MESOLITHIC IN THE MIDDLE GANGA VALLEY

J. N. PANDEY

During the last two decades our knowledge about the Mesolithic in India has increased substantially. Intensive prehistoric investigations carried out in the Middle Ganga Valley between 1970-71 and 1987-88 have been extremely rewarding. A large number of Mesolithic sites has been discovered over an extensive area between the Ganga and the Gomati. Not only the existence of Mesolithic culture right in the heart of the Gangetic plain has been established but also aspects of Mesolithic culture in the region can be worked out in greater details.

In this article an attempt has been made to synthesize the large and complex body of published and unpublished data relating to the Mesolithic culture of the Middle Ganga Valley. Despite the paucity of classified and published data, the present study has been made possible owing to the active participations in the field-work by the author since 1971-72, and access to unpublished material housed in the Museum of the Department of Ancient History, Culture and Archaeology, University of Allahabad by the courtesy of the authorities of the Department.

Topography

The region of Middle Ganga Valley under study is located between the Ganga in the south and the Gomati in the north, covering northern part of Allahabad district and Pratapgarh, Sultanpur, Jaunpur and Varanasi districts of Uttar Pradesh. Geologically speaking, the Middle Gangetic plain is of a very recent age and its surface has been built up by the silting action of its streams during the Pleistocene. In the Middle Ganga Valley, the Ganga is the master-stream and is the recipient of all water-lines like the Gomati, the Sai, the Varuna and their numerous seasonal tributary streams. Except the Ganga, all other rivers rise in the marshy plain. Gomati and Sai have occasional badlands and ravines. There is a great development of dead arms, deferred junctions, *jhils* and natural *tals* in their plains (Spate 1967 : 547). The general slope of the region is towards south-east.

Distribution and Settlement Pattern

In the Middle Ganga Valley 204 Mesolithic sites have been discovered so far. A total of 177 sites are recorded in Pratapgarh district as compared to 6 in Allahabad, 5 in Sultanpur, 14 in Jaunpur and only 2 in Varanasi district. Thus Mesolithic sites have a fairly dense but discontinuous distribution in Pratapgarh district and sporadic occurrences in Allahabad, Sultanpur, Jaunpur and Varanasi districts. The distribution disparity is probably the result of uneven explorations but could also be due to micro-level environmental differences among the districts concerned. This latter possibility has yet to be investigated (Pandey 1985 : 130). Mesolithic settlement pattern in the Middle Ganga Valley is represented by sites in three characteristic locations :

1. along rivulets and their seasonal tributaries,
2. in close association to horse-shoe lakes, and
3. away from rivers and lakes.

Three primary habitats—river banks, lakes and open woodlands—were available for

exploitation (Pandey 1985 : 13). Location of settlements along rivulets and lakes is probably related to the availability of water and aquatic resources. Another reason for this bias may be the presence of dense forests in inland areas. The settlements are located generally on elevated barren land *(Usar)* and are away from the reach of annual floods. The settlements are smaller in size. Most of these measure between $5m^2$ to $4.5m^2$ in area. There are a few larger settlements like Sarai Nahar Rai (1800 m^2), Mahadaha (8000 m^2), and Damadama (8750 m^2). Average spacing between two sites is between 5 and 10 km in Pratapgarh district. The spacing is slightly more in other districts in the Gangetic plain (Pandey 1985 : 132).

Technology

The noteworthy traits of Mesolithic technology of the region under discussion are : (i) use of microliths, and (ii) use of bone tools and ornaments. It may not be out of place to mention that bone tools and ornaments occur only at the excavated sites; these are completely absent at the explored sites. Heavy-duty tools such as querns, rubbers, anvils, hammerstones, slingballs and sharpeners of grey sandstone occur at the excavated sites, the richest examples coming from Mahadaha and Damadama. A preliminary study of Mesolithic assemblages from 100 surface sites, selected at random, has been conducted by the author (Pandey 1985 : 164). The total number of assemblages is 2051, of which 392 (19.11%) are shaped artifacts and 1659 (80.89%) simple artifacts. The sites are poor in shaped artifacts which are completely missing at 25 sites, eighteen sites have only one shaped tool each, nine have 3 shaped artifacts each, and only ten have shaped artifacts between 10 and 18. Retouched and backed bladelets, and various other forms are of regular occurrence. Most of the retouched bladelets are broken, either at proximal or at distal end. Retouching is very frequently found on the dorsal surface of bladelets while a few pieces show retouch on ventral surface. Unmodified and modified broken bladelets predominate in the assemblage. Chips (798)—very small, irregular flake pieces, less than 10 mm in length and without retouch—occur in high frequency. The predominant raw material is chalcedony, and other semi-precious stones are chert, agate, carnelian and jasper. The Middle Ganga Valley furnished us a striking example of what can be learnt from the occurrence and non-occurrence of raw material in a particular region. Raw material had to be brought in from outside. The presence of waste flakes and tiny chips suggests that raw material was taken to these sites and worked there. The nearest source of raw material is the Vindhyan hills, about 100 km. to the south as the crow flies.

Bone Tools and Ornaments

A large number of bone tools and ornaments has been found at Sarai Nahar Rai (Sharma 1973 : 142-43; Misra 1977 : 100), Mahadaha (Sharma *et al* 1980 : 107) and Damadama (Varma *et al* 1985 : 64). Bone tools comprise arrowheads, points, blades, knives, scrapers, a chisel and a saw. Arrowheads and points are the dominant tool-types. Among the bone ornaments, mention may be made of circular bone rings, pendants and beads.

Faunal Remains

Faunal material is better preserved and occurs in greater quantity at Sarai Nahar Rai, Mahadaha and Damadama which are excavated sites. These sites are situated on the margins of lakes. Much of the faunal material and other remains found their way into the water-logged deposit. This led to the survival of an unusually large number of animal bones and other objects made of organic material. Faunal remains have undergone considerable mineralization. Most of the animal bones are

heavier than recently macerated bones. In addition to high mineral components in the compact and cancellous bone tissues, there are varying degrees of calcareous concretions deposited over the external surfaces of many bones. This has also helped in the preservation of bones. Large percentage of animal bones is fragmentary, broken and charred. The presence of faunal remains can definitely be ascribed to human agency. At Sarai Nahar Rai animal bones were found in hearths and on the floor area of the site (Sharma 1973 : 142), while at Mahadaha these were discovered in hearths as well as in habitation and lake areas, the greater number of bones coming from the lake-area (Sharma *et al* 1980 : 110). At Damadama animal bones were found scattered throughout the site with a heavier concentration in the "Eastern Sector" (Varma *et al* 1985 : 65). A preliminary study of animal bones from Sarai Nahar Rai and Mahadaha was undertaken by K. R. Alur (1980 : 201-227) who identified cattle, sheep and goat, boar and deer in the faunal assemblage. Molar teeth and a cervical vertebra of a big animal found at Mahadaha was inadvertently identified as those of a hippopotamus (Alur 1980 : 215). These faunal remains actually belong to rhinoceros species. Recent study of the faunal remains of the Mesolithic sites of the Gangetic plain by P. K. Thomas of Deccan College, Pune, indicates that cattle, sheep and goat are absent. Deer species and wild boar are represented in the assemblage. This evidence contributes substantially to our knowledge of the Mesolithic economy and animal environment. Bones of tortoise, fish, rat and birds were also found. Aquatic resources would have been non-seasonal, predictable, relatively non-fluctuating in availability than terrestrial recources and were capable of supporting localized human population. In the absence of quantitative data, it is not possible to determine if there were any significant temporal changes in the pattern of animal resource procurement at Sarai Nahar Rai, Mahadaha and Damadama. However the available evidence is suggestive of broad spectrum hunting rather than specialization on any particular game (Pandey 1985 : 186). We are familiar with the impact of food-producing economies on the environment and landscape but in the last decade a suggestion was made about the possibility of change at pre-agriculture level (Mellars 1976 : 15-45). Studies undertaken in Britain indicate that Mesolithic man was modifying the forest cover partly in course of burning of forests but also to improve plant cover for animal and human consumption. Use of fire on a large scale is attested at Sarai Nahar Rai, Mahadaha and Damadama. Such a study in the Gangetic plain is a *desideratum.*

The Burials

Excavations at Sarai Nahar Rai (Misra 1977 : 99), Mahadaha (Sharma *et al.* 1980 : 86-98) and Damadama (Varma *et al.* 1985 : 53-58; Pal 1988 : 115-22) have yielded a large number of human skeletal remains. Fragmentary human skeletal remains have been found during explorations at Kurha in Allahabad district, Harhi-Bhituli, Bela-Rampura, Dheruhi and Sonwa-Bahara in Pratapgarh district, and Nacharaula and Pure-Jujhar Rai in Jaunpur district in the middle Ganga Valley (Pandey 1985 : 212-13). Skeletal remains found at these sites indicate the existence of at least 7 other Mesolithic burial sites in the study area.

Data for the study of Mesolithic burials derived from Sarai Nahar Rai, Mahadaha and Damadama have been arranged in the following heads : (i) general condition of skeletal remains; (ii) mode of burial and orientation of skeletons; (iii) number of individuals per burial; (iv) sex and age; and (v) nature and degree of grave-goods. A sample representing 93 individuals—15 from Sarai Nahar Rai, 30 from Mahadaha and 48 from Damadama—has been investigated. Excavations at Sarai Nahar Rai were undertaken by

the Department of Ancient History, Culture and Archaeology, Allahabad University in collaboration with State Department of Scientific Research and Cultural Affairs, Government of Uttar Pradesh between 1971-72 and 1972-73. Sixteen graves were located at the site, of which twelve were excavated. The excavations at Mahadaha and Damadama were undertaken by Allahabad University between 1978 and 1979, and between 1982-83 and 1986-87, respectively. Twenty-eight graves, containing skeletal remains of thirty individuals, were exposed at Mahadaha. The excavations of 41 graves at Damadama brought to light skeletal remains of 48 individuals.

Human skeletal remains found at Sarai Nahar Rai, Mahadaha and Damadama were in the advanced stage of fossilization and had acquired considerable weight. The bones were generally sturdy and bear light white encrustations of calcium nodules. The available skeletal remains at Sarai Nahar Rai and Mahadaha were generally in good state of preservation, however, the human bones unearthed at Damadama were comparatively not well preserved and vertebral columns, ribs, hip-bones, proximal and distal end of long bones were corroded.

The dead were commonly buried within the open-air settlements in prepared graves. There was no differential location of graves of adults and children, males and females. Shallow, oblong pits with tapering sides were common features of the graves. Graves meant for double burials were larger in size than those of the graves containing skeletal remains of a single individual. The evidence of earthen-cushion, about 4-5 cm high, to protect the head of the individual buried was noticed in a few cases. After placing the dead body, graves were filled with the self-same earth and hearth material, containing broken and charred animal bones and ash (Pandey 1985 : 258-59). The mode of burial in eighty-eight out of ninety-three cases was complete inhumation, body placed in extended supine position with legs extended and head occasionally towards right or left. The evidence of flexed burial is very limited at the moment, the sites of Mahadaha and Damadama yielding evidence of one and two burials, respectively. In two cases at Damadama the buried individuals were found placed in extended prone position with crossed-legs. The practice of burying dead in prone position at Damadama appears to be novel to Mesolithic burial practices of the Middle Ganga Valley and unique to Damadama (Pandey 1985 : 241). Seventy-three out of nenety-three skeletons were oriented west-east, the head lying in the west. Six skeletons at Mahadaha and seven at Damadama were oriented north-south, and one each at Mahadaha and Damadama were oriented south-north. In a few cases the orientation was east-east-south to west-west-north (Pandey 1985 : 259).

A study of the position of hands at the time of burial presents an interesting picture. The right hand in the case of males and left hand in the case of females were invariably placed across the abdomen and the other one along the body at Sarai Nahar Rai (Sharma 1973 : 135). At Mahadaha and Damadama no definite pattern appears to have been observed in the placing of hands of individuals at the time of burial. Generally both the hands were placed along the body but sometimes the right hand was placed along the body and the left on the chest or on the pelvic region. At Mahadaha in one case the right hand was placed on the pelvic region and the left below (Pal 1985 : 35). In two cases at Damadama in which the skeletons were found in prone position, the left hand was found placed underneath the body and the right hand along the body (Varma *et al.* 1985 : 57). It can be said that intra-site variability in the position of hands existed during Mesolithic in the Gangetic plain and people were often buried in a variety of positions of hand (Pandey 1985 : 265).

Both single and multiple graves were found in the Middle Ganga Valley. Seventy-two graves—11 at Sarai Nahar Rai, 26 at Mahadaha and 35 at Damadama—out of eighty-one graves contained the skeletal remains of a single individual. Nine double/multiple graves—one at Sarai Nahar Rai (Misra 1977 : 100), two at Mahadaha (Sharma *et al.* 1980 : 86) and six at Damadama (Pal 1988 : 116)—have been discovered in the Middle Ganga Valley so far. There is evidence of a high degree of variability among the isomorphic double/multiple burials. No two double-/multiple graves are similar, nothing to speak of their being identical. One grave at Sarai Nahar Rai contained the skeletal remains of four individuals buried simultaneously with two males placed to the right side of two females (Misra 1977 : 100). In one of the two double-burials exposed at Mahadaha, the skeletons were placed side by side in extended position, the male on the right side of the female. In another case the female skeleton was found placed on that of the male (Sharma *et al.* 1980 : 86). Out of the six double burials found at Damadama, five contained one male and one female each. The remaining one grave contained skeletal remains of three individuals (Pal 1988 : 116).

Sarai Nahar Rai skeletal series is composed of 15 specimens. Of the 10, seven are males and 3 females. Sex in five cases could not be determined (Kennedy *et al.* 1986 : 31). The age range for males is 16 to 34 years at the time of death, with a mean age between 17 and 31 years. The age range for females is 15 to 35 years with a mean ranging between 16 and 32.5 years (Kennedy *et al.* 1986 : 32). The Sarai Nahar Rai population appears to be composed of tall individuals, males as well as females. The average height of males was between 173.93 and 192.08 cm, and those of females between 174.89 and 187.68 cm (Kennedy *et al.* 1986 : 38). Of the 30 specimens from Mahadaha, 18 are males, 6 females, 5 are of uncertain sex, and there is one child skeleton. The age range for Mahadaha males is between 17 and 40 years, and from young adulthood to 60 for females (Kennedy *et al.* 1983 : 32). Out of 48 specimens from Damadama, 23 are males and 17 females. Sex in 8 cases could not be determined (Pandey 1985 : 242). At Damadama out of 37 individuals whose age could be determined, 7 were below 18 years and 30 were in the age group of 18 to 40 years (Pandey 1985 : 243). The people at Mahadaha and Damadama were tall and sturdy but a detailed study of the stature of skeletons is yet to be done.

Grave-goods which included bone ornaments, bone arrowheads, animal bones and tortoise-shell were found in the neck, ear or at the vertebral column or near the feet of different individuals. It is reported that in a few cases microliths and shells were offered as grave-goods (Sharma 1973 : 135). It may be pointed out in this connection that those were calcified white ant or termite hills in the shape of hollow clay balls. Some of the scholars identified these as shells (Sharma 1973 : 135), and others as pieces of coiled pottery (Kennedy *et al.* 1986 : 7). There is nothing to indicate that shells or hand-made coiled pottery was being offered as grave-goods at Sarai Nahar Rai. Seven individuals at Mahadaha and ten at Damadama were buried with grave-goods (Pandey 1985 : 268). Two males were buried adorned with necklaces of bone-rings at Mahadaha (Pandey 1985 : 270). The form of these items is *sociotechnic,* indicative of social status. Bone arrowheads and animal bones were offered to memebrs of both the sexes. Age, sex and status of individuals probably affected the number and types of grave-goods to be buried. The presence and absence of burial goods signified status differences of deceased individuals (Pandey 1985 : 271).

Chronology

Mesolithic culture of the Middle Ganga Valley lacks an established and generally accepted chronological framework. On the

basis of typo-technological study of the artifacts a relative chronology for Mesolithic culture has been suggested. Mesolithic artifacts have been divided into Early and Late groups, possibly preceded by an earlier category of artifacts (Sharma *at al.* 1980: 118). This three-fold sequence is basically based on the assumption of technological development rather than on stratigraphic evidence. This sequence has been defined on the basis of presence and absence of geometric microlithic shapes. The presence of geometric tools at Sarai Nahar Rai, Mahadaha and Damadama is sufficient to assign these sites to the Late Mesolithic phase.

There are two radiocarbon dates from Sarai Nahar Rai, derived from charred bone samples. The dates are: TF-1104, 10345 ± 110BP (Agrawal and Kusumgar 1973: 576), and TF-1356 13592 ± 125BP (Agrawal and Kusumgar 1975: 221). The three dates from Mahadaha are 4010 ± 120BP, 2880 ± 125BP and 3840 ± 130BP (Rajgopalan *et al.* 1982: 45-53). Radio-carbon dates from Damadama are still awaited. It is clear from the great diversity of dates that radiocarbon evidence for the chronology of Gangetic Mesolithic is at present inconclusive. Tentatively the Mesolithic culture may be placed between 8,000 and 2,000 BC.

References

Agarwal, D. P. and Kusumgar, S. 1973. Tata Institute Radiocarbon Date List X. *Radiocarbon,* 15: 574-585.

Agrawal, D. P. and Kusumgar, S. 1975. Tata Institute Radiocarbon Date List XI. *Radiocarbon,* 17: 219-225.

Alur, K. R. 1980. Faunal Remains from the Vindhyas and the Ganga Valley. In Sharma G. R. *et al, Beginnings of Agriculture* pp. 201-227, Allahabad.

Kennedy, K.A.R., Nancy C. Lovell, and Christopher B. Burrow 1986. *Mesolithic Human Remains From the Gangetic Plain: Sarai Nahar Rai.* South Asia Occasional Papers and Theses No. 10, Cornell University, New York.

Mellars, P. 1976. Fire Ecology, Animal Populations and Man: A study of some Ecological Relationships in Prehistory. *Proceedings of Prehistoric Society* 42: 15-45.

Misra, V. D. 1977. *Some Aspects of Indian Archaeology,* Prabhat Prakashan, Allahabad.

Pal, J. N. 1985. Some new Light on the Mesolithic Burial Practices of the Ganga Valley. Evidence from Mahadaha, Pratapgarh, Uttar Pradesh. *Man and Environment* IX 28-37.

Pal, J. N. 1988. Mesolithic Double Burials from Damadama-*Man and Environment XIII:* 115-22.

Pandey, J. N. 1985. *Settlement Patterns and Life in the Mesolithic Period in Uttar Pradesh.* D. Phil Thesis, Allahabad University.

Rajagopalan, G., Vishnu-Mittre, B. Sekar and T. K. Mandal. 1982. Birbal Sahni Institute Radiocarbon Measurements III. *Radiocarbon* 24: 45-53.

Sharma, G. R. 1973. Mesolithic Lake Cultures in the Ganga Valley, India. *Proc. Prehist. Soc.* 39: 129-146.

Sharma, G. R., Misra, V. D., Mandal, D., Misra, B. B. and Pal, J. N. 1980. *Beginnings of Agriculture.* Allahabad.

Spate, O.H.K. and Learmonth, A.T.A. 1967. *India and Pakistan, A General Regional Geography.* Methuen, London.

Varma, R. K., Misra, V. D., Pandey, J. N. and Pal, J. N. 1985. Preliminary Report on the Excavations at Damadama (1982-1984). *Man and Environment IX:* 45-65.