



A Geography Of India

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A GEOGRAPHY OF INDIA

by

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Preface to the Fourth Edition

India is making a significant progress in her developmental plans. To keep the students abreast of these developments, it is necessary to up-date the book periodically.

In this edition, temperature and rainfall data of most of the stations have been replaced by those given in the "Climatological Tables of Observatories in India" (1931-1960), published by India Meteorological Department. New articles on "maize" and "cement" have been added. Chapters on agriculture, minerals, industries, population and trade have been thoroughly revised and up-dated. It may, however, be mentioned here that the population of districts and towns of the states of Assam and Jammu & Kashmir, as on March 1, 1981, was not available at the time of the printing of this edition.

It is hoped that this fourth edition will prove very useful to students.

15th January, 1983

GOPAL SINGH

Preface to the First Edition

This book has been written primarily to serve as a text-book for undergraduates and students of graduate level of the Indian Universities. Besides, it will prove extremely useful for competitive examinations.

All aspects of the subject have been given due consideration. Interaction between man and his environment has been discussed to a depth which is easily comprehensible and which, as far as possible, presents a correct perspective for undergraduates.

Statistical figures given in lengthy tables generally fail to create an effective impact on students, who are often bogged down in these details. Long statistical tables have, therefore, been avoided and instead, individual quantities have been given as percentages of the total of quantities. Statistics have been incorporated in the textual material to such an extent as may enable the students to understand the subject easily. The text has been effectively illustrated with an

adequate number of maps and diagrams. Statistics given in this book can be relied upon as they have been taken mostly from the publications of the Central and State Governments.

Towns, areas, rivers, etc., are spelt differently in various publications brought out by the State Governments, Indian Railways and Survey of India. Students of Geography, however, refer frequently to the maps and atlases published by the Survey of India. Therefore, only those spellings have been adopted which are used in the maps published by the Survey of India.

The book has been divided into two parts. In the first part physical environment and economic geography have been discussed and in the second part, geographical regions. An attempt has been made to bring out the geographic personality of each region without preferences and excessive promiscuity. At the end of every chapter, a few selected questions have been given, which, it is hoped, will serve as subjects of discussion.

I have been greatly inspired by the monumental works of Prof. G.B. Cressey (Asia), Prof. Dudley Stamp (Asia) and Prof. O.H.K. Spate (India and Pakistan). I am also very grateful to Mr. I.D. Malhotra, M.A. (Edinburgh), my esteemed teacher for giving me his valuable suggestions on the vegetation of India and to Prof. Gurdev Singh Gosal, M.A., M.S., Ph.D. (Wisconsin), of the Panjab University, for guidance in writing the chapters on surface configuration, climate, industries and population. I am thankful to Mr. M. S. Kataria, M.A. of Kurukshetra University, for helping me in the preparation of the maps and diagrams.

I am particularly grateful to the librarians of National Library, Calcutta ; Information Centre, New Delhi ; Library of Yojna Bhawan, New Delhi and Library of Indian Agricultural Research Institute, New Delhi for making periodicals and books readily available to me. My thanks are also due to my colleagues Mr. K.K. Suri, M.A., and Mr. Rachhpal Singh M.A., for reading the proofs.

Suggestions for improvement of this book are solicited. They will be gratefully received and acknowledged.

July, 1970

GOPAL SINGH

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PART I

PHYSICAL ENVIRONMENT, ECONOMIC
GEOGRAPHY AND POPULATION

1

Location, Political Division and Surface Features

1.1. Introduction. On August 15, 1947, India was partitioned by the then British rulers to form two independent *Dominions*, viz., India and Pakistan. India then set up a constitution for herself by which it was proclaimed a Republic on January 26, 1950. With a total population of 683,810,051 at the 1981 census, India ranks as the world's second most populous country after China.

1.2. Size and Geographical Location. The Union of India is the seventh largest country in the world covering an area of 3,287,782* square kilometres and it is an important country of South Asia. The mainland stretches from latitude 8° 4' north to 37° 6' north and from longitude 68° 7' east to 97° 25' east of Greenwich. The country is of a vast size and measures about 3,214 kilometres from north to south and about 2,933 kilometres from west to east. The Tropic of Cancer passes through its middle part. India is situated on the northern fringe of the Indian Ocean. South of about 22° north latitude, the country begins to taper and pierces through the Indian Ocean for a distance of about 1,600 kilometres in the form of a wedge, dividing the ocean into two seas, the Bay of Bengal on the east and the Arabian Sea on the west.

India lies midway between the Far East and the Middle East. The trans-Indian Ocean routes connecting the industrially developed countries of Europe in the west and the underdeveloped countries of east Asia pass close by. India being centrally located in South Asia, she enjoys an advantageous position for doing trade with Australia and the countries of Africa, the Middle East and the Far East. Thus, India dominates the Indian Ocean and commands an important strategic position. Her land frontier is 15,200 kilometres long. Her northern borderland, being mountainous, is very difficult to cross and it offers very few transport facilities for trade with the arid, almost barren and very sparsely populated regions of central Asia. India has a coastline of 6,100 kilometres and she depends on the Indian Ocean for the bulk of her foreign trade.

*India, *A Reference Annual 1976*, Publications Division, Government of India.

1.3. Political division. India is divided on linguistic basis into 22 states and 9 centrally administered territories. The states are—Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Maharashtra, Gujarat, Madhya Pradesh, Orissa, West Bengal, Sikkim, Assam, Nagaland, Bihar, Uttar Pradesh, Rajasthan, Punjab, Haryana, Himachal Pradesh, Jammu and Kashmir, Meghalaya,* Manipur and Tripura (Fig. 1).



Fig. 1.

*Meghalaya (formerly Garo Hills, and United Khasi & Jaintia Hills districts of Assam) was inaugurated on April 2, 1970 as an autonomous state within Assam and on January 20, 1972 as a state of India. Tripura and Manipur states formerly Union Territories were inaugurated on January 21, 1972. Arunachal Pradesh (a Union Territory) was inaugurated on January 20, 1972 and Mizoram (a Union Territory) on January 21, 1972.

Union Territories are : The Andaman and Nicobar Islands, Lakshadweep (formerly Laccadive, Minicoy and Amindivi Islands), Chandigarh, Delhi, Mizoram (formerly Mizo district of Assam), Arunachal Pradesh (formerly North-East Frontier Agency of Assam), Dadra and Nagar Haveli, Goa, Daman and Diu, and Pondicherry. The Himalayan State of Bhutan is attached to India by special treaties. Sikkim ceased as a protectorate of India in 1974 and become an Associate State of India thereafter. Its status again changed in 1975 when in response to the Sikkimese wishes as expressed in the referendum held on April 14, 1975, the institution of the Chogyal was abolished and Sikkim was integrated with India as her 22nd state. The former French territories (Pondicherry, Karaikal and Yanam on the east coast and Mahe on the west coast) on the mainland of India, ceded to India in 1956. Goa, Daman and Diu along the west coast held by the Portuguese for centuries, were the last remnants of European aggrandisement in India. These became a part of India again in December 1961 completing the territorial integration of the Indian Union.

1.4. Neighbouring countries. Countries having a common border with India are--Afghanistan and Pakistan to the north-west, China and Nepal to the north, Burma to the east and Bangladesh to the east of West Bengal. Sri Lanka (Ceylon) is separated from India by a narrow channel of sea formed by the Palk Strait and the Gulf of Manaar.

1.5. Surface features. Expanse, height and location of India's landforms (plains, plateaus, hills and mountains) have played a significant role not only in influencing her past history but also her climate, land-use, means of transportation and distribution of population, etc. Their study in relation to man and his needs is vital.

The following are the four major physiographic divisions of India:

- (1) A high mountain barrier formed by the Himalayas in the north and the Eastern Highlands also known as Purvachal in the east.
- (2) The Plains of Northern India or the Great Plains of India.
- (3) The Plateau of Peninsular India, stretching south of the Plains of Northern India.
- (4) The Coastal Lowlands fringing the Plateau of Peninsular India.

These four regions are distinctly different from one another in respect of their surface configuration. Whereas the Himalayas are young fold mountains with great magnitude of local relief, highly uneven surface, very steep slopes, little level land and young river valleys, the Peninsular India is an old shield block having peneplained areas (due to prolonged erosion), relict mountains and old river valleys. The Plains of Northern India on the other hand are flat and alluvial without any local relief except bluffs of the old banks of the rivers and are of recent origin. The Coastal Lowlands are flat with deltas prograding and land generally rolling.

1.6. The Himalayas. The Himalayas form a highly rugged and continuous stretch of high mountainous country which flanks northern India for a considerable length and runs between the Brahmaputra Gorge in the east and the Indus in the west. They are about 2,500 km. long and 150 to 400 km. broad. They are relatively broad in Himachal Pradesh and Kashmir region and the highest in eastern Nepal. Rising abruptly from the plains in the south, the Himalayas rest against Ladakh district of Jammu and Kashmir State and the Tibetan Plateau in the form of an arc-like rim. 50 million years ago, the present site of the Himalayas was a part of a large ocean (the Tethys) containing enormous quantities of detritus brought in by the then rivers. Later, in the Miocene period, the ocean bed laden with these enormous deposits, was gradually raised by horizontal earth movements into highly complex fold mountain ranges now called the Himalayas. They are among the youngest fold mountains of the earth. Uplift of the Himalayas, at intervals in later period, rejuvenated the rivers which have cut alluvial terraces now at different levels. The Himalayas exhibit practically all those land forms which develop when strata is intensely folded. Examples of anticlinal ridges, synclinal valleys, overfolds and recumbent folds are common. At some places compression was so intense that folded strata were first torn across and then pushed off forming nappes. Intermontane plateaus and large-sized basins are conspicuously absent in these intensely folded mountains. The Vale of Kashmir, about, 135 km. long and 40 km. broad, is the only large level strip of land in the Himalayas. It is perhaps a synclinal valley in which the Jhelum has laid its load and has formed it into a level stretch of land. In general, the Himalayas consist of three main ranges—the Siwalik Range along the southern margin, the Great Himalaya along the Tibetan border and in between these two is the Lesser Himalaya.

The Siwalik Range. This range has low parallel ridges made up mainly of boulder and clay. These ridges form foot-hills of the Himalayas. From a breadth of 50 km. in the west, it narrows gradually eastwards until it loses its identity in the Bengal Duars. It is generally less than 1,220 metres in height and exhibits clearly anticlinal valleys and synclinal ridges. As these ridges were raised after the formation of the Himalayas, they obstructed the courses of the rivers draining to the south and west and formed temporary lakes in which debris brought by those rivers was deposited. After the rivers had cut their courses through the Siwalik Range, the lakes were drained away leaving behind plains called duns, such as Dehra Dun (600 metres above sea-level).

The Lesser Himalaya rises north of the Siwalik Range. Being deeply cut by rivers, this belt of mountains is highly rugged and ill-defined. A few ranges which branch off from the southern flanks of the Great Himalaya are also included in the Lesser Himalaya. They run in the westward direction and are more clearly defined. Those ranges are—the Dhaola Dhar, the Pir Panjal and Nag Tiba. The Mahabharat Range (Nepal) and the Mussoorie Range (Kumaun

Himalayas) can easily be traced as continuous ranges for long distances. These ranges vary considerably in height which is generally less than 3,050 metres above sea-level. Some of their peaks rise to heights of even more than 4,570 metres particularly where the ranges branch off from the Great Himalaya. Known also as Himachal, the Lesser Himalaya is 80 km. in breadth.

The Great Himalaya or Himadri is a long, continuous range. It is the highest range in the world with an average height of 6,100 metres above sea-level. The top of this range, about 25 km. wide, is dotted with numerous snowy peaks and it is about 150 km. away from the northern edge of the Plains of Northern India. One of its peaks, the Mt. Everest (8,848 metres) situated at the northern border of Nepal, is the highest peak in the world. Its other notable peaks are Kanchenjunga (8,598 metres), Makalu (8,481 metres), Dhaulagiri (8,172 metres) and Nanga Parbat (8,126 metres). Near about 80°E meridian, the Great Himalaya shoots off to the north-west a branch called the Zaskar Range. The Zaskar Range runs close to the Great Himalaya. It, however, runs along the northern side of the Great Himalaya till it approaches Kargil (Ladakh). In the north-west, the Great Himalaya ends in Nanga Parbat (8,126 metres) and in the east it culminates in Namcha Barwa (7,756 metres) near the Brahmaputra in Tibet (the Dihang, being the name of this river in this section of the Himalayas). It is snow-bound throughout the year and sends out glaciers which descend to a height of 2,440 metres above sea-level in Jammu and Kashmir State and about 3,960 metres in the eastern Himalayas. At their lowest limits, glaciers melt and supply water to the rivers of North India. During early summer when there is no rain in the plains, the water in these rivers has a particular significance because it is tapped for irrigating the parched land in these dry months.

This range is forbidding and can be crossed only by a few passes which too are snow-bound during winter months. Journey through these passes is hazardous as they are generally higher than 4,570 metres above sea-level. Pack animals like mules, yaks and goats are used for carrying goods across these passes. The Burzil Pass and the Zoji La in Jammu and Kashmir State, the Bara Lacha La and the Shipki La in Himachal Pradesh, the Thaga La, the Niti Pass and the Lipu Lekh Pass in Uttar Pradesh and the Nathu La and the Jelep La in Sikkim are generally used for crossing the Great Himalaya. The main India-Tibet trade route connecting Kalimpong (near Darjeeling in India) with Lhasa (Tibet), however, passes through the Jelep La (4,386 metres). This range has served as a natural barrier between India and Tibet (China) and has thus accentuated the isolation of our country from the cultural influences of the countries beyond the Himalayas. In addition to its being an insurmountable barrier, so vital for the defence of the northern frontiers of India, this range shuts off almost completely the icy cold-winds of inner Asia in winter and confines, on account of its formidable height, the moisture-laden summer monsoon winds to the soil of India. However, it

should be noted that so far as the former role of the Great Himalaya is concerned, it has ceased to be our absolutely formidable guardian because of the tremendous advances made in the science of aviation.

In the northern part of Jammu and Kashmir State there is another high mountain range called the Karakoram (or the Muztagh). This *trans-Himalayan* range runs roughly in the east-west direction. Heights of some of the peaks of this range are above 7,620 metres. K² (8611 metres), the second highest peak in the world and the first highest peak in the Indian Union rises majestically like a cone in the midst of other slightly less higher peaks of the Karakoram Mountains. In the west this range merges in the Pamir Knot. This bleak, desolate, lofty mountain waste, snow-covered throughout the year like the Great Himalaya, protects India from any danger of attack from the interior of Asia and also keeps off the very dry winds of Central Asia. The north-eastern part of Jammu & Kashmir State lying to the north of the Indus is a high plateau with elevation generally above 4500 metres.

The Eastern Highlands (Purvachal). These highlands consist of hill ranges which pass through eastern Arunachal Pradesh and the states having common border with Burma. They run in north-south direction in the form of a crescent the convex side of which points towards India. In the north lies a high mountainous land called the Dapha Bum (highest point 4,578 metres). The Patkai Bum starts from the southern end of the Dapha Bum. After running for some distance southwards along the international boundary between India and Burma, it merges into the Naga Range. Saramati (3,926 metres) is the highest peak of the Naga Range. The Patkai and the Naga ranges form water-shed between India and Burma. Further south, this mountainous belt is called the Manipur Hills (generally less than 2500 metres in elevation) in Manipur State, the Mizo Hills in Mizoram and the Tripura Hills in Tripura State. The elevation of the Mizo Hills is generally less than 1,500 metres. The highest point is in Blue Mountain (2,157 metres) in the south. In general, the height of the ranges falls gradually southwards.

The ranges are folded and alternate with valleys. This range-and-valley character of the topography has developed trellised drainage pattern. In some synclinal valleys water has collected to form elongated lakes. The ranges and the valleys run generally in north-south direction. They are covered with thick forests and are difficult to cross. They have thus protected eastern border of India in the past. Passes are very few. A poor motorable road connects Imphal with Tamu (Burma) about 87 km. away.

Three important rivers of India namely the Brahmaputra, the Sutlej and the Indus have their sources near Lake Manasarowar (Tibet) situated to the north of the Great Himalaya. The source of these rivers vary in height from 4,570 to 4,875 metres. The Great Himalaya which is about 1.5 km. higher than the level of the sources of these rivers, is cut across by these rivers to form very deep narrow gorges. According to the view of a few geographers and geologists,

these rivers are older than the mountains they cross. These rivers began entrenching their courses in these mountains when they began to rise slowly. Gorges deeper than 3 km. are not uncommon. The deepest gorge (5,180 metres deep) is found in the course of the Indus where it crosses the Himalayas near Nanga Parbat. A few other rivers such as the Bhagirathi, the Alaknanda, the Karnali, the Gandak, the Arun Kosi, the Tista and the Manas have completely cut back their courses in the Great Himalaya and have thus formed very deep gorges. These rivers run parallel for some distance to the mountain ranges before they debouch on the Plains of Northern India. Along the river courses at some places occur river terraces which show that the uplift of the Himalayas at intervals has rejuvenated the rivers. In the eastern Himalayas, some river valleys are very broad.

1.7. The Plains of Northern India. These plains stretch in the east-west direction between the Himalayas in the north and the Plateau of Peninsular India in the south. They form a continuous belt of alluvium varying in width from 240 (east Bihar Plain) to 500 km. (Punjab and northern Rajasthan). The Sutlej Plain in the west, the Ganga Plain in the middle, the Ganga Delta and the Brahmaputra Valley (from Sadiya downstream) in the east constitute these plains. These are amongst the largest plains of the world. Measuring about 650,000 square km., they account for one-fifth of the area of India. The desert in the west of the Aravalli Range being largely a plain formed partly by erosion and partly by deposition is also included in the Plains of Northern India. These plains continue to the west beyond the Punjab and Rajasthan and merge into the Indus Plain in Pakistan. These are uniformly level plains without any interruption except for a few outliers of the Aravalli Range such as in the vicinity of Delhi. They form isolated low hills or ridges and emerge out of the surrounding alluvium as islands in the oceans. This region was formerly a deep trench, six to eight km. in depth. The trench was formed as a foredeep when the Himalayas rose as fold mountains. This east-west depression received drainage from the Himalayas in the north and the plateau in the south. Owing to continued silting, the depression was filled up with sediments. After the drainage escaped to the Bay of Bengal through the Rajmahal-Garo Hills Gap a level alluvial plain emerged. Uniformity in the level of these plains is mainly due to two facts (a) deposition took place in water and (b) no earth movement disturbed their flatness later. In the drier parts of the western fringe of Haryana and neighbouring parts of Rajasthan, deposition of windblown dust accounts, to some extent, for the formation of these level plains. The watershed which divides the Sutlej Plain from the Ganga Plain is low (about 275 metres above sea-level near Ambala) and is hardly perceptible as one enters the Haryana-Punjab Plain from the Uttar Pradesh Plain.

The rivers being heavily charged with boulders, sand and silt suddenly slacken in speed when they debouch on these plains and