

GEOGRAPHY

Produced under Environmental Education in School System Project

This Textbook of Geography for Class VII has been developed as a part of the project 'Environment Education in School System (EESS)', a subcomponent of the India Environment Management Capacity Building Project undertaken by the Ministry of Environment and Forests (MoEF), Government of India. The Project is supported by the World Bank. The Centre for Environment Education (CEE) is the Consultant to MoEF for the implementation of this Project. Under this Project, the textbooks of standards VI to VIII have been environmentalised on the basis of an all India study conducted by Bharati Vidyapeeth Institute of Environment Education and Research (BVIEER) to assess the environmental content in school textbooks of all classes. Comments and suggestions for improvement are welcome, and may be sent to:

Bashir Ahmad Dar
Director academic J&K BoSE, and Nodal Officer EESS Project,
Rehari Colony, Jammu Tawi-180005/Bemina by pass
Srinagar-190010

FOR CLASS
VII



J&K STATE BOARD OF SCHOOL EDUCATION
SRINAGAR/JAMMU



The Jammu and Kashmir State
Board of School Education

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**For
Class VII**

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THE J&K STATE BOARD OF SCHOOL EDUCATION

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Editorial : Bashir Ahmad Dar, Director Academic, J & K BOSE and Nodal Officer
Environment Education in School System Project (EESS)

Typeset at : Graphic Printers, Okhla Delhi

Art Work, Layout

& Design by : Mrs. Mukul Chakraboty, Pocket K-1/25 CR Park, New Delhi-110 019

Price:

Published by the Secretary, J&K State Board of School Education.

Printed at



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Acknowledgement

The Board is grateful to the following for their participation in different workshops including the 11- 15 June, 02 workshop on ‘Greening Textbooks’ held by its Academic division.

List of persons who participated in the Textbook Development and Review Workshops

1. Prof. T. S. Kanth, HOD Geography K.U.
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The Board acknowledges with gratitude the use of materials from Geography portion of the Social Science class VII book of the NCERT, New Delhi in this book.

Foreword

Social Sciences is an integral component of our school curriculum upto the secondary stage. The main objectives of this component at upper primary stage are to enable the children to understand the society and the world in which we live as well as understand socio-economic developments and changes in the context of time and space. The course is meant to develop among students understanding of the evolution of human societies and civilization in different parts of the world.

The course of Social Sciences consists of elements of History, Our Civic Life and Geography. This textbook of Geography for Class VII; forming one of the elements of Social Science, was developed and reviewed as a part of the Project : 'Environment Education in School System (EESS)'. The EESS Project is a sub-component of the India Environment Management Capacity Building Project undertaken by the Ministry of Environment and Forests (MoEF), Government of India. The objectives of the project are to, among other things; strengthen infusion of environment education at all levels of school education.

The Board is grateful to the Ministry of Environment and Forests for including J&K State in the group of eight states selected to implement this project.

The curriculum for Social Sciences and the first draft of the Geography book was developed in different workshops held by the Academic Division of the Board. The material was reviewed in subsequent workshops particularly in the one on 'Greening Textbooks' held by the Academic Division under Environmental Education in School System Project.

The Board acknowledges with thanks the use of materials from the Social Science book of the NCERT, New Delhi in this textbook.

While dedicating this book to the children of the State I express my gratitude to the participants of different workshops held in connection with review of Geography book for Class VII and preparation of this book.

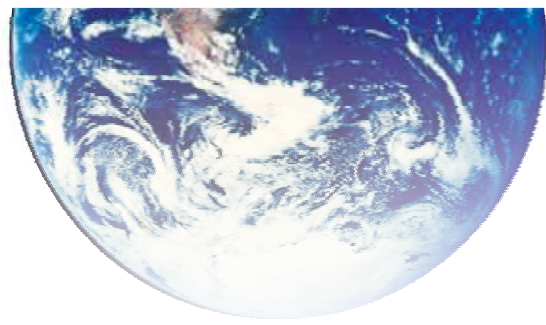
I also place on record my deep appreciation to Mr. B A Dar, Director academic and Nodal officer EESS project for his laudable contribution in the preparation and processing of the book.

Suggestions and comments are welcome.

Prof. J. P. Singh
Chairman

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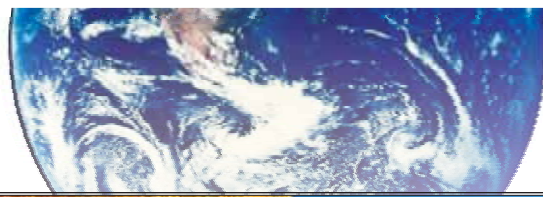
Unit I

Our Environment

Literally environment is the air, water and land in or on which people, animals and plants live. Our earth is a unique planet because it provides the most suitable environment for all forms of life including plants, animals and human beings. The earth is unique among the heavenly bodies.

Our existence depends on the basic geological processes that govern the dynamics of the land surface and vast bodies of water. These, in turn, are controlled by the sun whose radiant energy drives the atmosphere and oceans as well as influence climatic patterns. We live in



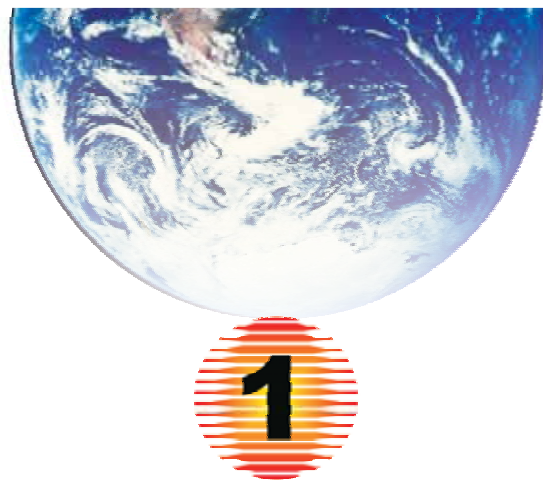


natural landscapes that is shaped by glaciers, rivers, ground water and wind.

In this unit we will learn about physical environment and human environment. We will also study the components and processes of the environment. It is interesting to know how humans are

affected by the environment and how human activities have affected the natural environment during the passage of time.

Environment is our basic life support system. It provides the air we breathe, the water we drink, the food we eat and the land where we live.



Components Of Environment

The literal meaning of environment is the surroundings of an organism, a community or an object. But, environment is not uniform all over, it varies from place to place. Take the case of India. There are so many varieties of conditions prevailing in different parts. The mountain environment of the Himalayas is very different from the environment of the Thar desert or the deltaic Sundarbans. One kind of environment is suitable for growing rice while the other is suitable for growing wheat or ragi. Accordingly, the food habits, economic activities or dresses of the people vary from region to region.

The plants, animals and humans are influenced by the physical or natural environment of a region. What is physical environment? The physical environment is the prevailing natural conditions comprising the land, water and air. The land may consist of mountains, plateaus, plains and valleys. The water bodies range from small ponds to vast oceans including lakes and rivers. Biological environment includes humans, animals, plants and other

organisms. These two components of physical and biological environment are interdependent. They cannot be separated altogether. They are very much interlinked and are interacting all the time. A change in physical or natural environment brings change in the biological environment.

Why should we protect our environment?

Environment is our basic life support system. It provides the air we breathe, the water we drink, the food we eat and the land where we live.

It provides us natural resources such as wood, fuel, energy and minerals.

Most of the human activities affect the environment in one way or the other.

Many parts of the environment have already been badly damaged by over use or irrational use of resources like forest, pastures and farms.

If we continue to do so, the damage will be irreparable and the consequences will be very serious.

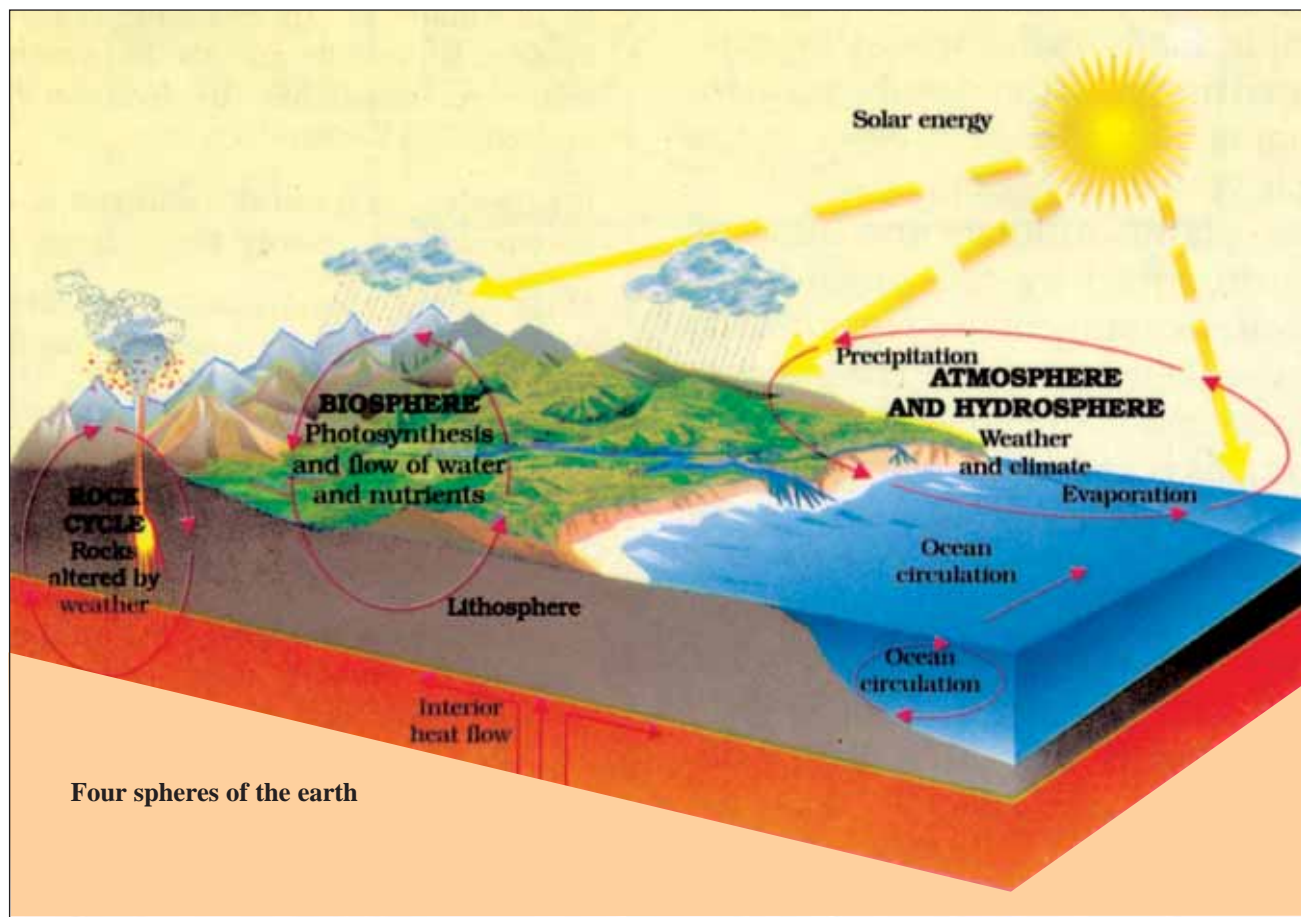
We must also know that these components of environment are not static. They are going through processes of changes. These changes may be slow but sometimes they are very sudden as well.

Broadly we can divide the environment into four spheres—**atmosphere, lithosphere, hydrosphere and biosphere.**

The atmosphere is the thin layer of air that envelops our earth. It is very dynamic in nature, changes can take place every hour. These changes in the atmosphere produce weather which affects us both directly and indirectly. Through weather it creates climate which affects the various

processes that operate on land-form features, soil development, nature of vegetation and activities of people. The atmosphere is not uniform all through its width. There are several layers about which you will read in a later chapter. The atmosphere provides a setting in which all forms of life are created and sustained. The force of gravity exerted by the earth holds the atmosphere around it. The atmosphere protects us from scorching heat and harmful ultraviolet radiation.

The lithosphere is the layer of the earth consisting of rock materials, extending both over the continents and ocean basins.



The average thickness of the lithosphere is about 100 km.

The lithosphere is composed of rocks rich in silica and aluminium, called sial layer, found over the continents. In the ocean basins, the rocks are mainly rich in silica and magnesium, called **sim**. The crustal part of the earth consists of a variety of rocks about which we will read later.

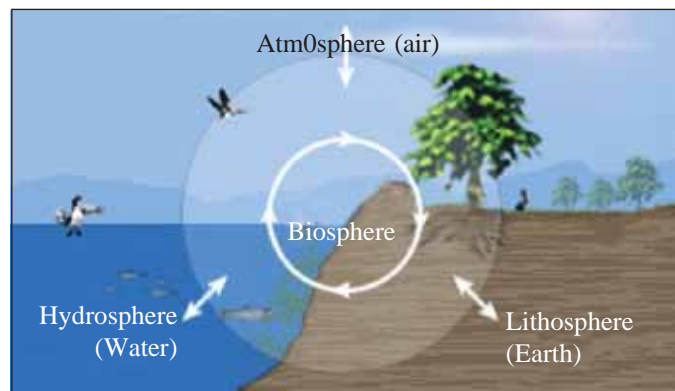
The lithosphere is the sphere which provides us land to settle, soils for plants and is a source of mineral-wealth.

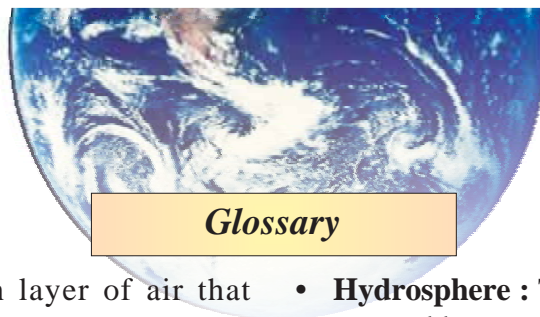
The **hydrosphere** is the part of the earth's surface, covered by water. Rivers, lakes, seas and oceans form this sphere. More than seventy per cent of the earth's surface is covered with water as you have already learnt. Continents are like vast islands floating in the oceans. On the other hand, oceans are the major links between landmasses. Water supports all forms of life on the earth and is very crucial for our survival. Besides, water has a moderating effect on climates of regions near coasts. Oceans provide us with food and minerals. Even in the seabed, deposits of mineral, oil and gas are found.

The biosphere is a very narrow sphere of the earth which contains life. This sphere includes parts of atmosphere, hydrosphere and lithosphere. Most of the living organisms, be it plants or animals on the earth, are found on or near the surface of land or water surrounded by air. Thus, the biosphere is a very narrow zone where life on this planet exists. Can you explain why life in the ocean is concentrated near the surface?

Our earth is perhaps the only planet in the solar system where conditions are suitable for life. Over the centuries, life form has evolved and got diversified. This diversification process has given rise to different species. The wide range of species is known as **biodiversity**, which we witness today.

People are an important part of the biosphere. They are a product of their environment but are capable of influencing and changing their environment through their activities. It is high time now when we have to learn to live harmoniously with the natural environment without causing any further damage.





Glossary

- **Atmosphere** : The thin layer of air that envelops our earth.
- **Biodiversity** : The wide range of species.
- **Biosphere** : A very narrow sphere of the earth which contains life.
- **Environment** : The surroundings of an organism, a community or an object.
- **Hydrosphere** : The part of the earth's surface covered by water.
- **Lithosphere** : The layer of the earth consisting of rock material.
- **Sima** : The ocean basic rocks rich in silica and magnesium.

EXERCISES



1. Answer the following questions in brief

- (i) What is environment?
- (ii) Why do we study natural environment?
- (iii) What are the major spheres of environment?
- (iv) How do we, the humans, influence the environment?



2. Fill in the blanks

- (i) We can divide the environment into _____ spheres,
- (ii) Sial layer is composed of rocks rich in _____ and _____
- (iii) Hydrosphere is a part of the earth's surface covered by _____
- (iv) Biosphere is the sphere which contains all on the earth. _____



3. Project work

- Prepare a diagram of the earth showing different spheres.



Changing face of the Earth : The Processes

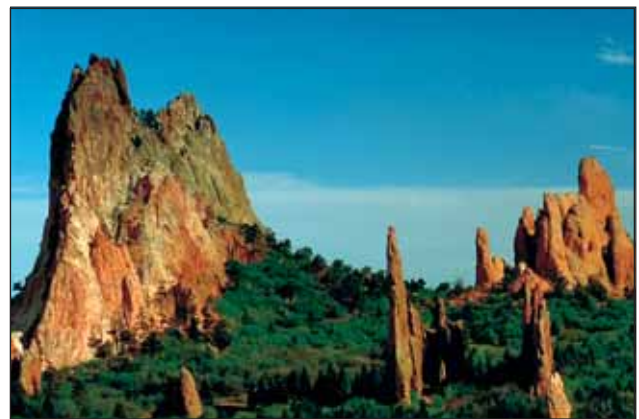
The earth's surface is subject to constant change. Both nature and humans are responsible for such changes. Sometimes these changes occur beneath the earth's crust due to folding or faulting of rock strata by earthquake or by volcanic activity. On the other hand changes are also brought about very slowly by processes like weathering, erosion or human activities.

Processes like weathering, erosion and deposition play a vital role in modifying the surface of the earth. They have profound effect on the formation of sedimentary rocks. It might be interesting to know that climate, in turn, affects the processes, too. Similarly water, plants and animals influence the rate and pattern of weathering and erosion of a particular area.

External Processes

Weathering, erosion and deposition are called external processes, as they are responsible for changes that happen over the surface. The term **weathering** refers

to all the processes that break rocks into smaller particles. You have probably noticed that the new and smooth surface of a building becomes rough and cracked when the outer layer of the concrete or mud is worn off. Large cracks may appear on the walls if roots of trees grow on or underneath the walls of a building. These processes are similar to the way rocks get weathered.



Once the rock is broken by weathering, the small pieces can be moved by water, moving ice, wind or gravity. In this process broken rocks are carried from one place and get deposited at other place. This process is called **erosion**.

Do you know?

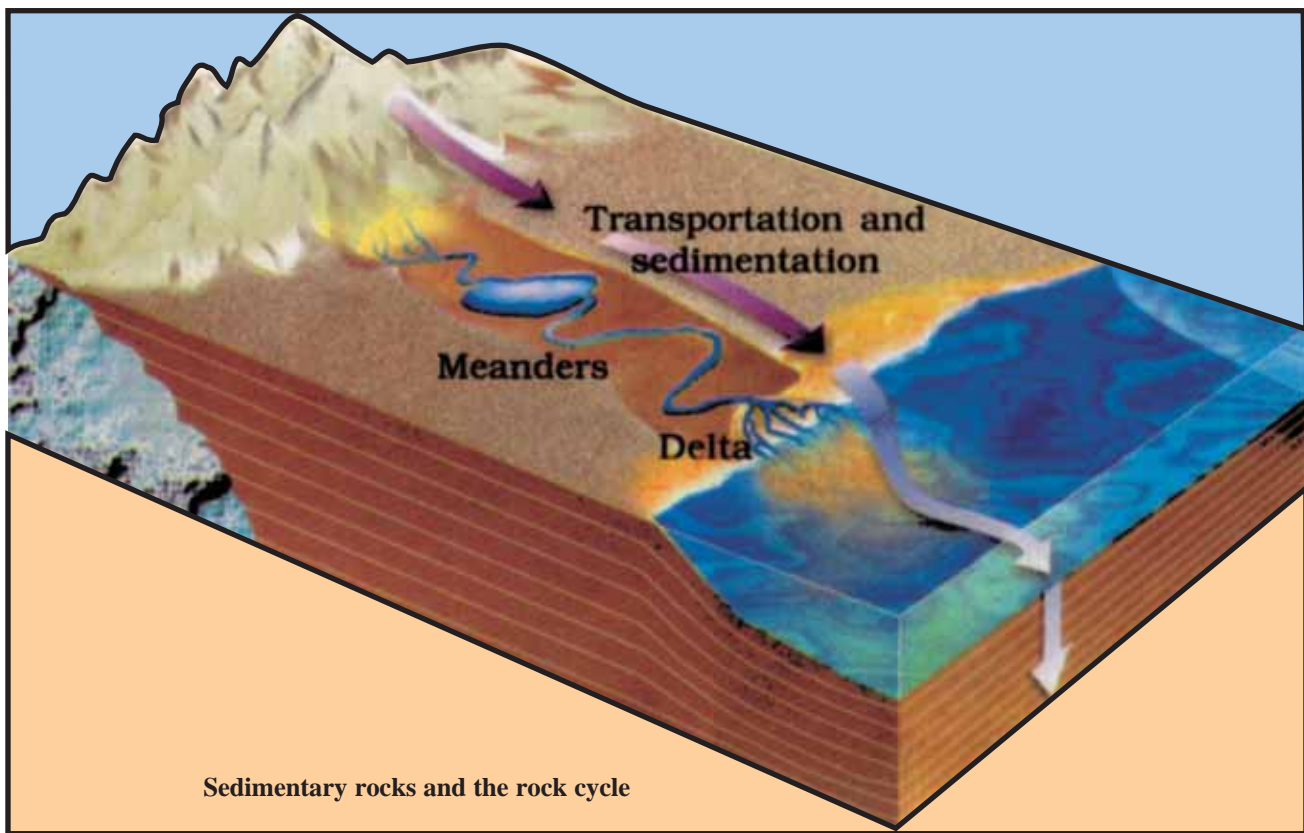
Growth of towns and erosion are very much related. As town and cities grow, land is cleared of vegetation cover for construction of buildings or roads. These human activities increase the rate of erosion. They disturb the soils also.

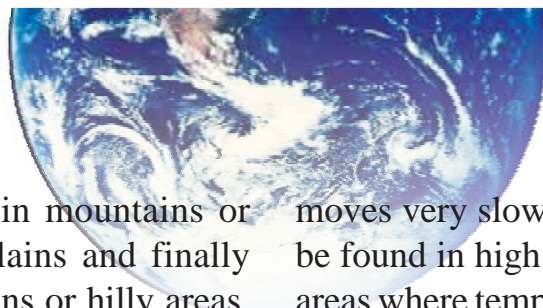
Weathering and erosion that spread over millions and millions of years change the land surface features like mountains, hills, plateaus and plains on the earth. If there were no such processes like weathering or erosion, the earth would have been very different. For very long time these two forces are acting together. The processes of weathering and erosion are called **denudation**.

In case the weathered rock particles remain exposed for a long time, chemical as well as organic changes take place. These changes lead to the formation of **soils**. As you all know, soils are very important for plant growth. The rocks from which soils are derived contain those minerals as well as decayed leaves, flowers, remains of animals, bacteria and earthworms. Formation of soils depends on the prevailing climate, rock-types, vegetation of the area as well as slope of the land.

Agents of Denudation

The most effective agent of denudation is **running water**. Streams or running water wear away and move rocks at high





speed. Rivers originate in mountains or hilly areas, flow over plains and finally reach the sea. In mountains or hilly areas, due to steep slope, the rivers rush down with great force. Maximum erosion takes place in this part. As the rivers reach the plain areas, the slope decreases. The rivers start depositing the materials in their beds or along the valley sides. Near the sea, due to extremely gentle slope, rivers are unable to carry the eroded materials or sediments any further and deposit them. At the mouth of a river, deposits of sediments or alluvium creates **delta**. Delta is a more or less triangular piece of land of alluvium. It resembles the Greek letter (D) and hence is named so. The delta formed at the mouth of the Ganga and the Brahmaputra rivers is the biggest in the world. All the east flowing rivers of peninsular India have formed deltas at their mouths. You may gather information on why the west flowing rivers of peninsular India have no deltas.

Long ago, in historical past, different parts of the earth were covered with **glaciers**. A glacier is a river of ice which



Mountain glacier

moves very slowly downhill. Glaciers can be found in high altitude and high latitude areas where temperature is very low. When the ice covers a large part of an area, it is called **continental glacier**. It is found in polar regions. Antarctica is covered by thick ice. In northern parts of Europe, Asia and North America continental glaciers are found.

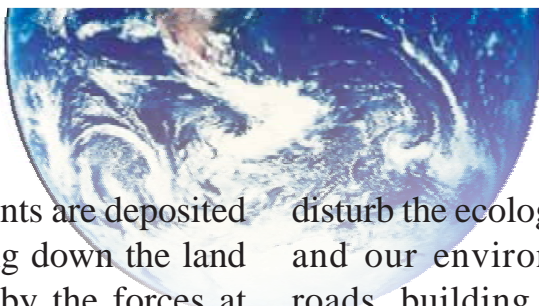
Mountain glaciers occur in high mountains like the Himalayas or the Alps. As a glacier moves, it works like a bulldozer, grinding and plucking the rocks beneath it.

Another agent of denudation is **wind**. Wind moves small particles of rocks. In the desert areas wind-blown materials, when deposited, are called dunes. The action of wind is more profound in deserts or in coastal areas.

Along the coastlines, the sea waves shape the land. The **waves** pound on rocks flanking the coastal areas and reduce them into small pieces. Those small pieces of rocks may be deposited along the coasts or carried down to the sea-floor.



Coast



Layers of rock sediments are deposited on the sea bed by wearing down the land features. When uplifted by the forces at work inside the earth they become mountains. These young mountains show the features of weathering and erosion, during the passage of time, to become old or mature mountains. Thus, the cycle of erosion continues. The shape of the land, at any time and place, is a stage in the battle between the forces that lift the land and the forces that wear it away!

We humans too, play a crucial role in changing land surfaces. There are situations where, through lack of knowledge about the processes and consequences, humans alter landforms. As a result, events follow that are not desirable. Nuclear tests or creating large dams are few examples of such activities which have created havocs. In our enthusiasm we cut down forests and destroy pasture to bring more and more land under the plough. While doing so we

disturb the ecological balance in the nature and our environment. Construction of roads, building of cities and growth of industries disturb the environment.

Soil

Earth's surface is covered by a layer of loose materials called **soil**. Soil is essential for any kind of vegetation to grow. It is a mixture of many kinds of particles. These particles can be divided into two groups: **organic and inorganic**. Organic means particles of living things. Most of the organic materials in soils come from plants. Some organic materials also come from animal remains and arid bacteria. In course of time, all the organic materials are changed by the action of bacteria into a dark coloured substance called **humus**. Humus is the main source of nutrients that plants need for their growth. Proportion of humus in a soil determines its fertility. In swamps or humid plains, soils are more rich in humus. But, in deserts, the soils

Landforms created by human activity

Features

Pits
Mounds
Furrows, terracing, ridges
Embankments + Dikes

Craters
Canals
Moats
Subsidence/depression

Causes

Mining
Mining
Agriculture
Transport, rivers, coast management
Wars
Transport + irrigation
Defence
Mining + water extraction

have less amount of humus and are less fertile. Try to find out the reason behind this.

Inorganic particles include pieces of weathered rocks. They vary in size; larger one is called gravel while the smaller ones are called sand. Silt, clay and dust are even smaller in size; they look like flour or dust when dry and are in powder form.

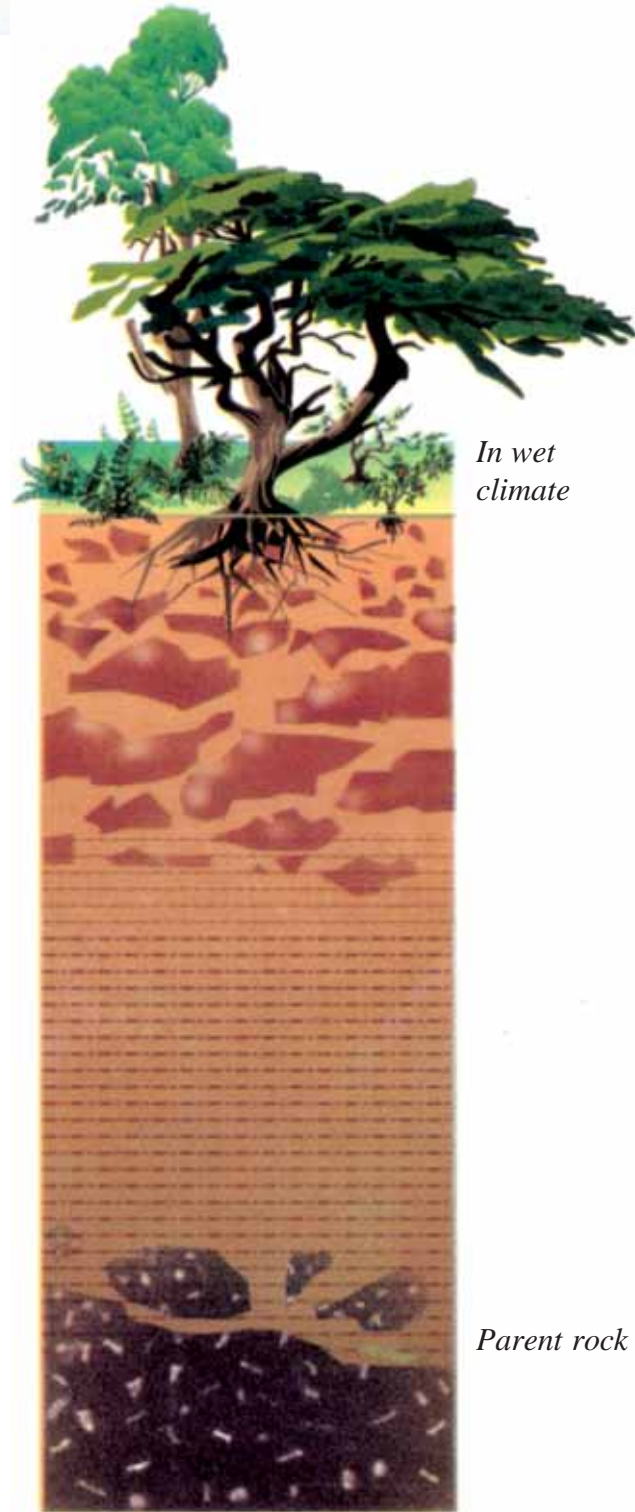
How is the soil formed? Soil formation is a very slow process. This process starts as soon as rock is exposed to air and water. Large pieces of rocks are weathered. This weathered material, removed by wind or water from the place of origin, are deposited in some place elsewhere. These soils are called **transported** soils. On the other hand, **residual** soils are materials which are transformed into soil in their place of origin.

As time passes and weathering continues, soil forming process starts. Soils begin to develop in layers. These layers are called **horizons**. The rock from which soil develops is called the **parent rock**.

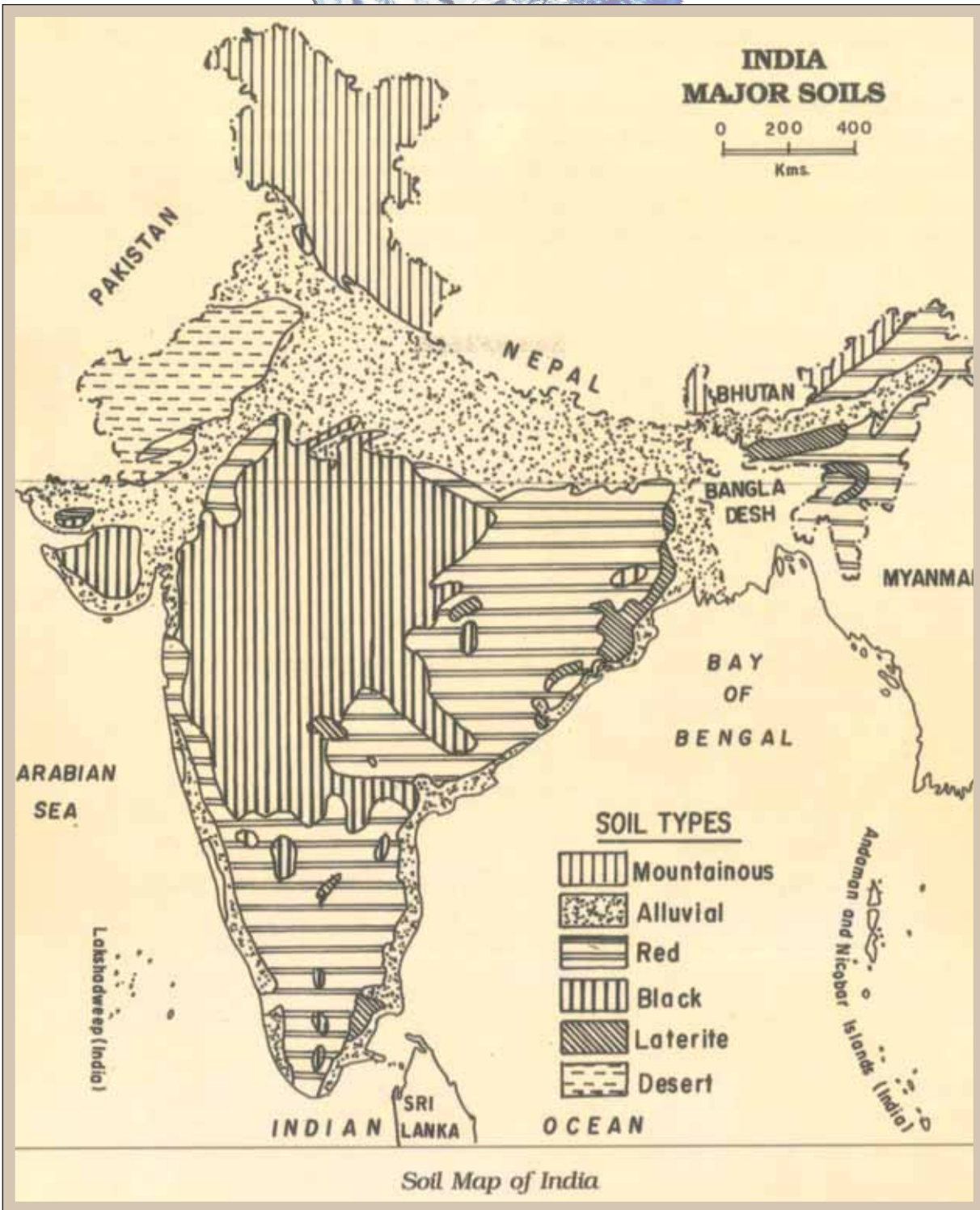
All over the world, there are thousands of varieties of soil. Parent rocks, prevailing climate, slope of the land, vegetation cover are some of the important factors which are responsible for developing different types of soil.

In India we have four major types of soil — alluvial soil, regur or black soil, red soil and laterite soil. Alluvial soils are

mainly confined to the river basins and coastal plains. These soils are very fertile

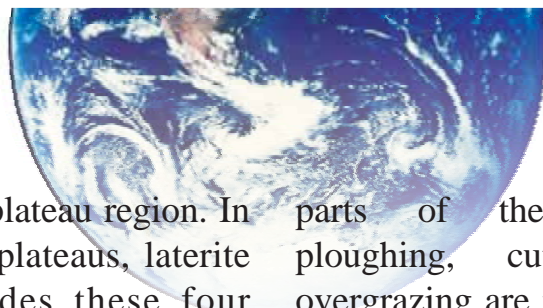


Soil formation



and contribute enormously to the growth and development of our agriculture. In the Deccan lava region, black soils are found.

You can try to identify the states which have these soils. Red soils are reddish due to the presence of iron in it. These soils



are found in peninsular plateau region. In the higher areas of the plateaus, laterite soils are found. Besides these four peninsular plateau region. In the road types of soils, mountain soils higher areas of the plateaus, laterite and desert soils are found in respective areas of India. You can try to find out the soil types in your locality.

Soil Erosion is a serious problem faced not only in India but also in other

parts of the world. Unscientific ploughing, cutting of trees and overgrazing are major factors behind soil erosion. In India the rate of soil erosion is very high. Thus, soil management is of absolute importance to protect this resource from further decay. Soil erosion can be checked by planting trees, proper farming practices and restricted grazing.

Glossary

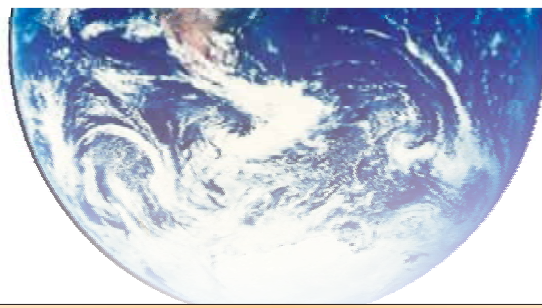
- **Alluvial soil** : A soil from marine or river deposits having usually a high fertility.
- **Delta** : More or less triangular piece of land of alluvium.
- **Denudation** : Processes of weathering and erosion.
- **Erosion** : The removal of soil from the surface by water, wind or gravity.
- **Glacier** : A river of ice.
- **Horizon** : A stratum of the soil.
- **Humus** : The organic matter in the soil formed by the decomposition of plant and animal remains containing nutrients that plants need for their growth.
- **Weathering** : The various ways in which the parent material is broken down to form the mature soil.

EXERCISES



1. Answer the following questions in brief

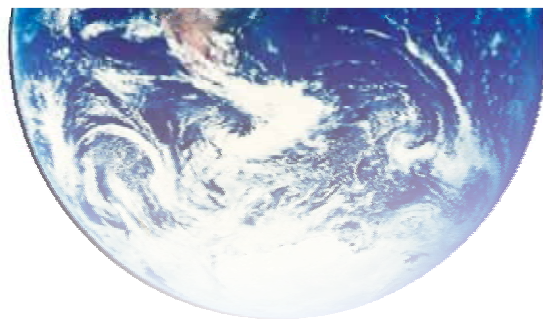
- (i) Name the processes which modify the surface of the earth,
- (ii) What is meant by external process?
- (iii) How does erosion take place?
- (iv) What are the factors which influence the rate of weathering and erosion?
- (v) How are soils formed?

**2. Match the correct pairs from the two columns**

(i) Running water	a. Dunes
(ii) Wind	b. Delta
(iii) Embankment	c. Parent rock
(iv) Soil	d. Irrigation

**3. Project work**

- Study the soil map of India and identify the States which have large tracts of alluvial soils.



Earth's Surface and Interior

We have read in our earlier class how the earth was formed, about 4,500 million years ago. But, since its birth, the earth as well as other planets are undergoing change. Nothing in this universe is static. In this chapter we shall explore the nature of the earth's surface and the structure of its interior.

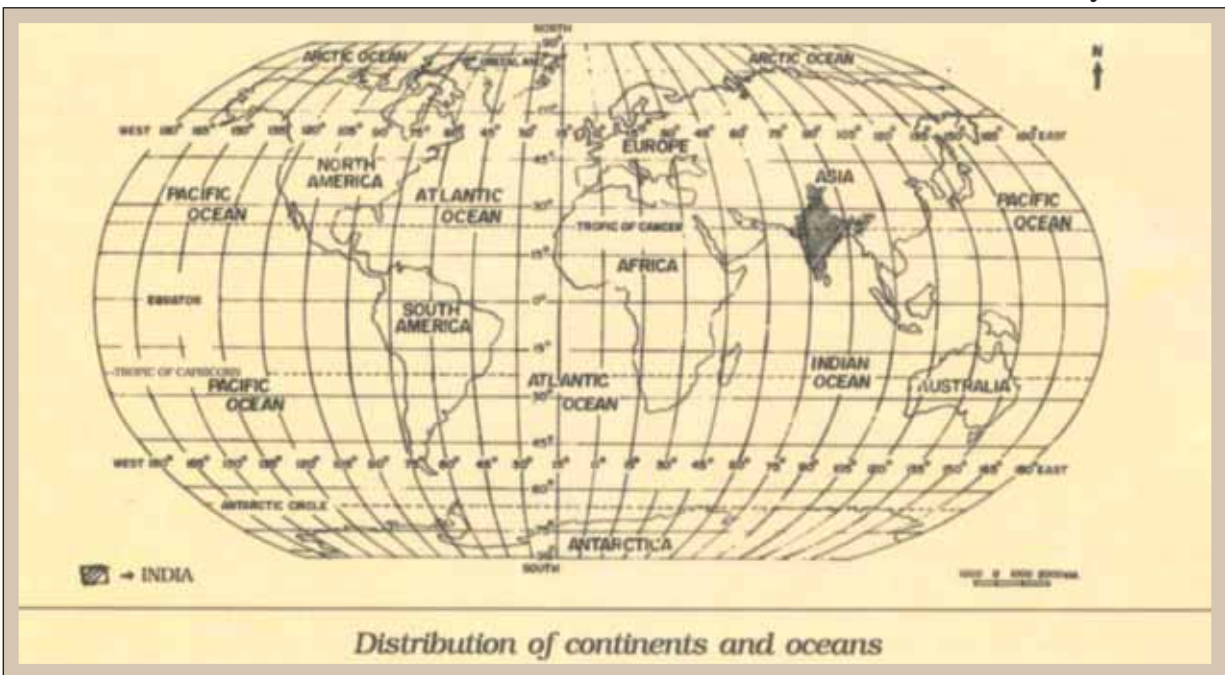
Surface of the Earth

Less than one-third (29 per cent) of the

earth's surface is occupied by land. Most of it is covered by water (71 per cent). One single ocean, the Pacific Ocean alone covers an area (160 million km²) larger than all the continents and islands put together. This distribution of land and water can be affected by

- Climatic changes
- Tectonic activities

Land and water are not evenly distributed around the earth as you can see



in the diagram below. Find out which hemisphere has more land and which has more water surface.

This distribution of land and water has a major impact on the global climatic pattern about which you will read later. You must know that oceans are our main source of moisture for precipitation. They are also our reserves of heat as the lands heat up and cool down relatively rapidly. The distribution of land and sea also influence pollution patterns of the globe.

The boundaries of oceans and continents, determined by the coastlines provide convenient natural way to divide the world. This is actually the face of the earth as viewed from space. This natural division provides a meaningful basis for some important aspects for managing our environment.

Do You Know?

If the total area of the earth is shared uniformly by the world's total population, each person will have a plot of 50 sq m (approx.). There would be about 43 persons per sq. km with a uniform population distribution. But, in reality, this is not so. Some places have very high population density; whereas some have very low. Find out the most densely populated and most sparsely populated: (a) continents (b) countries (c) states in India.

Relief

Our earth has a variety of landforms on its surface. There are high mountains

and deep valleys, vast stretches of plains and tableland or plateaus. This variety of topographic features or landforms has influenced spread and movements of people on this planet. Relief in its height as well as depth is the undulation of the earth's surface, as measured from a base i.e. the mean sea level. In the world map locate the highest peak of each continent.

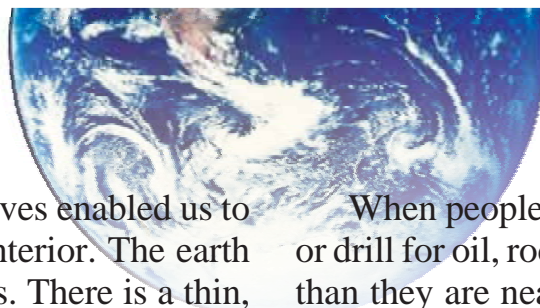
Do You Know?

The highest point on the earth is Mount Everest (8848 m), above mean sea level, in the Himalayas. The lowest point is the bottom of the Mariana Trench (11034 m), below the mean sea level, in the Pacific ocean.

What is the total difference (in metres) between these two extreme points on the earth?

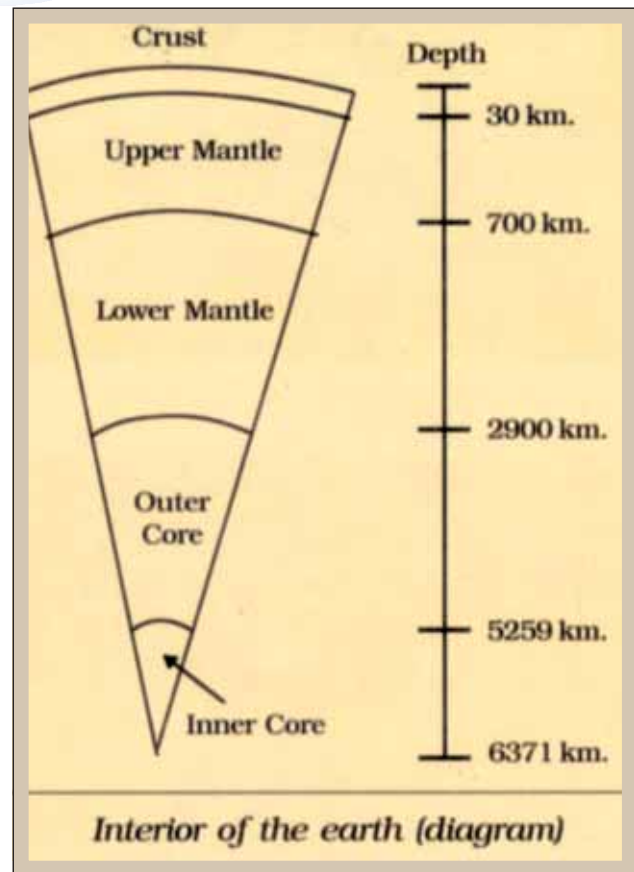
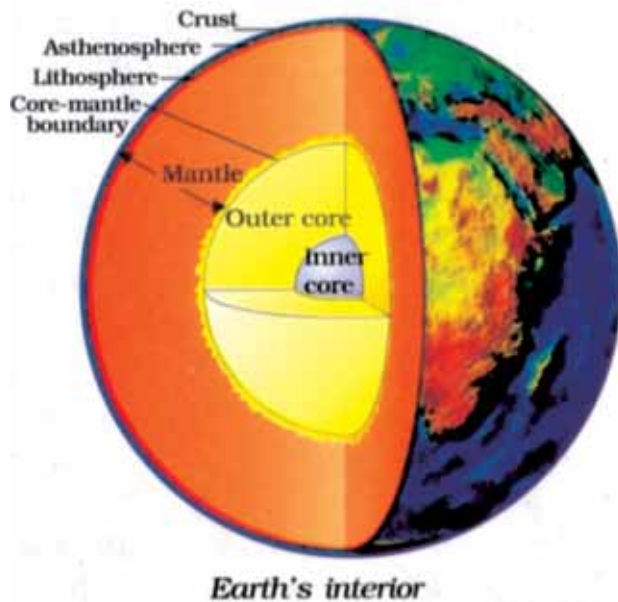
Interior of the Earth

You will be surprised to know that much of our knowledge about interior of the earth comes from indirect sources. The most important source is **seismic waves** or the earthquake waves. These waves are generated by earthquakes. They originate at the focus of the earthquake and travel towards the earth surface in different directions. They travel at different speeds. The speed of these waves depends on the nature of material they pass through. Two main types of seismic waves are 'P' waves (Primary waves) and 'S' waves (Secondary waves).



The study of these waves enabled us to know about the earth's interior. The earth is made up of three layers. There is a thin, solid layer covering the outside of the earth. This layer is known as the **crust**. The thickness of the crust differs from place to place. The crustal part that makes the sea floor is 4-7 km thick whereas in the continents it is on an average 35 km thick. Beneath some mountains the crust is even 70 km thick. Rocks and soils form the uppermost layer of the crust.

When people dig the crust for minerals or drill for oil, rocks are found hotter inside than they are near the surface.



Beneath the crust is a very thick layer which is called the **mantle**. Mantle extends upto 2900 km in depth. But, the entire mantle is not homogenous. Upper part of the mantle, upto 100 km, is **upper mantle**. Beyond 100 km lies the **lower mantle**.

The innermost part of the earth is known as **core**. Core has a radius of 3470 km. This is also divided into two parts—outer core and inner core. Iron and nickel form the core of the earth.

You may wonder, what happens to this heat inside the earth? Sometimes hot materials from the earth's interior comes out through some cracks or joints as lava from volcanoes. When molten materials comes out beneath a sea-floor, it creates a new sea-floor. On the land surface lava deposits may create mountains, Fujiyama mountain in Japan is a good example of that.

Such spreading of sea-floor caused the crust to break in several large pieces. These are known as plates. Each piece is a moving plate. The earth's crust seems to be made up of **seven** very large plates and several smaller ones. You may collect a

map of the tectonic plates with the help of your teacher.



Fujiyama volcano - Japan ↑↓



Erupting volcano - an aerial view

Do You Know?

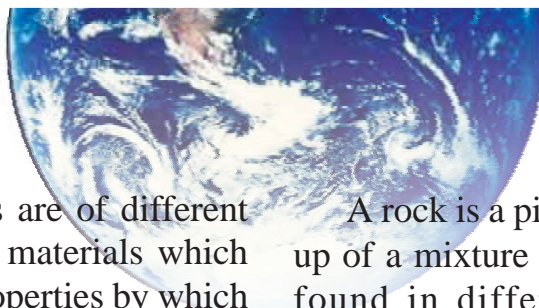
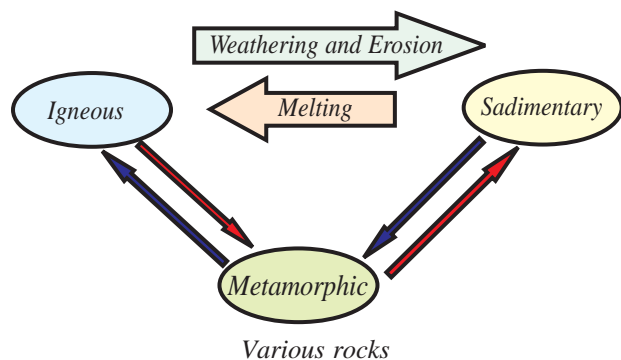
The Himalayas and the Andes mountains have been formed due to collision of plates. The collision pushed one plate over another, the materials between the plates are pushed upward to form mountains. According to geologists, this is how the Himalayas and the Andes were formed.

Earth Materials : Minerals and Rocks

We look at the earth everyday. When you take a close look of the ground you

can see rocks. The rocks are of different colours and shapes. The materials which form rocks have some properties by which we can identify them. These rock-forming materials are **minerals**. The minerals can be compared to salt and sugar of any kitchen. Just as salt and sugar can be differentiated by their tastes, minerals can be identified by their properties. Most of the minerals have a crystalline structure.

On the other hand, rocks found on the earth's crust are not the same all over. It is because a rock is a particular combination of minerals. The number of rock-forming minerals and their proportion vary from rock to rock. If you put a piece of rock under the microscope, you will be able to see the minerals. The common salt we use everyday is a mineral. The naturally occurring sodium chloride (common salt) is called halite. To identify minerals, tasting is not always a good method. The properties which are useful for identifying minerals include colour, lustre, texture and hardness. Quartz or diamonds are minerals too. In hardness the diamond is the most hard mineral. You can collect names of some other minerals. The minerals have economic value and thus are useful to us.



A rock is a piece of earth mostly made up of a mixture of minerals. They can be found in different shapes, sizes and colours. Some rocks are denser, some are harder than others. There are variety of rocks found on earth's crust. But geologists have classified the rocks into three large groups on the basis of their formation—**igneous, sedimentary and metamorphic**.

Igneous rocks are formed when molten material called magma cools and solidifies as lava. The word 'igneous' means 'coming out of fire'. The cooling and solidification can happen underground or on the surface. Igneous rocks are often called primary rocks because all other rocks are ultimately derived from igneous rocks. These cover large percentage of the earth's crust.



Hematite - means to identify rocks

Once exposed at the surface, igneous rocks are weathered or broken to provide materials for secondary rocks. Sedimentary rocks belong to this secondary group. Igneous rocks contain no fossils and are rarely layered. They have a crystalline structure.

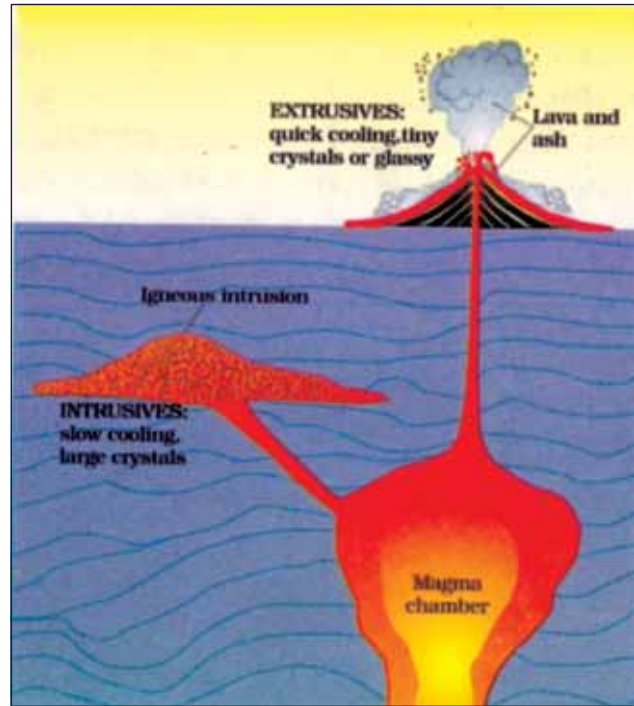


Rock

Igneous rocks which solidify beneath the surface are called intrusive igneous rocks. Granite and gabbro are examples of this type. When igneous rocks are formed on the surface they are called extrusive igneous rocks. Basalt and rhyolite are common examples.

Since their formation, igneous rocks are exposed to weathering and erosion by wind, running water, glaciers or sea waves. Running water is the chief agent of erosion. While flowing, rivers and streams carry with them small pieces of rocks. Minerals are also dissolved in the water. These rock pieces and dissolved minerals are called **river load** which the river deposits in its bed or along its valleys. These deposits are called sediments. These sediments are deposited in layers and get accumulated very slowly. Due to pressure these layers are squeezed and cemented together which ultimately become rocks. These stratified rocks are called sedimentary rocks. Sandstone, shale, gravel and conglomerate are common sedimentary rocks. Sometimes animals and plants or their

remains are also trapped in layers of sedimentary rocks. They are called **fossils**. Coal, oil and natural gas are of the organic origin and are thus called fossil-fuels. They are found beneath the earth where there are sedimentary rocks.



Igneous rocks

Modern society very much depends on these fossil-fuels as a major source of energy. The exploitation and use of all these types of fossil-fuels have an impact on our environment. Therefore, they are of prime concern worldwide.

Due to pressure and heat, igneous as well as sedimentary rocks undergo changes in their appearance, properties and character. This process of change is called **metamorphism**. The rocks formed in this process are called metamorphic rocks. A good example may be transformation of

granite (igneous) into gneiss or limestone (sedimentary) into marble. Pure marble is



Taj Mahal - the world famous white marble monument

white in colour and is in much demand for building grand structures. Taj Mahal is a good example in our country. Sandstone or granite is in wide use in the construction of houses.

You must have understood that metamorphosis changes the existing rocks, changing their character as well as properties. But it does not end there. Metamorphic rocks, like igneous or sedimentary rocks, are subject to change due to weathering and erosion and produce sedimentary rocks. This is a kind of cycle that goes on. This is called **rock cycle**.

Glossary

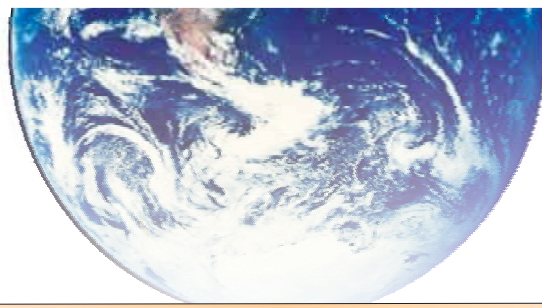
- **Crust** : The thin solid layer covering the outside of the earth.
- **Core** : The inner most part of the earth.
- **Fossil** : The trapped remains of animals and plants in layers of sedimentary rocks.
- **Igneous Rocks** : Rocks formed when molten material called magma cools.
- **Mantle** : The thick layer beneath the crust.
- **Metamorphic Rock** : Rocks formed because of metamorphism.
- **Plateau** : Expanse of level land high above sea level.
- **Rock Cycle** : The endless process by which rocks are formed, destroyed and formed again.
- **Sedimentary** : Rocks formed from solid materials deposited by wind, water or ice.
- **Seismic Waves** : Waves produced by rupture of rocks. Seismic waves are also known as earthquake waves.
- **Earthquake** : Natural shaking or vibrating of Earth in response to breaking of rocks.

EXERCISES



1. Answer the following questions in brief

- (i) What is relief?
- (ii) How do we know about the interior of the earth?
- (iii) Name the major components of the core of the earth,
- (iv) Name the major rocks of the earth.



2. Match the correct pairs from the two columns

(i) Rock	a. The endless process by which rocks are formed, destroyed and formed again,
(ii) Sediment	b. A piece of earth made up of two or more minerals,
(iii) Igneous rock	c. Substances that settle in the water,
(iv) Rock cycle	d. Rock formed when molten materials cool.



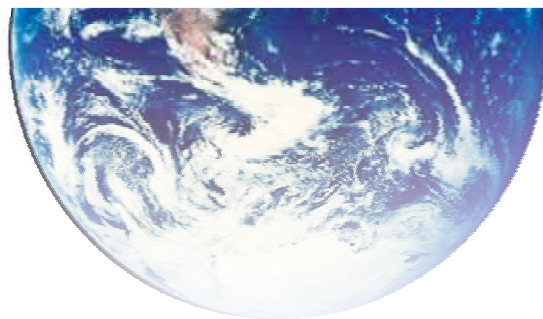
3. Fill in the blanks

- (i) About _____ of the earth's surface is covered by water.
- (ii) The most important source to know about the earth's interior is _____
- (iii) Uppermost layer of the earth is called _____
- (iv) Fossils are _____ sedimentary rock _____ and trapped in layers of sedimentary rock



4. Project work

- Make a model of the earth showing the major layers of the earth.
- Make piece-board cut-outs in the shape of the continents and oceans to try jig-saw-fit!



Air Around us

Have you ever thought how it would be like if there had been no air? If there was no air, the earth would have been like other planets of the solar family without life; the sky would have been black and cloudless. But, our planet is surrounded by a protective layer of gases which is called **atmosphere**. Without these gases our earth would have been lifeless like other planets.

Composition of the Atmosphere

The air, which you inhale, is not a single gas. It is a mixture of many gases. The proportion of gases contained in the air changes from time to time and from place to place. The three main components of air are — **nitrogen, oxygen and carbon dioxide**. Air also contains some amount of **dust and water vapour** in it.

In the earlier class you have learnt about the layers of the atmosphere. Now, let us know about the composition of air in detail. **Nitrogen** is the most plentiful gas in the air. It occupies 78 per cent of the total volume. When we inhale, we take some amount of nitrogen into our lungs and

exhale it. But plants need nitrogen for their survival. They can not take nitrogen from the air directly. Bacteria, that live in the soils and roots of some plants, take nitrogen from the air and change its form so that plants can use it.

Oxygen is the second most plentiful gas in the air. It makes up about 21 per cent of the air by volume. Humans and animals take oxygen from the air as they breathe. Green plants produce oxygen during photosynthesis. In this way oxygen content in the air remains constant. If we cut trees then this balance gets disturbed. Therefore, we should plant new trees before we cut some other.

Argon, helium and methane are other gases found in the air in small volume. But, **carbon dioxide**, containing only 0.03 per cent of the air is an important component of the air. Green plants use carbon dioxide to make their food and release oxygen. Humans or animals release carbon dioxide. The amount of carbon dioxide released by humans or animals seems to be equal to the amount used by the plants which makes

a perfect balance. However, this balance is upset by burning of fuels, such as coal and oil. They add billions of tons of carbon dioxide into the atmosphere each year. As a result, the increased volume of carbon dioxide is affecting the earth's weather and climate.

Water vapour is another component in the air which plays very important part in climatic changes.

Do you know?

When air is heated, it expands, becomes lighter and goes up. Cold air is denser and heavy. That is why it tends to sink down. When hot air rises, cold air from surrounding area rushes there to fill in the gap or vacuum. That is how air circulation takes place.

Pollution of Air

Every year million tons of substances are added to the atmosphere which are not natural components. These foreign substances in the atmosphere are called **air-pollutants**. There are two kinds of air pollutants — solid and gaseous. Dust and bacteria are solid pollutants. Volcanoes are often important source of dust pollution in the atmosphere. Human activities also add large amounts of solid pollutants to the air, particularly in cities. Smoke from the burning of fuels releases carbon particles (coal) and other solids into the air. Industries release dust particles in the air on a large scale through various operations.

Asbestos is a dangerous form of solid pollution.

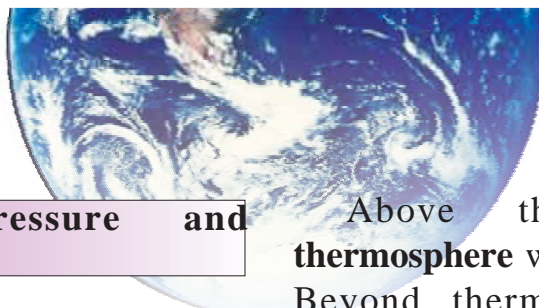
One of the most dangerous sources of gaseous pollution is exhaust of the automobiles. It adds carbon monoxide to the air in areas of heavy traffic and is very poisonous. Nowadays we also talk about **smog** which is essentially a combination of natural fog and smoke about which you perhaps read in newspapers. Smog is a mixture of substances that cause serious health problems. Low level ozone is an effect of air pollution which is caused by heavy traffic and industries. It is a major pollutant in hot summers, particularly in large cities and industrial areas where many people live and work.

Laws have been passed to control the sources of air pollutants. But, we ourselves have to be aware in this regard to combat pollution of air.

Atmospheric pollution is difficult to control because winds know no borders. Air polluted at one place pollutes air at another place.



Pollution of air



Atmospheric Pressure and Temperature

We live at the bottom of the earth's atmosphere and are under pressure from the weight of air above. This air pressure can be measured by an instrument called **barometer**. When you go to high mountains or travel by aeroplane you may have noticed that your ears pop up. This occurs due to drop in the air pressure. Air pressure decreases as one goes to high altitudes. As we go up both air pressure and temperature drop. The changes in temperature at various altitudes divide the atmosphere into layers.

Closest to the earth is the denser layer of **troposphere**. This is the layer in which we live. All kinds of weather phenomena can be observed in this sphere due to the presence of dust particles and water vapour. This sphere extends for about 11 km on an average, but is higher over the equator than near the poles.

Above the troposphere is the cold and clean layer of air called **stratosphere**. The zone which demarcates **troposphere** from stratosphere is called **tropopause**. Above stratosphere is **mesosphere**. **Ozone**, a special form of oxygen can be found in upper stratosphere and mesosphere. This ozone content is very important as it acts as a filter to ultraviolet rays reaching the earth. If the ultraviolet rays were to reach in full length, it would be dangerous for our life.

Above the mesosphere is **thermosphere** where the air is very thin. Beyond thermosphere, the earth's atmosphere gradually blends into very thin gases of the outer space. Upper part of mesosphere, to large part of thermosphere, is called **ionosphere** where molecules of gases are electrically-charged particles, known as ions. This ionosphere plays an important role in our communication; radio waves can be sent to different places through the ionosphere. You have seen the picture of layers of atmosphere in Class VI textbook.

The difference in air pressure causes air movement which is known as **wind**.

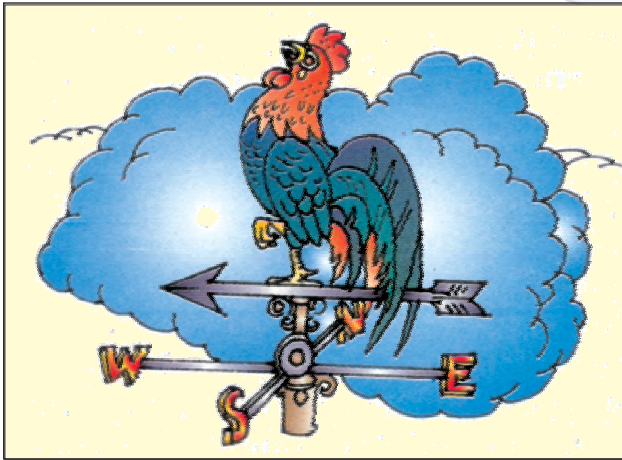
Greenhouse Effect

*The land and water are heated by solar energy. After being heated both land and water radiates the heat back to the atmosphere. This outgoing heat may be blocked by the carbon dioxide and water vapour present in the air. This trapped energy causes heating of the earth which is known as **greenhouse effect**.*

*Due to various reasons the earth is getting warmer which is known as **global warming**. It is one of the most serious environmental problem today.*

In areas where temperature is high, air gets heated and rises up. This causes fall in air pressure and the area becomes **low-pressure** area. Since there can not be vacuum in the atmosphere, air from surrounding cooler and high pressure areas

blow towards low pressure area to fill the vacuum. This is how the wind originates.



Windvane

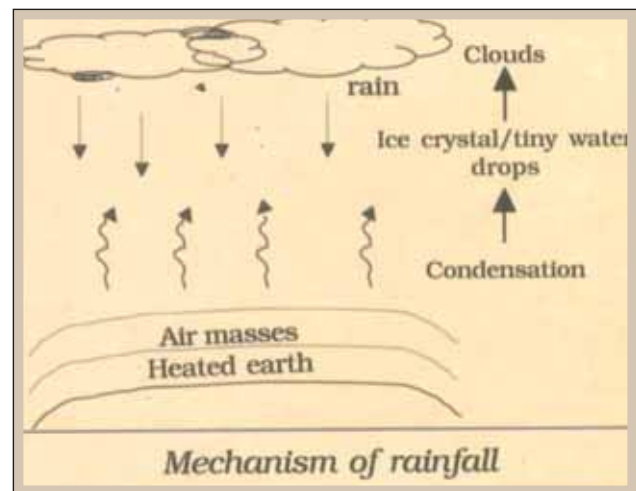
Monsoon is a very good example of this wind movement. Indian agriculture depends very much on the monsoons.



Hot air balloon rises as air in it is heated

There are various other wind movements about which you will learn later.

As the hot air rises, it reaches higher level of the atmosphere where temperature is much lower. It is here that the condensation takes place. Water present in the form of vapour becomes tiny droplets of **water and ice crystals** which float in the air. These droplets of water and ice crystals join together in course of time to form clouds. All of you must have watched clouds floating in the sky. When they (water droplets or crystals) become too heavy to float then they come down as rainfall or snowfall. Presence of water in the air is known as **humidity**.



On the basis of mechanism, rainfall can be classified as **convective, orographic and frontal**. Rainfall is very important for the survival of plants and animals. It brings fresh water to the earth's surface. If rainfall is less — water scarcity and drought occur. On the other hand if it is more, floods occur.



Raingauge

Rainfall can be measured with the help of an instrument called **raingauge**. Rain-water can be preserved and used during the period when there is water-shortage. Rain-water harvesting; as it is called; has been practiced from times immemorial.

Day-to-day atmospheric conditions like temperature, rainfall and humidity is called weather. The average weather conditions of a place is called climate of that place. Everyday newspapers or telecasts carry weather report and forecast. Weather and climate have great importance in our lives. We need to know about the weather as it is very useful. If you come to know that it will rain in the afternoon, you will carry a raincoat or umbrella to your school and will not get wet. Weather bulletins also inform us about the timings of the sunrise and sunset. You can study weather bulletin in your newspaper for 15 days and see how the weather conditions change.

Glossary

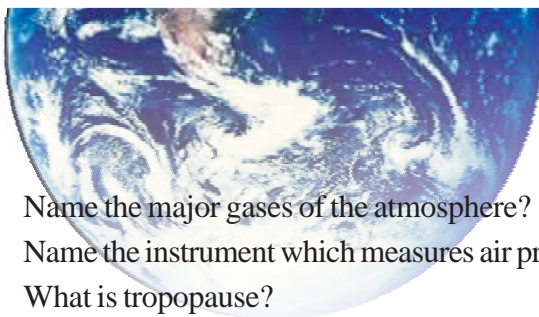
- **Barometer** : An instrument for measuring the pressure of atmosphere.
- **Pollution** : Any substance, biological or chemical, in which an identified excess is known to be detrimental to desirable living organisms. It is addition of unwanted substances or effects which alters the natural or man-made environment.
- **Greenhouse effect** : The trapping of sun's heat within the earth's atmosphere.
- **Smog** : Mixture of fog and smoke.
- **Thermosphere** : The region above the mesosphere in which the temperature increases regularly with height.
- **Troposphere** : The lowest layer of atmosphere.
- **Tropopause** : The boundary between the troposphere and the stratosphere.
- **Mesosphere** : The layer above the stratosphere which extends to about 80 KM.
- **Ionosphere** : The ionized layer of the atmosphere extending from about 50-300 KM and containing ions and free electrons.

EXERCISES



1. Answer the following questions in brief

- (i) What is atmosphere?
- (ii) What are the major spheres of the atmosphere?

- 
- (iii) Name the major gases of the atmosphere?
 (iv) Name the instrument which measures air pressure.
 (v) What is tropopause?



2. Fill in the blanks

- (i) Nitrogen occupies _____ of the total volume of air.
 (ii) Argon, _____ and _____ are other gases found in small volume.
 (iii) In areas of heavy traffic in cities _____ is added to the air.
 (iv) Ionosphere plays an important role in _____
 (v) Presence of water in the air is called _____
 (vi) Rainfall can be measured by _____



3. Match the correct pairs from the two columns

- | | |
|------------------|---|
| (i) Barometer | a. Movement of air caused by temperature differences, |
| (ii) Troposphere | b. The amount of water vapour in the air. |
| (iii) Humidity | c. An instrument to measure atmospheric pressure. |
| (iv) Convection | d. The densest layer of the atmosphere. |



4. Project work

- During the rainy season measure the daily amount of rainfall in your locality by using a rain gauge.
- Improvise a Rain gauge.
- Collect and store water during rainy season.
- What will you do to help reduce wastage of water?



Water Surrounding The Continents

More than seventy per cent of our earth is covered with water. Most of the earth's water can be found in oceans and seas. But rivers, lakes, glaciers and ice fields as well as air contain water too. Water moves from one place to another. The water that was once in Indian Ocean may now be in your tap! Or it may be in the cloud overhead. Water moves from oceans high up into the air. From there it may rain on the land or over the seas. The rain water again goes back to the sea through the rivers. This movement of water is called **water cycle**. Water cycle has neither a beginning nor an end.

Sun rays falling on ocean water cause **evaporation**. Water of the ocean is transformed into vapour due to the heat of the sun. When this water vapour reaches upper atmosphere condensation starts. Condensation converts water vapour into water droplets or tiny crystals of ice. These water droplets or ice crystals float in the air and form clouds. When water droplets or ice crystals grow in size and are unable to float they fall down to the earth in the form of precipitation.

When large amount of rainfall occurs, some of the water sinks into the ground, some can form streams or remain accumulated in depressions to form ponds or lakes. Rivers or streams flow over the surface of the earth and join the seas or oceans.

When the rainwater is soaked by the ground, it is called **ground water**. Ground water is a very important source of water for plants. Plants take the ground water through their roots, and return water vapour to the air through their leaves. The 'return of water' through this action of the plants is called **transpiration**. In the areas of low temperature, water moves very slowly because it is in the form of ice. River of moving ice is called **glaciers** found in high altitudes and high latitudes.

In fact the total amount of water on the earth remains constant. It is found in various forms, i.e., water, vapour or ice. Thus our earth is on a **water budget** where precipitation is the income while evaporation or transpiration is the expenditure. In some areas, ice melting

during the spring or heavy rain may add extra water to that area. This extra water puts the water budget out of balance. The opposite can happen too. In summer, evaporation may increase to make the weather dry and water supply drops. We cannot change the earth's water budget. But, we can control the way water is used. Huge amount of water used by cities and industries return to rivers or oceans as waste water. Often they contain harmful substances. We should remember that we can not increase the quantity of the water as it is limited. In order to have enough water to meet the needs of the growing population, we must be very careful about its use. To save this precious resource, **water conservation** should be a part of our life.

Make a list of uses of water in your daily life. Discuss how your share of water can be protected.

Waves, Tides and Ocean Currents

When we go to the sea, the rolling waves fascinate us. Waves are turbulence of the sea water. But, what causes waves? You toss a pebble in a pond and then watch what happens. You will see ripples in the water. Similarly, wind blowing over the seas causes big ripples which we call **waves**. How big the waves become depend on how strong the wind is. Ocean waves break when they enter shallow water zone. During a storm, waves can be very strong and high due to high speed of the wind. These big waves often cause disaster. **Tsunamis** are such big waves. Tsunami is a Japanese

If we are using tap water then to reduce wastage we must :

- *Turn the tap off while we brush teeth.*
- *Fix leaking taps.*
- *For a cool bath during summer, do not let the water run untill the flow is cold; instead let us fill a bucket of water and let it stand for a few hours.*
- *Wash vegetables, fruits etc., in a pan of water, rather than under running water.*

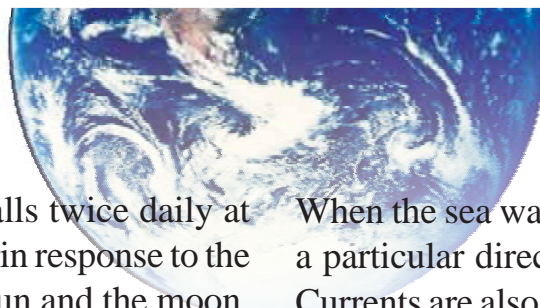
To help reduce wastage we must also:

- *Collect and store as much rain-water as possible during rainy season.*
- *Water the garden early in the morning or late in the evening. This reduces water loss due to evaporation.*



Waves near a coast

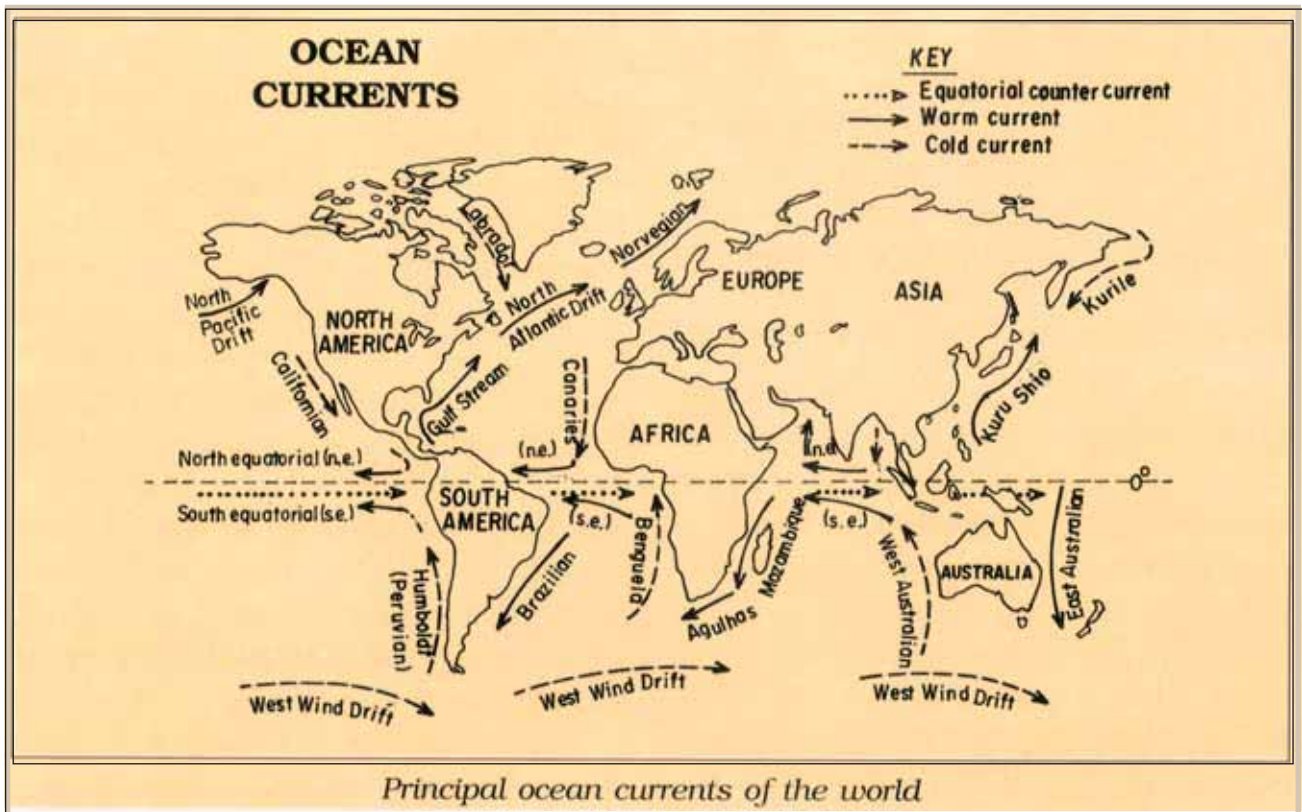
name. These waves are caused by earthquakes, underwater volcanic eruption or any such disturbances. Nowadays, energy of waves is being utilised to produce electricity.



Sea water rises and falls twice daily at an almost regular interval in response to the gravitational pull of the sun and the moon. This feature is known as **tides**. Rising of sea water is called a **high tide** whereas falling of sea water is called a **low tide**. In some of our economic pursuits, like, fishing and navigation, tides are important. Sometimes high tides enable big ships to enter the harbour or sail out of the harbour. Making use of the tides the river port of Hugli in Kolkata operates which is a good example of utilisation of tides.

You have learnt that most of the motions of sea water are the result of the wind. Winds blow across the surface of the sea or ocean and create **currents**. What are currents?

When the sea water moves continuously in a particular direction, a current is formed. Currents are also formed due to heating and cooling of the ocean water. Cold water is dense and heavy and sinks below the warm water which is less dense. Cold water of the polar region moves slowly towards the equator, along the bottom of the ocean. Warmer water, near the equator, moves along the surface of the ocean towards the poles. In this manner, general currents are caused. You can observe the map given below showing major ocean currents of the Pacific and the Atlantic Oceans. Prepare a list of warm and cold currents. If you note their directions carefully, you will find that the currents tend to move towards to the



right in the Northern Hemisphere and towards left in the Southern Hemisphere. Warm currents flow from lower to higher latitudes whereas cold currents flow from higher to lower latitudes.

Climate of the coastal regions as well as islands is influenced by the nature of ocean currents. If a warm current passes along the coast of a place or island, it raises the temperature and makes the place warmer than its normal climate. Similarly, cold current makes a place colder. Kuru Shio and Kurile currents along the coast of Japan are examples of ocean currents. Make a list of currents of the Atlantic Ocean.

Rainfall is often caused in the coastal areas where warm current passes through because the warm air absorbs moisture. On the contrary, areas influenced by cold currents experience dry and cold climate.

Meeting of warm and cold currents leads to abundance of fish food. In such areas fishing is a major economic activity. You can try to find out such locations from the map showing principal ocean currents of the world.

Ocean currents help in navigation too. Ships sailing in the direction of the currents move faster whereas sailing opposite to the current is a difficult task.

Glossary

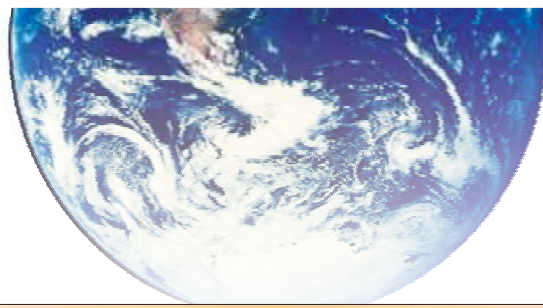
- **Evaporation** : Changing of water into vapour by heat.
- **Tide** : Regular rise and fall in the level of the sea caused in response to the gravitational pull of the sun and the moon.
- **Transpiration** : Plants take ground water through roots and return water vapour to the air through their leaves. This action of plants is called transpiration.

EXERCISES



1. Answer the following questions in brief

- What is ground water?
- Define a glacier.
- What is Tsunami?
- What is the difference between waves and currents?
- Explain the meaning of water conservation.



2. Match the correct pairs from the two columns

(i) Slope	a. glacier
(ii) High altitude	b. waves
(iii) Tsunami	c. soil erosion
(iv) Ocean currents	d. High
(v) River port	e. fishing



3. Project work

- On a world map show major ocean currents, both hot and cold. Locate the major fishing grounds and try to establish relation between them and the ocean currents.



Life on the Earth

Although the earth is very large with various landform features on its surface, life on this planet exists within a very narrow zone around it. Biosphere is the part of the earth that is occupied by living organisms. This sphere includes parts of the atmosphere, lithosphere and hydrosphere about which we have read in earlier chapters. This is the part of the earth's surface where plants and animals make their home. Therefore, most of the living organisms on earth are found on or near the surface of land and water or in lower part of the atmosphere. Biosphere is a very thin layer around our earth.

The earth is perhaps the only planet in the solar system where suitable conditions exist that sustain life. The life first emerged

in the oceans. Over the time life has evolved and diversified into more and more different species. This evolution has given rise to the abundant biodiversity that we witness today.

People are the most important part of the biosphere. Evolution of human life over the time has had tremendous impact on other forms of life as well. We, the humans, are the only species in the biosphere who have consciously altered the environment to meet our needs. As the human population has continued to grow across the globe, new technologies have been developed to use the natural resources more intensively. This has caused many environmental problems all over the world. In the past, the human impacts on the environment were negligible. The damage to the environment naturally was less grave. But, now the damage is becoming an issue of serious concern.

Human activities like agriculture, lumbering and growth of towns and cities have very negative impact on biodiversity. Loss of biodiversity as a result of human

Do you know?

The biosphere extends from less than 11 km below sea level to the tropo-pause which is less than 17 km above sea level. Thus, biosphere has a maximum thickness of about 28 km! But, this thin living skin of the earth is the most important part of the planet.

activity is a major concern now. You can collect information about the Earth Summit II held in Johannesburg, 2002 to know how people have become concerned about it.

Besides humans, there are animals, birds, insects and plants in the biosphere. The easiest classification of living organisms is kingdoms — plant and animal kingdoms. It is impossible to say how many species are there because many of them perhaps are not found or named. It is easier to count big animals, birds, flowering plants because they are relatively large. But, there are many more in the soil, in the sea, in forests or in swamps.

Do you know?

An Ecosystem is a system in the nature in which organisms interact with each other and with the environment.

Within this variety of species there is a beautiful order and system. Living and non-living elements co-exist in harmony with the nature. For survival one depends on others. Say for example, green plants prepare their food by photosynthesis utilising energy derived from the sun's rays. But animals can not produce the food in the same manner. As a result, animals depend on plants or other animals for survival. Humans eat both plant food and animal food. There is a feeding relationship between various organisms.

In the plant kingdom, we can divide plants into forests, grasslands, thorny

shrubs and scrubs. These varieties occur due to varieties in climate. Forests of tall trees are generally found where water supply is sufficient. In the areas of moderate rainfall, grasslands are found. In regions with scanty rainfall, thorny bushes grow and in polar areas, tundra vegetation is found.



Evergreen forest (Amazon)

Forest can broadly be classified into evergreen and deciduous forests. Evergreen forests are called so as there is no particular season when trees shed all their leaves. Therefore, this type of forests



Deciduous forest

look green all the year round. But, in case of deciduous forests, there is a particular season when most of the trees shed their leaves. By and large they do so in dry season to conserve moisture.



Grassland

Grasses are long rooted plants, which can survive in dry seasons. They can be found under varying climatic conditions. The grasslands have various names in different countries and continents : **Savanna** in Africa, **Campos** in Brazil, **Steppes** in Eurasia, **Prairie** in North America, **Veld** in South Africa, **Pampas** in South America and **Downs** in Australia.

Thorny bushes and shrubs occur in desert or semi-desert regions where rainfall is very scanty. In the cold, in polar areas of Europe, Asia and North America, tundra type of vegetation is found. They have a short growing season during the brief summer time. In winter they disappear when the land is covered by snow. There is a close relationship between animals on one hand and climate

and natural vegetation on the other. More varieties of animals, birds and insects are found in warm and moist tropical climate. Elephants, tigers, lions, monkeys, deer, boar, rhinoceros are some of the large animals. Since the forests here are dense, large variety of birds and insects are found here.

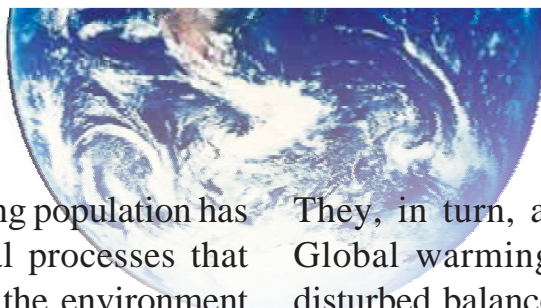


Elephant

Animals, birds and insects in mid latitudes are lesser in variety. In grasslands zebra, deer, antelopes, tiger, lion are found along with fox or rabbits.

In cold polar regions, animals are quite different. They grow thick fur and have thick skin to protect themselves from the cold. Some of them migrate to warmer places to avoid cold and in search of food.

There is a very close relationship between the animals, the plants and the prevailing climate. This relationship has given rise to a system in which they can survive. This interaction between the natural environment and its inhabitants is known as **ecosystem**.



Over the years, growing population has intervened in the natural processes that existed and have altered the environment to meet their needs. Clearing of forests for agriculture, industries, settlements or for transport has disturbed the balance in the nature. Due to the loss of balance many species both in plant and animal kingdoms have faced extinction. The disturbed balance has larger impact on the atmosphere as well as on hydrosphere.

They, in turn, are affecting us as well. Global warming is an effect of such a disturbed balance in nature.

Do you know?

Raised levels of carbon dioxide, methane and certain other greenhouse gases are responsible for global warming.

The consequences of global warming are extremely serious for humans and other species.

Glossary

- **Biosphere** : The zone adjacent to the surface of Earth that includes all living organisms.
- **Ecosystem** : System in nature in which organisms interact with nature and the environment. Ecosystems consist of interacting abiotic components (like : solar energy, water, air, soil) and biotic components (like : plants, animals). Ecosystems can exist at any level. It can be as small as a pond and as large as a river.
- **Global warming** : The possible result of increasing greenhouse gases such as carbon dioxide, methane and hydrocarbons due to burning fossil fuels and other human activity. Result of increased greenhouse effect.
- **Greenhouse effect** : The trapping of the sun's heat within the earth's atmosphere.

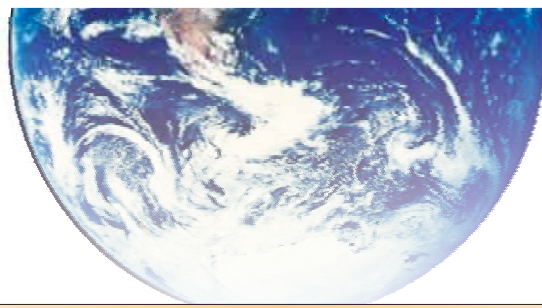


EXERCISES



1. Answer the following questions in brief

- Define biosphere.
- How did humans affect other forms of life?
- What do you understand by biodiversity?
- Mention the human activities responsible for degradation of biodiversity,
- Define food chain.



2. Tick (✓) the right statements

- (i) There are two broad types of forests : evergreen and scrubs/evergreen and deciduous,
- (ii) Grasses can survive in dry seasons as they have long roots/short roots.
- (iii) Grasslands are called savanna/prairies in Africa,
- (iv) Ecosystem is interaction between economy and land/natural environment and its inhabitants,
- (v) Earth Summit 11 was held in Rio de Janeiro/Johannesburg.



3. Project work

- Collect samples of tree leaves that grow in your locality.
- Make a list of birds that you have observed in summer and winter.



Human Environment

Settlement, Transport and Communication

Human or cultural environment is an important part of the overall environment. Some millions of years ago, during the Ice Age, human life probably first appeared on the earth. No other animal is so widespread on the earth. This is due to the extraordinary adaptability of humans to live and survive even in very difficult environment.

Before practising agriculture human groups used to survive by hunting and food gathering. They used to move from one place to another in search of food. This type of life is called **nomadic** life. But after the invention of farming methods, some kind of stability came in the life style of the people. Gradually the concept of settlement came into being. Agriculture has had a major impact on the expansion of population and its growth. Industrial revolution further accelerated this process. With the knowledge of making fire, wearing clothings, building shelters and developing tools, humans were able to transform even the nature which no other

organism could do. In recent years development of technology has empowered humans to breakthrough the barriers of harsh temperature, rough terrain and difficult space which otherwise would have restricted movements of human population. Human population demonstrated cultural development in various phases of history by systematically manufacturing various tools. These tools or implements helped them to transform the natural environment.

The oldest records of human activity and technology, the stone tools, have been found in various parts of Africa belonging to the Stone Age. With the passage of time tools became more sophisticated and effective.

Invention of fire was a big stride towards civilisation. After the invention of fire, building of shelter and use of clothing became part of human life. Later on, farming of land, domestication of animals, passed through **River valley** civilisations.



Stone tools to Jet

Both cultivation of plants and domestication of animals have serious impact on the natural environment. Many a time ploughing destroys the biodiversity of a region. Mining, industrialisation and growth of towns and cities have their shares in transforming a region's natural environment to a great extent. Pollution and global change in environment, for

which we are very much concerned now, are the outcomes of our activities only.

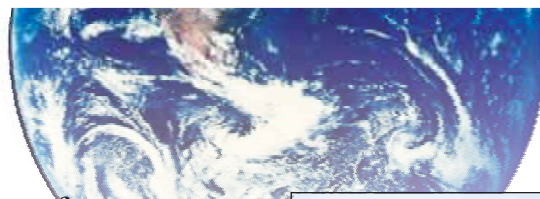
Settlements

What are the reasons for the development of permanent villages, towns or cities? Until the humans had discovered the ways of producing food

from the land, concept of permanent houses or settlement did not occur. Because, as hunters or gatherers, human groups used to move from one place to another in search of food.

Introduction of farming, therefore, marked the beginning of permanent settlement. Having learnt to grow food from the land, humans were able to establish permanent sites for their settlements. But, in choosing the permanent sites, certain factors played crucial roles. Why certain sites are preferred to others? The most important and basic factor behind such preferences was the **availability of water**. In earlier times, to be near to a water source was considered to be of vital importance. Because of the importance of water, all the ancient civilisations grew along river valleys. The Indus Valley Civilisation is one such example. Even today water sources are of great importance in the growth of villages, towns or cities. In dry regions the pull force of water is even more. The settlements growing around water are called **wet point** settlements. Sometimes, settlements also grow where transport facilities are better. Settlements can be found to grow along railway routes or along major roadways.

Topography or nature of land also plays a vital role behind the growth of settlements. Extensive riverine plains have always been sites for towns or cities. In Northern Plains of India numerous towns



Various stages of farming

and cities have developed due to favourable topography. You can make a list of ten towns situated in the North Indian Plains. In such plains, development of transport network is also easy which facilitates the movement of people from one place to another. But if the topography is very rugged, settlements are few because nature of land restricts easy movement. Sometimes, sites close to the mountain passes become preferred sites for towns. Peshawar in Pakistan became an important town site because of its proximity to Khyber Pass.

Physical or natural beauties of a place also play a role in the growth of tourism-based towns. The natural beauty attracts people and these towns grow as **holiday resorts**. In recent years, tourism has become an industry which provides employment to a number of people. In the Himalayas or in the coastal regions of India many such resorts have come up where people from all over the world gather to enjoy the scenic beauty. Kashmir and Goa are examples which all of you know.

Transport and Communication

Network of transport and communication forms an important part of human environment. Transport network facilitates movement of people and goods from one place to another, which influences economic and social interactions of the people. There are many settlements, which really have importance

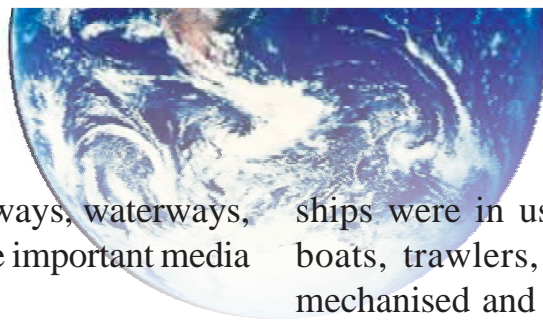
and activities beyond their immediate neighbourhood area. For such towns to grow, means of transport and



E-mail – satellite

communication is important. If good transport can be ensured, towns with surplus production can reach far-off markets and can grow in the process. Better facilities of transport allows them to extend their exchanges over a wider area. Such type of towns soon become the centres of culture and commercial activities. Apart from cities situated along major transport routes, port-towns are also examples of such settlements.

Modernisation of transport had started with the domestication of animals and invention of the wheel. But it has gone a long way in the development of transport and communication. Modes of transport has been changing with the development



of technology. Now, railways, waterways, roadways, and airways are important media of transport.

Road transport plays an important role as it gives us 'door-to-door' service. Construction of roads is cheaper than that of railways. In mountainous regions road transport plays a very crucial role as railways are difficult to be constructed there because of rugged terrain.

Railways, however, is necessary for both passengers and goods transport in bulk. Started with coal engines, the trains now ply with electric or diesel engines. Apart from surface rail network, underground services have become very important in big cities all over the world. Can you name two cities in India where underground or Metro rail services have been started?

Water transport is the cheapest mode of transport. In earlier times, boats and

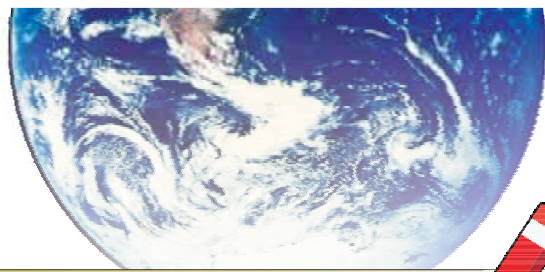
ships were in use. Today we have huge boats, trawlers, ships which are highly mechanised and fast.

Air transport is a very fast means of transport but it is very costly. Pipelines, electric grids are other means of transport in use for distribution of oil, gas or electricity.

Apart from transport, media and other communication networks have become crucial links for exchanging knowledge and ideas. Communication network can be personal or at mass level. Communication in recent years through internet provides us global access even sitting in a corner. It is, so far, the cheapest mode of communication. Mass communication network is equally important for dissemination of educative and other kinds of awareness programmes. Radio and television along with newspapers are effective means of mass communication.

Glossary

- **Nomad** : A member of a tribe that wanders from place to place in search of food.
- **Settlement** : Process of settling people.
- **Topography** : Description of a place, nature of land.
- **Holiday resorts** : The places where people spend holidays.
- **Wet point** : Settlement around water.



EXERCISES



1. Answer the following questions in brief

- (i) How did agriculture influence human settlements?
- (ii) Where did we find oldest records of human activities?
- (iii) What is a 'wet point' settlement?
- (iv) How does topography affect growth of settlements?
- (v) What are the advantages of road transport?



2. Fill in the blanks

- (i) Peshawar is situated near the _____ Pass.
- (ii) Invention of _____ was a big stride towards development.
- (iii) In Northern plains of India growth of towns was due to favourable _____.
- (iv) Scenic beauty of a place is responsible for the growth of_____.
- (v) _____helps us to communicate any place in seconds.



3. On an outline map of India show the following

- (i) Major railway routes
- (ii) Major rivers
- (iii) Ten major cities



4. On an outline map of your state (J&K) show the following :

- (i) Major rivers
- (ii) Summer and winter capital
- (iii) Major Lakes



Life in the Desert Regions

In this chapter we shall learn about some typical regions and about the people living there.

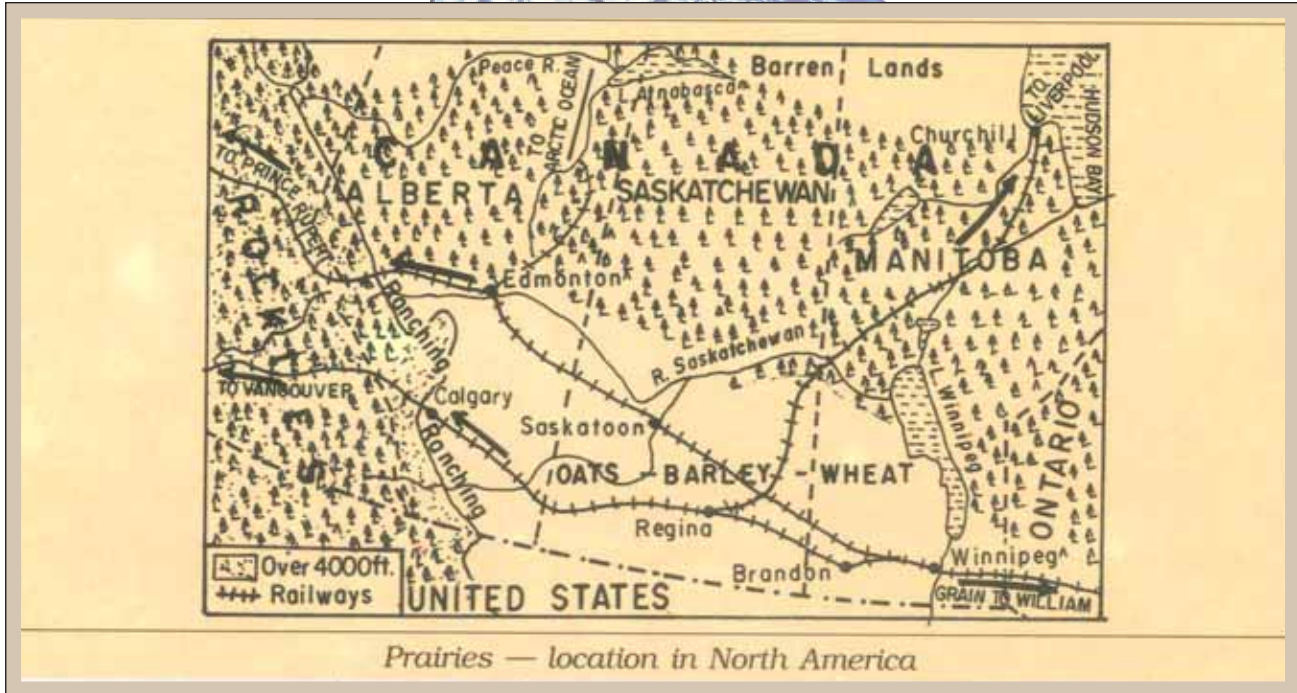
Life in Prairies

In interior parts of the continents difference between day and night temperatures are often very high. In the absence of high mountains and being away from maritime (oceanic) influences, rainfall is scanty. In such climatic conditions grass is the most important natural vegetation found here. The long roots of the grass help it to survive in harsh climates. Do you know how? These long roots penetrate deep down into the soil and take the soil-moisture which help the grass to survive. These grasslands are called by various names in different countries or continents.

Prairies are such grassland regions in North America. It is a vast stretch of grassy plains found in the interior part of the continent away from coastal areas. Its major part lies in the USA and extends in Canada. Here, we shall discuss mainly

about Canadian Prairies. On the south prairies mark the border of the United States and extend towards north till it merges with the forest belt of Canada. For the most part, prairies are treeless but, near the low lying plains, flanking river valleys, woodlands can be found. You can try to find the reasons behind this. Tall grass, upto two metres high, dominates, the landscape.

Since the first people came to settle in the prairies the landscape has largely been modified by human activities. People from Eastern Canada and the British Isles came here to settle. They started clearing grasslands for agriculture. With the introduction of **Canadian Pacific Railways** in 1885 the prairies really opened up. The construction of other railways made this region more attractive to people. People started to come in hundreds to settle here. Settlement here is very much linked with the development of railways. Here, even today, most people live within 25 km on either side of the main railway line. In India, old cities were connected by railway lines in later



period. But, in the prairies the process was reversed. First the railway lines were laid and later towns came up.

In the western part, the climate is more dry. Animal-rearing is the main occupation here. There are cattle ranches in the foothill regions of the Rockies. Cattle is the most important animal domesticated in such



Cowboy

ranches apart from bison, deer, antelopes and poultry. In winter, dry and warm wind blows from the west and melts the snow. In summer and autumn, the warm wind turns the grass into hay, which is the main feed for cattle. You must have heard about American **cowboys** of the prairies in old stories.

Wheat is the main crop here. The farms are very big but not isolated. The farms are equipped with modern machines and communication networks like radio, telephone, television and internet.

Though wheat is the main crop, barley and oats are also grown here. Wheat is sown in spring. The showers of late spring and bright sunshine of the summer help wheat to grow quickly. In August, the crop is ready for harvesting. Machines are used to reap and thrash its grains. These

machines are called **combines**. Railways are used to send grains to different markets.

People staying in the farms are strong built and very hardworking. Except for the winter, they work hard in the farms. Cities and towns have grown along the rivers. Some of the towns have also become railway junctions. Now, you understand how transport and communication play a crucial role in the growth of settlements. Winnipeg is one such important city. It is called the 'Gateway to Canadian Prairies'. Find some important cities located in the prairies of the USA.

Between 1885 and 1915, too many people moved into this area to settle. New farms were established and large areas were given to agriculture and cattle grazing. These activities were done at the consumption of the grassland. Grasslands were cleared for transport network and towns. As a result, serious soil erosion began and severe drought affected this region. Wind erosion being very active, top layer of the soils, containing organic matter (humus), clay and silt was blown out from this region. Naturally, crop production fell down. To cope up with the situation, federal government and state governments jointly have taken measures to restore the soil. Tall grass has been planted and grazing has been restricted to save the Prairies.

Do you know?

These grasslands of Prairies were the home of American Indians, more popularly known as 'Blackfoot Indians'. The Prairies were home of other tribes also like the Apache, the Crow, the Cree and the Pawnee.

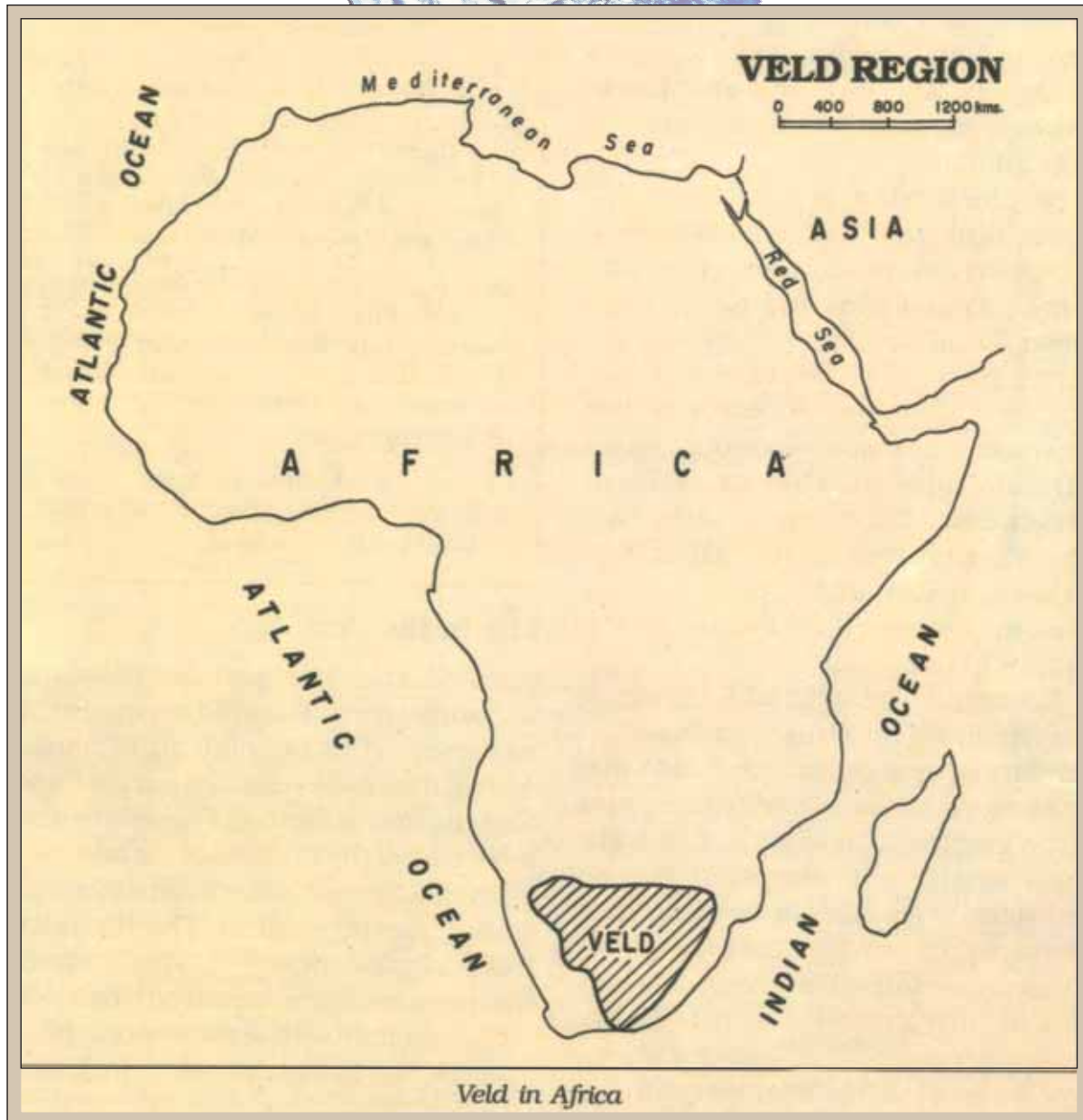
Before the coming of the Europeans, the Blackfoot Indians were purely hunter and food gatherer tribe. Grassland, Buffalo and Blackfoot Indians used to be in close relationship.

In the vegetation map of North America, carefully observe the extent of the Prairie grassland.

Life in the Veld

The Veld is a great expanse of grassland in South Africa. The Veld occupies the eastern part of the plateau of South Africa. It includes eastern part of Cape Colony, entire Orange Free State and most part of the Transvaal. As one goes from east to west, away from the coast, climate becomes drier. The distance from the sea means smaller rainfall because moist winds from the sea loses their moisture as they reach far interior. The climate is too dry for trees. Grass is the natural vegetation here. Further west, the grassland merges with the desert.

The area of high plateau is known as the High Veld - height ranging from 1120 m to 1670 m. The Middle Veld is a plateau ranging from 610 m to 1120 m below



which lies the Low Veld. The High Veld is a central ridge which forms the watershed of the regions. The Zambezi, Limpopo and Sabi rivers flow down the slopes and have created falls and rapids.

The main food crop grown here is maize. Large quantities of maize are

exported. This area is known as Maize Triangle. In a map of South Africa you can try to locate Veld where natural vegetation has been shown. In some places, especially in moist areas, maize is naturally grown. Cattle rearing is also an important occupation in these parts. But, the most important industry in the Veld region is

sheep rearing. Wool of the sheep used to be exported to England in earlier times. Now, the region has developed its own woollen industry. Parts of the Veld is also rich in mineral. Near Johannesburg, gold and coal are mined. The famous diamond mines of Kimberley are on the western borders of the Veld. Towards north, the Veld slopes down gently to meet the Limpopo river. The slopes are warmer than the high part. In the fringe areas maize, fruits, cotton and tobacco are important crops.

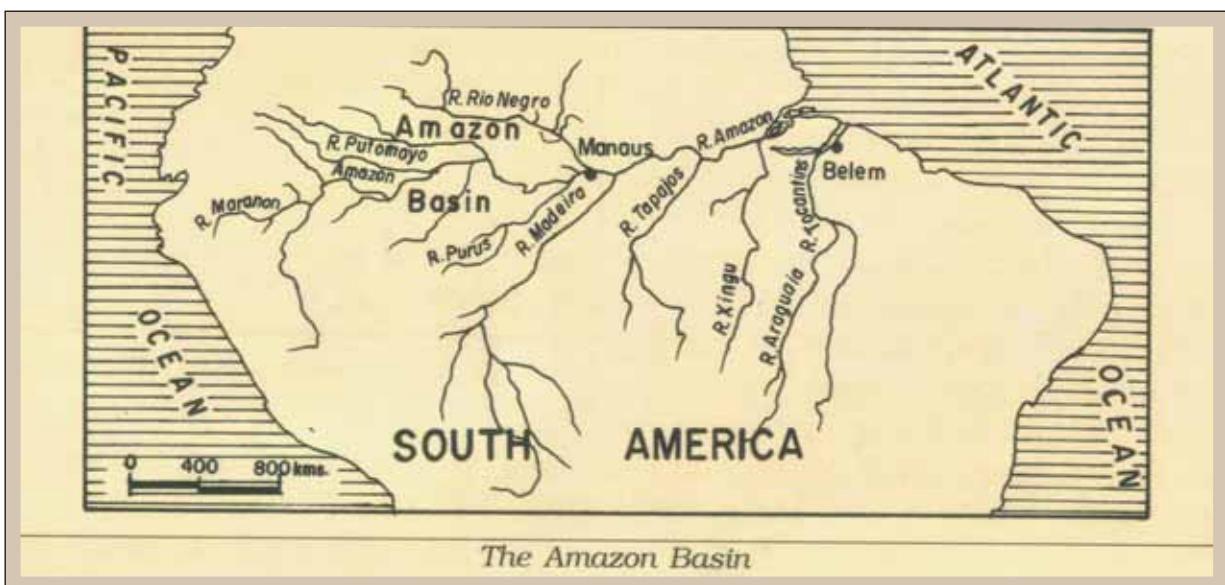
The Veld is rich in resources. Therefore, agriculture as well as mineral-based industries have given rise to growth of towns. For example, Pretoria is an important town which specialises in iron, steel, railways and medicines industries. This development has reduced the grassland to a considerable extent and has affected its natural environment.

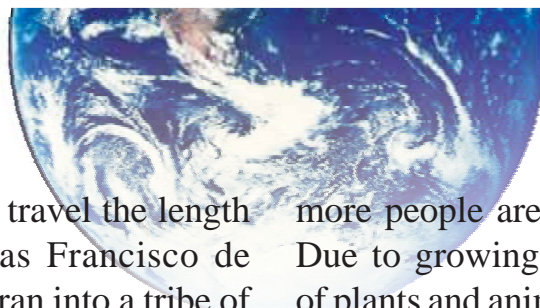
Life in the Amazon Valley

The Amazon is the second largest river in the world, only next to the Nile. But if we consider the size and the volume of water, the Amazon is the largest river in the world. It carries snow and rainfall from the Andes Mountains to the Atlantic Ocean. Amazon basin holds 20 per cent of the earth's freshwater. The flow of this river is very powerful.



Canoe





The first European to travel the length of the Amazon river was Francisco de Orellana. On his way, he ran into a tribe of fierce women warriors. Orellana recalled a Greek myth about warrior women and named the river 'Amazonas'.

Indigenous people in this region used to live mostly along the river because it provided drinking water and means of transport. Canoes, a narrow boat made out of tree trunk, were used for transportation. Today the indigenous people are fewer in number.

The Amazon basin is a rainforest. It is home to such a diversity of plants and animals that is rare on this earth. It has 2 million species of insects, thousands species of fish and six hundred mammals. The region is rich in minerals as well. Bauxite, oil, nickel, copper and tin are mined here. Timber from the rich forests have initiated wood-based industries.

You shall be perhaps surprised to know that the indigenous people lived here for thousands of years. They hunted, fished and grew crops in small farms. They practised these activities for their survival but not for trading. They practised shifting agriculture. Manioc is the important food crop.

Life in the Amazon has changed dramatically in recent years. Since the discovery of the New World by Columbus, many Europeans have migrated to South America. In the past few decades more and

more people are moving into this region. Due to growing demands lots of species of plants and animals are lost. Now farmers want to own big farms as they want to grow crops to sell. Coffee, maize and cacao are important crops now. But, loss of most of this rich forest is a point of serious concern. The depletion of trees in the Amazon basin may have far reaching effect. If the carbon dioxide level rises, it will cause global warming and will lead to disasters. This rainforest of the Amazon River Basin is a valuable resource to the entire planet. But, we humans are destroying it through our activities. People who want to settle here are clearing the forests to build cities or for grazing. Extraction of minerals also consume the forests. In about a hundred years we have destroyed a considerable portion of this unique forest.

Do you know?

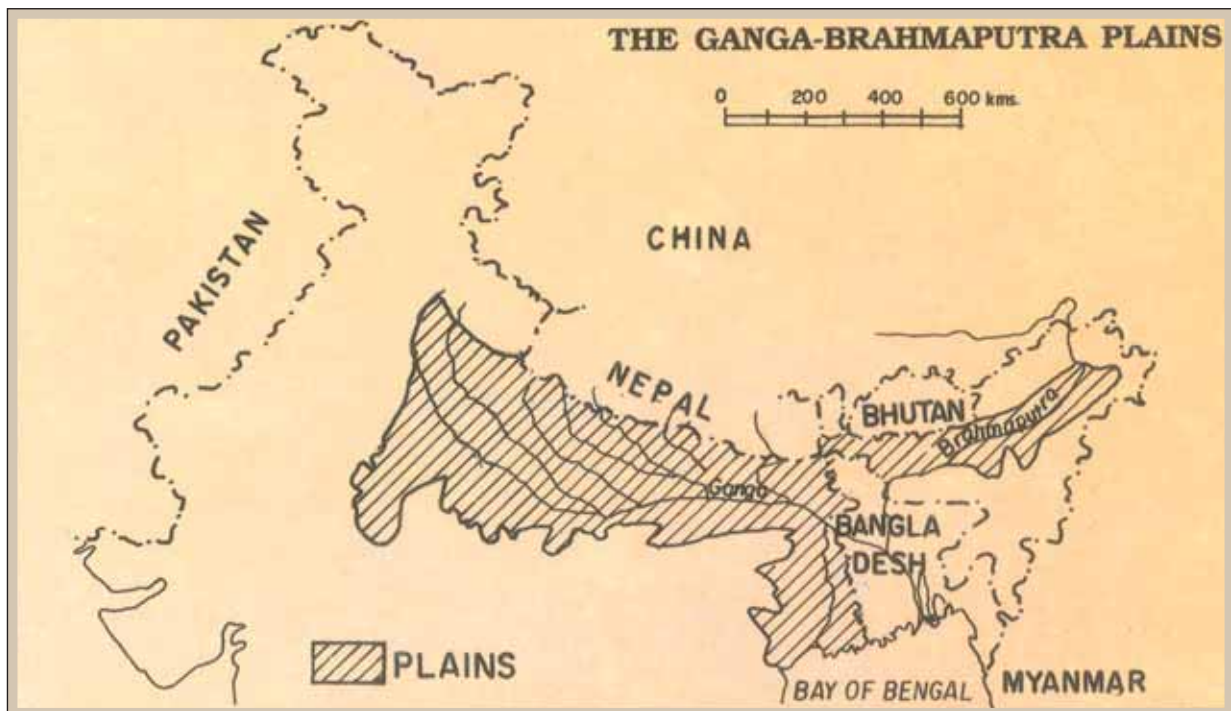
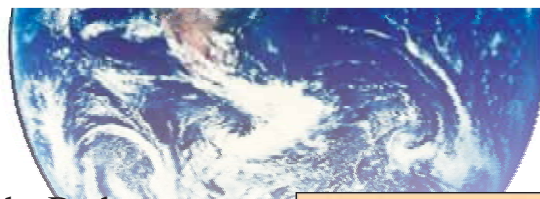
In shifting agriculture (slash and burn method), farmers clear the land by slashing the trees and bushes and then burn them. The ash is mixed with the soil, which makes it fertile. They grow crops in these fields for a few years and then shift to another plot. They plant trees in the abandoned plot.

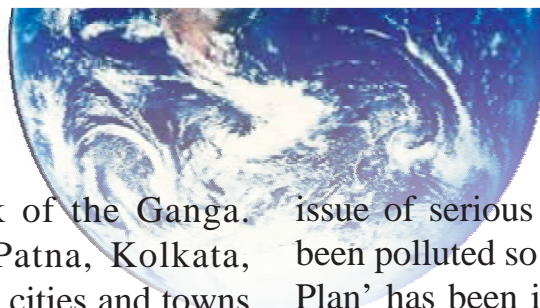
Life in the Ganga-Brahmaputra Plain

A vast riverine plain extending for over 2500 km lies to the south of the Himalayas. This plain has been formed by three rivers—

the Indus, the Ganga and the Brahmaputra. This fertile plain has been of great importance as a region where people preferred to settle. Numerous towns and cities have grown in this plain for its fertile soil, availability of water and ease of transportation. This plain had been the seat of the Indus valley civilisation, as you have read in your earlier class.

The formation of this extensive plain can be attributed to two river systems — the Indus and the Ganga-Brahmaputra. The Gangetic plain includes the states of Uttar Pradesh, Bihar and West Bengal mainly while major plain of the Brahmaputra is confined to Assam. In this plain there is not much variety of relief features. But the rivers through their erosion and deposition have created natural embankments,





located along the bank of the Ganga. Hardwar, Allahabad, Patna, Kolkata, Tezpur, Dispur are a few cities and towns among hundred others. You can make a list of twenty big towns located on this plain and show it on a map of India.

The growth of towns, extension of farms, transport networks have changed this landscape in the past five decades. The river water is being polluted by agriculture sector as well as by industries. The sewerage system of towns is also polluting the rivers which has become an

issue of serious concern. The Ganga has been polluted so much that ‘Ganga Action Plan’ has been initiated to save the river. With the help from your teacher you can collect some information about the ‘Ganga Action Plan’.

Life in the Deserts

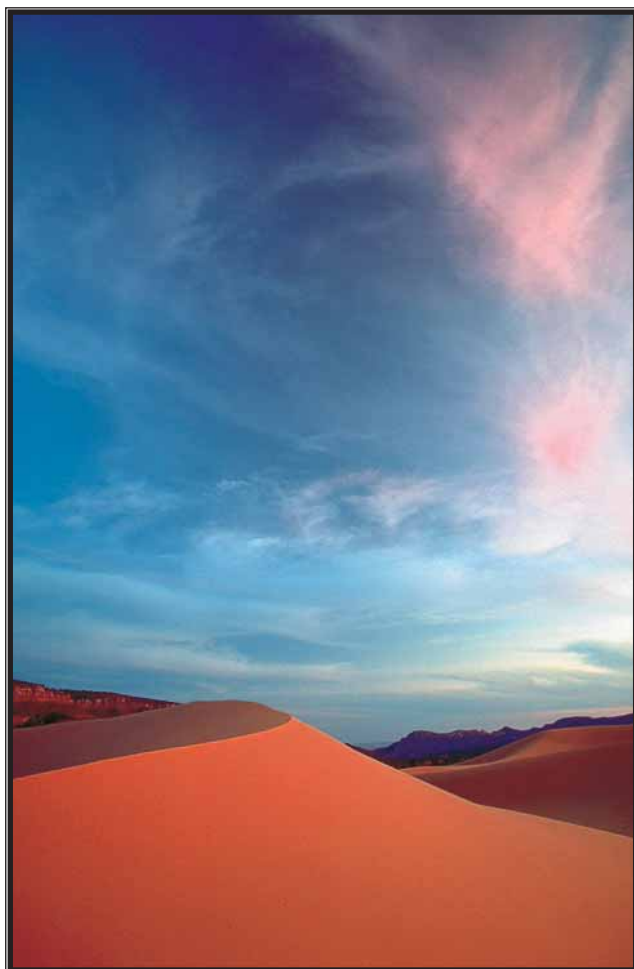
There are some areas on this planet where rainfall is not sufficient to support vegetation. The difference of temperature between day and night is high. Days are hot and sunny whereas nights are very cold.



Desert vegetation

In some places for several years there may not be any rainfall. When rain occurs it is accompanied by strong winds or storms. Such hot and dry landscapes, devoid of vegetation, are called deserts. Deserts occupy about one-seventh of the earth's surface.

Deserts can be of two types - hot deserts as mentioned above and cold deserts. In high latitudes or high altitudes, vast stretches of treeless landscape covered by permanent snow is called cold desert. Here you will know about **Sahara**, the hot desert and **Ladakh**, the cold desert.



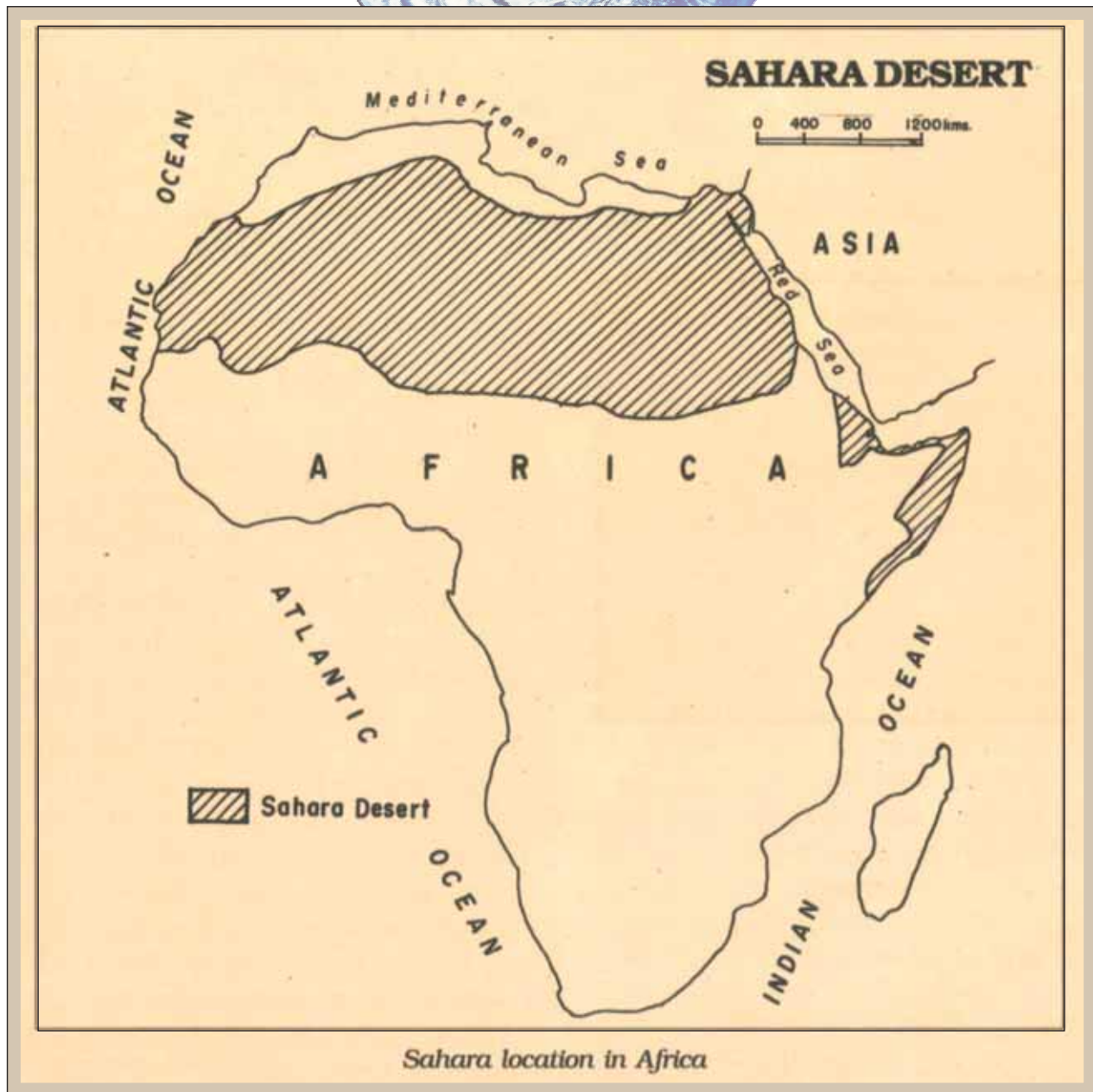
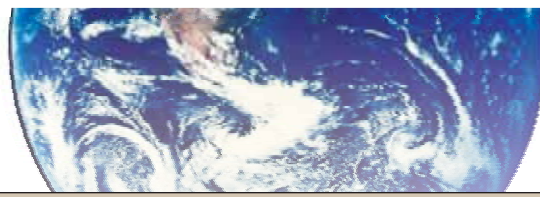
Sand dunes

Sahara — The Biggest Hot Desert

Sahara is the largest desert in the world. From the Red Sea to the Atlantic Ocean it stretches across the northern part of Africa. If you carefully observe the map of Africa, the continent has more land in the northern part. Towards south the continent is narrowing down. Thus, you can realise that a substantial portion of this continent is covered by sand. Sand dunes is the most noticeable feature in this landscape. As strong wind blows, when it is obstructed on its way, the sands it was carrying, get deposited. These deposits are called **sand dunes**. A major part of the Sahara desert consists of shifting dunes.

Sahara records very high temperature for most part of the year. But the hottest months are June, July and August. In places where water is near the surface some cacti and shrubs grow apart from date palms. In Sahara and Arabian deserts date palms are prevalent. The fruits, i.e., the dates are brown when ripe. Both people and animals eat dates. The leaves are used as fodder or fuel. Sometimes the leaves are also used to cover roofs. This tree is very useful. The sap of this tree is used to make wine. In the shelter of date palms, fruits like figs, olives, apricots are grown.

Therefore, the common belief that the desert is a lifeless habitat, is not entirely true. But, water is evidently very important factor behind life. Here we find a beautiful relation between landform in deserts and

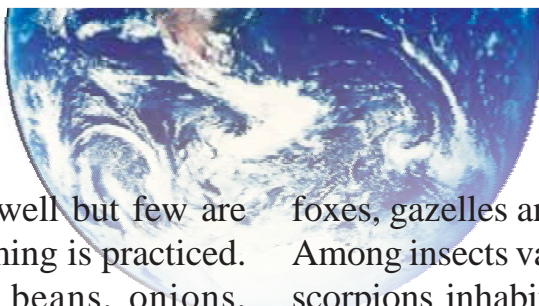


availability of water. In high areas or on steep slopes, water does not accumulate. Thus, plants and animals are rarely found there. But, in low lying areas plants and animals are to be seen.

Plants and animals show various features of adaptation to the natural environment of a hot desert. For example,

the plants develop long and extensive roots to extract water from beneath the surface soil. Usually these plants have smaller leaves so that water is not lost through transpiration.

Similarly, human settlements are found in the **Oases** as water is available there. Some oases are very small with some palm



trees clustered around a well but few are quite big where even farming is practiced. Wheat, maize, millets, beans, onions, tobacco and sweet potatoes are grown in such farms. People build thick-walled houses with small windows to prevent heat. In Tunisia, for example, people have built caves in soft rocks for themselves and their animals. White loose clothes are worn to survive in the heat. For long distance travels people carry water in containers made out of goat skin or camel skin which keeps the water cool.

Camel is the most important animal which is very well adjusted to the harsh climate of the desert. The soft-padded feet help the camels from sinking in loose sand and long eyelashes protect eyes from sand. The hump stores water for long time which help it to survive long journeys in the deserts. Therefore, camel is rightly named the **Ship of the Desert**.

Do you know?

You will be surprised to know that there used to be a lush green plain where Sahara is at present situated. It was then a densely settled area. Cave paintings in Sahara show that there used to be rivers with crocodiles. Elephants, lions, giraffes, ostriches, sheep, cattle and goats were common animals. But the climate has changed to a very hot and dry one transforming it to what we see today.

Apart from camels, some other wild animals are also found in Sahara; for example, antelopes, jackals, sandrates,

foxes, gazelles and oryx are some of them. Among insects various kinds of spiders and scorpions inhabit this desert.

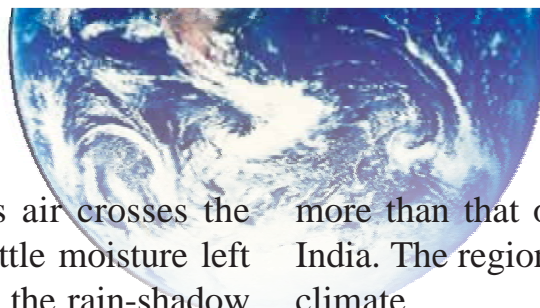
Ladakh — The Cold Desert

Ladakh is one of the coldest regions of the world. It is the eastern part of the state of Jammu and Kashmir. For about four months Ladakh remains almost cut-off from the rest of India due to heavy snowfall.

The striking features of Ladakh landscape are high mountains and the aridity. Ladakh has two administrative districts : Kargil and Leh. The total area is about 98,000 square km. Its population is above 2 lakhs. The main mountain ranges are the Karakoram and Ladakh which are towards north of the Great Himalaya Ranges.

K₂ (Mt Godwin Austin), about 8611 metres high in the Karakoram ranges, is the second highest peak in the world, after Mount Everest (8848 metres high in the Great Himalaya Ranges). The Ladakh Range has no major peaks and its average height is about 6000 metres. There are a few passes which are about 4800 metres high above the sea level. Zoji La pass is between Kashmir and Ladakh and acts as a physical barrier.

Some deserts are located in the rain-shadow region of the mountains. When moisture-laden winds reaches a mountain range, it gives rain as it goes upon the mountain slopes. This side is called the



windward side. As this air crosses the mountain range, it has little moisture left for the leeward side, i.e., the rain-shadow area. Such areas experience desert conditions.

The Great Himalaya Mountains act as a barrier for the moisture-laden clouds to enter into the Ladakh region. When some winds, especially during the winter season, are able to pass through the gaps or passes in the mountains, they provide heavy snowfall.

The rainfall during the summer season is almost negligible and the supply of water is mostly through the melting of snow on the higher altitudes. There is little or no atmospheric moisture. Thus, the intensity of the sun rays in the summer months is

more than that of the Northern Plains of India. The region experiences extremes of climate.

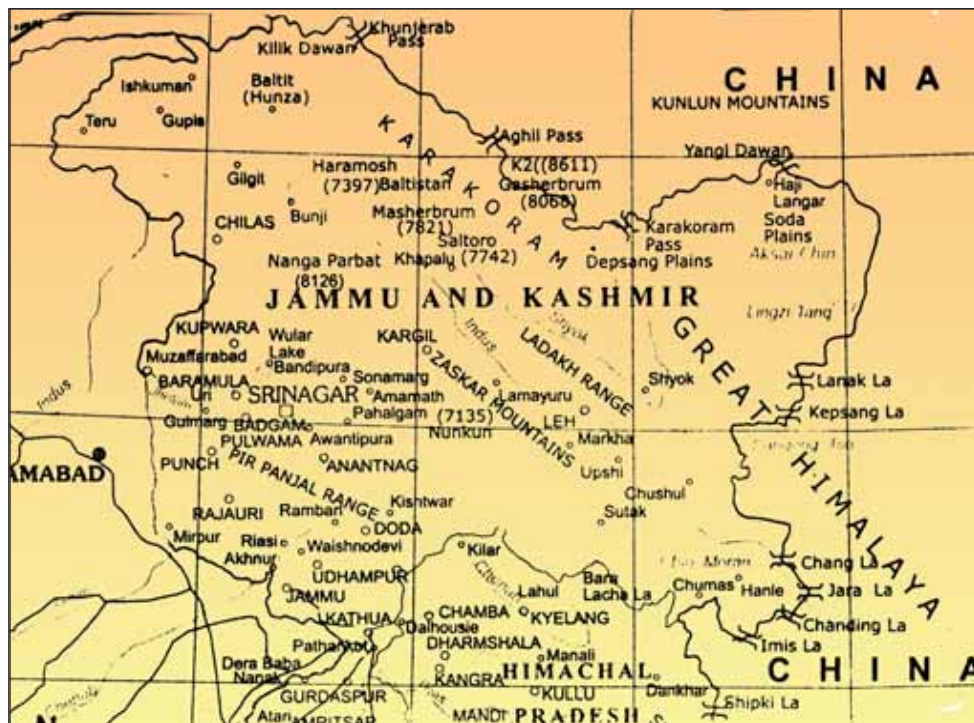
Agriculture

In Ladakh, otherwise a very cold desert, the heat from the sun is enough to ripen some crops. Sowing is mostly done in the month of May and harvesting in September (to avoid the frost). Below 3000 metres height **wheat** is the main crop and elsewhere **barley** is widely grown.

Grain farming is supplemented by fruit growing and livestock raising.

Horticulture :

Apricot is the main fruit of the area. The



Map—Jammu and Kashmir state



Goats found in Ladakh region

best apricot is grown in Karkitcho and Hardas. Other fruits like grapes, walnut, almonds, cherry, pear and peaches are also grown.

Animal Husbandry :

The mountain slopes have extensive **pastures**. Almost every family keeps some livestock, such as yaks, sheep and goats. **Yak**, the beast of burden, also provide hair (out of which tents are woven), milk and butter. **Pashmina** from goats is the main source of income.

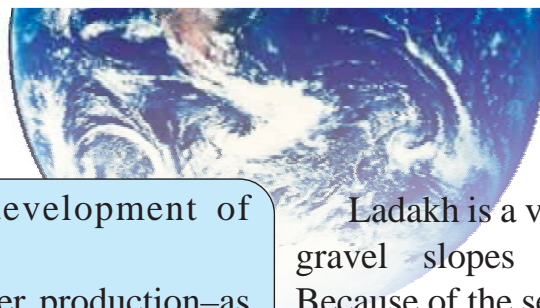
Ladakh is one of the few trans-himalayan areas which is open to outside visitors. This has helped in the development

of a flourishing **tourist trade**. People in Ladakh live very close to nature, where a most delicate balance operates between man, his physical environment and the cycle of seasons.

The people in this cold desert have evolved methods of meeting the challenges posed by their inhospitable environment.

The government has made several plans to improve the life-style of the people, which include :

- improvement of communication facilities.
- tapping of potential resources for the development of hydroelectric projects.



- introduction and development of irrigation facilities.
- development of fodder production—as animals have to be stall-fed for about six months.
- plantation of traditional trees like poplars and willows to meet the needs of fuel-wood.
- improvement in the local breeds of livestock.
- further development of tourist industry.

During the winter season no work is done in the fields. Of course, animals have to be looked after. The main work during the winter season is **weaving** which is mostly done on primitive looms. In the buddhist area, it is the time for annual festivals of the various **gompas**.

Along every water course, natural or man-made, there is a strip of land under crops. These are the Oases in Ladakh. Each oasis has its village with scattered houses in the fields or clustered along a road. The flat-roofed houses, made from sun-dried bricks match the colour of the mountains.

Do you know?

Fa-Hien is one of the earliest Chinese pilgrims believed to have passed through Ladakh.

Ladakh is known as Moonland, Broken Moon or the Last Shangrila. These names suggest the remoteness or inaccessibility of this place. Ladakh is still known as **Kha-pa-chan** which means **snowland**.

Ladakh is a vast sandy desert with bare gravel slopes and rocky mountains. Because of the severe cold, vegetation can not survive. The harsh climate has restricted people to settle here.

River Indus is flowing through the central part of Ladakh. Settlement can be found only along the river valley. Leh is the capital of Ladakh which is situated in the heart of the Indus Valley. Nubra, Shyok, Suru and Zaskar are other rivers flowing through Ladakh.

Ladakh is accessible through several mountain passes. Some of the important passes are the Karakoram Pass, Zojila Pass, Namika-La Pass, and Photo La (Fotu La). You can list names of some more passes after consulting a physical map of India.

During the summer months, when the ice melts, some fruits like apple, walnut, apricot, mulberry are grown. In the lower reaches of the mountains Pencil Ceder, Elm, Yew, Cypress and Willow trees are found.

Wild Life

Among animals, yak, cow, goat, sheep, dogs are domesticated. Wild yak, wild sheep, hare, kiang (appearance like a mule) and barasingha are wild animals found in this region. Lizard is the only reptile found here. Pigeon, grey heron, pintail, chikar, carrion crow and blacknecked crane are some of the birds seen in Ladakh. Among

minerals borax and sulphur are found in plenty in Ladakh.

With this information we can understand the basic difference between a hot desert and cold desert. In hot desert water is scarce. But in cold desert surface water is frozen due to extremely low temperature. In both the cases they experience extreme dryness because of which vegetation can not thrive. Weathering and wind erosion are more

active in both the regions.

Since 1970s Ladakh has undergone a tremendous change. Despite its remoteness Leh is attracting even tourists from abroad. Tourism has become the most important industry. About 400 hotels have been built in Leh alone. The opening up of Srinagar-Leh road had been the big step to open this area to the rest of the world. There is also regular flight services to Leh. This kind of development has brought changes in the life style of the people of Ladakh.

Glossary

- **Cow Boy** : Man who looks after cattle in the western parts of the America.
- **Prairies** : Name given to grasslands in North America.
- **Ranches** : A large farm especially one with extensive lands for cattle.
- **Oasis** : An area in hot desert, where the presence of water at a suitable level permits sustained plant growth.
- **Sand Dunes** : A mound of sand formed by the wind.
- **Veld** : Great expanse of grassland in South Africa.



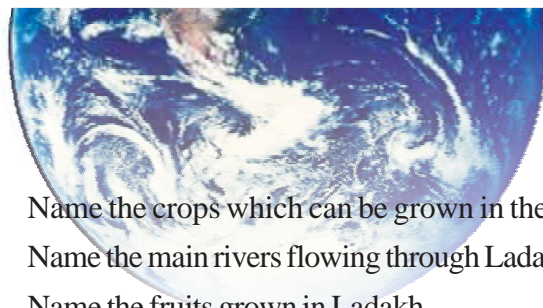
EXERCISES



1. Answer the following questions in brief

- (i) What is the extent of prairies grassland?
- (ii) State briefly the climatic conditions of prairies,
- (iii) What is the main food crop in the prairies?
- (iv) What are the three broad divisions of the Veld?
- (v) Name the major mineral resources of the Veld.
- (vi) Why is the Amazon Basin ecologically so important?
- (vii) State the extent of the Ganga-Brahmaputra plains.

Find out what effect the above parameters have on the health of a forested area. How can you improve on these parameters in your area of study?



- (viii) Name the crops which can be grown in the oases of the Sahara desert.
- (ix) Name the main rivers flowing through Ladakh.
- (x) Name the fruits grown in Ladakh.
- (xi) Name the minerals found in Ladakh.
- (xii) On a given outline map of J&K state show Leh and Kargin towns.
- (xiii) What is the difference between Yak and Camel?



2. Fill in the blanks

- (i) Tall grasses, up to _____ metres high dominate the prairie landscape.
- (ii) The main food crop in the Veld is _____
- (iii) _____ is the most important food crop in the Amazon Basin.
- (iv) _____ is an ancient town located along the bank of the Ganga.
- (v) _____ and _____ are the two districts of Ladakh.
- (vi) Pashmina is obtained from _____ found in _____.



3. On a world map show the following

- (i) All the hot deserts,
- (ii) Two Subtropical grasslands,
- (iii) One major riverine plain each in China, India and Brazil.



4. Things to do

- (i) Collect pictures showing the life-styles in sahara and Ladakh regions.