LANDS AND PEOPLES

Part II

Geography Textbook for Class VII

Editors

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Foreword

'Lands and Peoples — Part II' is a textbook in geography for Class VII. The earlier version of this book was first published in 1988 as a follow-up of the National Policy on Education — 1986 and its Programme of Action (POA). However, some of the world events that have taken place in the recent past rendered certain portions of this book outdated and hence the need for a thorough revision of the book. Though an effort has been made to incorporate as many recent happenings as possible, the rapidity of change at times makes it difficult to record all the events in a textbook. It is essential that both the teacher and the pupil assume greater responsibility and independence in gathering and sifting information relevant to the topic under study.

Geography is introduced as a separate subject as a part of social sciences from Classes VI to X. The National Council of Educational Research and Training's (NCERT) syllabus recommends the study of man-environment interaction in different parts of the world through case studies from different continents as well as a few elements of physical geography which are necessary to understand such interactions. For a better understanding of the subject, the continents have been grouped classwise in a sequence from simple to complex patterns. For example, in Class VI, the continents of Africa, Australia, South America and Antarctica, showing more or less simple geographical patterns — topography, climate, vegetation etc. — have been covered. In Class VII, two highly developed continents — North America and Europe — showing wider varieties have been dealt with. Class VIII covers the continent of Asia with emphasis on India and its neighbouring countries. Keeping in view the focus of geography at this stage, the series has been entitled 'Lands and Peoples'.

The book aims at giving the student elementary knowledge of the geography of the world as well as developing certain basic skills which are acquired mainly through geography, i.e. graphicacy. In other words, the skill of reading and interpreting visual representations such as graphs, diagrams, photographs and maps. A number of activities relevant to the content have been given in the book with a view to providing sufficient opportunities to develop some of these skills.

This book has been revised by Dr Savita Sinha and Shri Mohd Akhtar Husain in the Department of Education in Social Sciences and Humanities. The NCERT is grateful to them for their contribution. Thanks are also due to Shri M.A. Sabri and Shri Mohd Hilal who have prepared the maps and diagrams in this book.

The Council will welcome comments and suggestions on any aspect of this textbook from the readers.

A. K. SHARMA
Director
National Council of Educational
Research and Training

May 1994
New Delhi

THE CONSTITUTION OF INDIA

PREAMBLE

WE, THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a [1][**SOVEREIGN SOCIALIST SECULAR DEMOCRATIC REPUBLIC**] and to secure to all its citizens:

JUSTICE, social, economic and political;

LIBERTY of thought, expression, belief, faith and worship;

EQUALITY of status and of opportunity;
and to promote among them all

FRATERNITY assuring the dignity of the individual and the [2][unity and integrity of the Nation];

IN OUR CONSTITUENT ASSEMBLY this twenty-sixth day of November, 1949, do **HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION.**

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1. Subs. by the Constitution (Forty-second Amendment) Act, 1976, Sec.2, for "Sovereign Democratic Republic" (w.e.f. 3.1.1977)
2. Subs. by the Constitution (Forty-second Amendment) Act, 1976, Sec.2, for "Unity of the Nation" (w.e.f. 3.1.1977)

Part IV A
Fundamental Duties

ARTICLE 51A

Fundamental Duties – It shall be the duty of every citizen of India–

(a) to abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem;

(b) to cherish and follow the noble ideals which inspired our national struggle for freedom;

(c) to uphold and protect the sovereignty, unity and integrity of India;

(d) to defend the country and render national service when called upon to do so;

(e) to promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diversities; to renounce practices derogatory to the dignity of women;

(f) to value and preserve the rich heritage of our composite culture;

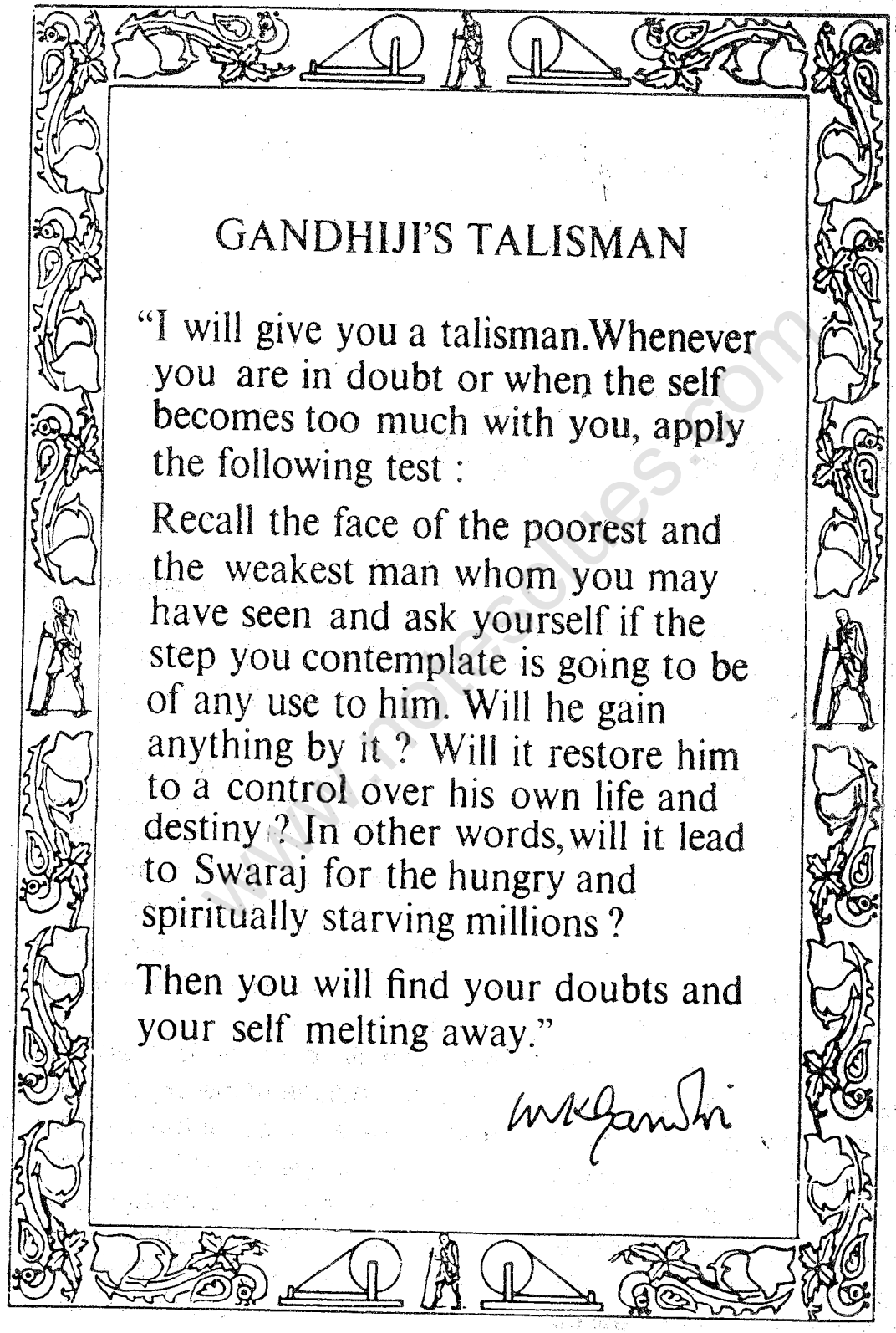
(g) to protect and improve the natural environment including forests, lakes, rivers, wild life and to have compassion for living creatures;

(h) to develop the scientific temper, humanism and the spirit of inquiry and reform;

(i) to safeguard public property and to abjure violence;

(j) to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievement.

Contents



GANDHIJI'S TALISMAN

"I will give you a talisman. Whenever you are in doubt or when the self becomes too much with you, apply the following test :

Recall the face of the poorest and the weakest man whom you may have seen and ask yourself if the step you contemplate is going to be of any use to him. Will he gain anything by it ? Will it restore him to a control over his own life and destiny ? In other words, will it lead to Swaraj for the hungry and spiritually starving millions ?

Then you will find your doubts and your self melting away."

M K Gandhi

UNIT I

THE ATMOSPHERE

In this unit, you will learn about the atmosphere. It is one of the four important spheres of the earth. The other spheres are the hydrosphere, the lithosphere and the biosphere. The next unit is on the hydrosphere. You will learn about the lithosphere and the biosphere in Class VIII.

The atmosphere extends to several hundred kilometres above the earth's surface. It is always restless and is responsible for all weather changes. Due to unequal heating of the earth's surface by insolation, different heat zones are produced on the earth. The variations in temperature bring about changes in the atmospheric pressure conditions. Winds are caused due to difference in air pressure. The presence of water vapour in the atmosphere produces several weather phenomena such as clouds, rainfall, and snowfall.

The state of the atmosphere at a given place and time in terms of its temperature, moisture, winds and the condition of the sky is called weather. Climate, on the other hand, is the average of the weather conditions of a somewhat larger area over a longer period. The basic elements of weather and climate are the same Since weather and climate have great influence on our life, we like to know about them Weather forecasts can be made for the weather conditions of the next few hours or the next few days

You can yourself observe some of the weather conditions. A few activities have been given in this unit to help you conduct such observation.

Besides weather, you can also find out about the duration of day and night at your place and its relationship with seasons. Can you find direction during the night ? If you don't know, you can find out about it in Chapter 4.

CHAPTER 1

The Atmosphere and Its Temperature

Terms that you know

ATMOSPHERE . The air envelope consisting of gases that surrounds the earth

Our earth is surrounded by a vast envelope of air known as the ATMOSPHERE. It is held to the earth's surface by its gravity. The air is composed of tiny molecules of gases. A MOLECULE is the smallest particle of a substance. These molecules move randomly in all directions in the air. The number of molecules present in a unit/volume determines the density of air. The number of molecules present in the air is very high near the surface of the earth. Therefore, the density of atmosphere is high near the surface. As we go high up in the atmosphere, the molecules are spread farther apart. The air, therefore, becomes rarer.

Composition of air

Air is a mixture of different gases in varying proportions. There are two main gases in the air. They are nitrogen (78 per cent) and oxygen (21 per cent). The remaining one per cent is shared by argon, carbon dioxide, ozone, water vapour and many other gases. All these gases are very important for us. As you know, we cannot live without oxygen. Similarly, carbon

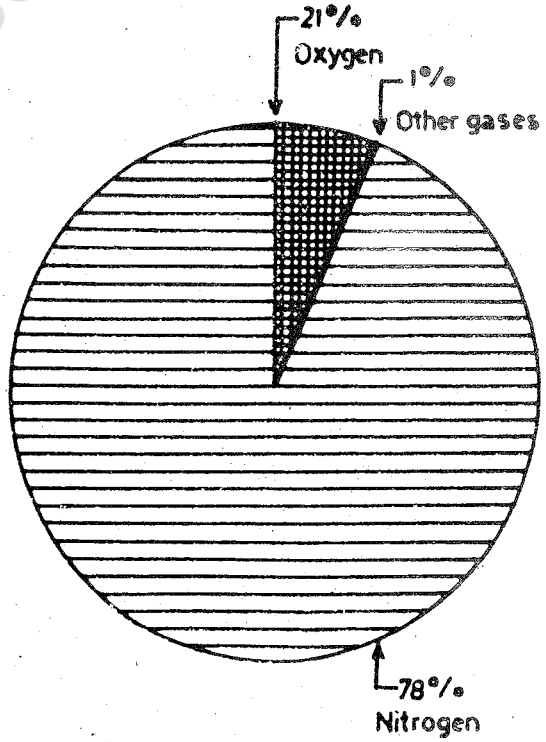


Fig. 1.1 Composition of air
Note the main gases constituting the air.

dioxide is required by plants for preparing their food. Can you find out how other gases are useful to us ?

Layers of the atmosphere

The atmosphere may broadly be divided into four layers. They are the troposphere, the stratosphere, the mesosphere and the thermosphere. However, there are no sharp boundaries between them.

The lowest layer of the atmosphere is called the TROPOSPHERE. It extends upto a height of 10-15 kilometres. It is the densest part of the atmosphere and contains large parts of the gases in the atmosphere. Almost all dust particles and water vapour of the atmosphere are found in this layer. Hence, all the weather phenomena take place here. The troposphere and the layers above it act as filter. They allow the solar heat to reach the earth's surface but absorb and reflect the harmful radiations present in sunlight. Hence, this layer is of great significance to us. You will learn about the other layers in higher classes.

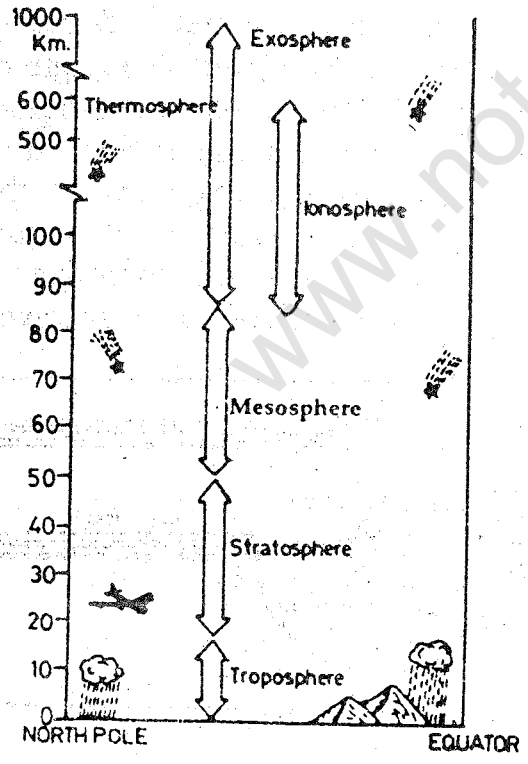


Fig. 1.2 Layers of the atmosphere
Note the height and thickness of each layer.

How the atmosphere is heated

The sun is the main source of heat for our planet — earth. It constantly RADIATES (gives out) light and heat in all directions. This is called SOLAR RADIATION. Only a small amount of this radiation is received by the earth because it is very far from the sun and is small too. The amount of SOLAR RADIATION received by the earth is called INSOLATION (incoming solar radiation).

The earth's surface is heated mainly by insolation. The rays of the sun pass through the earth's atmosphere, but they do not heat the air as much as they heat the earth's surface. Have you ever noticed that some surfaces get hotter than others? You will find that land surfaces such as concrete roads heat up faster than water bodies. The heated surface of the earth in turn warms the air coming in contact with

it. In this way, the atmosphere is heated mainly from below by the heated surface of the earth. For this reason, the temperature in the lower parts of the atmosphere is usually higher. It decreases as we go higher.

The degree of hotness or coldness of the air is known as TEMPERATURE. The standard unit of measuring temperature is degrees Celcius (°C). The instrument used to measure temperature is called THERMOMETER. The simple thermometer has a narrow tube, which is filled with mercury. When the temperature rises, the mercury expands and rises in the tube. With a fall in temperature, the mercury contracts inside the tube.

Factors influencing insolation

All parts of the earth do not receive the same amount of insolation throughout the year. The angle of the sun's rays and the duration of the day determine the amount of insolation received by different parts of the earth.

You must have observed that the sun's rays strike the earth's surface nearly vertically at noon. Such rays get concentrated over a small area and give more heat. On the other hand, the sun's rays strike the earth obliquely during morning or evening. They spread over a large area and hence the heating effect is less. Moreover, the vertical rays cover a shorter distance through the atmosphere as compared to the oblique rays. As such, the heating effect of the vertical rays is more than that of the oblique rays. The sun's rays are more direct in summer than in winter. The angle of the sun's rays also varies with latitude. The sun's rays are almost vertical in lower latitudes. As we go towards the poles, the sun's rays are more oblique.

Another important factor influencing the amount of insolation received

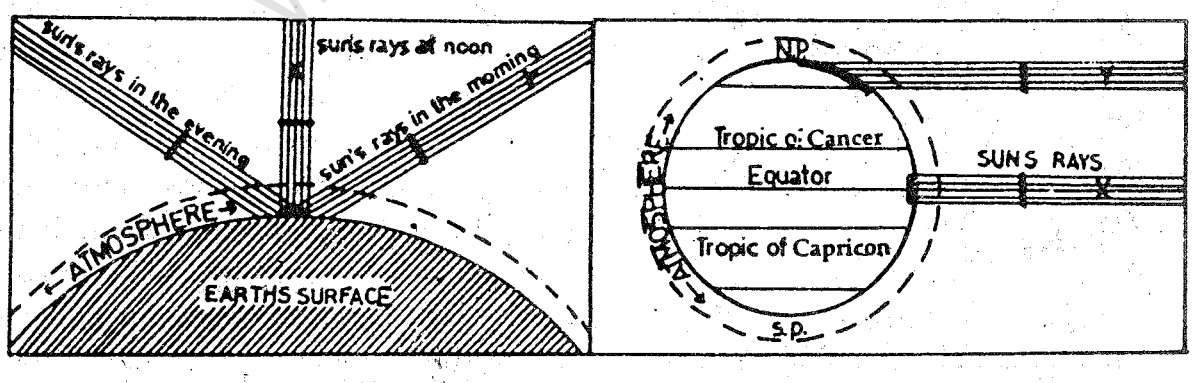


Fig. 1.3 The sun's rays striking the earth at different angles

(a) Why are the sun's rays more hot at noon than in the morning or evening ?

(b) Note that the sun's rays cover a small area in the lower latitudes but as we go towards the Poles, they spread over a large area.

by a place is the duration of daylight. During summer, days are long and nights are short. On the other hand, during winter, nights are long and days are short. As such, the amount of insolation received during summer is more than it is in winter.

Thus the amount of insolation received by the earth's surface varies with time and place.

Distribution of temperature and the heat zones

The distribution of temperature over the earth's surface is closely linked with the amount of insolation received by it. In general, temperature decreases from the equator to the poles. Three heat zones may be identified on the earth's surface as shown in Fig. 1.4.

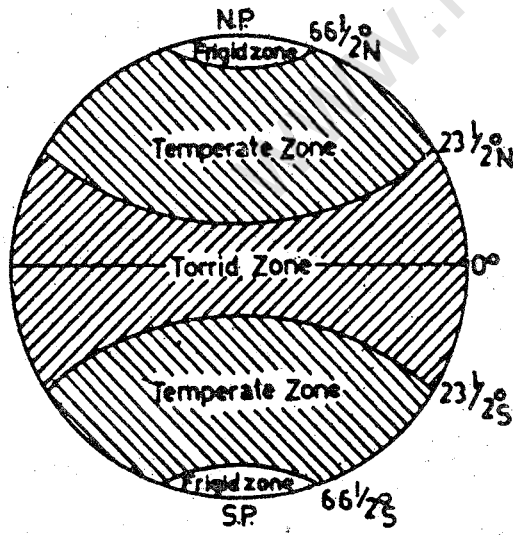


Fig. 1.4 Heat zones of the earth
Note the distribution of insolation in different parts of the earth. Which are the three heat zones of the earth ?

The zone between 23° 30' North and 23° 30' South latitudes is known as the TORRID or TROPICAL zone. The apparent movement of the sun during a year is between these two latitudes. As a result, the sun's rays are almost vertical in this zone throughout the year. Hence, this zone receives maximum insolation and is very hot. The zones between 66° 30' North latitude and the North Pole and 66° 30' South latitude and the South Pole receive minimum insolation. They are, therefore, very cold. These are known as the FRIGID ZONES. The areas between the torrid zone, on the one hand, and the frigid zone on the other, have moderate temperature i.e. they are neither too hot nor too cold. They are called TEMPERATE ZONES.

From the above, it is clear that the temperature of air decreases with *increase in latitude*. As we go away from the equator, it is cooler. This explains why Siberia is colder than the equatorial lands of Africa or Asia or why Moscow is cooler than Delhi.

The temperature of air also decreases with ***height or altitude*** in the lower layers of the atmosphere. You can even feel this change in temperature if you move from the plains to the mountains or vice versa. Generally, the temperature drops at the rate of roughly 1°C for every 165 metres of ascent. It is for this reason that Shimla

is cooler than Ludhiana, though both are located more or less on the same latitude. Similarly, Quito is comfortably cool despite its location near the equator.

Another factor influencing temperature is the *distance of a place from the sea.* Since water heats or cools slowly compared to the land mass, the air above it also gets influenced in the same manner. As such, during summer when land gets heated, the air above it also gets heated and rises. In contrast, the air above water is cooler and denser. It, therefore, moves towards the land and brings a cooling effect on the land near the sea. Thus there is very little difference between summer and winter temperatures in places near the sea. Such places, having equable temperature, are said to have MARITIME CLIMATE. On the other hand, there is greater difference in summer and winter temperatures in places in the interior of a landmass. Such places having extremes of temperature are said to have CONTINENTAL CLIMATE. Now you know why Delhi is hotter in summer and cooler in winter than Mumbai or Kolkata.

New terms you have learnt

TROPOSPHERE : Lowest layer of the atmosphere where all weather phenomena take place
INSOLATION: Incoming solar radiation received at the surface of the earth

EXERCISES

Review questions

1. Answer the following questions briefly.
   (i) Name the two main gases constituting air.
   (ii) Name the four layers of the atmosphere.
   (iii) How is the troposphere important to us?
   (iv) How is the earth's surface heated?
   (v) Why is there variation in the distribution of insolation over the earth's surface?

2. Distinguish between
   (i) Torrid and frigid zones
   (ii) Equable temperature and extreme temperature

3. Put a tick mark (✓) against one of the four choices given below which answers the question or completes the statement best.
   (i) The most abundant gas in the atmosphere is _____
   a. oxygen b. nitrogen c. carbon dioxide d. ozone
   (ii) Plants need_____to prepare their food.
   a. helium b. oxygen c. argon d. carbon dioxide
   (iii) Temperature drops at the rate of roughly 1°C for every_____metres of ascent.
   a. 160 metres b. 165 metres c. 170 metres d. 180 metres
   (iv) The atmosphere is held to the earth's surface because of_____.
   a. the earth's magnetic force b. high density of air
   c. the earth's gravity d. solar radiation

4. Make out correct sets from the three columns.

Place	*Controlling factor*	*Climate*
a. Quito	1. Distance from the sea	i. Maritime
b. Delhi	2. Distance from the equator	ii. Cold
c. Mumbai	3. Height	iii. Continental
		iv. Equatorial

5. Name the three important factors that influence temperature. Describe how distance from the sea affects the temperature of a place ?

Skills in geography

6. Study carefully in your atlas the world maps showing January and July temperatures. Compare the areas of highest temperature in the two maps. What inference will you draw?

CHAPTER 2

Air on the Move

Terms that you know

TEMPERATURE : The degree of hotness or coldness of air

TROPICAL ZONE : The region bounded by the tropics in which the sun, at noon, is overhead twice a year

WIND : Horizontal movement of air near the earth's surface

Have you seen smoke rising up in the air ? Sometimes it rises vertically and at times it drifts sideways. Why does the smoke rise ? Why does it change its direction ?

Let us find answers to these questions. As you have read, air is made up of tiny molecules, which move constantly in all directions. When any material is burnt, the air around the place is heated. As a result, the molecules start moving vigorously. The more you increase the temperature, the faster these molecules move. Besides, these molecules also move apart with an increase in temperature. The air, therefore, expands and its density decreases. As a result, the air becomes lighter and moves upwards. This can be observed in the case of hot air balloons.

Cold air, on the other hand, is dense and heavy. It, therefore, moves downwards while hot air rises up. Smoke is usually emitted when a substance is burnt. It rises up with the hot air. We see it rising vertically when there is no wind. But if there is the slightest wind, it carries the smoke in its direction. What are these winds and how are they caused ? Why do they change their direction ? For answering

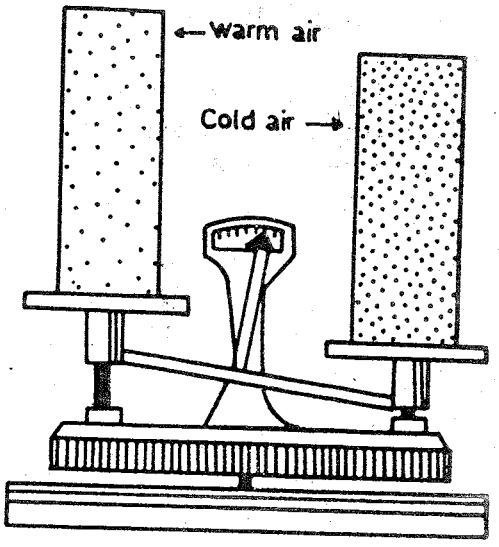


Fig.2.1 Air pressure
Which type of air exerts more pressure and why ?

these questions we need to know more about the air.

Though we cannot see air, it occupies space and has weight too. Suppose you could weigh two columns of air as shown in Fig. 2.1. Column 'A' contains warm air and Column 'B' contains cold air. Which one would be heavier on the balance and why ? Air molecules in the cold-air column (Column 'B') are closer to each other than in Column 'A'. Hence there are more molecules in Column 'B'. It will, therefore, weigh more and push down the balance with greater force than Column 'A' having hot air. The force exerted on a unit area is called PRESSURE. The weight of the air as well as the atmospheric pressure depend on temperature.

The atmosphere exerts force on the earth's surface due to its weight. It is called ATMOSPHERIC PRESSURE. The weight of an air column of 1 cm^2 from sea level to outer space is slightly more than a kilogram. Atmospheric pressure is generally determined by measuring the force the atmosphere exerts on a column of mercury. The instrument used for this purpose is called a BAROMETER. These days, a different kind of barometer is used to measure air pressure. It does not contain any liquid like mercury and hence is called ANEROID BAROMETER (without liquid).

The pressure exerted by the atmosphere decreases with height or altitude. Atmospheric pressure is the highest at sea level. As we go up, the amount of air above us as well as its density decreases. On high mountains, air is so thin that climbers have to carry oxygen to breathe properly.

As the earth's land and water surfaces warm up and cool down, the air near them also does the same. Air starts moving from places of high pressure to places of low pressure. It continues to blow as long as the difference in pressure exists. The horizontal movement of air near the earth's surface is known as WIND.

Permanent pressure belts of the world

Atmospheric pressure on the earth's surface is not uniform. It varies from place to place. It is influenced by the temperature of air at a given place. But on a global scale, there are a few permanent pressure belts. Look at Fig. 1.4. showing heat zones of the earth. Compare it with Fig.2.2 showing pressure belts. You will notice that temperature is high throughout the year near the equator. As a result, the lower layers of the atmosphere get heated. Air expands and rises continuously in this region. As a result, a low pressure belt is created in this region. It is known as the EQUATORIAL LOW PRESSURE BELT or the DOLDRUMS.

On the other hand, the region around the North and the South Poles

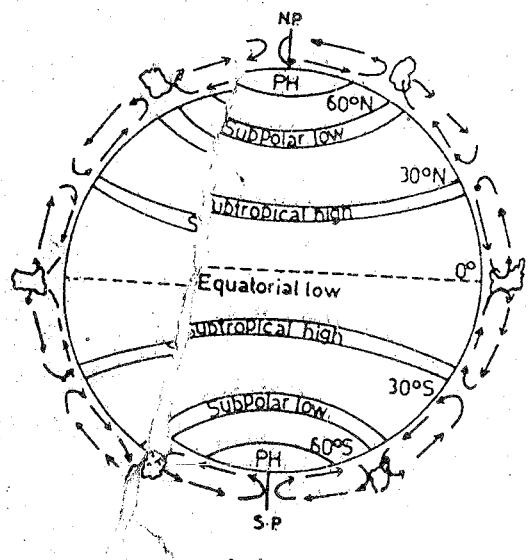


Fig. 2.2 Pressure belts
Note the pressure belts of the world.

are very cold throughout the year. Therefore, the air is also very cold. It is dense and heavy. As a result, it keeps on piling up. This produces POLAR HIGH PRESSURE BELTS, around the two Poles. When the subsiding air reaches near the surface of the earth, it starts flowing towards the equator.

The rising air at the equator cools down after reaching the upper parts of the atmosphere. It spreads out towards the poles. The air starts sinking near 30°N and 30°S latitudes and piles up there. Thus, high pressure belts are produced in these regions. They are known as the SUB-TROPICAL HIGH PRESSURE BELTS or horse latitudes. The subsiding air is relatively dry, because its moisture has already been released near the equator. Consequently, the world's tropical deserts are located in this belt. As soon as the subsiding air reaches near the earth's surface, it splits into two branches. One starts flowing towards the Pole and the other towards the equator.

In both the hemispheres, the air moving from the two high pressure belts i.e. polar and the sub-tropical high pressure belts, meet each other near 60° latitude. Converging air starts rising and sub-polar low pressure belts develop near 60°N and 60°S latitudes.

Permanent wind belts of the world

Winds blowing constantly throughout the year in a particular direction are called PREVAILING or PERMANENT or PLANETARY winds. There are three main planetary winds which blow constantly

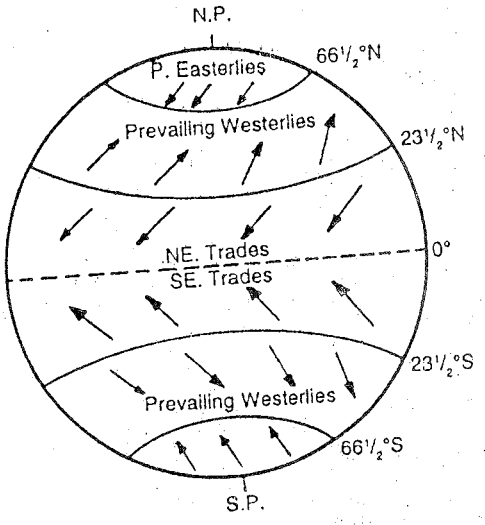


Fig. 2.3 The planetary winds
Note the planetary winds of the world and their association with the pressure belts.

from high to low pressure belts of the world throughout the year They are the trade winds, the westerlies and the polar winds (Fig.2.3). The monsoons are also part of the planetary wind system but of a different nature.

Winds blowing from the subtropical high pressure belts towards the equatorial low pressure belt are called TRADE WINDS. The word 'trade' has been derived from a Latin word, *tread*, which means constant direction .These winds blow in the tropical zone. While in the northern hemisphere, they blow from the north-east direction, in the southern hemisphere, they blow from the south-east.

The WESTERLIES are the winds blowing from the sub-tropical high pressure belts towards the sub-polar low pressure belts. They blow from the south-west in the northern hemisphere and from the north-west in the southern hemisphere.

The POLAR WINDS blow from the polar high pressure to the sub-polar low pressure areas. In the northern hemisphere, their direction is from the north-east. In the southern hemisphere, they blow from the south-east.

The MONSOONS are the winds which reverse their direction with the change in season. Strong contrasts in temperature between summer and winter cause great difference in the pressure conditions over the interior part of a big continent like Asia and the surrounding seas. Hence the winds start moving from land to sea in winter and from sea to land in summer. Winds

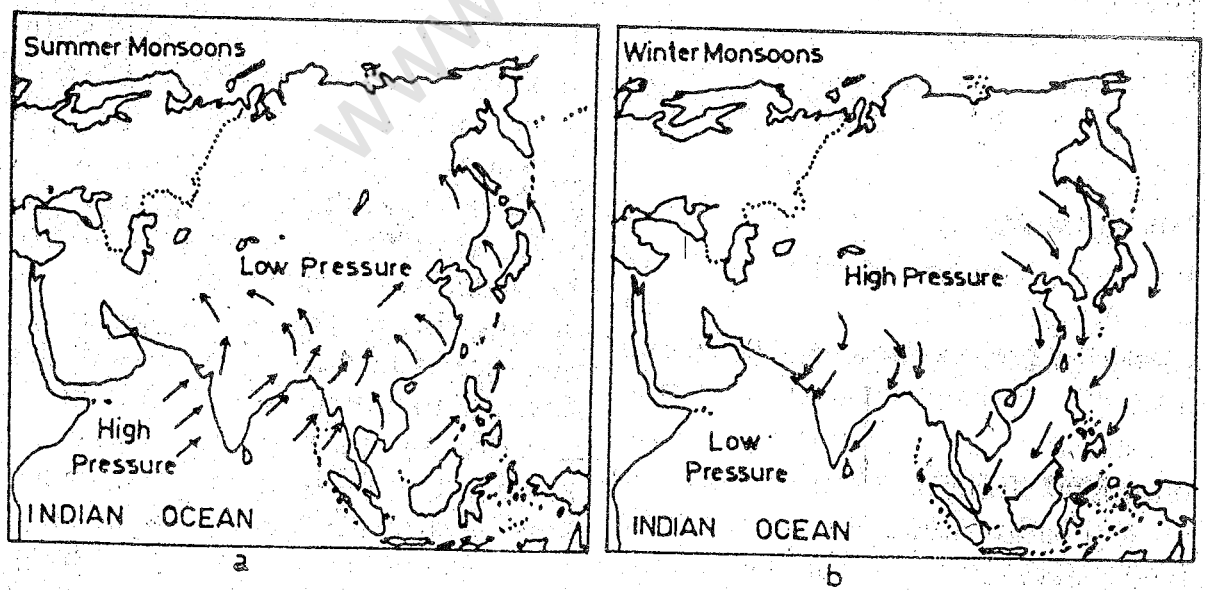


Fig. 2.4 The monsoon winds
Note the reversal of wind direction from summer to winter. Winds blow towards the land in summer and towards the sea in winter.

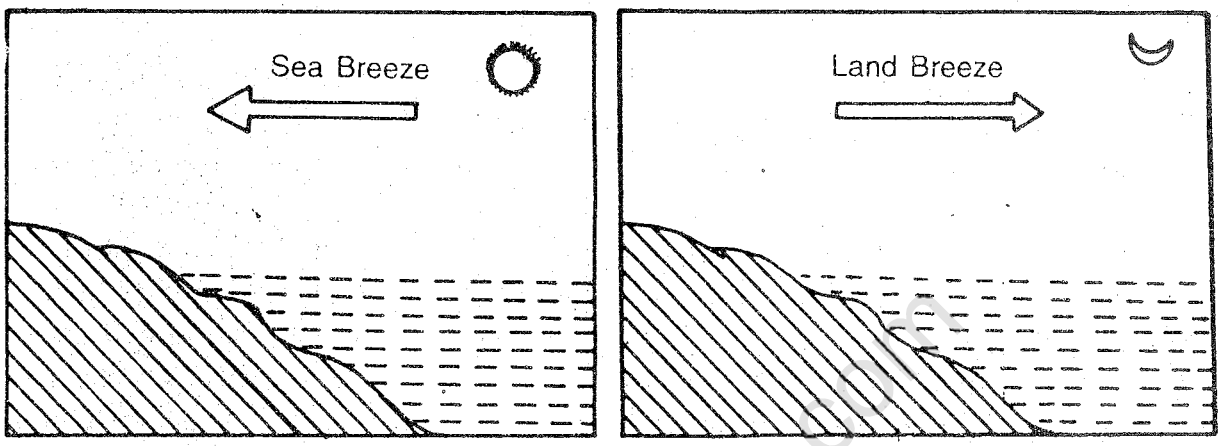


Fig. 2.5 Sea breeze and land breeze
The sea breeze blows during the day and the land breeze blows during the night. Why is it so ?

coming from the sea bring moisture and heavy rainfall occurs during summer. Thus the main characteristic of the monsoons is a complete reversal of winds on a very large scale. Though the monsoons are mainly associated with Asia because of their strong nature reflected there, weak monsoons exist over south-west USA, Australia and parts of Africa and South America.

Local winds

Besides planetary winds, there are some winds which blow only during a particular period of the day or year in a small area. Sea and land breezes in coastal areas and katabatic winds on mountain slopes are some examples.

In coastal areas, the sea and the land breezes are common. During the day, the land heats up more rapidly than the sea. The air over the land also gets heated and rises. It causes low pressure over the land. The cooler air from the sea moves towards the low pressure area over the land. This is known as SEA BREEZE. During the night, the land cools faster than the sea. The air pressure over the sea is lower than over the land. As such the wind starts blowing from the land to the sea and is known as LAND BREEZE.

Sometimes, during winter, areas adjacent to highlands experience a local wind called KATABATIC WIND. *Katabatic* is a Greek word which means moving down. The temperature and pressure of air increase when it blows down a mountain slope. This air is very dry. A good example of this is the *mistral*. It blows over France from the Alps towards the Mediterranean sea.

An example of a local wind in India is the *loo*. It is a hot, dry and dusty wind which blows over the northern plains of India in May and June.

New terms you have learnt

ATMOSPHERIC PRESSURE: The force exerted by the atmosphere on the earth's surface due to its weight

WIND: Horizontal movement of air

TRADE WINDS: Winds that originate and blow from the subtropical high-pressure belts towards the equatorial low pressure belts

EXERCISES

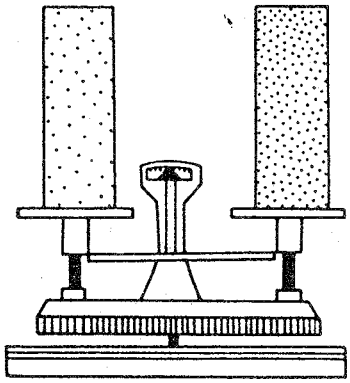
Review questions

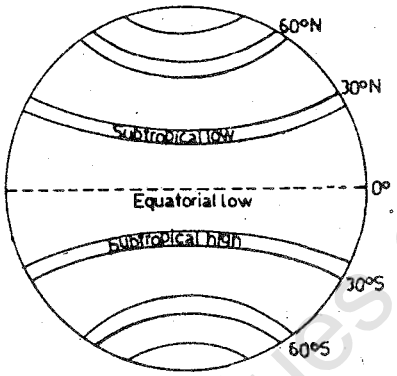
1. Answer the following questions briefly.
   (i) Why does a hot-air balloon rise ?
   (ii) Which column of air — hot or cold — will press more on a balance ?
   (iii) What is atmospheric pressure ?
   (iv) What does a barometer measure ?
   (v) Why does air pressure decrease with increasing height from sea level ?
   (vi) Why do polar areas have high pressure belts ?
   (vii) Name the three low pressure belts of the earth.
   (viii) What are planetary winds ?
   (ix) What are the monsoons ?
   (x) What are katabatic winds ?
2. Distinguish between
   (i) Low pressure and high pressure
   (ii) Land breeze and sea breeze
   (iii) Trade winds and the westerlies
3. Mark each statement as true or false. If a statement is false, change the underlined word to make the statement true.
   (i) Cold air is <u>light</u> and dense.
   (ii) Air <u>expands</u> when heated.
   (iii) Air pressure is <u>more</u> at mountain top than at sea level.
   (iv) There are <u>alternating</u> low and high pressure belts on the earth.
   (v) Winds blow from <u>low</u> pressure areas.
   (vi) The *loo* is an example of <u>planetary</u> winds.
   (vii) Monsoon winds blow from land to sea during <u>summer</u>.
   (viii) Katabatic winds move <u>up</u> the mountain slopes.
   (ix) Trade winds blow in the <u>temperate</u> regions.
4. Explain how temperature and density of air influence air pressure.
5. Describe briefly the high and low pressure belts of the earth's surface. Explain

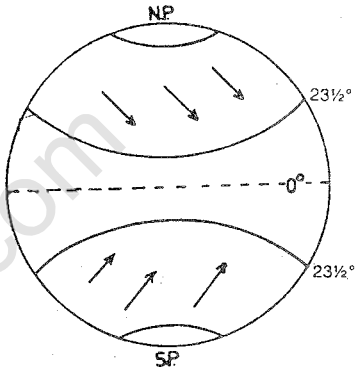
how they are responsible for the development of the planetary winds. Draw suitable diagrams to support your answer.

Skills in geography

6. Is there anything wrong in the following diagrams ?
If yes, identify and correct the mistakes and write them in the given space.







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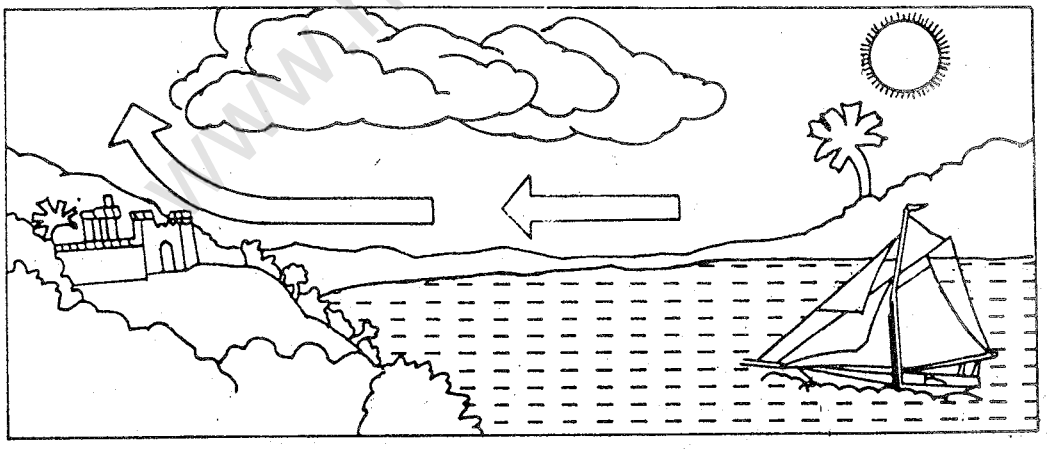

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CHAPTER 3

Water in the Air

Terms that you know

WATER VAPOUR : Water in the form of gas present in air

RAIN-BEARING WINDS : Winds coming from the oceans or large water bodies containing moisture and hence bringing rain

The earth is often called a 'blue planet' because it appears blue when viewed from space. Another distinguishing feature of the earth is the cloud cover. What causes the dominant blue colour of the earth's surface, or the white clouds in the atmosphere ? Both, the dominant blue of the earth's surface and the white clouds in the atmosphere, are water.

In the air, water is found in the gaseous form, i.e. water vapour. It is the most valuable gas of the atmosphere. While it is present in large amounts in low latitudes and over oceans, it is less over polar areas and land. The water vapour content of the atmosphere also varies with the season. It is more in summer than in winter. This variation can also be observed at different altitudes. As we go up, there is less amount of water vapour in the atmosphere.

Compared to other gases, the amount of water vapour present in the atmosphere is very small. It, however, plays a crucial role in the heating and cooling of the atmosphere and the day-to-day changes in weather.

How water moves in the air

Water can change its form from liquid to solid or gaseous. What happens to the wet clothes when they are spread out for drying ? The water in them disappears after some time. Where does it go ? It changes into water vapour and goes into the air. This process of change in water from a liquid to a gaseous state is called EVAPORATION. Most of the water in the atmosphere comes through evaporation from water bodies on the earth's surface.

Evaporation goes on all the time and at all temperatures. The rate of evaporation, however, varies with change in weather conditions. While evaporation is highest in hot, dry and windy conditions, it is lowest in cool, moist and calm weather.

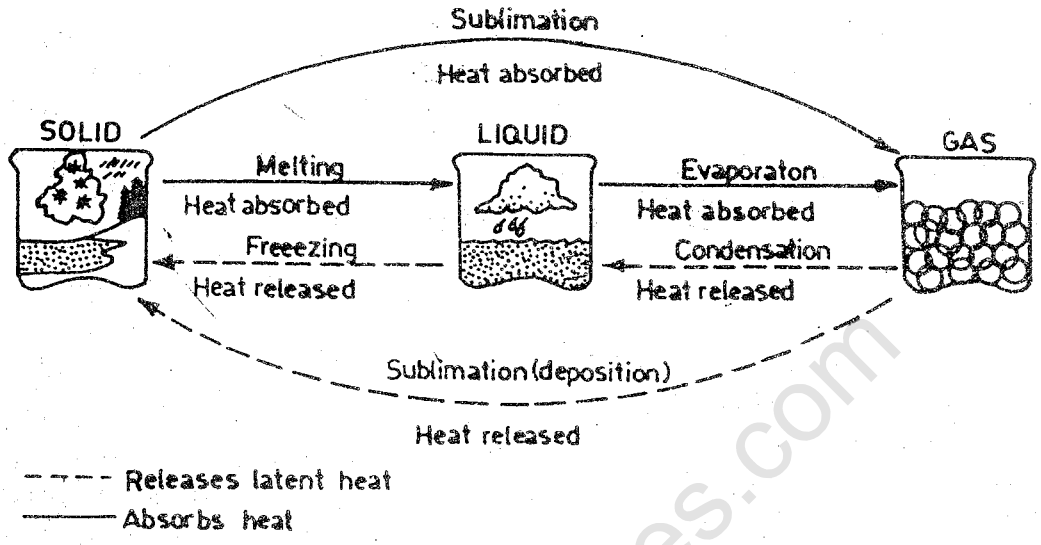


Fig. 3.1 Water in three states
Note that heat is absorbed when ice melts into water or water evaporates to form water vapour. The heat is lost in the process of condensation. What is sublimation ?

Humidity

The amount of water vapour present in the air is called HUMIDITY. It is closely related to the temperature of the air. A certain amount of air can hold, at a given temperature, only a fixed maximum amount of water vapour. At this stage and for the given temperature the air is said to be SATURATED.

If the amount of water vapour present in the air is less than the amount it can hold, the air is said to be UNSATURATED.

Condensation

The capacity of air to hold water vapour increases rapidly with increase in temperature. On the other hand, any decrease in temperature reduces the capacity of the air to hold water vapour. Saturated air may, however, become unsaturated if there is increase in temperature. Similarly, unsaturated air may become saturated if it is cooled. The temperature at which the air gets saturated is known as DEW POINT. At this point, water vapour changes into minute droplets of water or ice crystals. This process is called CONDENSATION. When both temperature and humidity are high, we feel uncomfortable. Why ? We perspire more due to heat but the sweat does not evaporate because of high humidity. Therefore, we feel hot and sticky In which season do we feel so ?

As a result of condensation, dew,

fog or clouds are formed. Although each of these forms of condensation is very different, they all have two things in common. First, for any form of condensation, the air must be saturated. Second, there must be a surface on which the water vapour may condense. Objects at or near the ground help in dew formation at the earth's surface. In the air, on the other hand, tiny particles of matter such as dust serve as surfaces for condensation of water vapour. These are known as CONDENSATION NUCLEI.

Forms of condensation

Dew and Frost : In cold, clear nights when comparatively warm, moist air comes in contact with cold objects it cools down. As a result, its excess moisture condenses into droplets of water called DEW. In the case of dew formation, the dew point is above freezing point (0° Celsius). Sometimes, the dew point is at or below freezing point. In such cases, dew gets frozen and is called FROST.

Cloud

Condensation of water vapour in the atmosphere results in cloud formation. When moist air is lifted upwards, it starts cooling. As soon as the dew point is reached, the water vapour condenses in the form of very tiny droplets of water or ice crystals. Millions of minute droplets of water or tiny crystals of ice hang in the air and float with the air currents. These visible aggregates of minute droplets of water or ice crystals are known as CLOUDS. On the basis of their appearance (shape) and height, they are classified into different categories.

Precipitation and its types

When millions of cloud droplets join together to form drops which are too heavy to float in the air, they come down as drops of water or flakes of snow. Falling of this solid or liquid water on the earth's surface is called PRECIPITATION. Rain, snow and hail are different types of precipitation. Precipitation completes the water cycle that began with evaporation from the oceans and other water bodies on the earth's surface.

Due to ascent or drift to a cooler region, the cloud may be further cooled. As such, cloud droplets become still colder and come close together to form big drops of water. These drops are so big that they can no longer float

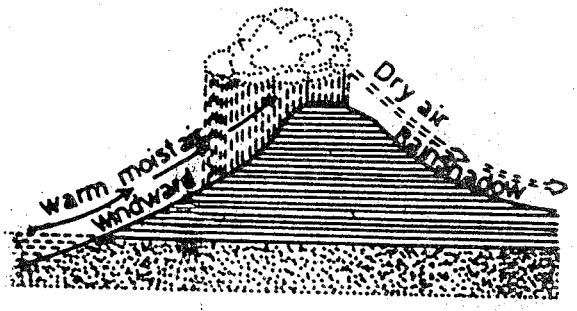


Fig. 3.2 Relief rainfall
Why is the rainfall heavy on the windward side of a mountain? What is a rain-shadow area ?

in the air. They fall on the earth's surface. Falling of these big drops of water from the clouds is known as RAIN. In calm air, the drops are very small and are called DRIZZLE.

Rainfall occurs in three different ways. When a mountain range lies in the path of a rain-bearing wind, it causes the wind to rise along its slope. As a result, it cools and gets saturated. Further cooling due to its ascent leads to rainfall. This type of rainfall is known as RELIEF RAINFALL. The windward side of the mountain gets heavy rainfall. On the leeward side, air descends and gets warmer. It gives very little rainfall. The leeward side of the mountain is called the RAIN-SHADOW REGION. In India, the western part of the Western Ghats receives heavy rainfall but the eastern part falls in the rain-shadow region.

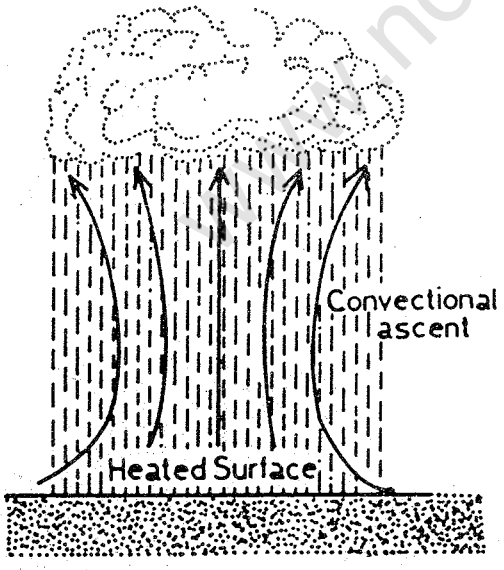


Fig. 3.3 Convectional rainfall
The warm, moist air rising upwards forms clouds and gives rise to sudden and heavy showers called convectional rainfall.

Fig. 3.4 Cyclonic rainfall
The uplifting of the warm air in a cyclone causes this rainfall.

When land is heated, the air close to it is also heated. The warm air, then, starts rising. If the rising air is moist, increase in height leads to the cooling of air, condensation and formation of clouds. Such clouds often result in heavy rainfall. This type of rain which is associated with convectional air current is known as CONVECTIONAL RAINFALL. It is common in the equatorial region.

When winds blow from all sides towards the centre of the low pressure, they have a spiral motion of great speed. This causes the whirling air to rise up. If the air has moisture, sudden uplifting of warm air may lead to rainfall. This kind of rainfall is called CYCLONIC RAINFALL. It is common in mid-latitudes.

Snowfall : When condensation in the air takes place at a temperature below freezing point, the water vapour

changes into tiny ice crystals. These crystals may combine together to form flakes of snow which cannot remain suspended in the air. Falling of flakes of snow from the clouds is known as SNOWFALL.

Hail : Sometimes, powerful air currents may lift raindrops to a greater height where temperature is below freezing point. This causes the raindrops to freeze. As the frozen drops fall through the clouds, they collect a coating of water. The high velocity air currents may toss these frozen drops up again. The coating of water is frozen in a concentric layer about the original nuclei. The process is repeated several times till hailstones grow so big and heavy that the air can no longer hold them. Then they fall to the ground as HAILSTONES.

New terms you have learnt

EVAPORATION : The change of water from liquid to gaseous state

CONDENSATION : The change of water from gaseous into liquid state

DEW POINT : The temperature at which the air gets saturated and begins to change into water drops

PRECIPITATION : Falling of solid or liquid forms of water such as snow, hail and rain from the atmosphere as a result of condensation

EXERCISES

Review questions

1. Answer the following
   (i) What is humidity?
   (ii) How does temperature affect humidity?
   (iii) What is condensation nuclei?
   (iv) What is dew point?
   (v) What is precipitation?
   (vi) Which are the two bases on which clouds are classified?

2. Distinguish between
   (i) Evaporation and condensation
   (ii) Saturated and unsaturated air
   (iii) Dew and frost
   (iv) Rainfall and snowfall
   (v) Windward side and leeward side

3. Some of the following statements are true and some are false. Tick mark the statements which are true and rewrite those which are false.
   (i) Evaporation takes place at all times.
   (ii) Water vapour is found in a fixed amount in the atmosphere
   (iii) Air can hold more moisture if it is cooled.
   (iv) Dew is formed when the dew point is above freezing point.
   (v) Dust particles help in the formation of clouds.
   (vi) Convectional rainfall is common in mid-latitudes.

5. What are the different forms of condensation ? Explain how clouds are formed ?

6. Describe the process of hail formation.

7. Explain with the help of diagrams how relief rainfall and convectional rainfall occur.

Skills in geography

8. Make a diagram of the water cycle using arrows and labels. Why is this a complete cycle ?

9. Collect information and pictures of different types of clouds seen during the rainy season.

CHAPTER 4

Local Weather and the Sky

Terms that you know

AIR : A gaseous mixture around the earth
RAIN : Water drops from clouds

Our daily lives are influenced far more by the weather than by any other aspect of the physical environment. The clothes we wear and the activities we engage in are influenced by the weather. Newspapers, magazines, radio and television report a wide range of weather events. This reflects the growing interest of people in the weather.

Weather and climate

Weather is constantly changing, sometimes from hour to hour and at other times from day to day. It may be defined as the state of the atmosphere at a given place and time. CLIMATE, on the other hand, is the sum of all statistical weather information about a large area or region. In other words, it is the 'average weather' as well as variations and extremes, which together characterise a place. The basic elements of weather and climate are the same. The most important of these are temperature, humidity, precipitation, cloudiness or sunshine, air pressure and winds.

Information about these elements of weather and climate are collected by scientists at different weather stations around the world. Weather stations are those places where weather data are recorded continuously. Data about weather is also collected by ships, balloons and satellites. On the basis of this information, weather forecasts are made. The study of weather is called METEOROLOGY and the scientists who study weather are called METEOROLOGISTS.

Let us find out how information about weather is recorded.

Temperature

The instrument which is used for measuring the air temperature is called a THERMOMETER. Since different substances react to temperature changes in varying degrees, mercury or alcohol is

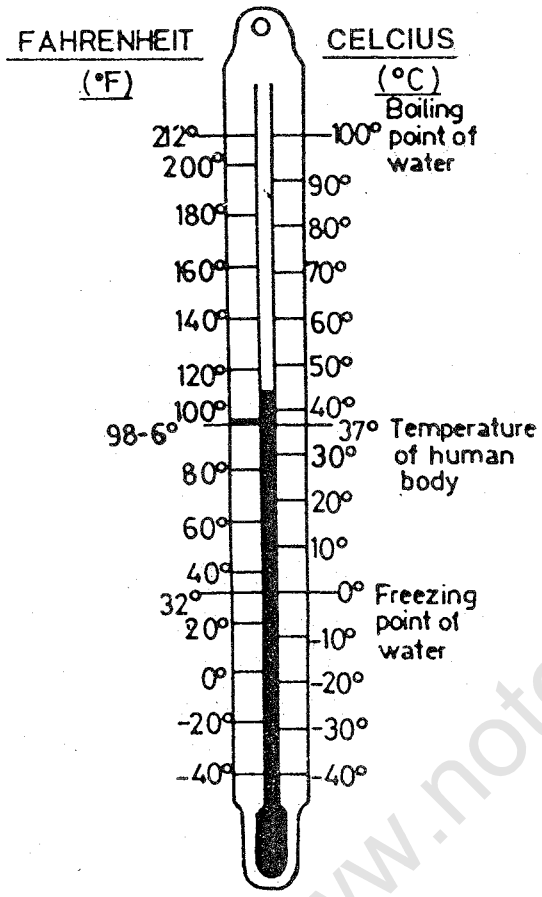


Fig. 4.1 Thermometer
How many degrees below freezing point can the thermometer record temperature ?

used in thermometers. When heated, it expands more than the glass and when cooled, it contracts more than the glass.

As a result, the liquid rises in the tube when temperature rises and falls when it drops. On the glass tube, there is a graduated scale which helps in reading the thermometer.

Temperature is indicated in degrees of Celsius or Fahrenheit. These are the two types of scales named after two scientists who devised them. In our country, we use the Celsius scale. It is a decimal scale on which the melting point of ice is at 0^0 and the boiling point of water at sea level pressure is 100^0.

The temperature of a place changes constantly. We can find out the maximum and minimum temperatures of a place within 24 hours with the help of a special kind of instrument called Six's Maximum and Minimum Thermometer.

The thermometer should not be exposed to the direct rays of the sun. It is always kept in shade and at a place about 11 metres high from the ground having free movement of air. Generally, a shelter is used for this purpose.

These days weather and meteorological stations use an instrument called THERMOGRAPH which continuously records temperature.

The difference between maximum and minimum temperatures recorded at a place during a day (24 hours) gives the diurnal or DAILY RANGE OF TEMPERATURE. The average or mean temperature of a day can be worked out by dividing the total (daily maximum temperature + daily minimum temperature) by 2. Similarly, maximum and minimum temperatures during a month give us the monthly RANGE OF

TEMPERATURE. In the same way, we can find the ANNUAL RANGE OF TEMPERATURE.

Atmospheric pressure

Atmospheric pressure is measured with the help of a BAROMETER.

Simple barometers use mercury to measure air pressure. But they are not easy to use. Therefore, the ANEROID (without liquid) barometers are preferred. They are portable too.

This instrument consists of partially evacuated metal chambers with a spring inside to check them from collapsing. These metal chambers are very sensitive to variations in air pressure. They compress when the pressure increases and expand when it decreases.

Aneroids are often used in making another instrument called BAROGRAPH, which continuously records changes in air pressure.

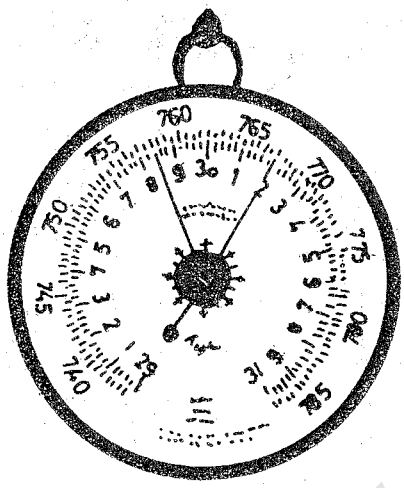


Fig. 4.2a Aneroid barometer
What is this instrument used for?

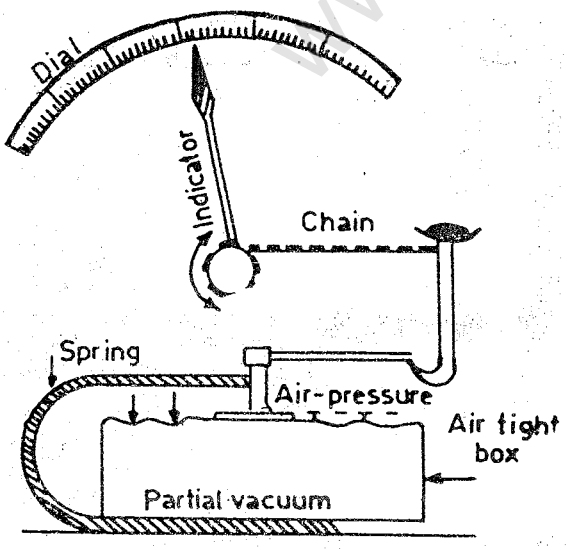


Fig. 4.2b The mechanism of an Aneroid barometer
See how this instrument works.

Wind direction and speed

The horizontal movement of air is called WIND, which always blows from

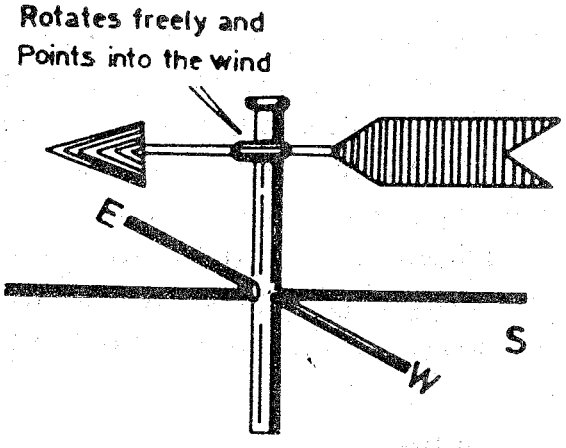


Fig. 4.3 A wind vane
The arrow of the wind vane always points to the direction from which the wind blows. What do the letters N E W S indicate?

high pressure to low pressure areas. Two basic measurements — direction and speed — are particularly significant to weather observers. A wind is named after the direction from which it blows. For example, winds blowing from the west are called the WESTERLIES. The instrument used to find the wind direction is called a WIND VANE.

A wind vane always points to the direction of the wind. The wind direction is shown on a dial that is connected to a wind vane.

Wind speed is measured by an instrument called ANEMOMETER. It is recorded in kilometres per hour. These days, weather stations use an instrument which records wind speed automatically. It is known as ANEMOGRAPH. You may get some idea about wind speed through simple observations. If you see smoke rising vertically, it means there is hardly any wind. In other words, it is less than a kilometre per hour. Sometimes, you may find it difficult to hold your umbrella. The wind speed in such cases is more than 40 kilometres per hour. In a storm when trees get uprooted, the wind speed is more than 100 kilometres per hour.

Humidity

Humidity can be expressed in two ways — absolute humidity and relative humidity.

Absolute humidity is the weight of water vapour in a given volume of air. It is expressed usually in grams per

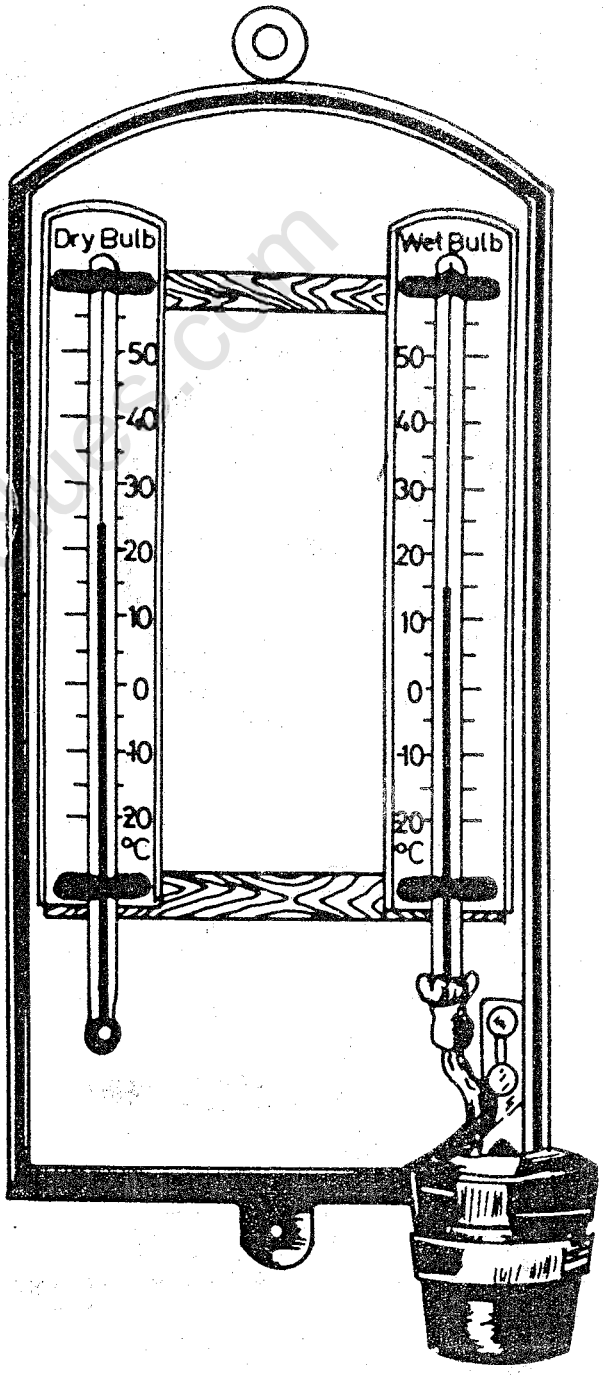


Fig. 4.4 Wet and dry bulb thermometer
Find out how this instrument helps to measure the humidity in the air.

cubic metre of air. But this index is less commonly used because of its limited usefulness. For example, if we are told that the air has 20 grams of moisture per cubic metre, we do not make much sense of it. Hence, the other index i.e. relative humidity is more popular.

Relative humidity is expressed in percentage. It is a ratio between the total capacity of the air for holding moisture under a given temperature and the actual amount of moisture being carried by it. For example, the temperature of a sample of air is 25°C. It can hold 20 grams of moisture per kilogram, but it is carrying only 5 grams of moisture. Its relative humidity is calculated as follows

$$\frac{5}{20} \times 100 = 25$$

Thus its relative humidity is 25 per cent. The air is said to be saturated when its relative humidity is 100 per cent.

The humidity of a place can be found out with the help of an instrument called Wet and Dry Bulb Thermometer or hygrometer. If the temperature on the wet bulb drops sharply, the humidity is very low. On the other hand, if the temperature does not drop much, the humidity is high.

Precipitation

Precipitation takes place in several forms such as rainfall, snowfall, hail etc.

Rainfall, including other forms of precipitation, is measured with the help of a metallic instrument called a RAIN-GAUGE.

The rain-gauge has a metal cylinder with a vessel and a funnel with a

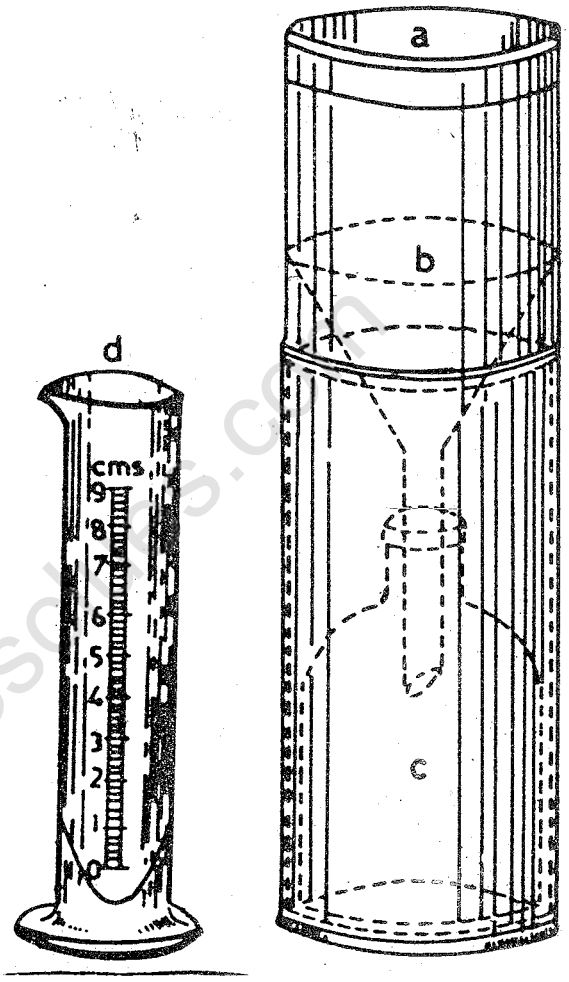


Fig. 4.5 Rain gauge
Note that a rain-gauge consists of: (a) the receiving vessel; (b) a high walled funnel; (c) a metal container; and (d) a measuring jar.

measuring glass. The circumference of the mouth of the funnel is equal to the base of the receiving funnel. The rain water is collected in the vessel through the funnel. The actual amount of rainfall collected during a day (24 hours) is then measured. Rainfall is measured in millimetres. Ten millimetres of rainfall means that the rain water if allowed to stand over a given level area, will have the depth of about 10 millimetres.

Snowfall or hail is measured after melting it.

The rain-gauge is kept in an open and level area away from trees and buildings. It is generally kept 30 centimetres above ground level.

The daily weather record is used for preparing weather reports. They also include condition of the sky — sunshine and cloudiness. These weather reports are published in local newspapers. They tell us about the local weather conditions.

Study the following reports about weather in Delhi on a day in September and answer the questions that follow.

Weather

Outlook : Generally cloudy sky with one or two spells of rain/thunder showers.
Sunset on Tuesday : 6.36 p.m.
Sunrise on Wednesday : 6.02 a.m.
Max. Temp : 31.8°C (-2)
Min. Temp : 25°C (-1)
Rainfall : 1.2 m.m.
Relative Humidity : Max. 93 per cent, Min. 61 per cent

1. What are the maximum and minimum temperatures on Monday?
2. How much rain was recorded on Monday?
3. What is the diurnal range of temperature for that day?
4. What is the duration of day and night?
5. Which season of the year does this weather report indicate?

Such weather reports are of great use in finding out general climatic conditions, if collected for several years. You can find out the duration of day and night at a given place with the help of the timings for sunrise and sunset. If you collect this information for a year, taking any particular date every month, you will see a pattern. The length of days (period between sunrise and sunset) will be greater than the nights (period between the sunset and sunrise) in summer. In winter, it will be just the opposite. In autumn and spring, days and nights will be almost of equal duration.

The night sky

On a cloudless night, you can see countless stars. Some are bright while others are not so bright. Some of them appear in peculiar shapes. These groups of stars are called CONSTELLATIONS. There are many constellations in the sky. Some of them are easy to

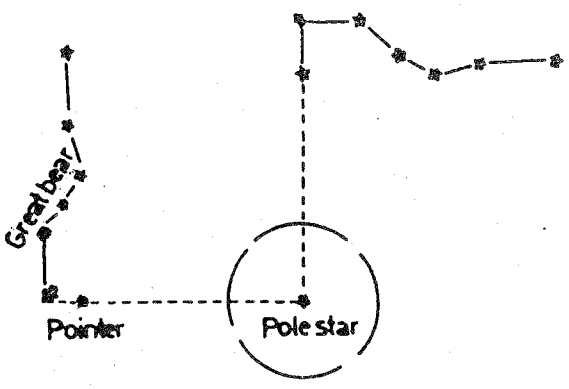


Fig. 4.6 The Pole Star and the Great Bear
In the Northern Hemisphere, the constellation of the Great Bear keeps revolving round the North Pole. The front two stars, known as 'the pointers', always point to the Pole Star. Do you know in what way it is of great help to us ?

locate. One of these is called the *Sapta Rishi Mandal* or the Great Bear. It has seven stars.

The two stars in front of this constellation are called 'pointers' because they always point to the Pole Star which is relatively brighter. It always shines vertically above the North Pole. The position of the *Sapta Rishi Mandal* changes from time to time, but the Pole Star always points to the north in the Northern Hemisphere. We can thus determine the north in the Northern Hemisphere, with the help of the Pole Star on a cloudless night.

New terms you have Learnt

DAILY MEAN TEMPERATURE : The average obtained by dividing the total of the maximum and the minimum temperature of a day by 2

CONSTELLATION : Small clusters of stars in the sky

EXERCISES

Review Questions

1. Answer the following
   (i) What elements make up the earth's weather ?
   (ii) What is a barometer and what does it measure ?
   (iii) What is daily mean temperature ?
   (iv) What are the two ways of expressing humidity ?
   (v) Which method expresses humidity in a better way and why ?
   (vi) What is the basis of naming a wind ?
   (vii) When is the air called saturated ?
   (viii) What is a weather station ?
   (ix) What is a constellation ?

(x) Which star shines vertically above the North Pole ?

2. Distinguish between
   (i) Weather and climate
   (ii) Daily range of temperature and annual range of temperature
   (iii) Absolute humidity and relative humidity
   (iv) Precipitation and rainfall

3. Given below are various elements of weather in Column 'A' and the units in which they are measured in Column 'B'. Match the items.

A	*B*
a. Relative humidity	i. Kilometres per hour
b. Temperature	ii. Millimetres
c. Precipitation	iii. Grams per cubic metre
d. Absolute humidity	iv. Per cent
e. Wind speed	v. Millibars
f. Atmospheric pressure	vi. Degree Celsius

4. Given below are the names of weather instruments in Column 'A' and their functions in Column 'B'. Match them.

A	*B*
a. Six's thermometer	i. Finding wind direction
b. Dry and wet bulb thermometer	ii. Finding humidity
c. Anemometer	iii. Measuring precipitation
d. Aneroid barometer	iv. Finding windspeed
e. Rain-gauge	v. Measuring atmospheric pressure
f. Wind vane	vi. Finding maximum and minimum temperature of a place

5. What is precipitation ? How are rainfall and snowfall measured ?

6. How can you find the north in the northern hemisphere during the night ?

Skills in geography

Activity 1

7. *Making Weather Observations*

Materials : Thermometer, aneroid barometer, wind vane, anemometer, rain-gauge, dry and wet bulb thermometer.

Procedure : Copy the chart given below in your notebook and record simple weather observations for five days in a row.

Weather Observations

Elements of weather	*Day 1*	*Day 2*	*Day 3*	*Day 4*	*Day 5*
Temperature in ^{0}C					
Pressure					
Relative humidity					
Sky condition : cloudy or clear					
Wind speed and wind direction					
Precipitation in mm					

On the basis of the above observations answer the following

(i) What trend do you observe in the temperature ? Is it increasing, decreasing, static or fluctuating ?

(ii) Is there any relationship between air temperature and pressure ?

(iii) Is there any relationship between air pressure and cloud cover ?

Activity 2

8. Collect data regarding the weather of one place for a week from Monday to Sunday from the daily weather report published in local newspapers and work out the following.

(i) Mean temperature for each day

(ii) Mean temperature for the week

(iii) Diurnal range of temperature for each day

(iv) Relative humidity for each day

(v) Duration of day and night every 24 hours.

Activity 3

9. Given below are the mean monthly temperatures of Chennai in degree celcius and precipitation in millimetres for a year. Draw two graphs – one for temperature and one for precipitation. Study them carefully and answer the questions that follow.

	Jan.	*Feb.*	*Mar.*	*April*	*May*	*June*	*July*	*Aug.*	*Sept.*	*Oct.*	*Nov.*	*Dec.*
Temperature in C	24.5^0	25.8^0	27.9^0	30.5^0	32.7^0	32.5^0	30.7^0	30.1^0	29.7^0	28.1^0	25.9^0	24.6^0
Precipitation (mm)	24	7	15	25	52	53	83	124	118	267	308	157

(i) Which month has the highest temperature ?

(ii) Which month has the lowest temperature ?

(iii) What is the annual range of temperature ?

(iv) What is the mean annual temperature ?

(v) Which month records maximum precipitation ?

(vi) What is the total annual precipitation ?

(vii) Describe the temperature and rainfall conditions in Chennai What conclusions do you draw from this analysis?

UNIT II

THE HYDROSPHERE

The water on the earth found in oceans, seas, lakes and streams and in the form of snow and ice together make up the hydrosphere. The hydrosphere occupies a major part of the earth's surface. The ocean waters are always in motion. Waves, tides and currents are three important movements of the ocean waters. Ocean currents influence climate and navigation in several ways.

CHAPTER 5

Ocean Waters and Their Circulation

Terms that you know

HYDROSPHERE : The water realm of the earth including oceans, lakes, rivers and snow fields

ICEBERG : A large mass of ice floating in the sea

Ocean is the body of water that covers most of the earth. Four-fifths of the Southern Hemisphere and more than three-fifths of the Northern Hemisphere are under water. The existence of life on the earth is mainly due to the presence of water and air. Oceans contain about 97 per cent of the total water available on the earth's surface. The remaining three per cent is the fresh water found in the form of snow and ice on the ground and in lakes and rivers.

Oceans modify land temperature. They are the source of water vapour which forms clouds. These clouds bring rainfall to the earth.

Oceans have long been a source of food. They are also an excellent means of transporting bulk cargo. For instance, it is much cheaper to ship wheat, iron ore, coal and oil by water than transport them by land.

Ocean water is always saline because it contains large amounts of dissolved salts, which are left behind after evaporation. Hence, it is not fit for direct use. The salinity of water, however, differs from place to place. It is expressed in grams per thousand grams.

The waters of the seas and oceans are never still. They have three kinds of movement — waves, tides and currents.

Waves

Waves are caused by the pushing action of the wind. Particles of water move up and down and pass on their movement to the neighbouring particles. Depending upon the weather conditions and the speed of the wind, waves may be gentle or violent. Stormy waves may be very high and destructive. On the eastern coast of India, such waves, associated with cyclones, often cause huge destruction of life and property.

Tides

The sea water rises and falls twice a day at regular intervals. This alternate rising and falling of the sea water is called a TIDE. It is caused mainly by the attraction of the moon and, to some extent, that of the sun. Tides are more pronounced in large bodies of water such as oceans and seas. The highest elevation of water during a tide is known as high tide and the lowest depression is termed low tide.

Tides are of great help in navigation, trade, and fishing. During high tide, the depth of water near the coast increases. This enables big ships to enter or leave the harbour safely. For example in India some ports such as Kandla in Gujarat, and Diamond Habour in West Bengal depend on the tide for this purpose. Tides, at some places, take away the mud brought down by rivers and prevent silting of harbours. Besides, tidal water makes the river suitable for navigation. The port of Kolkata on the river Hugli, for example, owes its importance to high tides. Most of the important ports of the world such as London, Hamburg, New York and Rotterdam are on tidal rivers. See their locations on a map and note down the names of rivers.

Ocean currents

Large amounts of water in the oceans move from one part to the other. It may take the form of a current or a drift. The constant flow of water on the surface of the ocean as a stream in a definite direction is called an OCEAN CURRENT. These currents are swift and narrow with a speed ranging from two to ten kilometres per hour. However, the moving mass of water, at times, takes the form of a broad and slow moving shallow DRIFT. The speed of such drifts varies from one to three kilometres per hour.

Ocean currents are of two kinds — the warm currents and the cold currents. Currents moving from the equatorial region towards the Poles are known as warm currents. Currents that flow towards the equator from polar areas are termed as cold currents. The temperature of a warm current or a cold current is only slightly higher or lower respectively than that of the surrounding water.

Look at the maps showing important ocean currents of the Atlantic and the Pacific Oceans. Prepare lists of the warm and the cold currents of each ocean separately. Note their directions also. You will notice that these currents, like winds, move generally to their right in the Northern Hemisphere and to their left in the Southern Hemisphere.

Effects of ocean currents

Ocean currents have considerable influence on the climate, agriculture and other economic activities of the coastal

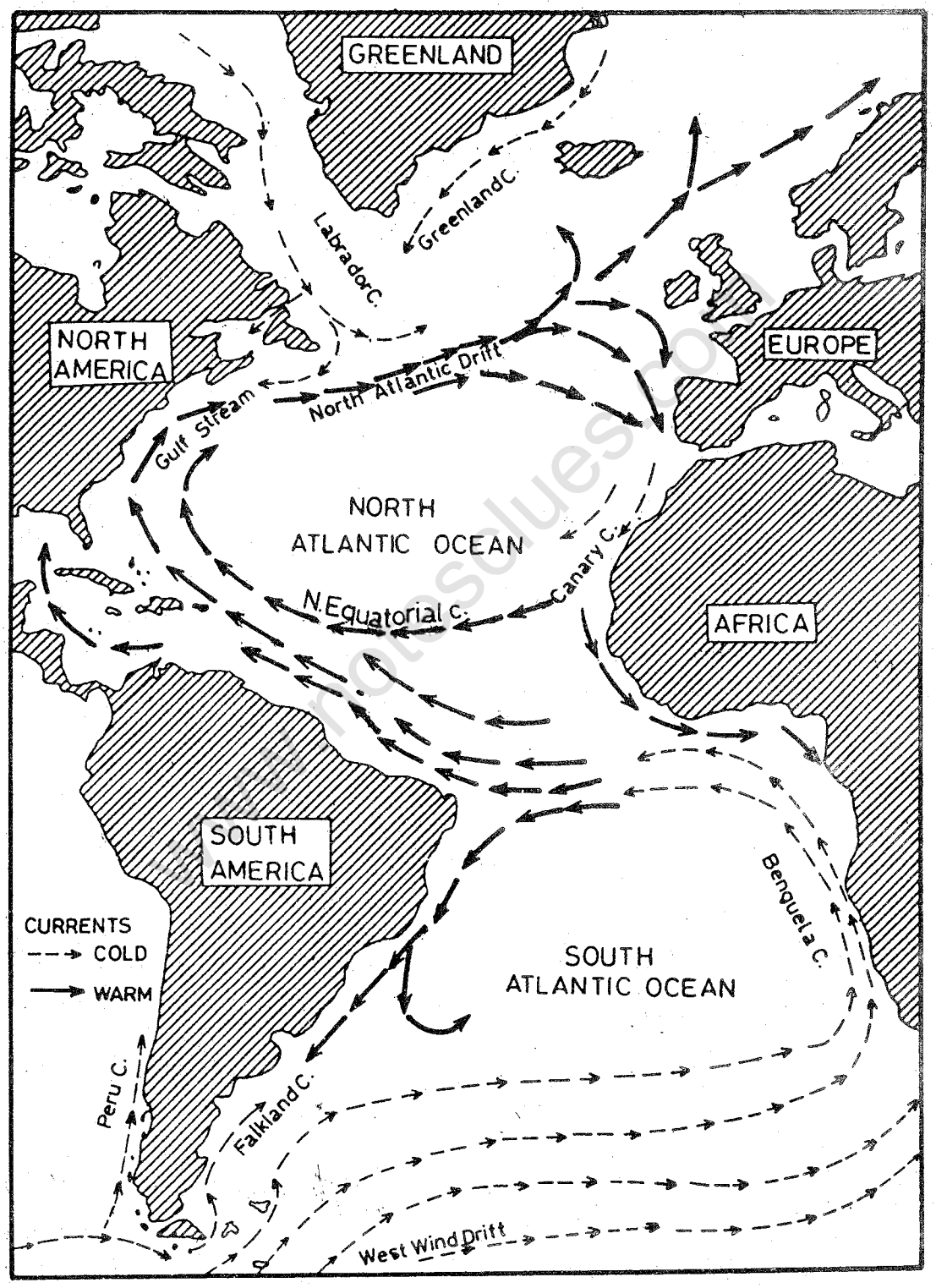


Fig. 5.1 Currents of the Atlantic Ocean
What difference do you notice in the direction of the warm and the cold currents in the northern and the southern parts of the Atlantic Ocean ?

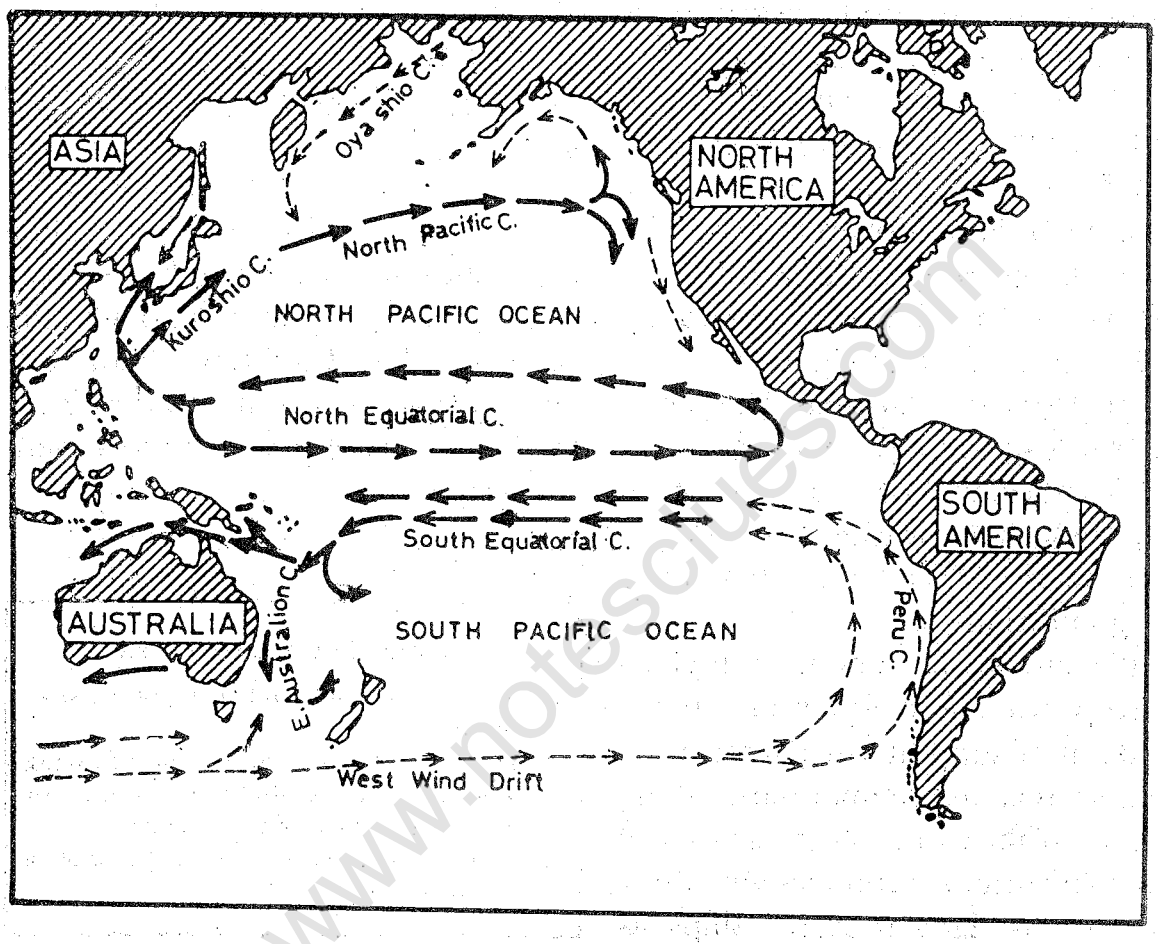


Fig. 5.2 Currents of the Pacific Ocean
Note the direction and names of the warm and the cold currents of the northern and the southern parts of the Pacific Ocean.

regions and the islands near which they flow. The warm currents tend to raise the temperature making a place warmer for its latitude, while the cold currents make a place colder. For example, the Kuroshio current in the Pacific Ocean and the Gulf Stream in the Atlantic Ocean modify the climates of Southern Japan and the eastern part of USA respectively.

As a result, the ports of even polar regions remain free from ice during winter. For example, the coast of Norway within the Arctic Circle remains free from ice even in winter due to the warm North Atlantic Drift. On the

other hand, the Labrador coast, which is on a lower latitude, remains frozen during the same period due to the cold Labrador current.

Winds blowing over warm currents absorb moisture and bring heavy rainfall over coastal areas. Eastern USA, Ireland and Britain receive such rains. On the other hand, winds passing over cold currents, become dry and cool and bring little or scanty rainfall to the coastal areas. This factor is partly responsible for the location of hot deserts of the world at or near the coasts which are washed by cold currents. Atacama desert in South America is a good example.

Planktons are abundant in regions where warm and cold currents meet. Hence, they support fish in large numbers. Such areas are important fishing grounds of the world. Meeting of warm and cold currents produces very thick fog. This is dangerous for ships as visibility is reduced. One such region is near Newfoundland where the warm Gulf Stream meets the cold Labrador current. Find out from the map the other regions where warm and cold currents meet.

Currents also have a definite influence on navigation. A ship sailing down the current will surely go faster. Ships, therefore, prefer to go with the current because it helps them save time and fuel. Warm currents also help in melting icebergs which are a menace to navigation.

New terms you have learnt

TIDES : Alternate rising and falling of the sea water

OCEAN CURRENTS : Streams of water flowing constantly in a definite direction at or near the surface of the oceans

SALINITY : Amount of salts present per unit of ocean water

EXERCISES

Review questions

1. Answer the following questions briefly.
   (i) Why is sea water saline ?
   (ii) What causes waves ?
   (iii) What causes tides ?
   (iv) How are tides useful to us ?
   (v) Name three types of water movements.
   (vi) What is an ocean current ?
   (vii) Name the two warm ocean currents that modify the climates of southern Japan and eastern USA.
   (viii) Name a cold ocean current which has been partly responsible for the formation of a desert.

2. Distinguish between
   (i) Waves and tides
   (ii) A warm current and a cold current
   (iii) An ocean current and an ocean drift

3. Give the terms for each of the following.
   (i) The movement of ocean waters in which the water particles move mainly up and down.
   (ii) Alternate rising and falling of the sea water generally twice a day.
   (iii) Streams of water flowing constantly in a definite direction on the surface of the ocean

4. What are ocean currents ? How are they caused and how do they influence climate. Give suitable examples.

5. Give reasons.
   (i) Ports of north western Europe remain open throughout the year.
   (ii) Major fishing grounds are located where warm and cold ocean currents meet each other.
   (iii) Ships prefer to sail along the path of ocean currents.
   (iv) Some deserts of the world are located on or near the coasts washed by cold currents.

6. Choose the appropriate word to fill the blanks.
   (i) Fresh water is associated with_____.
   (a) sea (b) ocean (c) snow and ice (d) pond
   (ii) Surface currents are caused by_____.
   (a) winds (b) waves (c) tides (d) earthquakes
   (iii) Tides are caused by_____.
   (a) rotation of the earth (b) gravitational force of the moon
   (c) salinity of water (d) wind

Skills in geography

7. On an outline map of the world show the following.
   (i) Warm currents — the Kuroshio current and the Gulf stream
   (ii) Cold currents — Labrador, California and Benguela
   (iii) Fishing grounds off the coast of Newfoundland, Japan and north-western Europe

Topic for class discussion

8. "If there were no currents and tides". Points such as their effects on climate, navigation, ports and fishing may be discussed.

UNIT III

NORTH AMERICA

North America is the third largest continent in the world. Being highly industrialized it is the world's most prosperous continent. It has extensive forests, rich farmlands, abundant mineral wealth, huge water-power resources and extensive fishing grounds near its coasts. The general standard of living in the continent is very high. It has a diverse population. The distribution of population is highly uneven. The continent has a dense network of the most modern means of transport.

The United States of America has made great progress both in agriculture and in the manufacturing industries. The country possesses a variety of resources in abundance. It now leads the world in international trade.

Canada is a vast country with abundant natural resources and a small population. The country is now one of the leading producers and exporters of raw materials and manufactured goods.

CHAPTER 6

North America —Land and Climate

Terms that you know

GORGE : A deep, narrow river valley with steep sides

TUNDRA : The intensively cold region within the Arctic Circle where the natural vegetation consists of moss, lichen and stunted trees

ISTHUMUS : A narrow strip of land joining two large land areas

Look at the globe. Find out the location of North America in latitudes and longitudes. Identify the oceans that surround the continent. North America stretches between Alaska in the north-west, Labrador in the north-east, and Panama in the south. It is the third largest continent, following Asia and Africa. To the north is the Arctic ocean, where the continent breaks off into a series of cold and barren islands. Name the largest island in the north-east. It is under the control of Denmark. In the south, the continent tapers to a narrow strip of land known as Central America, which connects North America and South America. A group of islands, known as the West Indies, are also included in this continent

There is variety in the land and climate of North America. Northern parts like Greenland, Alaska and Canada belong to the cold Arctic zone. The warm beaches of the tiny Caribbean Islands and the tropical rain forests of Central America lie in the south.

The area of North America is over 24 million square kilometres. Whereas Canada and the United States cover about three-fourths of the area, Greenland, Mexico and other smaller nations account for the rest.

Physical features

North America has four major physical divisions. They are :

1. The Canadian Shield
2. The Appalachian Mountains or Eastern Highlands
3. The Central Plains
4. The Western Cordilleras

Locate these divisions on the map (Fig 6.1).

The Canadian Shield

It covers nearly half of Canada in the north. It is formed of ancient hard

Fig. 6.1 North America — Political divisions
Note the countries and their capital cities.

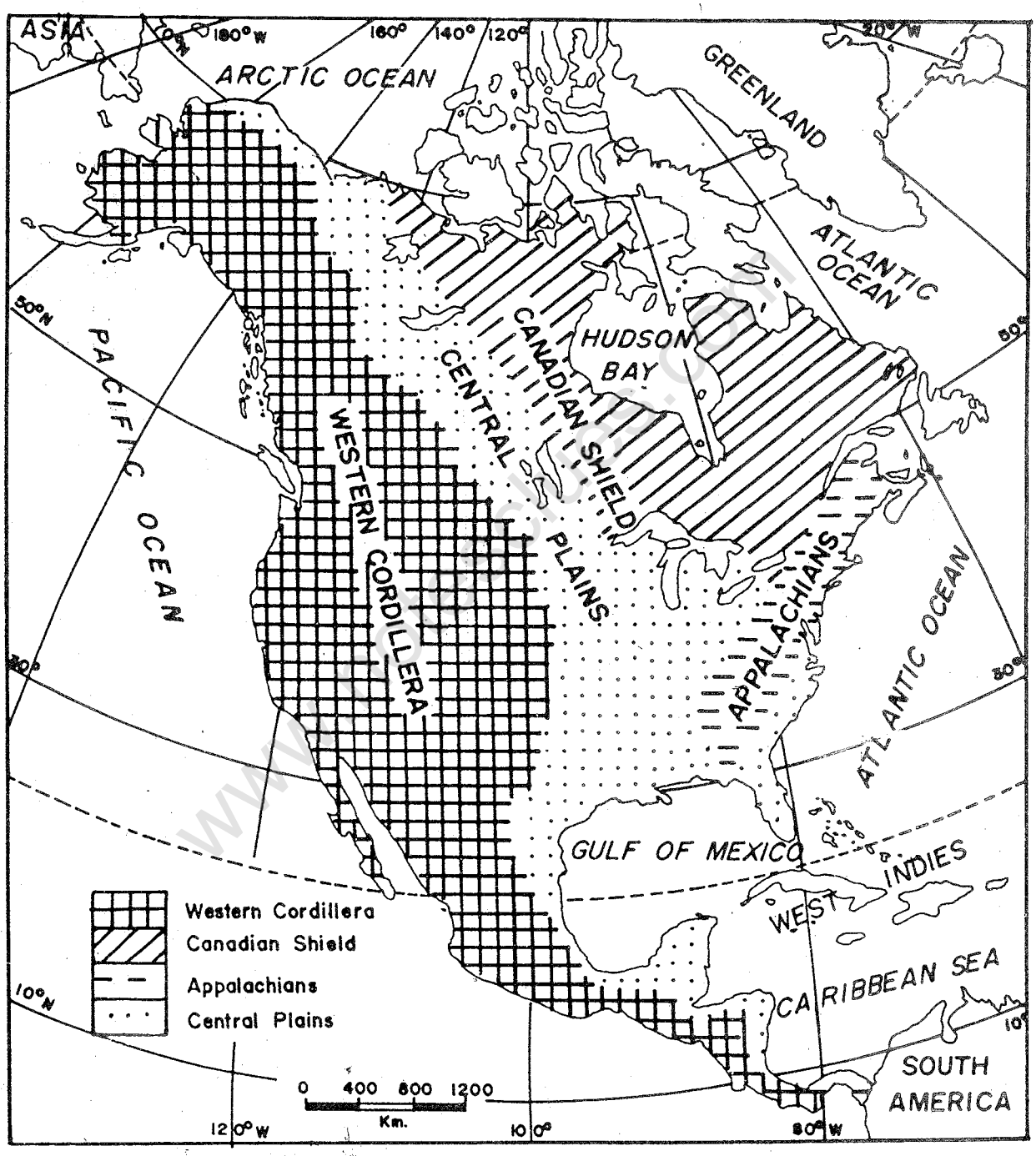


Fig. 6.2 North America — Physical features
Note the major physical divisions of North America. In what direction do they extend ? Find out the name of the biggest island in the north-east of the continent.

rocks. Due to continuous erosion and weathering its average height has been reduced to less than 300 to 400 metres. A large part of it is covered with swamps and a number of lakes like the Great Bear, Winnipeg and the Great Lakes (Lake Superior, Lake Michigan, Lake Huron, Lake Erie and Lake Ontario). Its northern part remains covered with snow and ice for most of the year. The southern parts of the shield are the lowlands of the Great Lakes and the St Lawrence river. The famous Niagara Falls is located between Lake Erie and Lake Ontario. St Lawrence is an important river of the region and falls into the Atlantic Ocean. It is the busiest inland waterway in North America.

The shield is a treasure-house of valuable mineral resources like gold, silver, nickel, iron, copper, platinum, radium, cobalt and uranium.

The Appalachian Mountains

Located in the north-east, they are also known as the Eastern Highlands. The height of these mountains varies from 1,000 metres in south-western Pennsylvania to 1,800 metres in Mount Washington. The Appalachian mountains were once very high. Over the years, they have been eroded by glaciers, and rivers. As such, the area is now a land of low relief. The Hudson river flows through the Appalachian mountains. It is joined to the Great Lakes by the Erie Canal. A number of mineral resources are found here. They include coal, copper and lead.

The Central Lowlands

They lie between the Western Cordilleras and the Eastern Highlands — extending over a distance of about 2,000 kilometres. From the delta of River Mackenzie in the north to the edge of the coastal plain in Texas in the south, its extension is more than 6,000 kilometres. The central and southern parts are a vast low and flat river basin of the Missouri-Mississippi. This river basin has very fertile soil and is rich in agricultural resources.

The Western Cordilleras

The western part of the continent is a mountainous region known as the Western Cordilleras. It stretches from the north to the south along the entire length of the continent. The highest peak of the Cordilleras is Mt Mckinley. It is in Alaska and its height is 6,187 metres above sea level. Most of the rivers of North America rise in the Western Cordilleras.

The Western Cordilleras consist of several parallel ranges. The Rocky Mountain is most prominent among them. The Coastal Range and the Sierra Nevada are the two other ranges. These ranges enclose a few intermontane (enclosed by mountains) plateaus. The Great Basin is the largest

intermontane plateau of this continent. As the waters of its rivers do not reach the oceans, it forms an area of inland drainage.

South of the Great Basin is the Colorado plateau. The Colorado river and its tributaries have deep cut valleys in the soft rocks of this region. At places many of the gorges are as much as 1,800 metres deep. Such very long and deep gorges with wall-like sides are known as CANYONS. The Grand Canyon of Colorado is the largest of its kind and is famous all over the world for its natural beauty.

The Western Cordilleras also have many active volcanoes in Alaska and Mexico. In these areas, heat from the interior of the earth penetrates through the cracks to boil the ground water and sends it up to the surface in hot springs called GEYSERS. The most famous geyser is the Old Faithful in the Yellow Stone National Park. It attracts tourists from distant places.

The Western Cordilleras are covered with forests of fir, spruce and cedar. The area is also rich in coal, lead, zinc, gold and copper.

North America has several rivers. They have played an important role in the economic development of this continent. Find out the names of the oceans and seas into which the Colorado, St Lawrence, Mississippi and Mackenzie rivers flow. Swift flowing rivers from the Appalachians have been used for hydroelectric power generation. St Lawrence and the Great Lakes provide the largest inland waterways in the world as they link the highly industrialized parts of USA and Canada. The Mackenzie flows northward to the Arctic Ocean, and passes through a very thinly populated forested region. By contrast, the Mississippi flows southwards through well-developed farmlands. It is used to carry goods such as cotton, timber and petroleum.

Climate and natural vegetation

North America has a varied climate. Extending between the tropical zone in the south and the frigid zone in the north, North America is huge in size. The Western Highlands and the Appalachian mountains play an important role in shaping the climate of the continent. These relief features leave the central plains open to the influences of both the cold winds from the north and the warm winds from the south.

The summers are hot except in the northern parts. Only the Arctic Zone and the Western Cordilleras are very cold. The Atlantic and the Pacific coasts, especially where they are washed by the cold currents, are less hot than the interior. However, places like New York suffer from heat waves when warm air moves up from the south.

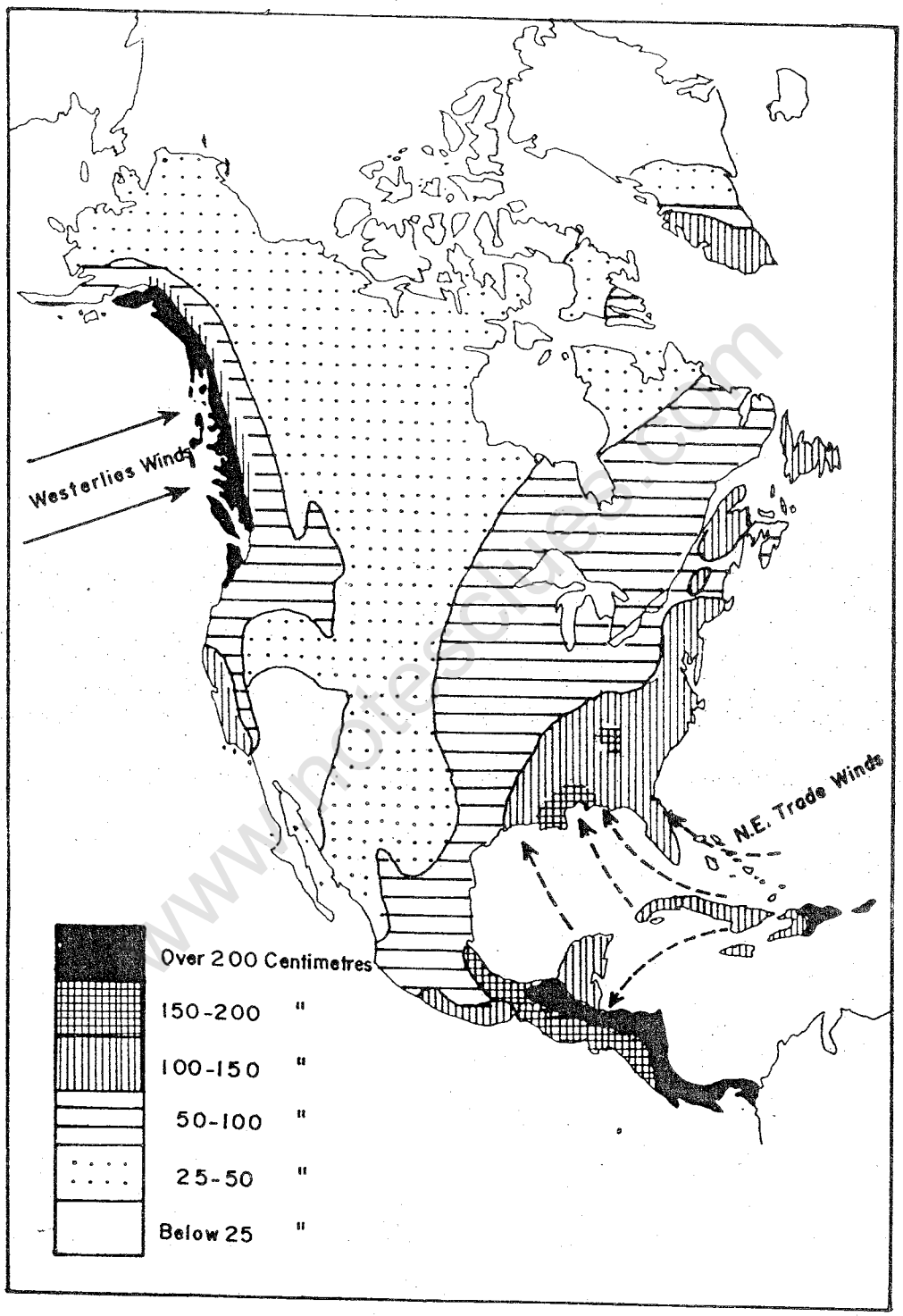


Fig. 6.3 North America — Annual rainfall
Note the distribution of rainfall. Which part receives maximum rainfall and why?

Ocean currents also influence temperature and rainfall in North America. Find out the names of the cold and warm currents, which flow along its coast.

The western coast in the north faces the winds coming from the west known as the westerlies and the south-eastern coast comes under the influence of the trade winds. The westerlies bring heavy rainfall to the Pacific coast throughout the year. The north-east trade winds bring equally heavy rainfall to the Highlands of east Central America and the West Indies. However, parts of south-west United States and north-west Mexico remain extremely dry. For instance, Arizona has less than 25 cms of annual rainfall. Hence this area is a desert.

In winter, there are wider regional variations in temperature than in summer. Winters are cold over much of North America. Winter temperature is much below the freezing point in the northern and central parts. Cold waves are sometimes experienced even on the northern shores of the Gulf of Mexico. Rainfall decreases in the interior parts. Temperature also decreases from the south to the north. Study the rainfall and temperature maps. Note the areas of heavy rainfall. Which winds are responsible for bringing heavy rains to these areas ?

Find out the main vegetation belts of North America ? How are the vegetation belts related to the physical features and the climate ? In the extreme north of the continent, the climate is very cold and severe. The winters are long and snow covers the ground for eight to nine months. This is an area of PERMAFROST, i.e. permanently frozen sub-soil. The summers are short and comparatively cool. During this period, only mosses, lichens, grasses etc. grow. This region is known as THE TUNDRA. Polar bear, caribou, musk-ox and reindeer are the important animals of this region.

To the south of the tundra region is a wide belt of coniferous forests known as the TAIGA. The taiga stretches from the Atlantic to the Pacific across Canada. The forest consists of balsam, fir and white and red pines, which yield soft-wood. Similar forests are also found on the higher slopes of the Western Cordilleras in the United States. These areas experience severe winters and short, warm summers. Precipitation is less and that too mostly in the form of snow. The tops of mountains are always covered with snow and permanent ice. Find out the animals which are found in this region.

South of the taiga region in the zone of mixed forests. It lies in south-east Canada and north-east United States. Here, rainfall is moderate, winters are cold and summers fairly warm.

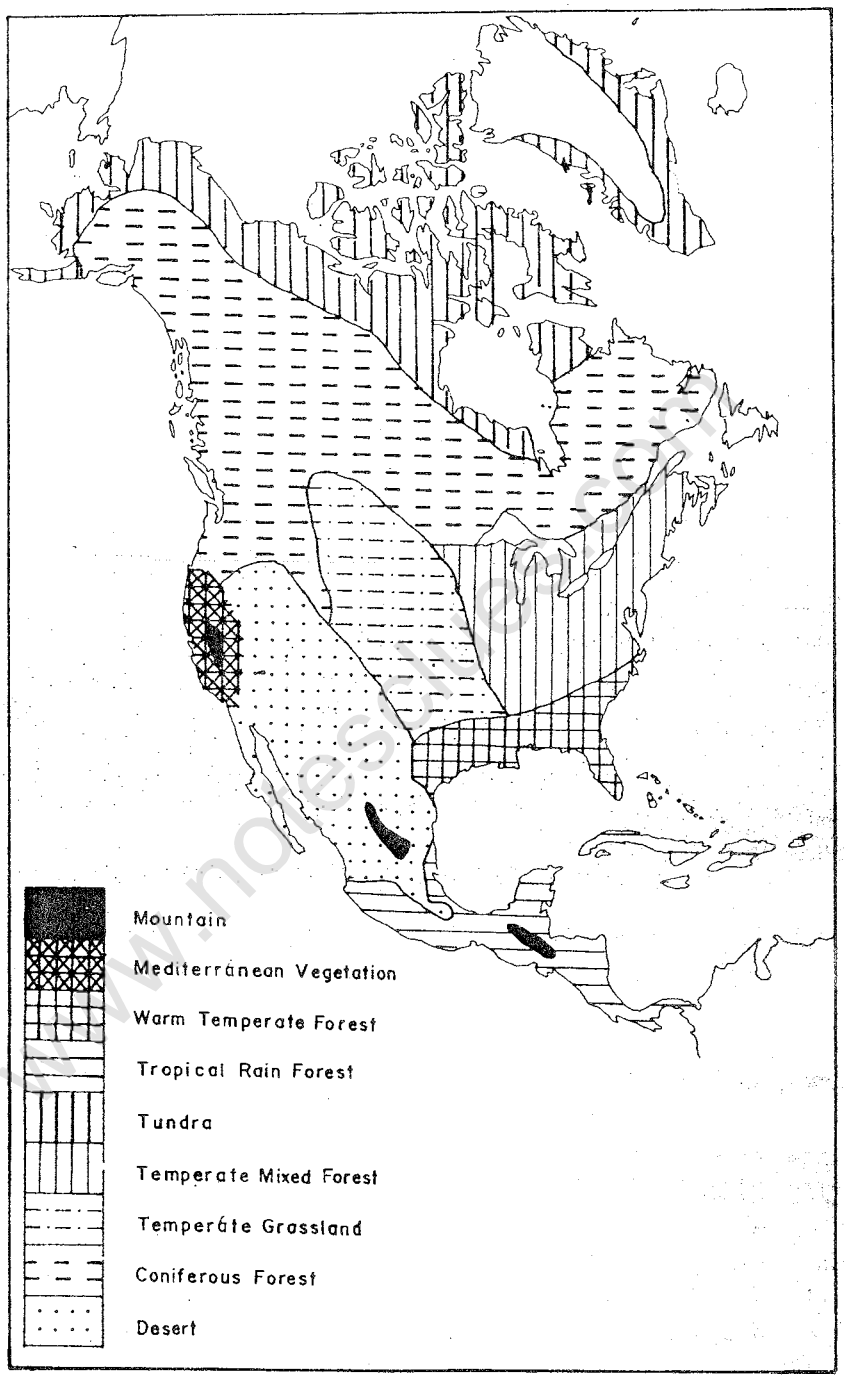


Fig. 6.4 North America — Natural vegetation
Note the relationship between the amount of rainfall and the natural vegetation. How does climate differ from one vegetation zone to another?

This belt has coniferous as well as deciduous forests. Deciduous forests are hardwood forests which shed their leaves during autumn. They have trees like beech, birch, maple and oak. Large areas of these forests have been cleared for growing crops.

Tropical forests are found in Central America, eastern parts of Mexico and the West Indies. Here, rainfall is very heavy and the temperature is always high. The common trees of this forest are palm, mahogany and logwood.

Grasslands are found in the interior plains of North America. They are known as the PRAIRIES. The prairies are known for tall and nutritious grasses. This zone has very cold winters and hot summers. Rainfall is light, occurring mostly in summer.

The extreme south-west part of the United States and north-western Mexico receive very scanty rainfall. They form a rocky and sandy desert. Winters are cold and summers are hot here. The natural vegetation consists of a variety of cactus plants.

The Mediterranean type of climate is found on the west coast of California. Here summers are hot and dry, and winters are mild with moderate rainfall. Trees consist of olive, pine, orange and cork oak.

New terms you have learnt

CANYON : A gorge of a very large size with wall-like sides. It is an I-shaped valley.

CORDILLERA : A chain of mountain ranges which are roughly parallel or run in one general direction

EXERCISES

Review questions

1. Answer the following questions in brief.
   (i) Which are the major physical divisions of North America?
   (ii) Which are the five lakes known as the Great Lakes in North America?
   (iii) Name the different ranges of the Western Cordilleras.
   (iv) What is the Great Basin?
   (v) Which three factors influence the climate of North America the most?

2. Give one term for each of the following.
   (i) Very long and deep gorges with wall-like sides.
   (ii) Ground covered with snow for eight to nine months.
   (iii) Grasslands of North America having tall and nutritious grasses.

(iv) The region of coniferous forests stretching between the Atlantic and the Pacific coasts across Canada.

3. Distinguish between
   (i) A gorge and a canyon
   (ii) Mediterranean climate and tropical climate
   (iii) Desert and arctic type of vegetation

4. Name five natural vegetation belts of North America. Select any three belts and explain how the vegetation in each belt depends upon its climate.

5. How have the rivers in North America played an important role in the economic development of the continent ? Explain with suitable examples.

Skills in geography

6. On an outline map of North America draw and mark the following.
   (i) The mountains — the Appalachians, the coastal ranges, the Sierra Nevada and the Rocky mountains
   (ii) The rivers — Mackenzie, Colorado and Mississippi
   (iii) The inland waterways — St Lawrence river and the Great Lakes, the Panama Canal
   (iv) Lakes — Winnipeg, the Great Bear and the Great Lakes
   (v) Gulf of Mexico, Hudson Bay, Gulf of California and Bering Strait

CHAPTER 7

North America—Resources and Their Utilization

Terms that you know

PERMAFROST : Permanently frozen sub-soil
EXTENSIVE AGRICULTURE : A farming practice in which only a few farmers till large farms with the help of machines

North America occupies 16 per cent of the total area of the world but contains only nine per cent of its population. It is the most prosperous and highly industrialized continent of the world. This is mainly due to its vast natural resources, the application of high-level technology and well-trained manpower. The available natural resources have been utilized very systematically, e.g. the fertile plains have specialized in food production, extensive grasslands have been utilized for the dairy industry, and coniferous and deciduous forest belts supply raw materials for the paper industry. North America is equally rich in fisheries. Extensive fishing grounds are found along its coasts.

Land resources

North America is very rich in agricultural resources despite the fact that only about one-twelfth of its total area is under cultivation. This has been possible because of the fertile and well-watered plains and the use of scientific methods of farming. Agriculture is mostly of the extensive type. Farms are very large and most of the agricultural operations are done by machines. Although the yield per unit area is lower than that of the intensive type of agriculture, the overall production is high because of the large area under cultivation. As a result, a small proportion of the population engaged in farming is able to produce plenty of food. This is not only sufficient for home consumption but also leaves a lot of surplus for export. Maize, wheat, and barley are the important cereals grown in North America. The other important crops are cotton, tobacco, soyabean and linseed.

About half of the world's maize is

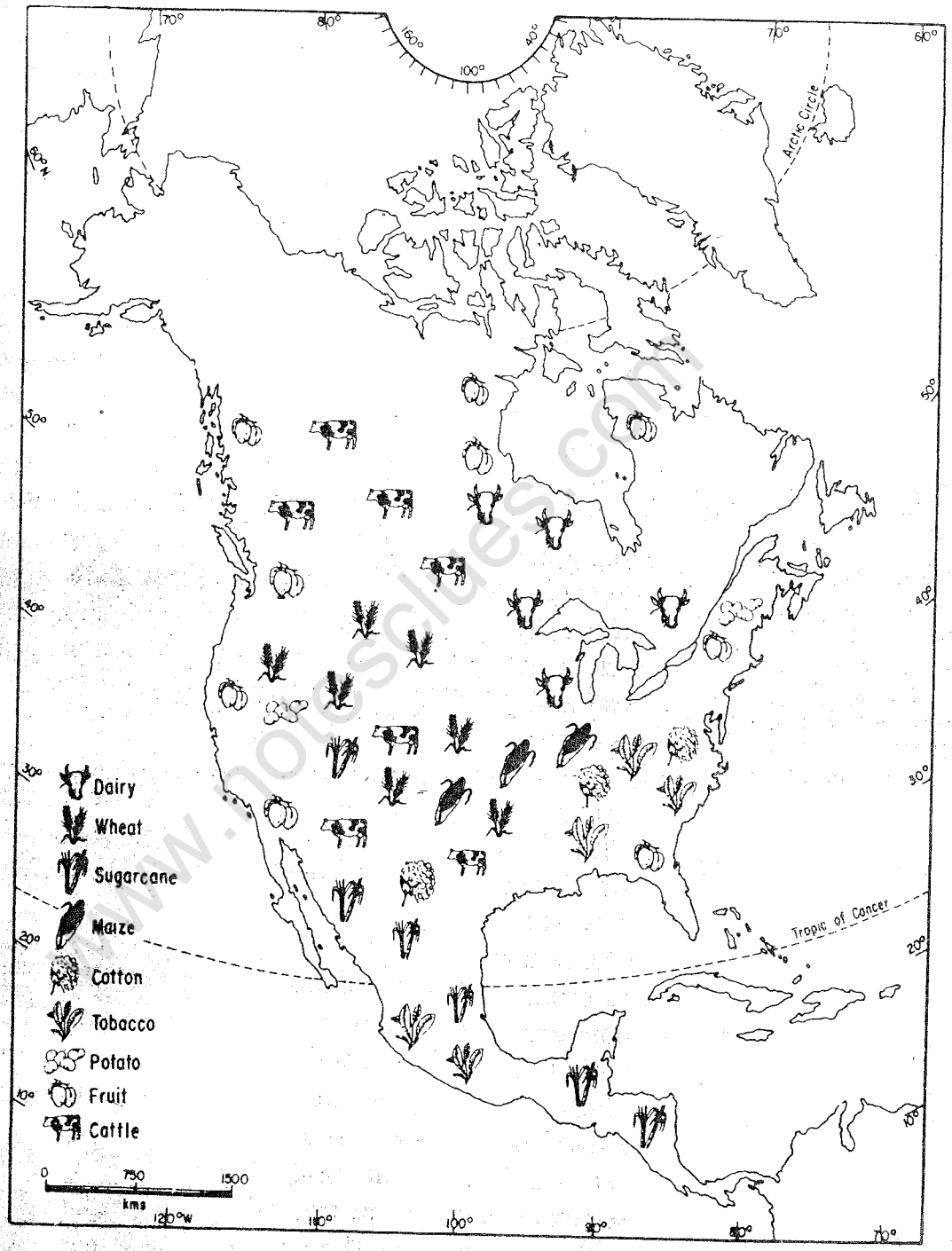


Fig. 7.1 North America — Forests, crops and livestock

Note the distribution of forests, various crops and livestock in North America. Which part of the continent has forests and which part has pastures? Which part is suitable for wheat farming?

grown in North America alone. Here it is known as 'corn'. It grows well in hot climate with frequent rain. The maize plant probably originated in south Mexico where it is the staple crop even today. But in the United States it is used mainly for feeding pigs and cattle. Wheat is grown in the prairie region of Canada and the United States. North America produces about one-fifth of the world's wheat.

Cotton and tobacco are grown mainly in the southern parts of the Mississippi river basin. The soil and the climate in this region are favourable for the cultivation of cotton. Summers here are warm with moderate rainfall. A clear sky with abundant sunshine is ideal for ripening and picking of cotton balls. The United States and Mexico are the leading producers of cotton in North America.

Along the Gulf Coast, rice and sugarcane are grown. The tropical lowland of Central America is famous for growing banana. The West Indies is known for sugarcane cultivation.

The total agricultural production of the United States is more than that of Canada or Mexico, partly because of its more favourable climate.

The extensive prairie grasslands in the interior of North America and the mountain pastures are used for rearing cattle, sheep and horse. Dairy cattle are reared in humid regions, whereas cattle meant for meat are reared in relatively dry regions. North America accounts for about one-fourth of the total cow's milk produced in the world. It is also a leading producer of meat. The United States provides about one-fifth of the total meat produced in the world.

Forest wealth

North America is rich in forest resources. A large part of the continent is under forest cover. Three major types of forest are found here. Coniferous forests cover most of Canada, northern United States and the Western Cordilleras. These forests are a great source of softwood. North America alone produces about one-fifth of the world's softwood. Pulp and paper are the important forest products of this region. Douglas fir and white pine provide house-building materials. Cellulose, resin and turpentine are obtained from softwood. Cellulose is used in manufacturing rayon cloth.

In the southern part of the temperate regions, deciduous trees, pineapples, oak and beech grow along with coniferous trees. White pine and spruce trees yield pulp for newsprint, which is a kind of rough paper used for newspapers. The wood of oak and willow trees is used for making furniture. The sap of the maple tree is sweet and yields sugar.

Tropical rain forests are found in

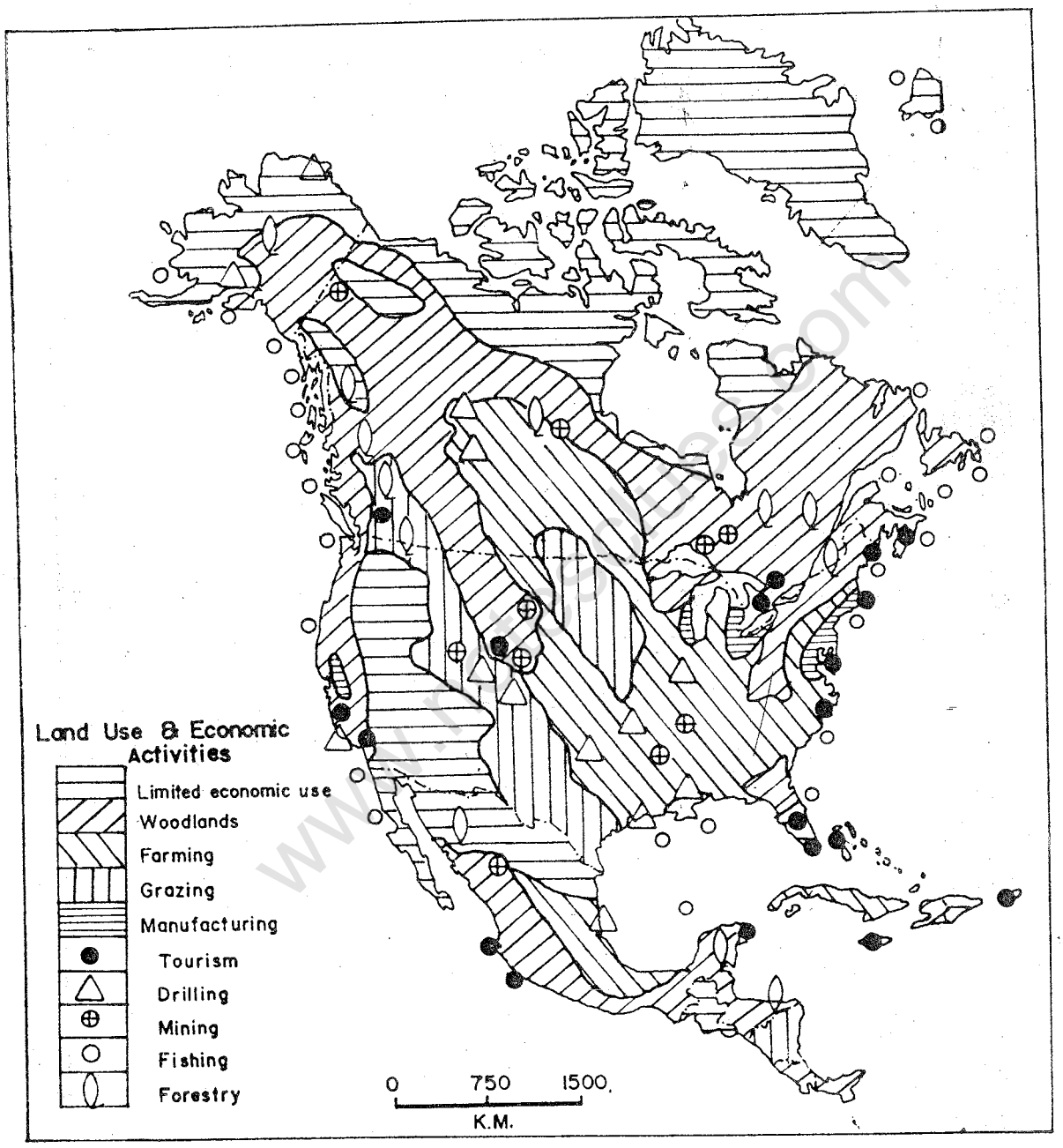


Fig. 7.2 North America — Land use and economic activities
Note the distribution of different kinds of land uses and economic activities.

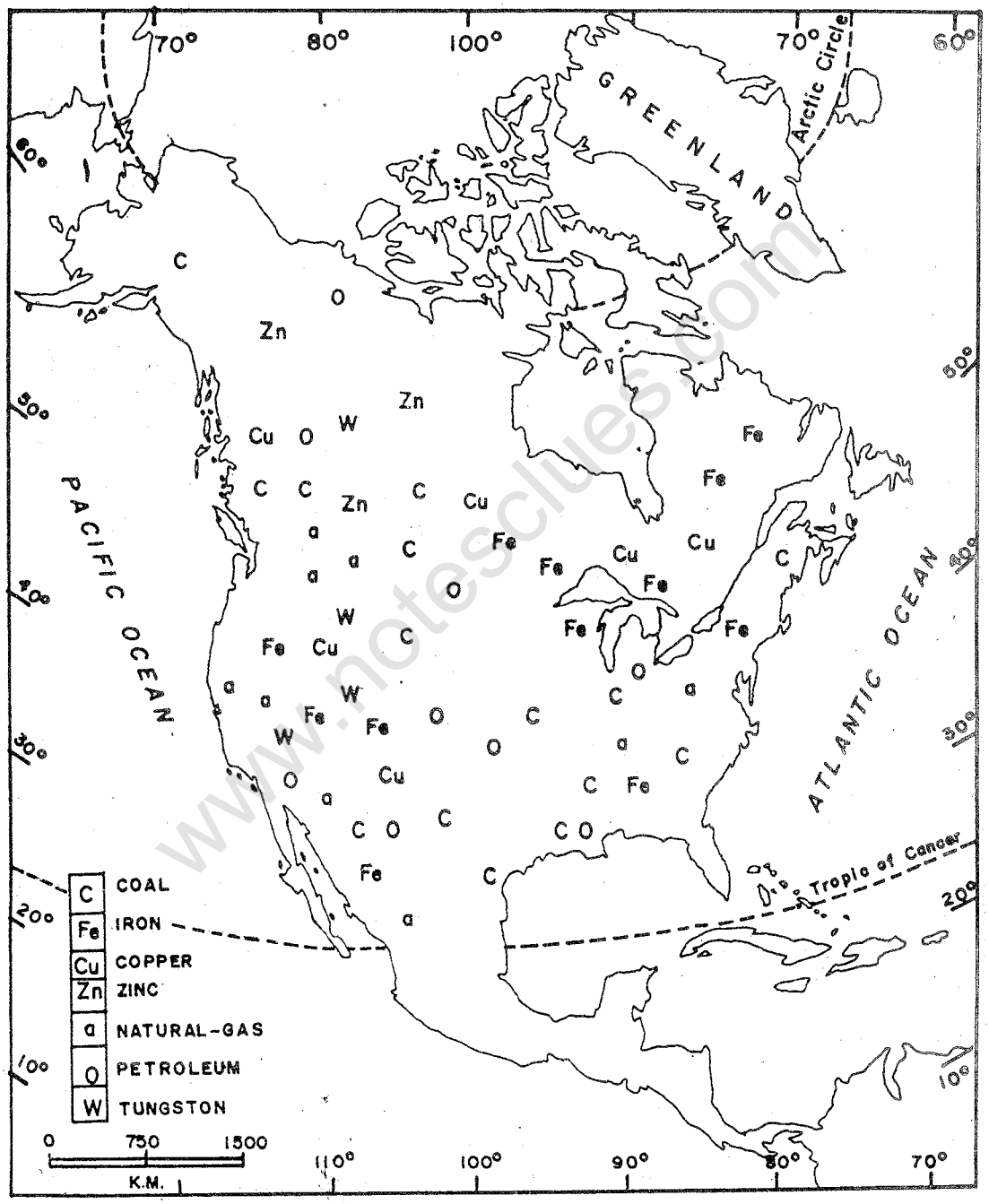


Fig. 7.3 North America — Minerals
Note the distribution of important minerals. Note the important areas producing petroleum.

southern Mexico and countries of Central America. These forests yield good quality hardwoods such as mahogany and logwood. Hardwood is used for making high quality cigar boxes and in the building industry.

Minerals and power resources

North America is quite rich in a variety of mineral resources. It is a major producer of petroleum, natural gas, nickel, zinc, asbestos, gold, silver, copper, and iron ore.

The Canadian Shield contains deposits of nickel, iron ore, gold, platinum and copper. Lake Superior is the leading producer of high-grade iron ore in North America. Gold is found mainly in Ontario, which has the largest gold mine in the world.

The Appalachian Highlands produce a large amount of anthracite and high-grade bituminous coal. They have the largest soft coal field in the world. Coal is used mainly by the iron and steel industries. It has been responsible for the high degree of industrialization of this region. The first oil well in the United States was drilled in western Pennsylvania in 1859. The Gulf Coast and the Atlantic coastal plain produce much of the world's petroleum, and natural gas. The United States of America is the second largest producer of natural gas in the world. Sulphur, phosphate and potash are also found here. Phosphate and potash are used for manufacturing chemicals and fertilizers.

The Western Cordilleras have vast deposits of copper. This region also possesses mineral oil, natural gas, coal and rock phosphate. The largest deposits of lead and zinc in the world are found in British Columbia. Mexico has been the leading world producer of silver for many years.

North America is very rich in water power resources. Hydro-electricity is produced on a very large scale in the continent. The St Lawrence river, the Appalachian region and the valleys of the Tennessee, the Colorado and the Columbia rivers provide numerous sites for developing hydroelectricity. The Niagara Falls is a great source of hydroelectricity in North America.

Fisheries

In North America, open sea as well as inland fisheries are important. The shallow seas around the north-eastern coast abound in fish. Such vast areas of shallow sea near the coast abounding in fish are called FISHING BANKS. The Grand Bank near the coast of Newfoundland is famous for fishing. On the Pacific Coast, tuna and salmon are the main fish catches. Fish are processed and tinned for domestic use as well as for export.

Population

The North American population consists of the original inhabitants — the

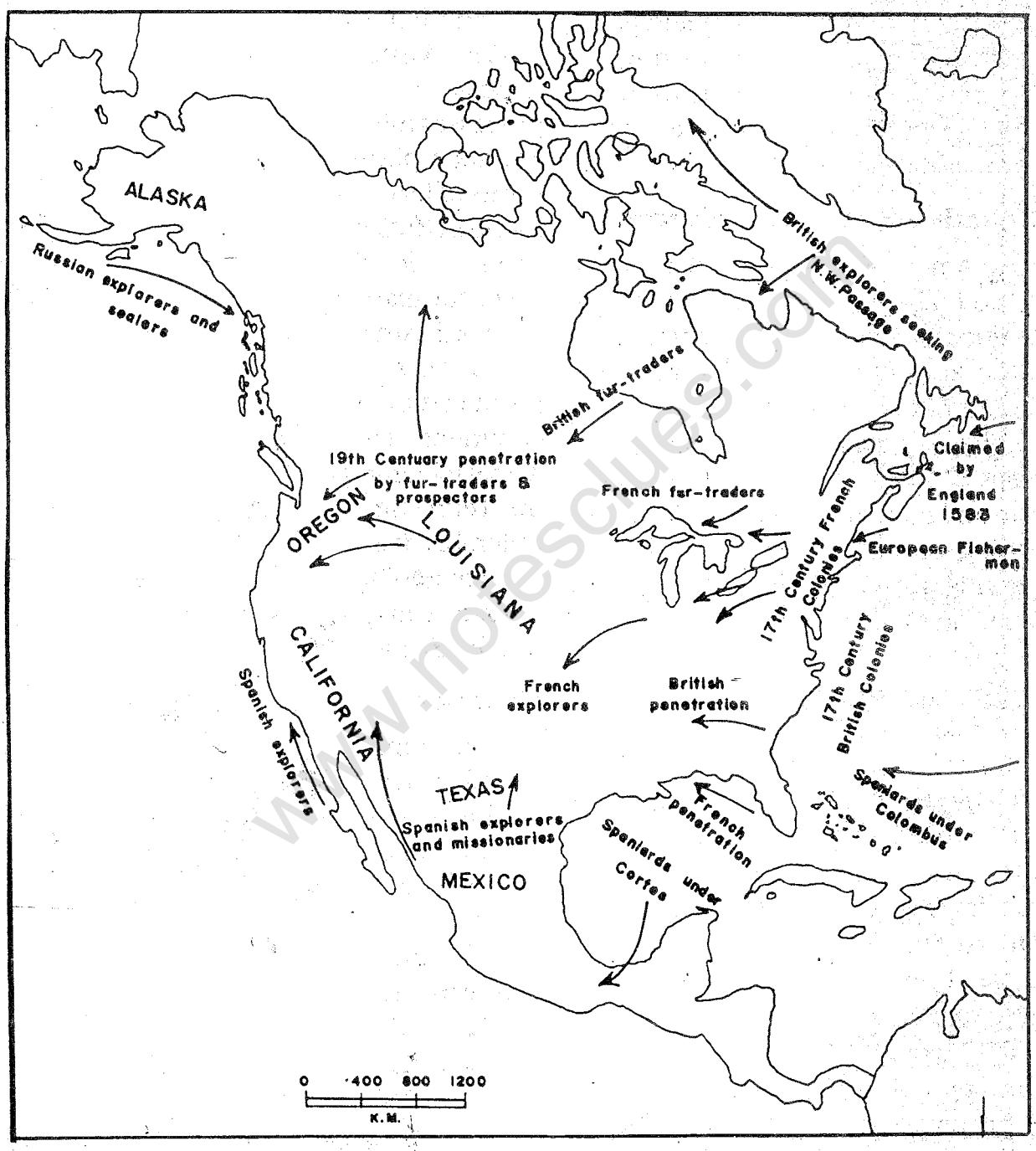


Fig. 7.4 North America — Migrants and migration routes
Note the main routes of migration and the places from where migrants came.

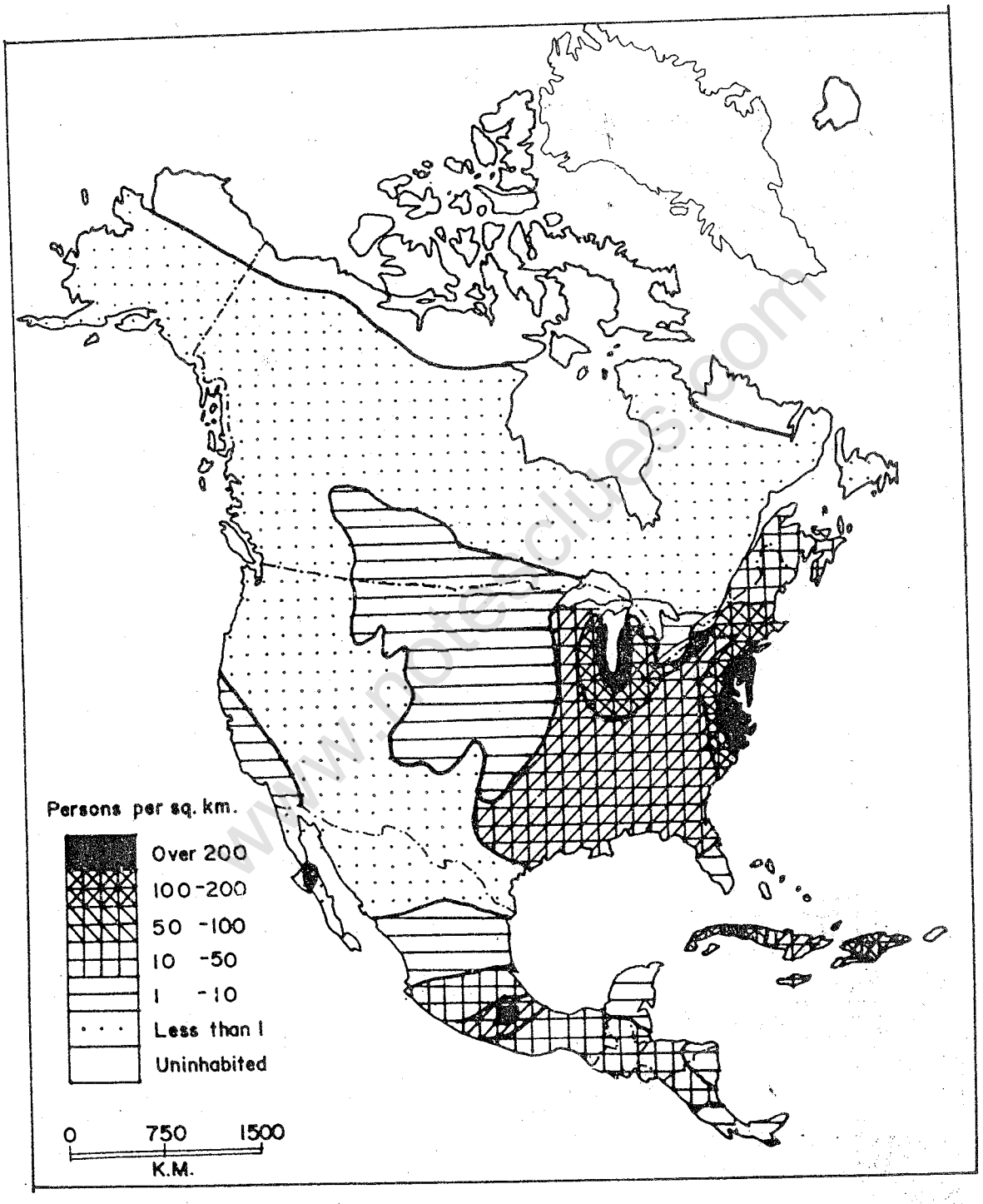


Fig. 7.5 North America — Density of population
Note the areas of dense population. Why is the population in these areas so dense ?

native Indians — and the people who came from different parts of the world during the last few centuries and settled here.

The latter group of people are called migrants. The earliest migrants came from western Europe, i.e. Spain, Portugal, France, the Netherlands and the British Isles. They entered North America by different routes, settled and built colonies in different parts of America. Look at the map and find out the routes followed by the different groups of people and the areas where they settled.

In North America total population is 472 million, and contains nine per cent of the world's population. Almost two-thirds of this population, i.e. 274 million, lives in the United States. While Mexico has a population of over 96 million, Canada has only 30 million. Cuba's population is little more than 11 million. Study the population map of North America. You will find that population is distributed very unevenly over the continent. The United States, Mexico and Cuba have average densities of about 29, 49 and 100 persons per square kilometre respectively. It is quite low in Canada—less than three person per square kilometre.

The distribution of population is influenced by several factors such as topography, climate, and the availability as well as the utilization of minerals and other resources. Ninety per cent of Canada is still virtually uninhabited because of the harsh climate. The majority of its people lives along the narrow southern fringe, where the climate and soil are favourable for human habitation. The northern parts, the western Cordilleras, and the south-west desert areas of North America are sparsely populated because of the unfavourable climatic conditions and the rugged terrain of the mountains. On the other hand, eastern United States and the Central lowlands are densely populated. While fertile soil, and good climatic condition have favoured cultivation in the central lowlands, the availability of mineral and power resources and a good network of transport have helped in developing a variety of industries in the north-eastern part. Several industrial regions have emerged in these areas. Most of the big cities of North America are, therefore, located here.

In Mexico, the densely populated part is the central region around Mexico city, which is the largest city in the world.

Transport

One of the basic requirements for development is the presence of a good network of transport system and communication. North America has a well-developed modern system of transport. It has a dense network of roads and railways. They mostly run in the east-west direction. The coastal and

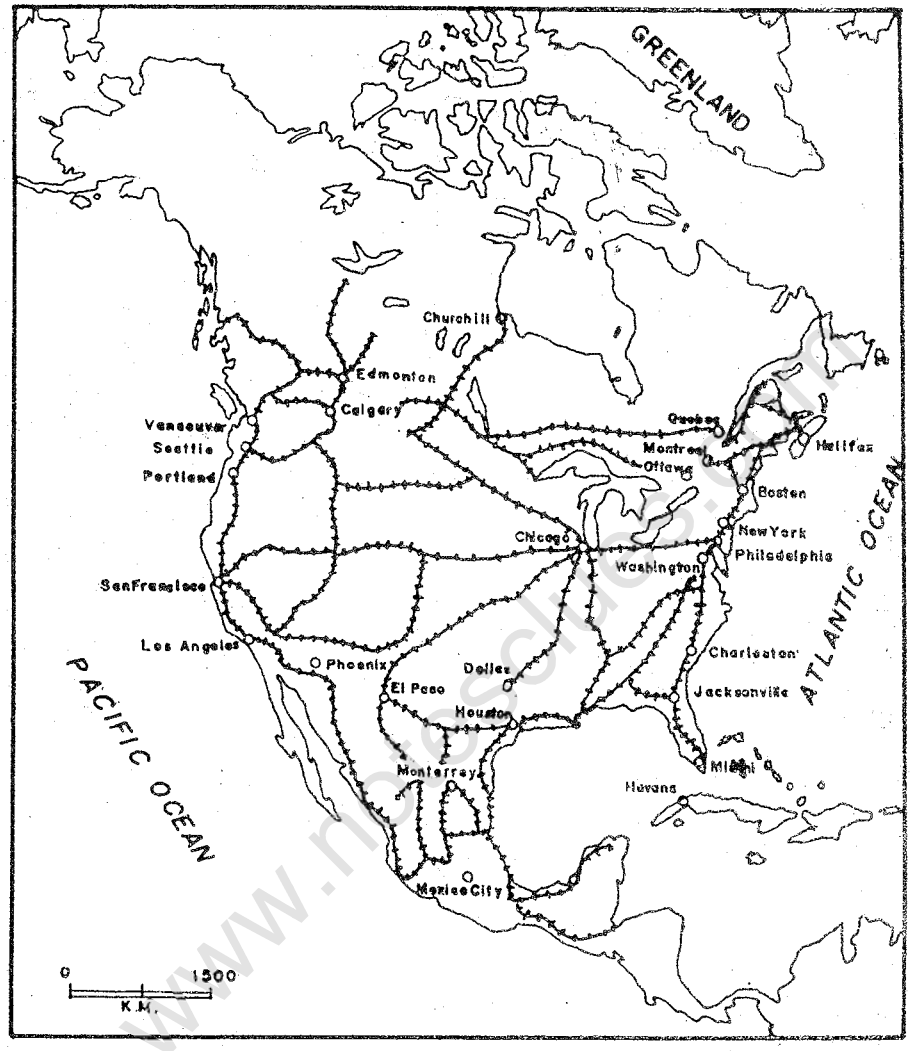


Fig. 7.6 North America — Railways
Note the railway network. Which parts of the continent are best served by them ? Why ?

inland waterways continue to be the bulk carriers. The Inland waterways run from the north to the south. Why ?

The southern parts of Canada and most parts of USA have a good network of broad and well-surfaced roads. Many roads are wide enough to allow four to six vehicles to run together in one direction. These roads are meant for fast traffic and are known as FREEWAYS or SUPERWAYS.

North America has an extensive and efficient network of railways. There are several transcontinental railways in Canada and in the

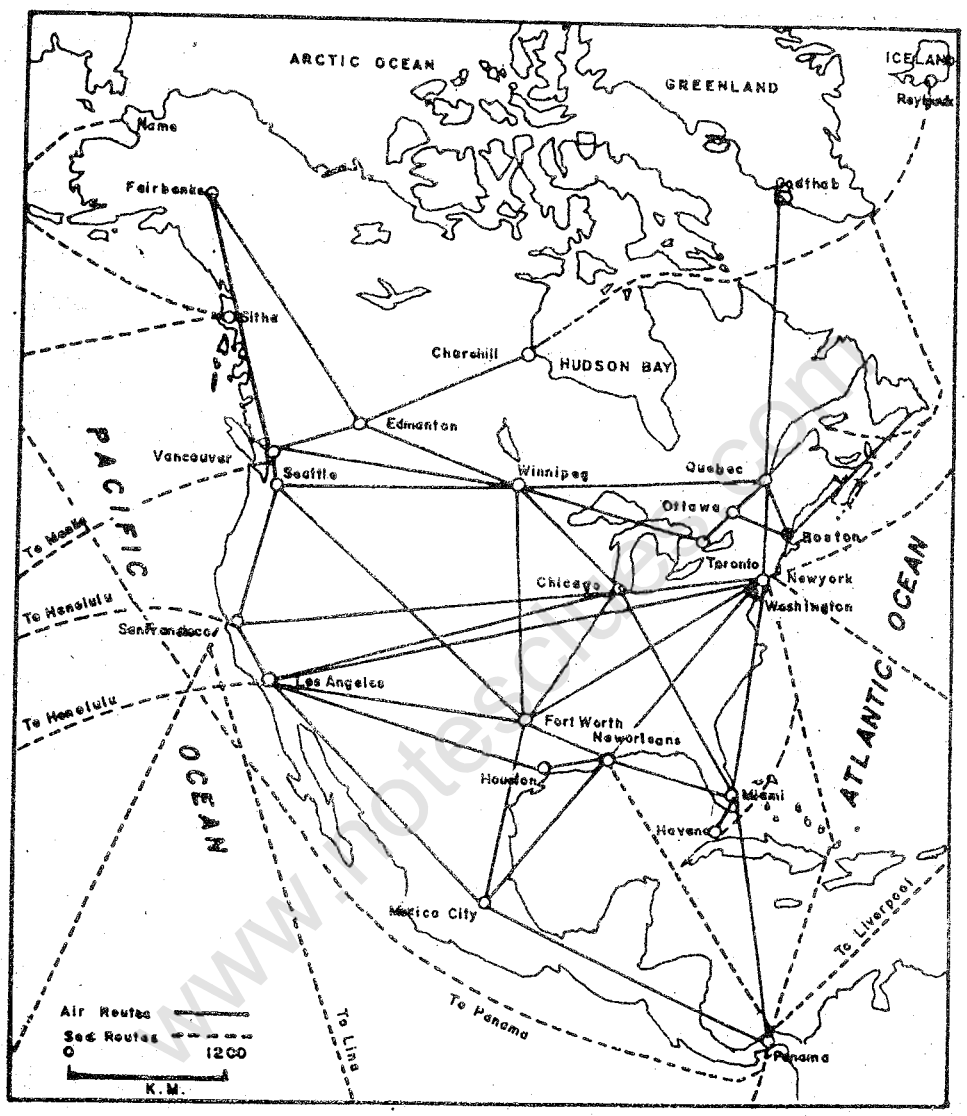


Fig. 7.7 North America — Airways
Note the major air routes. Which is the northernmost airport of the continent ?

United States. There is a dense network of railways in the eastern half of North America. What could be the reason for this ?

There are many good ports in North America. Most of them are located on the Atlantic coast. Find out from the map some important ports of the continent. Bulky and heavy goods are generally transported by the major inland waterways since water transport is cheaper than the other means. The Mississippi and St Lawrence are the large navigable rivers. The Great

Lakes together with St Lawrence form the largest and busiest inland waterways in the world. The Panama Canal connects two great oceans — the Atlantic and the Pacific. It is of great commercial and strategic importance.

By using the Panama canal, shippers going from New York to San Francisco can cut down nearly 23,200 kilometres of their journey.

All important cities of North America are interconnected by airways. There are about ten thousand airports in the continent. The Kennedy Airport in New York is the busiest international airport in the world.

New terms you have learnt

MIGRANTS : People who come to a country from a different place and settle there

FISHING BANKS : Vast areas of shallow seas near the coast abounding in fish

EXERCISES

Review questions

1. Answer the following questions briefly.
   (i) Which are the three important cereals grown in North America?
   (ii) What factors have been responsible for an overall high production of foodgrains in North America ?
   (iii) Why is cotton grown mainly in the southern part of USA ?
   (iv) Which is the staple foodcrop of Mexico ?
   (v) Name five important minerals of North America.
   (vi) Name the region having reserves of good quality coal in North America.
   (vii) Name one important region each having reserves of iron ore, copper, gold, petroleum, lead and zinc in North America.
   (viii) Which country of North America has the lowest density of population ?

2. Give one term for each of the following.
   (i) A farming practice in which only a few farmers are able to till large farms mainly with the help of machines.
   (ii) Vast areas of shallow seas near the coast abounding in fish.
   (iii) Well-surfaced and broad roads of North America which allow four to six vehicles to run together in one direction.

3. Which are the major types of forests found in North America and how are they useful ?

4. Give an account of the power resources of North America.

5. Which parts of North America have specialized in the rearing of cattle and why ?

6. What factors influence the distribution of population ? Explain with the help of suitable examples.

7. Which parts of North America are very densely populated ? Why ?

Skills in geography

8. On an outline map of North America, mark the following.
   (i) The areas producing wheat, maize, cotton and sugarcane
   (ii) The areas of coniferous and deciduous forests
   (iii) The Grand Bank
   (iv) The Great Lakes and the St Lawrence waterway

Topics for class discussion

9. Collect information on the discovery of America by Columbus, and relate this story to the class.

10. Hold a group discussion on 'The Panama Canal and the Suez Canal'. Divide the class into two groups, one for the Panama Canal and the other for the Suez Canal. Let each group talk about the canal in terms of its location, length, depth, height from sea level, the year of the construction, the number of ships passing daily and the countries served by each canal. At the end, list the points of similarities and differences between the two.

CHAPTER 8

The United States of America

Terms that you know

NATIONAL PARK : An area reserved for preservation of its natural vegetation, natural beauty and wildlife

The United States of America or the USA is the fourth largest country in the world, in area, after Russia, Canada and China. It consists of 50 states including Alaska, and Hawaii. Find out the locations of Alaska and Hawaii in the map. The USA stretches from the Atlantic Ocean in the east to the Pacific Ocean in the west. Find out the latitudes and longitudes of the country. It is one of the highly developed countries of the world.

Physical features

The USA has a varied terrain — mountains, plateaus and plains drained by a number of rivers. Its physical features can be divided into three major groups. They are: the Western Cordilleras, the Central Lowlands and the Eastern Highlands.

The Western Cordilleras consist of several high and rugged mountain ranges running from the north to the south. The Rockies, the easternmost range, is the highest of them. To its west lies the Cascade Range in the North and the Sierra Nevada in the south. Close to the Pacific Ocean lies the Coastal Range. Mt Whitney with a height of 4,418 metres above sea level, is the highest peak.

There are high plateaus and valleys enclosed by the Cascade and the Sierra Nevada ranges on the one hand and Rockies on the other. Find out their names from the map. The Great Basin located between the Sierra Nevada and the Rockies is an area of inland drainage.

There are several national parks in the Western Cordilleras. The Yellow Stone National Park is a great attraction for tourists because of the high peaks, canyons, volcanoes, hot springs and geysers.

The Central Lowlands bounded by the Rockies on the west and the Appalachians on the east, is a vast plain area. It is drained by the river Mississippi and

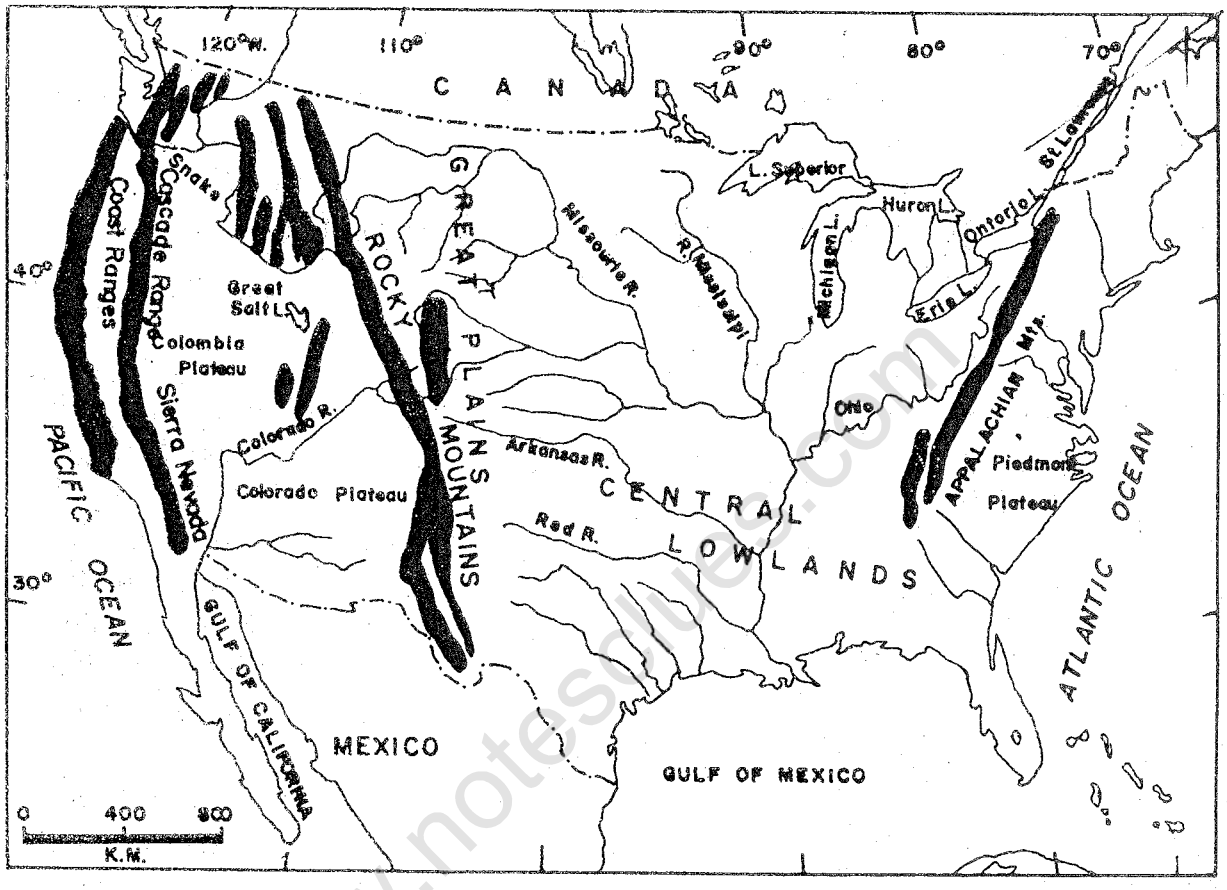


Fig. 8.1 The United States — Location and relief
Compare this map with Fig. 6.2 showing the physical features of North America. What common features do you see in these maps ?

its tributaries. This region is the most fertile part of the United States.

The Eastern Highlands consist of the much eroded old mountains — the Appalachians. On either side of these mountains, there are narrow and low plateaus called PIEDMONT plateaus.

Climate and natural vegetation

The USA has a great variety of climates. The south-eastern part of the country receives fairly good rainfall from the warm moist air coming from the Gulf of Mexico and the Atlantic Ocean. The amount of rainfall decreases from the south to the north and from the east to the west. Snowfall is confined to the northern part of the country. Temperature, in general, decreases from the south to the north. The southern parts have long and hot summers. Winters are short and mild. In contrast, summers are short and

warm in the north. Winters on the other hand, are long and cold. The Central Lowlands have the continental type of climate. The rainfall is light, mostly concentrated in summer. This region receives some snowfall during winter as there is no mountain barrier in the north.

Weather changes very frequently in much of the eastern area. Here, the warm air blowing from the south is frequently interrupted by the cold air masses. It results in the bad weather conditions sweeping down from the north.

The climate of the western part is more varied. The north-western part receives heavy rainfall throughout the year under the influence of the Westerlies. On the eastern side, rainfall decreases. Hence, the Great Basin and the Colorado plateau are deserts. The high mountain peaks remain covered with snow throughout winter. Southern California has a typical Mediterranean climate.

In the USA, the coniferous forests are confined to the Great Lakes region and the Western Cordilleras. The giant Redwood and Douglas fir are the well-known trees of the north-western part of America. The most dominant natural vegetation here consists of mixed forests. They contain both coniferous and deciduous trees. The natural vegetation of the Central Lowlands is the prairie grass.

In the desert region of south-western United States, especially in the basin of the Colorado River, the natural vegetation consists of cactus and a few varieties of thorny bushes.

Economic development

The United States of America holds a dominant position in the world because of its high economic development. It has been a leading producer of both industrial and agricultural goods. It is also a leader in the development and application of innovative technology. Because of its enormous output, the United States has a major share in world trade. The farms, factories, stores and banks in the USA are owned and managed by private investors.

Agriculture

About one-fifth of the total area of the country is under cultivation. Most of it lies in the Central Lowlands. This area has fertile soil, flat and well watered land. Here farms are large. These vast agricultural lands are cultivated by a very small proportion of the country's population. They practise extensive farming. As a result, this small percentage of population is able to produce plenty of food for the entire population of the United States and there is also surplus for export. The country, however, faces some environmental problems due to excessive use of

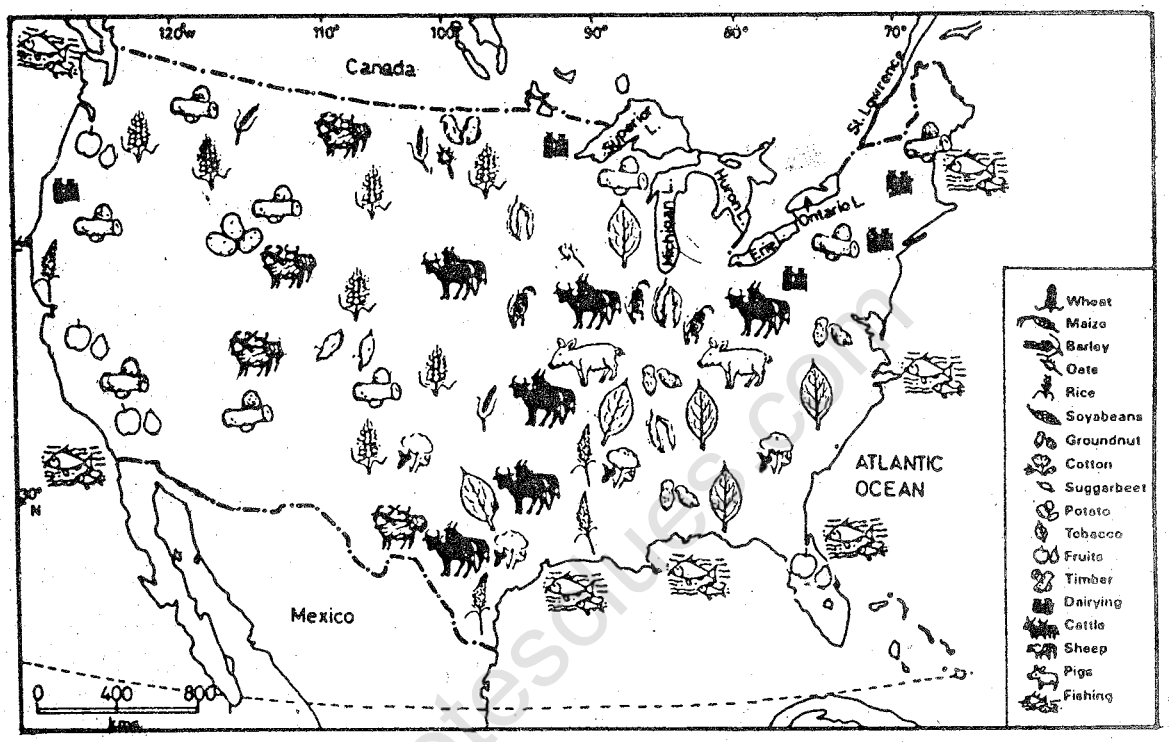


Fig. 8.2 The United States — Forests, crops and livestock
Note the crops and animals reared in the USA. Why is cotton grown in the south ?

insecticides and pesticides. Efforts are being made to find new eco-friendly techniques so that development activities can be sustained for a longer period. ECO-FRIENDLY techniques are those methods and activities which do not affect the environment adversely.

Maize, wheat, oats and barley are the important cereals grown here. Some other crops are soyabean, cotton and tobacco. Maize is the most important crop. The United States produces nearly half of the world's maize. Most of the maize produced is used for feeding cattle, pigs and poultry. The United States is the second largest producer of wheat in the world. It exports wheat and wheat flour in large quantities to other countries. Oats and barley are produced mainly to feed animals. An important feature of agriculture here is the growing of one predominant crop in large areas. Hence you may notice different crop belts such as wheat, corn and cotton belts.

About one-third of the world's cotton is grown by the United States. It is grown in the southern parts. The country is also a leading producer of tobacco. Potatoes, sugar-beet and a variety of fruits are grown here on a large scale.

Animal rearing

Animal rearing is an important activity in the USA. The country has a large number of cattle, pigs and sheep. Large herds of beef cattle are reared in grassy plains and plateaus of western United States. This region is known for cattle ranches. A CATTLE RANCH consists of pasture land and a group of buildings which serve as the headquarters. There are separate buildings for the owners, the cowboys and for different activities. For example, there are sheds for cattle where they are kept in winter. There are storehouses, sheds for machines, shops and special places called *corrals* for sorting, branding and breeding cattle.

The USA contributes nearly 20 per cent of the total milk produced in the world and over 20 per cent of the cheese and butter. Dairy-farming is also carried on mainly around the Great Lakes region and in the north-eastern parts of the country. The cool, humid climate is favourable for milch cattle. Most of the dairy farms are located near large cities. Why is it so ?

Fishing

Fishing is an important activity of the country. Fishing is done both in the open seas along the Atlantic and the Pacific coasts and in inland waters. Modern techniques of fishing are used. Ships are fitted with computer controlled sensors for locating the potential fishing grounds. Fishing fleets carry huge fish processing factories and refrigeration plants.

Forestry

Forests cover about one-fourth of the area of the country. Lumbering contributes nearly one per cent to the national income of the United States. The country leads the world in the production of temperate hardwood, which is largely used for making furniture. It ranks second in the production of softwood, which provides timber for construction purposes and also wood pulp for the manufacture of paper and rayon.

Mineral and power resources

The country is very rich in metallic minerals such as iron, copper, zinc, lead and gold. It is one of the largest producers of copper and silver in the world.

The major deposits of iron ore are found in the Lake Superior region. It has large deposits of bauxite, uranium, phosphate, potash and sulphur.

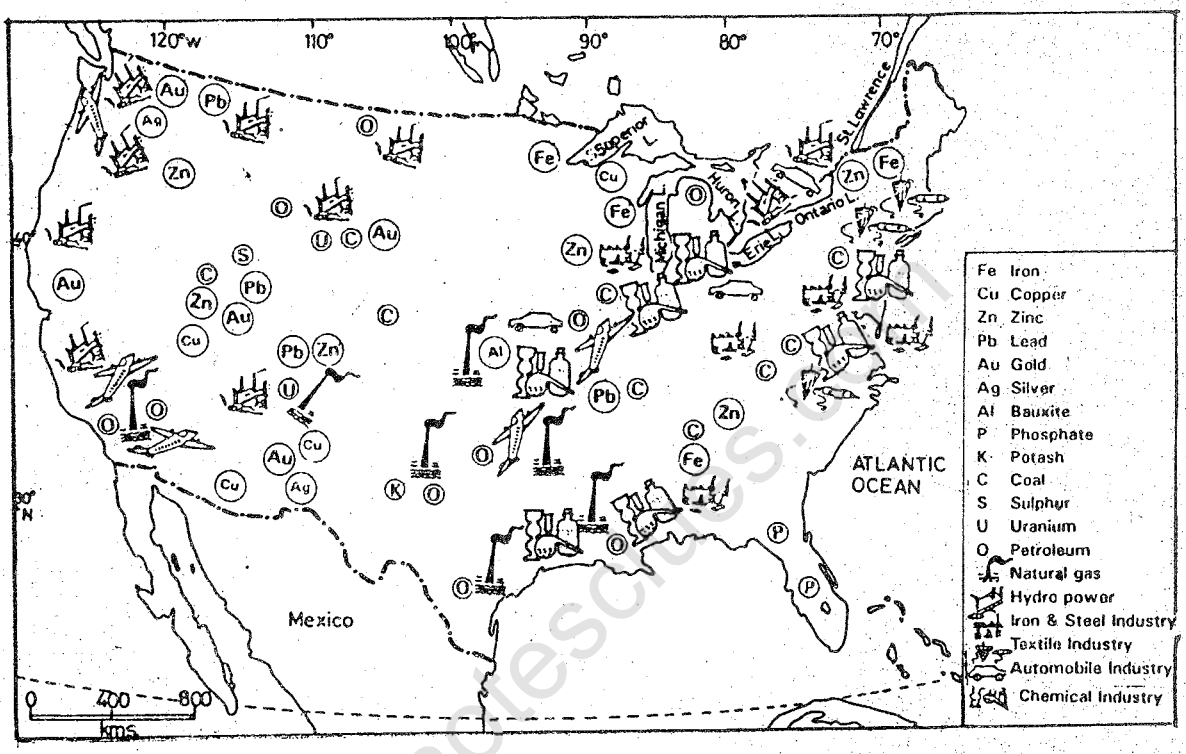


Fig. 8.3 The United States — Minerals and industries
Note the distribution of minerals and industries. Why is the north-eastern part of the USA important for industries ?

The USA has large reserves of coal which are found mainly in the Appalachian region. It is also one of the leading producers of petroleum in the world. Its major oil fields are located in the central plains and along the Gulf Coast. Natural gas, found in association with petroleum, is also produced in large quantities. The main fields of natural gas are located in Texas, Louisiana, Oklahoma and New Mexico. Extensive pipelines have been laid down to carry oil and gas to many cities and industrial centres.

The country is rich in water resources as well. It is one of the leading producers of hydroelectricity in the world. Most of the power plants are located in the mountainous areas of the west. The country has also set up several atomic energy plants which produce electricity.

Industries

The United States of America is one of the leading industrial countries of the world. Its huge mineral deposits, varied agricultural crops and animal products provide raw materials for its industries. There is enough fuel or power to run big factories. It has ample capital and skilled labour. There are excellent means of transport and a very big market for its industrial goods both within the country and abroad. All these factors have been responsible for the rapid growth of industries in the USA. It is the largest producer of industrial goods, chemicals and basic metals. Iron and steel is the most important industry of the United States. Steel is used for manufacturing goods like automobiles, heavy armaments, railway wagons, locomotives, machine tools and machines. The United States of America is the leading producer of aeroplanes in the world. In the field of manufacturing automobiles, it is one of the world producers. Detroit is the chief production centre for the automobile industry.

Oil refining and petro-chemicals are the other major industries. Smelting of ores and production of automatic machines, a variety of electrical goods, textiles, and chemicals are also important. Paper and food-processing industries are the other large-scale industries of the United States.

Most of the industries in the country are located in the north-eastern part of the United States. The leading manufacturing centres of this region are Boston, New York, Philadelphia, Detroit and Chicago. Los Angeles is an important industrial centre on the western coast.

Population

The total population of the United States is 274 million. In population it ranks fourth in the world, after China, India and Russia. The average density of population in the USA is about 29 persons per square kilometre. The population is, however, unevenly distributed. About three-fourths of the total population lives in the eastern half of the country. Seventy six per cent of the people in the United States live in cities.

New York is the largest city of the country. Its population is more than seven million. It is a big centre of international trade and commerce. It is also known for its SKYSCRAPERS (a group of high, multi-storeyed buildings forming a skyline). The headquarters of the United Nations is located in New York. Los Angeles is the second largest city of the United States. Washington D.C. is the national capital of the country.

Transport and trade

The transport system of the USA is very

good. All the large cities are well connected by railways, roads and airways. Automobiles are the most effective means of daily transport.

People covering long distances by their automobiles halt at MOTELS, a kind of hotels which provide bedrooms, a kitchen and parking facilities. More than 80 per cent of the intercity passenger traffic is in the private sector. Many roads in the country are freeways or superways.

Railways form a vast network throughout the country. Transcontinental railways link the Atlantic coast with the Pacific coast. Chicago is the main terminus of the railways. It is the world's largest railway junction. The airways are very popular among passengers covering long distances.

The United States of America accounts for the biggest national share in world trade. Its exports consist mainly of armament, aircraft, machinery, transport equipment, electrical equipment, grains and food items. The chief imports are crude oil and industrial raw materials.

Terms you have learnt

SKYSCRAPERS : A group of high multi-storeyed buildings forming a skyline

MOTEL : A kind of hotel which provides travellers with facilities such as bedrooms, a kitchen and a parking place

EXERCISES

Review questions

1. Answer the following questions briefly.
   (i) Which are the two states of the USA which are not a contiguous part of the USA ?
   (ii) Name the main ranges of the Western Cordilleras.
   (iii) Which is the most fertile part of the USA ?
   (iv) Name the most dominant vegetation type of the USA.
   (v) What is meant by eco-friendly techniques of agriculture ?
   (vi) Which are the crops that are grown mainly to feed animals in the USA ?
   (vii) What is a cattle ranch ?
   (viii) Which part of the country has a concentration of several industries ?
   (ix) Which is the leading coal field of the United States ?
   (x) In which region of the USA are oil and gas deposits found ?

2. Make out correct pairs from the two columns.

A	*B*
a. The national capital	i. New York
b. The largest railway junction	ii. Los Angeles
c. A centre of automobile industry	iii. Chicago
d. The headquarters of the United Nations	iv. Washington D.C.
e. An important industrial centre on the western coast	v. Detroit

3. Give a brief account of the climate of the USA.

4. Describe the main features of agriculture in the USA.

5. What are the factors that have been responsible for the rapid growth of industries in the USA ?

Skills in geography

6. On an outline map of the United States of America mark and name the following.
   (i) The Rocky mountains and the Appalachian mountains
   (ii) Mount Whitney and the Great Basin
   (iii) The Mississippi river and the Colorado river
   (iv) New York, Chicago and Los Angeles

CHAPTER 9

CANADA

Terms that you know

INDENTED COASTLINE : A long and highly zig-zag coastline with alternate creeks and capes or bays and headlands

Canada occupies the northern part of North America (excluding Alaska and Greenland). It is the second largest country in the world. It extends from the Atlantic Ocean in the east to the Pacific Ocean in the west. It is bounded on the north by the Arctic Ocean and on the south by the United States of America. Study the map of Canada carefully. Find out its location in latitudes and longitudes. The northern part of Canada consists of many islands, big and small. The coastline of Canada is highly indented.

Physical features

The overall pattern of the Canadian landform is simple. It has three main physical divisions — the Canadian Shield, the Interior Plains and the Cordillera Region.

The Canadian Shield

Most of northern Canada is composed of the Shield. It is an area of low plateaus made of old, hard rocks. The Shield is the largest and oldest physical feature of Canada. It has numerous lakes and swamps. Its northern part is covered with snow and ice for most of the year. The southern part has coniferous trees. It is rich in metallic minerals like gold, silver and nickel.

To the south and south-east of the Shield are the Lowlands of the Great Lakes and the St Lawrence river. About 60 per cent of the total population of Canada lives in these lowlands. This region is the most productive part of Canada. It has farmlands, dairy farms and fruit orchards. St Lawrence is the most important river of Canada. It flows out of the Great Lakes and falls into the Atlantic Ocean. It is one of the busiest inland waterways in the world. The plateaus of Labrador Peninsula are located east of the Canadian Shield. They are the extensions of the Appalachian mountains.

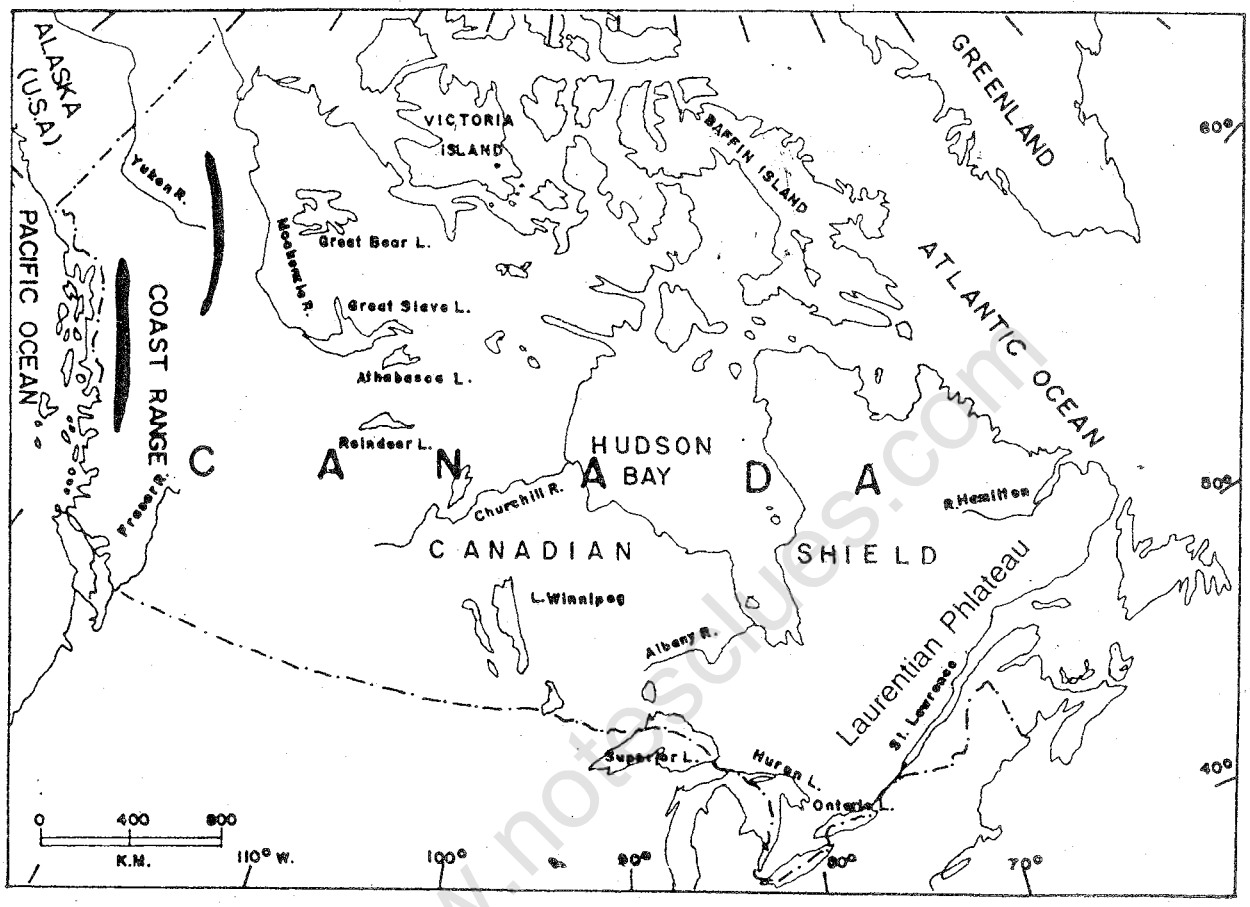


Fig. 9.1 Canada — Location and relief.
Note the latitudinal extent of Canada. How does it influence the climate? Also note the physical features of Canada.

The Interior Plains

To the south-west of the Canadian Shield lie the interior plains known as the PRAIRIES. These plains are mostly flat and rise towards the Rockies. They are very fertile. The prairies are famous for wheat production. In some parts, cattle are reared. This region is also rich in a few mineral resources such as gold, coal and petroleum. The interior plains are fast becoming very prosperous parts of Canada. This region is, therefore, very important to Canada.

The Cordillera Region

The Cordillera region of Canada includes the mountains and plateaus of the west. From the east to the west, you will find the Rocky mountains, high plateaus and coastal ranges respectively. This region is rich in forest resources, minerals and hydroelectric power. Agri-

culture is the common occupation in the valleys.

Climate and vegetation

As most of Canada lies north of 50^0 N latitude, its climate is generally cold. Winters are long and extremely cold. Summers are short and cool. The temperature is dependent not only upon the distance from the equator but also upon the topographical features. The northern part of Canada generally remains covered with snow and ice. Cold winds from the north blow in winter. These winds are often accompanied by powdery snow and sometimes by ice crystal. In such stormy weather, one finds it difficult to see beyond a few metres. Such strong, cold winds accompanied by snow are called BLIZZARDS. The Pacific coast of Canada has little variation in temperature. It experiences cool summers and mild winters. Western Canada has a relatively milder climate compared to the eastern part. Warm currents in the western and southeastern parts bring good rainfall in these regions. These currents also increase the temperature in these areas.

Tundra, taiga and prairies are the important vegetation belts. The northern treeless zone is called the tundra. It occupies about one-fourth of the total area of the country. To the south of the tundra lies a vast region of coniferous forests known as the taiga. It occupies about two-fifths of the total area of Canada. The poplars are the most common trees in south-west taiga. The grasslands of the prairies extend from Lake Superior to the foothills of the Rockies. Most of these grasslands have been brought under cultivation.

Resources and economic development

Canada is one of the most highly developed and prosperous countries in the world today. Agriculture, mining, forestry, fishing and manufacturing industrial goods are the most important economic activities. Canada produces a large number of goods for export such as machinery, transport equipment, and paper.

Agriculture

Only about seven per cent of the total area of Canada is suitable for agriculture. About 80 per cent of Canada's farmland is in the prairies. Wheat is the chief crop. Canada is one of the leading exporters of wheat in the world market. Oat, barley, rye and rapeseed are the other important crops of Canada. Most of the agricultural work is done by machines. Nova Scotia is noted for its large orchards of apples. Cattle rearing is an important occupation in the drier parts of the prairie region, especially towards the Rocky Mountains. Meat production is very high. Besides meeting its own requirement, the country is left with plenty to export. In the St

Lawrence valley and around the Great Lakes, mainly dairy cattle are reared.

Forestry

A large part of Canada is covered with coniferous forests. For more than a century, forest products have been important export items of Canada. Pulp and paper are the most important forest products. Canada accounts for nearly one-third of the world's production of newsprint.

Lumbering is one of the important occupations of the people of Canada. People who work in the forests fell trees, help in logging, splitting and hauling lumber. These forest activities are collectively known as LUMBERING.

The lumber-jacks live in log huts built for their winter residence in the lumber camps. Fully grown trees are felled and dragged over the frozen river. They are stacked there until spring. When ice begins to melt, the

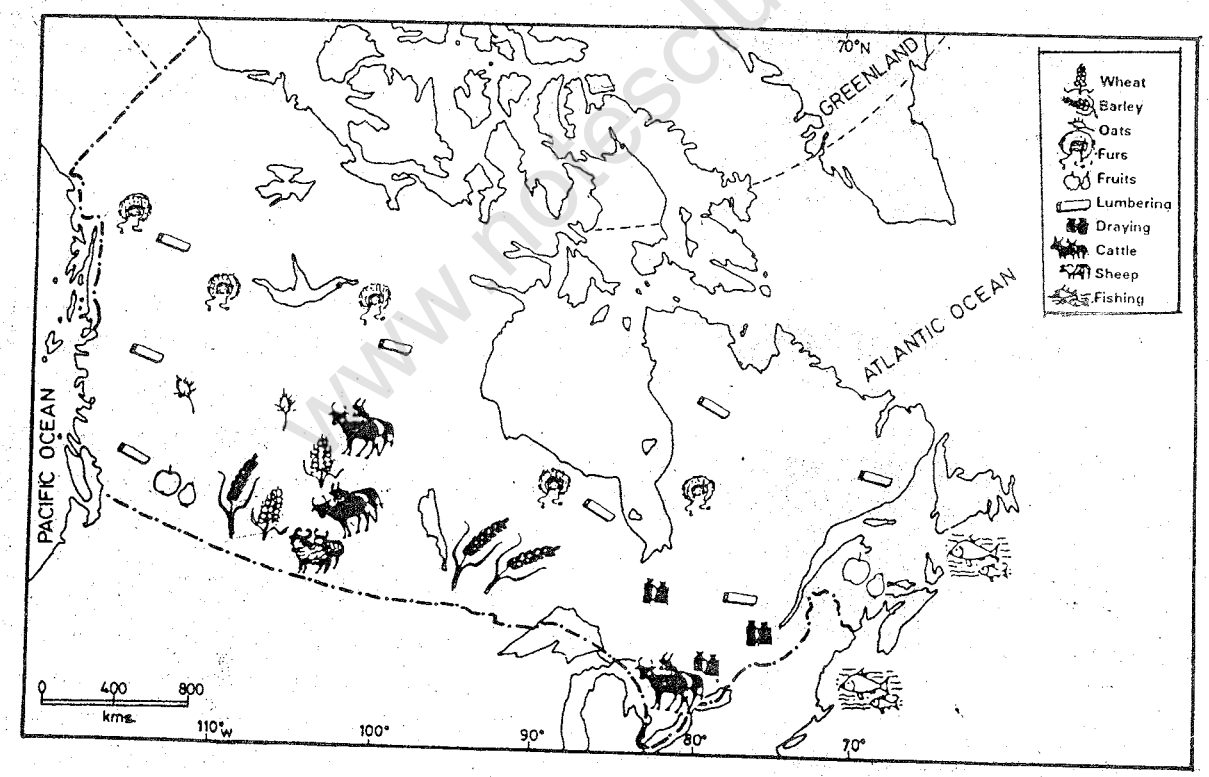


Fig. 9.2 Canada — Forests, crops and livestock
Note the areas of crop cultivation, cattle rearing and forests in Canada. Why is the greater part of Canada useless for farming ?

logs are floated down the stream to the saw mills. Huge rafts consisting of thousands of logs are floated from the lumber camps to the mills where they are processed into paper and other useful products.

Lumbering methods in Canada are constantly changing with advances in modern technology. Power-driven chain saws have replaced the old-fashioned hard-driven saws. Various types of tractors, trucks, log-loaders and lifting-trailers are used for loading, unloading and transportation of logs. Extensive mechanization and scientific techniques of lumbering have greatly reduced the manual work involved in it earlier.

Fishing

Fishing is an important economic activity of a large number of people in Canada. It is carried out mainly along the eastern coast. Newfoundland is famous for fishing. With an average annual fish catch of about 14 million tons, Canada exports about three-fourths of it. Thus it is one of the main fish producing and exporting countries of the world.

Mining

Mining is one of the primary industries of Canada. Several important minerals are found here. These are asbestos, nickel, potash, uranium, molybdenum, silver, gypsum, sulphur, copper, titanium, platinum, cobalt, gold and iron ore. Asbestos is a fibrous mineral used for making fireproof materials. Uranium is used for producing atomic energy. The largest deposits of iron ore are found along the Labrador-Quebec border. Canada is among the chief exporters of iron ore in the world. It exports four-fifths of its total production.

Among mineral fuels, Canada produces coal, petroleum, and natural gas. Most of Canada's petroleum and natural gas supplies come from Alberta, which accounts for 90 per cent of the total production. Coal is found in the widely scattered areas of the country on the coasts of the Pacific and the Atlantic Oceans. The water power resources of Canada are very large. About 70 per cent of its total power is generated by water. The Niagara Falls is an important source of water power for both Canada and the United States. The development of water power has made Canada a leading industrial country.

Industries

About one-third of the total population in Canada depends directly on its manufacturing industries. Manufacturing transport equipment, pulp and paper, machinery and chemical products, petroleum refining, meat processing and smelting of ores are important. Most of the industries are highly mechanized and capital intensive.

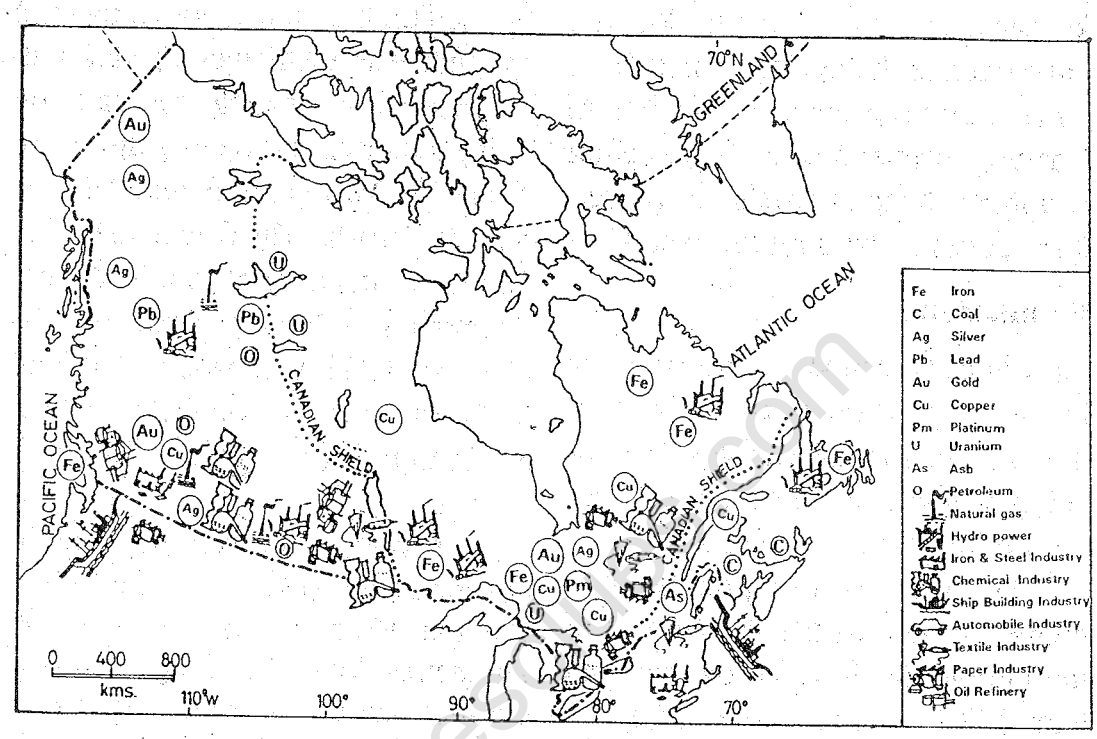


Fig. 9.3 Canada — Minerals and industries
Note the distribution of minerals and industries in Canada.

The region around the Great Lakes is highly industrialized. There is a heavy concentration of industries like automobiles, electrical goods, and iron and steel plants in Ontario.

Quebec, the second most industrialized province, relies on its excellent water resources to maintain its lead in the pulp, paper and aluminium industries. Toronto and Montreal are also important industrial and commercial centres. Canada is the largest producer of newsprint in the world. This industry is based on the softwood timber obtained from the coniferous forests found in southern Canada.

The smelting and refining of metals, from ores, such as zinc, nickel, uranium, copper, gold, silver and aluminium are important industries in Canada. The process through which metals are extracted from their ores, is

known as SMELTING. Canada does not have bauxite. It imports bauxite from Jamaica and Guyana for its aluminium smelting plants. Using its abundant supply of cheap hydroelectric power, it produces aluminium for export.

Population

Canada is three times the size of India but its population is only about 30 million. The average density of population is less than three persons per square kilometre in Canada.

The distribution of population is highly uneven. Nearly 80 per cent of the people live in a narrow belt less than 300 kilometres wide along the southern border. The rest of the country has very sparse population due to excessive cold. More than three-quarters of Canada's population live in urban areas. The level of urbanization in Canada surpasses the estimated world average. Toronto is the largest city of Canada and one of the busiest ports on the Great Lakes. Other important cities are Montreal, Vancouver and Ottawa. Ottawa is the capital city of Canada.

Transport

Rail and roads are of primary importance in the Canadian economy Canada's vast size and difficult topography made the construction of railways and roads expensive but essential. The introduction of railways opened up the prairies for large-scale agriculture and settlement. Today, railways are used mainly for carrying bulky commodities over long distances. There are two transcontinental railways in Canada. The Canadian Pacific Railways runs from St John's in New Brumswick to Vancouver on the Pacific coast. The Canadian National Railways connects Halifax in Nova Scotia to Prince Rupert in British Columbia.

Automobiles are very popular for covering short distances. The Trans-Canada Highway is about 9,600 kilometres long. It links the two coasts. There is a good network of highways in the lowlands of St Lawrence and the industrial region around the Great Lakes.

A number of canals connect St Lawrence to the Great Lakes. Built jointly by Canada and the United States, they provide excellent inland waterways. It has had a great impact on the economic development of this region. However, a number of problems are being faced today in allowing the ocean going vessels to sail upto the river. The seaways locks are too small for modern super tankers. Besides, the channels remain frozen for more than three months due to the harsh winter. Moreover, the tolls are high. The inland waterways are largely limited to the St Lawrence, the Great Lakes and to the Mackenzie in the north.

Air routes link all the main towns and cities of Canada. In the northern parts of Canada, aeroplanes very often make use of lakes and rivers for landing because they are quite numerous. In winter, aeroplanes use skis in place of wheels for landing over frozen lakes and in summer, they use floats for landing on lakes, bays and rivers.

New terms you have learnt

BLIZZARD : Very strong, cold winds accompanied by powdery snow and sometimes ice crystals especially in the polar regions

LUMBERING : Forest activities such as felling of trees, logging, splitting and hauling lumber

EXERCISES

Review questions

1. Answer the following questions briefly.
   (i) Which physical feature of Canada is most dominating ?
   (ii) Why are the prairies important to Canada ?
   (iii) Why is the climate of the western coast of Canada mild ?
   (iv) Name the three important vegetation belts of Canada.
   (v) Which is the main cereal crop of Canada ?
   (vi) Which are the two important forest products of Canada ?
   (vii) Why is lumbering in the forests of Canada done mainly in winter ?
   (viii) Which part of Canada is highly industrialized ?
   (ix) Which industry of Canada is dependent mostly on imported bauxite ? Why ?
   (x) Why is the population of Canada mostly concentrated along its southern border ?
   (xi) Name the two transcontinental railways of Canada and the places connected by them.
2. Give one term for each of the following.
   (i) Strong cold winds accompanied by powdery snow.
   (ii) The process by which metals are extracted from their ores.
   (iii) Forest activities such as felling of trees, logging, splitting and hauling of lumber.
3. Describe the lumbering activity in Canada and the changes taking place in the methods adopted.
4. What are the major mineral and power resources of Canada ? Where are they located ?

5. Describe the role of inland waterways in the economic development of Canada and the problems being faced by them today.

Skills in geography

6. On an outline map of Canada show the following.
   (i) Rivers — Mackenzie and St Lawrence
   (ii) Hudson Bay and Newfoundland
   (iii) Coastal ranges
   (iv) Canadian Pacific and Canadian National Railways
   (v) Taiga forest
   (vi) Niagara Falls
   (vii) Cities — Toronto, Montreal, Ottawa and Vancouver

7. Collect information on the natural resources of Canada and their use. Discuss among yourselves what has made Canada a very prosperous country.

UNIT IV

EUROPE

Europe is at best a peninsula of the Eurasian continent. However, for its size it is very important. No other continent has left its impact on the rest of the world as Europe has done during the past three centuries or so.

Europe is the only continent which is both populous and prosperous. This is the real greatness of Europe, although it is small in size.

The secret of Europe's prosperity lies in certain qualities of the people of Europe who have made the best possible use of its available natural resources.

The northern part of Europe is very cold. Minerals are few and agriculture is restricted to a few areas because of the short growing season. Large areas are under forest cover. As a result, fishing and forestry are highly developed. Non-availability of coal has been compensated for by developing hydroelectric power.

Europe is fortunate to have a large proportion of a level and well watered lowland mostly in the central part. Almost every bit of it has been brought under cultivation. Hill slopes and all those lands, which are neither very fertile, nor quite level, are used as pastures. Even rearing of animals and forestry are done on a scientific basis. The natural beauty of the landscape has also been well used to develop the tourism industry.

Europe provides examples of not only the best utilization of

resources but also generation or creation of resources. The Dutch, for example, have been constantly at war with the sea, reclaiming land from sea.

The underground wealth has been used to develop a variety of industries. Means of transport — rail, road, air and waterways — and communication have been developed like a network. This has helped in developing industries even in those areas which lack the necessary raw materials as they are easily imported from outside the region.

As a result, Europe has developed its available natural resources in the best possible manner. Even the small countries like Denmark, Belgium and the Netherlands export a large variety of industrial goods and technical know-how.

Three countries of Europe — the United Kingdom, France and Germany — have been selected as case studies. They demonstrate the ways in which varied natural resources could be used to bring economic prosperity. The unification of Germany has been one of the major events in the world. This has influenced the pace of economic development in recent years.

Another important world event has been the formation of fifteen independent nations, which earlier were republics of the former Union of Soviet Socialist Republics (USSR). Russia continues to maintain its position in the world with regard to its area. Except for the three Baltic States of Estonia, Latvia and Lithuania, the remaining 12 countries have formed a Commonwealth of Independent States (CIS) to develop their economy.

CHAPTER 10

Europe — Land and Climate

Terms that you know

LAND HEMISPHERE : The Northern Hemisphere of the earth's surface containing nearly six-sevenths of the world's total land area.

PENINSULA : A large stretch of land surrounded by sea or other water bodies on all sides except one through which it is connected to a large land mass

Europe is a small continent. Note the latitudes and longitudes within which it is situated. Among the seven continents it ranks sixth in area. It has a favourable location in the centre of the land hemisphere. Its boundaries are the Arctic Ocean in the north, the Atlantic Ocean in the west, and the Mediterranean Sea in the South. In the east, it is separated from Asia by the Ural Mountains, the Caucasus Mountains and the Caspian Sea. Some geographers think that Europe and Asia should be considered as one continent called Eurasia. However, because of certain distinctive characteristics Europe is generally considered to be a continent by itself. During the past few centuries, religious beliefs, political ideals, scientific discoveries and technological skills originating in Europe have strongly influenced the world civilization.

Europe is made up of several peninsulas and islands. Most of its land is within a few hundred kilometres of the sea as large arms of sea have penetrated deep into the land. Study the map of Europe and find out the names of the seas bordering it. Its coastline is highly indented. It provides good sites for natural harbours and ports. Many of the bays and seas surrounding this continent are shallow. They offer one of the best fishing grounds in the world.

Europe is drained by many navigable rivers that flow in every direction. Find out the names of a few major rivers. Where do they originate and where do they finally join the sea ?

Political division

Study the political map of Europe (Fig. 10.1). In the northern part, you will

Note the names of the countries and their capitals. Kaliningrad is part of Russia, Yugoslavia has now been devided into a number of independent countries. A separate map of former Yugoslavia has been given in next page.

Fig. 10.1 Europe — Political divisions

Fig. 10.2 Former Yugoslavia and the new independent nations

Note the capitals of Slovenia, Croatia, Bosnia - Herzegovina, Macedonia, Montenegro and Serbia.It may be noted that the boundaries of these countries are yet to be finalized. While Serbia and Montenegro together form the Federal Republic of Yugoslavia with Belgrade as its capital, the others are independent countries.

notice the Scandinavian countries. Iceland, Norway, Sweden and Denmark are collectively known as Scandinavia. A large part of Russia and nine independent republics of the former Soviet Union are parts of Europe. Of these, Estonia, Lithuania and Latvia are together known as the Baltic States. Find out the names of the five other independent republics of the former USSR which are parts of Asia ? Belgium, the Netherlands and Luxemburg are called the Low Countries. Why ? Yugoslavia (Serbia and Montenegro), Slovenia, Croatia, Bosnia - Herzegovina, Macedonia, Bulgaria, Greece, Romania and Albania are known as the Balkan States.

Italy and Greece in southern Europe are known for their ancient civilizations. Vatican city is a small and independent state in a part of Rome with a population of a few hundred people. It is the seat of the Pope and the headquarters of the Roman Catholic Church. The British Isles include the two main islands of Ireland (comprising Northern Ireland and the Irish Republic), and Great Britain (Scotland, Wales and England) as well as a number of small islands.

Physical features

Europe may be divided into four major physical divisions.

1. The North-western Highlands
2. The North European Plains
3. The Central Uplands
4. The Alpine System

The North-western Highlands

In the far north there is a region of highlands. It extends from Finland through Sweden, Norway and the British Isles to Iceland. The northern part of this highland is called the Fenno-Scandian Shield. These shield rocks are the oldest exposed rocks in Europe, where glaciers have scraped off the sedimentary rocks. The area is fairly rich in metallic minerals such as iron and copper. But it is almost without fossil fuels such as coal, oil and natural gas which are associated with sedimentary rocks. The soils are coarse and least fertile.

The western edge of the shield is buckled into mountains. Along the Norwegian Coast, they reach into the Atlantic Ocean creating FIORDS. These are deep valleys cut by glaciers and now filled with sea water.

The North European Plain

It extends from the Urals in the east to the Atlantic coast in the west. Its westward extension may be seen in the British Isles. This plain is broadest in the eastern part and narrows down towards the west. It is bounded in the north by the White Sea and the North-western Highlands and in the south by the Central Uplands. Its landscape is low, flat and gently rolling. It has long been an important farming area. In

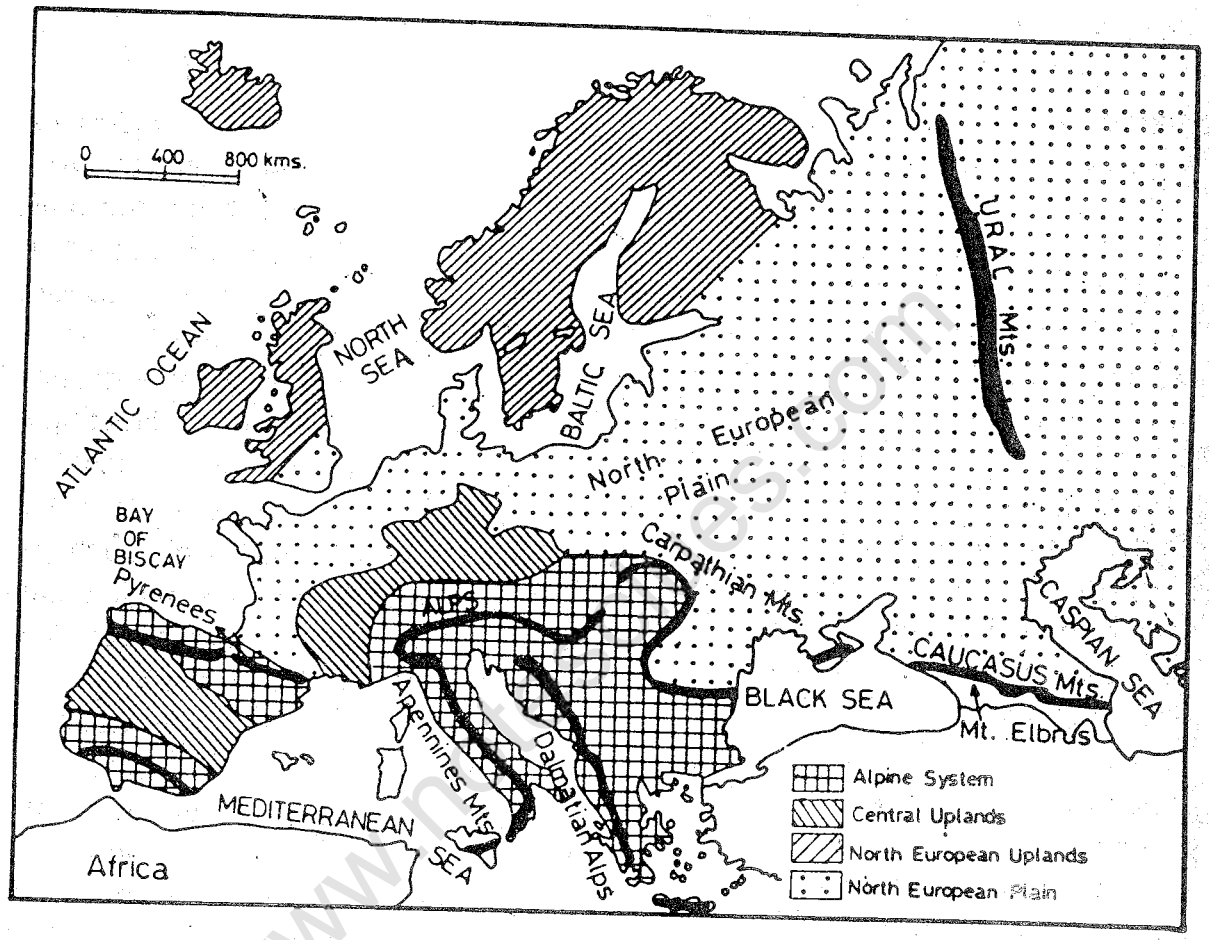


Fig. 10.3 Europe — Physical features
Note the physical divisions of Europe and the location of the important mountain ranges, rivers and seas on the map.

some cases, hills have been eroded into basins such as the London and Paris basins.

This plain is drained by large navigable rivers. The Seine and the Rhine are the important rivers joining the English Channel and the North Sea, respectively. The Danube, the Dniper, the Don and the Volga are the other important rivers.

In several places, this plain is underlaid with deposits of high-grade fossil-

fuels such as coal, oil and natural gas. These deposits extend into the North Sea where oil exploration and production on a large scale is now taking place.

The Central Uplands

A variety of mountains, hills and plateaus make up the Central Uplands. The Meseta in Spain and Portugal, the Massif Central and Jura mountains in France, the Black Forest in Germany and several low ranges in the Czech and Slovak republics are part of this region. Two major rivers which flow through this region have broad valleys. While the Rhine flows northwards, the Rhone flows southwards. A canal connects the two rivers making it possible to cross the continent through waterways.

The Alpine System

In the south, there is a chain of high mountains. The age of these is the same as that of the Atlas mountains in Africa and the Rocky mountains in North America. This chain stretches from the Atlantic Ocean in the west to the Caspian Sea in the east from where it further extends into Asia. These mountains have high peaks, steep slopes and deep valleys. The most important mountain system among them is the Alps. Mont Blanc (4,807 metres) is the highest peak of the Alps. The other important mountain ranges are the Pyrenees, the Carpathian and the Caucasus. The highest mountain peak of Europe is Mount Elbrus (5,633 metres) in the Caucasus.

These mountain systems generally have a series of ranges that run parallel to one another forming folds. Such fold mountains develop when the land is gradually compressed from two opposite sides as a result of internal movements beneath the earth's crust.

Climate and vegetation

When you look at the latitudes within which Europe is situated, you will find that a major part of the continent lies in the temperate zone. But considering its latitudes, Europe's climate is described as mild. Several factors like relief, its proximity to the seas, the Westerlies and the North Atlantic Drift influence the climate of Europe and make it mild.

Europe lies in the region of the Westerlies. As such, most of the time the wind blows from the south-west. Since there is no mountain system from the north to the south, there is no obstruction for these winds. As a result, these winds blow deeper into the land and modify the temperature. The warm waters of the North Atlantic Drift keep the seas along western Europe ice-free. The Westerlies blowing over these currents carry warmth further inland. On their way, they also pick up moisture and cause a fair amount of rainfall. Since these are permanent winds, rainfall is also fairly well distributed all through the year. It is generally

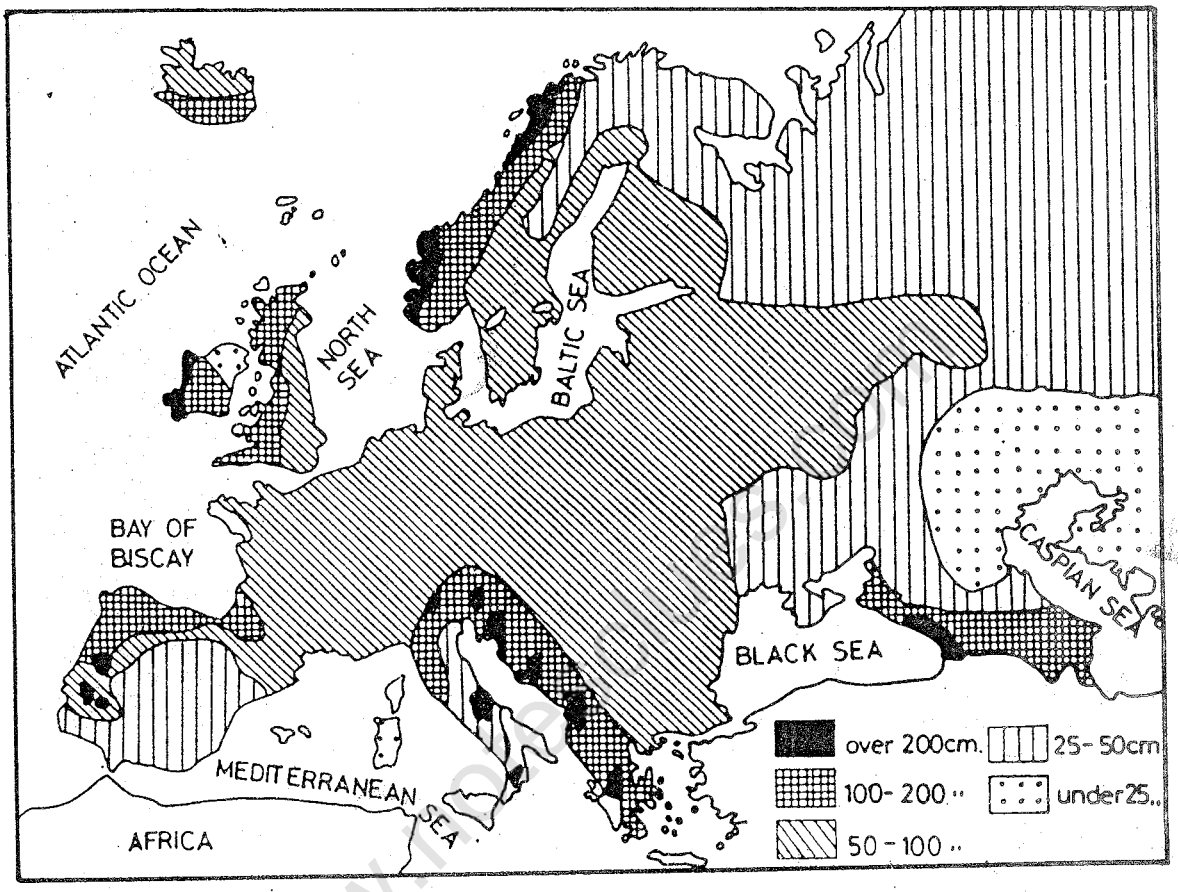


Fig. 10.4 Europe — Rainfall
Note the eastward decrease in the annual rainfall. Which areas receive more than 200 cm. of rainfall ?

heavy in the west and decreases towards the east.

The moderating influence of the Westerlies and nearness to the seas and oceans keep summers warm and winters cool in western Europe. The temperature remains equable and rainfall is well distributed throughout the year. In winter, fogs are common. This type of climate is typically maritime and is known as the West European type.

The moderating influence of the ocean is reduced eastward. As a result, in central and eastern Europe, summers are hot and winters are very cold and rainfall is also less. Such a climate with wide variation in the annual range

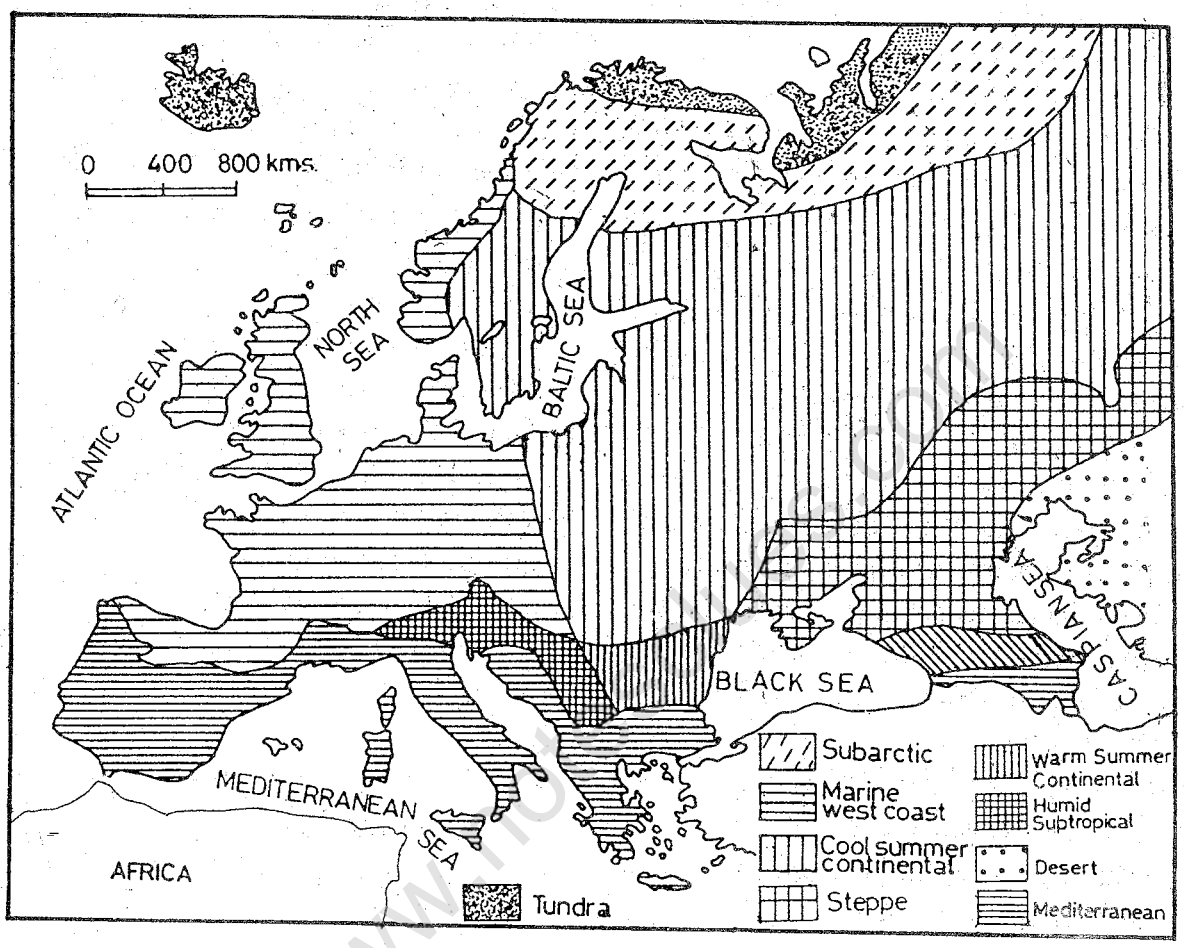


Fig. 10.5 Europe — Climate and natural vegetation
Note the main climatic belts and the associated vegetation.

of temperature and moderate rainfall is called CONTINENTAL CLIMATE.

Southern Europe comes under the influence of offshore winds during summer. Hence, rainfall is confined to winter alone. Summers are long, hot and dry. Winters are warm and wet. This type of climate is called the MEDITERRANEAN TYPE. It has derived its name from the Mediterranean sea as this type of climate is most prevalent along its coast.

The area north of the Arctic Circle has an extremely cold climate. Precipitation is very scanty and mostly in the form of snow. Summers are short with long and warm days. The sun is visible even at midnight for a brief period. The land is covered with snow for the major part of the year. It is called TUNDRA CLIMATE.

The natural vegetation of Europe closely follows its climatic pattern. In the Mediterranean region, trees are required to stand a long summer drought. Hence, they are small in size but have deep roots. Their leaves are small, thick and glossy. Some trees have thick and pulpy bark. Olive, fig, grapes and oranges are the most common fruits of this region.

At one time, dense forests covered nearly all of Europe north of the Mediterranean. But the need for farmland and wood caused massive cutting of forests. Today, forests are confined mostly to the areas not suitable for farming.

In the northern part, beyond the Arctic Circle, the vegetation is of the tundra type consisting of lichens, moss and a few stunted trees. South of the tundra lies the taiga region. It is a region of coniferous forests. Trees are tall and straight with a cone-like shape. Pine, spruce and fir are common trees. They provide valuable softwood. Fur animals like sable, mink and squirrel are found here.

South of this belt lies the belt of mixed forest. It has some coniferous trees and mostly broad-leaved deciduous trees which shed their leaves in winter. Oak, ash and poplar are the common trees of this region.

In the south-east part of Europe, there is an extensive grassland called the steppes. Compared to the prairies of North America, these grasses are shorter. This region extends from the Danube valley in Romania to Ukraine, where grasses are taller. The plains of Hungary are an extension of this plain. Most of this grassland has been brought under cultivation.

New terms you have learnt

FIORD : Deep inlets of sea standing between high cliffs.

FOLD MOUNTAINS : Chain of mountains running parallel to one another, formed due to compressional forces beneath the earth's surface

EXERCISES

Review questions

1. Answer the following.
   (i) Which are the four major physical divisions of Europe ?
   (ii) Which are the relief features that separate Europe from Asia ?
   (iii) Why does Europe have good natural harbours and ports ?
   (iv) Why are the North-western Highlands devoid of fossil fuels ?

(v) What are fiords ?
(vi) What kind of landscape is found in the North European Plains ?
(vii) In which areas are the grasslands found ?

2. Distinguish between
   (i) Maritime climate and Continental climate
   (ii) The Taiga and the Mediterranean types of vegetation

3. Make correct pairs from the following.

A	*B*
a. Iceland, Norway, Sweden and Denmark	Low countries
b. Irish Republic, Northern Ireland, Scotland, Wales and England	Scandinavia
c. Yugoslavia (Serbia and Montenegro), Slovenia, Croatia, Bosnia - Herzegovina, Macedonia, Bulgaria, Greece, Romania and Albania	British Isles
d. Belgium, the Netherlands and Luxemburg	Baltic States
e. Estonia, Latvia and Lithuania	Balkan States

4. Describe the major types of climate found in Europe.

5. What are the factors that influence the climate of Europe ?

6. Which are the main vegetation zones of Europe ? Explain how the vegetations in the Tundra and the Mediterranean regions are influenced by the climate of these regions ?

Skills in geography

7. On an outline map of Europe show the following.
   (i) The North Sea, the Baltic Sea, the White Sea, the Caspian Sea, the Black Sea, the Mediterranean Sea, the Adriatic Sea and the Aegean Sea
   (ii) The Rhine, the Danube and the Volga rivers
   (iii) The Alps, the Pyrenees, the Carpathian, the Caucasus and the Ural mountains
   (iv) Iceland, Great Britain, Ireland and Sicily
   (v) The Strait of Gibraltar and the English Channel
   (vi) London, Oslo, Rome, Paris and Bonn

CHAPTER 11

Europe — Resources and Their Utilization

Terms that you know

MIXED FARMING : Combination of cultivation of crops and rearing of animals for their milk and meat on the same farm

INTENSIVE AGRICULTURE : A farming practice involving greater use of manpower per unit of land.

Europe is endowed with a variety of natural resources such as forests, minerals, fertile soil and water. These resources are unevenly distributed. But the people of Europe have used them very wisely to make their countries prosperous. The Scandinavian countries, for example, have utilized their marine resources, water power and forest wealth in the best possible way. The Netherlands has reclaimed vast tracts of land from beneath the sea for agriculture. In countries like Great Britain, Germany, Belgium and Russia the available mineral resources have been used to make them giant industrial nations of the modern age. In many parts of Europe, cultivation of crops and rearing of animals are done on the same farm. This type of farming is called MIXED FARMING. It yields high returns to the farmers. As a result of careful planning and the application of science and technology, most countries of Europe are well developed. Their per capita income is generally high. The standard of living, on the whole, is comparable to that in other developed parts of the world such as the USA and Canada.

Soil resource

Europe has a large proportion of level and well-watered lowland. Almost all of this has been brought under cultivation. In fact, the Netherlands has reclaimed land from the sea by making big embankments along the sea front. They are called DYKES. The water from the enclosed land called POLDERS is pumped out into the sea. Earlier, windmills were used for this purpose. Now big electric pumps do this job. Land is then left to dry for some time before it

is brought under cultivation,

Hills and less fertile lands are put under pasture. Scientific methods are followed in the rearing of cattle. Infertile mountainous areas are mostly under forest. Even these are looked after very carefully. The natural beauty of the landscape has been given due attention to develop them into tourist resorts, which attract people from all parts of the world.

Although a large part of the land is arable, the quality of soil and climate varies from one part to another. A

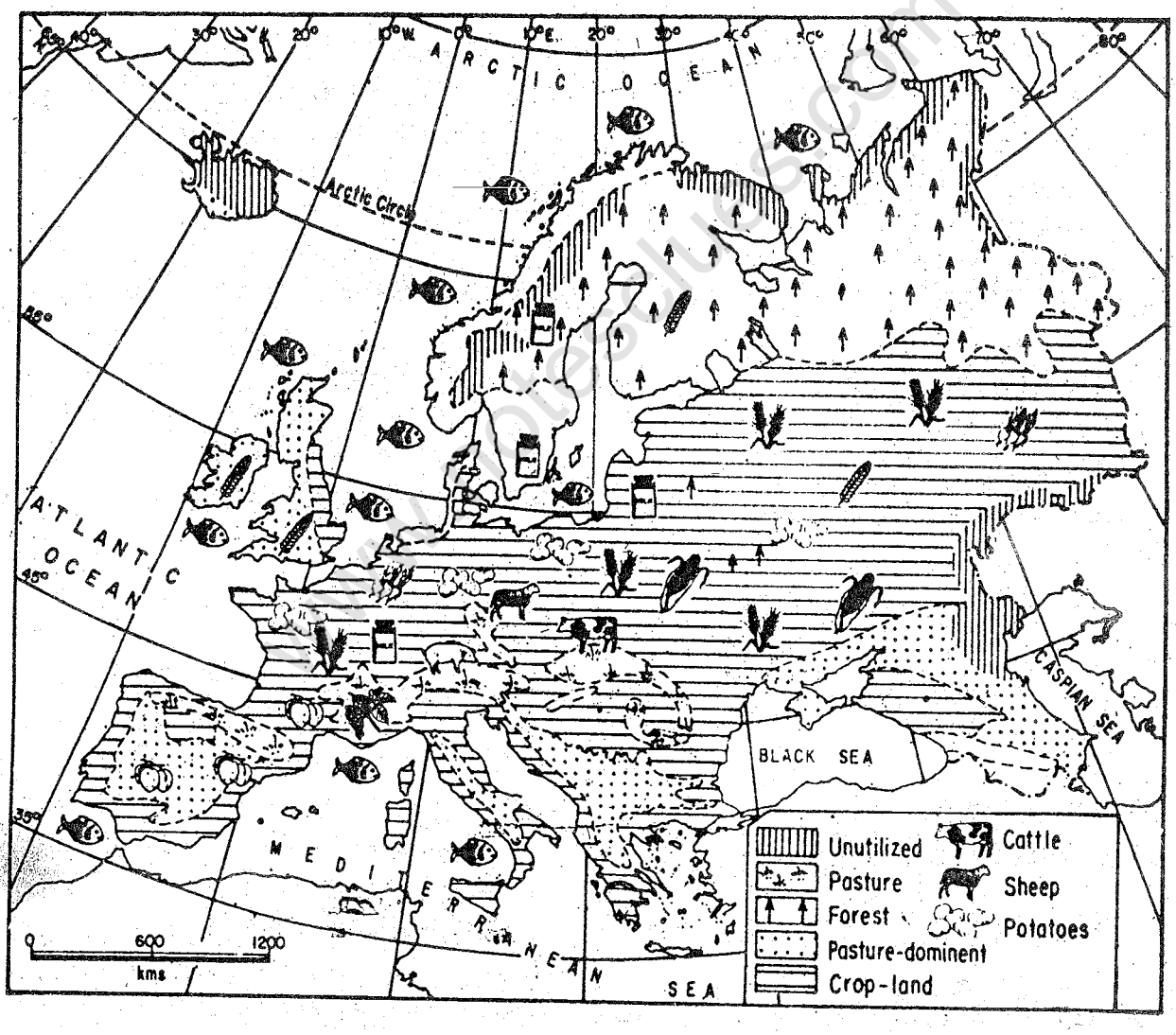


Fig. 11.1 Europe — Crops and livestock
Note the areas of crop cultivation and livestock rearing in Europe

variety of crops are grown here depending upon the soil and climate. Wheat is the most important crop of Europe. It is grown in the area of fertile soil with cool but relatively long summers with abundant sunshine. Some of the important wheat production areas are Ukraine, the Paris basin, the Low Countries, the North European plain, the plains of Hungary and the Po valley in Italy.

Poorer soils are used to grow barley, rye and oats in that order. They supplement wheat, which is the staple foodcrop of Europe.

Sugar-beet and potatoes are two very important root crops of Europe. Sugar-beet is the main source of sugar here. They are grown in the plains of central and eastern Europe. Flax is the only fibre crop of Europe which is used for making linen. It is grown in cool damp lands especially in Belgium and the Baltic States.

A large variety of fruits such as apples, olives, figs, grapes, peaches and oranges are grown in large quantities. The orchards are located on the sunny side of the hillslopes mostly in the Mediterranean region. Bulgaria in the eastern part, and the Netherlands and Belgium in the western part of Europe, are known for vegetables.

Machines are used on a large scale for different activities in the farms such as ploughing, sowing, harvesting, cleaning, packing etc. Scientific methods of farming are practised, e.g. testing of soil to know its composition, using hybrid variety of seeds, fertilizers and insecticides as well as rotation of crops. These methods have increased the yield of crops significantly.

A number of agro-based industries have developed in the region. A large number of mills are engaged in converting wheat into flour. Bakeries, in turn, convert it into loaves of bread, cakes, pastries and biscuits. Sugar is produced from sugar-beet in sugar mills. Extraction and preservation of fruit juices, fruit pulp and preparation of other products such as jams and jellys and wine-making are done on a large scale. Fruits and vegetables are dehydrated and frozen for export. Countries of eastern Europe like Bulgaria, Hungary and Poland have developed their food processing and agro-based industries. Wool, flax and silk are turned into textiles. The roses of Bulgaria, and the tulips of the Netherlands are well known. These products are exported to neighbouring countries.

Rearing animals

About one-fifth of the land in Europe is under pasture. The cool and moist climate has favoured luxuriant growth of grass, especially in the central part of Europe. Carefully bred cattle ensure a high yield of milk, which is used for preparing a number of milk products such as butter, cheese, dried and condensed milk etc. The countries around

the North Sea are famous for their dairy industry. Denmark is especially noted for it. Cattle are also reared for meat. Pigs are reared for pork and bacon. Poultry farming is very common in Europe. It provides eggs and chicken. Sheep rearing is done in drier parts mainly for wool and mutton.

Forests

A large part of the forest cover in Europe is confined to Scandinavian and the

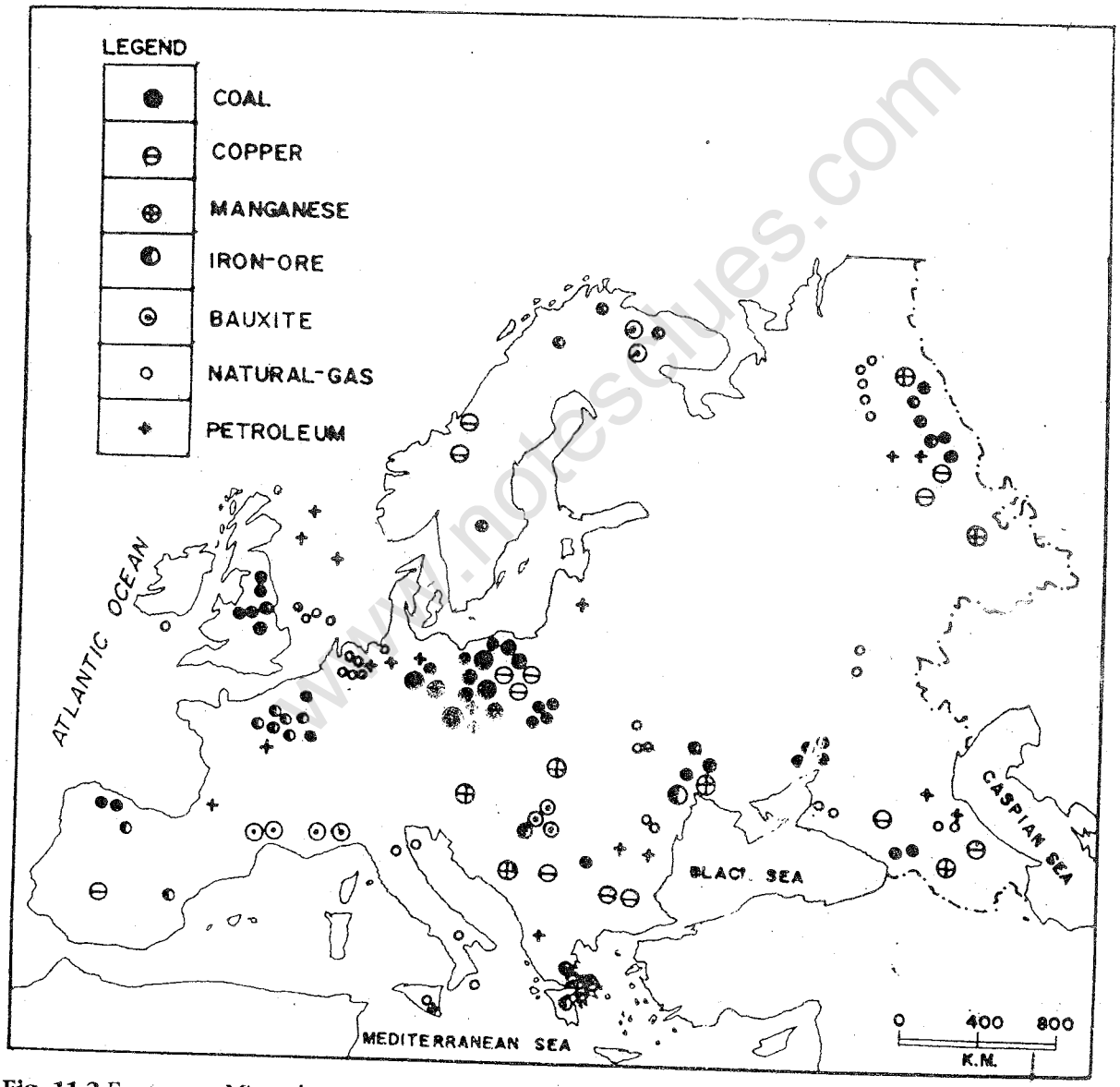


Fig. 11.2 Europe — Minerals

Note the distribution of minerals in Europe. Find out the names of major coal and oil fields of Europe and the countries where they are located.

Alpine mountains and the taiga region of Russia.

Logging and lumbering are important activities of the forest areas. Timber and wood-pulp are important forest products. Newsprint, paper, rayon and other synthetic fibres are produced from wood.

Mineral resource

Coal, iron-ore, petroleum and natural gas are important mineral resources of Europe.

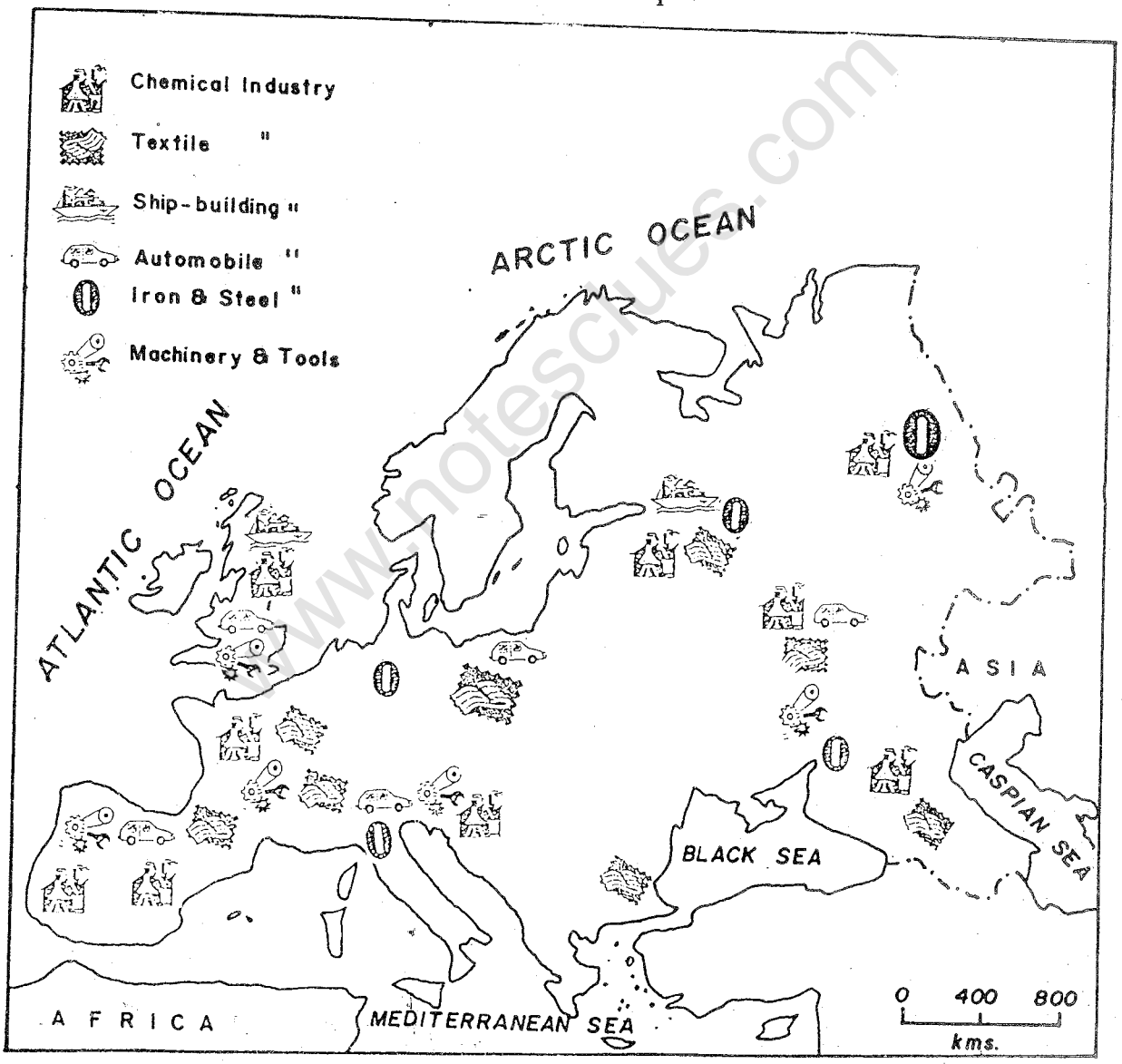


Fig. 11.3 Europe — Industries and industrial regions
Note the distribution of various kinds of industries in Europe. Which are the important industrial regions ?

Coal is found in Great Britain and on the mainland of Europe in the region from north-eastern France to Poland. Besides this, it is also found in Spain, Ukraine and Russia. Coal is the major source of power.

Petroleum or mineral oil is found in the regions of sedimentary rocks in a few areas. The important oil fields are in the North Sea, Romania, Georgia, Armenia, Azerbaijan, and Russia. Several other countries of Europe have to import mineral oil.

Iron ore is found in France, Ukraine, Azerbaijan, Sweden, the United Kingdom, Germany, Russia and Spain. Manganese, copper, bauxite, sulphur and potash are the other minerals found here.

The iron and steel industry is important in many countries of Europe. Its major centres are found in the United Kingdom, France, Germany, Ukraine and Russia. Countries like Italy, Belgium, Czech and Slovak Republics and Poland make steel by importing iron ore from other countries.

The iron and steel produced in these countries are used by a number of other industries, such as industries manufacturing railway engines and wagons, machines, automobiles and ships. Coal is used in chemical industries, which have developed in several parts of Europe. Aluminium is extracted from bauxite. It is used in making aeroplanes and electrical wires. Some of the small countries which do not have rich mineral deposits have also developed their industries either by processing their agricultural products or by producing diversified small articles which are of high quality and great value. While Denmark is an example of the former category, Austria, Switzerland, Czech, Slovak, Belgium and the Netherlands belong to the latter group. They are known for their electronic instruments, watches, metallurgical and glass articles and chemicals.

Water resource

The oceans have been used for fishing and shipping on a large scale. All along the coast, several ports have been developed. Fishing is a very complex operation. It involves a large number of activities such as manufacturing nets and fishing boats, catching fish, processing and packing fish and finally, marketing these products. Find out the different fish products.

Dogger Bank and the Great Fisher Bank are important fishing grounds. The major fishing countries are Norway, Sweden, Iceland, Denmark, the Netherlands, France, Germany, the United Kingdom, Spain and Portugal. Norway has very advanced and well equipped vessels. These are used for

deep-sea fishing. They are like floating factories. A variety of fish are caught, separated and processed for packing on the vessel itself. Norway has transferred its technology to India to develop deep-sea fishing along the Kerala coast.

Rivers and canals provide a good system of inland waterways in Europe. Water has been used on a large scale to generate power. The mountainous areas are the chief reserves of water power. The main hydro-power producing countries in Europe are Spain, Italy, France, Switzerland, Norway and Sweden.

The Netherlands presents an excellent example of managing its water

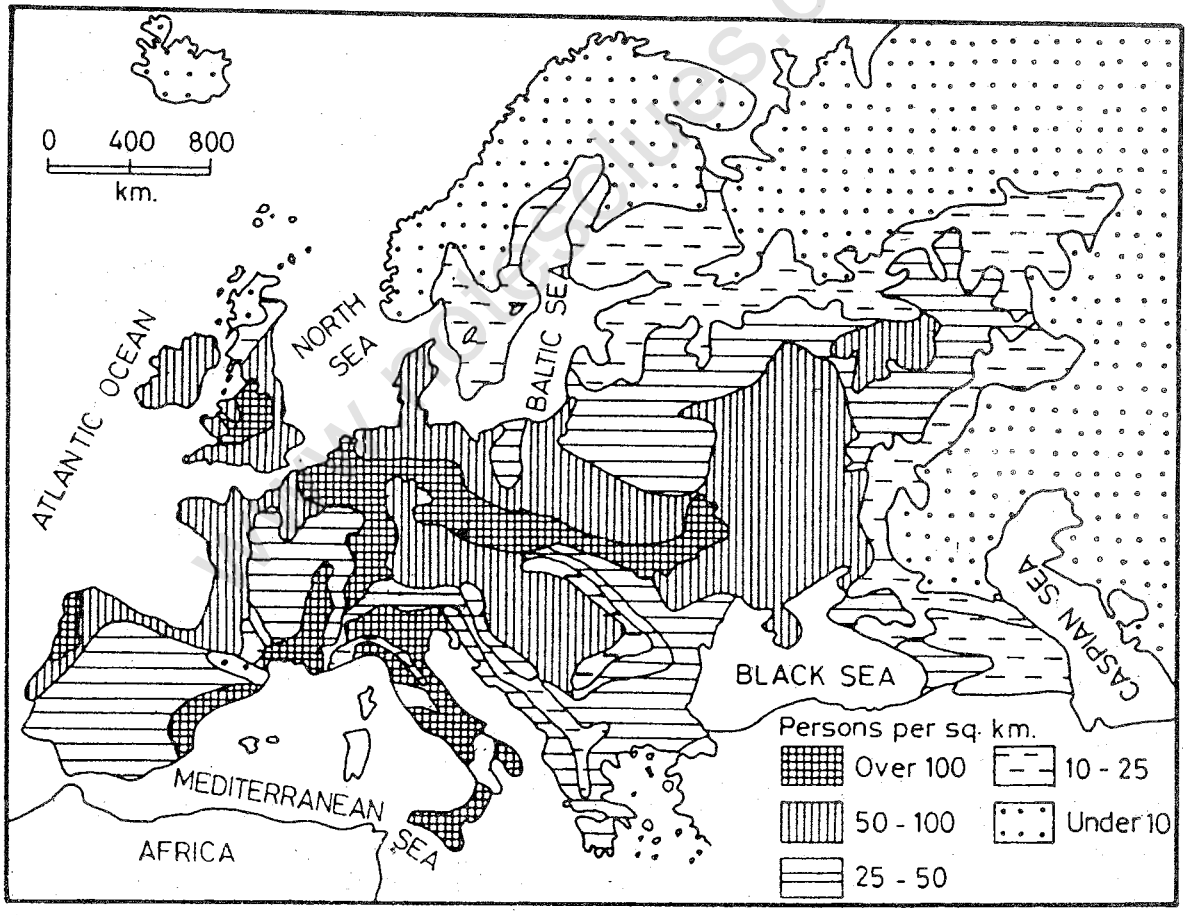


Fig. 11.4 Europe — Distribution of population
Find out the most densely populated and the sparsely populated areas of Europe. State the reasons for this variation.

resources. Its lower areas, especially the delta region, faced the problem of flooding. To reduce this danger, the five estuaries have been sealed with dams, which regulate the flow of water. Besides struggling against the sea, the Netherlands also had to struggle to get sufficient water for drinking and navigation. The quality of drinking water is poor due to salinity of ground water and the pollution of rivers. Hence, big reservoirs have been made where water is stored and filtered on a large scale before it is supplied for consumption. Special arrangements have been made to hold back water in the rivers to maintain sufficient depth for navigation.

Population

People are the greatest resource of a country. How they use their potentiality to develop the resources of a country ultimately decides the course

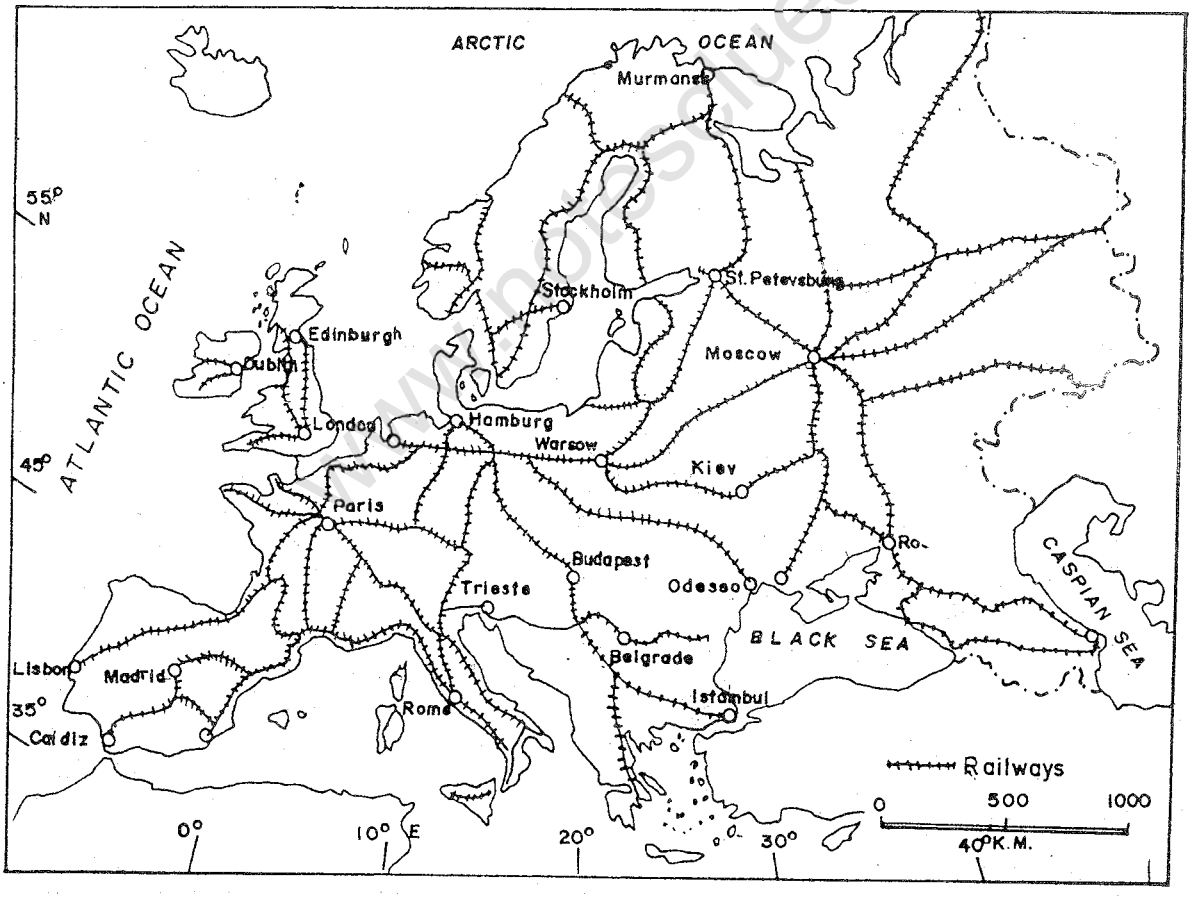


Fig. 11.5 Europe — Railways
Which part of Europe has a thick network of railways ?

of development. As you have seen, the people of Europe have used their resources very wisely. Hence they have progressed and have become highly developed today.

Europe is the most densely populated continent of the world. But if you look at the map showing distribution of population, you will find it very unevenly distributed. The plains of Europe have a fairly high density of population. The coal fields and industrial regions of the UK, France, Germany, and Italy show high density of population. Eastern and southern Europe have moderate density, northern Europe is thinly populated.

Europe has several large towns and cities many of which are historical places. Despite modernization, they have preserved the relics of their past such as monuments, paintings, sculptures etc.

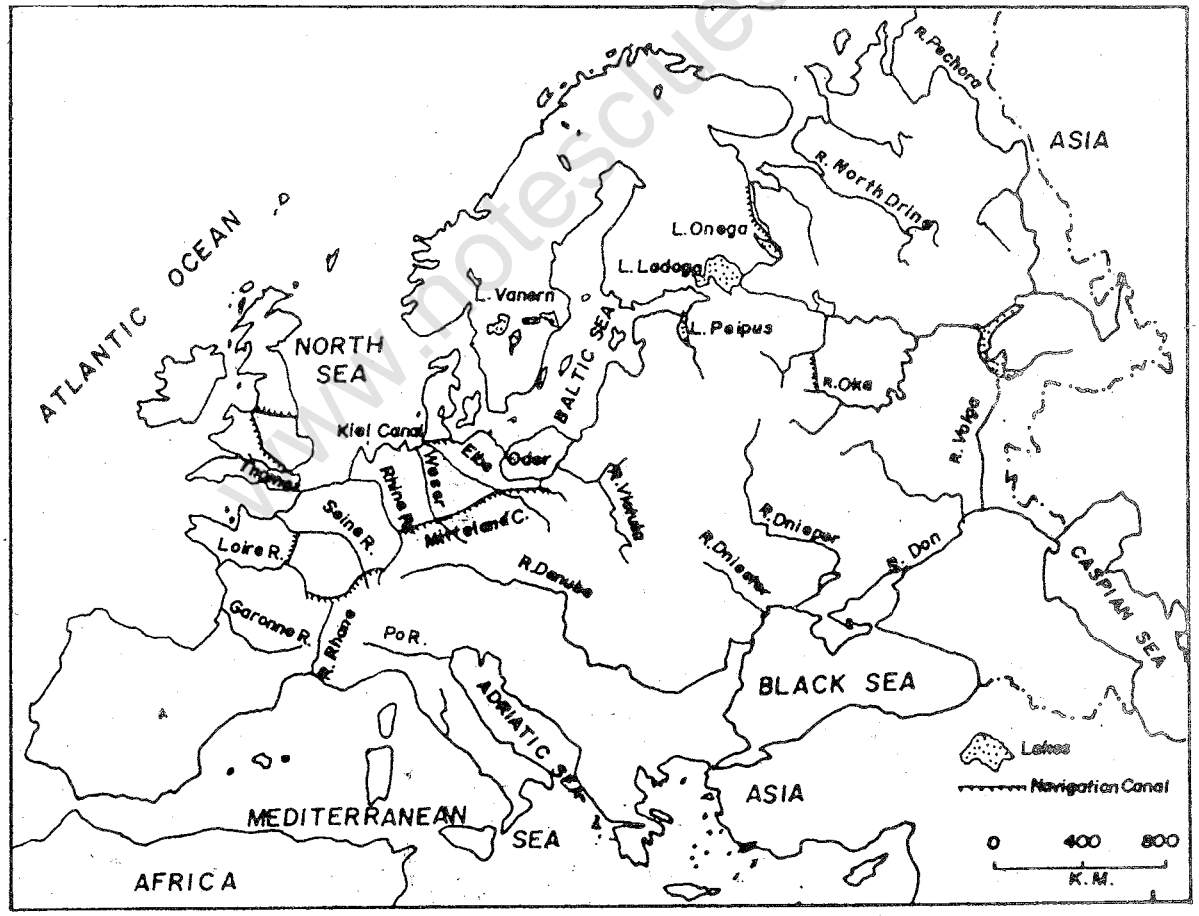


Fig. 11.6 The inland waterways of Europe
Mark the rivers connected by navigable canals. Which canal connects the North Sea with the Baltic Sea ?

Transport and communication

Europe has a well-developed network of all means of transport and communication. Study the rail routes of Europe and note the location of major junctions. You will find that railway lines criss-cross Europe inspite of mountain barriers. London, Paris, Berlin and Moscow are major junctions.

Roads are also very well-developed. There are highways connecting different countries. These are broad, well-surfaced roads. People have a high sense of road traffic, with the result that accident rates are very low. Road journeys are very popular as they offer a good view of the natural beauty of the landscape.

Rivers and canals provide easy and cheap means of transport for moving bulky and heavy cargo. The Rhine is the busiest inland waterway of Europe. The Seine, Thames, Danube and Volga are the other important waterways. Note the location of important river ports and sea ports on the map. In a medium-sized country like Romania, there are nine ports on the entirely navigable river Danube over a distance of only 1,075 kilometres. Denmark comprises the Jutland peninsula and over 400 islands. A number of bridges and a network of ferry services connect major islands to maintain communication links.

Airways connect all the important cities of Europe with one another. It is a very popular means of transport. Several international airports like London, Paris, Frankfurt, Berlin, Geneva, Rome, Moscow and Amsterdam are connected with almost all the other continents.

New terms you have learnt

DYKES : Big embankments built along the sea front to protect the land from the sea

POLDERS : The land which is reclaimed from the sea by making dykes

EXERCISES

Review questions

1. Answer the following.
   (i) What is mixed farming ?
   (ii) What is the staple food of Europe ?
   (iii) Which crop is the main source of sugar in Europe ?
   (iv) Which parts of the continent have a large forest cover ?
   (v) Which country of Europe has reclaimed large parts of land from the sea?
   (vi) Which is the busiest inland waterway of Europe ?

2. Distinguish between
   (i) root crop and fibre crop
   (ii) agro-based and mineral-based industries

3. Complete the following statement with the most appropriate ending.
   Europe has made great progress because
   (i) it has vast agricultural lands.
   (ii) it is favourably situated in relation to other parts of the world.
   (iii) it has been the cradle of western civilization.
   (iv) its people have made the best possible use of available resources.

4. Give reasons for the following.
   (i) Many countries in Europe have developed a modern industry without having raw materials for it.
   (ii) The food-processing industry is highly developed in the countries of eastern Europe.
   (iii) Denmark has a large number of bridges and a network of ferry services.
   (iv) Inland waterways are of great importance in Europe.

5. The people of Europe have used their resources very wisely. Elaborate this statement giving a few examples.

6. Give a brief account of the agricultural land use in Europe.

Skills in geography

7. On an outline map of Europe show the following using appropriate shading.
   (i) forest area
   (ii) pasture land
   (iii) cropped land

8. Collect information about the polders in the Netherlands and write a brief account on how the land is reclaimed from the sea. Do you think such technologies can be used in our country also ? Give reasons in support of your answer.

CHAPTER 12

The United Kingdom, France and Germany

Terms that you know

DAIRY FARMING : A kind of agriculture in which emphasis is on breeding and rearing of milch cattle. Hay and other fodder crops are raised mainly to feed cattle.

ROTATION OF CROPS : Raising crops in a certain sequence on the same piece of land mainly with a view to restoring the fertility of the soil.

Europe has a large number of countries with distinct customs, ideas, monetary systems and languages. All of them depict individuality in shaping their countries. While some of them are very rich in certain resources, others lack them. But all of them have used their available resources in the best possible manner. Most of them, in western Europe, have joined hands in developing a common market known as the European Union (EU) to boost their economies.

Three countries have been selected here as case studies to show varieties in the natural resources and the patterns of economic development. While the United Kingdom (UK) and France are parts of western Europe, Germany belongs to central Europe. France is still a country of farmers and produces enough food for its people. The UK and Germany, on the other hand, are basically industrial nations. Let us now find out how they have developed their resources.

THE UNITED KINGDOM

Lying off the north-west coast of Europe, there is a group of islands called the British Isles. The two main islands are Great Britain consisting of England, Wales and Scotland and Ireland, divided into Northern Ireland and the Irish Republic. The Irish Republic is independent. Northern Ireland and Great Britain are under one crown. Together they are called the United Kingdom. The distinction among the three names is important as they are not interchangeable.

The United Kingdom occupies the

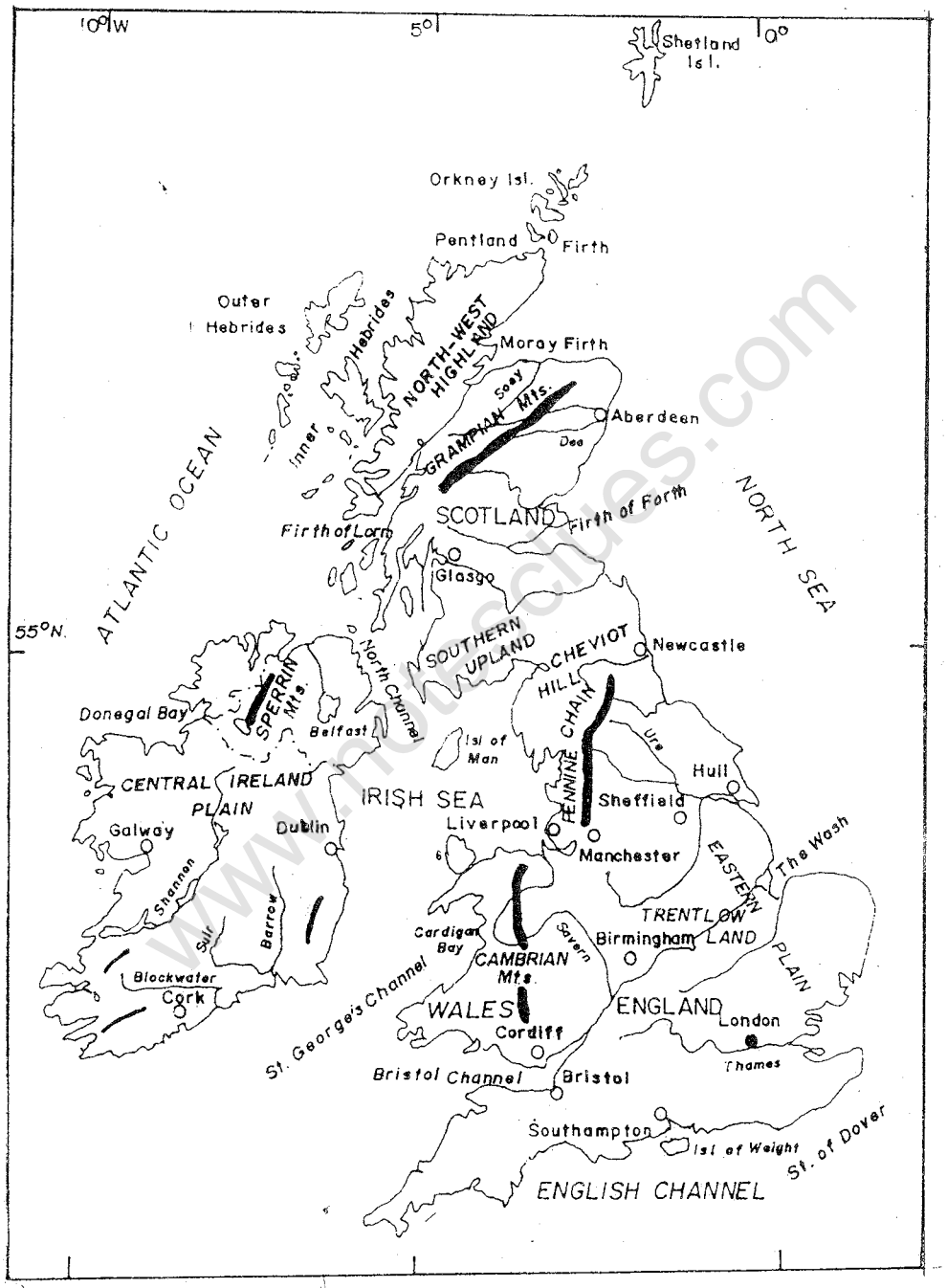


Fig. 12.1 The United Kingdom — Location and relief

Note the seas separating it from the mainland of Europe. Which parts have highlands and which have lowlands ? Why does the coastline favour the location of a number of natural harbours ?

major portion of the British Isles. It is surrounded by seas on all sides. It is separated from the mainland of Europe by the English Channel. At the nearest point, it is only 33 kilometres wide. Name the Indians who swam across this channel.

Relief and climate

The United Kingdom is a country of low relief marked by undulating plains, low hills and dissected plateaus. The highest peak is only 1,350 metres above sea level. Areas of the sea penetrate deep into these islands. As a result, the country has a very long indented coastline. It has favoured development of excellent harbours. No part of the land is more than 125 kilometres away from the sea. The seas surrounding the islands are shallow. The extensive continental shelf is an ideal breeding and feeding ground for fish. Closeness to the sea has attracted Britons to the sea. Many of them sailed through oceans to explore new lands.

The climate is influenced by the oceans. It is temperate and equable with very little difference between the summer and winter temperatures. The Westerlies make winters warm and summers cool. Rainfall is well distributed throughout the year. However, it is slightly more in winter than in summer. Unlike France, the United Kingdom has less sunshine, averaging two hours a day. Most of the time it is cloudy and foggy. It is especially so under the influence of the western depression. Weather is, therefore, highly variable.

Resources and economic development

The United Kingdom has a very small percentage of its area — less than 10 per cent — under forests. Nearly half of its land is under meadows and pastures, especially in the western part. Some amount of rain throughout the year and the mild temperature have favoured the growth of grass. Hence, rearing of cattle and sheep is an important activity. The country is known for its beef and dairy industries as well as quality wool. On an average, a milch cow yields more than 3,000 litres of milk every year. Poultry farming is also very common.

Less than one-third of the total area is under cultivation. The arable land is concentrated in the drier eastern and south-eastern parts of England. Though the soil is not very fertile, with the help of scientific methods of farming enough food and raw materials are produced to meet about two-thirds of the country's needs. Wheat, barley, oats, rye, potato, sugar-beet, vegetables and fruits are the major crops. Farmers mostly practise mixed farming.

The country has developed its fishing industry tremendously. The shallow seas abound in fish. The most

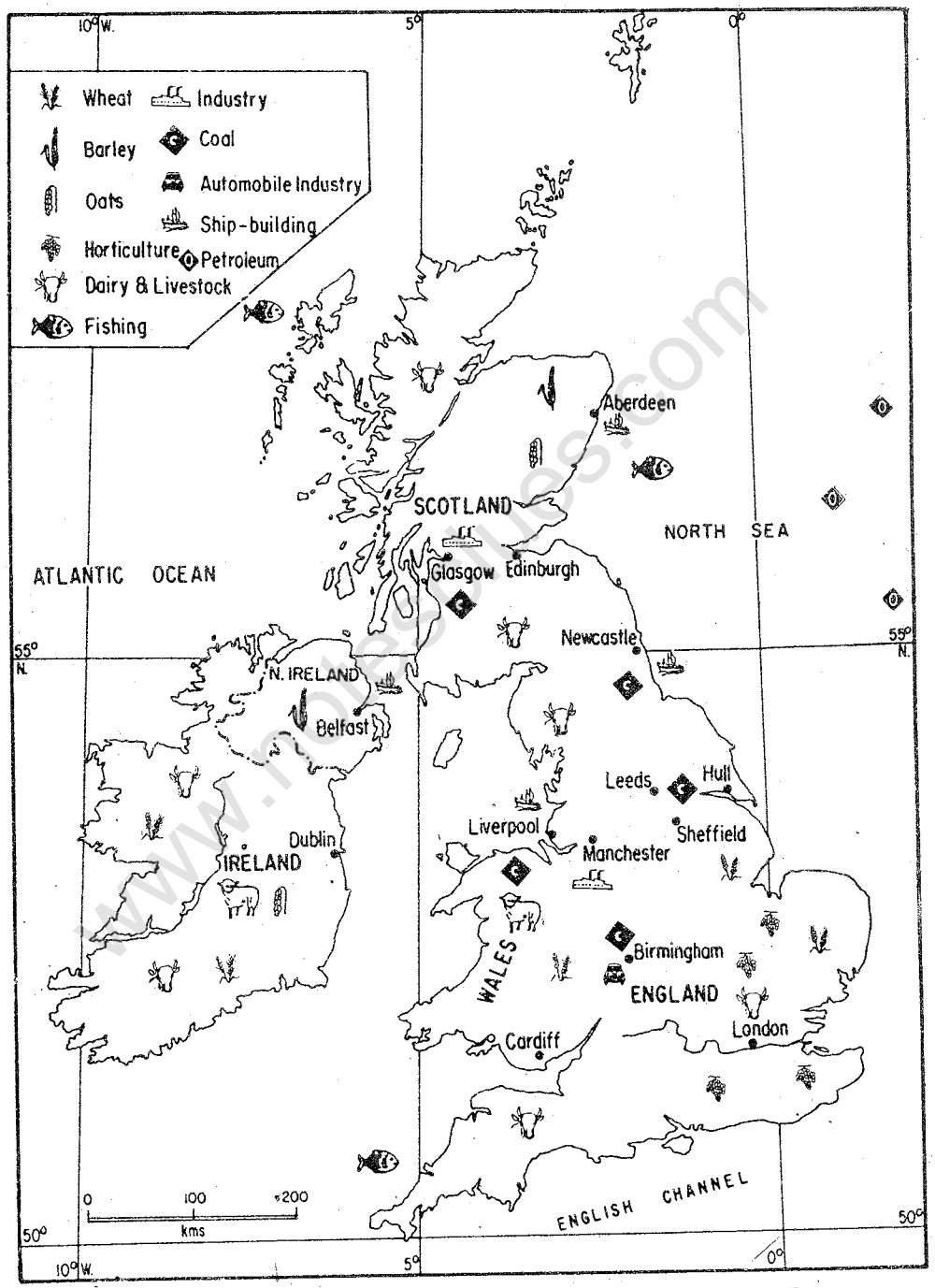


Fig. 12.2 The United Kingdom — Resources
Locate the areas having cropland , dairy farms, fishing ground, coal and oil fields. Note the important industrial centres.

important fishing ground is the Dogger Bank. It has a large mechanized fishing fleet consisting of trawlers and drifters. Trawlers are used for catching fish lying near the sea bed. They are fitted with bag-like nets. Drifters, on the other hand, are used for catching fish in shallow water or near the sea-surface. They use nets which hang like straight walls close to the surface of the sea. These nets are several hundred metres long. Facilities to preserve fish are available on the fishing craft as well as at the fishing ports.

The United Kingdom with its rich deposits of coal, iron ore, mineral oil and natural gas became one of the earliest industrial nations of the world. It was the first country to use coal on a very large scale. Availability of coal and iron-ore helped in developing its iron and steel industry. It led the world in the production of pig iron and crude steel for several decades. As a result of this early start, it has exhausted its good reserves of coal and iron ore today. The country, therefore, imports iron ore for its flourishing iron and steel industry. Some coal deposits have been found in the North Sea. The country still produces a large amount of hard coal, which is the main source of energy production in the country. Atomic energy was produced for the first time in this country for commercial purposes. It supplements the power resources of the country. Huge deposits of oil and natural gas are also found in the North Sea. Today, the UK is one of the leading oil producing nations of the world. Most of its oil needs are met from this source. The country does not have much potential for water power.

A wide variety of industries have developed in this country, e.g. iron and steel, engineering, electronic, chemicals; manufacturing of railway engines, wagons, automobiles, aeroplanes and ships, processed foods and beverages, fish and dairy products, etc. Note the location of major industrial centres in the map. You will notice that some of these centres are located near coal-mining areas or near the seaports. Why ?

The country has a fine network of roads and railways. It is being linked to the mainland of Europe through undersea passage.

The long, indented coastline of the country has promoted the development of seaports numbering more than 300. Some of them are industrial centres too. Among these, Liverpool, Glasgow, Newcastle, and Southampton are notable. Other important industrial cities in the plains are Birmingham, Sheffield and Manchester. London is the capital city. It is the largest in size and in population. It is situated on River Thames which is navigable by ocean-going ships. London port also handles a large amount of cargo.

It is one of the busiest international airports in the world.

The total population of the UK is about 58 million. The average density of population is about 240 persons per square kilometre.

FRANCE

France is the second largest country in Europe, next only to Russia. It is surrounded by seas on three sides. Find out the names of these three water bodies. Thus, France has not

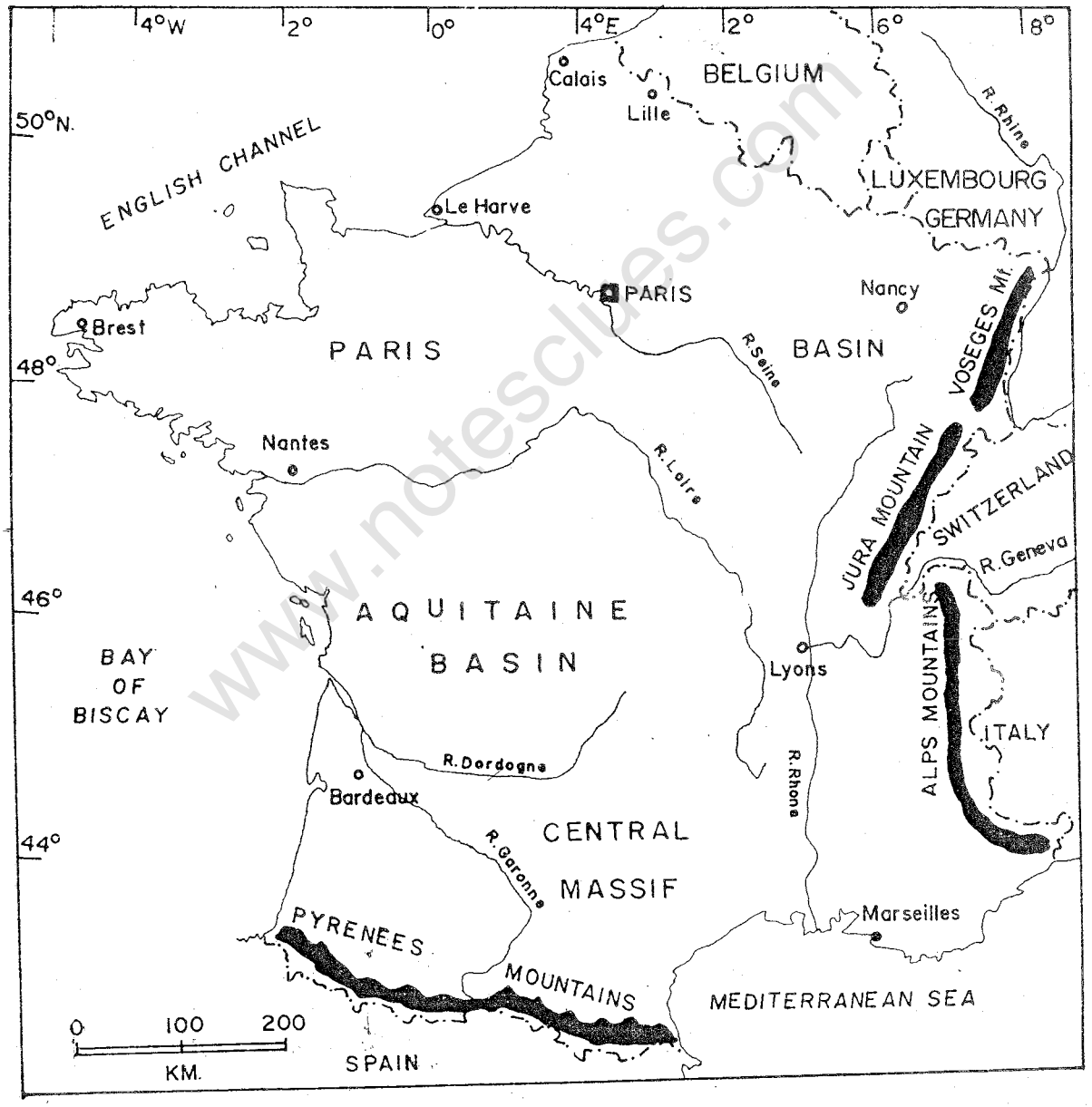


Fig. 12.3 France — Relief
Note the location of France and its physical features. Find out the names of important mountains, plateaus and rivers.

only a long coastline but also access to the main trade routes from the Atlantic Ocean and trade to the East through the Mediterranean. At the same time, it adjoins some of the most populous and prosperous countries of Europe —Belgium, Germany, Switzerland and Italy.

The Pyrenees mountains run along the southern boundary and separate France from Spain. In the eastern part, the Alps, the Jura and the Voseges separate it from Italy, Switzerland and Germany respectively. It occupies a strategic position in the European landmass.

Relief and climate

France has a varied relief. More than half of its land, i.e. in the west, the north-west and the north, belongs to the great European plain. The central plateau or the massif forms a well-marked unit. It slopes gently towards the west and the north-west. Rivers in this part, therefore, flow in these directions. This region is made up of very old rocks. The Alps lie in the south-east part of France. Mont Blanc (4,807 metres above sea level), the highest peak of the Alps, is located in France. The Pyrenees are located on the southern border.

The north-west coastline of France is indented. Its narrow coastal plains and river valleys, like those of the Seine, the Loire and the Rhone, are very fertile.

The climate of France, like its relief, is also varied. The western and northern parts of the country enjoy maritime climate. The north-eastern and eastern parts of France and the central plateau, on the other hand, have continental climate. The climate is slightly modified in the sheltered valleys of the central plateau. Here autumns are long and sunny. Southern France has the typical Mediterranean climate with long, dry summers and mild rainy winters. It has much more sunshine than any part of the United Kingdom has and is, therefore, warmer.

Resources and economic development

France is rich in several resources and has utilized them wisely. The indented coastline provides many natural harbours. They have been developed for fishing, shipping and trade.

Though France is not richly endowed with mineral wealth, it has used the available resources in the best possible way. Coal is found in the northern part of the country, which, in fact, is an extension of the Belgian coal field. The quality of coal is not very good as it has been powdered. Iron ore is the only mineral which is found in large quantities. More than 90 per cent of its iron ore comes from the Lorraine field. The small reserves of coal have acted as a spur in the devel-

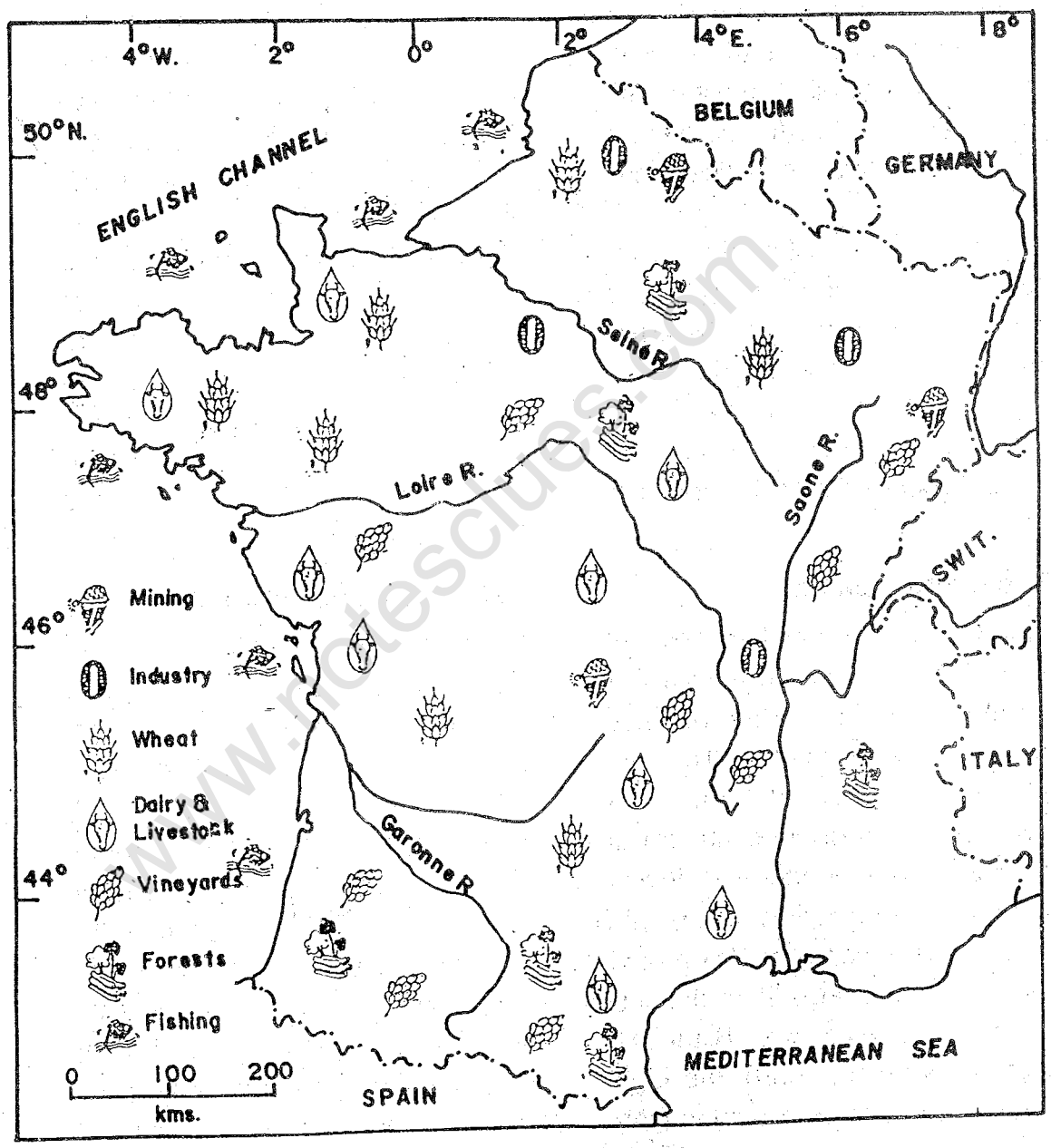


Fig. 12.4 France — Resources
Note the varied land use in France. Which are the important resources of France ?

opment of hydroelectric power in France. The rivers are fed by snow and rainwater from the Alps. The Pyrenees and the plateau region provide abundant pollution-free water-power at a low cost.

The availability of raw materials has been an important factor in the location of industries in France. The iron and steel industry has developed in the Lorraine field and the northern coalfield. The textile industry of France is very important. While the silk industry is concentrated in the Rhone valley, the cotton industry is centred in the northern coalfield and the Voseges. The woollen industry is located mostly in the north.

France specializes in the manufacture of machines, automobiles, ships and aeroplanes. It also manufactures chemicals, fertilizers, electrical goods, perfumes and other luxury items.

France has preserved nearly one-fourth of its area under forests. Another one-fourth of the total area lies in the form of meadows and pasture lands on the low hills and plateaus. The pasture lands, with good rainfall, are ideally suited for rearing animals both for milk and meat. France is, therefore, one of the leading producers of cheese, butter and milk in Europe. In the highlands, sheep are reared for wool.

The coastal plains and the river valleys are most suited to agriculture. A little over one-third of the total area is under cultivation. Wheat is the most important crop. It is grown mainly in the northern plains of the Paris Basin. Maize is grown in the warm and humid south-east. Rye and oats are grown on the poorer soils of the north-west coast and the central plateau. Barley grows more in the cool north. Potatoes, sugar-beet and flax are the other important crops. They are grown in northern France.

Farming in France is generally of the mixed type. Farmers cultivate crops and also rear cattle, pigs and poultry on their farms. The animals are fed on the hay and fodder obtained from the farms. The farmers get good money by selling animal products.

Intensive farming is practised by farmers to obtain maximum yield. They use every bit of land and apply heavy doses of manures and fertilizers. Scientific farm practices such as using good seeds and insecticide, etc., and rotation of crops are followed. As a result, the yield of crops is very high, making France almost self-sufficient in foodgrains.

France is famous for its vineyards — the fields where grapes are cultivated. Terraced and sheltered valley slopes are mostly devoted to the cultivation of grapes, especially in southern France. Grapes are used mainly for making wines. French wines are known for their quality throughout the

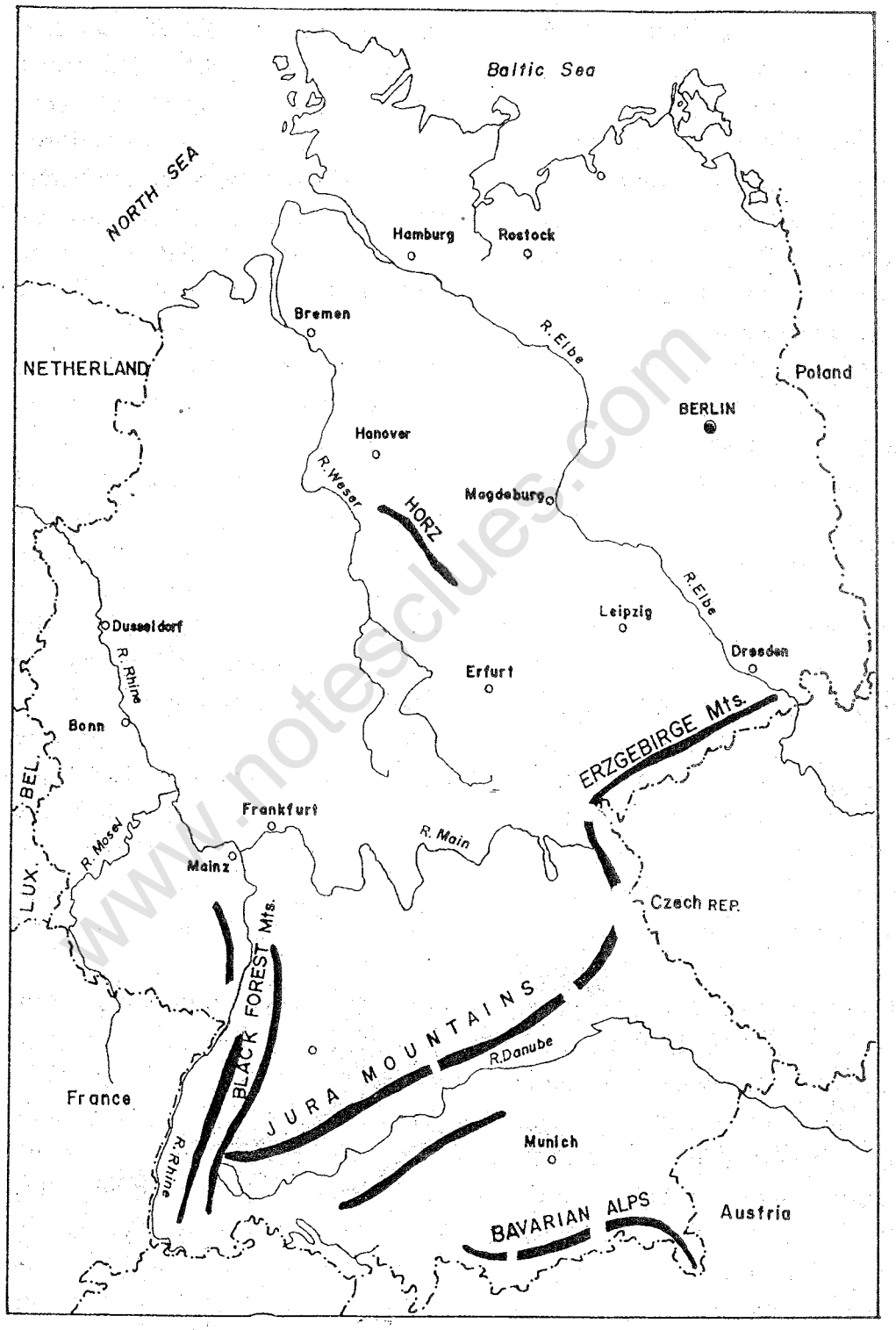


Fig. 12.5 Germany — Relief
Note the important physical features of this country. What makes the Rhine very important for Germany?

world. Champagne is one of these which is produced from the grapes grown in the district of Champagne, near Paris. A wide variety of fruits — olives, figs, peaches, plums, pears and oranges are grown in the Mediterranean region. Apples are grown in the northern part of the country. Here apples and grains with hops, instead of grapes, are used to prepare wine.

France has an integrated network of transport. Good highways, efficient railways, extensive waterways and modern airways, provide quick and easy access to all parts of the country. They facilitate movement of goods and services, and also link them with the outside world.

Paris is the capital city of France. It is a well-planned city having several monuments, buildings and museums. French contribution to art, literature, science and technology have been immense.

The total population of France is about 59 million. It has an average density of about 108 persons per square kilometre. Most of the people live in towns and cities.

GERMANY

Germany was divided into two nations after the Second World War. The western part of Germany was called the Federal Republic of Germany (FRG). The eastern part of Germany came under the influence of the Soviet Union and was called the German Democratic Republic (GDR). In 1990, The two nations united to form a single nation, Germany, by mutual agreement, with Berlin as its capital. Economically Germany has become stronger after unification.

Physical features

Germany may be divided into two physical units — the North German Plain and the Southern Highlands and Mountains.

The North German Plain

This Plain is part of the great European plain. It gradually widens from the west to the east. It is covered by a thick mantle of glacial clays and sands. These deposits have been left behind by the ice sheets, which extended over this area a long time ago.

The Southern Highlands and Mountains

The Southern Highlands and Mountains comprise varied landforms — plateaus, hills, valleys and mountains. The general slope of these highlands is northwards from the Alps. Low and worn down uplands are found in the central part. They are deeply eroded by rivers flowing through them. The region extends from the Black Forest — a low tableland in the west — to the Bohemian forest in the east. To its

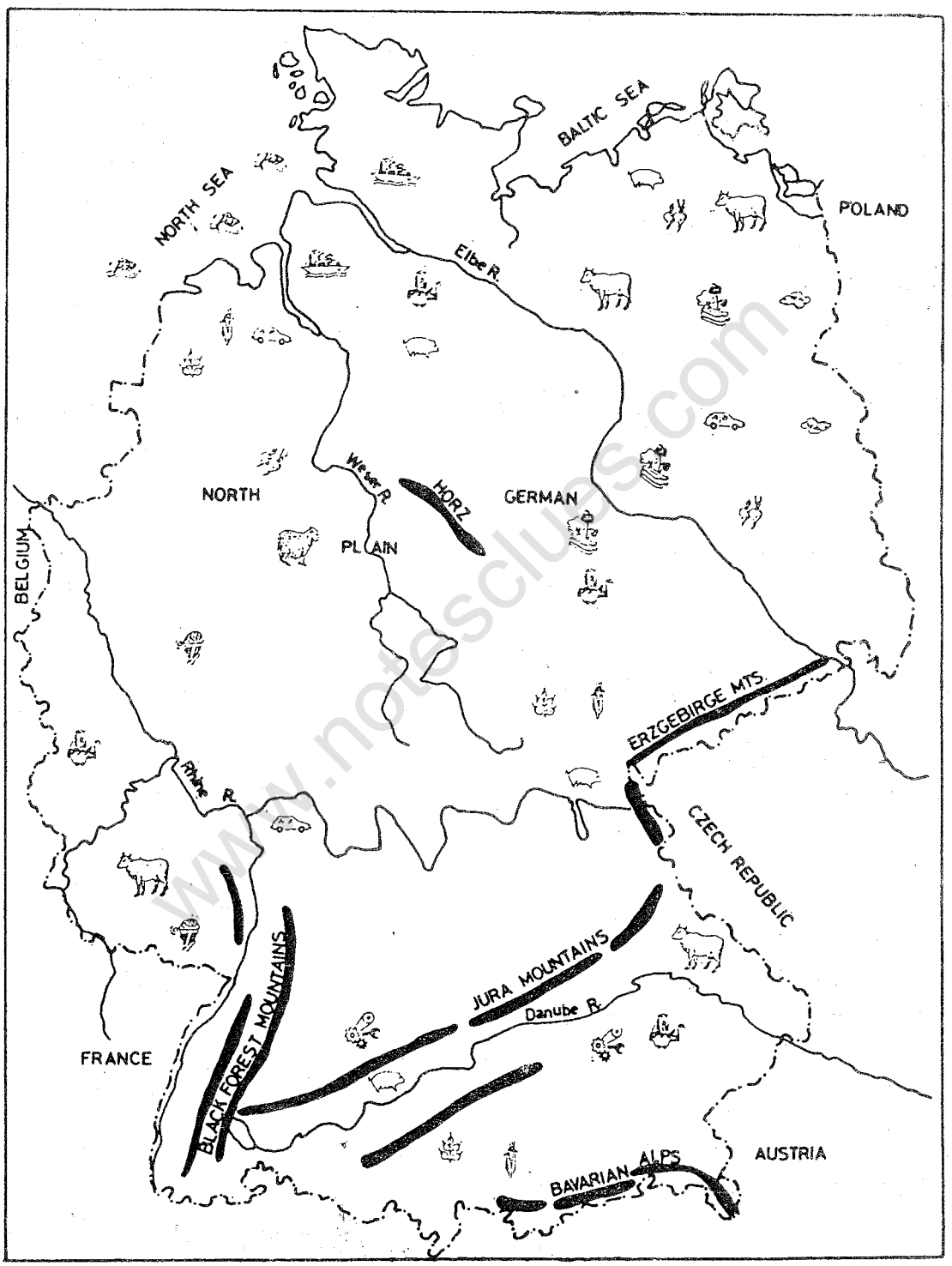


Fig. 12.6 Germany — Resources
Note the important iron ore and coal mining areas as well as the main iron and steel centres. Where are they located and why?

south lie the rugged highlands of the Bavarian Alps. To the west of this upland is the famous Rhine valley. It is a wide rift valley through which the river Rhine flows. In the far south of Germany, the Alps rise abruptly. The plateau regions are made up mostly of sedimentary rocks.

The Rhine, the Weser, the Elbe, the Oder and the Danube are important rivers. All rivers except the Danube flow northwards. Find out which river flows along the eastern border.

Climate

Lying between 47° N and 55° N latitudes, Germany has a temperate climate. While the coastal area enjoys a maritime climate with cool summers and mild winters, the oceanic influences decrease towards the east and the south. The range of temperature tends to increase and the climate is of the continental type in the south-east. Thus it has warm summers and cold winters. Winter becomes severe in the south due to the rise in altitude. Most of the rainfall occurs in summer. The amount of rainfall decreases as we go eastward.

Land use and economic development

The higher lands and mountains have coniferous forests. As such, there are extensive forests in the southern part covering nearly one-third of the total land there. These forests are managed carefully on scientific lines. They provide a base for manufacturing wood pulp, paper and newsprint.

Germany is rich in coal (especially lignite), iron, lead, copper and potash salt. The Ruhr is the biggest and the richest coal producing area of Europe. The other important coal fields are Saar and Saxony.

The Ruhr is a small right-bank tributary of the Rhine. This region has a number of industries and hence is often called the heart of industrial Europe. The Ruhr coal field consists of a series of seams interspersed with other rocks. The coal is of excellent coking quality. It forms the basis of one of the most intensive iron and steel industry in the world.

Iron ore is found mainly in the areas east of Nuremberg in Bavaria, south-east of Hanover and south of the Ruhr. Of these, the ores of Bavaria are of good quality but the ores of other areas are of very low grade.

A large number of industries such as coke furnaces, iron and steel plants, chemical industries, cement, machinery, automobiles and textile factories have developed in the region. One can see a cluster of small towns and cities in this region, which appear as a single integrated industrial area. Industrial centres are now found in all parts of the country because of other advantages such as hydropower, raw

materials and improved transport. Lignite is used for producing thermal electricity and is also used as a raw material for the chemical industry.

The important products of the chemical industry are explosives, synthetic rubber, disinfectants, insecticides, perfumes, dye, paints and plastic.

Textile industries have taken advantage of the fuel and transport facilities. The cotton and silk industries are of importance in the western part.

Highly finished goods such as optical glass and cameras, specialized scientific instruments and chemicals are produced in the Saxony region.

More than half of the total land is under crops — cereals, orchards and vineyards. Since the soil is not very fertile in many parts, great quantities of fertilizers and manures are used to raise good crops.

The coastal areas and parts of the northern plains have poorly drained soil. Swamps have been reclaimed by draining out their water. By using scientific methods of farming the production capacity of the land has been increased. Although intensive agriculture is still carried on in lowlands and valleys , farming is now highly mechanized. Wheat, barley, sugar-beet, potatoes, rye and oats are the major crops. Germany is one of the largest producers of rye, potatoes and sugar-beet in the world. Beet-leaves and sugar factory waste provide valuable fodder for cattle. It has made animal husbandry, including dairying, an important agricultural activity. Partly because of this reason it is an important producer of milk, butter, cheese and poultry products.

Most of the central and southern parts of Germany have been put to agricultural use having mixed farming. Despite the high yield of crops, food production is not enough to meet the country's requirements and it has to import food.

The northernmost vine growing region of Europe is found on the slopes of the Elbe river valley. Another important vine-growing area is along the slopes of the Rhine valley. The fertile soil of the valley is known for the fruits and vegetables grown on it.

The country is well served by airways, a dense network of railways, inland waterways and roads. Besides rivers, there are a number of canals which provide easy access to the inner parts. This has promoted trade opportunities. The Kiel canal connects the North Sea and the Baltic Sea. This 99 kilometre long canal saves a journey of about 700 kilometres by sea round Denmark. It is of great importance, especially in trade with Scandinavia. More than 400 ships pass through this canal everyday. In the southern part, river Danube serves the same purpose in carrying the traffic to the western and central parts of Europe.

Berlin is the largest city of Germany. It is a river port. It has also been made the capital of united Germany. Bonn, the capital of the former FRG is an important city on the Rhine. It is an important educational and industrial centre. Hamburg and Bremen are important seaports along the North Sea.

Besides Essen, Dusseldorf and some other industrial cities of the Ruhr region, Cologne, Mannheim and Frankfurt, are other important cities in the Rhine Valley. The location of Cologne is very important because most of the sea-going vessels on the Rhine pass through it. Munich, located in the Bavarian uplands, is a centre for art and culture. It is also known for its breweries. Leipzig and Dresden are important ancient cities situated along the river Elbe. While Leipzig is an important road and rail junction and a centre for agro-based industries, Dresden is known for its ceramics. Rostock is an important port along the Baltic Coast.

The total population of Germany is about 82.4 million. The average density of population is 230 persons per square kilometre. Due to low birthrate in recent decades population of Germany has not increased very sharply.

New terms you have learnt

MASSIF : A large mountain mass with one or two summits

EXERCISES

Review questions

1. Answer the following.
   (i) Name the Channel which separates the UK from the mainland of Europe.
   (ii) What has helped the development of harbours in the UK ?
   (iii) Why is rearing of animals an important activity in the UK, especially in its western part ?
   (iv) Name the three main climates found in France.
   (v) Name the most important area of iron ore mining in France.
   (vi) Which industrial region of Germany is known as the heart of Industrial Europe ?
   (vii) Name the canal in Germany which connects the North Sea and the Baltic Sea.

2. Distinguish between
   (i) The British Isles and the United Kingdom
   (ii) A trawler and a drifter
   (iii) Maritime climate and continental climate

3. Give reasons for the following
   (i) The UK has extensive fishing grounds.
   (ii) Many industrial centres in the UK are located along the sea coast.
   (iii) France is almost self-sufficient in foodgrains.
   (iv) There is a concentration of industries in the Ruhr region.

4. Write an account of the industrial development in the United Kingdom.

5. Give a brief account of the natural resources of France and show how they have been used wisely by the people of France.

6. Despite high yields, food production in Germany is not sufficient to meet the country's requirements. Explain.

Skills in geography

7. On an outline map of the British Isles, mark the following.
   (i) England, Wales, Scotland, Northern Ireland and the Republic of Ireland.
   (ii) The North Sea, the English Channel, the Dogger Bank.
   (iii) Cardiff, London, Edinburgh, Aberdeen, Belfast, Glasgow and Liverpool.

8. On an outline map of France show the following.
   (i) Mountains — Pyrenees, the Jura and the Alps
   (ii) Rivers — the Seine, the Rhone and the Loire
   (iii) Le Havre, Paris, Nancy and Marseilles

9. On an outline map of Germany show the following.
   (i) Mountains — the Black Forest, Jura and the Bavarian Alps
   (ii) Rivers — the Rhine, the Elbe and the Danube
   (iii) Hamburg, Bremen, Essen, Cologne, Bonn, Frankfurt, Leipzig, Berlin and Dresden

CHAPTER 13

Russia : A Country of Two Continents

Terms that you know

GROWING SEASON : A part of the year which is free from frost and when the temperature is high enough to allow the growth of crops

TIME ZONE : A longitudinal division of 15° each within which the local time of a central meridian serves as the standard time for the whole area. There is a difference of one hour in the local time at intervals of 15° longitude.

In contrast to the unification of Germany, another important event in recent years has been the formation of fifteen independent states which were earlier Republics of the Union of Soviet Socialist Republics (USSR).

In December 1991, these republics formally broke their ties with the USSR and became independent. Look at the map of the former USSR and the fifteen independent nations of today. Except for the three Baltic states of Estonia, Latvia and Lithuania, the rest of the 12 states have formed a Commonwealth of Independent States (CIS).

In area, Russia is still the biggest country in the world. Over 76 per cent of the total area of the former USSR lies within it. Though it extends over both the continents, i.e. Europe and Asia, most of its developed part lies to the west of the Urals in Europe. The Ural mountains, the Ural river and the Caspian Sea divide this country into European and Asiatic parts. A large part of Asiatic Russia is very cold.

Russia extends from the far north to the Black Sea in the south and from the Pacific coast in the east to Kaliningrad in the west. Kaliningrad is a part of Russia. However, Lithuania separates it from the rest of Russia. Find out the latitudes and longitudes within which Russia is situated. You will notice that it has eleven time zones because of its great longitudinal extent. Find out the difference in local time between its easternmost and westernmost longitudes.

Physical features

The landforms of Russia can be divided into four major groups — the Plains of European Russia, the West Siberian plains, the Central Siberian Plains and Mountains and Uplands.

The Plains of European Russia

These are among the most extensive plains in the world. In fact, they are part of the central European plains. They stretch from the Arctic Ocean in the north to the Black Sea and the Caspian Sea in the south.

These fertile plains are drained by several rivers which flow in different directions. Of these, the Volga is the most important which falls into the Caspian Sea.

The West Siberian Plains

Situated between the Urals on the west and the river Yenisey on the east, the West Siberian Plains are lowlands sloping gently towards the Arctic Ocean in the north.

Rivers Irtysh, Ob and Yenisey flow through these plains and fall into the Arctic Ocean. Large parts of these plains are marshy lands. Why ?

Central Siberian Plateau

Lying between river Yenisey in the west and river Lena in the east, there is a plateau called the Central Siberian Plateau. It rises to a height of about 500 metres. It is deeply eroded by rivers

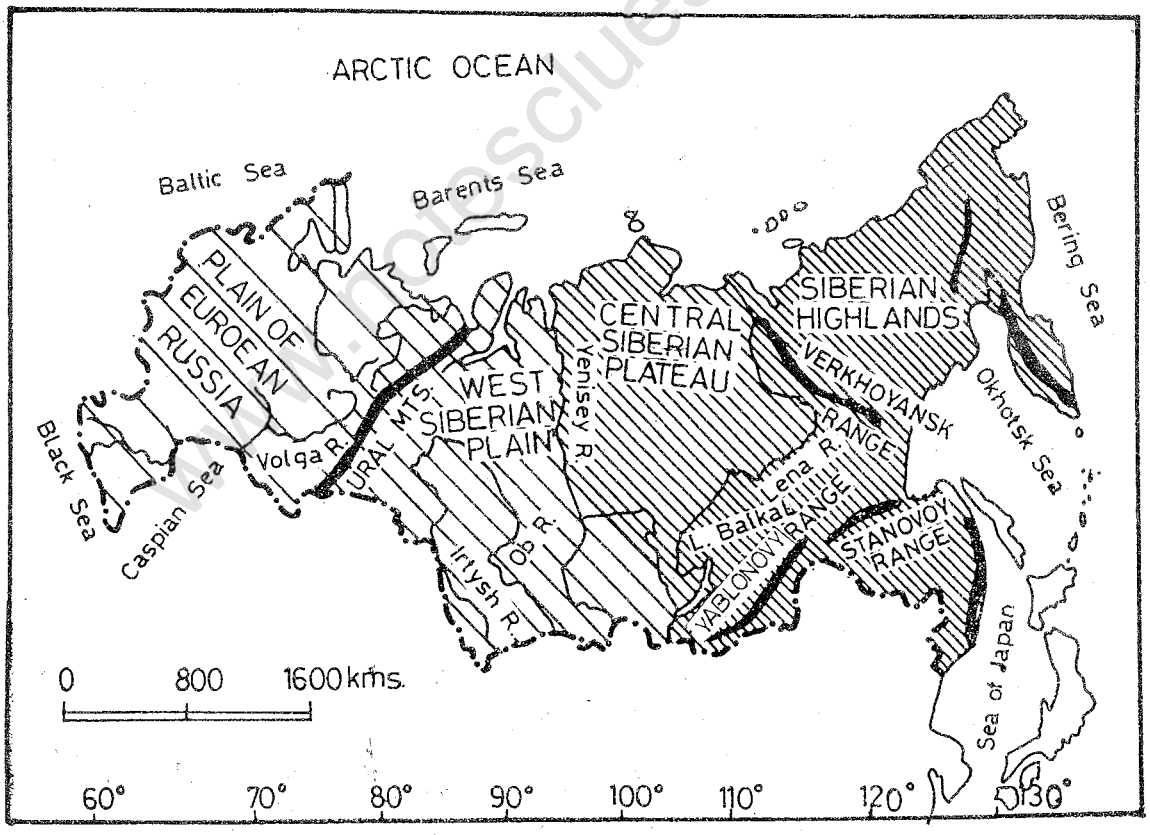


Fig. 13.2 Russia — Landforms
Note the physical features, the important rivers and the direction in which they flow.

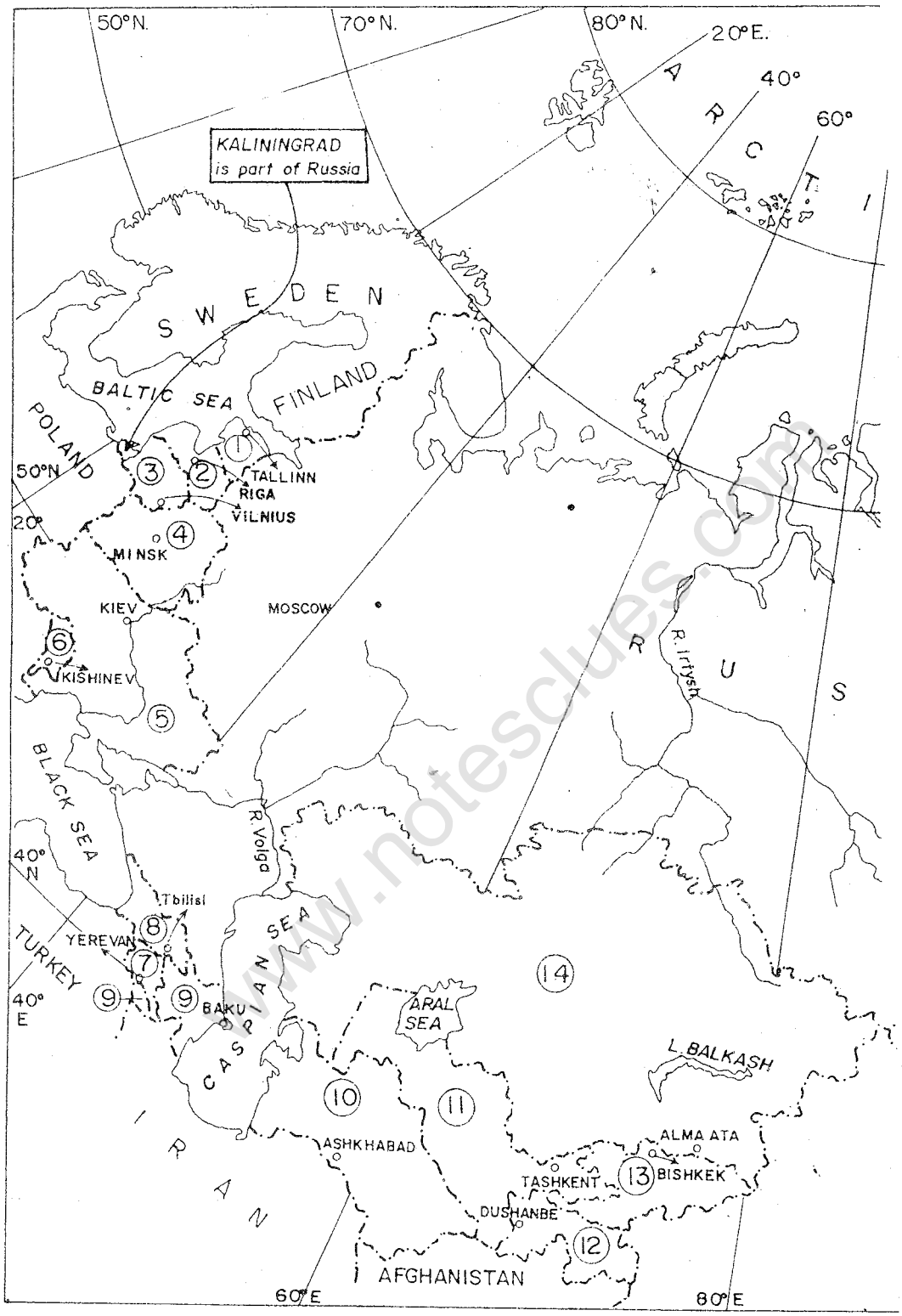
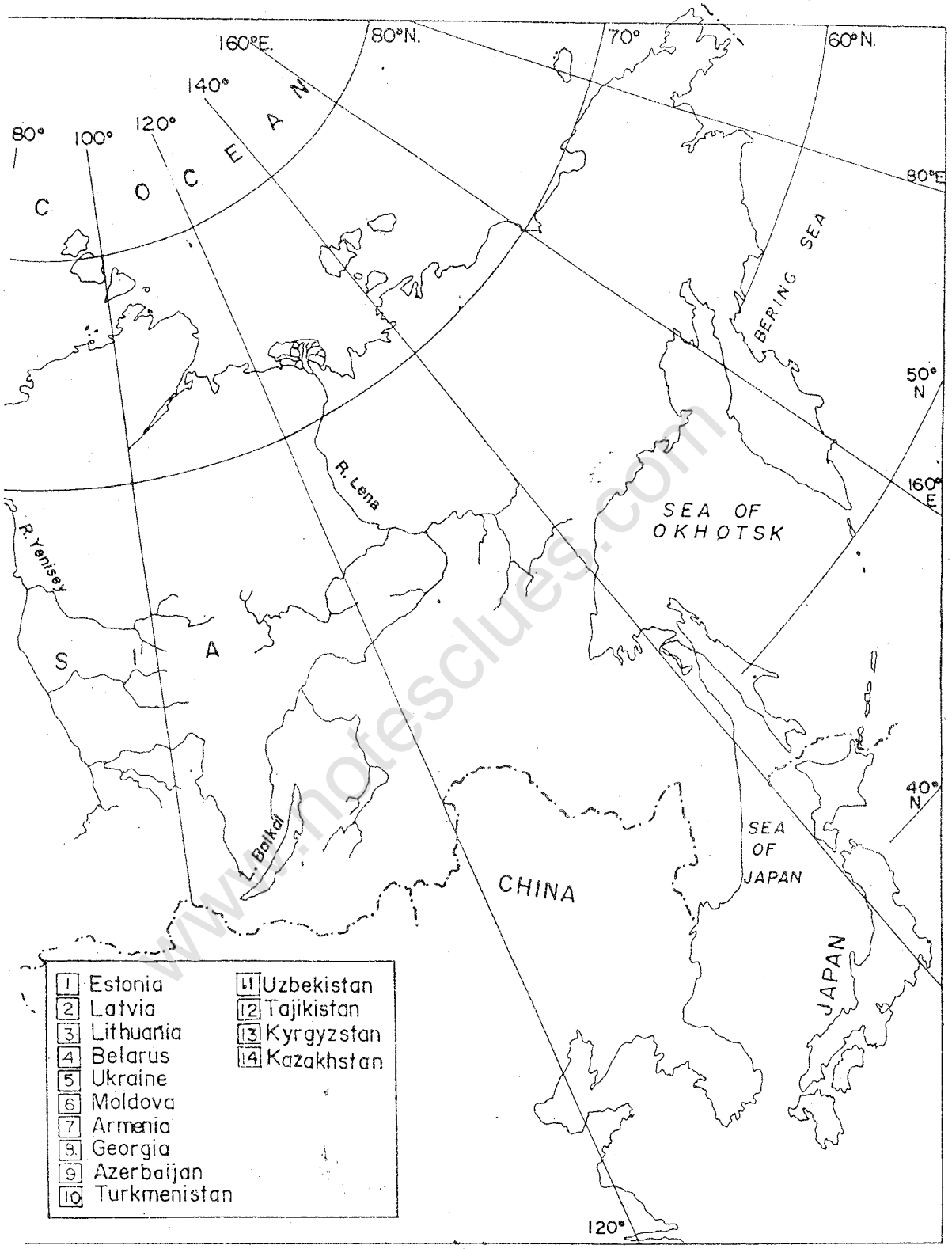


Fig. 13.1 The former USSR and its 15 independent states.
Note the names of the 15 independent states and their capitals. Find out the names of the three Baltic states and five countries of central Asia.



and much of it is covered with forest.

Mountains and Uplands

Besides the Urals, which divides the European and Asiatic parts of Russia, there is a mountain rim all along its southern and eastern borders. While the Urals are old mountains, the mountains of the south and the east are young fold mountains.

To the east of the river Lena is the region of the mountain ranges of eastern Siberia. They are high and rugged. This part, including the Kamchatka peninsula, is a region of earthquakes and volcanic activities. The Caucasus mountains run between the Black Sea and the Caspian Sea in the south-western part. Mt Elbrus, with a height of 5,633 metres, is the highest mountain peak in Russia. Find out the locations of the Yablonovy, Stanovoy and Verkhoyansk ranges on the given map (Fig. 13.2).

Climate and vegetation

On account of its great size and the great distance of a large area from the sea, there are many climatic regions in Russia. However, one outstanding

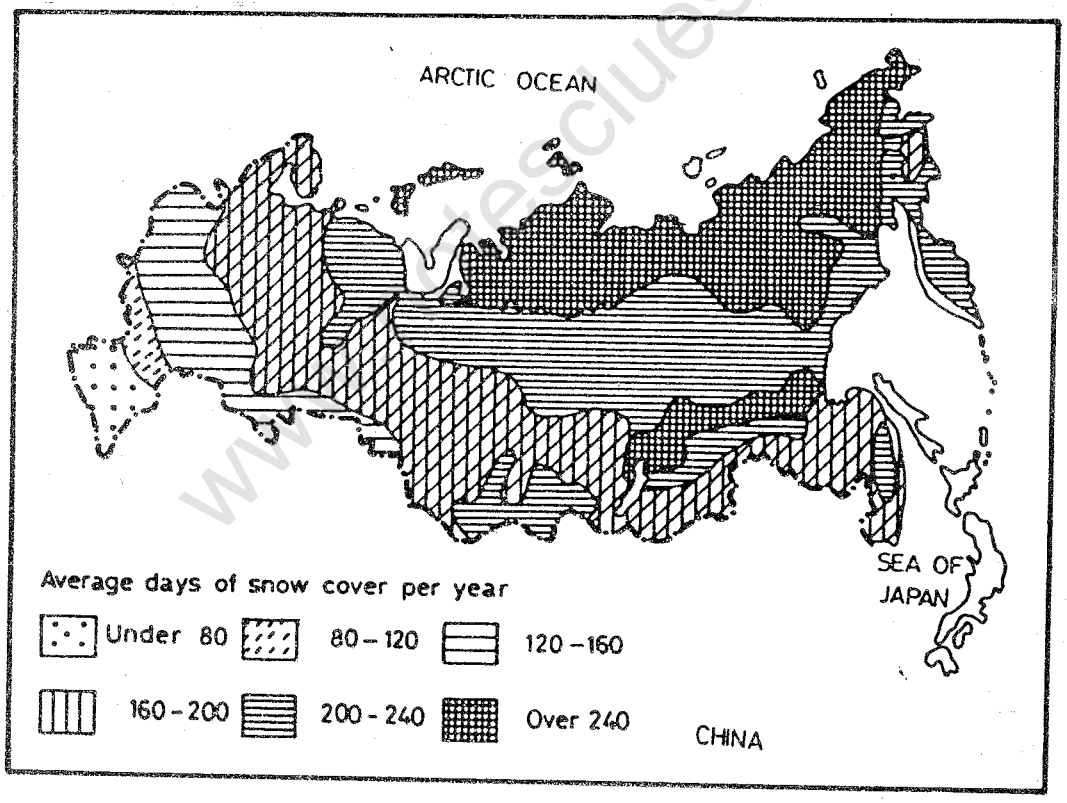


Fig. 13.3 Russia — Snow cover
Find out the areas covered with snow for more than 240 days in a year. Which areas have snow cover for less than 80 days a year?

characteristic of its climate is the long, cold winter due to its extension in the northern latitudes. You can imagine the severity of cold from the fact that the average days of snow cover in a year vary from over 240 days in the northern and eastern parts to over 80 days in the westernmost part. In other words, the intensity of winter decreases from east to west but no part is free from snow cover during winter.

Except for the European part of Russia, the rest of the country is little affected by the moderating influence of the oceans. The interior part of the country has the continental type of climate with a high annual range of temperature. Moreover, the northern lowlands are exposed to the cold polar winds coming from the north. During winter, the inland and coastal waters over large areas freeze. There are very few all-weather ports. During January, the temperature may be above freezing point only in the sheltered areas in the mountains.

Snowfall is common all over the country. It may be as long as for nine months in Siberia. A large part of the country receives rain during the short

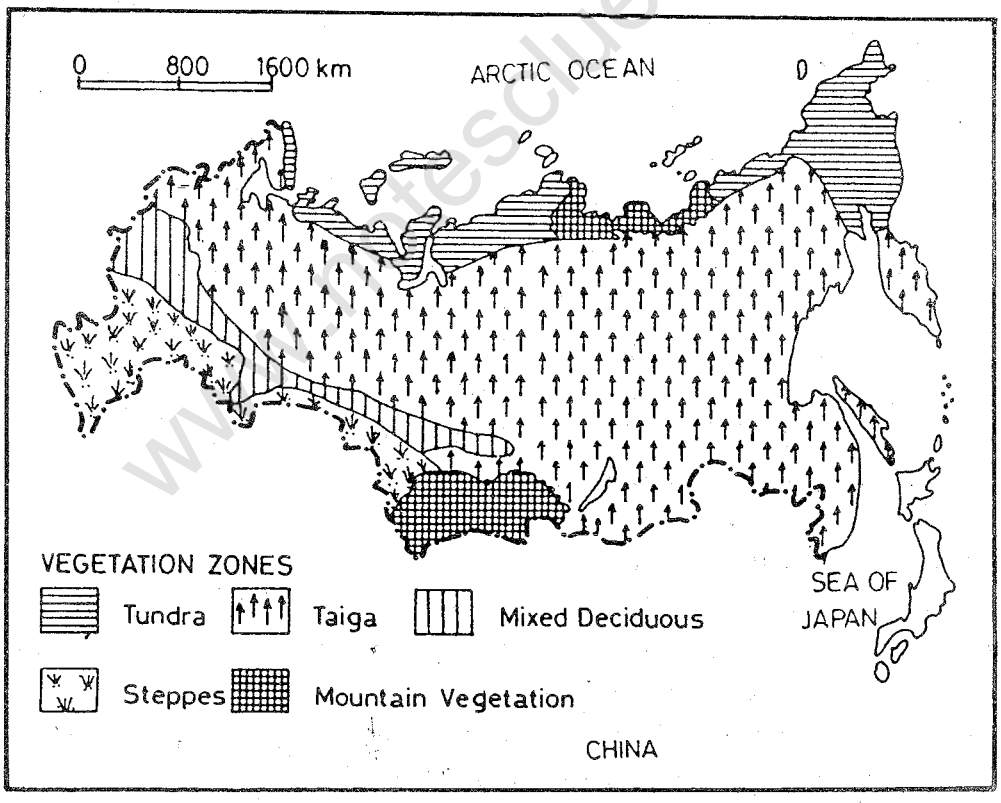


Fig 13.4 Russia — Natural vegetation

Note the vegetation belts from south to north. Find out the climatic condition in each vegetation belt. You will notice a close relationship between the climate and the vegetation zones.

summer season. The amount of precipitation decreases from west to east. It is scanty in north-eastern Siberia. The heaviest rainfall occurs in the Caucasus mountains, mostly in winters. Why is it so ?

There is great variety in the vegetation as well. The vegetation belts lie one after the other in a more or less regular sequence from the north to the south. The northernmost belt has the tundra type of vegetation. It is followed by the taiga, the mixed deciduous, the steppes and the mountain vegetation.

Resources and their utilization

Russia is rich in different kinds of natural resources. After the revolution of 1917, Russia and the other Republics, which formed the former USSR planned their economic activities in a centralized manner. Unlike the USA, the different sectors of the economy such as agriculture, industry, business, transport and communication were owned and managed by the State. The natural resources were utilized in a systematic manner, using highly developed technology. As a result, in economic development, the former USSR emerged as one of the most powerful nations of the world. However, since 1990, Russia has followed an economic programme to help develop a powerful private sector. The aim is to have a mixed economy where some of the areas will be under State control but some others will be given to private sectors.

Agriculture

Although a very small percentage of the total land area is under cultivation, it is quite large compared to that in any other country in the world. The growing season is very short and hence only one crop may be grown in a year.

Since 1990, people have been given permission to own and manage plots of agricultural land privately. Earlier, all agricultural land was owned by the State. More than half of this land was given to collective farms and the rest to the State farms. Collective farms were managed through cooperatives and farmers were paid in cash and in kind according to the amount of work done by them. State farms were set up as large model farms to show what could be done with the help of machinery and modern scientific methods. During 1980, due to frequent drought and inadequate storage facilities, the food situation deteriorated and the former USSR had to import grains. Hence, reforms were brought about to remove State control over agricultural land and bring in privatization. Now collective and State farms have also been allowed to start private farming.

Wheat, oats, rye, maize, sugar-beet and potato are grown here, mainly in the plains of the European part of

Russia. Look at Figure 13.5 showing agricultural land use in Russia. Wheat is grown in the fertile soil of the steppes. Rye and oats are cultivated in the cold north where the soil is poor. Maize and potatoes are cultivated in the warmer, humid lands of the south-west and western parts of Russia respectively. The whole of Siberia is unsuitable for cultivation.

Animal rearing

Less than one-fifth of the total area is under pasture and meadows. Cattle, pigs, sheep and reindeer are reared in large numbers for their milk, meat, wool and fur. Dairy-farming is important in the central and northern parts of European Russia, especially around Moscow.

Forestry

Little over two-fifths of the land in Russia is under forests. Most of the forest cover is in Siberia and in the fareast of Russia. Electric saws are used by lumbermen to fell trees in a short time. Large quantities of timber and softwood are produced here. It is a leading producer of sawn wood.

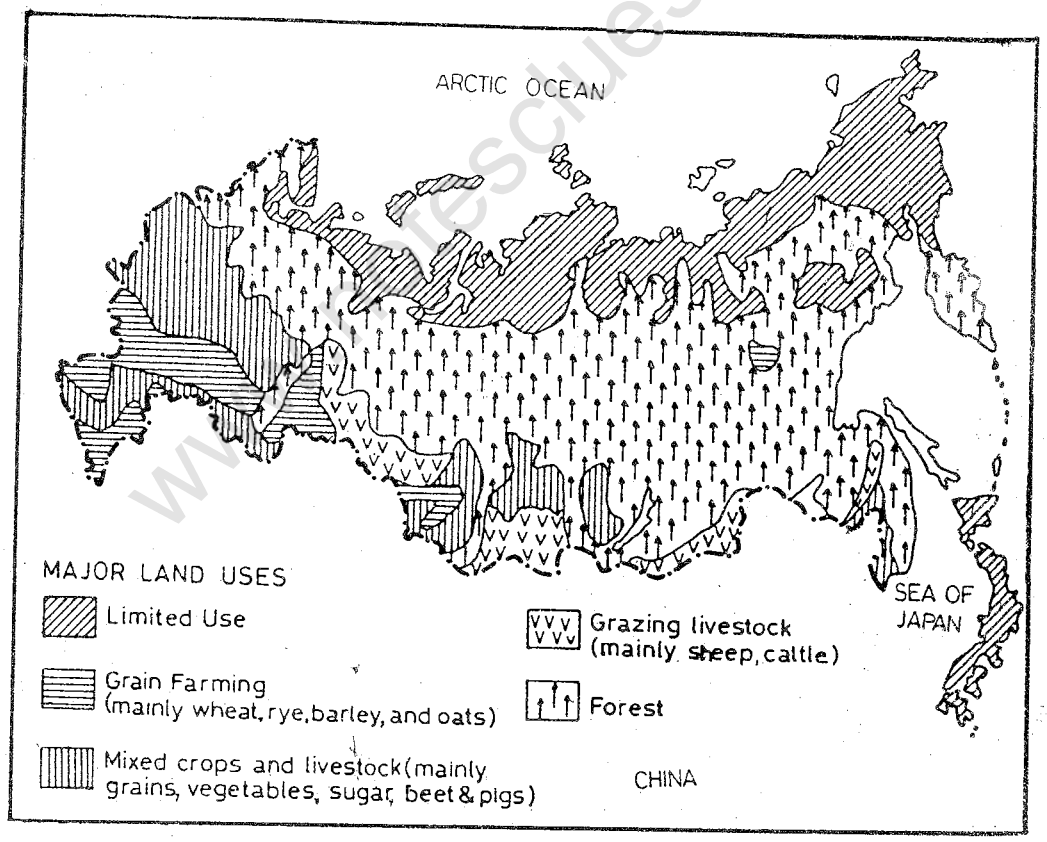


Fig. 13.5 Russia — Agricultural land use
Note which part of Russia has a large area under forests. Note the areas of grain farming and mixed farming.

Softwood is used for manufacturing pulp, paper and newsprint.

Mineral and power resources

Russia contains large deposits of several minerals and power resources. Iron ore is found in the Urals, the Kerch peninsula and Siberia. It has huge reserves of iron, manganese and bauxite. It is also rich in gold. The other important minerals are lead, tin, zinc, copper and platinum.

Coal is the most important power resource of Russia. It is found in the Kuznetsk basin, Eastern Siberia, the Urals and the sub-Moscow basin. Petroleum and natural gas are the other power resources found in Russia. Important oil fields are located in the region between the Urals and the Volga, Azov-Black Sea area, Bashkiria and west Siberia.

Russia has vast water-power resources. It has many large dams producing hydroelectricity.

Industries

Heavy industries have the major share in the total industrial production. Iron and steel industry is the most

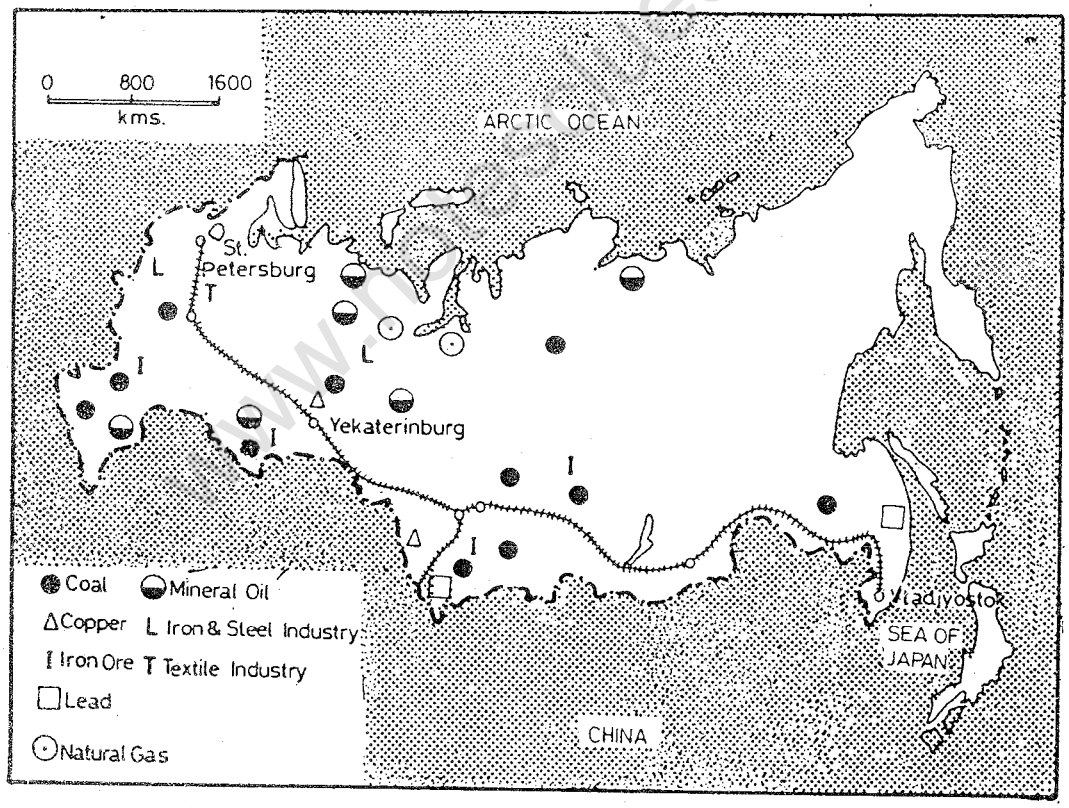


Fig. 13.6 Russia — Minerals, industry, and railways

Note the areas producing coal, iron ore and petroleum and the chief industrial centres of the country. Find out the longest railway line and its terminal stations.

important industry. Russia is one of the largest producers of iron and steel in the world. Iron and steel industries are located in the Urals and Siberia. Russia manufactures tractors, heavy machines, trucks, blast furnaces, arms and ammunition, chemicals, ships and aeroplanes. Textile, electrical and electronic goods, and food-processing industries are also important. The chief industrial regions are in and around Moscow and St Petersburg (formerly called Leningrad), the southern Urals and west Siberia, and the far eastern area.

Transport

It is a country of great distances. Railways and rivers are the chief means of transport. Look at the map. There is a network of railways and canals in the European part of Russia. The Trans-Siberian Railway is the longest railway in the world. Find out the names of the two terminal stations of this railway line. Moscow is the largest railway junction. St Petersburg and Moscow are connected with the industrial centres of Siberia by the Trans-Siberian railway.

Moscow is a port of five seas — the Caspian Sea, the Black Sea, the Baltic Sea, Lake Ladoga and the Arctic Ocean, through the White Sea.

Most of the rivers are interconnected by canals. The flat relief of the country makes its rivers highly suitable for inland transport. In the forest areas, some of the rivers are frozen during winter. They are used as natural tracks for sledges.

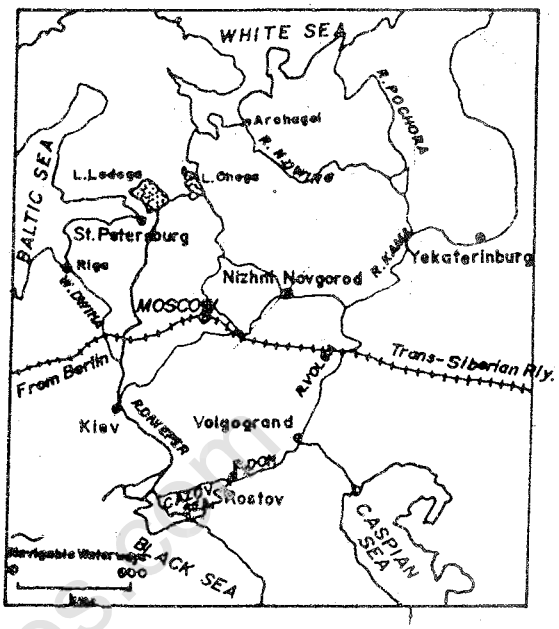


Fig. 13.7 Moscow — Location
Note how Moscow is rightly named an inland port of five seas.

Murmansk is the only ice-free port along the Arctic Ocean route to Vladivostok. Some of the important ports on the Black Sea, the Baltic Sea and the Pacific Ocean are kept open by ice-breakers. Oil and gas pipelines transport these commodities from the mining areas to other parts of the country.

Air transport in Russia is highly developed. Moscow and St Petersburg are important national as well as international airports. Air transport is of great value in the remote areas of northern and eastern Siberia.

The total population of Russia is about 147 million. The average density of population is less than nine persons per square kilometre. Most of its population is concentrated towards the west of the Urals. Siberia, especially its eastern part, is sparsely populated. Moscow is the largest city. It is the capital of Russia. Other important cities are St Petersburg, Nizhni Novgorod (Gorky), and Yekaterinburg (Sverdlovsk). As you would notice, the names of some places have been changed recently and hence their old names too have been given within brackets for your convenience.

EXERCISES

Review questions

1. Answer the following questions briefly.
   (i) How many states have joined to form the Commonwealth of Independent States ?
   (ii) Name the three Baltic States which were earlier Republics of the USSR but are now independent.
   (iii) What are the natural features that divide Russia into two continents ?
   (iv) Which are the four main physical divisions of Russia ?
   (v) What is the main characteristic of the climate of Russia ?
   (vi) Why is cultivation of crops in Russia restricted mainly to the western part ?
   (vii) Which are the main industrial regions of Russia ?
   (viii) Which railway line links St Petersburg with Vladivostok ?

2. Distinguish between
   (i) open sea and land-locked sea
   (ii) an all-weather port and a seasonal port

3. Give reasons for the following.
   (i) Russia has eleven time zones.
   (ii) The vegetation belts run in a sequence from north to south.
   (iii) Siberia is sparsely populated.
   (iv) Air transport is of great value in northern and eastern Siberia.

4. Make out correct pairs from the two columns below

A	*B*
a. An important area of iron-ore mining	Azov-Black Sea area
b. A port of five seas	Kuznetsk
c. A port which remains free from ice throughout the year	Moscow
d. An important coal field	Murmansk
e. An important oil field	the Kerch Peninsula
	Vladivostok

5. Write a brief account of the agricultural development in Russia as part of the former USSR and the changes which have taken place since 1990.

Skills in geography

6. On an outline map of the former USSR, mark the 15 independent states and shade Russia.

7. On an outline map of Russia show the following.
   (i) The capital city
   (ii) The Trans-Siberian Railway and its terminal stations
   (iii) Murmansk, St Petersburg, Nizhni Novgorod and Yekaterinburg
   (iv) The Urals and the Caucasus
   (v) The Volga, the Yenisey and the Lena rivers