

EARLY MAN AND HIS ENVIRONMENT IN CENTRAL INDIA

V. N. MISRA

DECCAN COLLEGE POST-GRADUATE & RESEARCH INSTITUTE, PUNE

GEOGRAPHICAL BACKGROUND

Central India can be defined as the area delimited by the alluvial plains of the Ganga in the north; the Aravalli and Sahyadri mountains in the west; the Tapti river in the south; and the Eastern Ghats and the Chota Nagpur plateau in the east. Administratively, its core is formed by the State of Madhya Pradesh but its periphery includes the contiguous hilly and rocky tracts of Uttar Pradesh, Rajasthan, Gujarat, Maharashtra, Andhra Pradesh, Orissa and Bihar. Geographically, it is primarily a hilly and rocky land with hill ranges of varying sizes and elevations, rocky plateaus, and occasional deep gorges. The hilly and rocky topography is relieved by alluvial plains of varying dimensions along numerous streams. The major mountain range is the Vindhyas which runs in a northeast-southwest direction almost across the entire region. Its northeast portion, known as the Kaimurs, together with the low rocky plain to its north, abuts the Gangetic alluvium. The second significant mountain range is formed by the Satpuras which runs roughly in an east-west direction between the Narmada and the Tapti rivers. Geologically, the major part of the Vindhya range and a part of the Satpura range are formed of sandstone. The nature of weathering and collapse of this soft rock leads to the formation of natural rock shelters which are found in thousands in the region. These shelters provided ready places for habitation to prehistoric human groups. The hills and rocks, as also boulders and pebbles in stream beds, were an abundant source of raw material - quartzite, dolerite, chert, jasper and chalcedony - to prehistoric people for their technology.

There are five large perennial rivers - the Chambal, Son, Mahanadi, Narmada and Tapti - with numerous tributaries and sub-tributaries. Three of them - the Narmada, the Son and the Mahanadi - rise from the Amarkantak plateau of the Satpuras but flow in different directions, the Narmada to the west, the Son to the north, and the Mahanadi to the east. The Chambal rises on the Malwa plateau and flows north and then east, ultimately to join the Yamuna. The Tapti rises in western Maharashtra and flows west, parallel to the Narmada. These perennial rivers and their tributaries were a source of water and aquatic food to prehistoric communities. Besides, in the sandstone rock there are numerous peren-

nial springs which are today, and must have been in the past, an assured source of water for human and animal populations. The region receives ample rainfall, mainly during the monsoon months of July-September, which steadily increases from about 800 mm in the west to about 2000 mm in the east.

ENVIRONMENT AND PEOPLE

Because of adequate rainfall and fertile soils the hills and valleys are covered by dense natural vegetation which grades from dry deciduous woodland, with teak (*Tectona grandis*) as the climax species, in the west to sub-humid forest, with *sal* (*Shorea robusta*) as the dominant species, in the east. These forests harbour a large variety of trees, plants and creepers many of which have edible leaves, flowers, fruits, seeds, roots and tubers which are exploited even today for food by the large tribal population of the region (Vishnu-Mittre, 1985; Nagar, 1985). Among them particular mention may be made of *mahua* (*Madhuca indica*), *achar* (*Buchanania latifolia*), *bel* (*Aegle marmelos*), *ber* (*Zizyphus jujuba*), *chhind* (*Phoenix sylvestris*), *imli* (*Tamarindus indica*), *jamun* (*Eugenia jambolana*), *karonda* (*Cassia spinarum*), *tad* (*Borassus flabellifer*), and some twenty dioscorea or tuber species. The forests also abound in wildlife - carnivores, herbivores, reptiles and birds. Particular mention may be made of *barasingha* (*Cervus duvauceli*), *sambar* (*Cervus unicolor*), *chital* (*Axis axis*), *nilgai* (*Boselaphus tragocamelus*), *blackbuck* (*Antilope cervicapra*), *jackal* (*Canis aureus*), *fox* (*Vulpes vulpes*), and *monitor lizard* (*Varanus sp.*). Besides, the many streams have rich aquatic fauna comprising turtles, fishes and mollusks. A number of wild creatures are hunted, trapped and caught by tribal as well as non-tribal communities for food. Fossil record of the Narmada, Son and Belan rivers shows that the region had a rich fauna in the prehistoric period as well.

Unfortunately, in recent decades, because of the pressure of growing human population and slackness in the enforcement of environment protection laws, both wild plant and animal resources have suffered considerable destruction. Even then the richness of the original flora and fauna can be seen in several wildlife sanctuaries like Kanha-Kisli, Bandhavgarh, Bagadora and Shivpuri in Madhya Pradesh.

With an assured and abundant supply of food, water and natural shelters, Central India formed an ideal habitat for human populations. It is, therefore, no surprise that this bountiful environment has attracted human societies, particularly those living by hunting and gathering, from the earliest stage of human colonization to the present. Abundant archaeological evidence of all stages of the stone age is found in the region. However, the same environmental conditions - hilly terrain, high rainfall and dense forests - were not very conducive to agricultural economy. Hence, the earliest colonization of the region by farming communities of the Chalcolithic period is confined to its less humid western part. Large scale colonization of the region by farming communities began only after the introduction of iron technology in the first millennium B.C. and was mainly confined to alluvial plains. As a result, large tracts of hills and forests, with their wild plant and animal food resources, have still been preserved. Not surprisingly, they harbour the largest concentration of aboriginal societies in the country who continue to subsist on a combination of primitive agriculture and hunting-gathering. These societies include Bhils, Bhilalas, Gonds, Baigas, Korkus, Mundas, Santhals, Kols, Korwas, Parojas, Pardhis, Kuchbandhias and many smaller groups.

Central India is also of special culture-historical interest because only here three of the sub-continent's major cultural streams - Indo-Aryan, Dravidian and Austro-Asiatic - with their distinctive languages and associated cultural traditions, are found. The Indo-Aryan peoples are represented by the speakers of Hindi, Gujarati, Marathi and Oriya languages; the Dravidians by the speakers of Gondi (Gonds, Baigas, Parojas), and Kurukh (Oraon) languages; and the Austro-Asiatics by the speakers of Korku, Korwa, Munda, Santhali, Savra, Gadaba, Bondo and Didayi languages.

HISTORY OF RESEARCH

Prehistoric research in central India has a respectable antiquity. As early as 1856, LeMesurier (1861), Chief Engineer of the Jabalpur Line of East Indian Railway, had found "a very perfect chert arrowhead" near Nyagurhee, 28 miles (45 km.) east of Chacheye Falls on the river Tons in the hilly tracts of the Kaimur Range in southern Uttar Pradesh. Subsequently, in 1860 he discovered a few ground stone axes, typical of the Neolithic period, at the village of Neehee situated in the hill ranges "westward of the Chacheye Falls". Later on, more such axes were discovered by him and his colleagues in the region of the Kaimur hills in the Banda and Mirzapur districts of Uttar Pradesh and the adjoining Rewa, Satna and Jabalpur districts of Madhya Pradesh. Some more

years later, Rivett-Carnac (1883) also discovered similar axes in the same region. These axes were collected and placed by village people under *pipal* (*Ficus religiosa*) trees and worshipped as representations of the deity Shiva or Mahadeo.

Around the same time, A.C.L. Carlleyle, an officer of the Archaeological Survey of India, discovered Mesolithic occupation deposits on the floors, and paintings on the walls and ceilings, of caves and rock shelters in the Kaimur range in Mirzapur and Rewa districts (Brown, 1889; Smith, 1906; Allchin, 1958; Sieveking, 1960). In his diggings in the shelters he came across large quantities of beautifully made geometric microliths, other stone objects, human burials, animal bones, and hearths containing bones, ash and charcoal. The paintings noticed by him appeared "to illustrate in a very stiff and archaic manner scenes in the life of the ancient stone chippers; others represent animals or hunts of animals by men armed with bows and arrows, spears and hatchets" (Smith, 1906, p.187). The discovery of microliths by Carlleyle was probably the earliest one anywhere in the world, and his observations on rock paintings are truly precocious because it took archaeologists in Europe a long time to accept the existence of stone age art.

Some fifteen years later, Cockburn discovered engravings and paintings in the rock shelters (Cockburn, 1883, 1884, 1898) and Palaeolithic implements in the deposits of the Kon and Balia Nadi rivers (Cockburn, 1888, 1894) in the same region. His contemporary, Rivett-Carnac (1883), also discovered Palaeolithic implements in the Banda district.

Some progress was also made in the first half of this century. This consists of the discovery of rock paintings by Silberrad (1907) in the Banda district, Uttar Pradesh, by Ghosh (1932) at Adamgarh Hill, and by Gordon and Gordon (1939) in the Mahadeo Hills at Pachmarhi; excavation by Hunter (1935, 1936) and by Gordon (1950, 1958) of Mesolithic deposits in the rock shelters in the Mahadeo Hills at Pachmarhi, all in Hoshangabad district of Madhya Pradesh. A major landmark was the work of the Yale-Cambridge expedition led by de Terra and Paterson (1939) in the Narmada valley in 1935. The expedition surveyed the geological deposits between Narsinghpur and Hoshangabad and proposed a sequence of Quaternary geological deposits and associated stone tool industries which, though now partially outdated, continues to be a reference point for all Quaternary research in the Narmada valley.

It is, however, during the post-Independence period that systematic explorations and excavations of prehistoric sites have been carried out in this region, particularly by the archaeologists of the Deccan College, Pune;

Allahabad University, Allahabad; University of California, Berkeley, U.S.A.; Cambridge University, U.K.; Vikram University, Ujjain; and the Archaeological Survey of India. These explorations have led to the discovery of a large number of stone age sites of different phases. They have been carried out by a team led by F.E. Zeuner of the Institute of Archaeology, London in the Singrauli basin of Mirzapur district, Uttar Pradesh (Krishnaswami and Soundara Rajan 1951); Khatri (1958) in the Shivna valley in Malwa; Allchin (1958, 1959) in Banda and Mirzapur districts of Uttar Pradesh; Jacobson (1970, 1975, 1985) in Raisen district of Madhya Pradesh; Sharma and his colleagues from Allahabad University (Sharma 1973, 1980; Sharma *et al.* 1980) and Pant (1982) from Banaras Hindu University in the Belan valley in Allahabad district of Uttar Pradesh; Singh (1965) in northern Bundelkhand; Khatri (1961, 1962a, 1962b), Wainwright (1964), McCown (Semans 1981), Supekar (1968, 1985), Armand (1983), Mishra (1986) and Salahuddin (1987) in the Narmada valley; Ahmed (1966), and Sharma and his colleagues (Sharma and Clark, 1983) in the Son valley; and Pandey (1987) in the Mahanadi valley.

While the explorations have given us an idea of the distribution of different stone age cultures, excavations provide us information about the stratigraphic sequence and material content of different periods and phases. Unfortunately, some of the excavations are of a very small nature and provide very limited information. The excavated sites are listed below:

Table 1: List of Excavated Palaeolithic Sites.

S. No.	Site	District	State	Reference
1.	Mahadeo Piparia	Hoshangabad	M.P.	Supekar, 1968, 1985
2.	Adamgarh	Hoshangabad	M.P.	Joshi, 1978
3.	Bhimbetka	Raisen	M.P.	IAR 1972-73:18-19; 1974-75: 24-26; 1975-76: 23-24; 1976-77: 29-30; Wakankar, 1973; Misra 1978; 1985a
4.	Durkadi Nala	Hoshangabad	M.P.	Armand, 1983
5.	Sihawal	Sidhi	M.P.	Kenoyer and Pal, 1983
6.	Patpara	Sidhi	M.P.	Sharma & Clark, 1983
7.	Baghor I	Sidhi	M.P.	Sharma & Clark, 1983; Kenoyer <i>et al.</i> , 1983
8.	Samnapur	Narsinghpur	M.P.	Misra <i>et al.</i> , 1990
9.	Mehtakheri	West Nimar	M.P.	Mishra, 1995

Table 2: List of Excavated Mesolithic Sites.

S. No.	Site	District	State	Reference
1.	Pachmarhi	Hoshangabad	M.P.	Hunter, 1935, 1936
2.	Adamgarh	Hoshangabad	M.P.	Joshi, 1978
3.	Putli Karar	Raisen	M.P.	Jacobson, 1970
4.	Bhimbetka	Raisen	M.P.	IAR 1972-73:18-19; 1974-75: 24-26; 1975-76: 23-24; 1976-77: 29-30; Wakankar, 1973; Misra, 1985b; Misra <i>et al.</i> , 1977
5.	Baghor II	Sidhi	M.P.	Sussman <i>et al.</i> , 1983
6.	Ghagharia	Sidhi	M.P.	Sharma & Clark, 1983
7.	Lekhahia	Mirzapur	U.P.	Sharma, 1965
8.	Baghai Khor	Mirzapur	U.P.	Varma, 1965, 1986 Sharma, 1965
9.	Morhana Pahar	Mirzapur	U.P.	Varma, 1965
10.	Chopani-Mando	Allahabad	U.P.	Sharma <i>et al.</i> , 1980

ANTIQUITY OF MAN

Fossil evidence, painstakingly collected during last 140 years, has conclusively proved Charles Darwin's hypothesis that man evolved in Africa where his closest biological relatives - Chimpanzee and Gorilla - are still found. The antiquity of man, as a bipedal primate, goes back in Africa to around five million years. The earliest hominids comprising several species of the genus *Australopithecus* - *A. ramidus*, *A. afarensis*, *A. africanus*, and *A. robustus* - as also the oldest species of the genus *Homo*, *H. habilis*, were confined to Africa alone. It is only the *Homo erectus*, who appeared between 2 and 1.5 million years ago, who migrated out of Africa into Europe and Asia. His fossil remains have been found in Java and China but not in India. However, he could not have reached these remote regions except by traversing the Indian sub-continent. The explanation for the absence of fossil remains of *H. erectus* in India almost certainly lies in the fact that the exposed Late Pliocene and Early Pleistocene geological deposits are preserved only in the Siwalik Hills. But since the Siwalik region had become considerably cold by this time, it was unsuitable for habitation by early hominids and other primates. For this reason, we find evidence of early hominid presence in India only in the form of stone tools and that too from the late Middle Pleistocene onwards.

LOWER PALAEOLITHIC : ACHEULIAN CULTURE

In Central India, as elsewhere in the country, the oldest evidence of human occupation belongs to the

Acheulian Culture of the Lower Palaeolithic period (Misra, 1987). Khatri (1962a) had claimed the discovery of a pre-Acheulian pebble tool industry at Mahadeo Piparia on the Narmada but subsequent excavation at the site by Supekar (1968, 1985) did not substantiate this claim. The Acheulian evidence consists almost entirely of stone tools, and occasionally of animal fossils associated with them. Acheulian sites occur in three contrasting, though not unrelated, geomorphic/ geological contexts. These are: (a) open-air sites, (b) rock shelters, and (c) alluvial deposits. Only at the open air and rock shelter sites does the cultural material occur in a primary context, i.e., where it was manufactured, used and discarded. In the alluvial deposits, barring rare cases, such as Samnapur, it occurs in a secondary context. The stone tools found in such contexts were manufactured and used at some other places, and subsequently, they were washed down by flowing water and redeposited elsewhere. In this process, stone tools of different places and times got mixed together and therefore their culture-historical value is severely limited.

Open-air Sites

Open-air sites are known from all parts of the region but have a particularly high concentration in Raisen, Bhopal and Sehore districts of Madhya Pradesh. Their sparseness in other areas is probably due to inadequate exploration. In Raisen district, for example, Jacobson (1970, 1985) has located as many as 94 sites in an area of 175 sq. km. The sites occur on rocky ground either completely exposed or buried under a thin deposit of black soil. They are usually located in thick deciduous forest in the vicinity of seasonal rivulets, 20 to 50 km away from perennial streams. Occupation at such sites must have been restricted to a few months of monsoon and early winter when water was available. The artefact clusters range in extent from 1500 to 4500 sq. m. and their density varies from 1 to 7 pieces per sq. m. They are made of quartzite and claystone which were abundantly available in the nearby Vindhyan Hills, and they are remarkably fresh, showing minimal post-depositional dislocation.

Artefacts at these sites show a very high (over 70%) percentage of shaped tools. This, coupled with the absence of large heavy cores, suggests that large flakes and tools made from them were manufactured at or near the source of raw material rather than at the habitation site and brought to the site for use. Bifaces (handaxes and cleavers), scrapers, knives and choppers are the main tool categories. The high proportion of broken bifaces indicates the use of these tools at the site. Among bifaces, cleavers are nine times more numerous than handaxes. Both Levallois and discoid core techniques are repre-

sented in cores and flakes. These tool assemblages are very similar to those of Bhimbetka rock shelters. Similar but even larger open-air stations occur at Barkhera, a few kilometres away from Bhimbetka.

Rock Shelter Sites

Acheulian occupation in rock shelters is so far known only from Bhimbetka, about 45 km south of Bhopal and about 80 km west of Raisen open-air sites. Over a thousand rock shelters are located on Bhimbetka and nearby hills in a densely wooded environment (fig. 1). In addition to a seasonal stream, there are several



Fig. 1. Bhimbetka hill, Raisen district, Madhya Pradesh, with densely wooded valley. Monolithic rocks seen on top of the hill contain rock shelters at their base.

perennial springs here, and hence Acheulian occupation here could have been of a longer duration than in areas with only seasonal availability of water. Acheulian occupation was found in three shelters but the richest evidence came from shelter III F-23 (fig. 2) which produced a deposit of 3.80 m., comprising eight layers (fig. 3). The bottom three layers (6-8), accounting for a thickness of 2.50 m, yielded Acheulian material. Layers

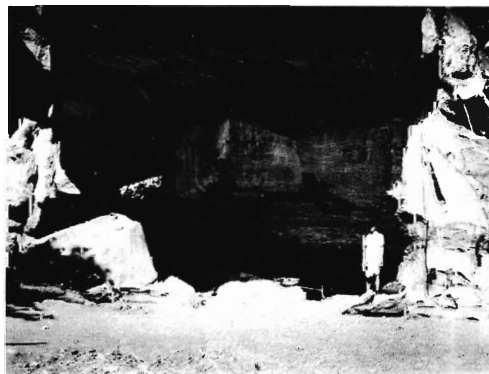


Fig. 2. Rock shelter III F-23 at Bhimbetka during excavation.

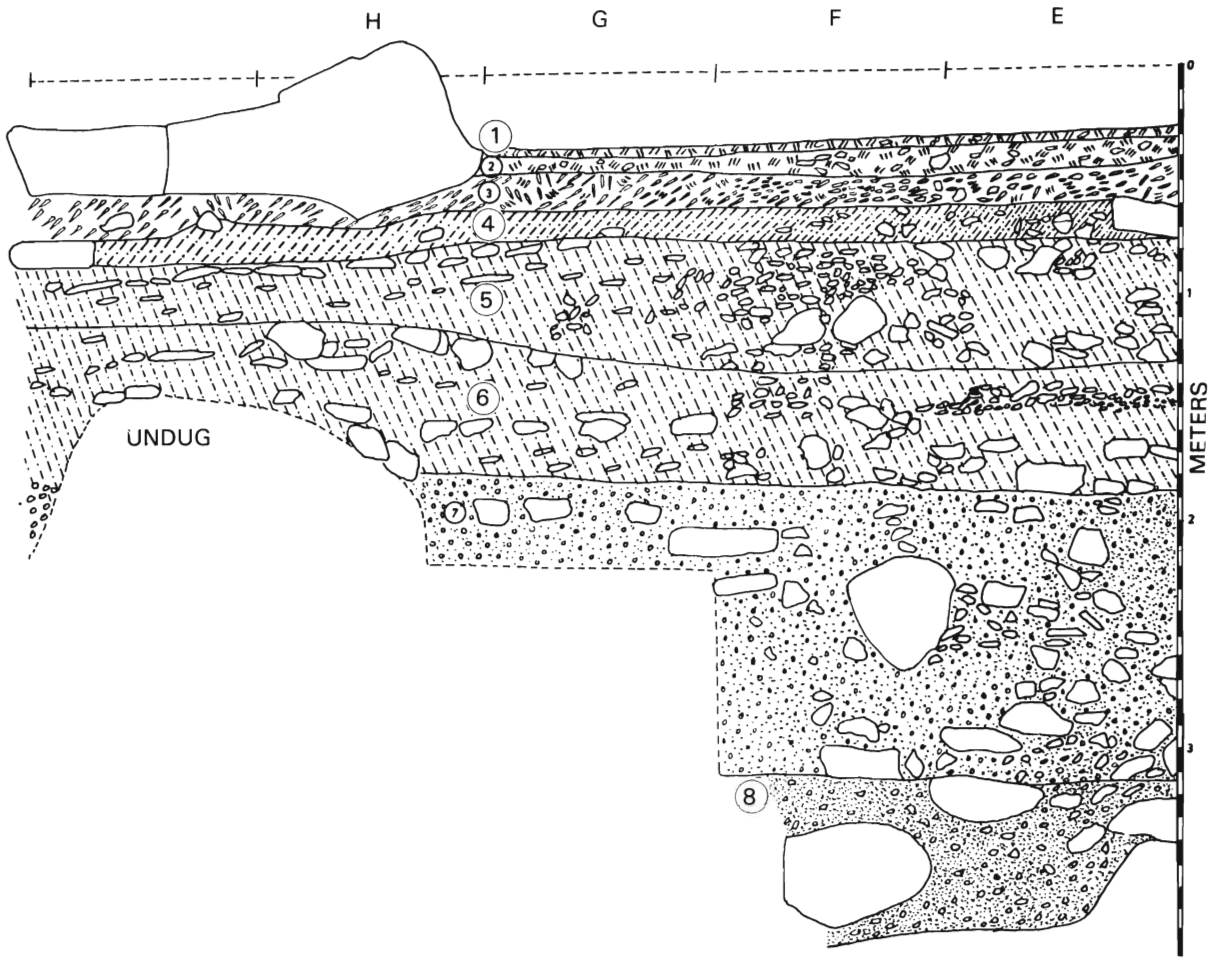


Fig. 3. Stratigraphy of rock shelter III F-23 at Bhimbetka.

5 and 4 produced Middle and Upper Palaeolithic materials, respectively, and Layers 1-3, Mesolithic (Misra, 1978, 1985a). At the moment, this is the only site

in India that has produced a continuous cultural sequence from the Late Acheulian to Mesolithic in an undisturbed context.

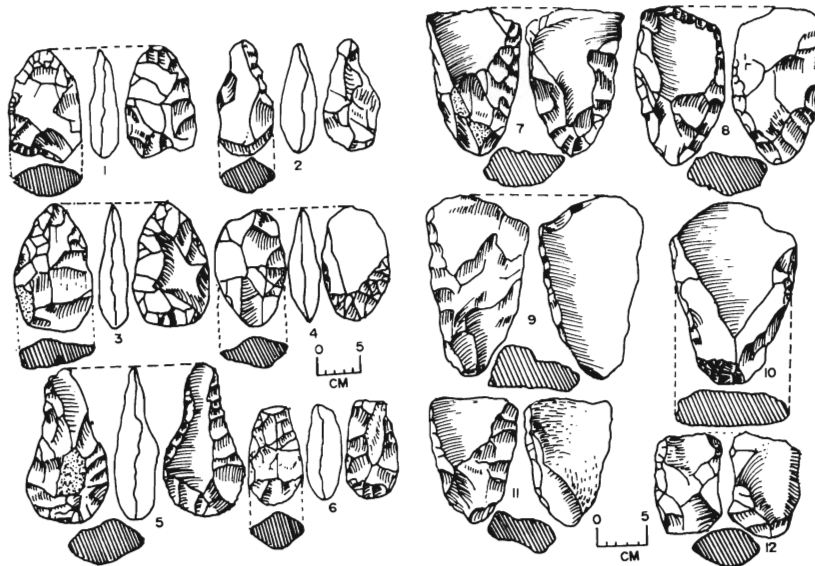


Fig. 4. Late Acheulian tools from rock shelter III F-23 at Bhimbetka, (1-6, handaxes; 7-12, cleavers).

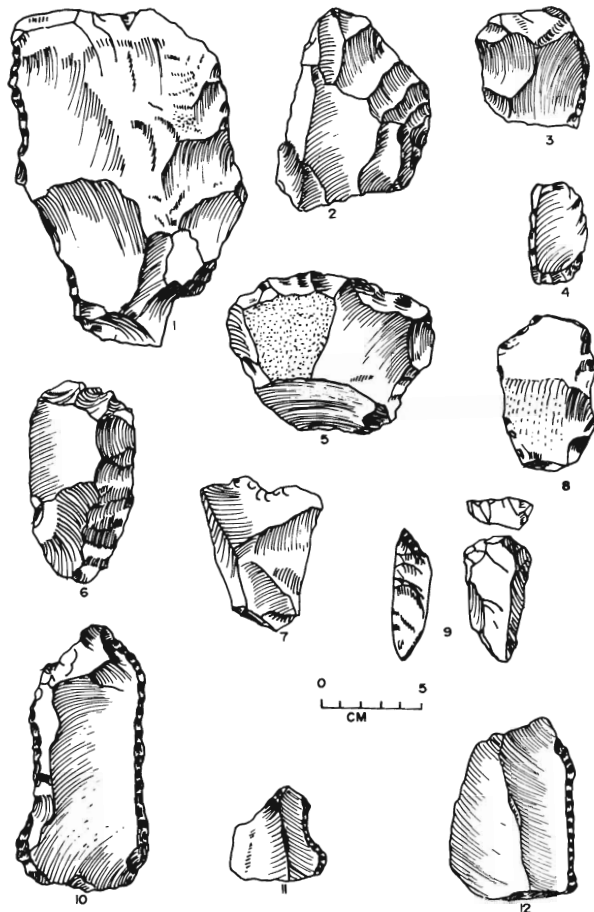


Fig. 5. Late Acheulian tools from rock shelter III F-23 at Bhimbetka, (1-6, 8, 10-12, side scrapers; 7, notch; 9, end scraper.

Nearly 19,000 artefacts were recovered from the Acheulian deposit. They are all made of fine-grained quartzite which was abundantly available around the shelter. A dark brown hard quartzite was used for making bifaces and an yellowish soft one for flake tools. The high proportion of manufacturing debris which includes, besides flakes and chips, massive cores weighing up to 20 kg as well as small carefully prepared Levallois and discoid cores, indicates that tools were made within the shelter. The proportion of bifaces is very high, and cleavers are twice as numerous as handaxes (fig. 4). All the cleavers and most of the handaxes are made on flakes, and among the cleavers all classic types - U-shaped, V-shaped and guillotine-shaped - are represented. The main component of the Acheulian industry consists of flake tools which include a large variety of scrapers, notches, truncated flakes, denticulates and knives (fig. 5). Floors paved with stone blocks and slabs were encountered at several levels. The presence of used and broken tools as well as manufacturing debris shows that shelters were used for making tools as well as for other activities. Unfortunately, the

complete absence of organic materials and hearths restricts our knowledge of these activities.

There are extensive open-air sites on densely wooded flat ground near Barkhera village, about seven km. south of Bhimbetka. The artefact assemblages at these sites are technologically and typologically identical to those found in the rock shelters. This parallelism suggests that both locations were used by the same people perhaps during different seasons.

River Valley Sites

The third type of Acheulian contexts, namely sites buried in the alluvium, are most common and known from numerous river valleys. Although the artefacts occurring in alluvial deposits are often derived from different spatial and temporal contexts and are therefore of limited value for reconstructing past adaptive patterns, their presence in well-defined lithounits, sometimes in association with fossil fauna, is useful for building a relative chronology of stone tool industries and reconstructing contemporary environments. We shall briefly summarize the data from three better-studied valleys, namely Narmada, Belan and Son.

Narmada Valley

In its middle portion, between Narsinghpur and Hoshangabad, the Narmada flows through an ancient trough and has preserved more than 150 m thick alluvium comprising layers of gravel, sand, silt and clay. Unfortunately, only about 30 m of it is exposed by erosion. The sediments are also extremely rich in animal fossils which have been collected by palaeontologists and amateurs for more than 150 years. The richest locality is Devakachar, 17 km north of Narsinghpur town where fossils in excellent condition of preservation can be collected in large numbers from the eroded alluvium in the fields as well as in the deposits of the Barurewa, Sher and Umer rivers, tributaries of the Narmada.

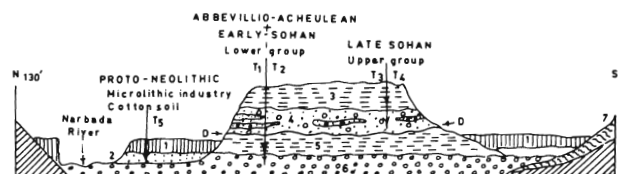


Fig. 6. Transverse section through the Narmada valley near Narsinghpur, Madhya Pradesh. 1, 2, Cotton Soil Group with cotton soil (1) and a basal gravel of cotton soil (2); 3, 4, Upper Group with pink clay, (3) and upper gravel and sand, (4); 5, 6, Lower Group with pink concretionary clay, (5) and lower basal conglomerate, (6); 7, laterite; D-D disconformity between Upper and Lower Groups. Cultures correlated with the Potwar (Sohan) terraces. (after de Terra and Paterson 1939, p. 314, fig. 182.)

Table 3: Sequence of Geological, Climatic and Cultural Phases in the Middle Son Valley.

Geological Formation	Nature of deposit	Environment	Culture	Age
Khetaunhi	Alluvial clays	Erosion of Baghor sediments and aggradation of clays; humid	Neolithic Mesolithic	Middle Holocene
Baghor	Horizontal clays and silts (Fine Upper Member)	Suspended load river over bank flooding; settlement along piedmont-flood plain junction and lower foot slopes and outer margins of the flood plain; warm and wet	Mesolithic Upper Palaeolithic	Early to Middle Holocene End of Pleistocene
	Unconsolidated crossbedded sands (coarse Lower Member)	Seasonal discharge bed load river; sparse vegetation; semi-arid; rich mammalian fauna; cold and dry	Derived Middle Palaeolithic	Terminal Pleistocene 30,000 to 12,000 + 10,000 B.P.
Patpara	Fine gravelly clays horizontally bedded, red brown clayey gravels	High flow regime; subsequent leaching and precipitation of iron and manganese	Middle Palaeolithic	Upper Pleistocene
Sihawal	Clays (possibly loessic) pediment gravels	Humid/dry? semi-arid, intermittent, erratic rainfall; sparse to absent plant cover	Sterile Lower Palaeolithic	Late Middle Pleistocene to Early Upper Pleistocene 100,000 years

The exposed Narmada alluvium was divided by de Terra and Paterson (1939) into three lithounits, namely (1) Lower Group, (2) Upper Group, and (3) Cotton Soil Group. The Lower Group comprises a basal conglomerate and a pink concretionary clay. The conglomerate contains Early Acheulian artefacts. The Upper Group, separated from the Lower Group by a major disconformity, consists of a gravel and sand unit at the base and a pink clay on top. This group yields Late Acheulian tools in the basal unit and Middle Palaeolithic to Upper Palaeolithic tools in the upper unit (fig. 6). Khatri (1961) stated that pink clay underlies the coarse gravel rather than over it. However, subsequent investigations by many researchers have shown that the Narmada stratigraphy is highly complex and it varies at different locations.

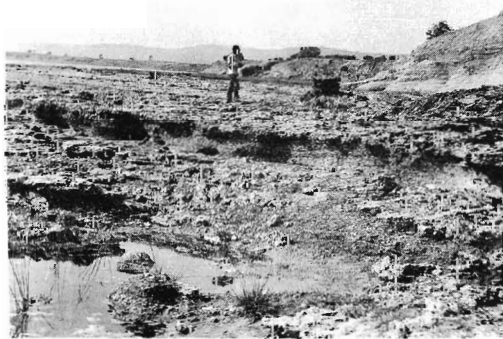


Fig. 7. Right bank section of the Narmada river at Hathnora, Hoshangabad district. The hominid calvaria was found in the boulder conglomerate seen in the foreground.

Both Lower and Upper Group, especially their coarser basal units, are rich in fossil fauna. The Lower Group contains *Sus namadicus*, *Bos namadicus*, *Elephas hysudricus*, *Equus namadicus*, *Hexaprotodon namadicus*, *Stegodon insignis* and *Stegodon ganesa* that are considered to be of Middle Pleistocene age. The Upper Group contains *Equus namadicus*, *Bos namadicus*, *Hexaprotodon palaeindicus*, *Elephas hysudricus*, *Stegodon insignis*, *Stegodon ganesa* and *Cervus* sp., crocodile and turtle. These fossils suggest that the region enjoyed good rainfall and the Narmada carried water perennially, had plenty of waterpools and supported forest as well as grassland vegetation along its banks (de Terra and Paterson, 1939; Badam, 1979; Badam *et al.*, 1986). The hypothesis of a rainfall higher than during the subsequent periods is also supported by the deep red weathering of the Acheulian-bearing sediments in the Bhimbetka rock shelters (Misra, 1978).

A boulder conglomerate deposit (fig. 7), apparently equivalent to the basal unit of de Terra and Paterson's Lower Group, at Hathnora village, 40 km. east of Hoshangabad town has yielded a hominid calvaria in association with late Acheulian tools. The calvaria, the only Pleistocene hominid fossil to be found in the subcontinent, has been dated to late Middle Pleistocene or early Upper Pleistocene and assigned to the genus *Homo erectus* by several scholars (Sonakia, 1984; de Lumley and Sonakia, 1985; de Lumley and Sonakia 1985). However, Kennedy and Chiment (1991) who have carried out a detailed morphometric and statistical study of the fossil,

are of the opinion that it is an archaic *Homo sapiens* and should be designated *Homo sapiens narmadensis*,

Belan Valley

South of the Ganga plains near Allahabad, a number of small rivers, rising in the Vindhya hills, flow north to join the Yamuna or the Ganga or their tributaries. One of them, the Belan, a tributary of the Tons, has been intensively explored in an area of over 5000 sq. km. by Allahabad University archaeologists who have discovered nearly four hundred stone age sites in its valley (Lower Palaeolithic 44, Middle Palaeolithic 87, Upper Palaeolithic 79, Epi-Palaeolithic 6, Non-Geometric Mesolithic 115, Geometric Mesolithic 17, and Neolithic 9). (Sharma *et al.*, 1980).

The alluvial deposits of the Belan are exceptionally rich in vertebrate fossils and Palaeolithic industries. The most complete stratigraphic section, 18 m thick, is preserved near Daiya village, south of Allahabad. Based on this section, a complex sequence of lithounits, environments in which they were formed, and associated lithic industries, as given below, from bottom upwards, has been proposed by Sharma (1973).

1. Aeolian Sand, Geometric Microliths
2. Aeolian Sand, Non-Geometric Microliths.
3. Cemented Gravel III, consists of calcareous nodules, iron nodules, coarse sand; less consolidated than Gravel I and II; Upper Palaeolithic tools of blade and burin complex.
4. Yellow Silt, appears like hill wash, dry conditions, Middle Palaeolithic tools, first appearance of blade industry, fossils.
5. Reddish Sand and Gravel, dry conditions with intervening wet phases, Middle Palaeolithic tools, fossils.
6. Cemented Gravel II, well sorted and cross-bedded with silty layers, humid conditions, Tools in the lower levels of this unit are generally made on flakes, mainly comprise cleavers and flakes, and are transitional between Lower and Middle Palaeolithic; those in the upper levels rich in fossils.
7. Mottled Clay or silt, deposited in stagnant water, dry conditions, no tools or fossils.
8. Cemented Gravel I, poorly sorted, humid conditions, Lower Palaeolithic tools, handaxes, cleavers, scrapers, pebble tools, very rich in animal fossils.

A large number of workshop sites of various stone age periods have also been located in the foothills and slopes of the Kaimur range. Unfortunately, no detailed study of this important research has been published.

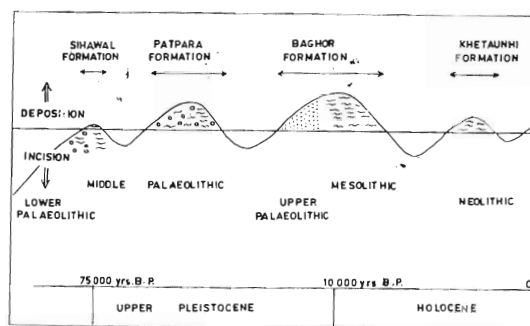


Fig. 8. Late Quaternary erosion and deposition in the middle Son valley, Madhya Pradesh. (after Williams and Royce, 1983.)

Son Valley

The middle portion of the Son valley, divided from the Belan valley by a hill range, has also been intensively explored by researchers from the Allahabad University in an area of nearly 14,000 sq. km. in the Sidhi district of Madhya Pradesh during the sixties and seventies, and more than 300 sites of various stone ages have been discovered (Sharma *et al.*, 1980). Subsequently, detailed geological investigations and excavation of a few archaeological sites were carried out by a joint team from Allahabad University and the University of California, Berkeley during 1980-82. (Sharma and Clark, 1983).

Williams and Royce (1983) have identified four major Quaternary formations, namely Sihawal, Patpara, Baghor and Khetanhi, and have inferred past environments of the region on the basis of the sediments and the processes involved in their deposition and weathering (fig. 8).

The Sihawal Formation consists of a basal gravel of angular to rounded clasts set in a clayey matrix and resting on bedrock, and a silty clay unit capping the gravel. Lower Palaeolithic artefacts, abraded as well as fresh, occur near the top of the boulder clays but are absent in the overlying silt. The Patpara Formation, lying unconformably over the Sihawal Formation, comprises massive to crude, subhorizontally laminated, medium to coarse, sandy granules and pebbles set in a matrix of red brown clay, and, in places, it is overlain by dark, red-brown, mottled indurated clay. It contains Middle Palaeolithic tools. The Baghor Formation rests unconformably on the Patpara Formation and consists of a Coarse Lower Member and a Fine Upper Member. The Coarse Member consists of unconsolidated cross-bedded sands and contains well-preserved mammalian and reptilian fossils and rolled Middle Palaeolithic tools. The Fine Member, resting conformably over the Lower Member and forming the highest aggradation surface in the Son valley, consists of horizontal layers of interbedded silts and clays. Upper Palaeolithic and Mesolithic tools occur

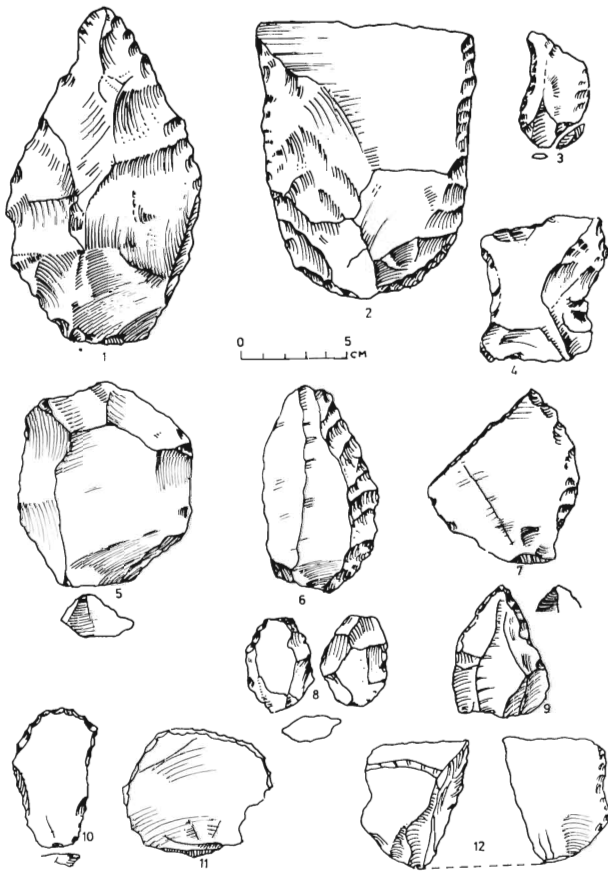


Fig. 9. Late Acheulian tools from Sihawal, Sidhi district, Madhya Pradesh. 1, handaxe; 2, cleaver; 3, side and end scraper; 4, modified flake fragment; 5, prepared flake; 6-7, convex side scrapers; 8, bifacially retouched chunk; 9, convergent scraper; 10-11, flakes; 12, dejeté scraper. (after Kenoyer and Pal, 1983).

in the upper part of this deposit. The Khetanhi Formation forms a distinct aggradation terrace and comprises interbedded silts and clays.

The stratigraphic, climatic, cultural and chronological sequence proposed by Williams and Royce (1983) is given in the table 3.

Two Acheulian horizons were excavated at Sihawal II and Nakjhar Khurd. At Sihawal II, the artefacts, made mainly on quartzite, occur in the upper part of the Coarse Lower Member of the Sihawal Formation, are both fresh and abraded, and show no patterning. They are therefore in a secondary context. A small sample of artefacts comprising bifaces and assorted flake tools found in the excavation has been assigned to Upper Acheulian (fig. 9). The Nakjhar Khurd sample is even smaller and is broadly similar to that of Sihawal.

MIDDLE PALAEOOLITHIC

Middle Palaeolithic sites are not as plentiful as those of the Lower Palaeolithic (Allchin, 1959; Sankalia, 1964). The evidence of this phase also is found in open-air sites,

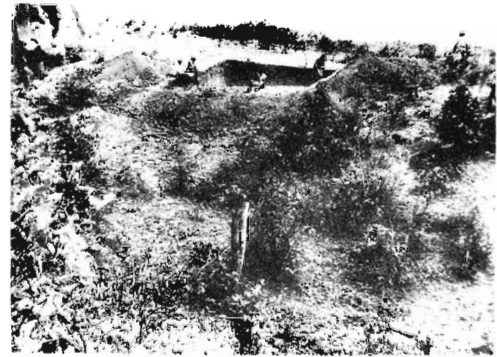


Fig. 10. The Middle Palaeolithic site on the topmost terrace of the Narmada at Samnapur in Narsinghpur district, Madhya Pradesh. Artefacts eroding from the silt deposit are seen in the foreground and excavation trench in the background.

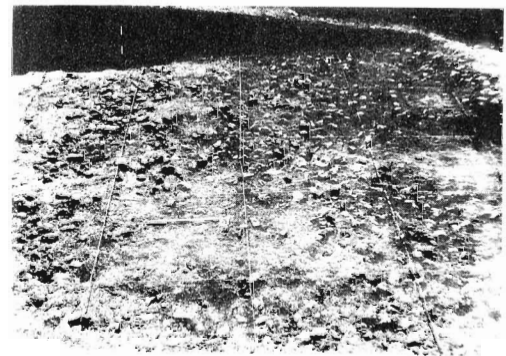


Fig. 11. Artefact spread in the excavated trench at Samnapur.

rock shelters and river deposits. A number of sites containing a small proportion of shaped tools and a large quantity of debitage are known at chert and jasper outcrops, particularly in the upper Narmada valley. Evidence for occupation in rock shelters is known only from Bhimbetka and Adamgarh. At Bhimbetka, there is a stratigraphic and cultural continuity from the Acheulian to the Middle Palaeolithic. Handaxes and cleavers persist, though in much reduced proportion, in the lower part of the Middle Palaeolithic deposit.

In the river deposits the tools occur in sandy gravels overlying the Acheulian bearing coarse sediments and in association with Late Pleistocene fauna, the latter mainly in the deposits of the Narmada, Belan and Son rivers. One of the best examples of land use by the Middle Palaeolithic people comes from the site of Samnapur on the Narmada river in Narsinghpur district (Misra *et al.*, 1990). Here a Middle Palaeolithic industry is found in a highly localized rubble deposit buried under the silt of the topmost terrace of the Narmada. The site abuts a cherty quartzite hillock from which cobbles were washed down by rain water. The Middle Palaeolithic people chose the location for their encampment because it was too high to be regularly flooded by the Narmada. They utilized the cobbles of the rubble

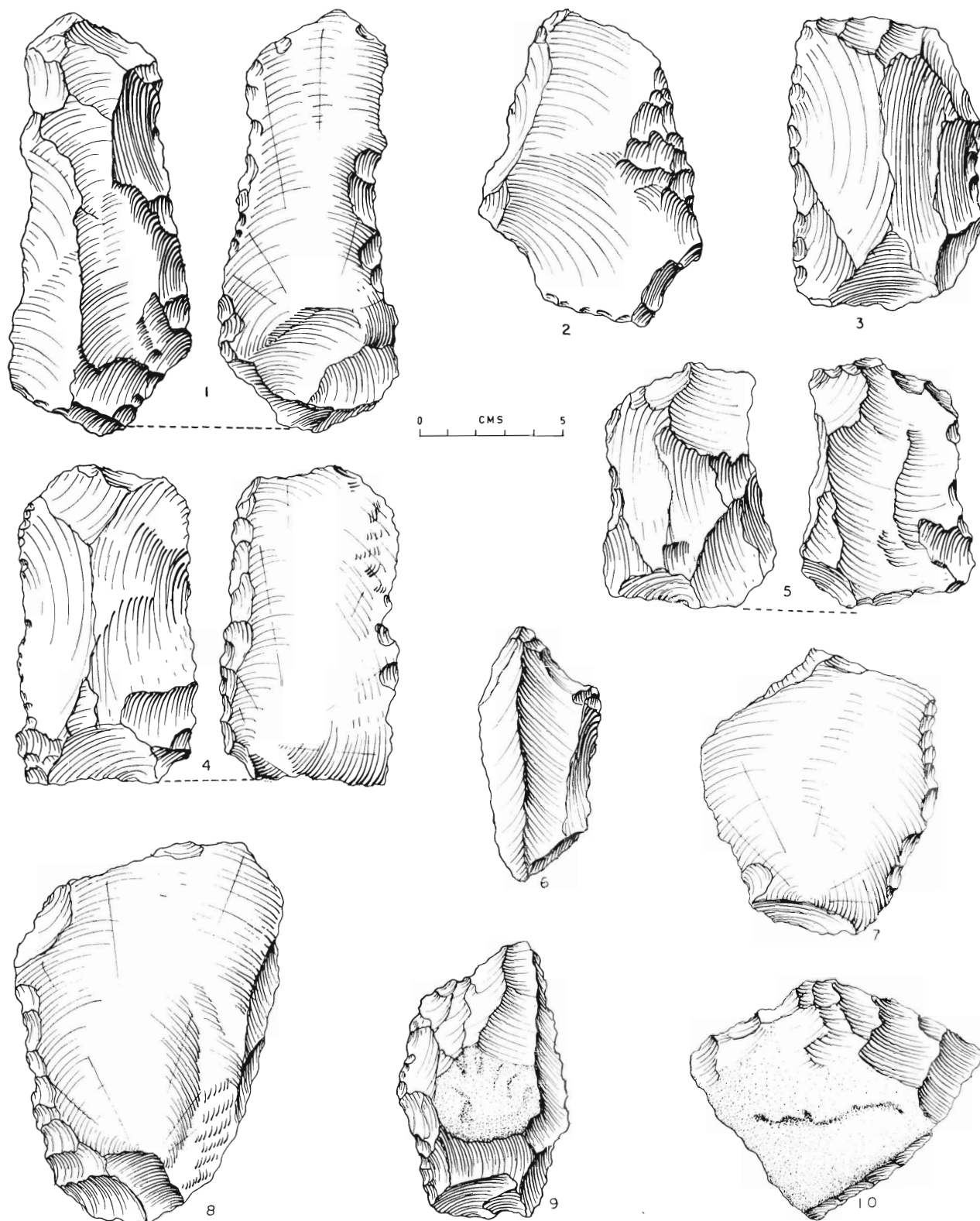


Fig. 12. Middle Palaeolithic artefacts from Samnapur, Narsinghpur district, Madhya Pradesh. 1, 4, double side scraper; 2, 10, side scraper; 3, side-cum-end scraper; 5, core; 6, blade core; 7, round scraper; 8, knife; 9, steep scraper.

deposit for making their tools but also used dolerite which had to be brought from some distance. Later on during exceptionally high floods, the site was buried under alluvium. It is now being exposed by erosion due to rainwater and the tools are slowly being washed down in erosion gullies (figs. 10-11). The assemblage consists mainly of flakes and scrapers which are in a remarkably fresh condition, having been preserved *in situ* since they were manufactured, used and discarded (fig. 12).

Excavations were also carried out at two localities at Patpara in the Son valley. However, in both cases the artefacts occur in a secondary context. As at Bhimbetka, a typological continuity from the Acheulian to the Middle Palaeolithic is seen at this site as well.

Technology

The tools of the Middle Palaeolithic period are made predominantly on flakes and tend to be smaller and thinner. The main reason for the smaller size of the tools is the use of chert and jasper as raw material for making tools as against quartzite and quartz during the Lower Palaeolithic. These fine-grained rocks are usually found in the form of small nodules and pebbles which naturally restricts the size of the tools. At Bhimbetka, however, quartzite continued to be used during the Middle Palaeolithic as well. In the tool assemblages, bifaces are either completely absent or rare; instead the tools mainly comprise a variety of scrapers, denticulates, notches, points, borers and knives, besides flakes and blades which were also used as tools.

UPPER PALAEOOLITHIC

The Upper Palaeolithic period belongs to the later part of the Upper Pleistocene when the climate was extremely arid. This aridity is best documented in the semi-arid and arid zone of Rajasthan in the extensive formation of sand dunes and the total absence of water in the numerous lakes (Misra, 1995). In central India, it is attested by the presence of ostrich which is represented by the occurrence of ostrich egg shells at numerous sites in Madhya Pradesh, Rajasthan and Maharashtra (Kumar and Narvare, 1984; Kumar *et al.*, 1988). There were, however, short humid episodes during this dry period and they are represented by the formation of soils within the Narmada alluvium (Hegde and Switsur, 1973). Probably because of this reason the sites of the Upper Palaeolithic period are very sparse even though they are represented in all three contexts, namely open air, rock shelters and alluvial deposits. At Bhimbetka, the Upper Palaeolithic is represented by a thin deposit in shelter IIIIF-23. The tools of this period have been found in Gravel III of the Belan valley. How-

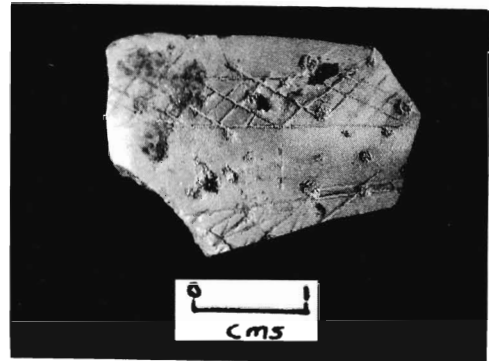


Fig. 13. Ostrich egg-shell piece with incised decoration from the Upper Palaeolithic site of Patne, Jalgaon district, Maharashtra. (after Sali, 1989).

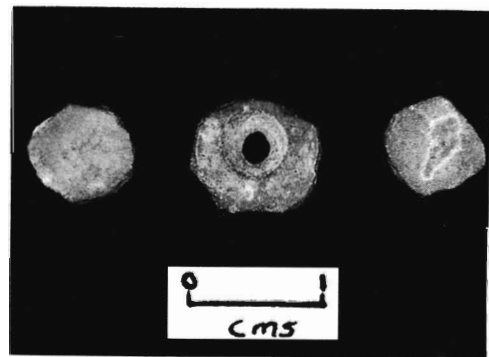


Fig. 14. Perforated and unperforated ostrich egg-shell pieces from Madhya Pradesh (after Kumar *et al.*, 1988).

ever, the best evidence of this period comes from the primary context site of Baghor I in the Son valley (Sharma and Clark, 1983; Kenoyer *et al.*, 1983).

The technology of the Upper Palaeolithic period predominantly consists of blades and tools made on blades, like scrapers, points and burins. At Bhimbetka, the tools were made of quartzite but elsewhere, as in the Dindori region in the upper Narmada valley and at Baghor I in the Son valley, they were made of fine-grained chert. Artistic activity first began during this period and it is represented by incised ostrich egg shells and beads (figs. 13-14) made on such shells (Kumar and Narvare, 1984; Kumar *et al.*, 1988; Sali, 1989). A bone object, claimed to be a representation of mother goddess, has been found in Gravel III of the Belan river (Sharma, 1980). Another important discovery of this period is a possible shrine discovered at the site of Baghor I in the Son valley (Kenoyer *et al.*, 1983). It consists of a squarish stone-paved platform, buried under a living floor, with a conical sandstone slab, having multiple concentric rings, placed in its centre. Such stones placed on stone platforms are worshipped today by the local Baiga tribal people as representation of the mother goddess Kalka. If this ethnographic analogy is valid, then the shrine rep-

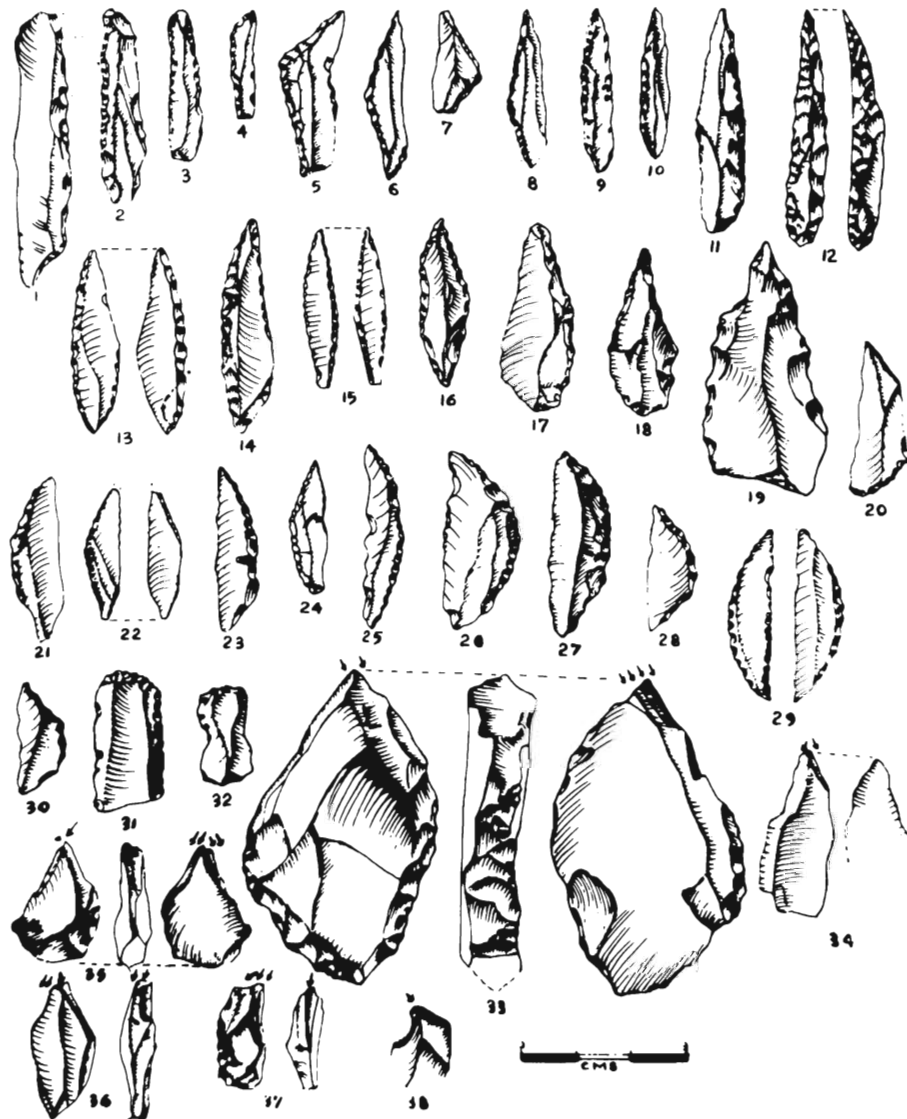


Fig. 15. Microlithic industry of Adamgarh rock shelter, Hoshangabad district, Madhya Pradesh (1-5, retouched blades; 6-8, triangles; 9-20, points; 21-30, crescents; 31-32, end scrapers; 33-38, burins) (after Joshi, 1978).

resents a remarkable continuity of mother goddess worship in the region over last nine thousand years.

MESOLITHIC

The Mesolithic period, which started towards the end of the Pleistocene or at the beginning of the Holocene, is represented by remarkably rich archaeological evidence. Mesolithic sites are found in rock shelters, along river banks, along deep water pools, on hill tops and slopes and on the flat ground but they are not so common in alluvial deposits (Misra, 1965; Cooper, 1983; Pal, 1986). The presence of sites along deep water pools, combined with the frequent representation of fishes and fishing in rock paintings, suggests that fishing was an important component of subsistence during this period. The number of sites of this period is much larger than the sites of all the phases of the Palaeolithic put together, and this increase is noted in all parts of the

country. For example, at Bhimbetka while the Palaeolithic remains are found in only a few shelters, Mesolithic occupation is represented in a large number of shelters and artistic activity in almost every shelter. The first human colonization of the Ganga plains and of the region south of the Kaveri river in Tamil Nadu took place during this period, obviously by migration of people from the adjoining regions and almost certainly due to population pressure. The increase in the number of sites is accompanied by thick habitation deposits, presence of multiple burials and profuse art activity. All these features are indicative of larger size of human groups and increased tendency toward sedentariness (Misra, 1976).

Demographic Increase

This dramatic increase in the number of sites, both in previously colonized and virgin areas, certainly rep-

resents a considerable increase in human population. This increase can be explained by three factors. First palynological evidence from salt lakes and weathering of sand dunes in Rajasthan (Misra, 1995), and the formation of black soil in the rock shelters in Central India (Misra, 1978; Joshi, 1978), definitely indicate a significant rise in rainfall. This increase would have led to a marked increase in plant and animal food resources. Secondly, the introduction of microlithic technology and the use of bow and arrow must have enhanced the efficiency of hunting and increased the food yield from that source. Thirdly, the introduction of food processing equipment like pounding and grinding stones and the regular use of fire for cooking must have increased the nutritional yield of plant and animal foods.

Technology

The technology of the Mesolithic period is based largely on microliths which were made from tiny blades or bladelets (1 to 5 cm. in size), which were mass-produced by pressure technique from prismatic cores, and used as tips and barbs of arrowheads and spearheads and for making knives, sickles, daggers, etc. (fig. 15). New items of technology like perforated stones, which were probably used as weights of digging sticks or as club heads, hammers, and grinding stones were introduced. Besides, bone and antler points were also used.

Disposal of the Dead

The evidence for the disposal of the dead comes from the rock shelters at Bhimbetka and in Mirzapur. The dead were buried in graves in an extended or crouched position on the living floors in the shelters. In one of the rock shelters at Morhana Pahar an extended burial was found right over the bed rock which was dressed to provide a raised platform for the head and feet and depression for the body (Varma, 1965). In a shelter at Lekhahia, as many as seventeen skeletons, belonging to eight phases, were found (Sharma, 1965). At Bhimbetka in shelter IIB-33, several burials were found one above the other. Invariably, the dead were provided with grave offerings like bone and antler objects, ochre nodules, and grinding stones.

Art

Another significant feature of the Mesolithic period is the abundance of art which largely consists of paintings in several thousand rock shelters in the sandstone region of Central India (Ghosh, 1932; Gupta, 1967; Wakankar and Brooks, 1976; Misra *et al.*, 1977; Neumayer, 1983, 1993; Mathpal, 1984; Allchin, 1986; Tewari, 1990; Pandey, 1993). The paintings were executed on the walls and ceilings and in the hollow spaces

of the shelters. Many of them are found at considerable height at places which are not accessible without some support. They must have been executed by artists standing or sitting either on the branches of trees growing close to the shelters or on specially made ladders. The paintings are mostly in red and white colours though some are in green and yellow as well. The pigments were derived from minerals found in the rocks and earth, the principal one being ochre or haematite in various shades of red. The contents of the paintings are highly varied and they constitute an important source of our knowledge about the aesthetic expression, contemporary fauna, technology, subsistence, structures, social life, religion and ritual of the Mesolithic people.



Fig. 16. Rock painting from Jaora near Bhimbetka depicting women engaged in catching rats. The rat-hole is shown in X-ray style. The woman to the left of the hole excavates the rat-hole with the help of a digging stick and has already killed a number of rats. The excavated material is shown by dots below her feet. Two women to the right are engaged in digging something. There are four V-shaped baskets and a digging stick around the scene of action.



Fig. 17. Rock painting from Jaora near Bhimbetka depicting a hunter with basket or carrying net filled with different animals from the forest and river. The peculiar shape of his head is either due to a mask or simply to stylized treatment. The hunter has decorative bands on his elbows and also around one of his knees. He carries a bow and two arrows, one tipped with microliths, the other with a ball-shaped stabilizing weight.

The most common subject of the paintings, quite understandably, is wild animals which constituted the most dynamic element in the environment and were a

major source of food for the artists. The animals portrayed in paintings include cattle, gaur (popularly but mistakenly called bison), buffalo, elephant, rhinoceros, barasingha, sambar, chital, nilgai, black-buck, wild boar, lion, tiger, panther, jackal and fox. They are shown singly or in herds or packs of varying sizes, with remarkable naturalism, vitality and dynamism, in a variety of postures like standing, looking back, with head turned, sitting, slowly moving or running, and include adults as well as young ones of various ages and sizes. They are drawn either only in outline, or with body filled with colour or decorated with geometric patterns like squares and wavy lines. The females are sometimes shown pregnant in X-ray style. Some animals are mythical creatures, combining features of more than one animal. The best example of this style is a boar with the horns of a bull at Bhimbetka. With minor variations this painting is repeated in two other shelters. Such animals were probably divinities which inspired awe and veneration among those who saw them.

Next to animals as such are scenes of hunts of individual animals or herds by individual or group of hunters (figs. 16-17). The most common weapons used in hunting are bow and arrow and spear. The arrows and spears are often tipped and barbed with microliths. There are also scenes of artificial dwellings, plant food collecting, honey gathering, trapping of birds and animals, catching of fish, and social and religious activities.

There are also paintings of humans performing various activities, e.g., drinking, walking in a group in file, with family members and performing ritual activities.

The later artists often executed their work over the existing paintings, thereby spoiling the beauty of the latter. This means that the paintings were not created only for aesthetic pleasure but had a deeper purpose behind them. Several layers of paintings, superimposed one above the other, can be seen. This situation, though aesthetically unedifying, helps the archaeologist in building a relative chronology of the paintings.

In the upper levels of the rock shelter deposits, Chalcolithic potsherds and copper objects, and in the topmost levels iron objects and early historic pottery are found, showing that the rock shelters continued to be occupied by hunter-gatherers well after the introduction of copper and iron (Varma, 1965; Misra, 1976). This evidence from the excavations is supported by the paintings wherein scenes of wild animals and their hunts are superimposed by domestic animals and of battles with warriors, riding caparisoned horses and elephants and fighting with metal-tipped spears, arrows, swords and shields. These later paintings also include representations of Hindu

deities like Ganesha and geometric religious designs. Radiocarbon dates for Mesolithic sites range from about ten thousand B.C. to about the beginning of the Christian Era and support the archaeological evidence of occupation of the shelters from the Mesolithic to early historic times.

BEGINNINGS AND CONSEQUENCES OF AGRICULTURE

All through the Palaeolithic and Mesolithic periods people had lived entirely by hunting and gathering. A dramatic change in human life took place with the introduction of agriculture. Agriculture assured food security and paved the way for permanently settled life; emergence of different occupations, based on specialized crafts, due to surplus production; and eventually for urbanization and civilization. Reinforced by the Aryan ideology of biological and cultural superiority and concepts of purity and pollution, occupational divisions, based on craft specialization, made the uniquely Indian phenomenon of caste possible.

Neolithic Culture

Evidence of Neolithic culture comes only from the eastern and central part of the region. Mention has already been made earlier (see History of Research) of the surface discovery of Neolithic axes in the hilly tracts of the Kaimur Range in southern Uttar Pradesh and the adjoining region of Madhya Pradesh. Explorations by the archaeologists of the Allahabad University have led to the discovery of a number of Neolithic sites in the valleys of the Belan and Son rivers in the Kaimur hills region. Two sites of this culture, namely Mahagara and Koldihwa, both located on the Belan river in Allahabad district, have been excavated by the Allahabad University (Sharma *et al.*, 1980), and they have given us some idea of the material content of the Neolithic culture.

These excavations have yielded, besides the triangular axes with pointed butt and lenticular cross-section of the peninsular type, small axes, with rounded butt and rectangular cross-section of the northeast Indian type; handmade cord-impressed pottery; stone blades and microliths; querns, mullers and ring stones; evidence of cultivation of rice and of domestication of cattle, sheep/goat and horse, and hunting of deer, wild boar and tortoise. The identification of horse, however, must at this stage be treated as doubtful. Evidence of structures consists only of circular and oval floors, post-holes and pits. A rectangular area of 12.5 x 7.5 m., enclosed by post-holes on all sides, bearing hoof impressions of cattle of various sizes, and lacking pottery or other evidence of occupation by humans, has been interpreted as a cattle pen.

Rice as a wild grass is indigenous to eastern and northeastern India, southern China and southeast Asia and was first cultivated in that region. This is also the region of the speakers of the Austro-Asiatic languages, shifting or slash-and-burn agriculture and of tuber crops like yam and taro. Speakers of these languages also practise raising of stone and wooden memorials, and associated rituals, for their dead. Among the speakers of the languages of this family are the Kols and Korwas who are found in the region around Koldihwa and Mahagara. Small rounded-butt ground axes and cord-impressed pottery are also characteristic of the early farming cultures of northeastern India, southern China and southeast Asia. C. von Haimendorf had suggested, more than half-a-century ago, that certain distinctive Neolithic tools, including the rounded-butt axe, shifting cultivation, Austro-Asiatic languages and megalithic memorials and associated rituals were introduced into central India from southeast Asia. The archaeological evidence from Koldihwa and Mahagara supports this theory.

Three radiocarbon dates of 6570 ± 210 B.C., 5440 ± 240 B.C. and 4530 ± 185 B.C. from Koldihwa make it the earliest agricultural site in India.

Chalcolithic Cultures

Evidence of the Chalcolithic period comes from Malwa or western Madhya Pradesh and consists of three cultures, namely Kayatha, Ahar and Malwa. The Kayatha culture (2000-1800 B.C.), named after the site of the same name in Ujjain district, is known from some forty sites, located in the valleys of the Chambal and its tributaries. The major evidence of the culture from the site of Kayatha which was excavated by the Vikram University, Ujjain (Wakankar, 1967, 1969) and Deccan College, Pune (Ansari and Dhavalikar, 1973). The initial settlers of Kayatha appear to have come from outside the region. They lived in small wattle-and-daub huts with floors made of rammed earth and practised a mixed economy of farming, stock raising and hunting. Evidence of cultivation of wheat has been found in the excavation. Domesticated animals include cattle, sheep/goat and horse. The discovery of horse at this early date is of considerable culture-historical interest.

The most distinctive feature of this culture is a ceramic designated as Kayatha ware. It is made on fast wheel from a well-levigated clay, coated with a thick chocolate colour slip and is well-baked. The pots were decorated with liner designs in purple colour on the external surface. The shapes comprise *lota*, bowl, storage jars with globular body and basins. Other ceramics of the culture are painted buff ware and combed ware. The technology of the Kayatha people consisted of stone

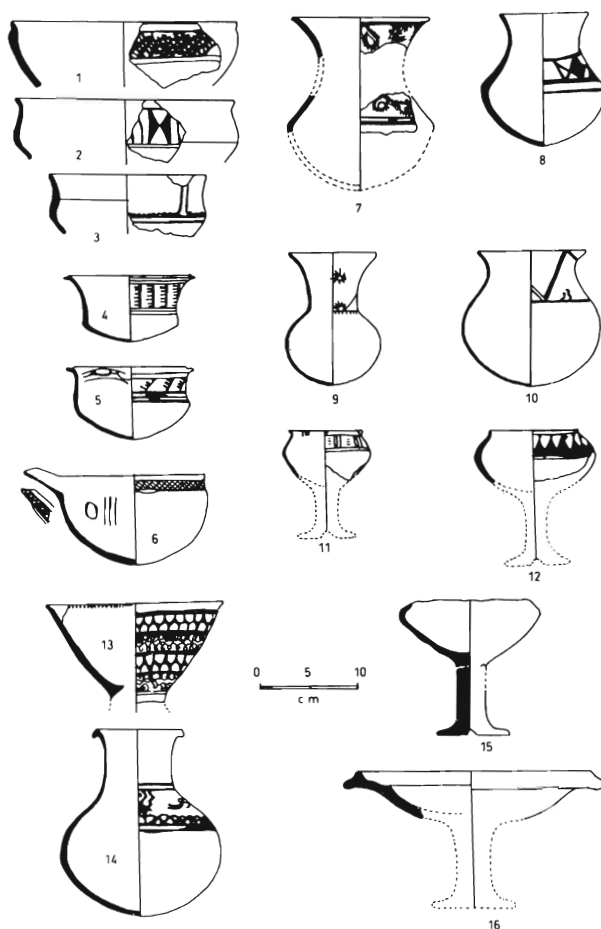


Fig. 18. Chalcolithic Malwa Ware from Navdatoli, west Nimar district, Madhya Pradesh (after Sankalia *et al.*, 1958, 1971).

blades and copper axes, and their ornaments included copper bangles and necklaces of beads of semi-precious stone.

The Kayatha culture was succeeded by the Ahar culture (1700-1500 B.C.) which is better known from the Mewar region of Rajasthan and is characterized by white painted Black-and-Red ware.

The Ahar culture was succeeded by the Malwa culture (1600-1300 B.C.) which is so named because of its wide distribution in the Malwa region. Many sites of this culture are located in the valleys of the Narmada and its tributaries. The principal excavated sites are Navdatoli on the Narmada in West Nimar district (Sankalia, Subbarao and Deo, 1958; Sankalia, Deo and Ansari, 1971), Nagda on the Chambal in Ujjain district (*IAR* 1955-56: 11-19; Banerjee, 1986) and Eran on the Bina in Sagar district (*IAR*, 1960-61: 17-18; 1961-62: 24-25; 1962-63: 11-12; 1963-64: 15-16; 1964-65: 16-18; Singh, 1962). At Nagda a mud-brick and mud rampart wall was built along the river side, apparently as a protection against floods. Eran is surrounded on three sides by the river and on the fourth side by a mud wall, separated by a wide moat,

which was apparently built as a defence against external aggression. At Nagda the houses were laid on both sides of the roads and streets, which run straight and join each other at right angles, suggesting incipient planning of the settlement on Harappan pattern. Another Harappan feature at Nagda is the use of mud bricks and even fired bricks which are absent at other Malwa culture sites but are known in the Ahar culture of the Mewar region of Rajasthan (Misra, 1997). Also noteworthy from Nagda are multi-roomed large houses, with floors of rammed earth, and a drain built of mud bricks.

The Malwa people cultivated bread wheat (*Triticum vulgare compactum*), rice (*Oryza sativa* L.), lentil (*Lens esculenta*), black gram or urd (*Vigna mungo*), green gram or moong (*Vigna radiatus*), khesari dal (*Lathyrus sativus*), and linseed (*Linum usitatissimum*). Ber (*Zizyphus jujuba*) may have been consumed both in cultivated and wild forms.

The technology of the Malwa people was based on mass produced chalcedony blades and copper tools, the latter comprising flat celts and a fragment of a sword or spearhead. Their houses were modest rectangular and circular huts made of wattle-and-daub. At Navdatoli a number of charred wooden posts and numerous pieces of burnt mud plaster were encountered. Their ornaments comprised copper bangles and rings, beads of semi-precious stones and terra cotta.

The typical pottery of the Malwa culture is a wheel made, buff or cream slipped ceramic, known as Malwa ware with painted decoration in dark brown colour. The principal shapes are *lota*, bowls, dishes and high-necked jars in various sizes. The ware at Navdatoli included some distinctive shapes like channel-spouted bowl, footed cups and goblets. The painted motifs are primarily geometric like triangles and lozenges but also include naturalistic designs like animals, birds, humans and plants (fig. 18). The other ceramics are white painted black-and-red ware, so typical of the Ahar culture, a cream-slipped or buff ware and a coarse grey ware.

Sankalia (1963) noted the close resemblance of channel-spouted bowl and pedestalled goblets from Navdatoli with similar forms at Tepe Sialk and Tepe Hissar in Iran and postulated that the pioneering settlers of Navdatoli were Indo-Iranian speaking Aryan migrants from Iran. It is also to be noted that while the Harappans, the Chalcolithic people of the northern Deccan or western Maharashtra and the Neolithic people of south India buried their dead, there is no evidence of burial among the earliest farmers of central India, Mewar region of Rajasthan and the Ganga plains. This negative evidence strongly suggests that these people cremated their dead, as is the practice among the upper caste

Indo-Aryan speaking Hindus today, and supports Sankalia's hypothesis.

With the introduction of agriculture, people started becoming permanently settled in villages. The stone age hunter-gatherers slowly adopted agriculture and settled way of life but some of them have continued a mixed economy of farming, animal husbandry, hunting and gathering to this day. They are represented by the various tribal communities of Central India like the Bhils, Gonds, Baigas, Korwas, Santhals and Mundas. Others like the Pardhis and the Kuchbandhias were too conservative to adopt agriculture and have persisted with the ancient hunting-gathering and nomadic way of life to this day (Nagar, 1983; Nagar and Misra, 1993, 1994). As the resources for hunting and gathering have declined because of rapid deforestation and indiscriminate hunting, these people had to take recourse to other avenues like making and selling craft items to farmers, petty trading and even crime to ensure their survival in a changed physical and social environment. The diverse and complex society of Central India, as indeed of other parts of the country, can be understood only in the light of developments during the long prehistoric period.

CONCLUSION

Central India, with ample resources of water, wild plant and animal foods, thousands of rock shelters for habitation, and a variety of raw materials for making stone tools, provided an ideal environment for hunting-gathering way of life. The richness of mammalian fauna during the Quaternary is well documented in the fossil record of the Narmada, Son and Belan valleys. But for a part of the Upper Pleistocene, which was very dry, the climate seems to have been quite congenial, as suggested by the faunal and sedimentary record. It is, therefore, no surprise that, barring the Upper Palaeolithic period when human population was sparse, the entire region was intensively inhabited by human groups. The environment during the Holocene seems to have been most conducive and this is reflected in the dramatic increase in human population and increased tendency toward sedentariness in the Mesolithic period. About 4,500 years ago, agriculture was introduced in the region. Hunter-gatherers slowly adopted this new settled way of life. But many of them, represented by various tribal groups, have not completely given up hunting and gathering. Besides, some communities like the Pardhis and the Kuchbandhias have remained very conservative and persist with a hunting-gathering and nomadic way of life to this day.

REFERENCES

- Ahmed, N. 1966. *Stone Age Cultures of the Upper Son Valley*. Ph.D. Thesis. Poona University.
- Allchin, B. 1958. Morhana Pahar: A Re-discovery. *Man*, LVIII: 58.
- Allchin, B. 1959. The Indian Middle Stone Age: Some New Sites in Central and Southern India and their Implications. *Bull. London University Institute of Archaeology*. II:1-36.
- Allchin, B. 1986. South Asian Rock Art. *Jour. Roy. Soc. for the Encouragement of Arts, Manufactures and Commerce* : 138-156. London.
- Ansari, Z.D. and Dhavalikar, M.K. 1973. *Excavations at Kayatha*. Poona: Deccan College.
- Armand, J. 1983. *Archaeological Excavations in Durkadi Nala: An Early Palaeolithic Pebble-Tool Workshop in Central India*. New Delhi: Munshiram Manoharlal.
- Badam, G.L. 1979. *Pleistocene Fauna of India with Special Reference to the Siwaliks*. Poona: Deccan College.
- Badam, G.L., Ganjoo R.K. and Salahuddin. 1986. Preliminary Taphonomical Studies of some Pleistocene Fauna from the Central Narmada Valley. *Palaeogeogra., Palaeoclimat, Palaeoeco* 1. 53: 335-348.
- Banerjee, N.R. 1986. *Nagda*. New Delhi: Archaeological Survey of India.
- Brown, J.A. 1889. On Some Small Highly Specialized Forms of Stone Implements found in Asia, North Africa, and Europe. *Jour. Roy. Anthropol. Instit.* XVIII: 134-139.
- Cockburn, J. 1883. A Short Account of the Petrographs in the Caves and Rock Shelters of the Kaimur Range in Mirzapur District. *Proc. Asiat. Soc. Bengal*, 125-126.
- Cockburn, J. 1884. On the Durability of Hematite Drawings of Sandstone Rocks. *Proc. Asiat. Soc. Bengal* 1884, 141-145.
- Cockburn, J. 1888. On Palaeolithic Implements from the Drift Gravels of the Singrauli Basin. *Jour. Anthropol. Inst.* XVII: 57-65.
- Cockburn, J. 1894. On Flint Implements from the Kon Ravines of South Mirzapur. *Jour. Asiat. Soc. Bengal*. 63(3) : 21-37.
- Cockburn, J. 1898. Cave Drawings in the Kaimur Range, North West Provinces. *Jour. Roy. Asiat. Soc. of Great Britain* : 89-97.
- Cooper, Zarine, M. 1983. Adaptation Patterns during the Late Stone Age in Bastar District, Madhya Pradesh. *Bull. Indo-Pacific Prehist. Assoc.* 3 :1-9.
- De Lumley, Henry and Sonakia A.. 1985. Contexte Stratigraphique et Archeologique de l'Homme de la Narmada, Hathnora, Madhya Pradesh, Inde. *L'Anthropologie*, 89(1) :3-12.
- De Lumley, M.-A. and Sonakia A. 1985. Premiere Decouverte d'un *Homo erectus* sur le Continent Indien a Hathnora, dans la Moyenne Vallee de la Narmada. *L'Anthropologie*, 89(1) :13-61.
- De Terra, H. and Paterson, T.T. 1939. *Studies on the Ice Age in India and Associated Human Cultures*. Washington, D.C.: Carnegie Institution.
- Ghosh, M. 1932. Rock Paintings and other Antiquities of Prehistoric and Later Times. *Mem. Archaeol. Surv. India*. 24.
- Gordon, D.H. 1950. Stone Industries of the Holocene in India and Pakistan. *Ancient India* 6 :64-90.
- Gordon, D.H. 1958. *The Prehistoric Background of Indian Culture*. Bombay: N.M. Tripathy Pvt. Ltd.
- Gordon, M.E. and Gordon. D.H. 1939. The Indian Rock Paintings. *Sci. and Cul.* 6 : 1-33.
- Gupta, Jagdish. 1967. *Pragaitihāsik Bhārtiya Chitrakala*. New Delhi.
- Hegde, K.T.M. and Switsur V.R. 1973. Radiocarbon Dates on the Buried Soil in the Lower Narmada Valley. *Curr. Sci.* 42(17) : 607-609.
- Hunter, G.R. 1935. Interim Report of the Excavation in the Dorothy Deep Shelter No. 1. *Nagpur Univ. Jour.* 1: 28- 57.
- Hunter, G.R. 1936. Final Report on the Excavation in the Mahadeo Hills. *Nagpur Univ. Jour.* 2 : 127-144.
- IAR - *Indian Archaeology: A Review*. Annual Publication of the Archaeological Survey of India, New Delhi.
- Jacobson, J. 1970. *Microolithic Contexts in the Vindhyan Hills of Central India*. Unpublished Ph.D. Thesis, Columbia University, New York.
- Jacobson, J. 1975. Early Stone Age Habitation Sites in Eastern Malwa. *Proc. Amer. Phil. Soc.* 119 :280-297.
- Jacobson, J. 1985. Acheulian Surface Sites in Central India, p. 49-57. In : *Recent Advances in Indo-Pacific Prehistory*, (Eds. Misra, V.N. and Bellwood, Peter), New Delhi: Oxford-IBH.
- Joshi, R.V. 1978. *Stone Age Cultures of Central India: Report on the Excavations of Rock-Shelters at Adamgarh, Madhya Pradesh*. Deccan College, Poona.
- Kennedy, K.A.R. and Chiment, John 1991. The Fossil Hominid from the Narmada Valley, India; *Homo erectus* or *Homo sapiens*? *Bull. Indo-Pacific Prehist. Assoc.* 10 : 42- 58.
- Kenoyer, J.M. and Pal, J.N. 1983. Report on the Excavation and Analysis of an Upper Acheulian Assemblage from Sihawal II, p.23-28. In: *Palaeoenvironments and Prehistory in the Middle Son Valley (Madhya Pradesh, North Central India)* (Eds. Sharma G.R. and Clark, J.D.), Allahabad: Abinash Prakashan.
- Kenoyer, J.M., Clark, J.D., Pal, J.N. and Sharma, G.R. 1983. An Upper Palaeolithic Shrine in India?, *Antiquity*, LVII : 88-94.
- Khatri, A.P. 1958. *Stone Age Cultures of Malwa*. Unpublished Ph.D. Thesis, Poona University.
- Khatri, A.P. 1961. Stone Age and Pleistocene Chronology of the Narmada Valley, Central India. *Anthropos*, 56 :519-530.
- Khatri, A.P. 1962a. Mahadevian: An Oldowan Pebble Culture in India, *Asian Perspect.* 6 :186-196.
- Khatri, A.P. 1962b. Origin and Development of Series II Culture in India. *Proc. Prehist. Soc.* 28 :191-208.
- Krishnaswami, V.D. and Soundara Rajan, K.V. 1951. The Lithic Tool-Industries of the Singrauli Basin, District Mirzapur. *Ancient India* 7 : 40-65.
- Kumar, G. and Narvare, G. 1984. Ostrich Egg-Shells and Early Rock Paintings in India. In: *Rock Art in India* (Ed. Chakravarty, K.K.), New Delhi.
- Kumar, G., Pancholi, R. and Narvare, G. 1988. Engraved Ostrich Egg Shell Objects: New Evidences of Upper Palaeolithic Art in India. *Rock Art Res.* 5(1) : 43-49, Melbourne.
- LeMesurier, H.P. 1861. Letter. *Jour. Asiat. Soc. Bengal*, 30 : 81-85.
- Mathpal, Y. 1984. *The Prehistoric Rock Art of Bhimbetka, Central India*. New Delhi : Abhinav.
- Mishra, S. 1986. *Early Man and Environments in Western Madhya Pradesh*. Ph.D. Thesis, Poona University.
- Mishra, S. 1995. *Mehtakheri Excavations 1992*. Report of the Project sponsored by the Indira Gandhi Rashtriya Manav Sangrahalaya, Bhopal.
- Misra, V.N. 1965. Mesolithic Phase in the Prehistory of India, p. 57-85. In : *Indian Prehistory: 1964* (Eds. Misra, V.N. and Mate, M.S.), Poona: Deccan College.
- Misra, V.N. 1976. Ecological Adaptations during the Terminal Stone Age in Western and Central India, p. 28-51. In: *Ecological Backgrounds of South Asian Prehistory* (Eds. Kennedy, K.A.R. and Possehl, Gregory L.), Ithaca : Cornell University.
- Misra, V.N. 1978. The Acheulian Industry of Rock-Shelter IIF-23 at Bhimbetka, Central India. *Austral. Archaeol.* 8 : 63-106.
- Misra, V.N. 1985a. The Acheulian Succession at Bhimbetka, Central India, p. 35-48. In : *Recent Advances in Indo-Pacific Prehistory* (Eds. Misra, V.N. and Bellwood, Peter), New Delhi : Oxford-IBH.
- Misra, V.N. 1985b. Microolithic Industries in India, p.111-122. In: *Recent Advances in Indo-Pacific Prehistory* (Eds. Misra, V.N. and Bellwood, Peter), New Delhi:Oxford-IBH.

- Misra, V.N. 1987. Middle Pleistocene Adaptations in India, p. 99-119. In: *The Pleistocene Old World: Regional Perspectives* (Ed. Olga Soffer), New York: Plenum Press.
- Misra, V.N. 1995. Evolution of Environment and Human Culture in the Rajasthan Desert during the Late Quaternary, p. 77-103. In: *Ancient Peoples and Landscapes*, (Ed. Johnson, Eileen), Lubbock, Texas: Museum of Texas Tech University.
- Misra, V.N. 1997. Chalcolithic Site at Balathal, District Udaipur, Rajasthan: Results of First Three Seasons' Excavations. *South Asian Archaeol.* 13 : 253-274.
- Misra, V.N., Mathpal, Y. and Nagar, M. 1978. *Bhimbetka: Prehistoric Man and his Art in Central India*. Poona.
- Misra, V.N., Rajaguru, S.N., Ganjoo, R.K. and Korisetar, R. 1990. Geoarchaeology of the Palaeolithic Site at Samnapur in the Central Narmada Valley. *Man and Environment* 15(1): 107-116.
- Nagar, Malti 1983. Ethnoarchaeology of the Bhimbetka Region. *Man and Environment* VII:61-69.
- Nagar, Malti 1985. The Use of Wild Plant Foods by Aboriginal Communities in Central India, p. 337-342. In: *Recent Advances in Indo-Pacific Prehistory* (Eds. Misra, V.N. and Bellwood, Peter), New Delhi: Oxford-IBH.
- Nagar, Malti and Misra V.N., 1993. The Pardhis: A Hunting-gathering Community of Central and Western India. *Man and Environment*, 18 (1) : 115-144.
- Nagar, Malti and Misra, V.N. 1994. Survival of the Hunting-gathering Tradition in the Ganga Plains and Central India, p. 169-192. In: *Living Traditions: Studies in the Ethnoarchaeology of South Asia*, (Ed. Allchin, Bridget), New Delhi: Oxford-IBH.
- Neumayer, E. 1983. *Prehistoric Indian Rock Paintings*. New Delhi: Oxford University Press.
- Neumayer, E. 1993. *Lines on Stone: The Prehistoric Rock Art of India*. New Delhi: Manohar.
- Pal, J.N. 1986. *Archaeology of Southern Uttar Pradesh. Ceramic Industries of Northern Vindhya*. Allahabad: Swabha Prakashan.
- Pandey, R.P. 1987. *Pre-historic Archaeology of Madhya Pradesh*. Delhi: Sundeep Prakashan.
- Pandey, S.K. 1993. *Indian Rock Art*. New Delhi: Aryan Books International.
- Pant, P.C. 1982. *Prehistoric Uttar Pradesh (A Study of Old Stone Age)*. Delhi: Agam Kala Prakashan.
- Rivett-Carnac, H. 1883. On Stone Implements from the Northwestern Provinces of India. *Jour. Asiat. Soc. Bengal*, 52 (1) : 221-230.
- Salahuddin. 1987. *Late Quaternary Ecology, Fauna and Human Cultures of the Central Narmada Valley*. Ph.D. Thesis, University of Poona.
- Sali, S.A. 1989. *The Upper Palaeolithic and Mesolithic Cultures of Maharashtra*. Pune: Deccan College.
- Sankalia, H.D. 1963. New Light on the Indo-Iranian or West Asiatic Relations between 1700-1200 B.C. *Artibus Asiae*, 26 : 312-332.
- Sankalia, H.D. 1964. Middle Stone Age Culture in India and Pakistan. *Sci.* 146(3642) : 365-376.
- Sankalia, H.D., Subbarao, B. and Deo, S.B. 1958. *Excavations at Maheshwar and Navdatoli (1952-53)*. Poona: Deccan College.
- Sankalia, H.D., Deo, S.B. and Ansari, Z.D. 1971. *Chalcolithic Navdatoli (1957-59)*. Poona: Deccan College.
- Semans, C.A. 1981. Analysis of an Acheulian Collection from Peera Nullah, Narmada Valley, India. *Man and Environment* 5 : 13-31.
- Sen, D. and Ghosh, A.K. 1963. Lithic Culture-Complex in the Pleistocene Sequence of the Narmada Valley, Central India. *Rivista di Scienze Preistoriche*, 17(1-4) : 3-23.
- Sharma, G.R. 1965. Comments on 'Mesolithic Phase in the Prehistory of India' by V.N. Misra, p. 76-79. In: *Indian Prehistory: 1964*, (Eds. Misra, V.N. and Mate, M.S.), Poona: Deccan College.
- Sharma, G.R. 1973. Stone Age in the Vindhya and the Ganga Valley, p. 106-110. In: *Radiocarbon and Indian Archaeology* (Eds. Agrawal, D.P. and Ghose, A.), Bombay: TIFR.
- Sharma, G.R. 1980. *History to Prehistory: Archaeology of the Ganga Valley and the Vindhya*. Allahabad: Department of Ancient History, Culture and Archaeology, University of Allahabad.
- Sharma, G.R., Misra, V.D., Mandal, D., Misra, B.B. and Pal, J.N. 1980. *Beginnings of Agriculture (Epi-Palaeolithic to Neolithic: Excavations at Chopani-Mando, Mahadaha and Mahagara)*. Allahabad: Abinash Prakashan.
- Sharma, G.R. and Clark, J.D. (eds.). 1983. *Palaeoenvironments and Prehistory in the Middle Son Valley*. Allahabad: Abinash Prakashan.
- Sievers, G. de G. 1960. Morhana Pahar: or the Mystery of A.C. Carlyle. *Man*, 160: 98-100.
- Silberrad, C.A. 1907. Rock drawings in the Banda district. *Jour. Asiat. Soc. Bengal* (NS), 3 : 367-370.
- Singh, R. 1965. *Palaeolithic Industries of Northern Bundelkhand*. Unpublished Ph.D. Thesis, Poona University.
- Singh, U.V. 1962. Excavations at Eran. *Jour. M.P. Itihasa Parishad*, 4 : 41-44.
- Smith, V.A. 1906. Pygmy Flints. *Indian Antiquary*, 35 : 185-195.
- Sonakia, A. 1984. The Skull-Cap of Early Man and Associated Mammalian Fauna from the Narmada Valley Alluvium, Hoshangabad Area, Madhya Pradesh, India. *Rec. Geol. Surv. India*, 113(6) : 159-172.
- Supekar, S.G. 1968. *Pleistocene Stratigraphy and Prehistoric Archaeology of the Central Narmada Basin*. Unpublished Ph.D. Thesis, University of Poona.
- Supekar, S.G. 1985. Some Observations on the Quaternary Stratigraphy of the Central Narmada Valley, p. 19-28. In: *Recent Advances in Indo-Pacific Prehistory*, (Eds. Misra, V.N. and Bellwood, Peter), New Delhi: Oxford-IBH.
- Sussman, C., Blumenshine, R., Clark, J.D. and Misra, B.B. 1983. Preliminary Report on Excavation at the Mesolithic Occupation Site at Baghor II Locality, p. 161-196. In: *Palaeoenvironments and Prehistory in the Middle Son Valley (Madhya Pradesh, North Central India)*, (Eds. Sharma, G.R. and Clark, J.D.), Allahabad: Abinash Prakashan.
- Tewari, Rakesh. 1990. *Rock Paintings of Mirzapur*. Lucknow.
- Varma, R.K. 1965. Comments on 'Mesolithic Phase in the Prehistory of India' by V.N. Misra, p. 73-76. In: *Indian Prehistory: 1964*, (Eds. Misra, V.N. and Mate, M.S.), Poona: Deccan College.
- Varma, R.K. 1986. *The Mesolithic Age in Mirzapur*. Allahabad: Paramjyoti Prakashan.
- Vishnu-Mittre. 1985. The Use of Wild Plants and the Processes of Domestication in the Indian Sub-continent, p. 281-292. In: *Recent Advances in Indo-Pacific Prehistory* (Eds. Misra, V.N. and Bellwood, Peter), New Delhi: Oxford-IBH.
- Wainwright, G.J. 1964. *The Pleistocene Deposits of the Lower Narmada River and an Early Stone Age Industry from the River Chambal*. Baroda, M.S. University, Baroda.
- Wakankar, V.S. 1967. Kayatha Excavations. *Vikram University Journal, Special Number*.
- Wakankar, V.S. 1969. New Light on Central Indian Archaeology through Kayatha Excavations. *Puratattva*, 2 : 26-29.
- Wakankar, V.S. 1973. Bhimbetka Excavations. *Jour. Ind. Hist.* 15(1) : 23-33.
- Wakankar, V.S. and Brooks, R.R.R. 1976. *Stone Age Paintings in India*. Bombay: D.B. Taraporewala and Sons.
- Williams, M.A.J. and Royce, K. 1983. Alluvial History of the Middle Son Valley, North Central India, p. 9-21. In: *Palaeoenvironments and Prehistory in the Middle Son Valley* (Eds. Sharma, G.R. and Clark, J.D.), Allahabad: Abinash Prakashan.