CHAPTER - 1

LAND AND THE PEOPLE

"India is the cradle of the human race, the birthplace of human speech, the mother of history, the grand mother of legend and the great grandmother of tradition. Our most valuable and most instructive materials in the history of man are treasured up in India only."-Mark Twain

India has a unique culture and is one of the oldest and greatest civilizations of the world. It stretches from the snow-capped Himalayas in the North to sun drenched coastal villages of the South, the humid tropical forests on the south–west coast, the fertile Brahamputra valley on its East to the Thar desert in the West .It covers an area of 32,87,263 sq .km. it has achieved all–round socio–economic progress during the last 63 years of its Independence. India is the seventh largest country in the world and ranks second in population. The country stands apart from the rest of Asia, marked off as it is by mountains and the sea, which give her a distinct geographical entity. Bounded by the Great Himalayas in the north, it stretches southwards and at the Tropic of Cancer, tapers off into the Indian Ocean between the Bay of Bengal on the east and the Arabian Sea on the west.

Lying entirely in the northern hemisphere, the mainland extends between latitudes 8°4' and 37°6' north longitudes 68°7' and 97°25' east and measures about 3,214 km from north to south between the extreme latitudes and about 2,933 km from east to west between the extreme longitudes. It has a land frontier of about 15,200 km. The total length of the coastline of the mainland, Lakshadweep, Isiands and Andaman &Nicobar islands is 7,516.6 km.

PHYSICAL BACKGROUND

Countries having common border with India are Afghanistan and Pakistan to the north-west, China, Bhutan and Nepal to the north, Myanmar to the far east and Bangladesh to the Wast Bengal. Sri Lanka is separated from India by a narrow channel of sea formed by the Palk Strait and the Gulf of Mannar. The country can be divided into six zones mainly North, South, East, West, Central and North–east zone. It has 28 states and seven union territories.

PHYSICAL FEATURES

The mainland comprises four regions, namely, the great mountain zone, plains of the Ganga and the Indus, the desert region and the southern peninsula.

The Himalayas comprise three almost parallel ranges interspersed with large plateaus and valley, some of which, like the Kashmir and Kullu valleys, are fertile, extensive and of great scenic beauty. Some of the highest peaks in the world are found in these ranges. The high attitudes admit travel only to a few passes, notably the Jelep La and Nathu La on the main Indo-Tibet route through the Chumbi Valley, north-east of Darjeeling and Shipki La in the Satluj valley, north-east of Kalpa (Kinnaur). The mountain wall extends over a distance of about 2,400 km with a varying depth of 240 to 320 km. In the east, between India and Myanmar and India and Bangladesh, hill ranges are much lower. Garo, Khasi, Jaintia and Naga Hills, running almost east-west, join the chain to Mizo and Rkhine Hills running north-south.

The plains of the Ganga and the Indus, about 2,400 km long and 240 to 320 km broad, are formed by basins of three distinct river systems-the Indus, the Ganga and the Brahmaputra. They are one of the world's greatest stretches of flat alluvium and also one of the most densely populated area on the earth. Between the Yamuna at Delhi and the Bay of Bengal, nearly 1,600 km away, there is a drop of only 200 metres in elevation.

The desert region can be divided into two parts – the great desert and the little desert. The great desert extends from the edge of the Rann of Kuchch beyond the Luni river northward. The whole of the Rajasthan-Sind frontier runs through this. The little desert extends from the Luni between Jaisalmer and Jodhpur up to the northern wastes. Between the great and the little desert lies a zone of absolutely sterile country, consisting of rocky land, cut up by limestone ridges.

The Peninsular Plateau is marked off from the plains of the Ganga and the Indus by a mass of

Mountain and hill ranges varying from 460 to 1,220 metres in height. Prominent among these are the Aravalli, Vindhya, Satpura, Maikala and Ajanta. The Peninsula is flanked on the one side by the Eastern Ghats where it is generally from 915 to 1,220 metres, rising in the places to over 2,440 metres. Between the Western Ghats and the Arabian Sea lies a narrow coastal strip, while between Eastern Ghats and the Bay of Bengal, there is a broader coastal area. The southern point of plateau is formed by the Nilgiri Hills where the Eastern and the Western Ghats meet. The Cardamom Hills lying beyond may be regarded as a continuation of the Western Ghats.

GEOLOGICAL STRUCTURE

The geological regions broadly follow the physical features and may be grouped into three regions: the Himalayas and their associated group of mountains, the Indo-Ganga Plain and the Peninsular Shield.

The Himalayan mountain belt to the north and the Nega-Lushai mountain in the east, are the regions of mountain-building movement. Most of this area, now presenting some of the most magnificent mountain scenery in the world, was under marine conditions about 60 crore years ago. In a series of mountain-building movements commencing about seven crore years ago, the sediments and the basement rocks rose to great heights. The weathering and erosive agencies worked on these to produce the relief seen today. The Indo-Ganga plains are a great alluvial tract that separate the Himalayas in the north from the Peninsula in the south.

The Peninsula is region of relative stability and occasional seismic disturbances. Highly metamorphosed rocks of the earliest periods, dating back as far as 380 crore years, occur in the area; the rest being covered by the coastal-bearing Gondwana formations, lava flows belonging to the Deccan Trap formation and younger sediments.

RIVER SYSTEMS

The river systems of India can be classified into four groups viz., (i) Himalayan rivers, (ii) Deccan rivers, (iii) Coastal rivers, and (iv) Rivers of the inland drainage basin. The Himalayan rivers are formed by melting snow and glaciers and therefore, continuously flow throughout the year. During the monsoon months, Himalayas receive very heavy rainfall and rivers swell, causing frequent floods. The Deccan rivers on the other hand are rainfed and therefore fluctuate in volume. Many of these are non-perennial. The Coastal streams, especially on the west coast are short in length have limited catchment areas. Most of them are non-perennial. The streams of inland drainage basin of western Rajasthan are few and far apart. Most of therm are of an ephemeral character.

The main Himalayan river systems are those of the Indus and the Ganga-Brahamaputra-Meghna system. The Indus, which is one of the great rivers of the world, rises near Mansarovar in Tibet and flows through India and thereafter through Pakistan and finally falls into the Arabian sea near Karachi. Its important tributaries flowing in Indian territory are the Sutlaj (origination in Tibet), the Beas, the Ravi, the Chenab and the Jhelum. The Ganga-Brahmaputra-Meghna is another important system of which the principal sub-basins are those of Bhagirathi and the Alaknanda, which join at Dev Prayag to form the Ganga. It traverses through Uttarakhand, Uttar Pradesh, Bihar and West Bengal states. Below Rajmahal hills, the Bhagirathi, which used to be the main course in the past, takes off, while the Padma continues eastward and enters Bangladesh. The Yamuna, the Ramganga, the Ghagra, the Gandhak, the Kosi, the Mahananda and the Sone are the important tributaries of the Ganga. Rivers Chamble and Betwa are the important sub-tributaries, which join Yamuna before it meets the Ganga. The Padma and the Brahmaputra join at Bangladesh and continue to flow as the Padma or Ganga. The Brahmaputra rises in Tibet, where it is known as Tsangpo and runs a long distance till it crosses over into India in Arunachal Pradesh under the name of Dihang. Near Passighat, the Debang and Lohit join the river Brahmaputra and the combined river runs all along the Assam in narrow valley. It crosses into Bangladesh downstream of Dhubri.

The principal tributaries of Brahmaputra in India are the Subansiri, Jia Bhareli, Dhansiri, Puthimari, Pagladiya and the Manas. The Brahmaputra in Bangladesh fed by Tista, etc., finally falls into Ganga. The barak river, the head stream of Megna, rises in the hills in Manipur. The important tributaries of the river and Makku, Trang, Tuivai, Jiri, Sonai, Rukuni, Katakhal, Dhaleswari, Langachini, Maduva and Jatinga. Barak continues in Bangladesh till the combined Ganga-Brahmaputra join it near Bhairab Bazar.

In the Deccan region, most of the major river systems flowing generally in east direction fall into Bay of Bengal. The major east flowing rivers are

Godavari, Krishna, Cauvery, Mahanadi, etc. Narmada and Tapti are major West flowing rivers.

The Godavari in the southern Peninsula has the second largest river basin covering 10 per cent of the area of India. Next to it is the Krishna basin in the region, while the Mahanadi has the third largest basin. The basin of the Narmada in the uplands of the Deccan, flowing to the Arabian Sea and of the Kaveri in the south, falling into the Bay Bengal are about the same size, though with different character and shape.

There are numerous coastal rivers, which are comparatively small. While only handful of such rivers drain into the sea near the delta of east coast, there are as many as 600 such rivers on the west coast.

A few rivers in Rajasthan do not drain into the sea. They drain into salt lakes and get lost in sand with no outlet to sea. Besides these, there the desert rivers which flow for some distance and are lost in the desert. These are Luni, Machhu, Rupen, Saraswati, Benas, Ghaggar and others.

CLIMATE

The climate of India may be broadly described as tropical monsoon type. There are four seasons: (i) winter (January-February), (ii) hot weather summer (March-May); (iii) rainy south-western monsoon (June-September) and (iv) post-monsoon, also known as north-east monsoon in the southern Peninsula (October-December). India's climate is affected by two seasonal winds – the north-east monsoon and the south-west monsoon. The north-east monsoon commonly known as winter monsoon blows from sea to land after crossing the Indian Ocean, the Arabian Sea and the Bay of Bengal. The south-west monsoon brings most of the rainfall during the year in the country.

FLORA

India is rich in flora. Available data place India in the tenth position in the world and fourth in Asia in plant diversity. From about 70 per cent geographical area surveyed so far, over 46,000 species of plants have been described by the Botanical Survey of India (BSI), Kolkata. The vascular flora, which forms the conspicuous vegetation cover, comprises 15,000 species.

With a wide range of climatic conditions from the torrid to the arctic, India has a rich and varied vegetation, which only a few countries of comparable size possess. India can be divided into eight distinct-floristic-regions, namely, the western Himalayas, the eastern Himalayas, Assam, the Indus plain, the Ganga plain, the Deccan, Malabar and the Andamans.

The Western Himalayan region extends from Kashmir to Kumaon. Its temperate zone is rich in forests of chir, pine, other conifers and broad-leaved temperate trees. Higher up, forests of deodar, blue pine, spruce and silver fir occur. The alpine zone extends from the upper limit of the temperate zone of about 4,750 metres or even higher. The characteristic trees of this zone are high-level silver fir, silver birch and junipers. The eastern Himalayan region extends from Sikkim eastwards and embraces Darjeeling, Kurseong and the adjacent tract. The temperate zone hase forest of oaks, laurels, maples, rhododendrons, alder and birch. Many conifers, junipers and dwarf willows also grow here. The Assam region comprises the Brahamaputra and the Surma valleys with evergreen forest, occasional thick clumps of bamboos and tall grasses. The Indus plain region comprises the plains of Punjab, western Rajasthan and northern Gujrat. It is dry, hot and supports natural vegetation. The Ganga plain region covers the area which is alluvial plain and is under cultivation for wheat, sugarcand and rice. Only small areas support forests of widely differing types. The Deccan region comprises the entire table land of the Indian Peninsula and supports vegetation of various kinds from scrub jungles to mixed deciduous forests. The Malabar coast of the Peninsula. Besides being rich in forest vegetation, this region produces and cashewnut. The Andaman region abounds in evergreen, mangrove, beach and diluvial forests. The Himalayan region extending from Kashmir to Arunachal Pradesh through Sikkim, Meghalaya and Nagaland and Deccan Peninsula is rick in endemic flora, with a large number of plants which are not found elsewhere.

The flora of the country is being studied by BSI and its nine circle/field offices located throughout the country along with certain universities and research institutions.

Ethno-botanical study deals with the utilization of plants and plant products by ethnic races. A scientific study of such plants has been made by BSI. A number of detailed ethno-botanical explorations have been conducted in different tribal areas of the country. More than 800 plant species of ethno-botanical interest have been collected and identified at different centers.

Owing to destruction of forests for agricultural, industrial and urban development, several Indian plants are facing extinction. About 1,336 plant species are considered vulnerable and endangered. About 20 species of higher plants are categorised as possibly extinct as these have not been sighted during the last 6-10 decades. BSI brings out an inventory of endangered plants in the form of a publication titled red Data Book.

FAUNA

The Zoological Survey of India (ZSI), with its headquarters in Kolkata and 16 regional stations is responsible for surveying the faunal resources of India. Possessing a tremendous diversity of climate and physical conditions, India has great variety of fauna numbering over 90,000 species. Of these, protista number 2,577, mollusca 5,072, anthropoda 69,903, amphibian 240, mammalian 397, reptilian 460, members of protochordata 199, pisces 2,546, aves 1,2232 and other invertebrates 8,329.

The mammals include the majestic elephant the gaur or Indian bison-the largest of existing bovines, the great Indian rhinoceros, the gigantic wild sheep of the Himalayas, the swamp deer, the thamin spotted deer, nilgai, the four-horned antelope, the Indian antelope or black-buck – the only representatitives of these genera. Among the cats, the tiger and lion are the most magnificent of all; other splendid creatures such as the clouded leopard, the snow leopard, the marbled cat, etc., are also found. Many other species of mammals are remarkable for their beauty, colouring, grace and uniqueness, Several birds, like pheasants, geese, ducks, myanahs, parakeets, pigeons, cranes, hornbills and sunbirds inhabit forests and wetlands.

Amongst the crocodiles and gharials, the salt water crocodile is found along the eastern coast and in the Andaman and Nicobar Islands. A project for breeding crocodiles which is started in 1974, has been instrumental in saving the crocodile from extinction.

The great Himalayan range has a very interesting variety of fauna that includes the wild sheep and goats, markhor, ibex, shrew and tapir. The panda and the snow leopard are found in the upper reaches of the mountains.

Depletion of forest cover due to expansion of agriculture, habitat destruction, over-exploitation, pollution, introduction of toxic imbalance in community structure, epidemics, floods, droughts and cyclones, contribute to the loss of flora and fauna.