INTRODUCTION
History and the environment

Environment—that is a world alive and related to a living centre, the habitat of an animal, the hunting grounds and pastures of nomads, the fields of settled peasants. For human beings the environment is both an objective ecological condition and a field of subjective experience. Nature sets limits, man transgresses them with his tools and his vision. Man progressively creates a specific environment and makes history. In this process it is not only the limits set by nature which are transgressed but also the limits of human experience and cognition. From the elementary adaptation to the natural environment to the establishment of great civilisations, the horizon of experience and the regional extension of human relations constantly expand.

The conception of the environment changes in the course of this evolution. Ecological conditions which may appear hostile to man at one stage of this evolution may prove to be attractive and inviting at another stage. The hunter and foodgatherer armed only with stone tools preferred to live on the edge of forests near the plains or in open river valleys, areas which were less attractive to the settled peasant who cut the trees and reclaimed fertile soil. But initially even the peasant looked for lighter soils until a sturdy plough and draught animals enabled him to cope with heavy soils. At this stage the peasant could venture to open up fertile alluvial plains and reap rich harvests of grain. If rainfall or irrigation were sufficient he could grow that most productive but most demanding of all grains: rice. Wherever irrigated rice was produced, plenty of people could live and great empires could rise, but, of course, such civilisations and empires were very much dependent on their agrarian base. A change of climate or a devastation of this base by invaders cut off their roots and they withered away.

Indian history provides excellent examples of this evolution. Prehistoric sites with stone tools were almost exclusively found in areas which were not centres of the great empires of the later stages of history: the area between Udaipur and Jaipur, the valley of the Narmada river, the eastern slopes of the Western Ghats, the country between the rivers Krishna and Tungabhadra

(Raichur Doab), the area of the east coast where the highlands are nearest to the sea (to the north of present Madras), the rim of the Chota Nagpur Plateau and both slopes of the mountain ranges of central India (see Map 1).

The cultivation of grain started around 7000 BC in Southern Asia, according to recent archaeological research. This was a time of increasing rainfall in the region which has always depended on the monsoon. Before venturing into the open plains of the lower Indus the precursors of the Indus civilisation experimented with cultivating alluvial lands on a small scale in the valleys of Baluchistan. There they built stone walls *(gabarbands)* which retained the sediments of the annual inundation. Initially the archaeologists mistook these walls for dams built for irrigation, but the holes in these walls showed that they were designed so as to retain soil but not water. Such constructions were found near Quetta and Las Bela and in the Bolan valley. In this valley is also the site of Mehrgarh which will be described in detail in the next chapter.

Palaeobotanical research has indicated an increase in rainfall in this whole region from about 3000 BC. The new methods of cultivating alluvial soil were then adopted not only in the Indus valley, but also in the parallel Ghaggar valley some 60 to 80 miles to the east of the Indus. This valley was perhaps even more attractive to the early cultivators than the Indus valley with its enormous inundations and a flow of water twice that of the Nile. The builders of the great cities Mohenjo-Daro and Harappa were masters of water management as the systems of urban water supply and sewerage show. So far no village sites have been found in the Indus valley. Perhaps due to the inundations agricultural operations were only seasonal and no permanent villages were established. The cities may have served as organisational centres for such seasonal operations. They were also very important centres of trade. Harappa which was situated near the borderline between agriculture and the pastoral zone served as a gateway city on which the trade routes coming from the north converged. Metals and precious stones came from the mountains and entered international maritime trade via the big Indus cities.

Life in the Ghaggar valley may have been of a different kind. There was a much greater density of settlements there. It was probably the heartland of this civilisation. The site of Ganweriwala, near Derawar Fort, which has been identified but not yet excavated, may contain the remains of a city as big as Harappa. It is surrounded by a large cluster of smaller sites. Perhaps here one could find the rural settlements which are conspicuous by their absence in the Indus valley. Archaeological evidence points to a drying up of the Ghaggar around 1700 BC which may be due to a sudden tectonic change. The river Yamuna which now parallels the Ganga is supposed to have flowed through the Ghaggar valley until an upheaval in the foothills of the Himalayas made it change its course. The distance between the present valley of the Yamuna and the ancient Ghaggar valley is less than

40 miles in the area between Jagadhri and Ambala. The land is rather flat in this area and even a small tectonic tilt could have caused the shift in the flow of the river. The northward thrust of the subcontinental shelf which threw up the Himalayas causes tectonic movements even today, as frequent earthquakes indicate. Other tectonic upheavals at the mouth of the Indus river may have produced a large lake submerging Mohenjo-Daro. This latter hypothesis is contested by scholars who think that the mighty Indus could never have been blocked for any length of time. However, even one sudden blockage or several seasonal ones would have done enough damage. The drying up of the Ghaggar and the blocking of the lower Indus could thus have ruined the major centres of the Indus civilisation.

There was one region which remained initially unaffected by these upheaveals: the Kathiawar peninsula of Gujarat. This region had been colonised by the people of the Indus civilisation and had emerged as a major link with the outside world. Only a few sites have been excavated there so far. Dholavira is a site to watch. It lies far inside the Rann of Kutch, but it was obviously a seaport like Lothal on the other side of the peninsula. Clearly, Dholavira is an important site. Maritime trade via Oman brought African millets to this region where inland settlements like Rojdi lived on cultivating them rather than wheat and barley which were the mainstay of the Indus civilisation elsewhere. The millets were of great importance for the spread of settled agriculture into the highlands further to the east.

The total area covered by the Indus civilisation was very large. So-called Late Harappan remains have been found even at Daimabad in Maharashtra. Shortugai in Badakshan, Afghanistan, is so far the most northern settlement of the Indus civilisation located by archaeologists. The distance between Shortugai and Daimabad is about 1,500 miles. Such distant outposts, as well as cities not threatened by tectonic upheavals, decayed when the heartland no longer provided trade and cultural supervision. The vigour of the Indus civilisation had thus been sapped long before the tribes of cattle-rearing nomads who called themselves Aryans (the noble ones) descended from the north. The ecological scenario faced by these newcomers was very different from that which had given rise to the Indus civilisation. As nomads they could adjust to a changing environment. Initially the plains of the Panjab provided rich pastures for their cattle until a sharp decrease in rainfall drove them eastwards, to the jungles of the Ganga-Yamuna river system which receded in this period of perennial drought.

THE ROUTES OF ARYAN MIGRATION

The main thrust of Aryan migration was probably south of the Terai region where the tributaries of the river Ganga must have dwindled to the point that they could be easily crossed and where the dry forest could be