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TRACING HUMAN ORIGIN IN INDIAN SUBCONTINENT: A REVIEW OF RECENT PALEOANTHROPOLOGICAL AND ARCHAEOLOGICAL FINDINGS

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Abstract

The present article tries to explore origin of man in India from recent Paleoanthropological and Archaeological evidences. The article is purely based on secondary data, and here attempt has been made to do extensive review of the recent most available publications on the human paleontology and prehistoric archaeology. Review of recent literature indicates that probably earliest hominines came to this subcontinent about 2.0-1.5 mya with pre-Acheulian and/or Acheulian like technology. Presence of such early evidences of Acheulian like technology in Indian subcontinent raises the hypothetical claim that probably Acheulian like technology originated independently in Indian subcontinent. And this further provides some support to the multi-regional model of human evolution.

Keywords: *Human Origin, Bio-Cultural Evolution, Paleoanthropology, Prehistoric Archaeology, Indian Subcontinent.*

Introduction

Research on the origin of Indian population goes back to the colonial period, when British geologists and geographers started to survey undivided India only to find out valuable minerals and ores. Some of such geologists and some army officers had keen interest to find out so called “missing link” and they also believed that the missing link could only be found in the eastern part of old world and Africa. In India one of such geologist was Robert Bruce Foote (1834-1912). Foote conducted archaeological and paleontological surveys in the southern part of India and discovered in the year 1863 the first Paleolithic tool (a hand axe) from the Pallavaram (near Madras) of south India (Pappu, 2008). Foot’s footprint was followed by various archaeologists, anthropologists and geologists of this country like Sen and Ghosh (1948), Ghosh (1963), Khatri (1962), Chakrabarti (1993), Paddayya and Petraglia (1997), Pappu (2011) etc. And, finally these endeavours led to the discovery of a number of prehistoric sites in various part of India (Pappu, 2008:30).

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Recent developments of human origin research in India have shown that geographical location[1] as well as diverse climatic condition[2] of this country must have some vital effects on adaptation as well as dispersal of Pleistocene hominids in the Old world (Joshi, 1978). Presence of various Lithic cultural traditions in Indian subcontinent (Mishra, 2007, 2008) and presence of some of the earliest lower Paleolithic, middle Palaeolithic and Microlithic sites (Mishra *et al*, 1995; Paddayya *et al*, 2002; Clarkson *et al*, 2009; Pappu *et al*, 2011, Mishra *et al*, 2013; Basak *et al*, 2014, 2017; Akhilesh *et al*, 2018,) have proven the above mentioned fact as true. Furthermore all these evidences indicate that probably India was inhabited by earliest members of genus Homo and this form of human developed diverse patterns of adaptation to cope with diverse climatic condition of this subcontinent. However, with the presence of these earliest archaeological findings one serious deficiency of human origin research in India is the scarcity of hominin fossils older than the upper Pleistocene and so far only few fossils of this age is discovered from the sediments of Narmada valley in central India (Sonakia, 1985; Sankhyan, 1997; Sankhyan *et al,* 2012). In this context the aim of present discussion is to make an understanding regarding the earliest ancestor of Indian population on the basis of older as well as recent most discoveries in the field of archaeological and paleoanthropological research. It is mentionable that in present paper description of the human fossil and cultural remains dated to early and middle Pleistocene are given, because aim of this paper is to trace earliest human populations in India.

Paleontological Evidences

So far only a single fossilized human skull, dated to middle Pleistocene was recovered from Narmada valley of India. However, review of some earlier documents show that before the discovery of Narmada cranium parts of human fossils were reported from various part of India, but unfortunately none of them were reported and preserved properly and are not available today for any scientific analysis. Among these earlier discoveries human remains recovered from Yamuna at Karimkhan region, Umhut skeletal remains of Uttar Pradesh, fossilized human skull of Narmada and Skeletal remains recovered from Attirampakkam of Tamilnadu, Gundalkamma and Billasurgam of Andhra Pradesh are important. All of these discoveries took place in between 1833 to 1884. Descriptions of some of these specimens were published in Journal of Asiatic Society and all these specimens were transported in the museum of Asiatic Society for proper preservation, but they disappeared from there (Kennedy, 1980:398-399). Beside these discoveries human remains of uncertain antiquity were reported from various parts of modern Afghanistan and also from Sri Lanka, but some of these were lost and some are not reported properly (Kennedy, 1980). The recent most and scientifically reported Pleistocene hominid fossil remains of India include Narmada fossil remains and fossil remain of a child, found from Kerala. So, to serve the goal of present paper these two fossil remains are described below.

The "Narmada Hominid"

Since 1830s the Central Narmada Valley in Madhya Pradesh had yielded innumerable Paleolithic artifacts and Pleistocene mammalian fauna and recently after the discovery of fossilized human cranium from this particular region of India attracted Geologists, Anthropologists and Archaeologists from the country and from other parts of the world. Before going directly into the discussion of Narmada hominid remain let us

[1] It lies directly between Africa in the west and South East Asia in the east from where oldest remains of human like animals (*Homo erectus)* have been reported.
[2] The monsoon climatic condition in India originated during Miocene period (Quade *et al,* 1989).

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take a brief glimpse of the geomorphology and geology of river Narmada and its associated area. The Narmada River originates at Amarkantak (22°40'N, 81°40'E) in eastern Madhya Pradesh and flows for about 1300 km before joining into the Gulf of Cambay near Broach in Gujarat. The origin of this river dates back to the origin of Himalayas. Geologists believe that upheaval of Himalayas caused the origin of two fault planes or alluvium filled rifts in the rocks parallel to the Vindhya Range. These rift valleys gave origin to the valleys of Narmada and Tapti in the peninsular region (Wadia, 1957:28). The central part of Narmada valley is rich in Quaternary alluvium and it is also rich in vertebrate fossil remains and archaeological remains of Pleistocene age. The central Narmada valley is a structural valley confined by Son Narmada North Fault and Son Narmada South Fault (SNNF). Reactivation of SNSF has controlled basin formation and deposition of thick Quaternary sediments. Sediments are exceptionally thick in the central Narmada valley in comparison to upper and downstream reaches. Subsurface valley configuration suggests existence of three isolated deep basins in the beginning of the Quaternary. These basins were connected sometimes during Early Upper Pleistocene by a westerly flowing trunk stream. Stratigraphic sequence here ranges from Lower Pleistocene to Holocene. The lithostratigraphic formations are recognized on the basis of multiple criteria of lithology, order of superposition, erosional unconformity, rhyolite tephras, soils and paleosols and morphostratigraphy. These in decreasing order of antiquity are Plikarar Formation, Dhansi Formation, Surajkund Formation, Baneta Formation, Hirdepur Formation, Bauras Formation and Ramnagar Formation (Tiwari and Bhai, 1997). Among these various stratigraphical units Surajkund and Baneta formations are rich in both vertebrate fossils and stone tools.

The cranial remains of Narmada man was discovered on 5th December, 1982 near Hathnora village at the middle course of river Narmada. Discoverer of this fossil remain is Arun Sonakia, senior geologist of the Geological Survey of India, central region. He found the specimen resting *in situ* on the surface of an alluvial terrace on the north bank of the river Narmada. The complete description of this fossil remain was published in 1985 in *L'Anthropologie* and also in *American Anthropologist* (Kennedy and Chiment, 1991). After this discovery two clavicles and part of the fossilized 9th rib (Sankhyan, 1997) is found from the same region and then very recently part of the fossilized humerus and femur are further reported from Netankheri village of the same region (Sankhyan et al, 2012).

The deposit from which Narmada man cranium is recovered is known as Surajkund formation. The Surajkund Formation comprises more than 50m thick steel grey and yellow clays in the deeper part of the basin .In the shallower basin part, this formation consists of yellow clays, sand, gravels and conglomerates. Its base is not seen in the deeper basin sections but in the peripheral part of the basin it is underlain by the Dhansi Formation. It is overlain by the Baneta Formation. Recent ESR[3] dating of the Narmada valley deposit shows that the bio stratigraphic and cultural findings of Surajkund formation is >236 Kya, so date of the findings can be assigned to middle Pleistocene (Kennedy and Chiment, 1990; Cameron et al, 2004; cited in Sankhyan et al, 2012). Beside this the artifact typology recovered from the site and study of the sedimentary succession of the site confirms its date to middle Pleistocene (Kennedy and Chiment, 1990:45-47).

The physical features of the Narmada crania indicate that it belonged to right half of an individual cranium with well-preserved right parietal and temporal walls, however frontal and occipital parts are also well preserved. Other features indicate that the cranial width of Narmada hominid has an upward

[3] Electron Spin Resonance dating. It is an absolute dating method.

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reduction with narrow primitive face, thick cranial walls, strong parietal eminences, simple angular sutures, strong parietal keel, angular torus and stout and inclined zygoma (Sonakia, 1999: 332). Study of the clavicle recovered by Sankhyan (1997) and further study of the Narmada crania indicates that both of them belonged to the same individual. It is further discovered that the individual to which the cranium belonged was a female who died in between the age 25-30 yrs. Height of the individual was ~ 4'4" and she had a robust body build up (Sankhyan, 1999:342). However very recently claim of the discovery of the part of humerus and femur have come into light and study indicates that they belonged to a larger individual (Sankhyan, 2012), hence further study is needed for better understanding. Study of the physical features of the cranium indicates that Narmada hominid belonged to archaic Homo sapiens group (Kennedy and Chiment, 1990). After the recovery of post cranial bones like clavicle, ribs and fragmented limb bones the above mentioned claim has got more supports (Sankhyan, 1999; 2012). However, variation in the size of the limb bones has recently put forward some debates regarding the presence of taller and short sized people in the central India region during Pleistocene (Sankhyan, 2012). However, only recovery of more hominid fossil evidences from this region could provide better insight into it.

The Ferricrete Baby

Recently a claim regarding the discovery of a baby skull within ferrecretised deposit has come forward from Odai of Tamilnadu. Examination of the outer surface of the skull is almost impossible because the skull is totally covered by ferrecrete cement and this property of the skull has also made it impossible to dig out the skull from its ferrecretised cast. Very recently study of the skull was done by 2D, 3D scan and also by 3D Photo Microscopy. Result of these examinations showed that the ferrecretised entombed structure contains a human baby skull with three cervical vertebrae. Study of the structure by SEM further showed presence of cranial bones, membranous tissue and brain cells within the structure. The skull was dated by TL[4] method of dating. Result of the dating shows that it belonged to middle Pleistocene time. Proper taxonomical status of the fossil is not understood, however on the basis of the age of the fossil remain it is assumed that it may belongs to archaic Homo sapiens (Rajendran, 2009).

Archaeological Evidences:

One of the most abundant databases to understand early human colonization in India is the archaeological material, more particularly stone tools or lithic assemblages. The earliest stone tools (belongs to the Lower Paleolithic Cultural age) in Indian subcontinent are mainly found from the Riwat of Pakistan. The earliest artifacts of Riwat date back to 2.5 mya, close to the age of earliest stone tools of Africa (Mishra, 2007:49; Mishra, 2008:21). However, later sediments dating between 2.2 -1.2 mya, examined in Pabbi hill region of Pakistan yielded amorphous surface assemblage with no *in situ* artifacts, leading to a conclusion of the discontinuity of the record (Mishra, 2008:21).

In India, the artifacts of lower Paleolithic cultural age can be divided into two broad categories, one is Soanian or chopper chopping tradition and the other is Acheulian or Hand axe tradition. Previously it was assumed that the Acheulian tradition was confined in the southern India only. However after 1980's some new discoveries in the Siwalik foot hill region revealed the existence in north and north-eastern India. A

[4] Thermoluminescence dating, it is an absolute method of dating.

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number of new sites were discovered in Punjab region of India and Pakistan and also from Nepal; and all of the cases artifacts were recovered from Siwalik deposits. Recent studies on the Soanian or chopper chopping tool types of north and north east India and their mode of occurrence have revealed that all these tool types are late Pleistocene in age and should not be considered as Lower Paleolithic at all. Beside these studies on the Acheulian tools of north and North West India indicates typo-technologically they are late Acheulian in nature (Mishra, 2008).

Scenario of peninsular India is completely contrasting to that of north India. In peninsular India Lower Paleolithic lacking hand axes are rare. Except some sites like Durkadi Nala, Mahadeo Piparia, Samnapur on the Narmada river and Lahchura on the Betwa river (Armand, 1983; Khatri, 1962; Mishra et al, 1990; Pant, 1982; cited in Mishra, 2008:21). All the sites of peninsular India consist chopper-chopping in their assemblages. It is further observed that the Oldowan or Sohanian or chopper chopping element in Peninsular India as well as north India postdate Acheulian elements. However, in Africa Oldowan and Acheulian elements it overlaps in between 1.4-1.0 myr. Absence of any equivalent element of Oldowan in India is really surprising (Mishra, 2008).

Acheulian element in India can be divided in two divisions on the basis typology, one is earlier and the other is younger or later. Evidences of earlier Acheulian are mainly found from fluvial deposits, preserved in silty or clayey sediments. Some of the most important sites of this type are Chirki on Pravara river basin and the other includes sites of Hunsgi Baichbal valley (Mishra, 2008). One such site Isampur of Hunsgi Baichbal valley is dated to 1.2 mya, among one of the oldest lower Paleolithic sites of Peninsular India (Paddayya *et al*, 2002). Beside these some exceptional examples of early Acheulian sites of peninsular India includes Bori, Moregaon and Attirampakkam. Dates for Bori and Moregaon go back to 0.67 mya (Mishra *et al*, 1995) and to 0.4 mya respectively. Attirampakkam is one of the most thoroughly studied lower Paleolithic sites of peninsular India. Recent study of Attirampakkam gives its date to 1.5 mya and now it is the oldest site of peninsular India (Pappu *et al*, 2011). Among younger Acheulian sites of India Bhimbetka is mentionable. The site was excavated by Mishra (1978) and it consist small number of bifaces with a huge number of retouched stone tools (Mishra, 2008).

Ecology and Adaptation Pattern

Distribution of Acheulian element in India indicates that Acheulian people were distributed from Siwalik Hills in north India to as far as southern Madras. However a few regions like north east India were not inhibited by this people because of heavy rain fall and dense forest in this region. In the case of the Ganga plains, the non-availability of stone and the swampy environment may have discouraged early man from occupying them. Acheulian hunter-gatherer populations adapted themselves to a wide variety of ecozones. These include the semi-arid regions of western Rajasthan, Mewar plain, Saurashtra, Gujarat alluvial plain, sub-humid dry as well as moist deciduous woodland zone in central India, semi-arid Deccan plateau, Chhotanagpur plateau and the Eastern Ghats, north of the Kaberi river (Mishra, 2001).

Acheulian sites are particularly densely concentrated and are richer in central India and the southern part of the Eastern Ghats. These regions today receive adequate rainfall; have perennial rivers, a thick vegetation cover and are rich in wild plant and animal food resources. Chemical analysis of the sediments yielding Acheulian assemblages in rock shelter III F-23 at Bhimbetka in Madhya Pradesh suggests that conditions during the Acheulian occupation were as humid as, if not more than, they are today (Mishra

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and Rajaguru, 1978; cited in Mishra, 2001: 494). Therefore, both plant and animal life must have been abundant. Faunal fossil evidence from the alluvium of the Narmada, Godavari and their tributaries supports this inference (Badam, 1979; cited in Mishra, 2001:494).

Within these broad eco-zones, the Acheulian people occupied a variety of microhabitats. In the semi-arid region of western Rajasthan sites, now buried in fine grained alluvium around Didwana in Nagaur district, Acheulian hunter-gatherers camped along lakes and pools in the wide flood plains of shallow meandering streams, on the surfaces of extensively exposed older gravel beds and on stable sand dunes (Misra 1987; Mishra and Rajaguru 1986; cited in Mishra, 2001). In the Vindhya hills of central India they occupied rock shelters as at Bhimbetka (Wakankar 1975; Mishra and Rajaguru 1978; cited in Mishra, 2001). Acheulian assemblages similar to those found in the excavations of the rock shelters have also been found at open-air sites like Barkhera near Bhimbetka and at Putlikarar (Jacobson 1985; cited in Mishra, 2001), both in Raisen district of Madhya Pradesh. It would appear that the rock shelter and open-air sites represent seasonal camping places of the same populations, the former being used during the rainy season and the winter and the latter during the summer months. Over most of the country, however, the Acheulian hunter-gatherers lived in the open along perennial as well as seasonal streams.

The Pleistocene climate in India is marked by its variety throughout the country as well as its changing nature and the lower Paleolithic people of that time had to adapt with this varied climatic condition. Lower Paleolithic sites of semi-arid eco-zones like Rajasthan indicates people of that time lived along the pools and lakes of this region. Very fresh Acheulian artifacts excavated from the lake and pool deposit of Rajasthan indicates that the makers of these artifacts lived along these ancient lakes. Beside some of important Acheulian sites of this region discovered from ancient dunes, which also indicate existence of Acheulian people on stabilized ancient dunes also (Mishra, 2001). In peninsular India, Acheulian artifacts are usually found buried in boulder and pebble gravels of the Chambal, Son, Mahanadi, Narmada, Godavari and Krishna rivers and their tributaries. These gravels are believed to have been deposited during semi-arid climate with intermittent, erratic rainfall when there was sparse to no plant cover (Williams and Royce 1983, cited in Mishra, 2001). The gravels are invariably covered by fine silt and silty clay which are usually devoid of archeological material due to the fact that these sediments were deposited by low energy streams which were incapable of carrying coarse material, including artifacts. Acheulian occupations contemporary to the deposition of the fine sediments are probably represented by the numerous surface sites found in central India and the Eastern Ghats (Mishra, 2001).

Faunal remains have been preserved in Acheulian bearing gravels in peninsular rivers like the Narmada, Godavari and their tributaries. These comprise wild boar (*Sus namadicus*), cattle (*Bos namadicus*), elephant (*Elephas hysudricus* and *Stegodon insignisganesa*), horse (*Equus namadicus*) and hippopotamus (*Hexaprotodon namadicus*). These animals indicate the existence of both forest and open grassland environments and the availability of plentiful water round the year (Badam, 2000). There is little doubt that all these animals formed a source of food for the Acheulian populations but whether they were hunted or scavenged or exploited can be ascertained only when their remains are found in association with archaeological material in undisturbed occupation contexts (Mishra, 2001).

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Discussion

Review of the recent evidences suggests that Indian sub-continent is one of the areas where hominins dispersed during early Pleistocene. Resemblance of the faunal remains, associated with *Homo erects* of Java indicates probably this particular group of hominid migrated to Java from India. However, in India fossil remains of early hominids are almost absent but tools are abundant and a reverse scenario is found in Java (Sondaar, 1984; cited in Mishra, 2010). The earliest stone tools (Lower Paleolithic tools) recovered from India put forward some important issues regarding migration of early hominins. The early Acheulian assemblage are almost absent in extra peninsular India while they are abundant in most part of peninsular India. Beside this the typo technological similarity and also similarity in dating of the early Acheulian assemblages of India and that of Africa indicates that probably this technology introduced in India from Africa. Dating of all African Acheulian sites (where dating is done) show that in Africa early Acheulian developed before 1.4 mya and it overlapped with Oldowan industry for half a million years. Recent work by Spoor *et al* (2007; cited in Mishra, 2007) suggests an association of different hominids like *Homo habilis* and *Homo erectus* with different tool technologies. So, existence of different tool technologies of early and late Acheulian in India suggests presence of two different population with different technologies (Mishra, 2007; Mishra, 2008). Now question comes whether these two different populations were two different hominin groups or two different groups of same hominin group. But recent evidences are not supportive enough to answer this question. Beside this another important question has been raised by Indian Archaeologists and Paleoanthropologists regarding the origin of early Acheulian technology. Secure and recent dating of some of the Lower Paleolithic sites of India like Attirampakkam (Pappu *et al*, 2011), Isampur (Paddayya *et al*, 2002) etc., indicates that early Acheulian in India can be dated to 1.2-1.5 mya. Beside this other evidences suggests that probably early Acheulian was originated outside Africa (Mishra, 2007). Seeing these facts some archaeologists like Mishra (2011)[5] in opinion that probably Acheulian technology originated in India. However, more work in this field can give secure conclusion to this issue. So it can be concluded securely that hominins like Narmada man were not the earliest Indians but probably they were successors of earliest people of this country. Earliest people probably came in this subcontinent nearly about 2.0-1.5 mya[6]. Probably these peoples came from Africa prior to the appearance of Acheulian technology, Acheulian developed in Indian sub-continent (Mishra, 2007).

Disclaimer: The present article is an updated version of the paper entitled "In Search of Earliest India: A Review of Recent Paleoanthropological and Archaeological Findings" presented in the 42nd Orientation Program of the Jadavpur University, 2012.

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[5] http// http://sheilamishra.wordpress.com/ (visited 23.12.2012, 6:23 pm)

[6] If dating of Riwat of Pakistan and that of Attirampakkam are taken into consideration.

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REFERENCES

Akhilesh, K., Pappu, S., Rajapara, H.M., Gunnell, Y., Shukla, A.D. and Singhvi, A.K., 2018. Early Middle Palaeolithic culture in India around 385–172 ka reframes Out of Africa models. *Nature*, *554*(7690), pp.97-101.

Armand, J., 1983. *Archaeological excavations in Durkadi Nala: an early Palaeolithic pebble-tool workshop in Central India*. Munshiram Manoharlal Publishers.

Badam G L 1979 Pleistocene Fauna of India with Special Reference to the Siwaliks. Deccan College, Poona.

Badam, G.L. 2000. Pleistocene Vertebrate Paleontology in India at the Threshold of the Millenium. *Journal of the Paleontological Society of India* 45:1-24.

Basak, B. and Srivastava, P., 2017. Earliest dates of Microlithic industries (42–25 ka) from West Bengal, eastern India: New light on modern human occupation in the Indian subcontinent. *Asian Perspectives*, pp.237-259.

Basak, B., Srivastava, P., Dasgupta, S., Kumar, A. and Rajaguru, S.N., 2014. Earliest dates and implications of Microlithic industries of Late Pleistocene from Mahadebbera and Kana, Purulia district, West Bengal. *Current Science*, pp.1167-1171.

Bose, N.K. and Sen, D., 1948. *Excavations in Mayurbhanj*. University of Calcutta. Calcutta.

Cameron, D., Patnaik, R. and Sahni, A., 2004. The phylogenetic significance of the Middle Pleistocene Narmada hominin cranium from central India. *International Journal of Osteoarchaeology*, *14*(6), pp.419-447.

Chakrabarti, D.K., 1993. *Archaeology of Eastern India: Chhotanagpur Plateau and West Bengal*. Munshiram Manoharlal Publishers.

Clarkson, C., Petraglia, M., Korisettar, R., Haslam, M., Boivin, N., Crowther, A., Ditchfıeld, P., Fuller, D., Miracle, P., Harris, C. and Connell, K., 2009. The oldest and longest enduring microlithic sequence in India: 35 000 years of modern human occupation and change at the Jwalapuram Locality 9 rock shelter. *Antiquity*, *83*(320), pp.326-348.

Ghosh, A.K., 1970. The paleolithic cultures of Singhbhum. *Transactions of the American Philosophical Society*, *60*(1), pp.3-68.

Jacobson J 1985. Acheulian surface sites in central India; in *Recent Advances in Indo-Pacific Prehistory* (eds) V N Misra and Peter Bellwood (Delhi: Oxford-IBH) pp 49–57

Joshi, R.V. 1985. Fossilization process of animal bones of Indian Quaternary Period-a chemical study. *Publication of the Centre of Advanced Study in Geology Panjab University Chandigarh*. 1:83-88.

Joshi, R.V. 1978. *Stone Age cultures of central India* (Vol. 181). Poona: Deccan College Post-graduate and Research Institute.

Kennedy, K.A.R. and Chiment, J., 1991. The fossil hominid from the Narmada Valley, India: Homo erectus or Homo sapiens. *Indo-Pacific Prehistory Association Bulletin*, *10*(1), pp.42-58.

DOI Link: https://zenodo.org/record/7100614#.Yyr0g3ZBzIU

Kennedy, K.A.R. 1980. Prehistoric Skeletal Record of Man in South Asia. *Annual Review of Anthropology* 9:391-432.

Khatri, A.P. 1962, December. Origin and development of Series II Culture of India. In *Proceedings of the Prehistoric Society* (Vol. 28, pp. 191-208). Cambridge University Press.

Mishra, S, 2007. The Indian Lower Paleolithic. *Bulletin of the Deccan College Post-Graduate and Research Institute* 66-67:47-94.

Mishra, S. 2008. Lower Paleolithic: A Review of Recent Findings. *Man and Environment*. 33(1):14-29.

Mishra, S., Chauhan, N. and Singhvi, A.K., 2013. Continuity of microblade technology in the Indian Subcontinent since 45 ka: implications for the dispersal of modern humans. *PLoS One*, *8*(7), p.e69280.

Mishra, S., Gaillard, C., Hertler, C., Moigne, A.M. and Simanjuntak, T., 2010. India and Java: Contrasting records, intimate connections. *Quaternary International*, *223*, pp.265-270.

Mishra, S., Venkatesan, T.R., Rajaguru, S.N. and Somayajulu, B.L.K., 1995. Earliest Acheulian industry from peninsular India. *Current Anthropology*, *36*(5), pp.847-851.

Mishra, V.N. 2001. Prehistoric Human Colonization in India. *Journal of Bioscience* 26(4): 491-531.

Misra V N 1987. *Evolution of the landscape and human adaptations in the Thar Desert*, Presidential Address (Anthropology and Archaeology Section), 74th Session of the Indian Science Congress, Bangalore

Misra, V.N. and Rajaguru, S.N., 1978. The Acheulian Industry of Rock Shelter IIIF-23 at Bhimbetka, Central India-A Preliminary Study1. *Australian Archaeology*, *8*(1), pp.63-106.

Misra, V.N. and Rajaguru, S.N., 1986. Environnement et culture de l'Homme préhistorique dans le désert du Thar, Rajasthan, Inde. *L'anthropologie (Paris)*, *90*(3), pp.407-437.

Paddayya, K. and Petraglia, M.D., 1997. Isampur: an Acheulian workshop site in the Hunsgi valley, Gulbarga district, Karnataka. *Man and Environment*, *22*(2), pp.95-100.

Paddayya, K., Blackwell, B.A., Jhaldiyal, R., Petraglia, M.D., Fevrier, S., Chaderton, D.A., Blickstein, J.I. and Skinner, A.R., 2002. Recent findings on the Acheulian of the Hunsgi and Baichbal valleys, Karnataka, with special reference to the Isampur excavation and its dating. *Current Science*, pp.641-647.

Pant, P.C., 1982. *Prehistoric Uttar Pradesh: A Study of Old Stone Age*. Agamkala, Lucknow.

Pappu, S. 2008. Prehistoric Antiquity and Personal Lives: The Untold Story of Robert Bruce Foote. *Man and Environment*. 33(1):30-50.

Pappu, S., Gunnell, Y., Akhilesh, K., Braucher, R., Taieb, M., Demory, F. and Thouveny, N., 2011. Early Pleistocene presence of Acheulian hominins in south India. *Science*, *331*(6024), pp.1596-1599.

Quade, J., Cerling, T.E. and Bowman, J.R., 1989. Development of Asian monsoon revealed by marked ecological shift during the latest Miocene in northern Pakistan. *Nature*, *342*(6246), pp.163-166.

Rajendran, P. 2009. Studies on a Human Baby Fossil Entombed within the Ferrecrete. In *Status of Prehistoric Studies in the Twenty-First Century India* ed, by Ranjana Ray and Vidula Jayaswal. BAR International Series, 1924:61-65.

DOI Link: https://zenodo.org/record/7100614#.Yyr0g3ZBzIU

S. Mishra, T. R. Venkatesan, S. N. Rajaguru and B. L. K. Somayajulu. 1995. Earliest Acheulian Industry from Peninsular India. *Current Anthropology* 36(5): 847-851

Sankhyan, A. R. 1997. Fossil clavicle of a Middle Pleistocene hominid from the Central Narmada Valley, India. *Journal of Human Evolution 32:* 3-16.

Sankhyan, A. R. 1999. The place of Narmada hominin in the Jigsaw puzzle of human origins. *Gondwana Geological Magazine Special Publication 4:* 335-345.

Sankhyan, A.R, G.L Badam, L.N Dewangan, S. Chakraborty, S. Prabha, S. Kundu and R. Chakraborty. 2012. New Post Cranial Hominin Fossils from Central Narmada Valley, India. Advances in Anthropology 2(3):125-131.

Sonakia A. 1985. Skull cap of an early man from the Narmada Valley alluvium (Pleistocene) of Central India. *American Anthropologist* 87:612–616.

Sonakia, A. 1999. The Implications of Finding Hominid Fossils from Indian Sub- continent. *Gondwana Geological Magazine Special Publication 4:* 329-334

Sondaar, P.Y., 1984. Faunal evolution and the mammalian biostratigraphy of Java. Courier Forschungsinstitut Senckenberg 69, 219–235.

Spoor, F., Leakey, M.G., Gathogo, P.N., Brown, F.H., Antón, S.C., McDougall, I., Kiarie, C., Manthi, F.K. and Leakey, L.N., 2007. Implications of new early Homo fossils from Ileret, east of Lake Turkana, Kenya. *Nature*, *448*(7154), pp.688-691.

Tiwari, M.P. and Y. Bhai. 1997. Quaternary stratigraphy of the Narmada Valley, in S.G. Udhoji & M.P. Tiwari (ed.) *Quaternary Geology of the Narmada Valley: a multidisciplinary approach* (Special Publication 46 of the Geological Survey of India). Calcutta: Geological Survey of India: 33-63.

Wadia, D.N. 1957. *Geology of India*. Mc Millan and Co Ltd. London.

Wakankar, V.S., 1975. Bhimbetka—the prehistoric paradise. *Prachya Pratibha*, *3*(2), pp.7-29.

Williams M A J and Royce K 1983 Alluvial history of the middle Son valley, north central India; in Palaeo-environments and Prehistory of the Middle Son Valley (Madhya Pradesh, North Central India) (eds) G R Sharma and J D Clark (Allahabad: Abinash Prakashan) pp 9–21.
