UNIT 1 LOWER PALAEOLITHIC CULTURES

Contents

Learning Objectives

Once you have studied this unit, you should be able to:

- describe how "prehistory", having a hoary past, emerged as a branch of "human history";
- understand about the origin of our ancestors (early hominins); and
- discuss the antiquity and cultural manifestations of Stone Age societies in India.

1.1 INTRODUCTION

In this lesson we shall learn about the earliest stage in the history of man's biological and cultural evolution. This is the stage when creatures ancestral to man began to branch off from their ape-like cousins. This journey covers a time span of 2.5 million years and involved improvements both in aspects of the biological make-up like bipedal posture and brain enlargement and in cultural behaviour, of which intentional preparation of tools out of natural materials like stone and wood was a critical one. The branch of archaeology which deals with the study of this initial stage of human history is called prehistory.

Stated in other words, prehistory deals with the origins and growth of human societies before the advent of writing systems, which in the case of India developed by about the middle of the first millennium B.C., e.g. the edicts of Asoka inscribed in Brahmi and Kharoshthi scripts and scattered in different parts of the country. Considering evidences like the composition of Vedic texts and the (still undeciphered) script of the Indus Civilisation, a transitional stage called protohistory has been provided between history and prehistory in India. Broadly speaking, this stage covers the third and second millennia and early half of the first millennium before the Christian era. It is characterised by the rise of many early agropastoral Neolithic-Chalcolalthic communities characterised by settled village life, domestication of animals like cattle and sheep/goat, cultivation of crops like wheat, barely, rice and millets, and emergence of various crafts and arts. In the Indus valley, this phase eventually led to the growth of an urban civilisation based on town planning and bronze technology. It is the long period of hunting and gathering way of life preceding the agropastoral stage which forms the subject matter of prehistory.

1.2 BIRTH OF PREHISTORY

Ancient thought in different parts of the world offered divergent interpretations of the story of man. For instance, in ancient Hindu thought you will notice the concept of four *yugas* (Krita, Treta, Dvapara and Kali) spanning more than 4 million years and their cyclical repetition. Christian theology on the other advocated the view that the world including man was created by God in 4004 B.C. In the 18th century some of the Enlightenment thinkers of Europe postulated that human society passed through the successive stages of hunting and gathering, pastoralism, agriculture and civilisation. Then in 1836 C.J. Thomsen, Curator of the Royal Danish Museum in Copenhagen, put forward the famous Three Age system. It divided the preliterate past of Northern Europe into Stone, Bronze and Iron Ages. But it was still implicitly believed that these Ages would fall within the temporal framework of 6000 years provided for the entire human story in Christian theology.

The actual birth of prehistory took place in May 1859 when a team of three British scientists comprising Joseph Prestwich (geologist), Hugh Falconer (palaeontologist) and John Evans (archaeologist), based upon their personal inspection of the actual sites, ratified before the Royal Society in London the findings by John Frere in England and by Boucher de Perthes in Northern France of primitive stone implements in drift gravels of rivers along with fossilised bones of extinct species of wild cattle and other large mammals. It was thus clear that Northern Europe was occupied by man much before its landscape assumed its present form. A long phase of infancy was thus prefaced to human history. Happily this development coincided with the publication in the same year of Charles Darwin's famous book *On the Origin of Species*, which advocated evolution of organic life from simple to developed forms through the process of natural selection.

Darwin's book gave the much needed impetus to prehistoric studies. In his book *Prehistoric Times* (1865) Sir John Lubbock not only announced the birth of a new science called prehistory but divided the Stone Age into Palaeolithic (Old Stone) and Neolithic (New Stone) ages. And by the end of the 19th century, not

only an intermediate stage called the Mesolithic was introduced between the Palaeolithic and the Neolithic but several stages were identified within the Bronze and Iron Ages. Furthermore, thanks to the cultural sequence obtained from cave and open-air sites in France, three phases were recognised within the Palaeolithic (Lower, Middle and Upper).

In the early decades of the 20th century important Stone Age sites were reported from southern part of Africa. Soon East Africa followed suit and the team led by L.S.B. Leakey undertook sustained investigations in the Olduvai Gorge of Tanzania. Other discoveries followed in Kenya and Ethiopia. And East Africa has now emerged as the cradle of mankind. In West Asia a large number of cave sites were found in the Mount Carmel area. Then important discoveries were made at the open-air sites of Ubeidiya and Gesher Benot Ya'akov. In East Asia, the lead was taken by China and the famous discoveries of Peking Man were made at the cave site of Zhoukoudian. Likewise, discoveries of Java Man were announced from Indonesia.

It will be a pleasant surprise for you to know that Robert Bruce Foote of the Geological Survey of India found Palaeolithic sites near Madras (Chennai) in 1863, just four years after the birth of prehistory in Europe. And by the 1930s a four-fold Stone Age sequence was identified in the Kurnool area of Andhra Pradesh.

The continents of Australia and America also have Stone Age sites but these are chronologically much later and also the courses of cultural developments in these regions are somewhat different than those of the Old World comprising Africa, Europe and Asia.

1.3 MAN'S PLACE IN BIOLOGICAL EVOLUTION

In the evolutionary scheme the humans together with the apes, monkeys and prosimians belong to the Order Primates, which itself forms part of the Class Mammalia. The ancestor common to us and the African apes (our closest relatives living today) lived between 8 and 6 million years ago. The earliest creatures that branched off from this ancestor and paved the way for human evolution are called the hominins. The fossil discoveries from southern, eastern and central parts of Africa clearly show that between 6 and 2 million years ago more than a dozen hominin species existed, with evidence of bipedal posture and dental features more hominin and less ape-like. Among these the more common and widely known are the *Australopithecines* (Southern Apes), several forms of which appeared around 4 million years ago. These *Australopithecines* included both gracile and robust forms and the first stone tools appeared 2.5 million years ago.

Between 2 and 1.7 million years ago (the boundary between the geological periods called Pliocene and Pleistocene) another major development took place. This is the emergence of early forms of the genus *Homo*, known as the *Homo rudolfensis, Homo habilis* and *Homo ergaster*. These are characterised by larger brains (cranial capacity between 510 and 687 cc), smaller jaws and teeth, longer legs, shorter arms, and more dexterous hands with a longer thumb. From this stage developed the later hominin forms called *Homo erectus, Homo heidelbergensis, Homo neanderthalensis* and, finally, our own species *Homo sapiens* (Fig. 1.1).

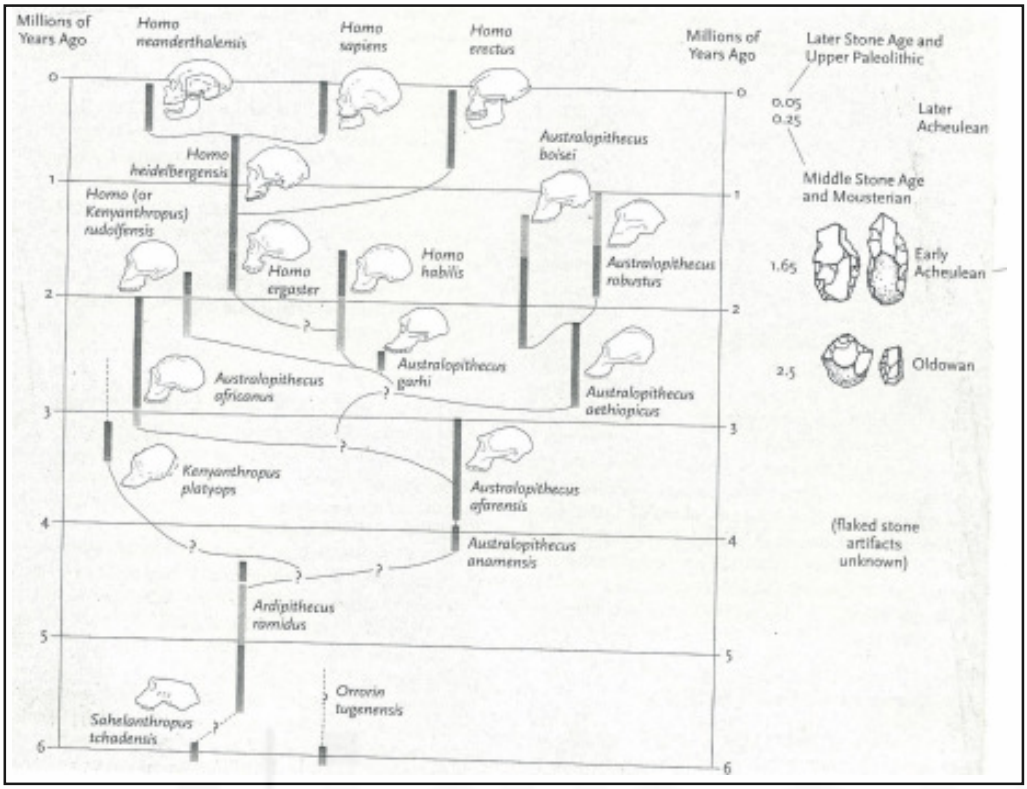

Fig. 1.1: Chart showing one interpretation of hominin biological and cultural evolution

1.4 EARLIEST STAGE OF HUMAN CULTURE IN THE OLD WORLD

With this knowledge of the biological basis of human lineage, we will briefly review the evidence pertaining to the cultural or behavioural aspects of this formative stage of human history. In Africa, the earliest known artificially modified objects of stone (i.e. stone tools) are found at Kadar Gona and Hadar in Ethiopia and are dated to 2.5 million years ago (Fig. 1.2).

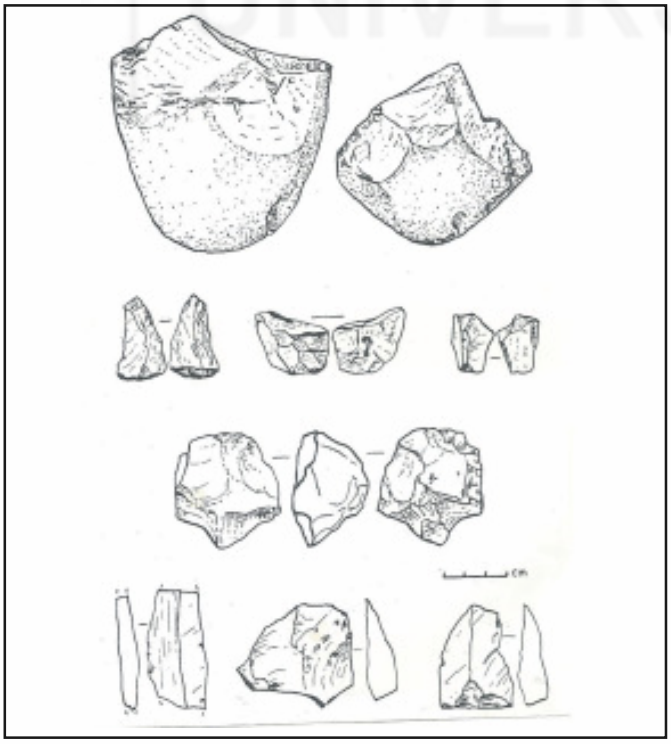

Fig.1.2: Stone artefacts (choppers/cores and flakes) dated to 2.5 million years ago from Hadar and Omo valley in Ethiopia

Even organic material like wood might have been employed but no traces have survived. More spectacular and authentic are the stone tools found in Bed I of the famous Olduvai Gorge site in Tanzania, dated to 1.85 million years ago. These artefact assemblages have been designated as the Oldowan industry by L.S.B. Leakey. It appears that members belonging to both *Australopithecine* and *Homo* lineages were responsible for these cultural assemblages representing the earliest stage of human inventory. These include*Australopithecus/africanus/ aethiopicus/gorhi/boisei/robustus and Homo habilis/rudolfensis*. The artefacts themselves consist of types such as choppers, heavy scrapers, discoids, awls, polyhedrons, anvils, hammer stones, etc. (Fig**.** 1.3). The Oldowan tradition continued into later periods (Bed II at Olduvai Gorge) and this later tradition is called Developed Oldowan. The Oldowan sites tend to be concentrated close to river flood plains and channels, deltas and lake margins. These hominins probably formed themselves into small groups of about 30 individuals. They gathered wild plant foods and obtained animal foods either by hunting or scavenging.

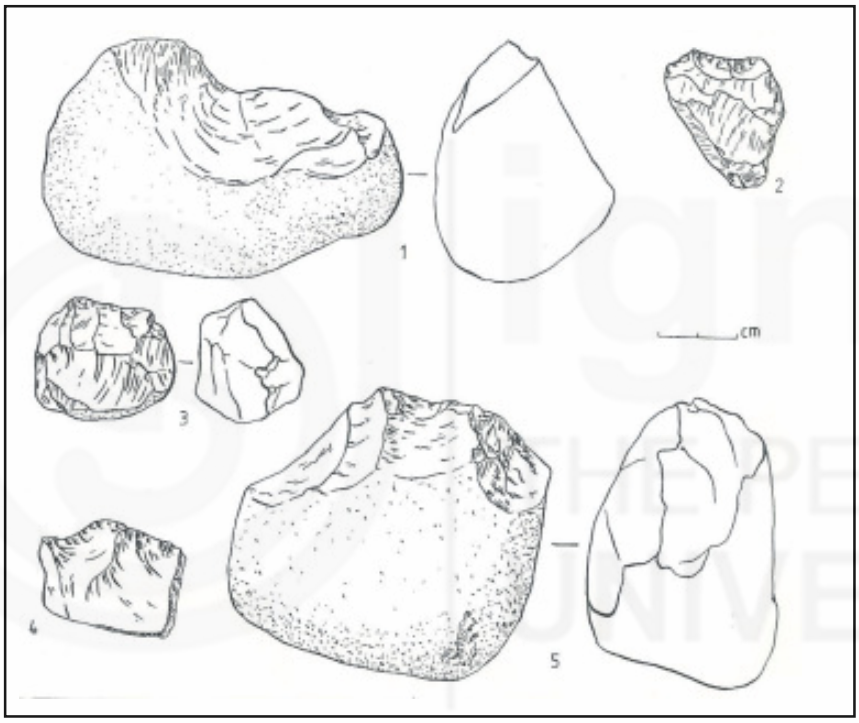

Fig.1.3: Stone artefacts of the Oldowan tradition dated to 1.85 million years ago from Olduvai Gorge in Tanzania: 1) unifacial chopper; 2) flake scraper; 3) light duty chopper; 4) utilised flake; 5) bifacial choppers.

The second major stage in cultural development came with the appearance of hominin species that anticipated living people in anatomy and cultural behaviour. This is called *Homo erectus* which appeared around 1.8 to 1.7 million years ago. Associated with this stage a new cultural tradition called the Acheulian appeared. It is named after the French site of St. Acheul where handaxes and cleavers characteristic of this stage were first found by Rigollot in 1854. Similar but somewhat cruder artefacts were found by another Frenchman Boucher de Perthes between 1836 and 1846 near the town of Abbeville in Northern France. In Africa, this tradition is best represented at Olduvai Gorge (Bed II), Olorgesailie, Koobi Fora, Kalambo Falls and Isimila and persisted from about 1.65 till 0.25 million years ago (Fig. 1.4). In the later stages of the Acheulian tradition, handaxes and cleavers became very refined and more symmetric in shape. Also flake-tools of refined forms (scrapers, points, etc.) appeared, foreshadowing the next cultural

stage called the Middle Palaeolithic which is associated with Neanderthal man and dated roughly between 0.25 million and 50,000 years ago. The Middle Palaeolithic tradition was followed by the Upper Palaeolithic stage attributed to *Homo sapiens*.

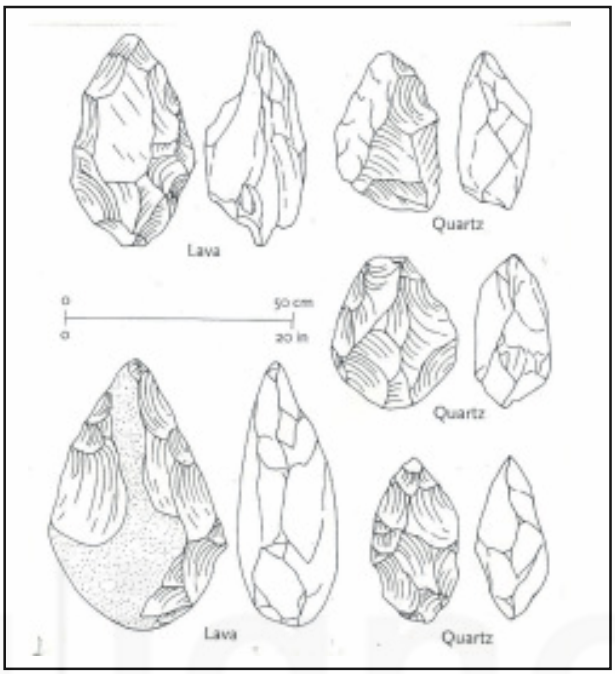

Fig. 1.4: Stone artefacts of the Acheulian tradition dated to 1.65 million years ago from Olduvai Gorge, Tanzania.

Now you will be curious to ask the question: When did the hominin occupation of other parts of the Old World take place? Since the end of the 19th century fossil remains of *Homo erectus* have been found in river deposits at Trinil, Mojokerto and Sangiran on the island of Java. These have been designated as Java Man or *Pithecanthropus erectus*. While some scholars hold that these are not older than 0.8 million years, others ascribe an antiquity of 1.65 millions to these findings. In China *Homo erectus* fossils are known from Zhoukoudian and Gongwangling; these are dated between 0.8 and 0.4 million years ago. The stone artefacts from Nihewan basin, some 150 km west of Beijing, have been dated to 1.6 million years ago, thereby implying human colonisation of Northeast Asia at an early date. Such a possibility gains in strength because of the existence of very early sites like Ubediya in Israel (dated between 1.4 and 1.1 million years ago) and Dmanisi in Georgia (dated to 1.8 million years ago) yielding stone artefacts, animal bones, and skulls and lower jaw of *Homo ergaster*. Considering that the Chinese tool assemblages consist of simple core tools (choppers and chopping tools) and flakes but lack true handaxes, in the 1940s, the late Professor Hallam L. Movius Jr. of U.S.A. drew a line through northern India to distinguish the handaxe or Acheulian tradition of Africa, West Asia and Europe from the pebble-tool tradition of Eastern and Southeast Asia. This is called the Movius Line.

What about the human occupation of the European continent? Thanks to the finding of a lower jaw at Heidelberg in Germany, representing a form of *Homo ergaster* called *Homo heidelbergensis*, it is known since long that a late form of the Acheulian culture spread from Spain and Italy to northern Europe by 0.5 million years ago. The human fossil remains and stone artefacts from cave deposits

of the Sierra de Atapuerca in Spain and human skull cap found at the site of Ceprano in Italy show that human colonisation of southern Europe was already underway by 0.8 to 0.9 million years ago. More recent stone artefact findings from Orce in Spain, Monte-Poggiolo in Italy and Pont-de-Lavaud in France show that this colonisation may have already been initiated between 1 and 1.4 million years ago.

So far we have examined the biological and cultural aspects of the Lower Palaeolithic stage in Africa, Europe, and East and West Asia. Let us now consider the evidence for this stage in South Asia.

1.5 GEOGRAPHICAL FEATURES OF INDIA

India (or South Asia, for general geographical and cultural purposes) is a distinct geographical entity at subcontinental level. It is a land of tremendous diversity, geographically, culturally and linguistically. Its principal geographical zones are the towering snow-clad Himalayas in the north; the Hindukush and Karakoram ranges in the northwest; the arid Thar desert of western Rajasthan; the fertile Indus and Gangetic alluvial tracts; the somewhat triangular-shaped peninsular tract flanked by the Sahyadris on the west and Eastern Ghats on the east; and the hill-tract of Northeast India. Each zone has tremendous variability in terms of landforms, soils, rainfall and vegetation.

In the Pleistocene, which has a duration about two million years, India was a part of global climate. Oxygen isotope studies of marine core-sediment samples have proved that the northern latitudes of the earth witnessed an alternation of nine or ten glacial and interglacial (cold and warm) periods. During glacial periods India experienced dry climate and weak monsoon, while interglacial periods were characterised by strong monsoon with high rainfall. The gravels and silt sediments preserved in the various river valleys in India do suggest a succession of wet and humid climatic phases.

The Indian landscape was endowed with all the prerequisites for a successful hunting-gathering way of life: suitable landforms permitting free movement of hunter-gatherer groups; occurrence of a variety of basic rocks and siliceous stones for making tools; existence of perennial water bodies in the form of a large and small streams and springs; and availability of a large variety of wild plant and animal foods. It is therefore not surprising that, barring the Himalayan tract proper and the Indo-Gangetic alluvial tracts, Stone Age groups occupied the whole of the Indian landmass. It is interesting that even the desertic zone of western Rajasthan was marked in the past with streams and pools and ponds which attracted Stone Age groups right from the Lower Palaeolithic till the Mesolithic stage.

1.6 CHANGING PERSPECTIVES IN INDIAN PALAEOLITHIC RESEARCH

Robert Burce Foote, who joined the Geological Survey of India at Madras (Chennai) in 1858, almost single-handedly laid the foundations of prehistory in India (Fig. 1.5). He was inspired by the Royal Society's ratification of the findings of stone tools and animal fossils in England and the Somme valley of Northern France and started looking for similar Palaeolithic implements on the Indian soil.

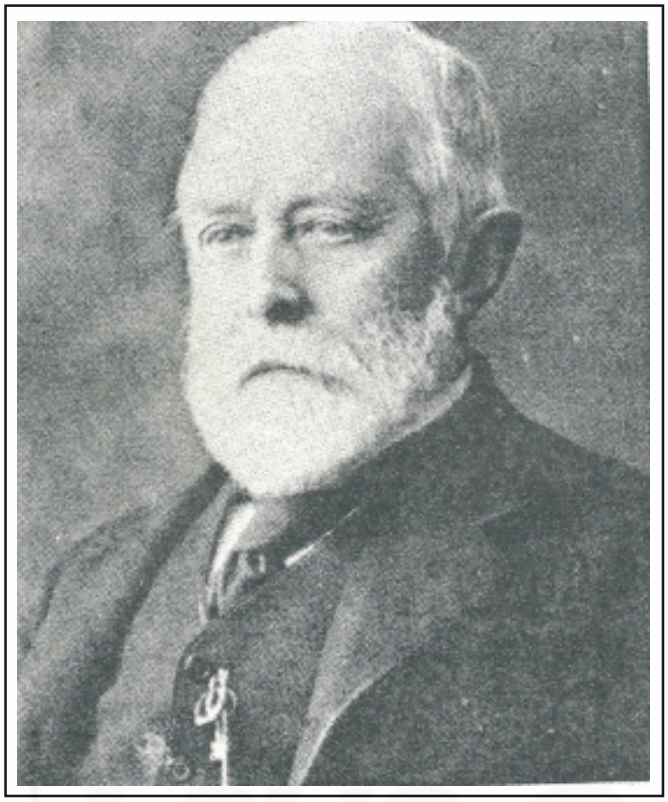

Fig. 1.5: Robert Bruce Foote (1834-1912), the Father of Indian Prehistory

He found the first group of implements at Pallavaram (now a suburb of Chennai) in May 1863 and continuously followed up this discovery for nearly three decades. In the course of his geological surveys in South India and Gujarat he discovered nearly 400 sites and classified them under the Palaeolithic, Neolithic and Iron Ages. In the elaborate Introduction of his publication about these sites which he prepared in 1916, Foote made many insightful observations about the life and times of Palaeolithic societies.

> Robert Bruce Foote, a British geologist joined the Indian geological survey in 1858, then after the establishment of archaeological survey of India in 1862, Boote began the systematic research of human prehistoric remains in India. He discovered the handaxe in southern India at a place called Pallavaram near Chennai.

The next major development took place in 1930. Based upon the stratigraphical evidence of gravels and silts recorded in the rivers of Eastern Ghats in Kurnool area of Andhra Pradesh and also considering the typological aspects of stone tool assemblages recovered from these deposits, L.A. Cammiade (a District Collector) and M.C. Burkitt of Cambridge University proposed that Southeast India witnessed a four-fold Stone Age sequence. They designated these stages as Series I to IV, which broadly correspond to Lower, Middle and Upper Palaeolithic, and Mesolithic stages, respectively. In the next four decades similar stratigraphical and typological studies were carried out in different regions of the country. H.D. Sankalia and his colleagues and students at the Deccan College, Pune, played a pivotal role in these studies. Sankalia's book *Prehistory and Protohistory in India and Pakistan* (1974) provides an elaborate synthesis of the results.

Since the 1970s new perspectives were developed in Stone Age research. These were aimed at rising above classificatory studies of stone tools and making inferences about the behavioural patterns of hunter-gatherer communities. Emphasis now began to be laid on intensive regional surveys aimed at the identification of *in situ* or primary sites of all sizes and kinds. Settlement system approach was adopted to relate the sites to respective landscape settings. Emphasis was also laid on the identification of formation processes of sites. Analogies were sought from ethnographic and experimental studies. In tune with these new perspectives many fresh studies including the excavation of primary sites and ethnographic research about the exploitation of wild plant and animal foods were undertaken in Kurnool and Cuddapah basins of Andhra Pradesh, Kortallayar valley of Tamil Nadu, Kaladgi and Bhima basins of Karnataka, Western Deccan plateau, Central India, Rajasthan and Chhota Nagpur area.

1.7 PHASES WITHIN THE PALAEOLITHIC AND DATING

For some time after Independence archaeologists expressed doubts about the existence of an Upper Palaeolithic stage in India. But excavations in Kurnool caves in Andhra Pradesh, Bhimbetka caves in Madhya Pradesh, and at the open air sites of Renigunta in Andhra Pradesh and Patne in Maharashtra, have revealed clear-cut cultural levels of this stage. So the Indian Palaeolithic can now be safely divided into three developmental stages: Lower, Middle and Upper. The Lower Palaeolithic has two cultural traditions, viz. the Soanian pebble-tool tradition and the peninsular Indian handaxe-cleaver tradition. These traditions involved the use of large pebbles or flakes for making choppers and chopping tools, handaxes, cleavers, knives, etc. The Middle Palaeolithic is based on the use of a variety of flakes struck from cores for preparing scrapers, points, borers and other tools. Further refinements came in the Upper Palaeolithic stage. Now implement types like blunted and penknife blades, blades with serrated edges and arrow points are made on long parallel-sided blades struck in a series from cylindrical cores by punch technique.

For a long time the topic of dating these stages within the Palaeolithic remained at the level of assigning relative ages to them on the basis of stratigraphical positions of tool-assemblages found in river-bank sediment profiles. Happily, during the last quarter-century it has been possible to date some of the sites in absolute terms by means of scientific dating techniques such as the radiocarbon, palaeomagnetism, thermoluminiscence, potassium argon, argon argon and uranium thorium.

At Riwat near Peshawar in Pakistan a flaked pebble and some other artefacts were found in a cemented gravel occurring at the base of a 70 m deep section within the Siwalik sediments (Fig. 1.6). This gravel has been dated to 1.9 million years ago (revised to 2.5 million years) on the basis of palaeomagnetism. Likewise, at Uttarbaini in Jammu some nondescript artefacts were found in Siwalik sediments which have been assigned an age of 1.6 million years (revised to 2.8 million years) by fission track method. Although some doubts are expressed about these dates, these sites are presently the earliest known archaeological sites in India.

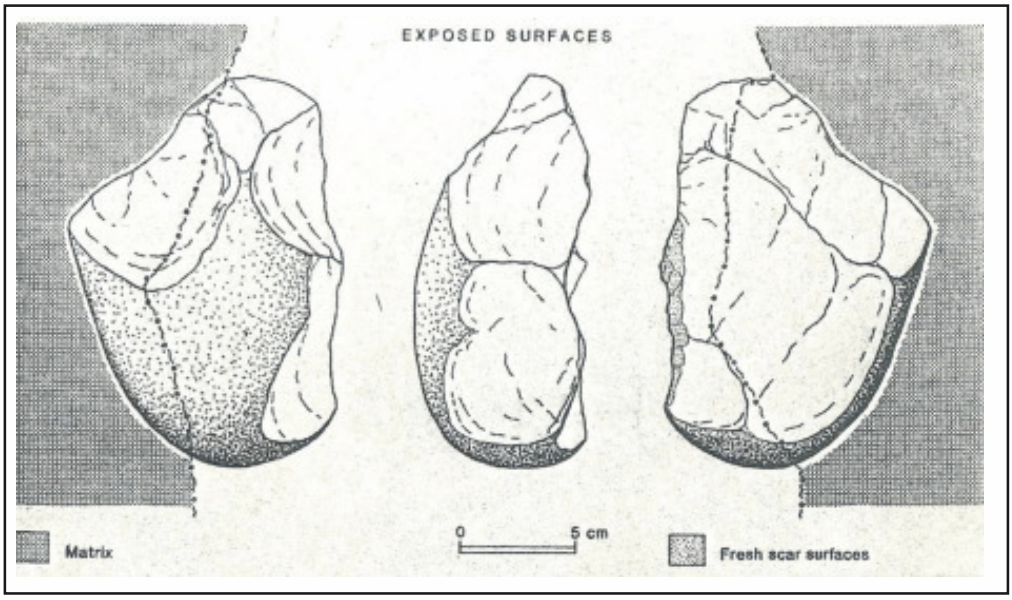

Fig. 1.6: Flaked artefact of quartzite dated to 1.9 million years ago from Riwat in Pakistan

The site of Isampur in North Karnataka has given a date of 1.2 million years on enamel of animal teeth, obtained by means of electron spin resonance method. This is the earliest known Acheulian site in the subcontinent. Other Acheulian sites such as Dina and Jalalpur in Pakistan, Didwana (Rajasthan), Umrethi and Adi Chadi Wao (Gujarat), Nevasa, Bori and Morgaon in Maharashtra, and Sadab, Teggihalli and Yedurwadi in Karnataka have produced dates on materials like calcretes, milliolites and volcanic ash. These range between 0.7 and 0.2 million years, thereby suggesting that the Acheulian culture persisted for one million years.

Absolute dates are available for the Middle Palaeolithic sites of Didwana (Rajasthan), Kalpi (U.P.), Jetpur (Gujarat), Dhom and Mula Dams (Maharashtra) and Jwalapuram (Andhra Pradesh). These dates range from 1,65,000 years to 31,000 years B.P.

More than one dozen dates obtained by thermoluminiscence and radiocarbon methods are known for the Upper Palaeolithic sites in Andhra Pradesh, Maharashtra, Madhya Pradesh and Rajasthan; these range from 40,000 years to 11,000 years B.P.

1.8 ARCHAEOLOGICAL RECORD OF THE PALAEOLITHIC

Let us now examine the nature of archaeological record (i.e. the traces of human habitation that survived the ravages of time) of this period. Palaeolithic sites are of two principal types: open air sites and caves or rockshelters. Open air sites are more common in all parts of India and occur on or close to large and small rivers and also in interior basins or valleys and foothill zone of hill ranges. They represent various formation processes ranging from true *in situ* or undisturbed sites found on weathered bedrock or else in soft silts to occurrences in colluvial and river-borne gravels. Cave and rockshelter sites occur in hilly areas covered with sedimentary rocks (sandstones and limestones). Bhimbetka complex in Madhya Pradesh and Kurnool caves in Andhra Pradesh are well-known examples. Sanghao cave in Pakistan and Batadomba and Beli- lena Kitulgala in Sri Lanka are some other famous cave sites. The principal aspects of cultural record found at these sites are as follows:

1) The record basically consists of stone tools made of basic rocks (quartzite, dolerite, granite and limestone) and siliceous materials like cherts and chalcedonys.

2) The earliest known wooden artefacts consist of spears of spruce found at Schöningen in Germany. These are dated to 0.4 million years ago and were used for hunting horses (Fig. 1.7). Wood might have been used for shaping spears, points and arrows in India too, and for that matter in many parts of the world, but nothing has survived. Tools made of animal bones are known from a few Palaeolithic sites e.g. Middle Palaeolithic site at Kalpi in the Yamuna valley and Upper Paleolithic caves in the Kurnool area.

Fig. 1.7: Hunting spears of spruce wood dated to 0.4 million years ago from Schöningen in Germany

3) Apart from fossil faunal collections from river sediments and Kurnool caves, small amounts of bones of wild cattle, deer and other animals are found in association with cultural material, e.g. Acheulian sites in the Hunsgi and Baichbal valleys of Karnataka.

4) Plant remains are extremely rare. Remains of wild bread fruit and two types of banana occur at the Beli-lena Kitulgala cave in Sri Lanka (dated to 10,000 to 8,000 B.C.). Gesher Benot Ya'akov in Israel (dated to 0.8 million years ago) has yielded remains of a variety of wild nuts with evidence of fire treatment. Evidence of fire in the form of a hearth is known from Upper Palaeolithic caves in the Kurnool area and is dated to about 16,000 years ago.

5) Human skeletal remains are known from Hathnora on the Narmada river, but these are more common from the Mesolithic stage.

6) Some of the paintings from Bhimbetka and other caves may date to the terminal phase of the Upper Paleolithic. Personal ornamentation in the form of bone beads and pendants appears in the Upper Palaeolithic phase at Patne and other sites in Western India.

7) Structural remains consisting of ground plans of hut-like dwellings were exposed from the Acheulian levels at Hunsgi in Karnataka and Paisra in Bihar and the Upper Palaeolithic site No.55 near Riwat in Pakistan. Also a shrine-like rubble platform of stone, meant for the worship of a natural stone block with bright-coloured laminations as the manifestation of mother goddess, was found at the Late Palaeolithic site of Baghor in Madhya Pradesh.

1.9 LOWER PALAEOLITHIC STAGE IN INDIA

As we have noted earlier, the Lower Palaeolithic phase in India (see map of sites in Fig. 1.8) consists of two principal tool-making or cultural traditions, viz., a) the Soanian tradition forming part of the East and Southeast Asian chopper-chopping tool tradition and b) the Handaxe-cleaver or biface assemblages constituting the Acheulian tradition, which is widely known from the western half of the Old World (Africa, Western Europe, West and South Asia). Movius Line formalised the geographical dichotomy between these two Palaeolithic traditions of the Old World.

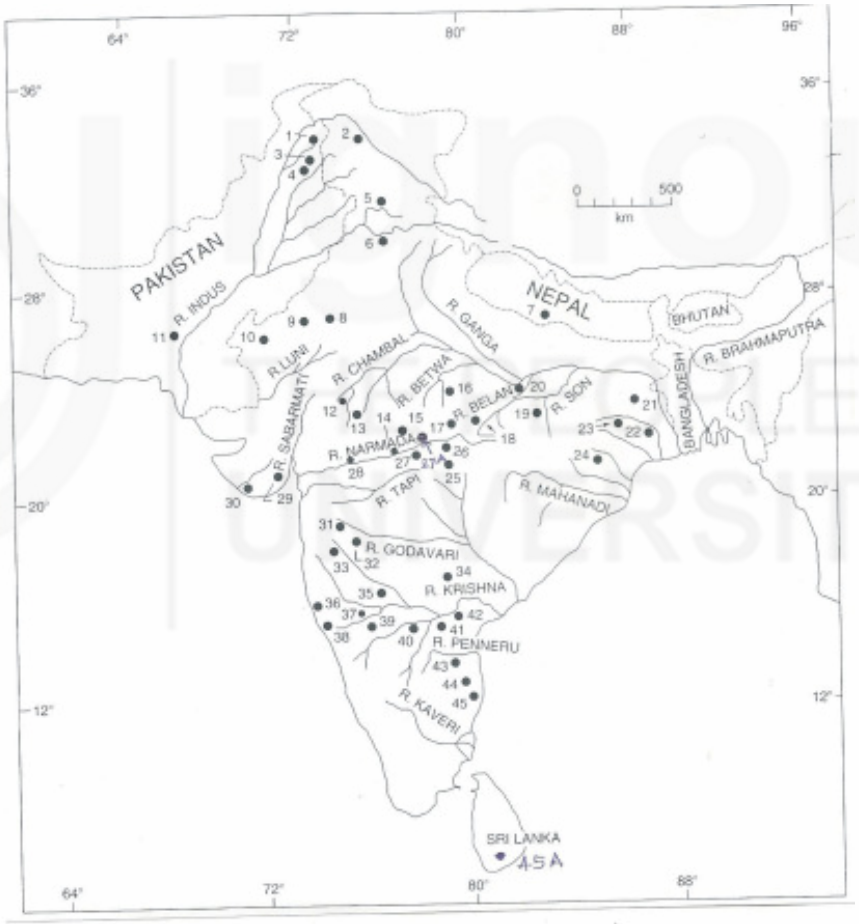

Fig. 1.8: Important Lower Palaeolithic sites in South Asia: 1) Riwat; 2) Pahlgam; 3) Jalalpur; 4) Dina; 5) Beas-Banganga complex; 6) Sirsa-Ghaggar complex; 7) Dang-Deokhuri complex; 8) Didwana; 9) Jayal; 10) Jaisalmer-Pokaran Road; 11) Ziarat Pir Shaban; 12) Berach complex; 13) Chambal complex; 14) Bhimbetka; 15) Raisen complex; 16) Lalitpur; 17) Damoh complex; 18) Son complex; 19) Sihawal; 20) Belan complex; 21) Sisunia, 22) Singhbhum complex; 23) Paisra; 24) Brahmani complex; 25) Wainganga complex; 26) Mahadeo Piparia; 27) Adamgarh; 27A) Hathnora; 28) Durkadi; 29) Samadhiala; 30) Umrethi; 31) Gangapur; 32) Chirki-Nevasa; 33) Bori; 34) Nalgonda complex; 35) Hunsgi and Baichbal basins complex; 36) Mahad; 37) Anagwadi; 38) Malwan; 39) Lakhmapur; 40) Nittur; 41) Kurnool complex; 42) Nagarjunakonda complex; 43) Cuddapah complex; 44) Rallakalava complex; 45) Kortallayar complex; 45A) Ratnapura complex.

1.9.1 The Soanian Cultural Tradition

The existence of this tradition was recognised in 1939 by H. de Terra of Yale University and T.T. Paterson of Cambridge University in the northwestern part of the subcontinent. On the basis of their field studies in the area they identified a series of five terraces on the river Soan, forming part of the Indus drainage system. They correlated these terraces with glacial and interglacial events of the Kashmir valley above. Further they collected stone artefacts from some of these terraces and, on stratigraphical and typological considerations, put up what has come to be called the Soan culture-sequence, comprising pre-Soan, Early Soan, Late Soan and Evolved Soan stages (Fig. 1.9). The tools consist of pebbles with working edges on their sides or ends, obtained by means of flaking from one or both surfaces (producing choppers or chopping tools) (Fig.1.10). The British Archaeological Mission led by Robin Dennell, which worked in this area (now in Pakistan) in the 1980s, raised serious doubts about the palaeoclimatic interpretations and cultural sequence put forward by de Terra and Paterson. But the term Soan culture has stuck on in Indian prehistory.

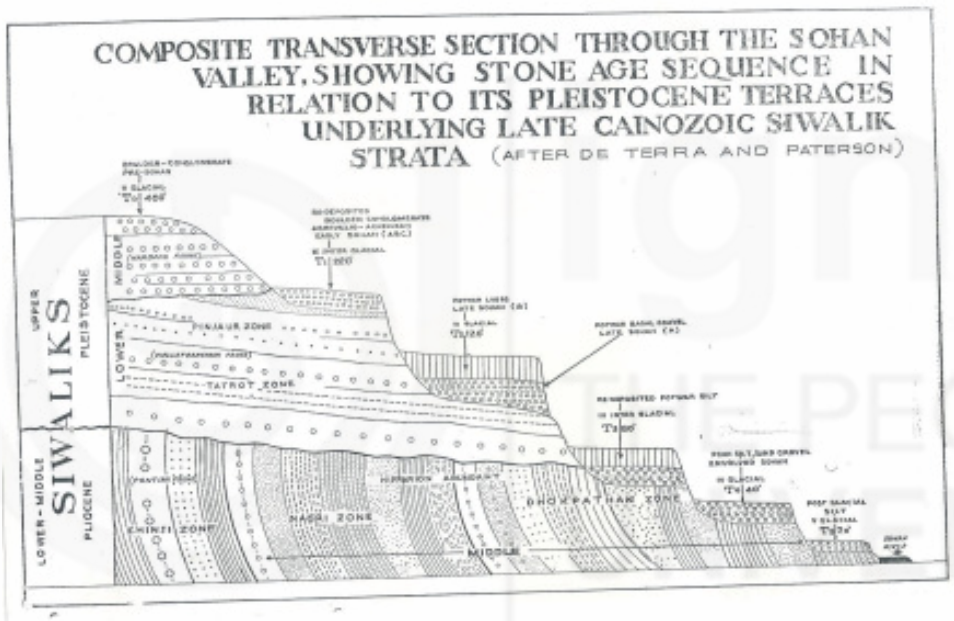

Fig. 1.9: Schematic section showing terrace stratigraphy and Stone Age sequence in the Soan valley of Pakistan

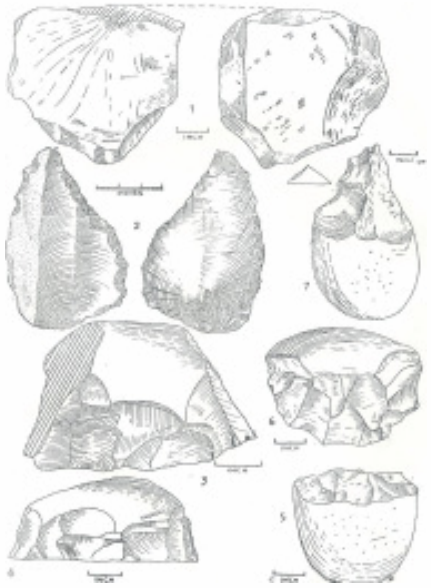

Fig.1.10: Choppers and flake tools of the Early Soan tradition

From the Indian side of the border, pebble-tool assemblages were found in the Sirsa and Ghaggar valleys of Haryana, Beas and Banganga valleys of Himachal Pradesh, and Hoshiarpur-Chandigarh sector of the Siwalik Frontal Range (Fig. 11). Curiously enough, bifacial assemblages were also found at more than 20 places in the latter area. This led some scholars to the interpretation that the hominin groups responsible for these two traditions co-existed in the same area – the Soanian tradition confined to duns or valleys of the Frontal Range and the biface tradition restricted to plateau surfaces. The Soan assemblages from Punjab have been assigned by some workers to the Middle Palaeolithic tradition.

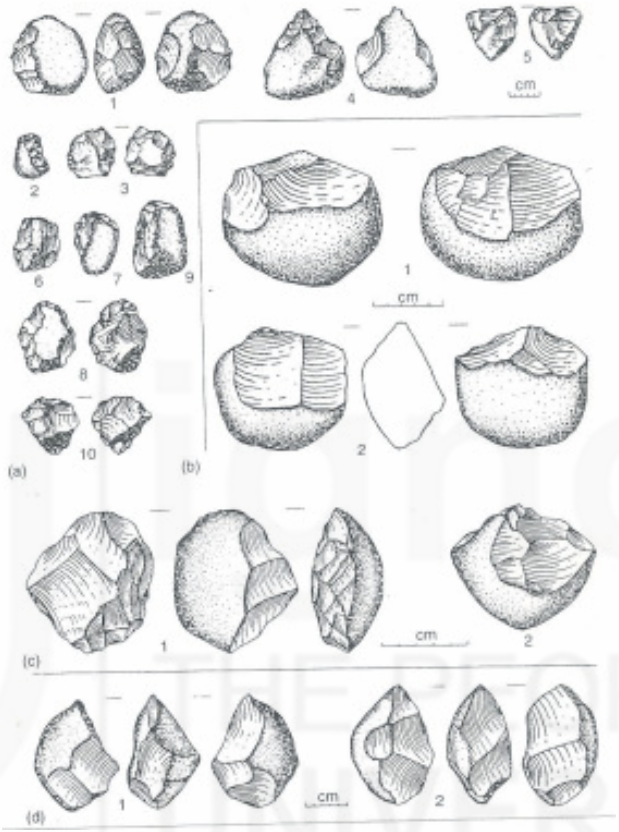

Fig.1. 11: Pebble-tools from Lower Palaeolithic sites in India: a) Nittur, Karnataka; b) Jaiselmer-Pokaran Road, Rajasthan; c) Sirsa valley, Haryana; d) Mahadeo Piparia, Madhya Pradesh.

In recent years the German archaeologist Gudrun Corvinus reported Soanian-like assemblages from the Dang valley in Nepal. Also claims of pebble-tool industries called the Mahadevian and the Durkadian have been put forward from the Narmada valley. Pebble tools have also been reported from Nittur in Karnataka and from some sites in Kerala. But all these findings still remain to be confirmed. The Ratnapura assemblages from Ratnapura gravels and silts in southern Sri Lanka also contain both pebble tools and bifacial artefacts.

1.9.2 The Acheulian Cultural Tradition

This tradition is better documented than the Soanian from the points of view of chronology, spatial distribution of sites and land use patterns. Large clusters of sites are known from the Kortallayar valley of Tamil Nadu, Kurnool and Cuddapah basins of Andhra Pradesh, Kaladgi and Bhima basins of Karnataka, Chhota Nagpur zone of Bihar and Jharkhand, hill-tracts of Uttar Pradesh south of the Ganges, Narmada and Son valleys of Madhya Pradesh, Saurashtra and mainland

Gujarat, the plateau tract of Maharashtra, Rajasthan including the desertic zone in the west, Aravalli ridges near Delhi, and the Siwalik zones of Punjab and Nepal. Some sites are also known from the Konkan coast and the northeastern coast of Andhra Pradesh.

Quartzite was the preferred rock for tool-making. Where it was not naturally available, the Acheulian groups made use of other available rocks like limestone in the Bhima basin, dolerite and basalt in Maharashtra, granite in Jhansi district of Uttar Pradesh, and fossil wood in Bihar and Bengal. Stone hammer, soft hammer and prepared core techniques were employed for detaching flakes and shaping them into implements. We will now briefly consider the evidence from major excavated primary sites.

1.9.2.1 Important Sites

Singi Talav (western Rajasthan) was a lake-shore site excavated by V.N. Misra and his team. This site yielded an assemblage of 252 artefacts of quartzite and quartz from two levels of silty clay. The assemblage comprised choppers, polyhedrons, bifaces, scrapers and points.

Rock-shelter III F-23 at Bhimbetka in Madhya Pradesh was also excavated by V.N. Misra. It preserved 4 m thick cultural deposit containing Acheulian, Middle and Upper Palaeolithic, and Mesolithic levels. The 2.5 m thick Acheulian level consisted of occupation levels paved with stone slabs and rubble. An excavated area of 16 m^2 yielded 4700 artefacts of quartzite. Adamgarh (also in Madhya Pradesh) also exposed an Acheulian level below Middle Palaeolithic deposits. Lalitpur (Jhansi district, U.P.) produced an early and *in situ* assemblage made up of granite tools.

Paisra (Munger district, Bihar) lies in an inland valley enclosed by hills forming part of the Kharagpur range. It was excavated by R.K. Pant and Vidula Jayaswal and exposed Acheulian levels below 1 to 1.5 m thick colluvial deposits. In addition to a large assemblage consisting of early Acheulian artefacts, the excavation exposed remains of hut-like dwelling structures in the form of alignments of post-holes and a circular arrangement of stone blocks.

At Chirki-Nevasa (Maharashtra) Gudrun Corvinus found the Acheulian cultural material in a colluvial gravel resting on a rock platform on the river Pravara. Trench VII (74 m^2 in extent) excavated here yielded 1455 artefats of dolerite along with fossil bones of wild cattle and other animals. The large basalt blocks found in this layer probably formed part of the ground plan of a dwelling structure. The site was a seasonal camp used for multiple purposes. The artefactual collection included handaxes, cleavers and knives as well as a small-tool component made up of flake-tools of chert and chalcedony.

Morgaon is another important site from the Deccan basalt landscape; it is located in the upper reaches of the Bhima drainage system. It has preserved 2 to 15 m thick ancient sediments including a tephra (volcanic ash) layer. A trench (6 x 4 m) excavated by Sheila Mishra and Sushma Deo between 2002 and 2004 yielded artefacts from three horisons. The main horison consisted of weathered basalt rubble found on surface of clay and produced 180 artefacts of local basalt. A second trench (5 x 5 m) dug in 2007 yielded an assemblage of 162 specimens including cleavers and handaxes.

Four Acheulian localities were excavated by K. Paddayya in the Hunsgi and Baichbal valleys of North Karnataka. Localities V and VI at Hunsgi in the Hunsgi valley and Locality VI at Yediyapur in the Baichbal valley preserved 20 to 30 cm thick *in situ* cultural levels on weathered bedrock (granite); these were covered by silt deposit measuring up to 50 cm in thickness. Rocky eminences or ridges above the beds of local streams were selected for camping and the open spaces found on these ridges were used for the erection of temporary shelters consisting of a framework of wooden posts and branches covered with grasses. The main trench (63 m^2) at Hunsgi locality V yielded an assemblage of 291 artefacts of limestone. Yediyapur locality VI yielded nearly 600 artefacts of pegmatite from an excavated area of 60 m^2.

At Isampur in the Hunsgi valley K. Paddayya's detailed geoarchaeological investigations and excavations exposed a quarry-cum-camp site covering an area of three-quarters of a hectare. It is associated with a weathered rock outcrop made up of silicified limestone blocks of suitable sizes and shapes. It lay close to a palaeochannel with a perennial body of water. Five trenches were excavated here, covering an area of 169 m^2. The Acheulian level was 20 to 30 cm thick and was covered by 50 cm thick brown silt. Trench 1 (70 m^2 in extent) exposed seven chipping clusters containing unmodified limestone blocks, cores, flake blanks, finished implements and waste products of limestone, all found in mint-fresh condition (Figs. 1.12 and 1.13). Hammerstones required for flaking were acquired from the surrounding area in the form of rounded nodules of quartzite, basalt and chert. This trench yielded an assemblage of over 15,000 specimens, which made it possible to reconstruct the flaking methods adopted by the hominins for making handaxes, cleavers, knives and other implement types. Isampur excavation also yielded fossilised bones and dental remains of wild cattle and deer and shell fragments of land turtle. Isampur served as a localised hub in this part of the Hunsgi valley, from where the hominins radiated onto the surrounding limestone tablelands and valley floor as part of their daily foraging rounds.

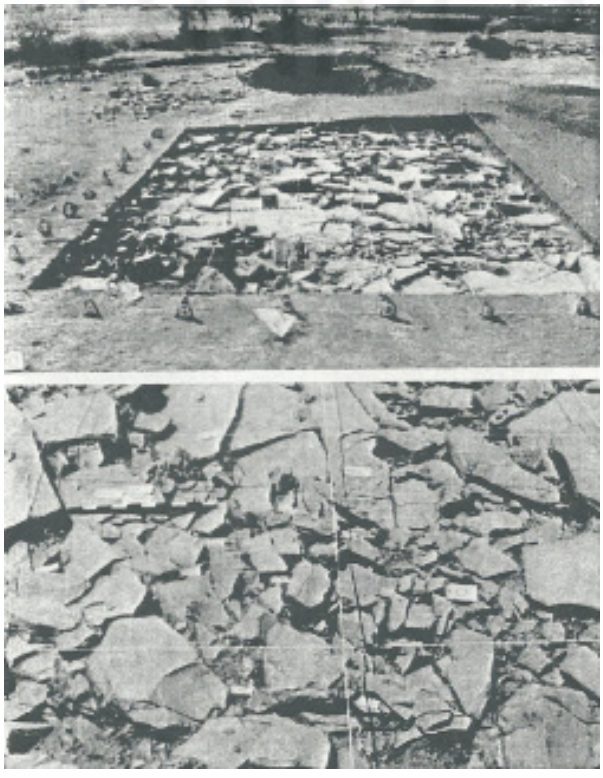

Fig.1.12: Acheulian horison exposed in Trench 1 at Isampur, Karnataka

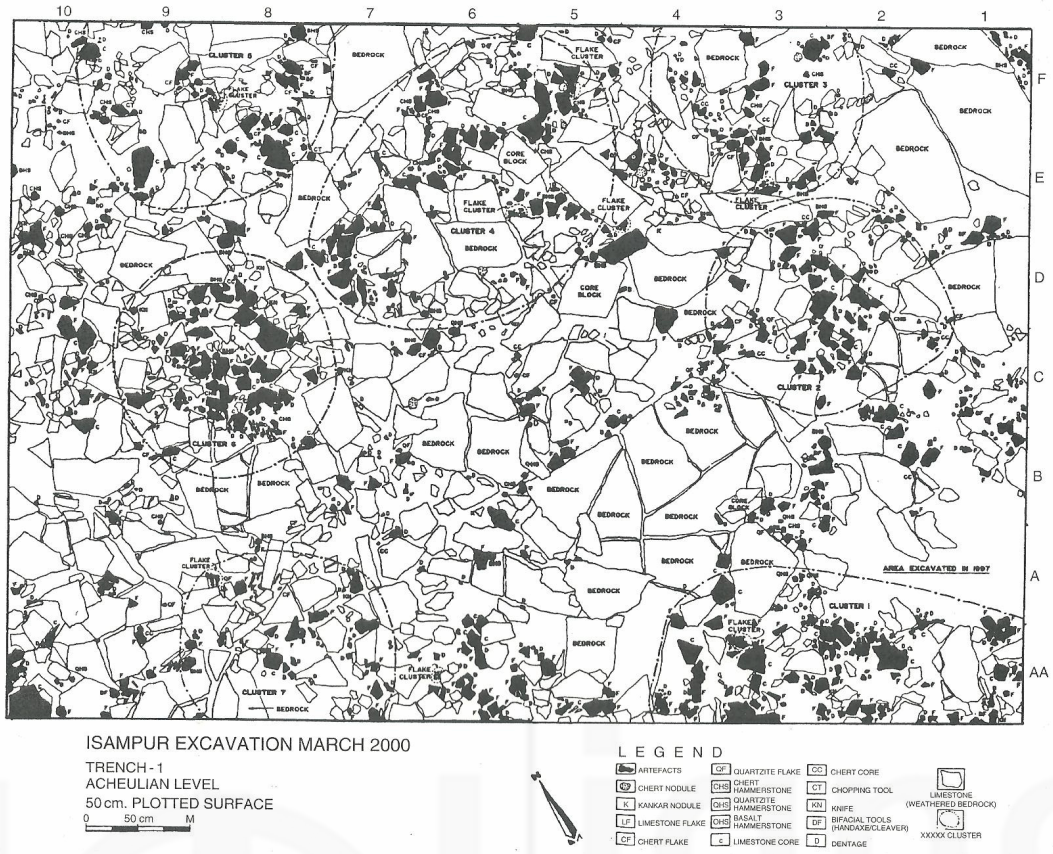

Fig.1.13: Acheulian chipping clusters for making stone artefacts exposed in Trench 1 at Isampur in Karnataka

Shanti Pappu's investigations in 200 km^2 area of the Kortallayar valley in Tamil Nadu brought to light many Acheulian and Middle Palaeolithic sites. The Acheulian sites at Mailapur and Pariculam are associated with low energy stream and sheet flood deposits. In the excavations at Attirampakkam an *in situ* Acheulian assemblage of quartzite was found in a thick layer of laminated clay; it also yielded fossilised bones of wild cattle and other species. This site has recently been dated to 1.5 million years by an advanced scientific technique.

1.9.2.2 Stages within the Acheulian Tradition

Although not documented stratigraphically at any one particular site, the Acheulian culture with a duration of nearly one million years has been divided into two developmental stages – Early Acheulian and Late Acheulian. The Early Acheulian assemblages are based on the employment of stone hammer technique. Hence handaxes, cleavers and large cutting tools are thick with irregular cross-sections and sinuous edges. Their surfaces are uneven and still retain large patches of cortex. Cleavers, handaxes, picks, knives, and polyhedrons are the principal types. Pointed shapes (pear-shaped, lanceolate and pyriform) are in a majority. This stage is represented by sites like Ziarat Pir Shaban in Sind, Singi Talav and 16 R Trench near Didwana in Rajasthan, Lalitpur, Chirki-Nevasa and Morgaon, Paisra, Attirampakkam, Hunsgi, Yediyapur and Isampur. As an example of assemblage composition, one may cite the collection from the bottom 10 cm portion of cultural deposit found in Trench 1 at Isampur. It is a limestone assemblage consisting of 13,043 specimens – 169 specimens being shaped implements and the rest simple artefacts. The shaped implements include handaxes (48), cleavers (15), knives (18), chopping tools (14), discoids (3), scrapers (65), perforators (5) and one indeterminate example (Fig. 1.14).

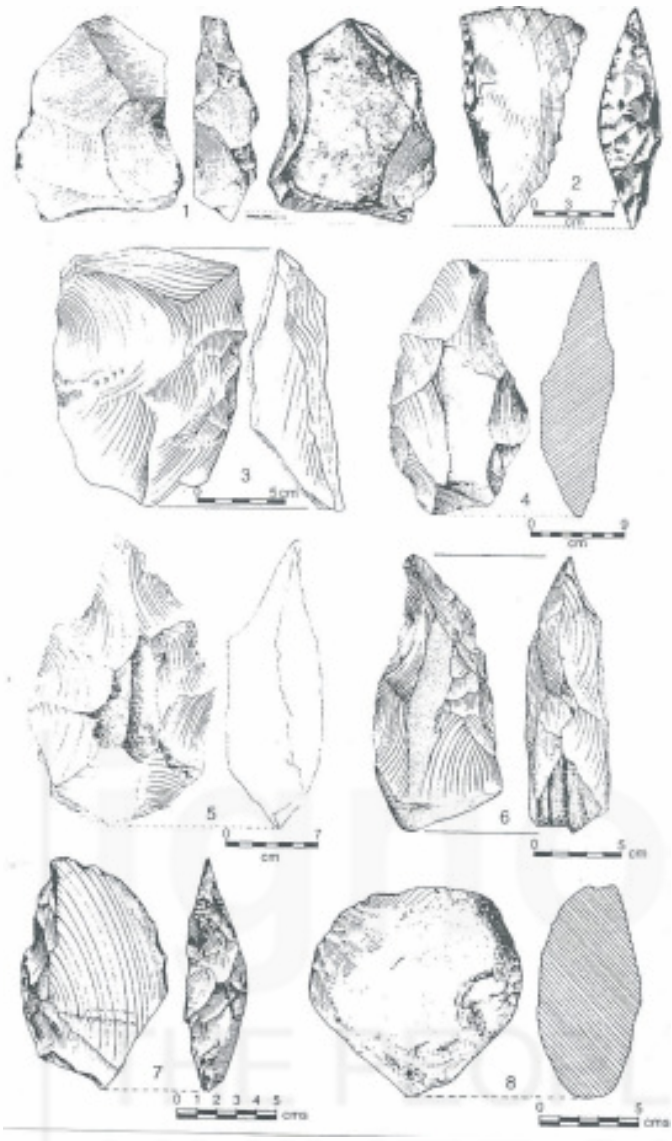

Fig.1.14: Lower Acheulian artefacts from Isampur, Karnataka: 1) core; 2&3) cleavers; 4&5) handaxes; 6) perforator; 7) knife; 8) hammerstone

The Late Acheulian is characterised by the use of soft hammer (wood or bone) technique, leading to the preparation of implements with thinner sections, smooth surfaces and less sinuous working edges. There is an increase in the number of cleavers and flake tools. Oval and triangular forms are common among handaxes. The assemblages from Bhimbetka and Raisen complex in Madhya Pradesh, Sihawal II in the Son valley, Gangapur in Maharashtra, Mudnur X and Lakhmapur in Karnataka, and the Rallakalava complex in Chittoor district of Andhra Pradesh are good examples of this stage. Some of the artefacts from the Ratnapura assemblages of Sri Lanka show Late Acheulian traits. Finished tools (all of quartzite) from III F-23 rockshelter excavation at Bhimbetka comprise handaxes (55), cleavers (150), side-scrapers (368), end-scrapers (108), backed knives (163), truncated flakes and blades (87), notches (111) and denticulates (78) (Fig. 1.15). In many ways the Late Acheulian tradition already foreshadows the flake-tool assemblages of the succeeding Middle Palaeolithic cultural stage.

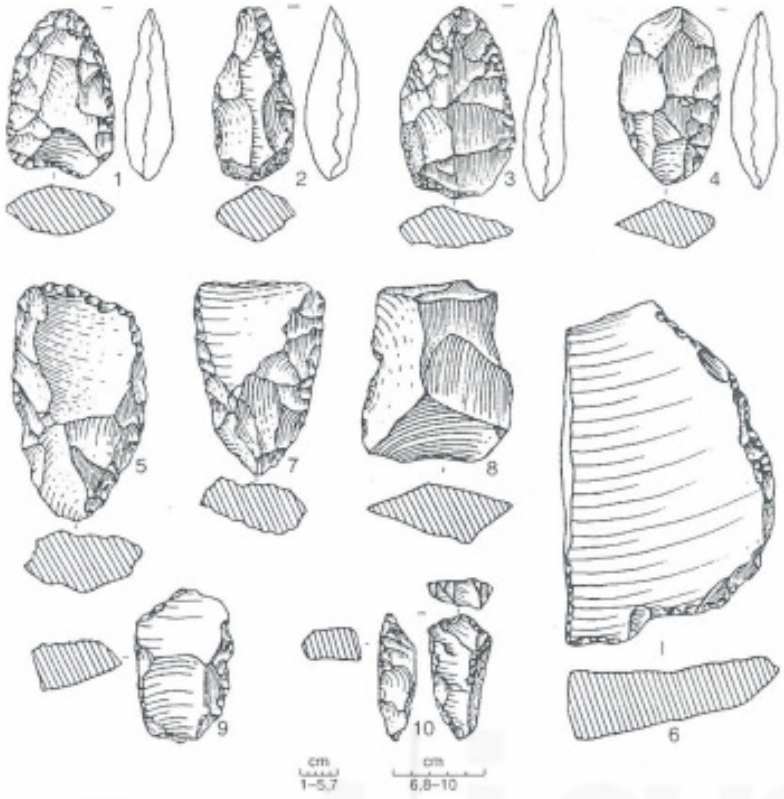

Fig.1.15: Developed Acheulian artefacts from III F-23 rock shelter at Bhimbetka, Madhya Pradesh: 1 to 4) handaxes; 5 & 7) cleavers; 6) convex scraper; 8) notched tool; 9) denticulate; 10) end-scraper

1.9.2.3 Hunting and Foraging

We have already noted that the entire Palaeolithic stage was characterised by a simple economic organisation consisting of hunting of wild animals and gathering of wild plant foods. Based upon the widely accepted premise that the various ecological or geographical zones of India supported rich animal life and vegetation in the Pleistocene periods we can safely infer that a wide spectrum of animal and plant foods was available for exploitation by the Stone Age groups. The archeological record does give us some interesting clues in this regard.

Since the middle of the last century large collections of fossil fauna of mammals have been obtained along with stone tools from the Narmada, Godavari, Krishna and other rivers. These findings gave rise to interpretations that Early Man was exploiting wild cattle, deer and other mammals for food purposes. This interpretation is now supported by the recovery of dental and post-cranial bone pieces of wild cattle and deer species, dental remains of wild horse and tusk pieces of wild elephant from primary Acheulian sites at Isampur, Teggihalli, Hebbal Buzurg and Fatehpur in the Hunsgi and Baichbal valleys, Chirki-Nevasa in Maharashtra, Attirampakkam in Tamil Nadu and other sites. Cut-marks and other taphonomic marks found on these bones indicate that these pieces formed part of food-processing and consumption. These skeletal remains either belonged to hunted prey or else were partly scavenged from kill-sites of carnivorous animals. Further, the occurrence of turtle shell pieces at sites like Isampur suggests that the Stone Age groups also exploited a variety of small fauna comprising insects, birds, fishes, rodents and amphibians by adopting simple collection strategies.

Now there is a worldwide realisation that plant foods also played an important role in the diet of Stone Age groups. Actually speaking, D.D. Kosambi already pointed out in 1965 that the Stone Age communities of tropical zones like India would have extensively made use of wild plant foods like fruits, berries, seeds and roots. Prehistorians have now realised the importance of looking for plant remains from Stone Age sites. M.D. Kajale recovered remains of wild bread fruit and two species of banana from Mesolithic levels (10,000 to 8,000 B.C.) of the cave site of Beli-lena Kitulgala in Sri Lanka. Also ethnoarchaeological studies conducted by M.L.K. Murty and D.R. Raju in the Eastern Ghats of Andhra Pradesh, K. Paddayya in Hunsgi and Baichbal valleys, and V.N. Misra and Malti Nagar in Madhya Pradesh have brought to light exploitation on a large scale of a wide variety of leafy greens, tubers and other root crops, fruits and berries, seeds and gums by tribal groups like the Chenchus, Yanadis and Gonds and also by the underprivileged sections of village communities.

1.9.3 Settlement Patterns

Some of the studies undertaken in recent years have proved to be helpful in the reconstruction of Stone Age land use patterns. The following deserve attention.

In 2004, R. Korisettar put forward the view that the sedimentary rock formations of peninsular India, viz. the Vindhyachal, Chhattisgarh, Cuddapah, Bhima and Kaladgi formations, were the core areas of Stone Age settlement. The principal reason put forward by him was that these areas offered many advantages to Stone Age groups, e.g. basin-shaped landforms, a variety of suitable rocks for tool-making, presence of caves and rockshelters, perennial water springs, and rich biomass with a variety of wild life and plant foods. This is a very useful proposition but needs some qualifications. First, erosional basins are very limited in extent in these geological formations which themselves cover very extensive areas. Secondly, erosional basins also occur in areas covered with Archaean and Deccan Trap formations e.g. Bhima and Ajanta basins in the Deccan Trap zone of Maharashtra and Sandur basin in the Archaean formations of Bellary area in North Karnataka, both containing a large number of Stone Age sites. Many such basins are found in other areas also.

In 1970s Jerome Jacobson identified as many as 90 Late Acheulian sites in a small valley enclosed by sandstone hills in the Raisen district of Madhya Pradesh. These probably represent winter-season occupation and the hunting groups moved to caves and rock-shelters of the adjacent Bhimbetka hills in the rainy season.

In 2004-2005, Ajith Prasad located a cluster of 40 Acheulian sites in a 300 km^2 stretch of the middle reaches of the Orsang river in Gujarat. These are primary context sites located in the foothill zone of hills or along the small feeder streams. A few sites were found around natural depressions on the landscape preserving water bodies till March. Also 70 types of wild plant foods were noted in the area.

The team led by V.D. Mishra and J.N. Pal found 17 Acheulian sites on the slopes of hillocks and rock outcrops marking the fringe of Kaimur range and overlooking the Belan river. Quartzite between available and rocks these are workshops where locally available rocks were used for tool-making. Their locations were suitable for the hominin groups to observe movement of game.

Pant and Jayaswal's work in the Paisra valley (15 km^2 in extent) of Bihar has revealed that a two-kilometer area around Paisra village served as the locus for camp-based activities. Many thin scatters of artefacts found in the surrounding uplands were interpreted as resource-procurement locations. The Paisra valley even today supports rich wild life and a variety of plant foods.

In the 1990s, R.S. Pappu and Sushma Deo investigated the Stone Age land use patterns in the Kaladgi basin of North Karnataka. They arrived at the inference that the Stone Age groups generally avoided the thickly forested and high rainfall tracts close to the Western Ghats and instead concentrated their activities on river banks and in foothill zone of hills in the middle reaches of the rivers Malaprabha and Ghataprabha.

K. Paddayya's three-decade long research since 1970 in the Hunsgi and Baichbal valley brought to light over 400 Stone Age sites. These two valleys form an erosional basin, which measures about 500 km^2 in extent and is enclosed by shale-limestone tablelands or granite hills. The Stone Age sites include 200 Acheulian sites which were investigated from the point of view of formation processes. Data pertaining to their distribution on the basin floor, excavation at four localities near Hunsgi, Yediyapur and Isampur, and ethnographic data about seasonal availability of surface water sources as well as wild plant and animal foods made it possible to reconstruct the Acheulian culture from a settlement system perspective. This reconstruction is briefly as follows.

Two features are striking about the distribution of sites across the basin floor. First, two major clusters of sites are noted – one near Hunsgi in the Hunsgi valley and the second one near Yediyapur in the Baichbal valley. Each cluster consists of 15 to 20 localities spread over a stretch of 2 or 3 km and both clusters are associated with perennial water sources resulting form seep-springs which emanate from the junctions of rock formations and antedate Stone Age occupation. The remaining sites were found in a scattered way all over the basin floor. Considering this differential distribution in conjunction with seasonal availability of water sources as well as wild plant and animal foods, it was inferred that the Acheulian settlement system of the area hinged upon two main seasonal resource management strategies. These are a) dry season aggregation of all Acheulian groups near perennial water pools (fed by seep-springs) in the two basins and probable reliance on large game hunting; b) wet season dispersal of the population in the form of small bands across the basin floor, dependence on shallow rainwater pools, and exploitation of a variety of seasonally abundant plant foods consisting of leafy greens, fruits, berries and seeds, and small fauna. It has further been inferred that for short-term or day-to-day purposes the Acheulian population organised itself into eight or nine groups or home ranges and occupied different parts of the basin.

1.9.4 Non-utilitarian Behaviour

Archaeological record has also preserved some strands of evidence regarding non-utilitarian aspects of the behaviour of Lower Palaeolithic groups such as cognitive and artistic abilities and personal ornamentation.

Bringing tenets of genetic epistemology developed by the Swiss psychologist Jean Piaget to bear on Stone Age technology, Thomas Wynn pointed out that the preparation of handaxes and cleavers reflects the employment of developed

cognitive principles of reversibility and whole-part relations. Developed cognitive abilities are also reflected in many aspects of land use. These include the selection of valley-like topographic settings as habitats for occupation, recognition of seasonal availability of water sources and food resources, and identification of certain rock outcrops as suitable spots for workshop-cum-camp sites.

Some of the handaxes in the Acheulian assemblages, particularly the thin specimens belonging to pointed, ovate and cordate forms, are very symmetric in shape and aesthetically pleasing. So the possibility cannot be ruled out that these specimens were valued as such by their makers. The cupules (small cup-like depressions) and simple engravings found on rock slabs from Bhimbetka, Daraki-Chatan and other caves in Central India have been interpreted by some archaeologists as artistic creations of the Acheulian groups.

There is some evidence of body decoration too. A few red ochre-like pieces were found at the Acheulian sites of the Hunsgi and Baichbal valleys. These were probably procured from vicinity and used for body smearing.

1.9.5 Hominin Fossil Record and Origins

Discussions about the biological identity of hominin groups responsible for the Lower Palaeolithic traditions groups of India are hampered by the woefully inadequate amount of fossil skeletal record available in the country till now. As yet only one true instance of the association of human skeletal record with the Acheulian cultural material is known. In 1982 Arun Sonakia of the Geological Survey of India found a fossil cranial vault (calvarium) in a 3 m thick gravel deposit of the Narmada river at Hathnora in Madhya Pradesh (Fig. 1.16). Initially classified under the *Homo erectus* group, this skull cap is now treated as representing an archaic form of *Homo sapiens*. Later a fossil clavicle was also reported from this site. Some bifacial implements and fossil fauna were also found from the gravel deposit.

Fig.1.16: Fossil skull cap of an archaic form of *Homo sapiens* from Hathnora, Madhya Pradesh

Now a few words about the origins of the Lower Paleolithic culture in India. Taking into account the high antiquity of hominin occupation in Africa and also the possible early dates for sites like Riwat and Uttarbaini in the Indian subcontinent, some workers have concluded that the Soanian type pebble-tool assemblages were a part of the spread of the Oldowan tradition of East Africa across Asia by a northern route between 1.8 and 2 million years ago. It has further been pointed out that the initial dispersal of the Acheulian into West Asia took place 1.4 million years ago and that its spread to South Asia occurred later either by a coastal route along the Arabian sea or else from the Levant (Mediterranean) zone of West Asia via a land route traversing the Iranian plateau. But there are some scholars who, based on the early dates for sites like Isampur, proposed an alternative hypothesis that the Acheulian culture may even have originated in peninsular India itself and spread in both eastern and western directions beyond the subcontinent's borders.

1.10 SUMMARY

In a popular book entitled *An Introduction to Archaeology* (1991) H.D. Sankalia summed up the whole purpose of archaeology in this statement: "… the aim is the total picture of man in the past. There is joy or delight not only in having this knowledge, but in its very pursuit." This is particularly true of prehistoric archaeology, which makes laborious efforts of all kinds to piece together various forms of evidence as in a jig-saw puzzle. Acquisition of knowledge about the distant Stone Age past not only calls for detective skills and a spirit of adventure and romanticism but entails familiarity with techniques and methods of various natural and social sciences. This hard-won knowledge is relevant in ways more than one.

First, it is an inherent attribute of man to show curiosity about animate or inanimate things around him. What we are as human beings and how we have come to be what we are – human nature and human origins - are legitimate domains of curiosity. In India even those who lack 'read and write' literacy do evince interest in knowing about the past and find it fascinating that the human society as we see it today, far from having been created on one fine morning by some supernatural agency, is actually the end product of a long process of change leading to more sophisticated developments in both biological and cultural domains. This fosters an attitude of awe and respect to changing relationships between man and nature across ages and thereby makes the human mind receptive to the concept of change.

Secondly, prehistory, because it deals with the inordinately long phase of infancy in human history and seeks to grasp the very genesis of human attributes, underscores the common roots of mankind and broadens one's world-view. Prehistoric heritage, irrespective of its present geographical locations in different parts of the world, forms the very bedrock on which history rests. As Jawaharlal Nehru put it aptly in his famous book *The Discovery of India*, the past is an inheritance common to the whole humanity.

Thirdly, Stone Age hunter-gatherer societies were based on subsistence economies geared to the seasonal availability of water and food resources as provided by nature. Surplus accumulation was an exception rather than a rule. This in fact explains their persistence over such a long period of time, without inflicting any

negative changes on their respective landscapes. In the world conference on environment held in Copenhagen in 1972, Indira Gandhi aptly termed the wanton destruction of natural environment by man in modern period as ecocide. The study of simple hunting-gathering societies of both the past and the present have some useful lessons to offer to the acquisitive and accumulative societies of our times.

Lastly, prehistoric studies also warn us not to lend credence to age-old negative characterisations of simple societies, as for example the seventeenth-century philosopher Thomas Hobbes' description of human life in the state of nature as "solitary, poor, nasty, brutish and short." Anthropological research on some of the existing hunter-gatherer societies clearly show that these societies have a high calorific intake, spend only limited hours of the day for food quest, and have much leisure time for story-telling, initiating the young into various life-skills and other social activities.

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Sample Questions

1) Define prehistory and examine its origins and development in the Old World.
2) Ascertain the place of man in the evolution of Primates.
3) Give an account of the Acheulian land use patterns in India.
4) Justify the relevance of prehistory.