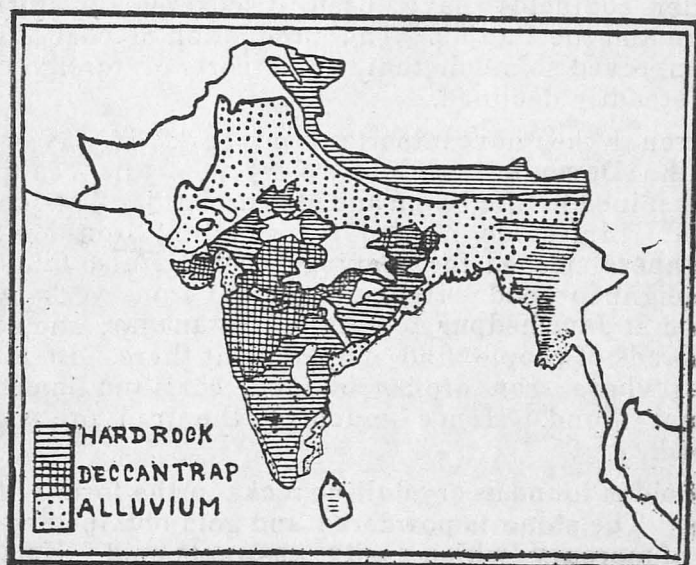
2. The Indo-Gangetic Basin may truly be said to be the 'Gift of the Himalays,' for the **alluvium** that is deposited to a depth of many feet is brought down by the rivers from the Himalayas. This is the richest soil and if there is sufficient water-supply, all kinds of crops can be grown abundantly. Similar alluvial soil is found in the coast strips particularly in the **deltaic tracts** of the rivers.

(3) The Deccan plateau existed long before the Himalayas came into existence. Hence this region has undergone denudation from a very long time. So the soil is not deep, the lower layers being one of **Hard Rock**. In depressions and valleys the soil is deep. If the soil is mixed up with sand, water easily sinks into it. As it is shallow, the water drains away very quickly and the soil dries up very soon.

(4) To the north west of this region we find another kind of soil commonly known as the **Black cotton-soil**. In former geological times this was a region of volcanic activity. The lava that came out of the volcanoes spread all over here. This lava underwent decomposition later on, and is now converted into **black clayey soil**. This region is called the **Deccan Trap**. All the

rain that falls on this soil sinks into it and remains there for a long time. Hence though the upper layers become hard and broken by the terrible heat of the sun, the interior of the soil retains enough of moisture to enable cotton, cholam and other dry crops to thrive well. It is this soil that accounts for the wealth of the Deccan region.

5. On the coasts there is the Sandy soil. This with the everblowing sea breeze is quite good for cocoanut trees, and they thrive well without much care being bestowed upon them.



Minerals

Minerals are as a rule found in older rocks. Hence the Himalayan region is not known to contain minerals. Neither is the Gangetic basin expected to be rich in minerals for it is only alluvial in its formation. Hence the minerals are limited to the old denuded block plateau of the Deccan, Burma and the Punjab.

Coal is a useful mineral. It is the petrified remains of forests that existed in former ages. When the forest land subsided and soil accumulated on it, the trees that were in the forest were compressed by the weight of the accumulated layers of earth, and the internal heat of the earth charred them. Thus coal came to be formed. Coal is therefore the remains of ancient forests preserved in the bowels of the earth. It is mined in the following regions. 1. **Singareni** in the Nizam's State, 2. **Raniganj, Jherria, and Giridhi** in Bengal, Bihar and Orissa. This is the richest coalfield and supplies four fifths of the coal mined in India. Smaller coalfields have been discovered in Burma, Assam and the Punjab. The production of coal of late has improved so much that the imports of foreign coal have steadily declined.

Iron is the next important mineral. It was found near the **Damodar coalfield**. Very near this coalfield, iron is mined in Singbhum and Mayurbhanja : districts of Orissa. Limestone needed for smelting iron ore and **Manganese** needed for making steel are also found in the neighbourhood. Hence steel and iron works were started at **Jamshedpur** now called **Tatanagar**, and some thousands of people find employment there. In many places where iron ore is obtained, coal and limestone are not found. Hence much of the iron ore is left unused.

Gold is found as crystalline rocks in the form of thin veins. The stone is powdered and gold obtained by the help of mercury which easily abstracts gold. **Kolar** in the Mysore province produces gold and many Italian miners are employed in the mines.

Petroleum is obtained from 1. the wells in Burma. 2. Rawalpindi in the Punjab 3. Assam.

The oil wells in Burma are the richest in India.

Salt is obtained by 1. evaporation from sea water and from the salt water of the Sambar Lake. 2. It is mined also in the **Salt Range** in the Punjab. Though mining

has been going on since the days of Akbar, there is even now a seam of 1000 feet in thickness. 3. England also exports some salt from Cheshire. It is used as ballast in the ships that bring manufactured goods to India. At present the production of salt is a government monopoly, and its local output is therefore regulated by the Government. Much of this imported rock salt is used in Bengal which is not able to manufacture salt from the sea because of its humid climate with heavy rain and the marshy alluvial nature of the coastal region.

Mica is mined in the Nellore District of the Madras Presidency, and Ganya and Haziribagh districts in Bihar and orissa. It is used in place of glass, which melts at high temperatures.

Manganese is produced in large quantities in the Central Provinces, and this will find an easy outlet through the Vizagapatam harbour, when it is completed.

(2) Climate

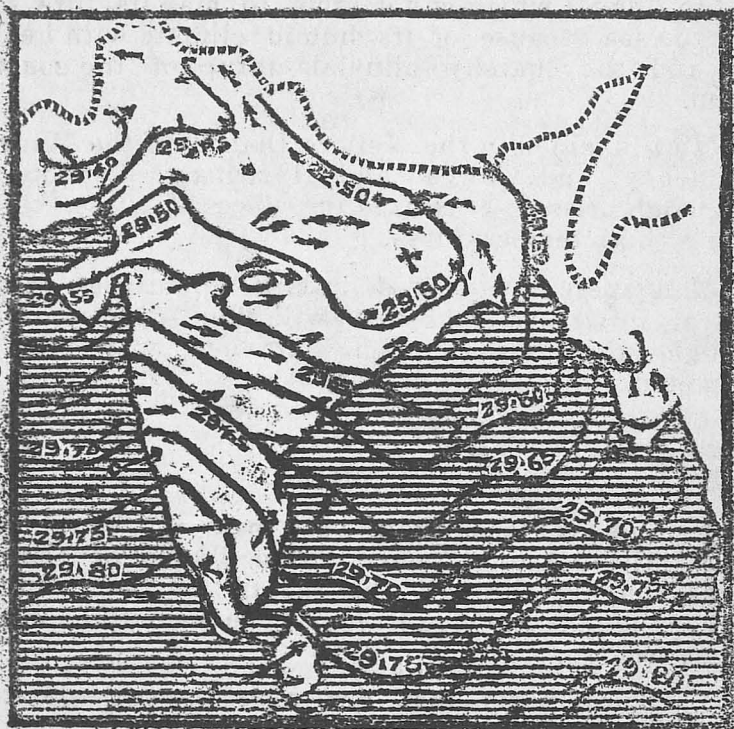
1. India extends from very near the equator (6° North latitude) to 35° north. The Tropic of Cancer passes roughly through the middle of the country. Hence much of the country may be said to be in the tropical region.

2. Those parts that are near the sea enjoy the moderating influence of it. Thus Ceylon which is surrounded by sea has an equable climate and so are Bombay and places on the west coast. The Punjab for instance does not enjoy the benefit of the sea and has therefore a climate of extremes.

3. Altitude is another consideration. The province of Mysore for instance being on the high plateau of the Deccan has a cooler climate than the coastal plains. For the same reason the Indo-Gangetic plain though

farther north has a very hot climate in summer and a cold climate in winter. The states of Kashmir, Nepal and Bhutan on account of their elevation have a very cool climate, and the Himalayas are always covered with snow.

Let us consider the summer conditions of India.



SUMMER CONDITIONS.

The sun now directly shines on the Tropic of Cancer and so India receives the vertical rays of the sun. As land gets heated more quickly than water, India becomes hotter than the Indian ocean. The air on land gets heated and becomes lighter. Hence a region of low pressure is formed as the following diagram shows.

Therefore winds from the sea rush into this region of low pressure. The S. E. Trades flowing in the southern hemisphere move a little northward. They cross the equator and being drawn into this low pressure turn eastward (as they blow from a region of higher velocity to one of a lower velocity) and blow as the S. W. Monsoon over the Arabian Sea and the Bay of Bengal. The terrific heat of April and May sets up this monsoon which flows steadily till about the middle of October, giving rainfall to the whole of India.

Let us consider the distribution of rainfall in this season.

This Monsoon may be divided into two branches (1) The Arabian Sea branch (2) The Bay of Bengal branch.

1. The Arabian Sea Monsoon blows in a south-westerly direction. One part blows over the Indus Valley near Karachi, not powerfully of course. As the land there is one level plain, there is nothing there to bring the moist monsoon wind into a cooler region. Hence the moist wind blows over the **Sind Desert** and instead of being cooled to give rain there, it gets heated by the rising hot air in the region, and goes directly into the Punjab where the moisture is deposited on the elevated regions. Thus Sind does not get any rainfall, though to the east the Aravalli mountains get good rainfall.

(b) That part of this branch which passes between the Satpura and Vindhya mountains blows steadily inward as if through a funnel and gives rainfall on both the mountain slopes and extends as far as the Kaimur Hills on the east. Thus Central India gets good rainfall, and famines there are of very rare occurrence.

(c) The third part of the monsoon affects the Malabar and the Konkan coasts. There are the Western Ghats on the way. The cool moist winds being driven upwards in crossing the Ghats go to a cooler region.

Moisture in them is condensed and it falls as rain. Thus the Western Ghats have very heavy rain, while the Deccan plateau to the east of the Ghats is comparatively dry. This part is said to be within the rain-shadow of the Western Ghats. For this reason Cochin gets 115 inches of rain, while Bangalore to the east of the Ghats gets only 35 inches.—(Vide the tabular statement of rainfall.)

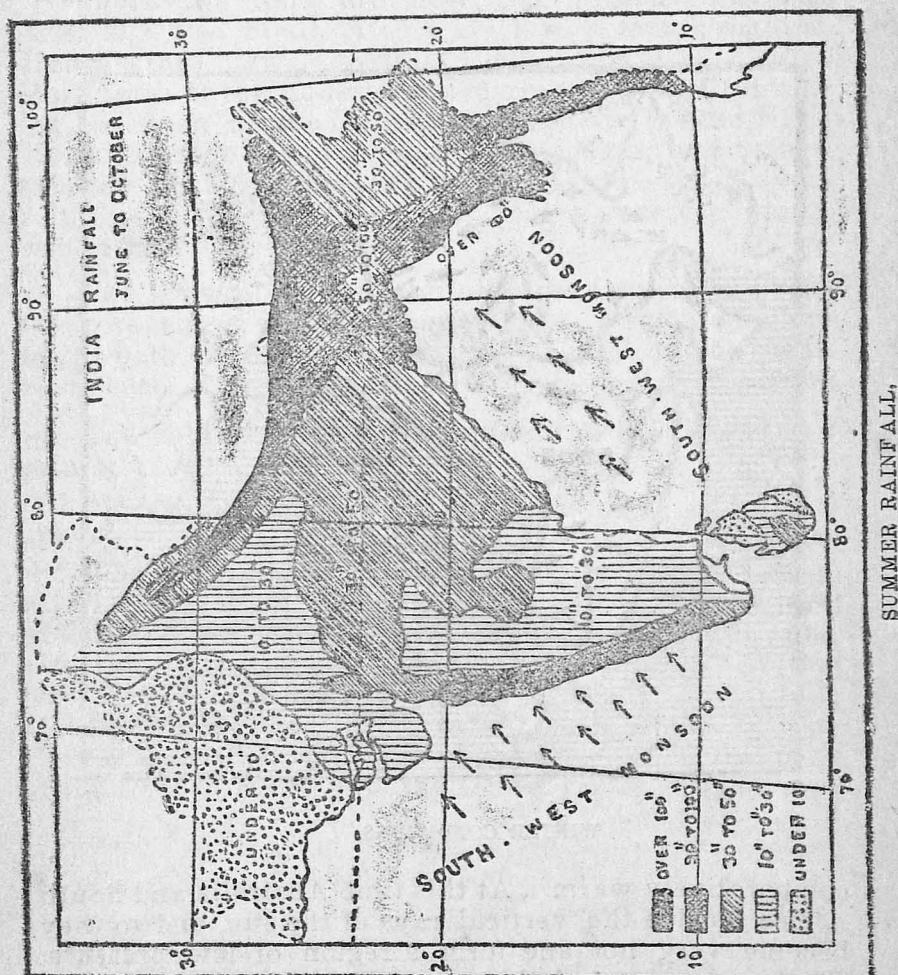
Ceylon gets the full benefit of this monsoon, and the west coast has a very heavy rainfall.

2. **The Bay of Bengal Branch** of the monsoon blows over the Bay of Bengal picking up more moisture as it goes over it. It blows over the coast of **Arakan** and **Tenasserim** and rising upwards over the hilly region gives a heavy rainfall (C. F. on the Malabar coast). Some part of the monsoon goes up the **Irravady** carrying rain into the interior, but as it goes more and more inland the rainfall becomes less and less.

Another part of the monsoon enters the region between Chittagong and Puri, coming in contact with the Eastern Himalayas and the Hills of Assam. Part of this moisture-bearing wind blows up the Assam Valley giving rain on both sides of it. Another part rises over the **Kasi Hills** and gives heavy rainfall there. **Cherrapunji** situated on these hills has the greatest rainfall in the world (458 inches). But the major part of the monsoon wind unable to cross the high Himalayas turns westward, and blows up the Gangetic Valley up to Kashmir carrying moisture with it and giving less and less rainfall as it goes more and more to the west. This is because the winds get drier and drier. Thus at **Peshawar** the rainfall is only 13 inches; **Patna** has 42 inches; **Calcutta** has 65 inches.

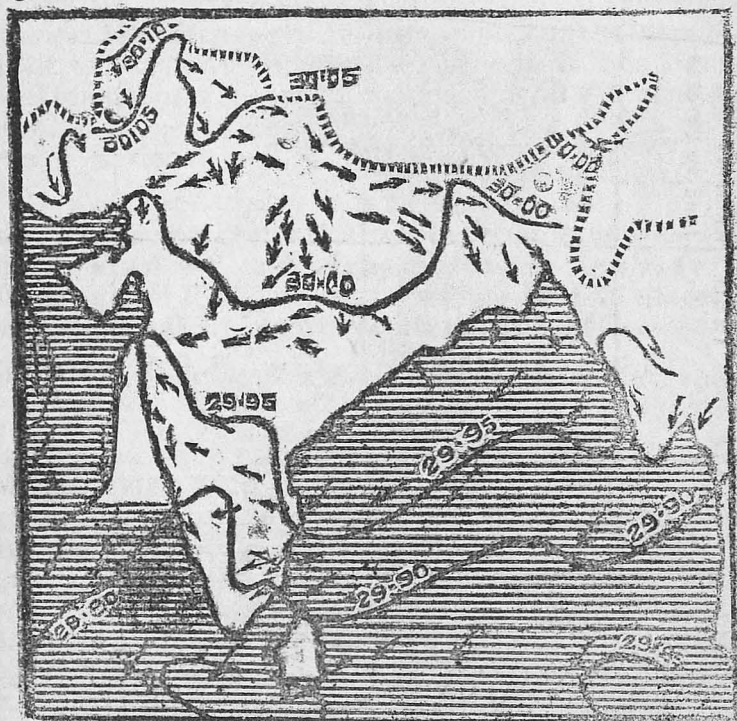
In this season, the Ganges basin experiences easterly winds and all the southern spurs of the Himalayas get heavy rainfall. The monsoon no doubt crosses the Himalayas but by that time, all the moisture in the wind would have been deposited as snow on the tops,

and the wind that crosses the mountains would therefore be very dry. Hence Tibet gets no rainfall, and **Leh** on the other side of the Himalayas has only 2.7 inches of rain in the year. The following diagram indicates the distribution of rainfall in the summer season.



Winter Monsoon

As the sun moves southwards, the heat received by India becomes less and less till in October, when the sun reaches the **Tropic of Capricorn** it becomes the least. The land becomes rapidly cooled and the sea becomes



WINTER CONDITIONS.

comparatively warm. At this time Australia and South Africa receive the vertical rays of the sun, and so they become very hot and form a region of low pressure. The monsoon wind that was blowing powerfully in summer becomes gradually weaker and weaker until at

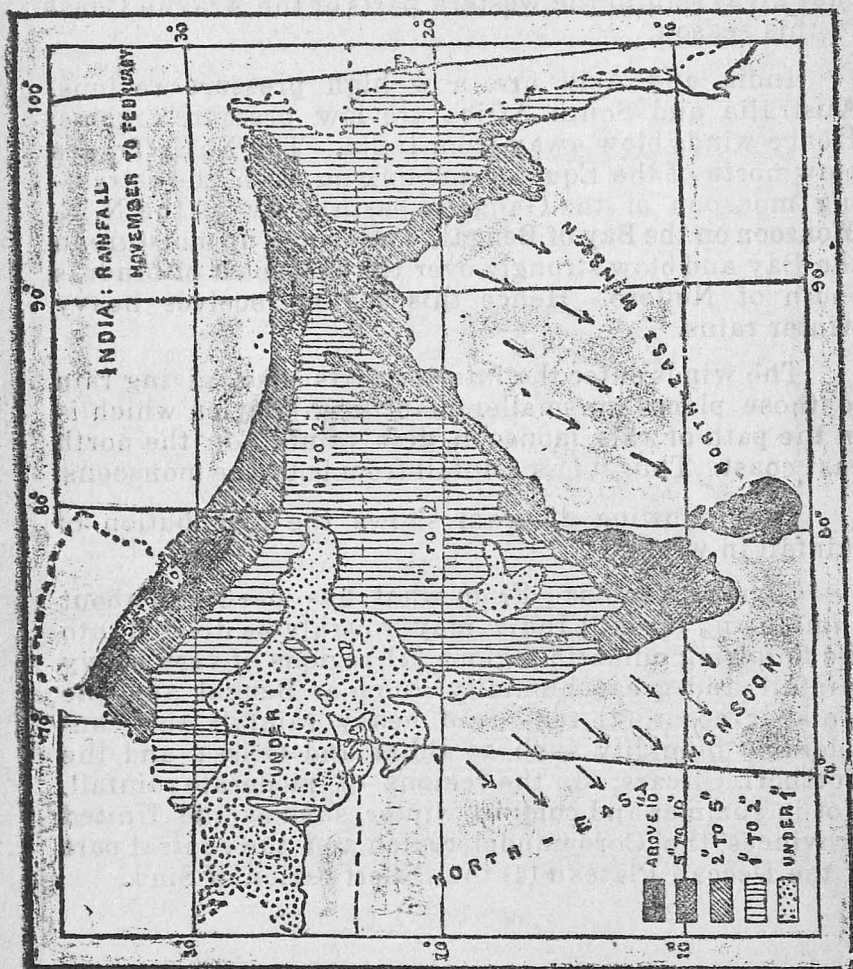
last the monsoon wind instead of proceeding **onward up the Ganges Valley**, turns backwards and blows eastward as the **retreating monsoon**. It is this **retreating monsoon** that gives rain to the western parts of the Arakan Coast in this season.

India and Asia are now **high pressure regions**, Australia and South Africa are **low pressure regions**. Hence winds blow away from India. The N. E. Trades blow north of the Equator and mixing with the retreating monsoon of the Gangetic basin blow as the **N. E. Monsoon on the Bay of Bengal**. These pick up moisture in the Bay and blow strongly over the east coast of Madras south of Nellore. Hence this region receives heavy winter rains.

The winds enter the interior parts also, giving rain to those places in smaller quantities. Ceylon which is in the path of this monsoon gets rainfall on the north east coast. Thus it has rainfall from both the monsoons.

The following diagram shows the distribution of rainfall in winter.

Climatic Regions—From what has been said about climate and rainfall India may roughly be divided into the following climatic regions (1) regions of very heavy rainfall and great humidity—such as Bengal and the Malabar coast (2) regions of heavy rainfall and considerable humidity such as Bihar and Orissa and the Northern Circars. 3. the regions of moderate rainfall. Hot in summer and cold in winter such as the United Provinces, the Coromandel region and the central part of the Deccan Plateau (4) the Desert region of Sind.



WINTER RAINFALL.

TABLE OF AVERAGE MONTHLY RAINFALL

Name.	Height in feet.	1	2	3	4	5	6	7	8	9	10	11	12	Total.
Karachi.	49	0.6	0.3	0.2	0.2	0.1	0.2	2.1	2.8	0.9	1.0	0.1	0.2	7.8
Haiderabad.	68	0.2	0.1	0.1	0.2	0.1	0.4	2.8	3.2	0.4	...	0.1	...	8.0
Quetta	5,501	1.6	1.6	2.4	1.3	0.5	0.1	0.9	0.6	0.2	0.1	...	0.4	9.9
Jacobabad	186	0.2	0.2	0.5	0.2	0.1	0.1	1.4	1.4	0.3	...	0.1	0.1	4.4
Leh	11,503	0.2	0.2	0.2	0.1	0.1	1.2	0.5	0.4	0.2	0.4	...	0.1	2.7
Peshawar	1,110	1.6	1.2	1.8	2.0	0.7	0.3	1.7	2.0	0.8	0.2	0.6	0.5	13.5
Murre	6,344	2.8	3.4	3.7	4.3	3.8	2.4	11.0	14.0	6.1	0.2	1.7	1.2	56.8
Lahore	732	0.7	1.1	1.1	0.6	0.9	1.8	7.4	4.6	3.4	0.6	0.2	0.5	21.9
Simla	6,958	2.8	2.7	3.0	2.8	4.7	7.2	19.3	18.1		1.4	0.2	1.1	70.1
Delhi	718	1.0	0.5	0.7	0.4	0.7	3.4	8.4	6.9	4.5	0.5	0.1	0.4	27.6
Abu	3,045	0.2	0.4	0.1	...	1.0	5.1	22.2	22.5	9.1	2.1	0.2	0.2	63.1
Lucknow	369	0.8	0.3	0.0	0.1	0.9	5.0	10.8	10.4	7.1	1.4	...	0.5	37.6
Allahabad	307	0.9	0.4	0.4	0.2	0.3	4.6	11.9	9.6	6.7	2.3	0.2	0.2	37.6
Patna	179	0.7	0.5	0.3	0.3	1.6	7.1	11.0	10.1	7.9	2.0	0.2	0.2	42.3
Agra	555	0.5	0.3	0.2	0.2	0.7	2.9	9.8	7.6	2.3	0.3	...	0.2	26.2

TABLE OF AVERAGE MONTHLY RAINFALL

Name.	Height in feet.	1	2	3	4	5	6	7	8	9	10	11	12	Total.
Darjiling	6,912	0·7	1·2	2·4	3·7	7·1	24·1	30·5	26·0	17·8	16·4	0·2	0·2	120·3
Calcutta	18	0·4	1·0	1·3	2·3	5·9	11·8	13·0	13·9	10·0	5·4	0·6	0·3	65·5
Chittagong	87	0·4	1·2	1·9	4·6	0·2	23·8	22·0	20·5	14·1	5·7	1·6	0·6	185·8
Cherrapunji	4,455	0·6	2·6	9·0	29·6	50·0	110·0	120·5	78·9	57·1	13·6	1·8	0·3	474·0
Cuttack	80	0·4	0·6	1·0	1·5	2·2	10·7	12·6	11·2	9·8	5·8	1·0	0·5	53·4
Jubbulpore	1,851	0·6	0·5	0·5	0·2	0·5	8·5	18·6	13·8	8·2	1·5	0·4	0·3	53·6
Nagpur	1,028	6·6	0·4	0·6	0·5	0·8	8·8	13·2	8·9	7·8	2·3	0·4	0·5	44·9
Poona	1,819	0·2	...	0·2	0·6	1·6	5·6	6·6	4·1	4·3	4·1	0·8	0·2	28·3
Bombay	37	0·1	...	...	...	0·5	20·8	24·7	15·1	10·8	1·8	0·5	0·1	74·4
Mahabaleshwar	4,550	0·4	0·1	0·4	0·9	1·4	47·3	102·1	68·6	32·9	5·8	1·1	0·4	261·4
Bellary	1,455	0·1	...	0·6	0·8	1·8	1·8	1·3	2·3	3·9	3·9	1·0	0·3	17·8
Bangalore	2,981	0·2	0·1	1·6	1·3	5·0	3·2	4·0	5·9	6·3	6·4	1·9	1·7	35·6
Bhimlipatam	30	0·3	0·5	0·2	0·2	2·0	3·2	3·6	4·4	6·3	8·1	2·5	1·3	32·6
Vizianagaram		0·2	0·5	0·8	0·4	2·6	4·3	5·0	6·6	7·7	8·4	2·2	1·6	40·3
Bandar	10	3·3	0·1	0·3	0·1	1·7	4·4	5·6	6·1	6·5	8·8	4·0	0·7	38·5
Rajahmundry	68	0·2	1·3	0·2	0·9	3·3	4·5	7·2	6·6	7·1	6·5	1·7	0·2	38·8

TABLE OF AVERAGE MONTHLY RAINFALL

Name.	Height in feet.	1	2	3	4	5	6	7	8	9	10	11	12	Total
Cuddapah	477	0.1	...	0.4	0.3	1.6	2.6	3.5	5.1	5.8	5.3	3.1	0.7	28.3
Madras	22	1.0	0.3	0.7	0.6	2.2	2.1	3.8	4.4	4.7	11.8	13.7	5.1	49.1
Trichinopoly	275	1.0	0.5	0.7	1.8	3.8	1.3	2.2	4.4	5.3	7.8	4.0	3.1	37.1
Secundrabad	1,787	0.3	0.1	0.7	1.7	1.4	3.7	6.2	5.7	5.2	3.3	0.8	0.3	28.3
Cuddalore	20	1.0	0.3	0.4	0.9	1.5	1.4	2.3	5.1	4.7	8.1	1	5.7	
Tuticorin	...	1.1	0.6	0.8	1.3	0.9	0.1	0.2	0.4	0.7	3.7	8.1	2.2	20.1
Madura	484	0.7	0.4	0.9	2.0	2.8	1.6	1.7	4.7	4.5	8.7	5.1	2.2	35.3
Mangalore	52	0.2	0.1	0.1	2.0	8.1	37.8	37.9	23.1	11.3	8.0	1.9	0.5	131.0
Cochin	11	0.9	0.7	2.1	4.4	12.7	30.7	22.7	12.4	9.4	12.1	5.7	19	115.1
Colombo	40	3.0	1.7	5.5	8.8	13.2	8.2	5.5	4.5	4.9	12.9	12.7	6.4	89.3
Trincomali	175	6.2	2.4	1.3	1.6	2.3	1.9	2.2	4.2	4.6	8.9	13.1	13.2	91.7
Kandy	...	5.0	2.6	3.1	6.9	6.7	9.1	7.9	6.2	5.8	11.3	11.6	8.4	94.5
Rangoon	41	0.2	0.1	0.1	1.8	10.9	18.4	21.3	18.6	19.3	8.1	2.1	0.1	101.0
Moulmein	94	...	0.1	0.1	3.0	79.7	38.4	43.9	43.0	33.3	6.4	1.5	0.1	188.5
Akyab	15	0.1	0.2	0.5	1.9	12.2	51.6	51.0	38.6	23.0	12.4	3.9	9.6	135.7

EXERCISES

1. Represent by graphs the rainfall of Colombo, Mangalore, Madras, Calcutta, Bombay and Delhi.
 2. Arrange half a dozen towns in the Ganges basin in order from west to east and note the rainfall of each against its name. What is your inference?
 3. Bombay and Poona are very near each other. Why does Poona get less rain than Bombay?
 4. Why has Karachi less rainfall than Bombay?
 5. Why does Central India get rains year after year?
 6. Why does Madras get heavy rains in December?
-

Rivers

From what has been said about the distribution of rainfall, we can understand the nature of the rivers in India. There are two kinds of rivers 1. snow-fed and 2. rain-fed.

1. The snow-fed rivers are the Himalayan rivers. Taking their rise in the melting snows of the Himalayas, and fed by the rain water brought by innumerable tributaries, these rivers carry enormous quantities of water and silt to the sea. And the Himalayas though huge and high, do not form a true waterparting, for all the water drained on the northern slopes ultimately flows through a gap in the eastern Himalayas again into Hindustan. The Indus, the Ganges and the Brahmaputra are the most important Himalayan rivers. Rising near the region of Lake Mansarowara they flow in different directions, fertilising enormous areas with their water and silt. All these rivers have constant supply of water even in summer from the melting snows on the Himalayas.

2. The rain-fed rivers are confined to the Deccan plateau region. During rains they are rapid overflowing torrents, but in the dry hot weather they are merely

dry tracks of water. Almost all these rivers rise on the higher parts of the plateau and flow in an easterly direction. The Mahanady, the Godavary, the Krishna, the Pennar and the Cauvery are the most important. The Nerbada and the Tapti rising on the eastern hills flow westward into the Arabian Sea. All these rivers carry silt with them, which is deposited at their mouths in the form of deltas.

Means of Irrigation

India does not get rainfall throughout the year as England does. Even the regions of heaviest rainfall have dry seasons, when crops will fail if they are not watered. Hence irrigation is very important in India.

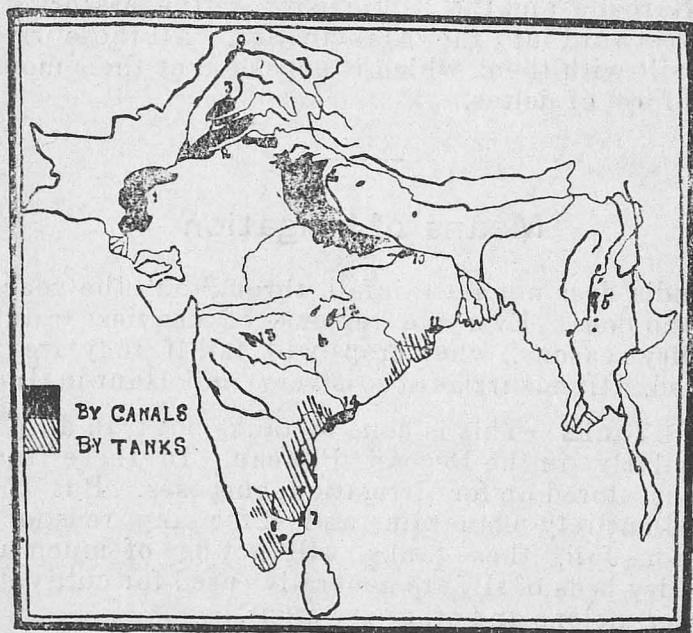
1. **Tanks.**—This is done by tanks built in all parts particularly in the Deccan Plateau. In these tanks water is stored up for irrigation purposes. But these depend entirely upon rain, and if for any reason the monsoons fail, these tanks will not be of much use. Their dry beds of silt are generally used for cultivation of water-melons and other dry crops.

2. Another source of irrigation is wells, from which water is baled out. Millions of wells are dug in India by which small holdings are irrigated.

3. **Canals.**—Extensive areas are irrigated by constructing dams across rivers and diverting water so collected to fields through canals. The delta lands of the Mahanady, Godavary, Krishna, Pennar, Cauvery are all irrigated in this way. At the head of the delta an anicut is constructed, and the water impounded thereby is sent by means of canals to the lower delta tracts. These canals have locks to regulate the supply of water and to allow boat traffic to pass through them.

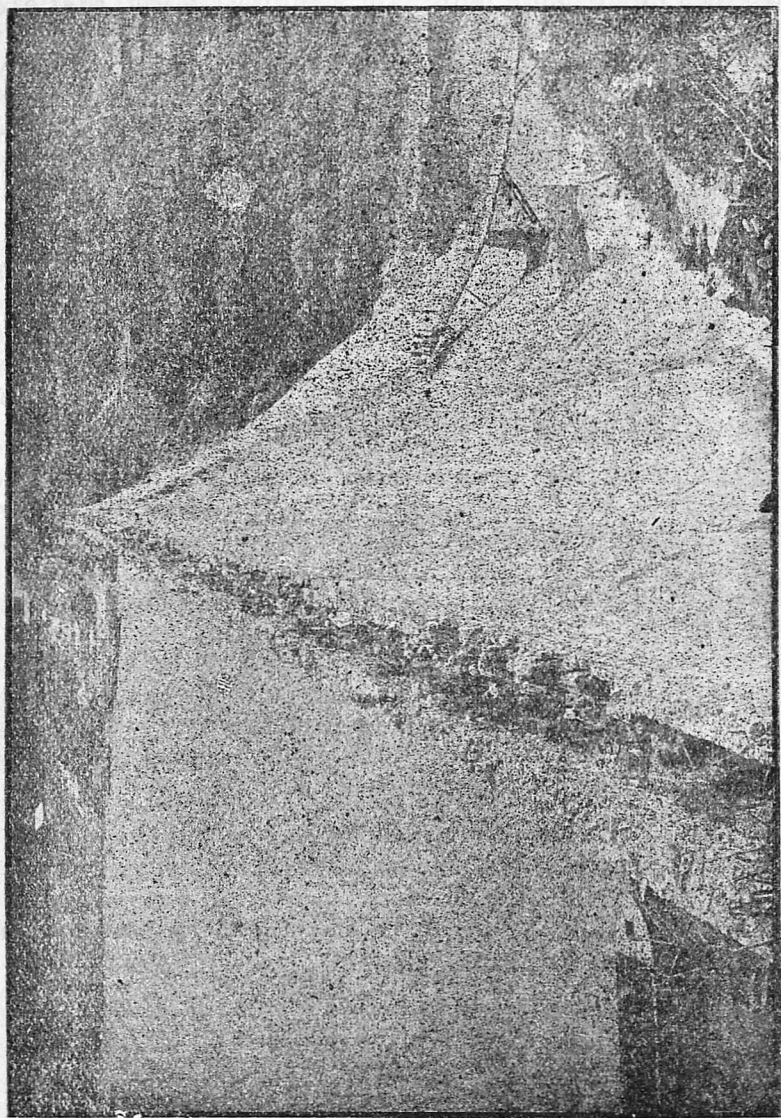
The Periyar river on the western side of the

Western Ghats has a dam constructed across it, and the water is made to flow through a tunnel to the east of the Ghats irrigating thousands of acres there. The surplus water then flows into the Vaigai.



IRRIGATION MAP.

The Punjab has a system of canals. It is watered by the Indus, and its tributaries, the Jhelum, the Chenab, the Ravi, the Beas and the Sutlej. But the waters of these rivers cannot be brought up for irrigation purposes, as their beds are deep in the fine alluvial soil. Hence dams are constructed across these rivers at higher places near the foot of the Himalayas, and the water so conserved is directed by means of canals to the lands below. There are five systems of canals irrigating the doabs of the Punjab, namely—1. The Sirhind canal, 2. The Upper Bari Doab canal, 3. The Lower Chenab canal, 4. The Lower Jhelum canal and 5. the Upper Chenab canal.



PERIYAR DAM.

The Sind Region has also a number of canals. But all these have been **innundation canals** or canals that are filled with water when the river is in floods. At other times they will be dry. Hence there cannot be a steady supply of water and so a **barrage** has recently been constructed at **Sukkur** across the Indus and a large area on either side of the river is being irrigated by means of these permanent canals.

The United Provinces have also a system of irrigation canals consisting of, 1. The Eastern Jumna canal, 2. The Agra canal, 3. The upper Ganges canal, 4. The Lower Ganges canal; A dam is under construction across the **Sarada** at Barmdeo near the foot of the Himalayas. This canal will irrigate a large tract of land up to **Lucknow**.

As there is considerable rainfall in the middle Ganges and the lower Ganges Valleys, and as the water-table is at a low depth, no canals are needed. Tanks and lakes can be formed in regions where there are hills, for huge lakes can be formed by constructing dams across the valley between two hills. All the other sides of the lake being more or less hilly, these hills form embankments. All big lakes and tanks are of this kind. The **Marikanve** lake in the Mysore province is a huge lake of this kind and it is calculated to irrigate two or three big taluks in the State.

In Madras dams are constructed at the head of the deltas of the Mahanady, Godavary, Krishna, Pennar and Cauvery and the water is led by canals to the delta lands. The flow of water is regulated by locks constructed along the canals.



THE GODAVARY LOCK.

3. Vegetation and Animal life

Vegetation in any country depends upon heat and rainfall. In India we have enough of sunshine. But the heat varies with altitude. Hence vegetation in India may be said to depend upon two factors 1. rainfall and 2. altitude.

Forests

Where there is heavy rainfall we have forests. In India we have forests of 4 kinds. 1. The evergreen forests. 2. The Monsoon Forests. 3. The Temperate forests. 4. The Mangrove forests.

1. **Evergreen Forests** are found in regions where the rainfall is over 80 inches. The trees are green in all seasons and there are several varieties. But most of them have very hard wood. These forests are more or less in the hilly tracts, the lowlands being cleared and used for rice cultivation. These are on the western side of the **Western Ghats**, the **Arakan Coast**, **Assam**, **Lower Burma**—all on the lower slopes of hills.

2. **Monsoon Forests** are in regions where there is rainfall in one season only, the other season being hot and dry. In these forests, trees shed their leaves in summer, and so they are not evergreen. **Teak** and **Sal** are the most valuable timber trees in these. **Teak** grows in **Burma**, on the **Western Ghats** and in the forests of **Eastern Ghats** also. **Sal** comes from the lower slopes of the **Himalayas**. **Red wood** and **Ebony** grow on the **Western Ghats** and in **Mysore**. **Bamboo** grows in all forests and its pulp is suitable for making paper. **Sandalwood** comes specially from **Mysore**, which makes sandalwood oil in its factories.

3. **Temperate and coniferous forests** are found on the higher slopes of the **Himalayas** above 5000 feet.

Oak of different kinds grows there. But above this oak region (9000 ft.) we have the **conifers**, consisting of pines with narrow needle-like leaves. Though there is valuable timber of soft wood here, commercially it has not been found useful on account of the difficulty of transportation.

4. **Mangrove forests** are found at the mouths of rivers in delta regions, where the mangrove grows well in the salt waters. This wood is used mostly as fuel.

Uses of forest.—The region where there are forests will have a cooler climate, for the moisture that is ever evaporating from the leaves keeps the air wet. 2. Forests help **condensation**. As the air over the forests is cool, moisture-bearing wind, when it passes over forests, is apt to get cooled and so condensation takes place and rain falls. Thus the cutting away of forests is prejudicial to rainfall. 3. Forests **regulate** the flow of rain water. For the undergrowth and leaves keep the rain water from flowing freely. Hence they help to store up water, and prevent the formation of sudden floods. 4. Forests give us **fuel, timber, gum, lac, varnish and tanning materials**.

2. Where there is not much of rainfall we have **Scrubland** or region of small bushes or thorny trees. The wood is used for fuel and deer, hares and other animals find shelter there.

3. **Desert region.**—It is in Sind and the region west of the Aravalli Hills is also a desert. Want of rainfall is the cause and desert plants are found here and there.

India's Agricultural Products

Much of the land in India has been brought under cultivation, and more and more of it will be made fit for that purpose. India is at present an agricultural country

and nine-tenths of the population are engaged in that occupation. Where rainfall is not enough, irrigation is resorted to and the area of cultivable land is increased. The following are the most important products.

Rice.—This grows in a region where there is tropical heat and sufficient water to flood the fields. Hence it grows well along the banks of rivers and in delta lands. It also grows under tanks. This forms the staple food to millions of people. It is grown in the deltas of the Ganges, Mahanadi, Godavery, Krishna, Kauvery and Irrawaddy.

Much of the rice grown in India is used for local consumption but a large quantity is exported from Burma to foreign countries where it is used for making beer.

Wheat comes next as an article of food. It is more nutritious than rice, and it requires less heat and less water. It grows in the Punjab and the United Provinces as winter crop. It cannot grow in the delta tracts. This is sown in winter and is reaped in April. This is the staple food of the people in Northern India and the surplus produce is exported to Britain.

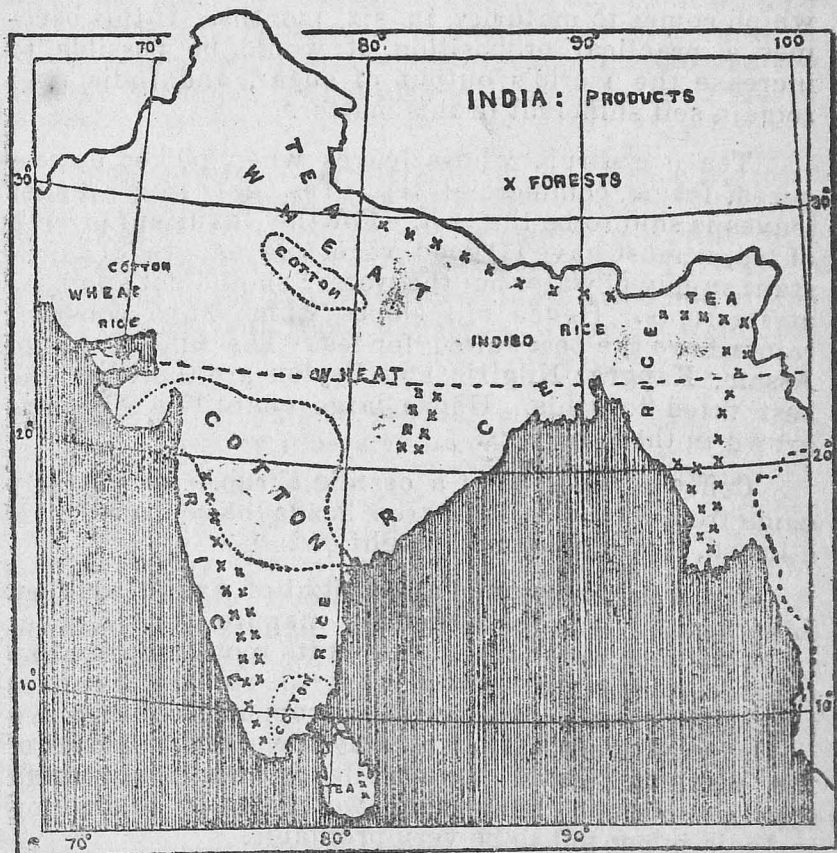
Maize and millet are grown in dry parts as on the plateau. Oil seeds, grams and pulses are dry crops grown every where, where there is not much water for irrigation.

Coconuts grow along the sea shore. The Malabar coast and the Coromandel coast have extensive coconut gardens. They are so abundant on the Malabar coast that their shells form the most important source of fuel and coconut oil replaces ghee in the people's daily use.

Rubber is got from the milk of rubber trees. These are planted now in Assam and Ceylon, and considerable quantities of rubber are exported from them.

Sugarcane can grow in all places where rice can

grow though it does not require flooding. But as rice is more important, it is generally cultivated in preference to sugarcane, which is an annual crop, and which requires much care and protection. If the fields are not guarded, the crop is apt to be destroyed by monkeys, foxes



and boars. Besides it is liable to be easily attacked by a pest, in which case the quality of the juice will be inferior. Added to this, expert knowledge is needed to make good jaggery. For all these reasons sugarcane cultivation is a risky job.

Beet sugar trade by Germany and other European countries has become such a formidable rival that sugar-cane cultivation is growing less and the annual import of sugar is increasing.

Recent experiments in Madras seem to have succeeded in creating a kind of **Hybrid** sugar-cane which comes to maturity in six months. If this becomes a practical proposition, it would be possible to increase the world's output of sugar, and India may remain self sufficient in this matter.

Tea is a shrub, whose leaves when picked up and cured, forms commercial tea. Tea got from tender leaves is said to be the best. For the luxuriant growth of tea, it must have (1) good vegetable manure (2) a constant supply of water but the water ; should not stagnate at its roots. Hence hill slopes which have constant rainfall are the best suited for tea. The hilly slopes of **Assam, Kangra, Nilgiris** and **Ceylon** are therefore the best fitted for this. Hence large quantities of tea are grown in these regions.

Coffee is the seed of a certain shrub. It originally came from Arabia. This tree has a bushy growth. If allowed, it will grow to a height of 20 feet.

But it is kept pruned at a height of five or six feet. Like tea, it requires vegetable manure and frequent rains without water stagnating at its roots. But unlike tea it requires more warmth and fertile soil and it cannot bear cold or wind. Hence it is a tropical product grown in sheltered areas. That is why the eastern slopes of the **Western Ghats** have coffee plantations. **Brazil** supplies so much coffee to the world that its production in India is not felt to be very profitable.

Cotton is obtained from cotton plants, grown in warm regions.

This is of two varieties, the **short-stapled** and the **long-stapled**; the former is used for thick and rough fabrics, whereas the latter is needed for all fine things.

In India cotton grows on the **Black Cotton Soil of Berar, Ceded Districts, and Central Provinces**. The clayey black cotton soil retains so much moisture within itself that even in the hot summer when the ground is cracked, the cotton plants have sufficient moisture for their growth. All this is short-stapled cotton. The long-stapled variety requires irrigation and this is grown under canals in the **Punjab and the United Provinces**. **Sind** also will grow more of this in future.

Jute requires a very fertile soil and hence it grows best in regions where year after year the soil is fertilized afresh. Delta places are therefore the best, and our **Ganges Delta** has specialized in this. This is in great demand for **gunny bags** and these are made of this fibre. At present India supplies the world with this material.

Silk is an animal product made by silk worms, which live best on mulberry leaves. The worms are fed on them which they eat voraciously and grow quickly. Then they begin to spin silk round themselves. Before the worm breaks open the cocoon, these are put in boiling water and when the creature dies, the fine thread is carefully unwound. This is the raw silk. It is then coloured and woven into fabrics. **Assam and Mysore** make raw silk in large quantities.

Animals—In our country there are many kinds of animals. They are of two kinds (1) wild animals (2) the domesticated animals.

1. Among the wild animals, lion is one. It used to be in Guzerat, but it has almost disappeared from there. Tigers are now found in all thick forests and jungles, and Bengal tigers are said to be the biggest variety. Many people in Bengal fall a prey to these. **Cheetas, Leopards, Foxes, Wolves, Boars, Porcupines, Bears** and hares are found in all parts. Wild asses are in **Cutch**. **Bisons** are in the wilds of South India.

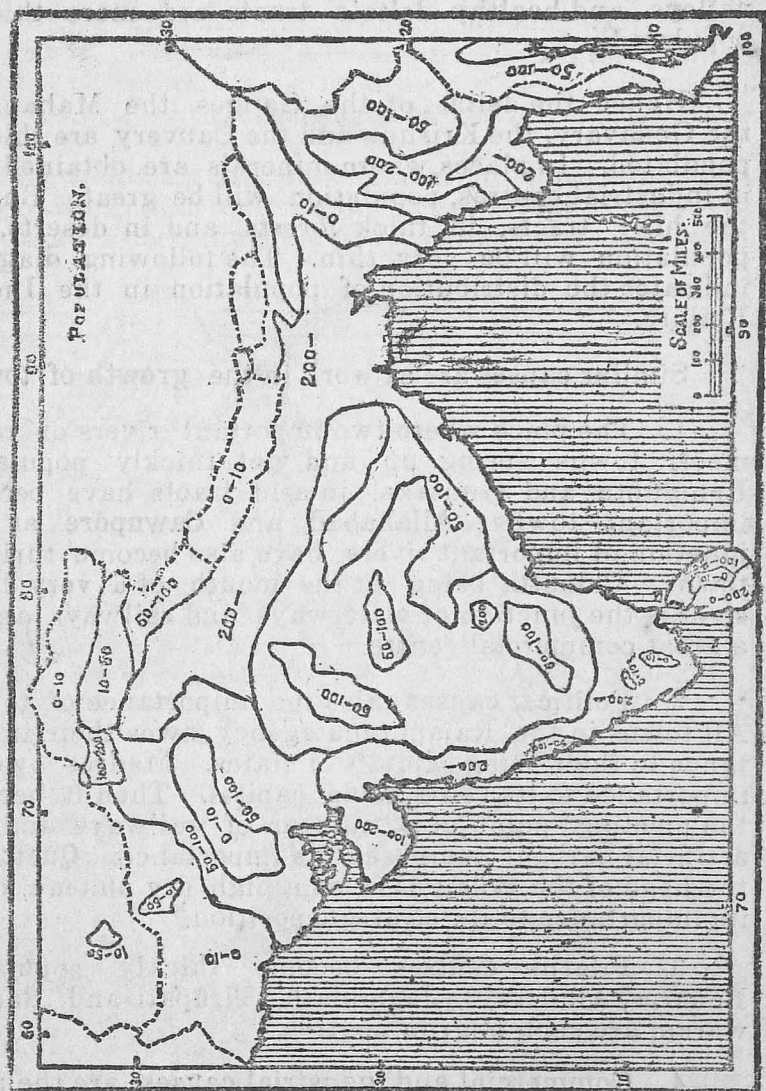
Among birds, kites, vultures and hawks are carnivorous. Crows, ducks, herons, cranes, wild pigeons, parrots, peacocks and other birds are seen in many places. Of the **domesticated** animals, sheep, goats, oxen buffaloes, horses and asses are important. Some of them give milk, some give flesh and wool, while many of them are used as beasts of burden. In the Himalayas **Yak** is an important animal. This gives milk, its flesh is eaten, and its wool is highly prized. It is the only sure-footed animal that can work as a beast of burden in the mountain regions there. **Camels** serve similar purpose in the deserts of Rajaputana and Sind. In Burma **Elephants** are numerous. The wild ones are caught and tamed. When trained they are able to haul huge logs of timber. Indeed the timber trade of Burma is due not a little to these useful animals. Elephants are found in the forests of **Travancore** and **Mysore** also.

There are several kinds of reptiles. Crocodiles are abundant in the lower delta regions of the Ganges. **Fish** abound in all lakes, rivers and seas. Among the serpents Cobra is notorious for its deadly poison. Viper is another kind of poisonous snake. Pythons are found in jungles. They are not poisonous but they can swallow animals.

4. Peoples of the Indian Empire

The original inhabitants are supposed to be very uncivilized people, and these seem to have been driven out by the **Dravidians** who came afterwards. Then came the Indo-Aryans from Central Asia and occupied Northern Hindustan mixing with the Dravidians there. Subsequently came the Afghans and the Moguls through the Western Mountain passes and settled in India. Later on came the European nations as traders and finally the English conquered India.

On the eastern side the Mongols came into India giving rise to a mixed Mongoloid race in Burma, Assam and Nepal. Thus India came to be peopled by different



types of people. The total population is 320 millions which forms $\frac{2}{5}$ of the world's entire population. They are unequally distributed in the country. The fertile valleys and healthy deltaic tracts are more thickly populated.

Hence the deltas of the Ganges, the Mahanady, the Godavary, the Krishna and the Cauvery are thickly populated. In places where minerals are obtained and in industrial centres, population will be great. But in the hilly tracts, in thick forests and in deserts, the population will be very thin. The following diagram indicates the distribution of population in the Indian Empire.

Similar causes are at work in the growth of towns.

1. The place where two important rivers or roads meet, towns spring up and get thickly populated. Renigunta and Guntakal in arid tracts have become important towns. Allahabad and Cawnpore at the junction of important rivers have also become thriving towns. Calcutta being at the mouth of a very large river is the junction of waterways and railways and so a great commercial centre.

2. Political causes raise the importance of towns. All towns in the Rajaputana agency owes their importance to their being capitals of states. Madras owe its importance to its being made capital. Then it became the meeting point of a number of railways and the artificial harbour increased its importance. Quetta at the head of the Bolan pass, on a high dry plateau, owes its importance to its strategic position.

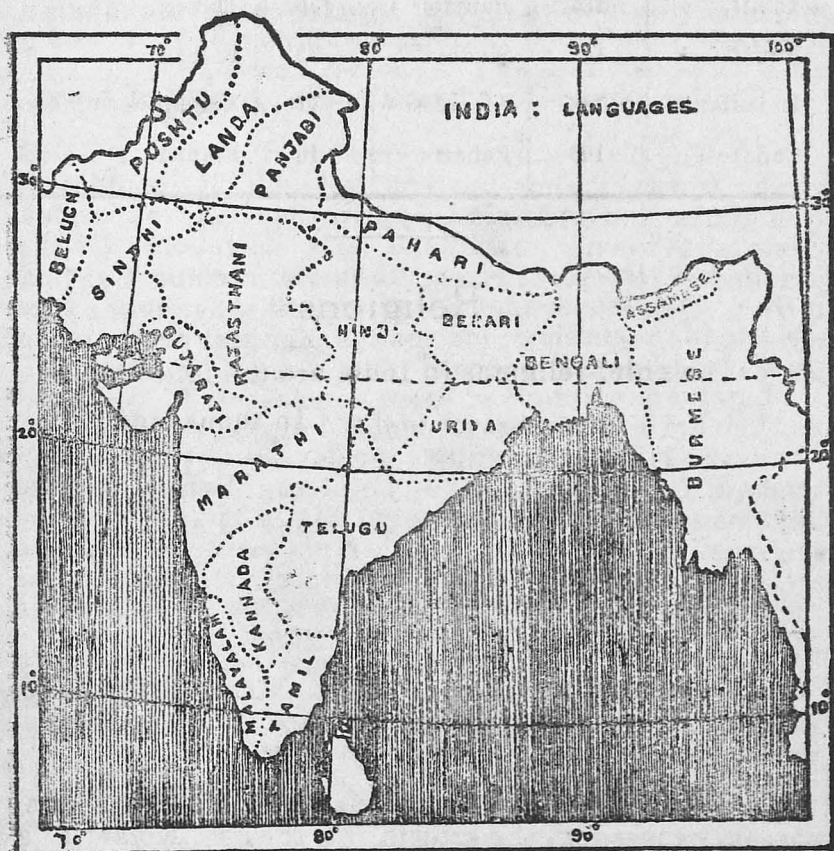
3. Pilgrim centres become thickly populated. Benares, Allahabad, Jagannath, Tirupati and Rameswaram are such pilgrim centres.

4. Commercial and industrial causes are the most potent causes for the growth of towns. Kolar is a

thriving town on account of gold fields. Jamshedpur is a huge city on account of the Tata Iron Works. Bombay is thickly populated on account of its cotton mills and other industries.

Languages

The following diagram shows the linguistic divisions of the Indian Empire and the accompanying table gives the number of people using the several languages.



IMPORTANT LANGUAGE AREAS.

Language.	People in lacs.	Language.	People in lacs.	Language.	People in lacs.
Hindi	981	Oriya	101	Gondi	16
Bengali	492	Gujarati	95	Pushto	14
Telugu	236	Burmese	84	Kashmiri	12
Marati	187	Malayalam	74	Orongon	8
Tamil	187	Punjabi	56	Tulu	5
Punjabi	162	Sindhi	33	Balochi	4
Rajastani	126	Assamese	17	Kandhi	4
Canarese	103	Pahari	16	English	3

Religions

The chief religions in India are the following :—

In thousands.

Hindus	... 217,587
Sikhs	... 3,014
Jains	... 1,248
Buddhists	... 10,721
Parsis	... 100
Mohammadans	... 66,623
Christians	... 3,876
Jews	... 20
Animists	... 10,295

5. Survey of the Provinces and States

India is divided into a number of Provinces and feudatory and independent states for purposes of Government. The British provinces are governed by Governors and Lieutenant Governors, and the states are ruled by the Indian Princes. As these political divisions do not form in many cases geographical regions, we shall in studying the natural geographical regions indicate what political divisions are included in them.

India may be divided into a number of natural regions 1. The mountain region 2. The Indo-Gangetic plain. 3. The plateau region 4. The east coast and the west coast strips 5. Burma, and 6. Ceylon.

(a) Mountain States

The Himalaya Mountain region is about 200 miles broad and extends to nearly 1500 miles east and west. This is not one single range but consists of at least three parallel ranges with branches extending in all directions. The peaks on these mountains are famous for their great height. **Mount Everest** (29000 ft.) is the highest peak in the world. **Kinchinjanga** (28000) and **Dowlgiri** (26000) are other very high peaks. **Nanga Parbat**, **Nanda Devi** and **Trisul** are other peaks on the western side.

In the summer season, the Bay of Bengal Branch of the monsoon enters Bengal up the mouth of the Ganges. There a part of the wind in crossing the **Khasi Hills** gives heavy rainfall at **Cherra Punji**. Another part rushes up the narrow **Assam valley** giving rains on either side of it. But the largest part of the monsoon wind unable to cross the Himalayas takes a more easy way. It turns westward and blows along the mountain slope keeping close to it and giving

rainfall as it blows onward. This rainfall naturally becomes less and less as the wind becomes drier and drier as it proceeds onwards, till it reaches the Punjab, where the rainfall becomes very little. Kashmir which is beyond the spurs of the Himalayas gets no rain at all. The monsoon wind when it crosses the Himalayas deposits the little moisture it has, in the form of snow, on the mountain tops and blows over Tibet as **dry wind**. Hence Tibet does not get any rainfall from the monsoon. For this reason **Leh** which is to the north of the mountains gets practically no rainfall.

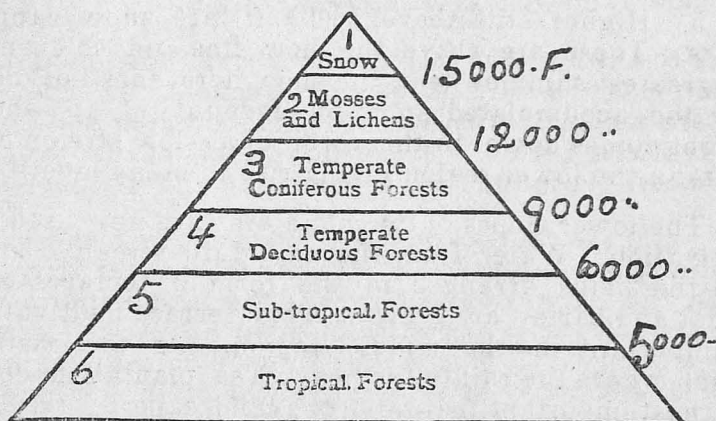
From what has been said above, the mountain region may be said to be in 4 regions. 1. The wet eastern region 2. The less wet middle region and 3. the dry western region 4. the drier region of the western offshoots bordering on Afghanistan and Beluchistan.

From the rainfall on the slopes and from the snow on the tops, innumerable streams take their rise. Of these, the Ganges, the Indus and the Brahmaputra are famous. There is a beautiful legend about the descent of the Ganges. It is said that King Bhagiratha brought the Ganges from heaven down to the earth. Whatever may be the legend, the following facts are true; that the heat of the sun makes the sea water go up as vapour, that this vapour mixing with the monsoon wind goes up and descends, as it were, upon the peaks of Gauri Sankar and others, that much of the moisture gets deposited there as **snow** and that in summer this snow melts and comes down as water through the Ganges and other streams.

We thus see that the Himalayas not only **help condensation** as the Western Ghats do, but **actually store up water**, as in a bank, on its mighty peaks in the form of snow, only to let it go down into the thirsty plain in the hot summer season as a heavenly gift.

Himalayan Zones

This mountain region has a variety of climate. At the foot of the region it is very hot and the rainfall is abundant. So we have the **Terai** or the marshy jungle-region, the hot bed of malaria and death. This region is the haunt of wild animals such as tigers, elephants, and crocodiles. But this is being gradually reclaimed by drainage, and cultivation is being pushed into this region though slowly. This region of tropical forest continues up to about 5000 ft.



ZONES OF VEGETATION ON TROPICAL MOUNTAIN

2. Above 5000 ft the evergreen temperate forest makes its appearance. Several kinds of oaks are found in this region, which is the **Outer Himalayas**. This region is healthy and health stations like Simla and Darjiling are located in this region.

3. The next zone of vegetation may be said to begin at about 9000 ft. **Conifers** make their appearance. Pines of several kinds are found here. But at present they are not of any economic value, for they are at such a high altitude that it is difficult to get the timber down. Hence this coniferous forest is left to itself, while the necessary soft wood is obtained from Norway and

Canada, where this timber is easily accessible. The dead leaves that fall on the ground store up rain water in them and prevent it from flowing down all at once in the form of floods. Rapid denudation is therefore prevented by this forest region.

4. The next zone of vegetation may be said to begin at about 12,000 ft. This is called the **Alpine Zone**, where moss, lichens, thin grass, and rhododendrons are seen. This being warmer than the next higher zone, glaciers are often met with.

5. Higher still above 16000 ft, are snow capped peaks. These are above the snow line and so even in the greatest summer heat, the snow here does not melt. But the accumulated snow on account of its sheer weight comes down in the form of a slow stream and melts in the lower region giving rise to many rivers.

The lower slopes of the mountains are now used for cultivation. Water from the mountain streams is led into the fields arranged in the form of terraces and wheat and barley are grown. This terrace cultivation is important in the middle region. On the eastern region where the rainfall is heavy Tea plantations form the most important feature of the landscape.

(a) The Western Himalayan Region

It is the driest part. Within this region are (1) Baluchistan (2) the North West Frontier Province (3) The state of Kashmir.

(1) Baluchistan is separated from the Lower Indus Valley by the Sulaiman and Kirthar mountains. This is a rainless region as it is outside the monsoon area. It is a plateau like Tibet but not so high as the latter and so not so cold as Tibet. But all the same it has extremes of climate and so grows only pasture, though here and there there are small patches of cultivable land.

The people are therefore nomads. Goats, sheep, horses and camels are reared. In summer they live in leaf huts and in winter in mud houses.

The people are mainly Mohammadans and since males are greater in number than females, polyandry is sometimes practised.

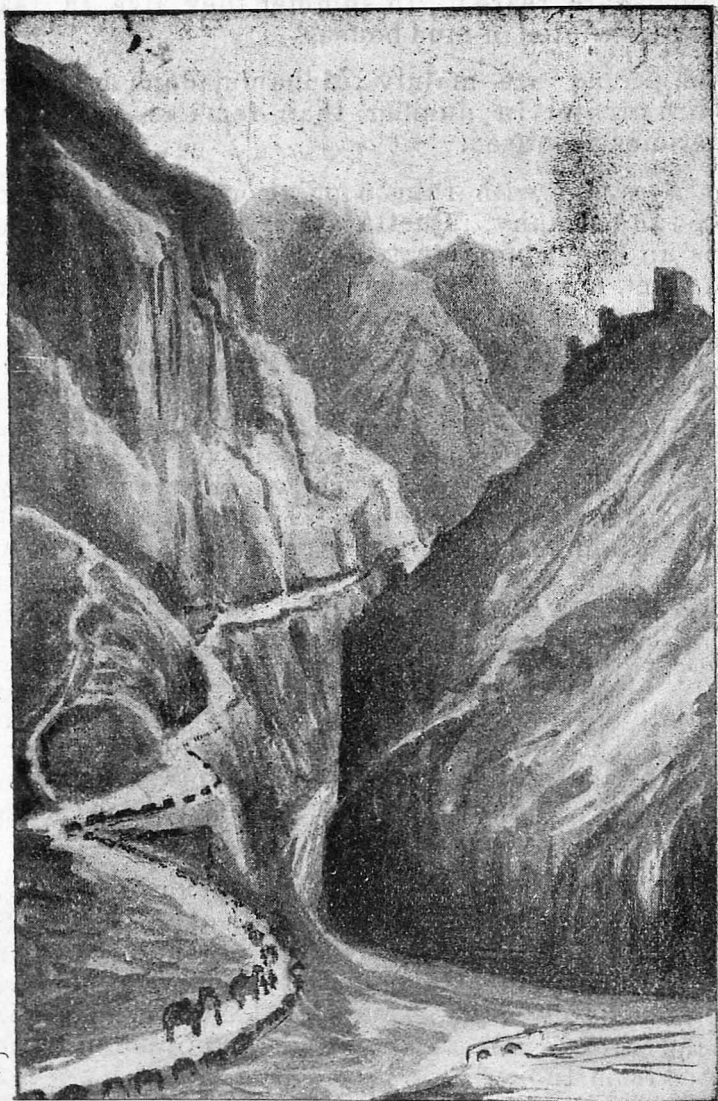
In a region with thin population, towns are not expected to be many. **Quetta** at the head of the Bolan Pass is an important strategic centre. Though in a barren tract, a large British army is kept to guard the pass. **Chaman** is the terminus of the railway.

2. **The North-West Frontier Province** is between Afghanistan and the Punjab to the west of the Indus. Look at the physical map, you will find four plains bordering on the Indus but separated from one another by a low hill range. These are the **Peshawar**, **Kurram** and the **Tochi**, and the Gomal valleys. The Pesawar plain is the biggest and most productive. This is irrigated by canals, and agriculture is the most important occupation. **Wheat** is the chief product on the hill slopes, there are pastures and **sheep** are reared.

To the west of these plains is the tribal territory. Many Pathan tribes live here and as they have no means of livelihood in that arid region, they frequently descend into the plains and devastate the country. To keep them in check, a number of frontier stations are formed which are connected by rail.

Peshawar is the most important frontier station situated in the centre of the fertile vale of Peshawar. It is at the Indian end of the **Khyber** pass, and therefore it is an important strategic and commercial centre, trading on the other side with **Kabul**, which sends raw silk and fruit. Silk cloth, tea, sugar and salt are exported from India.

Jorhats in the Kurram Valley, **Bannu** in the Tochi Valley, and **Dera Ismail Khan** in the Gomal Valley are other strategic stations, doing some trade also. These



KHAIBAR PASS.

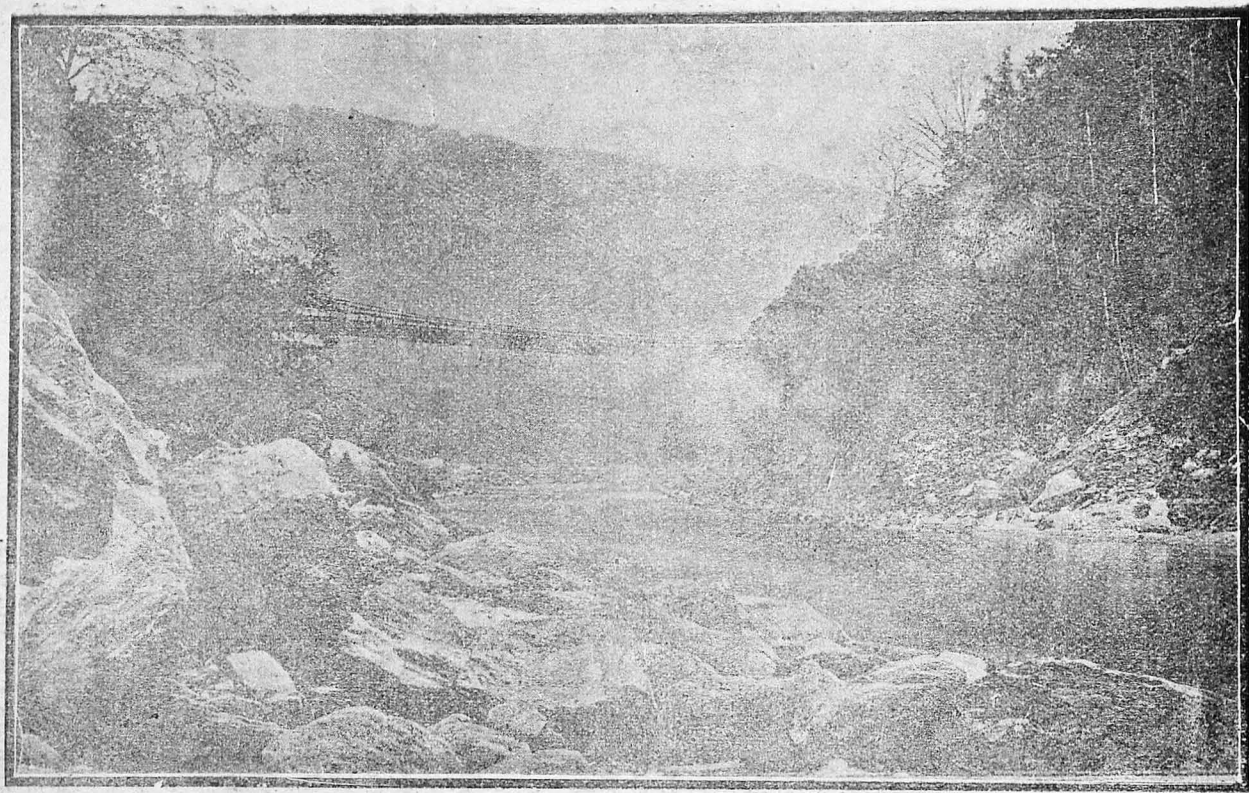
are connected one with another by railways 'called strategic Railways' mainly for military purposes.

Kashmir is a native state between the Hindu-kush and the Himalayas. There are many snow clad mountains in the region and many rivers flow between them. The picture shows a cane bridge on a Himalayan river. The **Gilgit** flows into the Indus but the **Jhelum** is the most important river in the state. This takes its rise in the Himalayas and flows in a westerly direction through a high gorge in the Mountains at **Baramula**. Hence the water spreads itself in the vale above the gorge depositing all the silt and fertilizing it. Thus a huge lake called the **Wulur Lake** is formed. This is the biggest fresh water lake in India. This Valley which is 90 miles long and 20 miles broad is at an elevation of 6000 ft. With the Wulur lake in the centre, surrounded by fertile corn fields and orchards and with magnificent snow clad mountains, it forms a veritable heaven on earth, and that is why it goes by the familiar name of the **Happy Vale of Kashmir**. Here is a picture of the Jhelum canal.

Enclosed as it is on all sides by mountains, it does not get much rain from the monsoons, but the snow clad mountains supply the country with enough of water. So they grow wheat and barley but fruits like apples, peaches and grapes are abundant. In the calm blue waters of the lake, floating vegetable gardens are found flitting from place to place.

People—Though the climate is healthy, it is thinly populated as it is a hilly tract. Most of the people are Mohamadans though the ruler of the state is a Hindu Prince. This state is very much liked by the Europeans as its climate resembles more or less that of their native land.

Srinagar on the Jhelum very near the Wulur Lake is the chief town, and the centre of routes to Tibet and northern parts and the Indus region in the south. It is famous for shawls.



CANE BRIDGE OVER A HIMALAYAN RIVER.

Jammu at the foot of the mountains is the terminus of the railway. **Leh** in the Ladakh district is at the head of the Karakoram pass leading into Eastern Turkestan.

The Eastern Himalayan Region

This receives more rainfall and so many rivers flow into the Ganges Basin. In this region are the highest peaks, Mount Everest, Dhaulgiri and Kinchinjanga. There are two states in this mountain region, Nepal and Bhutan.

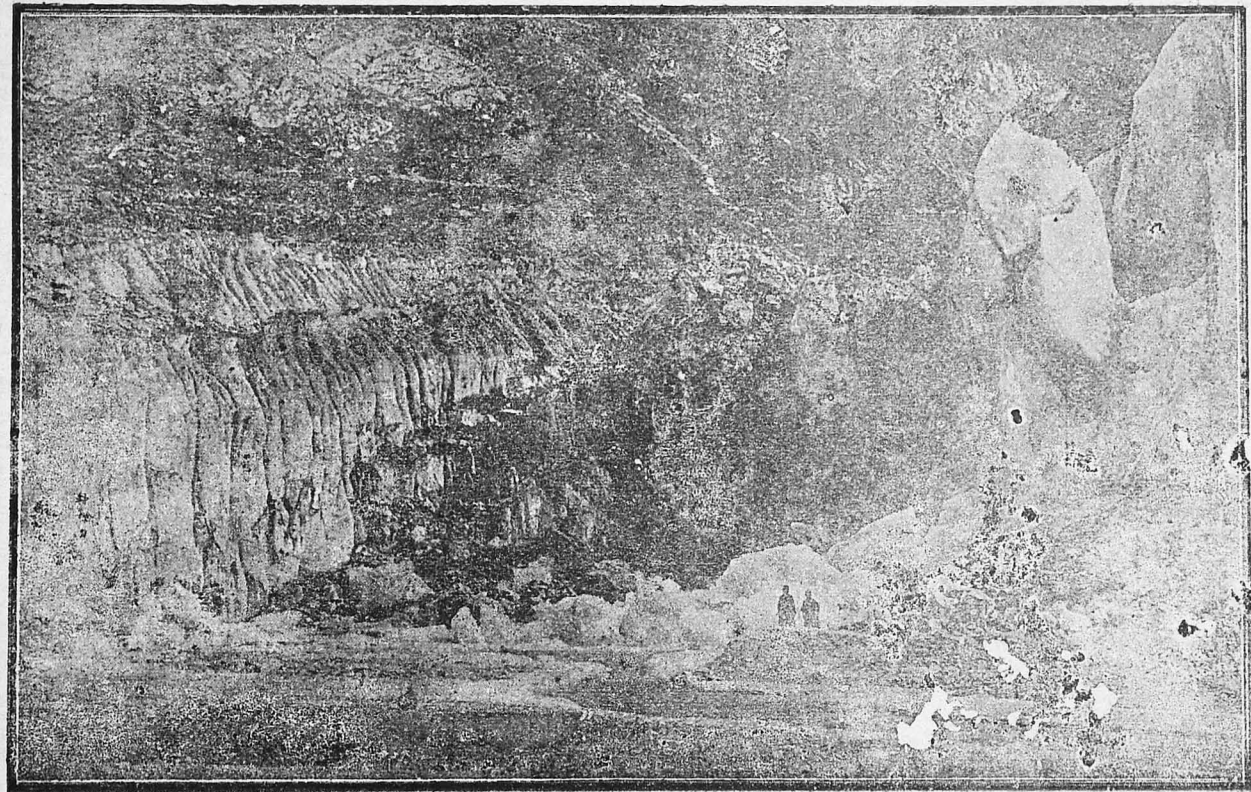
Nepal is an independent state. It has rich timber forests and in the warm valleys it grows some rice and wheat. It has therefore to import sugar, cotton goods and salt from the Ganges plain. It is thinly populated. But the natives—Gurkhas as they are called—are short but strong and sturdy and so they are freely enlisted in the army.

Katmandu is its capital.

Bhutan is another state on the mountains east of Nepal. It has heavy rainfall and like Nepal it has extensive sal forests. **Punakha** is its capital.

(b) The Great Plain

This natural region extends from Karachi on the Arabian Sea to the hills of Kashmir, and from there to the Bay of Bengal on the east. This extensive region is the basin of the two important rivers, the Indus and the Ganges and may therefore be studied separately.



GAIMUKH, THE SOURCE OF THE GANGES.

(a) The Ganges Basin

The Ganges takes its rise in the **Gangotri glacier** in the Central Himalayas and flows out through **Gaimukh** or **Gomukh** as a small stream. Its breadth at this point is about 30 ft. and its depth is only 2 ft. It flows 180 miles before it reaches **Hardwar**, up to which it receives water melted from the snow. It is called **Bhagirathi**. Here is a dam built across the river to direct its waters into irrigation canals. So far the river may be said to be in the **Mountain stage**.

Plain stage—At **Hardwar** the river descends the foothills into plains and flows as far as **Allahabad**, where it joins with the **Jumna**, another Himalayan stream, bigger and longer than the Ganges itself. But the **Jumna** having flowed through a vast region does not bring much water into the Ganges. Its waters however are clear when compared with the muddy water of the Ganges.

These flow some distance as two distinct streams before their waters get mixed up. The **Chambal** from the **Malwa plateau** flows into the **Jumna**. Thereafter a number of rivers, some from the south and many from the north join the Ganges. Thus receiving the waters from the several tributaries the Ganges flows eastwards, turns south at the **Rajmahal Hills** and enters its **delta stage**. Here the ground is one of uniform, level and so any small obstruction is enough to change the course of the stream. Hence the rivers break up into a number of branches all flowing into the **Bay of Bengal**; of these branches the **Hugli** is the most important. The region near the mouth of the Ganges is one impenetrable forest of **Mangroves** called **sundri** and hence the name **Sundarbans** to this mangrove forest region.

Here in this region, the **Brahmaputra** which has been flowing on the northern side of the Himalayas, having made a passage through the mountains, enters the delta of the Ganges at **Golundo**, bringing with it

enormous quantity of water and silt. The effect of the combined rivers is to make the delta bigger and bigger, while at the same time filling up the waterways with so much of silt that constant dredging is made necessary.

In the foregoing pages we have thus taken a general view of the Ganges basin from its source to its mouth. But climatically it is not a single region. It may be divided at least into 3 distinct regions. (1) The delta region or Bengal and Chittagong with the narrow valley of the Brahmaputra or Assam may be considered along with the delta region as it is only a continuation of the latter though somewhat elevated. (2) The upper Ganges basin or the United Provinces, (3) the Middle Ganges Basin or Bihar with Orissa in the south.

(1) Delta Region (Bengal)

The low level triangular region extending from Darjeeling to the Bay of Bengal forms the province of Bengal. This is all one uniform level plain having numerous waterways.

Delta—The Ganges delta forms at the bend of the river at the Rajmahal Hills. In addition to the Ganges, the Brahmaputra brings water and silt from the east. The effect of the combined streams is to raise the bed of the waterways and extend the delta into the sea, where for miles and miles there is the mangrove forests. This tree is called sundri and the forest is known by the name of **Sundarbans**. This region is swampy and intersected by a number of waterways like the threads in a net. This mangrove forest supplies fuel to cities like Calcutta and is the hot bed of malarial fever. The streams are infected with crocodiles and the jungle is inhabited by tigers which are so skilful in swimming that they even catch fish when hungry.

Climate—North of the Sundarbans is the agricultural region of Bengal. This has a warm damp climate

but there are no extremes. On the other hand the climate may be said to be equable. In this hot region full of water, **Paddy** is the most important crop, next to which comes **Jute** from which the world's supply of gunny bags is assured. Plantain and cocoanut gardens and bamboo bushes are everywhere to be seen. On the level plain there are ponds and lakes, which with their lotuses and lilies form a delightful scene. Fish are abundant.

This fertile valley is naturally thickly populated. Most of the people are **agriculturists** and so they live in huts near their holdings. There are not many towns but small villages each containing a few houses all over the region. As the land is damp, it is not quite healthy. **Malaria** is a common disease.

Jute Manufacture is the next occupation of the people. It is done in the jute mills of Calcutta, where-to coal from the Raniganj coalfield is imported. The world's supply of gunny bags comes from the jute of Bengal.

Tea picking and curing is another occupation practised in the plantations of Darjeeling. As Assam sends much tea, tea drinking is common among the Bengalis. Fish-eating also is very common even among the brahmins. That is because they are so abundant in ponds, canals and streams. Roads are few and canals take their place. But traffic of all kinds goes on in Bengal.

Calcutta was only a fishing village before the British occupied Bengal. After the construction of Fort Willam, commerce increased and rose by leaps and bounds. It was later on made the capital of India and so many magnificent buildings were constructed that Calcutta came to be known as the **City of Palaces**.

It is the outlet of the products of the Gangetic Basin, the centre where railways from all parts meet. Moreover being very near the Raniganj coalfield it is



A BEAUTY SPOT. EDEN GARDENS.

a manufacturing centre. Jute mills and rice mills are all over the city. It is the centre of a university. **Eden** gardens are in this town.

Dacca is the centre of the deltaic region. Formerly it was famous for fine muslins but this industry has disappeared owing to the importation of cheap mill-made cloth. It however manufactures gunny bags. It is also the centre of a university.

Chittagong is an important port from which the products of Assam are exported.

Assam is to the east of Bengal. It is hilly but in many respects it is like Bengal. It is triangular in shape. The Garo, Khasi, and Jaintia hills divide the region into two parts (1) The Brahmaputra valley. (2) The Kushinera-surma valley. Of these the first is more important as it is 500 miles long.

The S. W. Monsoon gives heavy rainfall. Cherrapunji on the Khasi Hills gets the heaviest rainfall. Rainfall everywhere is abundant and the climate being hot, the valleys grow rice, jute and oil seeds. But the most valuable product is **Tea** grown on the mountain slopes which have constant rainfall. There is an extensive forest region here and this has yet to be used. The Brahmaputra is the most important waterway, but the railway going up the valley is being more freely used.

The region is thinly populated. People from Bihar and Orissa go to Assam to work on Tea plantations, and after some years they give up work on plantations and set up agriculture in the river valley as there is much waste land yet to be cultivated. Thus the population of Assam is gradually increasing. **Wild silk** is also collected in this region.

Shillong, situated on the hills, is the capital of the province and is a healthy town. Digobi at the eastern end of the Brahmaputra valley has an oil and coalfield.

Gauhati, and Goalpara are important towns in the valley region.

(2) The Middle Ganges Basin (Bihar and Orissa)

West of the Rajmahal Hills up to Bankipur may be taken to be the middle Ganges Basin. This forms Bihar proper. But the hilly tract of Chota Nagpur, and the coastal strip of Orissa go with Behar to make one administrative division. This region falls into 3 natural divisions (a) The middle plain of the Ganges or Bihar in the north (b) the uplands of Chota Nagpur and Orissa in the middle (c) the low coastal plain of Orissa with the delta of the Mahanadi.

(a) The Middle Ganges Plain

You have learnt that rainfall decreases as we go west from Bengal. Hence this region has less rainfall than Bengal and the **water-table** (the level at which water is found in the ground) is lower than in Bengal. The climate is not so equable as in Bengal. It is drier, warmer in summer, and colder in winter. The Gandak and the Kosi flow into the Ganges from the north and the Son flows from the south.

As there is ample rainfall in the northern part no irrigational canals are necessary. If necessary, water in the wells is used to supplement rainfall. **Rice** is the most important production though wheat, barley, sugarcane and maize are also grown. **Oil seeds** form the special product in this region. South of the Ganges, as rainfall is not quite sufficient, the water of the Son is led by canals to irrigate the fields there. **Opium** was formerly made by the Government in this province but its production is now limited. Tobacco is grown all over, and **Monghyr** has a huge cigarette factory.

People—The Biharis are stronger and well disciplined race of people as they live in a healthy region. Many of them are agriculturists and live as in Bengal in huts on their farms. The population is so great that some outlet is felt necessary. So some people go to Calcutta as factory hands, and many go to Assam to work on the tea plantations there.

There are not many towns here. **Patna**, the ancient Pataliputra, is on both sides of the Ganges. This is the chief town and the centre of trade.

Gaya is a place of pilgrimage, near which is **Buddha Gaya**.

(b) The central uplands are the regions of old worn out rocks. They are rich in minerals. **Hazaribagh** has a huge mica mine. In the east, in continuation of the **Raniganj** coalfield of Bengal, there are **Jerria** and **Giridhi** coalfields. Very near them, fine iron ore is obtained in plenty. Hence at **Jamshedpur** have been started **Tata's Steel and Iron Works**.

In addition to this mineral wealth, there are vast areas of forests from which good timber can be had. **Lac** which is deposited by lac insect is collected in these forests, from which sealing wax and paint are made.

People—In this forest live wild tribes yet untouched by civilisation. They are the remnants of the old primitive people driven into the forests by the early invaders of Hindustan. They belong to several tribes most of them being **Santals**. They live by hunting and wear leaves as garments.

(c) The southern plain of **Orissa** extends to the Bay of Bengal. This region has good rainfall and has a warm climate. Hence this region with the Delta of the **Mahanadi** is one vast paddy field. The people are all agriculturists, their language being **Uriya**.

Cuttack on the Mahanadi, is the capital, and is at the head of the delta. It is famous for fine silver ware.

(3) The Upper Ganges Valley (The United Provinces)

This region is to the west of Bihar. Hence its rainfall must be less, and consequently the water-table is lower. So well-irrigation is difficult. For these reasons, irrigation canals would be necessary in this dry region. There are five such systems. (1) A dam has been constructed at Faizabad across the Jumna, just at the place where it descends to the plain. The water is taken to the fields to the east of the Jumna. This is called the East Jumna canal.

2. Just below Delhi, the Jumna is again tapped and it takes water as far as Agra and beyond. This is called the Agra canal.

3. The Ganges itself is tapped at Hardwar, where it enters the plain stage and the canal takes the water to the western side of the doab between the Ganges and the Jumna. This is called the **Upper Ganges Canal**.

4. At a lower place namely Narora, another canal takes water from the Ganges. It is called the Lower Ganges Canal to irrigate the same doab.

5. Another canal from the headwater of the Sarada is under construction. This will irrigate lands to the south of the Sarada as far as Lucknow.

Climate—This region is in the centre of Hindustan and so far away from the Bay of Bengal. The rainfall is not much. The air is therefore dry, and it does not receive the moderating influence of the sea. Hence the climate is not equable as in Bengal but it is one of extremes. It is cold in winter and hot in summer.

In this dry region wheat and Barley are the most important crops, rice being insignificant. In the summer season, maize, gram and pulses, sugar-cane and cotton are other crops. Fodder is another valuable crop on which cattle are fed. There are comparatively more cattle here than in any other part of India. Hence dairying is an important occupation.

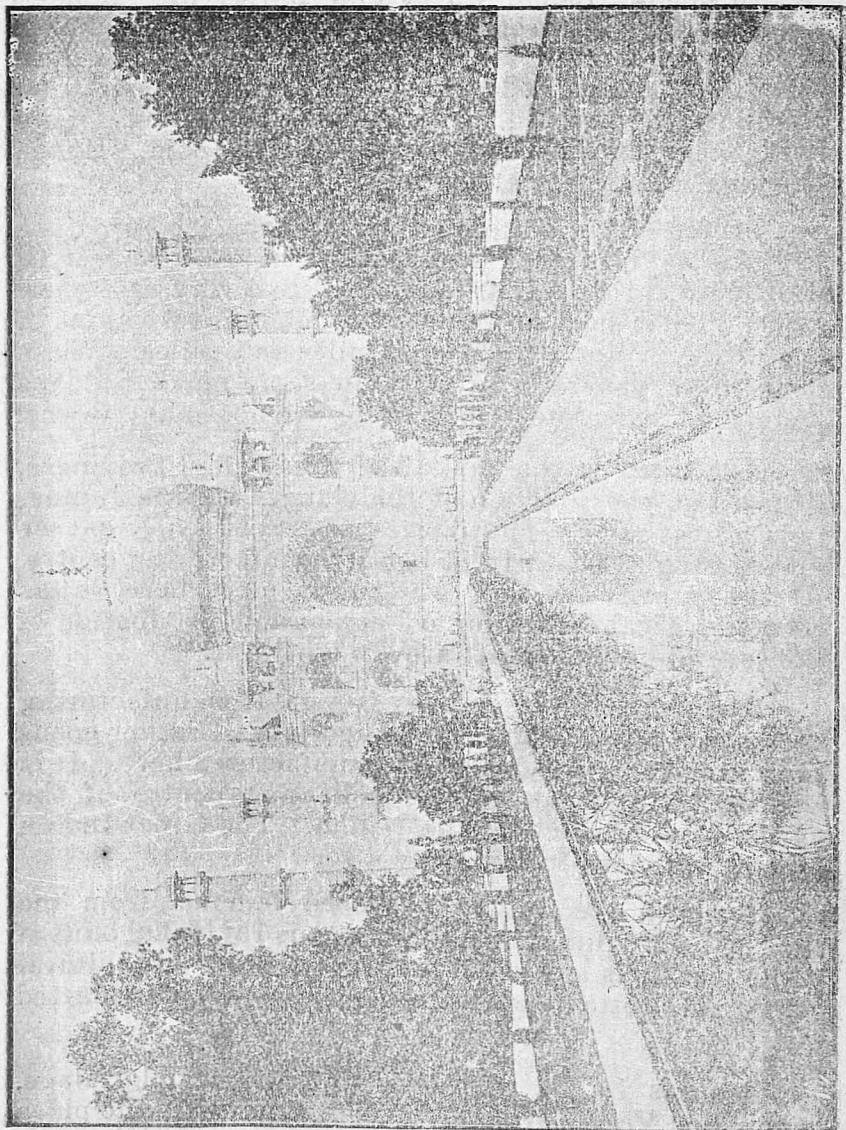
People—This is the most thickly populated province in India as it is both fertile and healthy. Almost all people are agriculturists and they live very near their fields. Their houses are built of mud because stone of any kind is not available for miles and miles. These houses are generally grouped in some small villages merely for self-protection. There are not many towns.

Allahabad is the capital of the United Provinces, situated at the junction of the Ganges and the Jumna. It is a great place of pilgrimage and lacs of people gather during Magh Mela. It is not a manufacturing centre. As many railways and waterways meet here, it has become a great centre for collection and distribution of the several products that are brought to it.

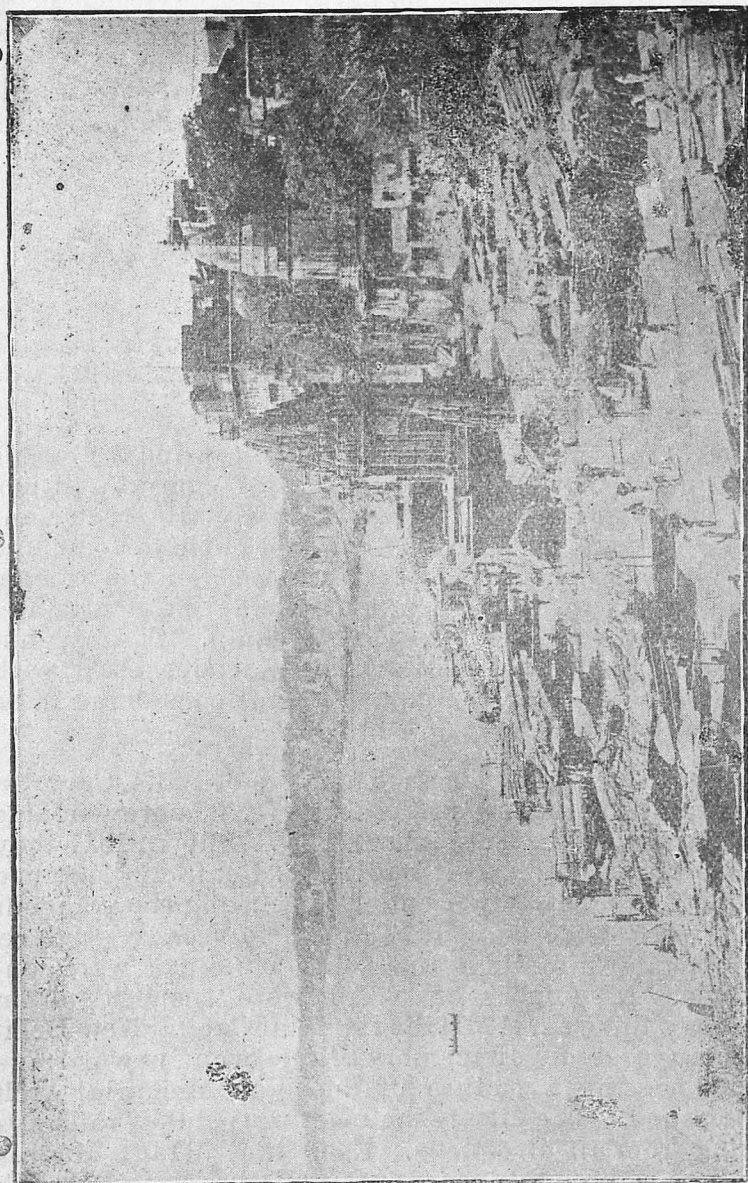
Cawnpore on the Ganges is a great manufacturing centre of textiles—cotton, wool and jute. Leather goods such as boots and saddles are manufactured here. It is a great railway as well as collecting centre of the agricultural products of the region. The Great Indian Mutiny extended to this place also.

Agra on the Jumna has been famous from the time of the Moghul rulers. The famous Taj Mahal built of white marble is located here. It is a great agricultural centre, and cotton and leather factories are also started here.

Benares is the most famous place of pilgrimage. It is called Varanasi or Kasi. Pilgrims visit the place throughout the year. It is a great commercial centre also. It is the seat of a university and the headquarters of the Theosophical Society. A Sanskrit college and



TAJ MAHAL AGRA,



BATHING GHAT, BENARES.

many choultries are located here. Here is a picture of the Ganges ghat.

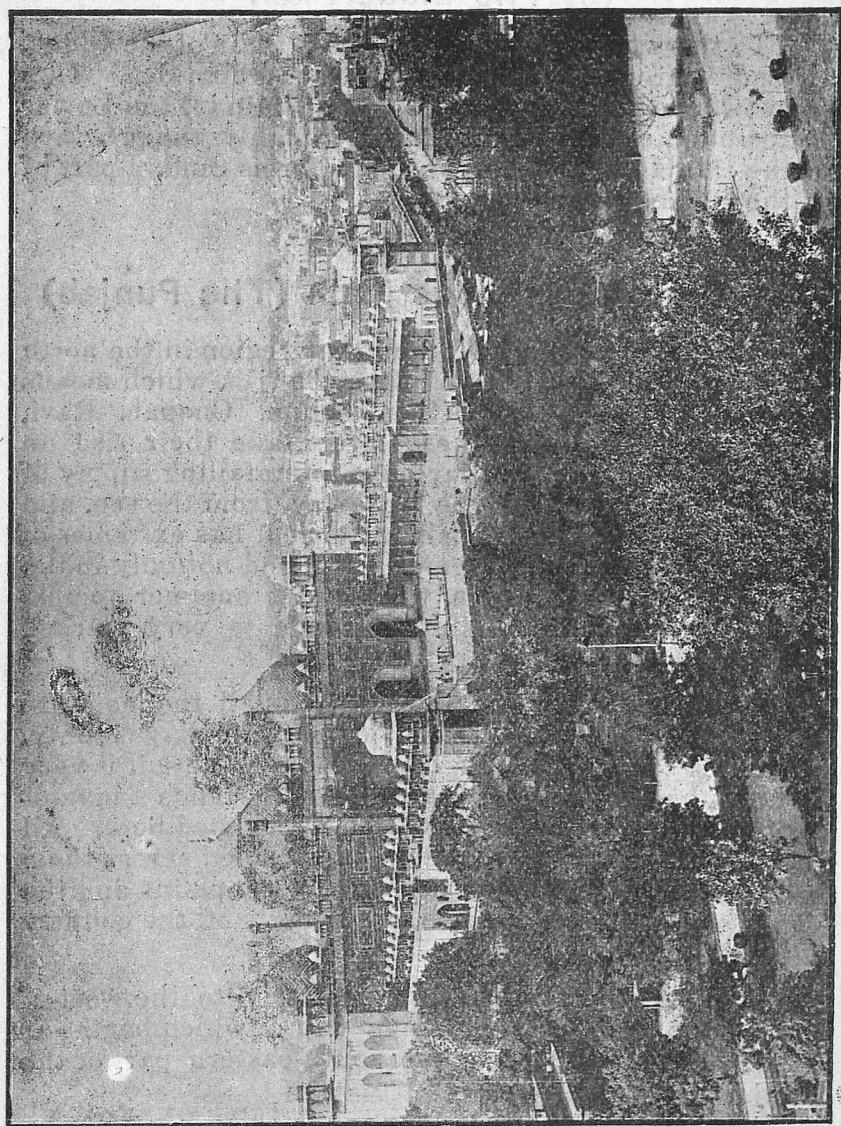
Hardwar on the Himalayas is a place of pilgrimage. Muttra and Ayodhya are other sacred places.

The Delhi Province

Between the United Provinces and the Punjab, there is a small tract of land on which **Delhi** is situated. This was formerly a part of the Punjab but in 1911 it is made into a separate Province.

Situated on the divide between the Indus and the Ganges basin, Delhi occupies the most central position. The ancient rulers made this their capital on account of its fine strategic position and were able to command both the plains. As Delhi is situated on the Jumna, boats can ply up and down from Delhi to Calcutta and trade with the whole of the eastern plain. The Moghul Emperors made it their capital and adorned it with many edifices. The Chandni Chouk is considered to be the most beautiful part of Delhi.

After the English became masters of India, Calcutta came into prominence, as a coastal city is more valuable to a sea power than an inland city. But in 1911 they transferred the Imperial capital to Delhi and planned to construct a city in a manner befitting the grandeur of the world-wide British Empire. The Viceroy's palace, the Assembly Buildings and other buildings were constructed. A number of parks were opened and in February this year (1931) the Imperial Capital **New Delhi** was inaugurated. In memory of this event, new postage stamps bearing a picture of the War Memorial Arch were issued. The city is the meeting point of railways coming from all directions. Even the distant Madras Province is brought nearer to it by the Grand Trunk Express which covers the distance in about 50 hours.



CHANDNI CHOUK DELHI.

(b) The Indus Plain

To the west of Delhi is the great Plain of the Indus, extending from the Himalayas to the Arabian Sea. This is in two parts (1) The Upper Indus Plain (2) the Lower Indus plain. The first one forms roughly the province of the Punjab and the second one forms Sind, a part of of the Bombay Presidency.

(1) The Upper Indus Plain (The Punjab)

This plain with a little mountain region in the north forms the political division of the Punjab, which means the country of five rivers, the Jhelum, Chenab, Ravi, Beas, and Sutlej. All these rivers take their rise on the Himalayas, and so they have an unfailing supply of water. But the country is far away from the sea, and its influence is scarcely felt. Hence it has extremes of climate. And these extremes are found not only in the great difference between winter and summer temperatures but even the diurnal range is very marked sometimes coming to a difference of 60°F.

There is very little rainfall here as all the moisture in the monsoon gives rain on the Himalayas only. Hence this region is very dry. Though the soil is very fertile it has no water to grow crops. Hence a magnificent system of canal irrigation is started here. All the five tributaries have weirs constructed across them at the place where they descend to the plains and the water so impounded is sent to all parts of the country through canals.

1. As the Punjab is immediately to the west of the Jumna the **Western Jumna Canal** which begins at Fyzabad takes water to the south-eastern part of the Punjab.

2. A canal begins at the beginning of the plain stage in the river **Sutlej** and it irrigates the same region of Sarhind. This is called the **Sarhind Canal**.

3. The river **Ravi** is similarly canalised at **Madhapur** and it irrigates the upper part of the **Bari Doab**. This canal is called the **Upper Bari Doab Canal**.

4. The **Chenab** likewise gets canalised near the foot of the hills at **Merla** and a canal called the **Upper Chenab Canal** irrigates the north part of the **Doab**. Then crossing the river **Ravi** by an aqueduct it enters the Lower part of the **Bari Doab**, which it irrigates.

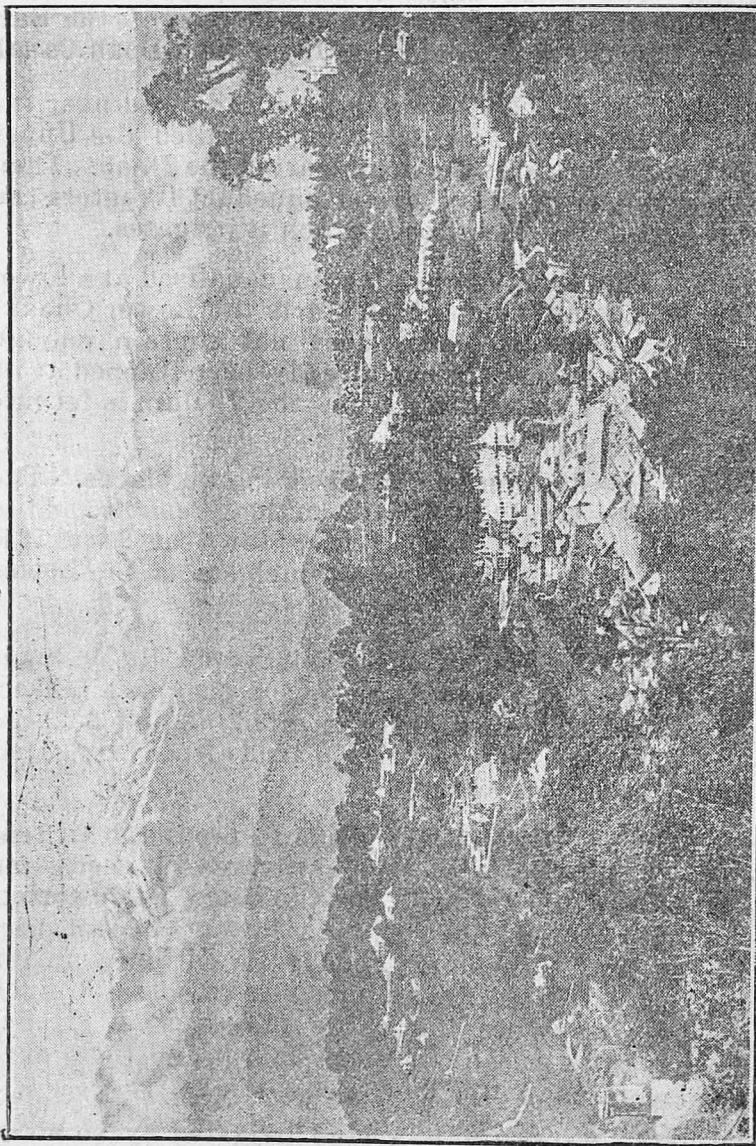
5. The **Chenab** gets again canalised at a lower region, at **Khamki** from which starts the **Lower Chenab** canal. But as this canal does not contain enough water, for the **Chenab** has already been tapped at its higher region a small canal from the **Jhelum** is let into this.

6. The **Jhelum** is canalised in two places. The upper **Jhelum** canal takes water to the **Chenab** to add to the **Lower Chenab Canal**. Lower down at **Rasul** it is canalised a second time, from which starts the **Lower Jhelum Canal**.

The region west of the **Jhelum** and the **Indus** is still without canals, and if this region also is canalised, **Sind Sagar Doab** also gets irrigated adding a large area to the 11,000 Square miles of land already irrigated by the canals at present.

Products—**Wheat** is the principal product. **Millets**, **barley** and **pulses** are widely cultivated, **oil seeds** and **sugar-cane** are also grown. But the long stapled **cotton**, grown on irrigated lands, gets the farmers decent price from the **English people**. **Fodder** for cattle is an important crop. There are no forests here, and not much waste land anywhere for cattle to graze on. Hence fodder has to be grown for them as without them agricultural work cannot be done.

People—Naturally in a land irrigated by so many canals, **agriculture** forms their chief occupation. These people live in mud houses (cf **Deccan**). These are



SIMLA.

grouped into small villages all over the plain, because in early times they had to protect themselves against robbers. Very few people live in towns, and there are not many big towns. Living in a drier and more healthy region and on wheat a more nutritious food than rice, the people are strong and sturdy. **Salt mining** is an occupation to some people. This is done in the **Salt Range** in the north western part of the Punjab.

Lahore on the Ravi is the capital. It is an important railway centre with 30,000 people working in its workshop.

Amritsar is the sacred city of the Sikhs. It manufactures shawls, carpets and lace cloths. It trades with Kashmir and Tibet.

Ludhiana exports shawls and asafoetida.

Sialkot manufactures games materials like tennis, cricket and badminton-bats.

Patiala is a native state in the Punjab.

Simla on the Lower Himalayas is the summer residence of the Viceroy.

(2) The Lower Indus Plain

This forms a part of the natural region of the Indo-Gangetic Basin. But for political purposes, the region called **Sind** is grouped with the Bombay Presidency.

Sind is the gift of the Indus as Egypt is that of the Nile. When the Indus leaves the Punjab, it has to pass through a narrow rocky gorge before it enters Sind. Here the river is crossed by a railway bridge at Rohri. Like the Nile, the Indus in this region receives no tributaries, as there is no rainfall at all. Hence the surrounding region is a desert. **Inundation** canals had been made to take the surplus water for irrigational purposes. But these were found to be a pre-

carious source of irrigation. Hence a weir is constructed across the Indus at **Sukkur** and canals are made on either side of the river to make many thousands of acres of land fit for cultivation.

Rice, wheat and cotton are the most important products, all of which are exported to England. Long-stapled cotton is grown here with the help of advanced loans from Lancashire merchants and that is exported to England to be made into cloth in Lancashire mills.

People—This region is very thinly inhabited and all are agriculturists living in villages very near the river or its canals. Their houses are built of mud as in the Punjab with flat roofs.

Towns—**Karachi**, at the mouth of the Delta, is the most important town. It is situated on a natural harbour. All the wheat and cotton grown in the Punjab and Sind reaches Karachi by rail whence it is exported to England. Karachi exports cotton to England just as Bombay does, but it cannot manufacture cotton goods like Bombay because its climate is very dry.

Hyderabad at the head of the Delta is the capital of Sind. It is on the railway line going to the Punjab and is connected with Delhi by another railway line coming from the east. A line goes to Sukkur along the right side of the Indus. From Sukkur the lines go to **Quetta** at the head of the Bolan Pass, a strategic centre in this region.

(c) The Plateau States and Provinces

South India is in two regions (1) South Indian tableland (2) the coastal plains.

1. The South Indian tableland. It extends from the Indo-gangetic basin in the north and west to the coastal plains in the south and west. It comprises

roughly of two parts (a) The region north of the **Satpura Mountains** sloping towards the Gangetic Basin (b) The region south of the Satpuras forming the **Peninsular India**.

The coastal plains may be divided into two main divisions (1) The **East coast plain** consisting of (a) the Northern Circars or the Golconda coast strip (b) the southern or the Coromandal coast strip.

2. The **West coast region** consisting of three parts (a) the Malabar coast region (b) The Konkan strip (c) The Gujerat region.

Political Divisions

This region consists of the following states and provinces.

Rajaputana Agency, Central India Agency, Central Provinces, Hyderabad State, Mysore State, Coorg, Madras Presidency and the Bombay Presidency.

The **Rajaputana agency** consists of a number of states occupied by the Rajaput rulers. This region is in two parts (1) The western region and (2) the eastern upland. The Western Region is mainly the desert region of **Thar**. There is no rainfall here, nor is there any river flowing through this region, which is not a flat level plain. Hence this is and must remain a desert. Here and there where there are small oases people live. Camels are the beasts of burden with whose help some trade is carried on. **Bikanir** is the capital of the state of that name noted for camel-hair goods and cotton fabics.

2. The Eastern region forms the uplands of **Rajaputana** which gradually slope towards the Ganges valley. The rainfall on this region is more than 40 inches but it comes irregularly. **Millet** forms the chief product.

The Bhils dwelling in the forests here are a wild tribe living on the products of the chase.

Jaipur is the biggest city in the region. It is a very fine city. West of this is the Sambhar Lake which yields much salt. **Ajmere** in the centre of the region is the capital of the small British Province of Ajmere-Merwara. **Abu** on the Aravallies Hills is the sanatorium.

Central India Agency

This is in two parts (1) the eastern part including the state of **Rewah** and the small states of **Bundlekhand**. (2) the western part which is bigger includes the states of Bhopal, Indore and Gwalior.

1. **The Eastern States** have ample rainfall from the summer monsoon. Rice is an important product. **Rewah**, the capital of the Rewah estate has rich forests. South of it is the **Umaria** coalfield.

2. **The Western part** is dry as it is more or less in the rain-shadow region of the Vindhya. The temperature in summer is high, but winters are cool. **Wheat** is the most important product of this region. In the valleys here and there sugarcane, cotton and tobacco are also grown.

Gwalior is the capital of the state of that name and has a famous hill fort.

Indore is another Maharatta state. Its capital is Indore.

Central Provinces and Berar

As the name indicates they form the central part of the tableland region. There is ample rainfall here, and so many rivers take their rise here as in Mysore. The



MARBLE ROCKS, JUBBALPore.

Mahanadi flows to the east. The Narbada and the Tapti flow to the west. The Wainganga, the Warda and the Painganga are the tributaries of the Godavary flowing to the south.

Wheat is the chief crop in the Narbada valley. Rice is grown in all places where water supply is sufficient. Gram, pulses and oil seeds are grown in all regions. Berar on account of its black cotton soil grows cotton in large quantities. Lac is collected in the forests.

Coal is obtained near Warora and Manganese ore is found in several parts.

Nagpur is the capital. It is on the main line connecting Bombay and Calcutta and is therefore an important commercial centre. **Amroati** in Berar is the centre of cotton industry. Jubbulpore on the Narbada is an important railway centre. It is near this, that **Narbada** cuts its passage through marble rocks.

Raipur on the plain of the Mahanadi, is to be connected with the East Coast Railway across the Eastern Ghats. This will bring the mineral products of the central provinces particularly manganese and the forest produce of the Ghats to the harbour of Vizagapatam, for export.

Hyderabad State

This is the largest of the Protected States of India and is situated on the Deccan plateau having an average height of 1250 ft. The Godavary and the Krishna with their tributaries supply water to the state. The climate is dry and, on account of high elevation fairly cool, though summers are somewhat hot. On the north, which is near the Central Provinces rainfall, is fairly good but the southern and central regions have very limited rainfall which they get mainly from winter storms in the Bay. **Ragi** and **Millets** are extensively

grown. Rice is cultivated in places where there is water supply.

Where the Deccan lava region comes within the state's limits cotton is grown, and this gives rise to ginning, pressing and spinning industries. Coal is mined at Singareni in the Godavary valley and this is used more or less by the local railway.

Towns—Hyderabad is the capital in which there are many places and mosques. It is an important railway junction, with a college maintained by the Nizam.

Secunderabad is a military station very near Hyderabad. Ellora and Ajanta are famous for rock-cut cave temples.

Mysore

Mysore is a higher plateau than Hyderabad having an average elevation of 3000 ft. It is consequently much cooler than the surrounding plains. It is in the rainshadow of the Western Ghats and so it does not get much rainfall. But being near the Western Ghats the western margin of the state has enough of rainfall, and so there are good forests yielding **Rosewood**, **Ebony**, **Sandalwood** and **Teak**, while the forests are the retreats of Elephants for which Mysore is famous.

Many rivers take their rise on this plateau. The **Tungabhadra**, the **Pennar**, the **Palar** and the **Cauvery** are the important ones. The last one when it descends the plateau at **Sivasamudram** gives rise to a waterfall, from which electricity is generated, which is at present used for lighting the cities of Bangalore and Mysore, besides supplying energy to gold mines at **Kolar**.

Productions—Rice is grown in places where there is good supply of water, but the most common food grain is **Ragi** and other millets. The cool climate of the plateau favours the growth of mulberry leaves on which silkworms are fed. **Sericulture** and silk weaving are therefore additional occupations. Mysore had for a time coffee plantations, but a pest destroyed them and as the

world gets cheap supply of Brazilian Coffee, its does not pay to start plantations.

People speak Canarese, but there are districts where Telugu and Tamil are also spoken. They are industrious. **Mysore** the capital is a beautiful town. It is the centre of the Mysore University. The Palace of the Maharajah is a magnificent building.

Bangalore is the biggest town in the province. It is very largely visited by people in the plains during summer. It has a college and other public buildings besides the British Cantonment very near it.

Srirangapatam on the Cauvery was the capital of Haidar and Tippu.

Coorg is a little mountainous province belonging to the British. **Coffee** and **Cardamums** are its principal products. **Mercara** is its capital. The natives of Coorg are hardy mountaineers fit for military service.

(d) The Madras Presidency

This is the southernmost political division. It is in natural regions. (1) Plateau region. (2) The East coast strip and the West coast strip.

(1) The Plateau Region

The plateau region consists of the Ceded Districts and a part of Chittoor. These are like the Mysore plateau already described. As the rainfall is limited, a number of tanks are in this region to collect and conserve the rain water. But in spite of this, the major part of it is dry and grows the dry millet crops. A canal from the Tungabhadra from Kurnool has been constructed and it irrigates a part of the Cuddapah

District. Cotton is grown in the black cotton soil of the Bellary and Kurnool Districts.

People—This region is not thickly populated as the land is not very fertile. All the houses are flat roofed mud houses. Want of rains is the reason. Poor people have thatched huts for thatch grows on the hilly regions, but palmyrahs are scarce. They are backward in education but being labourers working in a dry region they are generally strong.

Bellary is the biggest town in the District with ginning and spinning factories. It is a military station.

Kurnool on the Tungabhadra is a big town from which Cuddapah-Kurnool canal commences. Cuddapah and Anantapur are other district centres. **Tirupati** is the most famous place of pilgrimage.

Ootacamund in the Nilgiris is the summer capital of the Madras Government.

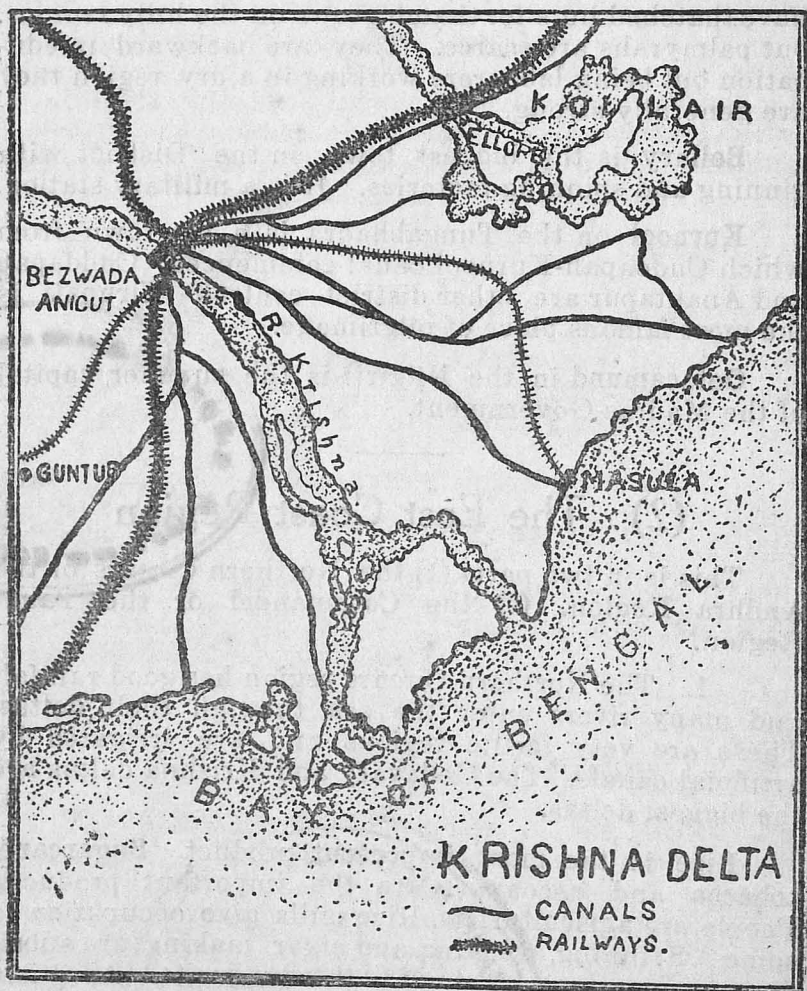
(2) The East Coast Region

This is in two parts (1) the Northern Circars or the Andhra Region. (2) the Coramandel or the Tamil Region.

1. The Northern Circars region has good rainfall and many rivers enter the sea through their deltas. These are very fertile regions and are irrigated by artificial canals. The Godavary and Krishna deltas are the biggest deltas.

Rice is the most important product. **Sugarcane**, tobacco and coconuts are the important products. People are agriculturists. Rice mills give occupation to some. Spinning, weaving and cigar making are subsidiary occupations. Telugu is the language. As it is a region of heavy rains, tiled houses are common (cf the flat mud houses of the Ceded Districts.) Palmyrahs are

abundant and they supply lots of things to the poor people, from buckets to rafters and beams. A railway line runs along the coast, connecting Madras and Calcutta. In the delta regions boats ply on canals. But motor cars are gaining popularity everywhere.



Berhampore, the biggest town in Ganjam, is an educational centre. Vizianagaram, the residence of the

Maharaja, has a First Grade College maintained by him. **Vizagapatam** will soon grow into great prominence (1) as the seat of the Andhra university (2) as the modern harbour exporting **manganese** and the forest produce of the agency forests.

Rajahmundry at the head of the Godavary Delta is a big commercial and educational centre and the **Paper Mills** on the branch of the river will soon supply home-made paper to meet the local needs. The forests of **Bhadrachellam** have inexhaustible supplies of bamboos to carry on this useful industry. A number of rice mills are here. There is an anicut across the river and the water impounded is sent through canals to the Delta tracts.

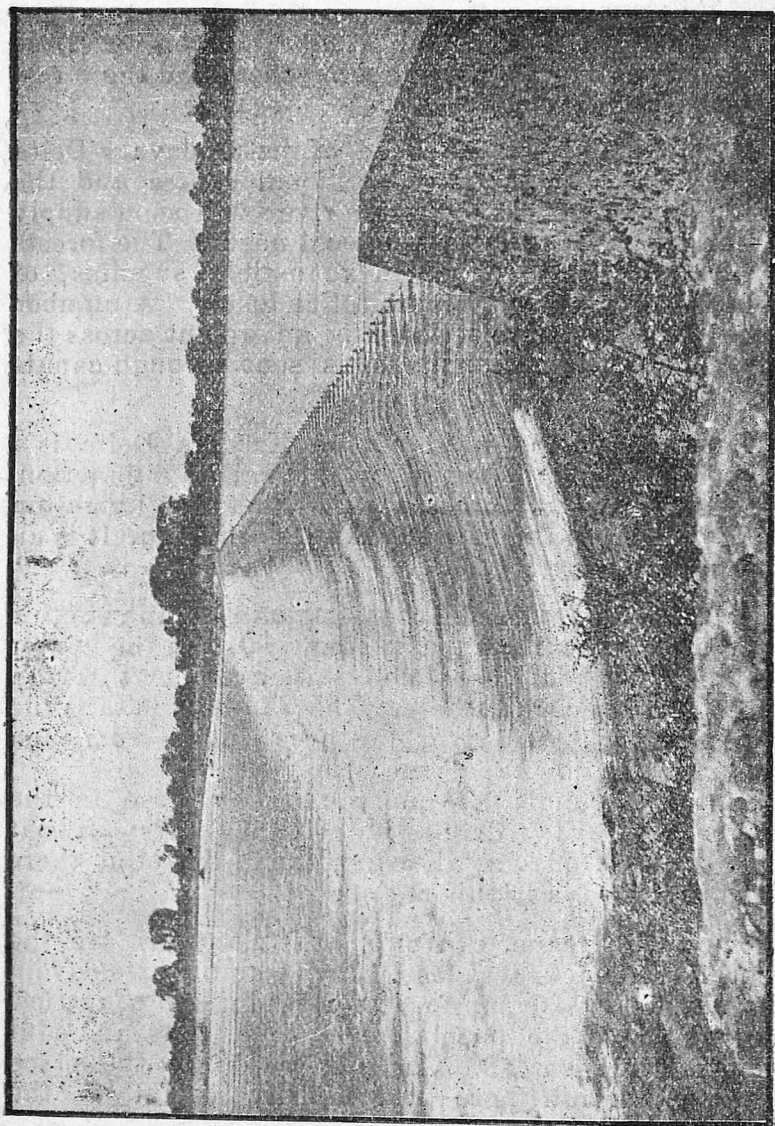
Bezwada at the head of the Krishna Delta is a thriving place and an important railway junction. There is an anicut across the Krishna and irrigation canals start from this place to the Delta region. It is an important railway centre.

2. **The Coromandel coast region** is similar to this except for the fact that it gets heavy rains in the winter season. This becomes wide as it goes southwards. There are deltaic tracts here. The Cauvery delta is the most important. The river has three anicuts from each of which irrigation canals go to the delta region.

But the canals are not so big as those in the Krishna—Godavary deltas, nor do they carry on boat traffic as the Godavary Krishna canals do. But there are more railways in this region.

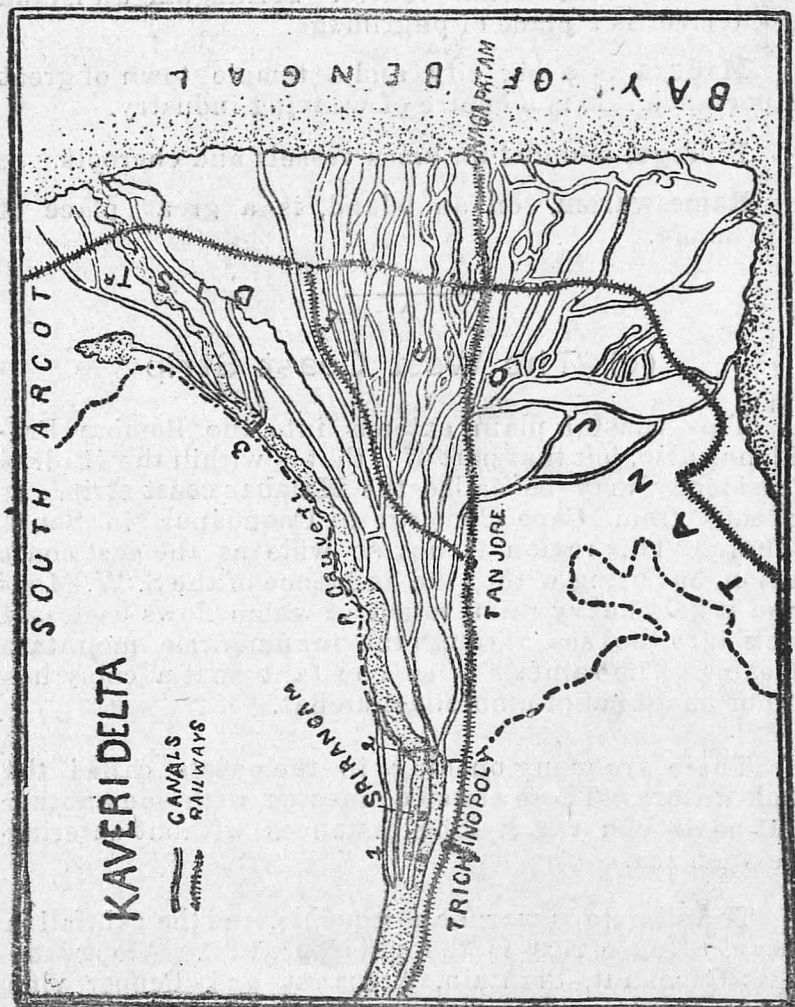
Rice, sugarcane, coconuts and plantains are the important products here also. Groundnut is extensively cultivated in this region for export to foreign countries. The majority of the people are agriculturists and education is wide spread. Coconut tree takes the place of the palmyrah here and equally useful to the people here.

Madras is the capital of the province and is the seat



GODAVARY ANICUT.

of the Madras University. It has an artificial harbour and railways go east, west, north and south. Hence it is an important commercial centre. It has got cotton mills, and is the winter residence of the Governor.



Kumbakonam in the delta of the Cauvery, is situated on a branch of the river. It is a big educational

centre in the midst of a fertile region, and is noted for bell metal articles.

Trichinopoly at the head of the Cauvery Delta is another big educational centre. **Srirangam** an island in the river is a place of pilgrimage.

Madura is a big city and a temple town of great importance. It is a centre of weaving industry.

Dindigul is noted for brass vessels and cheroots.

Rameswaram, on an island, is a great place of pilgrimage.

(c) The West Coast Strip

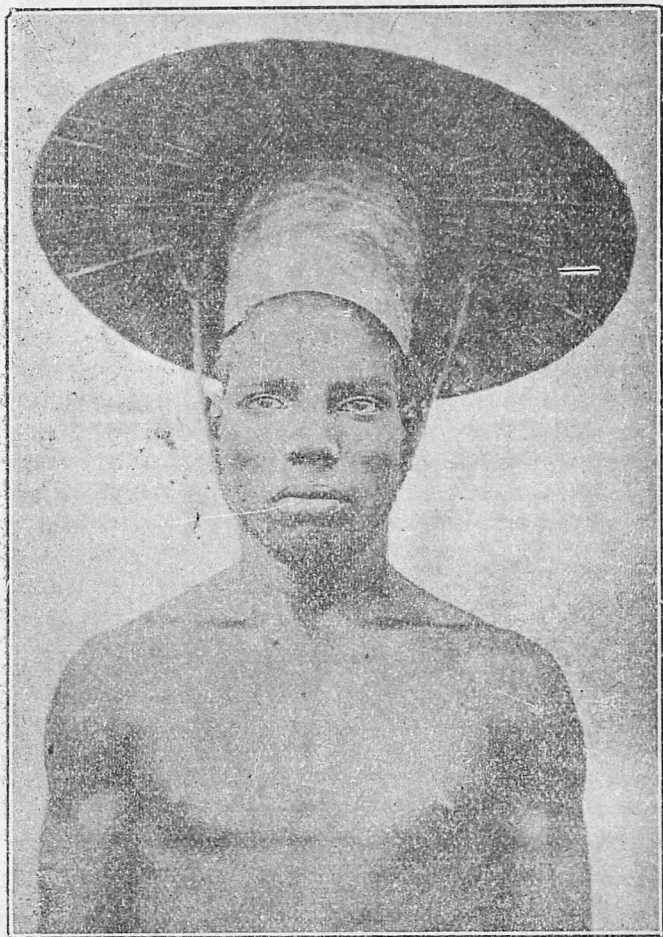
This coastal plain extends into the Bombay Presidency also, but that part of it that is within the Madras Presidency may be called the **Malabar coast strip**. It extends from Cape Comorin to Coondapur in South Canara. This region is not so wide as the east coast region, but being within the influence of the S. W. Monsoon it gets heavy rains, much of which flows uselessly back into the sea through the innumerable mountain streams. The rainfall is so constant that a cooly has to put on a kind of umbrella-like hat.

There are many openings in the coasts called the **back-waters**. These are so connected with one another that boats can travel long distances without entering the open sea.

The climate is warm and equable, and the rainfall is heavy. Hence rice is the chief product. Along the coast Coconut, Plantain, Arecanut and Pepper vine gardens are seen in never-ending succession. Hence these are largely exported. **Coir mats** are made. Fine clay is obtained from which tiles are made. In the hills

teak grows, which is floated down the rivers to be sawn in the saw mills.

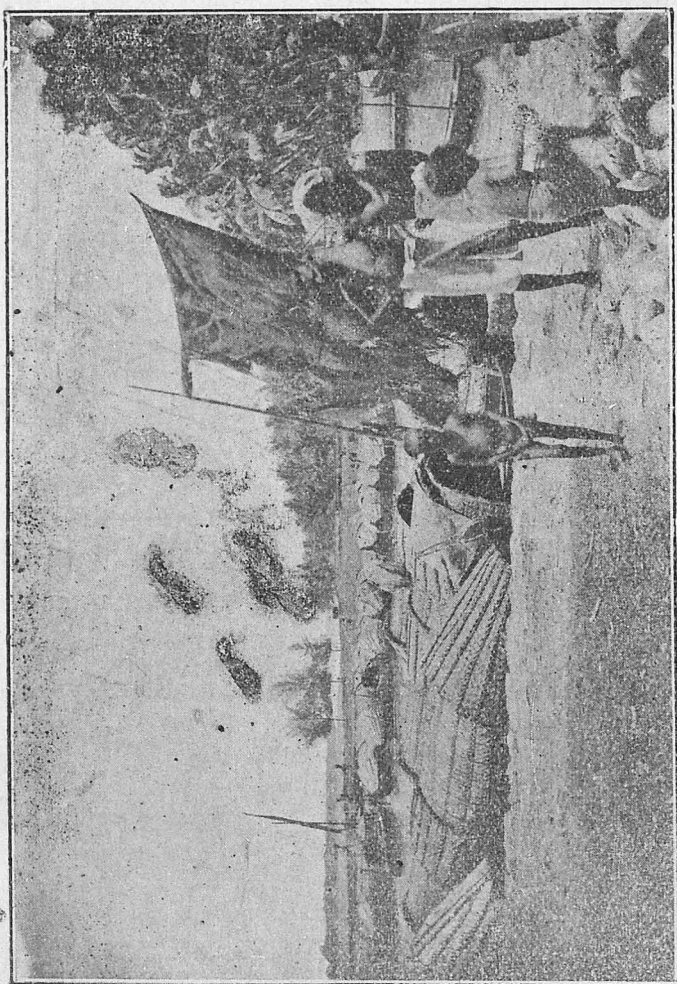
People—They are called Malayalis and their language is Malayalam. Most of them are Hindus, but



A MALABAR COOLY

there are many Christians and Mohamadaus also. The Hindus of this region differ from those of the east coast region in their customs and habits of dress. This is due to the fact that they were cut off from the eastern

plains by the Western Ghats. But now that easy communication by railway over the Palghat gap is assured, these differences will gradually disappear.



A CARGO BOAT ON THE BACKWATERS.

Houses in this region are tiled, and poor people have huts covered with cocoanut leaves. Generally all

houses have a garden round them with tanks for bathing purposes. As the climate is warm and equable, the people do not wear heavy dress and they bathe many times a day in their tanks. Rice is the staple food and cocoanut oil takes the place of ghee. Pepper replaces chillies here.

The people are highly educated, and as many of them do not find employment there, they have to leave their native places to find employment elsewhere. So enterprising they are, that even in Northern India they are found in large numbers.

Cochin is an important town with a fairly good harbour. **Calicut** is another town noted for its weaving mills. **Mangalore**, the chief town in South Canara, is noted for its tiles. It exports copra, rice and timber.

Travancore is a small native state in this region, stretching from Cape Comorin for about 150 miles. Like the other parts of the region, it has thick forests from which Teak, Ebony, Cedar, and Sandalwood are obtained. The plains yield rice and cocoanuts. This is now connected with Madras by rail. Trivandrum is the capital of the Maharaja.

(e) The Bombay Presidency

This extends along the coast to Karachi, and considerable distance east of the ghats. Therefore the presidency may be divided into four natural regions.

1. The southern coastal strip.
2. The Guzerat region.
3. Sind.
4. Deccan lava region.

1. **Southern coastal region**—This is called the **Konkan** and is exactly like the **Malabar** region in point of climate, rainfall and productions. Rice and cocoanuts

grow in the coastal plain and teak on the hills. People live exactly as those on the Malabar coast do.

Bombay is the most important city in this region. It is situated on an island in front of the harbour which is deep and safe. It has railway communication with Guzerat in the north, Calcutta and the Black cotton soil in the east. The raw cotton that reaches Bombay is manufactured in mills on account of the wet climate of the place. Since it occupies more or less the central part of the west coast, goods from England are sent to all parts of India very quickly from Bombay.

2. **The central Guzerat region** is drier than the southern coast strip, which is directly in the way of the S.W. Monsoon and which gets heavy rainfall on account of the Western Ghats helping to condense the moisture. This region is not directly in the way of the Monsoon. Here it has some rainfall but it is drier than the southern coastal plain, the rainfall becoming less and less as we go farther and farther north. Indeed in the northern part it merges into the desert region of Sind.

In the southern parts, rice is cultivated and the hilly interior grows forests. Farther north rice and forests become scarce and cotton and millets become more important.

Kathiawar has not much rainfall. In the central hilly region there is some valuable forest, but at many places it is an arid land. In favoured places here and there, wheat and cotton are grown. **Building stone** is obtained at **Parbandar** and salt deposits are seen all along the coasts.

This region is well served by the B. B. and C. I. Railways which connect Delhi with Bombay. **Ahamadabad** on this line is an important cotton manufacturing centre, making paper also.

Baroda is the capital of a progressive Indian state. It has also cotton mills. **Surat** at the mouth of the Tapti

was an important port, but its importance declined after Bombay came into prominence.

3. **Sind** is the third region of the Province. This is the driest part but it is irrigated by the canals of the Indus. This is already described under the Lower Indus Valley.

4. The Black cotton soil region is in the interior. It forms a part of the Deccan trap mentioned already. This region is in the rain-shadow of the Western Ghats. Hence the rainfall is less than 40 inches. The region immediately to the east of the Ghats being wet, has forests, but the interior has rich black cotton soil. **Short stapled Cotton** is therefore the most important produce, and **Millets** form the chief food grain. All the cotton is sent to Bombay to feed her mills. Cotton mills are being started in this region also.

The people here speak Marathi. They have to work hard to grow food crops like the plateau dwellers elsewhere.

Poona is the summer capital of the Bombay government. It is on the top of the Western Ghats, and its position commanding the passes made it the capital of the Peshwas.

Sholapur is an industrial centre.

Mahabaleswar is a sanatorium.

(f) Burma

This is a distinct natural region towards the east of Assam, separated from India by a series of parallel mountain chains running north to south. Hence it is that we have no railways to Burma yet, though politically it is a part of India. For this reason the rivers in Burma flow north to south in valleys separated by high ranges.

Irrawaddy is the most important river. It rises in snow-clad mountains east of the Brahmaputra bend, and flows into the Gulf of Martaban. From its mouth it is navigable to a distance of about 800 miles up the river and all the chief towns are on its banks. It is therefore a highway of commerce from the coast to the interior. The **Salwin** is another river. It is longer than the Irrawaddy, but it flows in narrow valleys over rocky regions with rapids here and there. It is therefore navigable for a short distance and therefore it is not so useful as the Irrawaddy. The **Sittang** is a small river between the Irrawaddy and the Salwin.

This country extends a considerable distance from north to south. It has therefore different kinds of climates. The coastal and delta regions must necessarily have heavy rainfall, and as we go farther north it must naturally become less and less.

This country can be therefore divided into four natural regions (1) The coast lands of Arakan and Tenassarim (2) the Delta region (3) The dry central region (4) The northern and eastern hill region.

1. **The coast lands of Arakan and Tenassarim** are narrow strips in the way of the S. W. Monsoon. They therefore get very heavy rainfall. But the hinterland in both cases is mountainous and has extensive forests, not of teak which does not require so much rainfall. The low coast-lands grow much rice, and **fishing** along the coasts is an important occupation. The forest growth is so quick and luxuriant in this hot and humid climate that it requires much care on the part of the farmers to keep their farm holdings free from forest growth. Hence people find it impossible to extend the area of cultivation.

Akyab is the chief town and it has a good harbour. Situated in a wider plain, it trades with the north, south and west.

Moulmein is the chief town in this region. It is

situated at the mouth of the Salwin and has a sheltered harbour, which unfortunately is silting up. All the products of the Salwin basin are brought to this port, and it has easy communication with Rangoon on the north. Teak logs come floating down the Salwin. **Tin, Tungsten and wolfram** are the minerals exported from the Tena-s-sarim region.

People—These coastal strips are thinly populated. The region having heavy rainfall is always damp and subject to floods. Hence houses are built upon piles. They are made of wood and bamboos. The upper part which is reached by a ladder is used by people, the lower part being left for cattle. **Agriculture and fishing** are their chief occupations.

(2) Delta Region

This is the most thickly populated region of Burma. This is the combined delta of the Irrawaddy and the Salwin. The whole plain and delta may therefore be supposed to extend as far as Prome with the **Pegu-Yomas** projecting between.

This region has heavy rainfall, and the water and silt brought down by the rivers are enormous. As the climate is hot, **rice** is the principal product of the delta as well as the valleys. **Tobacco** is another important crop. It is the abundance of this perhaps that makes even women smoke long cheroots in Burma.

Pegu Yomas have good rainfall. Though the southern parts have evergreen forests, the northern parts have teak forests. In other parts of Burma there are thicker teak forests. But these are more valuable because they are more easily accessible. Trees are felled and logs are dragged by elephants into streams where they are left to be floated down in the rainy season. All these logs are worked in the saw

mills of **Rangoon**. This hilly region is inhabited by Karens, a wild mountain tribe.



ELEPHANTS IN A FOREST

Rangoon is the modern capital of Burma situated at the mouth of the Irrawaddy. It commands the whole trade of Burma. It is the centre of rice factories, saw mills, and oil refineries. Hence it exports **rice**, **teak**, and **Kerosine** in very large quantities. It gets all manufactured goods and machinery, and sends them to all parts of the country by rail and water.

(3) Dry Central Region

The centre of this region may be said to be Pakokku, the town where the Chindwin flows into the Irrawaddy. The region north of this, gets drier and drier for it is farther from the sea. Hence canals have been constructed for irrigation purposes, and heavy crops of **rice**, **Tobacco**, oil seeds, beans, and millets are obtained. But mineral wealth is more important here. **Yenang-yung** is an important oil producing centre. All this crude oil is sent by boats and pipes to Rangoon where it is refined. **Mandalay** on the Irrawaddy is the former capital. Like Indians, the Burmans are a land nation and so chose Mandalay in the centre as their capital (cf. Delhi).

(4) The Mountain Region

This is inhabited by wild hill tribes. Forests are very common, pines growing in the north and monsoon forest in the south. Rice is the staple food of the people, and enough is grown for local consumption. **Jade** is an important mineral produced in this region.

On the eastern side there are the Shan States. These are on a plateau of over 3000 ft. Hence **pasture** is the natural product. Sheep, goats and horses are reared, and this is an important occupation. In the valleys **teak** and **bamboo** are obtained. **Tea** and

mulberry trees are grown in this region. Lac is gathered in all places.

Lashid an important town is connected by rail with Mandalay.

People—The Burmans, like the Chinese and the Japanese, belong to the Mongolian Race. These are short but well built people with yellow coloured skin. They are fond of music and games and are of a jovial temperament. They wear long hair in the form of tufts on their heads, with bright coloured cloth tied round the head. Their women also have their hair tied in beautiful tufts adorned with flowers.

There are no caste distinctions among the Burmans, and no purdah system among women. They are so free that they carry on trade in their shops. All that women earn belongs to them, and they need not give it to others, not even to their husbands.

On an auspicious day, Burman girls at the age of 12 or 13 have the ear-boring ceremony done to the accompaniment of music. From that time their ear holes are made bigger and bigger till they hold cigars, which they freely smoke. Male children are tattooed from hip to knee. Though this is a painful operation, the custom is still observed by the orthodox Burmans.

All the houses in the lower part of Burma are built upon piles driven into the ground. This is due to the dampness of the ground and the floods that frequently appear. These houses are built of bamboos without the use of iron nails. They have no furniture worth the name. A mattress of reeds, a log of wood for a pillow and two or three woollen blankets in winter form their furniture.

The Burmans bathe twice in the day and the bachelors among them wear round their waists a long robe. Women also wear the same kind of dress but it will be of very bright colours. Even women smoke cigars.

Being Buddhists they do not kill, and there are Buddhist temples everywhere in Burma. The Shwe Dagon Pagoda is a famous one in the country.

As a rule the Burmans are ease-loving people, and so labourers from China and India are imported. This is due mainly to the environment. Land being very fertile, it grows all kinds of products, and the Burmans can get them without much trouble. The hot wet climate enervates the people considerably. Hence the Burmans are neither hard-working nor are they known for their decision of character. Added to this is their religion, which lays stress on kindness and love. Moreover they had for a long time no communication with the external world. And so they became accustomed to let things alone.

But contact with the external world is producing a change. This new **Human factor** is growing so quickly that the cry of 'Burma for the Burmans' is being frequently heard. The people are now realising their duty to their own country, and very soon they will become as industrious and patriotic as any other nation in the world.

(6) Occupations and Industries of India

Agriculture is the principal occupation of 90 per cent of the population in India, and all these are fed upon the local produce. Hence from very early times Indians led more or less a contented life, and have not, like the English people, been compelled to go elsewhere for food products. It is this want of food materials that compels all industrial nations to establish colonies in the tropical regions, so that they may have an adequate supply of raw materials, and at the same time afford scope for the sale of goods manufactured in them. It is this need that led to the occupation of Africa and the Pacific Islands by the European nations, and it is that competition that is at the bottom of all recent wars.

Agriculture being the chief occupation, people live in villages very near their holdings. These villages in former times were more or less self sufficient. Each had its own blacksmith, silver smith, carpenter, washerman barber and potter, and all led a kind of harmonious life based upon division of labour, without that competition that is found in modern days, when all educated people crowd round learned professions, with the result that competition and not co-operation, discord not harmony have become the order of the day.

The chief crops that are grown in India have already been mentioned, and people are engaged in growing some of them.

Pastoral occupations—A great part of India receives good rainfall, and agriculture therefore becomes possible and profitable also. Cattle are reared in the plains in large numbers for ploughing fields and drawing carts as well as for their milk. But the best type of them are reared in the drier parts of Western India where the rainfall is limited and grass grows well. It is the rich mineral content in the grass that serves to maintain the health of cattle unimpaired. For the same reason vegetables grown on dry lands are more tasteful, because they are richer in mineral salts, while those that grow in deltas and places, where there is much water supply, are not so tasteful though they grow very big. This is because much of the mineral salts are washed away by the excess of water. The dry parts of Nellore breed good cows and bulls. Gujarat is famous for its fine cattle. Sheep and goats are reared everywhere but those in the mountainous parts of Kashmere yield fine wool, from which shawls of excellent quality are manufactured.

Cottage industries—Though India has been an agricultural country, it had some industries in former times. Fine muslins, cotton cloth, shawls and carpets, ivory and metal goods were made as cottage industries, and these commanded good sale in the western countries. But the cheap machine-made goods killed these indi-

genous industries, and people are now made entirely to depend upon agriculture, which in some regions is precarious. Even now there are certain cottage industries still going on, though on a small scale. Cotton is spun on charkas and woven into rough cloths called Khaddar. There are, in the interior, villages where hand-made cloths are still worn. **Silk** weaving is another cottage industry in Benares, Bangalore, Conjevaram and other centres. **Kashmir** still manufactures her shawls, and rough carpets of cotton and wool are made in many places. **Ivory and wood carving** are done in some places such as Vizagapatam and Lahore. India is now beginning to use machines for industrial purposes. We have in all delta tracts factories for pounding and polishing rice.

Cotton mills are now located in Bombay, and this industry is made possible by its damp climate, cheap coal which it imports from England, and the large supply of cotton from the Berars. Hydro-Electric Power has recently been obtained from the waterfalls on the Western Ghats, and this works the cotton mills of Bombay, thereby avoiding the smoke nuisance in the city. **Ahamadabad**, Madras, Coimbatore, Cochin, and Cawnpore are some of the cotton manufacturing centres in India.

Woollen Mills are located in Bangalore and Cawnpore, and leather goods are made in the latter.

Calcutta has jute mills, and it supplies the whole world with gunny bags. The nearness of the **Raniganj** coalfield, and the huge supply of raw jute from Bengal account for this industry.

Iron Industry—Though there are several regions where iron ore is plentiful, this industry did not make any headway for want of coal near at hand. But now coal in the **Jherria** coalfield is used to smelt the ore at **Singbhum**, and a huge factory at **Tatanagar** manufactures iron goods, steel rails, nails etc. Tin plate used for Kerosine oil is also made here.

Mining is another industry which gives employment to large number of people. The coal mines at **Singareni, Raniganj**, are of this nature. The Kolar goldfield gives employment to many people in the Mysore Province.

Paper is being manufactured in small quantities in Bengal from **bamboo pulp**. Rajahmundry in our province has recently started a mill to make paper from bamboos, which it gets plentifully from Bhadrachellam.

Tile factories in Mangalore, soap factories in Bangalore and the Malabar coast give employment to some people. **Matches** also are locally manufactured in small quantities.

But all these form a drop in the ocean. We have yet to depend upon western countries for our necessities, and it is our duty to see that the necessary articles are manufactured in our country. This gives employment to those who have none at present or who have to depend upon uncertain rainfall.

(7) Trade, Transport and Sea Ports

India is a huge country, and has various products. Hence it is but natural that there should be some **internal trade**. Thus the wheat of the Punjab and the United Provinces is sent to Bengal, the gunny bags of Bengal go to all the other parts; the tea of Assam is sent to the whole of Northern India, the cocoanuts of the coastal plains are sent to the interior parts.

The External trade of India is very considerable. Being an agricultural country it exports all raw products to the several industrial countries of Europe and America. All manufactured goods are imported by India from foreign countries. From a pin to an Engine everything we need comes from foreign countries. The few industries that have been started in India are not able to supply the country's needs.

THE FOLLOWING ARE THE CHIEF EXPORTS AND
IMPORTS

Exports	To	Imports	From
Wheat	Britain.	Iron goods	Britain, Germany Belgium.
Rice	Holland, Japan, Austria, Hungary, St. Settlements, Germany.	Sugar	Java, Mauritius.
Tea	Britain, Australia, Russia.	Wool	Persia, Australia.
Jute	Britain, Germany, United States, S. America.	Cotton goods	Britain.
Flax	Britain and Belgium.	Woollen goods	Britain, Germany.
Silk	France.	Silk goods	Japan, France.
Jute goods	Britain, United States.	Salt	Britain.
Wool	Britain.		
Cotton	Japan, Belgium, Britain.		
Opium	China, Hongkong, Strait Settlements.		
Oil seeds	Europe.		
Hides	Germany, United States.		
Lac	United States.		

For the export and import of these goods, good harbours are absolutely necessary. India has at present only five harbours of importance, **Karachi, Bombay, Madras, Colombo, Calcutta** and **Rangoon**. Many others are road-steads. Some mention has already been made of these. From these ports railways carry goods to the several parts of the country. From **Karachi** railways go to all parts of **Sind** and the **Punjab**, and these are connected with the net work of railway lines running in the **Ganges Basin** and meeting at **Calcutta**. **Bombay** has railway lines running north through the coastal plain to **Delhi**, another in an easterly direction to **Calcutta**, a third to **Madras** and a fourth through the **Mahratta** country to **Mysore**.

Look at the railway map of India and you will find a net-work of railway lines in the **Indo-Gangetic basin**. This is because the region is very productive, thickly populated and it is very easy to construct railways in a level country. The coastal regions have also railway lines running along them. But the interior of the **Deccan**, because it is thinly populated, has not many lines. Those that exist form mainly links in the general system. All the Provincial capitals are brought into touch with **Delhi**, the imperial capital, by express trains running from them.

The most important Railways are.

1. **The Madras and Southern Maharatta Railway**—It starts from **Madras**. One branch goes along the east coast and ends at **Waltair**, joining the **Bengal Nagpur Railway**. A second branch goes north-west via **Cuddapah**, and **Guntakal** and joins the **Great Indian Peninsular Railway** at **Raichur**. A third branch goes south-west via **Katpadi** and **Jalarpet** and terminates at **Bangalore**. All this is **Broad-guage** line. A **metre guage** line runs from **Masulipatam** on the east to **Mormagoa** on the west via **Bezwada**, **Guntakal**, **Bellary** and **Gadag**.

2. **The South Indian Railway**—This runs from

Madras southwards as far as Tuticorin. Branches go to Rameswaram and Trivandrum.

3. **The Great Indian Peninsular Railway**—This starts from Bombay, one branch runs south to meet the M.S.M. Ry. at Raichur, another goes eastward to meet the Bengal Nagpur line at Nagpur. Another branch goes to meet the East Indian Railway at Allahabad.

4. **The East Indian Railway**—Begins at Howrah and runs westward through Benares, Allahabad, Cawnpore to Ghaziabad where it meets the **North Western Railway** which runs as far as Peshawar.

5. **The Bengal Nagpur Railway** begins at Howrah. One branch runs along the coast to meet the M.S.M. Ry. at Waltair. Another branch goes westwards to meet the G.I.P. Ry. at Nagpur.

Besides these main lines there are many branches. Narrow gauge lines go to hill stations such as Simla, Darjiling and Ooty. As yet there is no direct railway line to Burma, which is separated from India by a series of mountain ranges running from north to south. Hence Burma can now be reached only by sea. But it has railways of its own. Rangoon is the starting point and railways go up the Irrawaddy and the Sittang Valleys up to Mandalay, its former capital. From there the lines go to Bhamo in the north. Notice that the railway lines in Burma run north to south owing to the configuration of the land.

Canals—There are not many canals which are used as means of communications. Some of the irrigation canals in the deltas are used for this purpose. Boats ply up and down in the Godavary and the Krishna Canals. The same may be said of the canals in the Punjab and the United Provinces. The Buckingham canal flows from Bezwada to Madras and beyond. It is not now in good repair, and it is used for the transportation of fuel. Calcutta is connected with the Diamond Harbour by the Hugli Canal which is kept constantly dredged

This allows steamers to go up the Ganges to a considerable distance. Hence we see steamers lying at anchor in the Hugli, along the Strand Road at Calcutta.

(8) Ceylon

It is an island on the continental shelf of India, separated from the mainland by the narrow Palk's Strait, which is so shallow that a canal (Pamban Passage) had to be made to allow small steamers to go through the strait. Big oceanic steamers have even now to go round Ceylon to reach Madras.

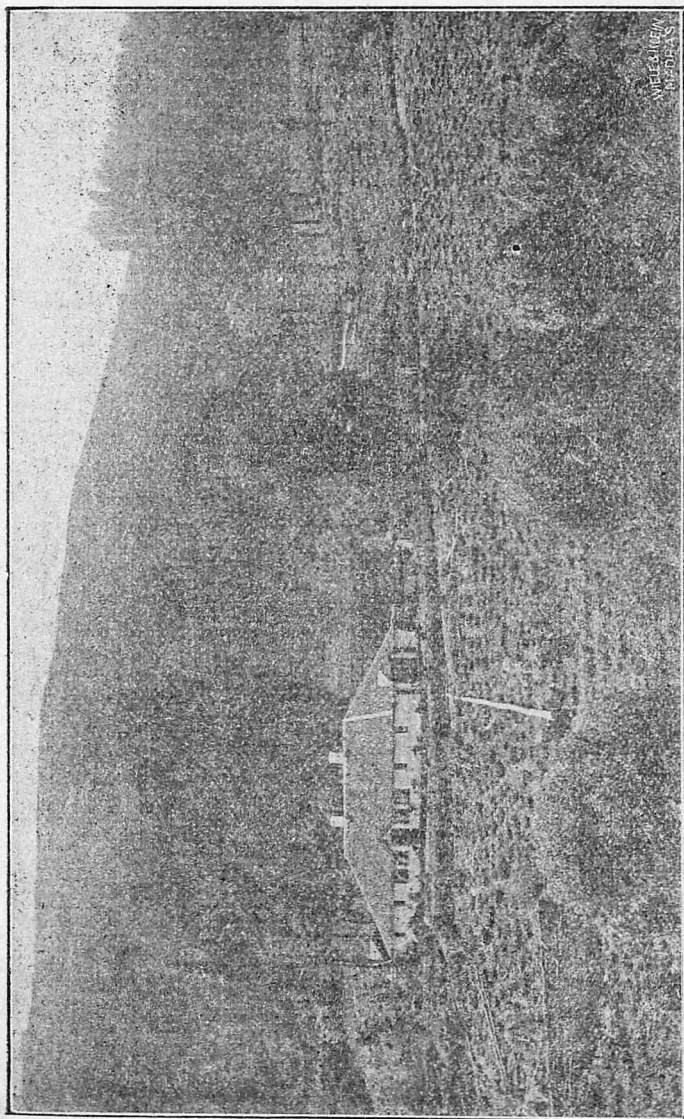
The coast line of the island is fringed with cocoanut and areccanut palms, which waving beautifully in the air, give a grand appearance to the island. Hence Ceylon is called 'The Pearl of the South Seas' and The 'Garden of India'.

Look at the map and you will find that the central part is mountainous. The highest peak **Pedro-Talagala** is only 8000 feet in height.

From the centre the land slopes on all sides. Being in the midst of the Indian Ocean, it receives rainfall from both the monsoons. All this rain flows back into the sea through small innumerable streams, the biggest stream being the **Mahavali Ganga** flowing through regions of grand scenery.

Cocoanut and **areccanut** palms are abundant all over the island near the coast, and they are useful for a variety of purposes. **Cinnamon** is a peculiar plant from which a kind of aromatic oil is extracted. Ceylon was formerly producing coffee, but a blight killed the plantations; and now **tea** has taken its place. On the elevated central parts tea plantations are everywhere to be seen, and therefore many tamil coolies from Southern India find employment there on the lower slopes. **Rubber**, **Cocoa** and **Cinchona** plantations are growing in number,

and large quantities of these are exported annually from the coastal plains.



A TEA PLANTATION.

Rice is the chief product. Among animals **Elephants** are the most important. They are caught in the forests and are trained to carry logs of wood. **Pearl-fishing** and **graphite-mining** are other occupations of the people. The forests yield **Ebony**, **iron-wood** and other timbers.

The chief exports are cocoa, cinnamon, coir, copra, cocoanut oil, Tea, **Rubies**, **graphite**, areccanuts, rubber and pearls. Coal, wine and cotton and woollen goods are the chief imports.

Colombo is the capital situated on an excellent harbour, through which all the sea-trade of the island passes. All the ocean steamers travelling in the Indian ocean meet here for trade and especially for coal which is stored up here. A number of railways radiate from this town, and so the trade of the island gets more or less concentrated at Colombo.

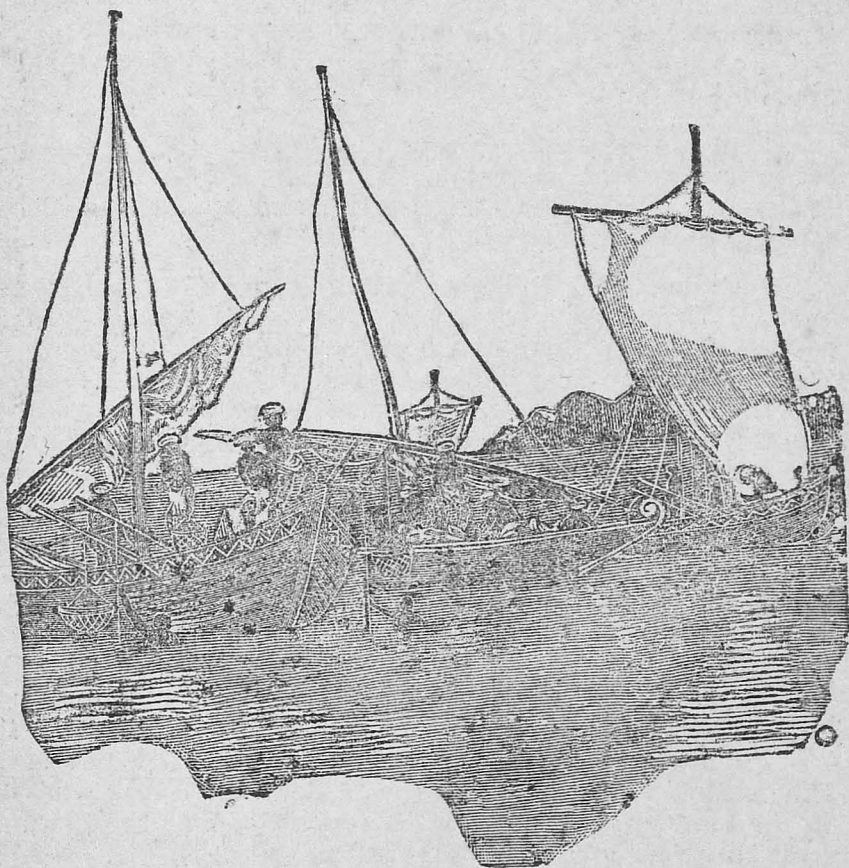
Kandy is the former capital now noted for its fine botanical garden. It is situated in the centre of the island. At a higher elevation in the south is **Nuwara Eliya** which is an important sanatorium.

Trincomale on the east is a beautiful natural harbour, but being farther away is not so important as Colombo.

Population—There are several kinds of people in this island. (1) Tamil coolies from Southern India work in the tea plantations. (2) Those who come as soldiers from the Strait Settlements belong to the Malay race. (3) The descendants of the old Dutch and Portuguese are called Burgers. These prefer to be called **Ceylonese**. These are the best educated people in the country and are employed in all learned professions. (4) The natives of the Island are called **Singalese** and these are agriculturists. (5) An uncivilised tribe of people called the **Veddahs** live on the hills of the island.

Agriculture is the chief occupation of the people. Work on **Tea**, **Cocoa**, and **Rubber** plantations give

maintenance to many people. Pearl fishing and mining graphite are other occupations.



PEARL FISHING, CEYLON.

In an island with an average rainfall of 100 inches, houses are all tiled or thatched with cocoanut leaves, and the people are accustomed to bathe several times in the warm equable climate of the island.

Ceylon is a British crown colony and is ruled by a Governor appointed by the King of England.

QUESTIONS AND EXERCISES

AUSTRALIA

1. Give a brief account of the settlement of Australia.

2. What is a convict settlement? Name any near India. How did Australia thrive as a convict settlement?

3. Give an account of the relief of Australia and draw a map to illustrate your description.

4. Why is the Australian desert hotter than the Sahara Desert.

5. What are monsoons? How are they caused? Draw a Map of Australia and indicate the monsoon region.

6. From the tabular statement on page 11, represent graphically the temperature and rainfall of Sydney, Melbourne, and Perth. How do you account for the heavier rainfall at Sydney.

7. What is a natural region? Divide Australia into a number of natural regions and indicate them on a sketch Map.

8. "Australia has vegetation and animals all peculiarly its own." Justify this by giving a short account of the animal and vegetable life of Australia.

9. What animals and plants were introduced into Australia and how did they thrive?

10. Describe the life of people in any one of the natural regions of Australia.

11. How is the problem of irrigation solved in Australia and what need is there for irrigation?

12. What is an artesian well. Draw a sketch to show how it is possible for water to come out. In a sketch map indicate the artesian areas in Australia.

13. Draw a map of Australia showing the means of communication both internal and external. "Australia is said to be a land of possibilities." Discuss.

14. What and where are the following? The Great Barrier Reef, Riverina, Refrigerating chambers, Shepherd Kings, Kangaroo, Jarrah.

15. Draw a sketch map showing the advantageous situation of Sydney, Melbourne, Perth.

16. What is a Mediterranean Region? What are the Mediterranean regions in Australia. What is the peculiarity of their climate and vegetation?

17. Give an account of the situation of Australia and state the benefit it derives therefrom. Why do ocean routes concentrate more on the south and east of the continent than in the north?

18. If the Australian Alps are shifted to the west coast of the continent, what would be the result?

AFRICA

1. Why was Africa called the 'Dark Continent'?

2. Give an account of its relief and compare it with that of Australia.

3. What is a rift and where in Africa is that rift region found and what are the resulting peculiarities of the regions?

4. Draw Maps of July and January Isotherms and indicate the hottest and coolest regions in these months.

5. How do you account for the heavier rain-fall in January?

6. Why does the Sahara get no rainfall and why is it more arid than the Kalahari?

7. Draw maps of January and July rainfalls and account for the difference in distribution.

8. Mention the important rivers of Africa and describe the course of the Nile or the Congo.

9. Africa has a number of lakes. Give an account of them and describe their importance.

10. How do you account for the duplication of vegetation belts in Africa? Indicate what those belts are by a sketch map.

11. With the help of the tabular statement on page 37, represent the rainfall of Cape Town and Cairo by a graph.

12. Why does Zanzibar get more rainfall than Cairo or Cape Town?

13. Give an account of the animal life of Africa.

14. Into what natural regions can Africa be divided? Describe briefly the characteristics of each region.

15. Egypt is said to be the Gift of the Nile, Discuss.

16. Give an account of the Nile region.

17. Draw a map of Africa showing the distribution of its population, and account for variations.

18. Which parts of Africa are best suited to the Europeans and why?

19. Where are the Mediterranean lands in Africa and what are their special products?

20. What and where are the following—Kimberly, Ostriches, Karoo, Victoria Falls, Tsetse Fly, The Sahara, Congo, Zanzibar.

21. A traveller goes from Cape Town to Cairo. State the natural regions through which he would pass.

22. Draw a sketch map of the Nile Delta and indicate the advantageous position of Cairo.

23. Discuss the importance of the Suez Canal.

SOUTH AMERICA

1. Describe the relief of South America.
2. Give an account of the Andes.
3. Draw sketch maps illustrating the distribution of rainfall in January and July.
4. How do you account for the absence of duplication of Vegetation belts in South America.
5. Give an account of the Amazon and compare it with the Congo.
6. Account for the formation of the Atacama desert.
7. Describe the climate and importance of Argentina.
8. Draw a sketch map of Argentina, showing its railways and indicate the position of important towns.
9. What are the important products of Brazil and what facilities have they for their growth.
10. Give an account of the people of South America and draw a sketch Map of the distribution of population.
11. Give an account of the Panama Canal and say how it is important.
12. Describe the three natural regions of Chile. Why is the central region more important?

NORTH AMERICA

1. Describe the relief of North America.
2. Give an account of the Rocky Mountain Region.
3. Why is the East Coast of North America more important than the West Coast?
4. The Central part of North America has extreme climate. How does it affect the life of the people.
5. Give an account of the life of the people in the Taiga.

6. 'North America has a magnificent system of lakes' Justify this statement.

7. Give an account of either the Missisipi or the St. Lawrence.

8. Give an account of the several natural regions of Canada.

9. Give an account of the New England States and the life of the people there.

10. Mention the several natural regions into which the United States can be divided and give an account of each.

11. What part of North America has the Mediterranean climate and what are its important products?

12. "The West Indies are of great economic importance." Explain.

13. Give an account of the facilities that exist for transport and communication in North America.

EURASIA

1. What justification is there to treat Eurasia as one land mass, and for what reasons is it considered as two separate continents?

2. Give a general account of the build of Eurasia and illustrate your answer by a sketch map.

3. What are the principal factors on which the climate of a country depends? Illustrate them with reference to Eurasia.

4. Give an account of the distribution of the rainfall in Eurasia in January and July and illustrate it with the help of a sketch map.

5. What are Monsoons and how are they caused? What is the relation between the monsoons and the Planetary Winds.

6. Why are these Monsoons peculiar to the Indian ocean? Are they observed in the Atlantic?

7. Why is it that the northern part of Europe gets constant rainfall?

8. How do you account for the heavier rainfall in England in Winter?

9. Which parts of Eurasia have a continental climate and why?

10. Into what natural regions can Eurasia be divided. Describe the life of people in any two of them.

11. What are monsoon forests and how do they differ from the equatorial forests?

12. What are the beasts of burden in Asia and in what regions are they found and why?

13. If you travel north from Cape Comorin, mention the natural regions through which you would pass before reaching the Arctic Ocean.

14. What natural advantages have the British Isles and how are they influenced by them?

15. British Isles do not require irrigation canals. Why?

16. Why has Britain specialized in manufactures and how does she maintain that position?

17. Name the special centres of manufacture and give reasons for them.

18. Food stuffs are imported into Britain. State what are imported and from what countries.

19. How do you account for the importance of London?

20. Why is agriculture more important in France than in England and what are the chief agricultural products?

21. Locate in a Sketch map the manufacturing centres in France and account for them.

22. Paris and Marseilles owe their importance to their situation. Illustrate this.

23. Why is Belgium said to be the cock-pit of Europe?

24. What industries are important in Belgium ?
 25. Account for the industrialisation of Germany.
 26. What is sugar beet and for what is it made use of ?
 27. Account for the importance of Berlin and Hamburgh.
 28. What are the several independent states in the Baltic Region and why is forestry the most important occupation of the people in them ?
 29. Write an account of the industries in Switzerland.
 30. What is meant by Mediterranean climate ? What regions in Europe have this climate ? Mention their important products.
 31. Russia has a continental climate. Why ?
 32. In what respects does Italy resemble India ?
 33. Account for the importance of Turin, Milan and Genoa.
 34. What is the political importance of Western Asia ?
 35. What are the three natural Regions of China and which of them is the most thickly populated and why ?
 36. What are the monsoon lands of Asia and how does the life of people there differ from that of those living in South-West Asia ?
 37. Give an account of the Trans Siberian Railway and account for its importance.
 38. Japan is said to be the Britain of the East. Discuss.
 39. How is Korea important to Japan ?
 40. What are the important industries of Japan and where are they located and why ?
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INDIA

1. Draw a sketch map of the Indian Ocean and indicate the trade routes therein.
2. Give an account of the relief of India.
3. What is alluvium and how is it brought? Name some alluvial plains in India and account for their formation.
4. Account for the formation of the Summer and Winter Monsoons and indicate their relation with the planetary winds.
5. Draw sketch maps of distribution of rainfall in summer and winter.
6. What is meant by rain-shadow and water-table? What is meant by saying that the water-table is lower in the United Provinces than in Bengal?
7. Why is irrigation necessary in India and what are the means of irrigation?
8. Why are tanks more or less limited to the Deccan and why are they not common in the Ganges Basin?
9. Draw map of India and indicate the regions irrigated by canals.
10. From the tabular statement given in the book represent graphically the rainfall of Colombo, Mangalore and Poona and account for variations.
11. Why has Cherra Punji the heaviest rainfall in the world?
12. What are inundation canals and perennial canals and where are they found?
13. Give an account of any irrigation scheme that you know of.
14. Name the provinces which are noted for wheat, rice, tea and teak and indicate the method of their cultivation.
15. Why are Bombay and Calcutta cotton and jute manufacturing centres? Can these industries be interchanged?

16. What is 'Black cotton-soil', where is it found and what are its special features?

17. What are the important sea-ports of India? What is likely to be the future of Vizagapatam as a port?

18. Why is salt imported into India and where does it come from?

19. Indicate the positions of Bombay, Calcutta, Delhi, Karachi in a sketch map and discuss how their positions made them important.

20. How do you account for a net-work of railways in Northern India.

21. What is meant by hinterland?

General

1. How are winds caused? What is meant by sea breeze and land breeze?

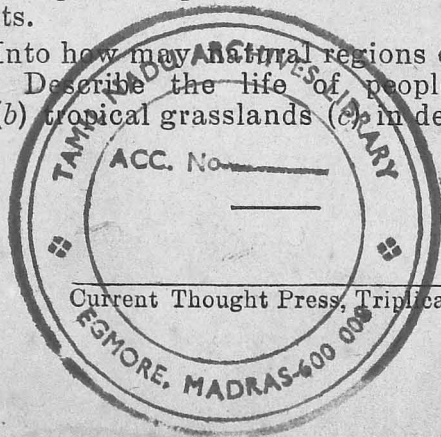
2. What are planetary winds? Explain with the help of a diagram the chief of them.

3. What are monsoons? In what region are they common? Why are monsoons common in the Pacific and Indian oceans and why not in the Atlantic ocean?

4. What are 'Mediterranean lands' and where are they in the world? Indicate their position by a sketch map.

5. What are the important factors on which the climate of a place depends? Give examples from all the continents.

6. Into how many natural regions can the world be divided? Describe the life of people in (a) tropical forests, (b) tropical grasslands (c) in deserts. (d) tundra lands.



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