

THE FIRST EARLIEST SKELETAL REMAINS OF A LATE STONE AGE MAN FROM INDIA

PRATAP C. DUTTA, CALCUTTA

INTRODUCTION

Although evidence of "material culture" of the Early Man, in the form of Palaeolithic assemblages of stone tools, is abundantly available in India, it is regrettable that not a single fossil remains of this kind could yet be discovered in this vast subcontinent. The cultural evidence unmistakably attests that Man inhabited India during the Middle Pleistocene period, some half-a-million years ago. His activities were widely distributed throughout the entire length and breadth of the country, as reflected by the various Early and Middle Stone Age sites, but we are completely innocent about the physical appearance of the authors of these stone tools in India.

As we come to the next cultural stage — the Late Stone Age, in the Holocene, quite a different story is encountered in the Indian scene. The cultural phase, which somewhat corresponds technologically with the Mesolithic in Europe but which is not really coeval, provided us with a pretty good number of habitation sites with human skeletal remains within burials. Notable are the sites of Baghor in Bhilwara District of Rajasthan, Lekhahia and Baghai Khor rock shelter in Mirzapur District of Uttar Pradesh, the well-known site at Langhnaj in Mehsana District of Gujarat, and the present site at Sarai Nahar Rai in Pratapgarh District of Uttar Pradesh. The people of this cultural phase prepared microlithic tools, had an economy based purely on hunting and collecting, and learnt the art of pot making. Besides the sites noted above, the occurrence of the Late Stone Age sites in India is quite wide spread, concentrated mostly around the Vindy Mange in Central India, Rajasthan and Gujarat, also in Eastern and Western Ghats of the Peninsula, too.

The skeletal material of this present site has been dated by C^{14} as c. 8110 BC., and the discovery has been reported by the present author elsewhere (Dutta, 1971). The detailed scientific report about the skeleton will be published shortly (Dutta, Pal and Biswas, in press). The present report is intended to highlight some of the interesting features of the earliest skeletal remains from India.

The site, which falls on the $25^{\circ}48'$ north and $81^{\circ}50'$ east, is a slightly rising ground enclosing an area

of about 2.700 m², the eastern portion of which has been badly eroded. In this eastern part, roughly covering an area of about 600 m², evidence of human graves could be found in a cluster. This cluster is being excavated by the Allahabad University. The details about the cultural evidence of this site has already been reported (Dutta, Pal and Dutta, 1971). It may be said only that the deads were regularly buried. The orientation of the skeleton was in west-east axis, the head placed towards west. The body was fully stretched in supine position. The skeleton was numbered as SRN-4. The site was discovered by the State Archaeology Department of Uttar Pradesh, which carried out the excavation during March 10 to 18, 1970, with the help of the present author. One more or less complete skeleton in well preserved condition could be exhumed, but the mandible and right humerus were missing. This was due to the cutting of a pit afterwards. The skeleton belonged to an adult male individual. The diagnostic features suggest that the individual was possibly around 40 years of age at the time of death.

2. PATHOLOGICAL CHANGE IN THE SKELETON

The flattening at the right frontal region of the skull indicates that the right frontal cortex was slightly less developed than its left counterpart. It is possible that the person had a minor birth trauma leading to incomplete infantile hemiparesis. This condition might also occur due to congenital aplasia or hypoplasia of right side of the frontal cortex extending to the right parietal region. The change is likely to affect the normal development of the left side of the body in general. The evidence for this affected development of the left side is available from an inspection of the limb bones of the skeleton. The length measurements show that the limb bones of the left side are, in general shorter than their right counterpart. The radius, femur and tibia of the left side exhibit a clear shortening of length when compared to the bones of the right side. This evidence indicates that the individual had a left hemiparesis with consequent shortening and atrophy of bones on the left side, as a whole.

Stature

The absolute crown-heel length of the skeleton, measured *in situ*, was 1650 mm. The value lies within the average category of stature classification. Even allowing some error on either side for the absence of superficial soft tissues and for drying up the joint cartilages, we may say that the individual had a medium stature. But the living stature as calculated from long bones provides us with the following estimates.

By Pearson's method (1889) 1680.406 mm

By Dupetruis and Hadden's (1951) 1749.033 mm

By Trotter and Glesser's (1952, 1958) 1740.300 mm

The skeletal-length measured *in situ*, which should closely approach the living stature, is at variance with the estimates available by using different inter-racial formulae. We suggested elsewhere that the formulae are not perhaps adequate in estimating the stature of the Indians (Dutta and Pal, 1972).

Cranial Capacity

The endocranial capacity could not be measured directly using Mollison's method (1938). It has been estimated by Lee-Pearson's (1901) inter-racial formulae as used for the males. It gives an estimate of 1449.20 cm³.

The cranium

Measurements, which were taken according to Martin (1928), are set out in Table 1 and the derived indices in Table 2. The cranium itself has been illustrated in Plate 1.

The shape of the vertical contour corresponds with the byrsoides type: the cranium is broad, and it is more so at the parietals. The pterion is spheno-parietal, and the vault has a flattened keel. The occipital contour is house shaped. Occiput is slightly protruding with moderately developed inion.

The cranium is of medium-rounded form — mesocranial. The height of the cranium is low; the cranium is chamaecranial (64.58) with regard to length-height relationship, while it is tapeinocranial (84.93) with regard to breadth-height.

The forehead is receding and broad with moderately developed frontal tuberosities. Glabella and the superciliary arches are well developed.

The upper face is markedly short and broad belonging to the hypereuryene type (43.10). The orbits are compressed and rectangular in shape (left 74.70 right 76.26), and placed wide apart — the inter-orbital distance being 26 mm. The breadth of the nose is relatively wide, with the length thus producing a short and broad nose of chamaerhine type (53.61). The root of the nose is depressed with a low nasal bridge. The face is slightly prognathous at the alveolar region. From the transverse cranio-facial index, which is 99.32, it could be said that the face of the cranium is quite wide in agreement with the width of the calvarium.

The maxillary dentition is complete, and there is no evidence of caries or periodontal diseases. Sho-

Maximum cranial length	192.0
Maximum cranial breadth	146.0
Nasion inion length	167.0
Basion-bregma height	124.0
Auricular height	115.0
Minimum frontal breadth	107.0
Greatest frontal breadth	121.0
Bizygomatic breadth	145.0
Nasion basion line	96.0
Nasion prosthion line	62.5
Nasal breadth	26.0
Nasal height	48.5
Inter-orbital breadth	29.5
Orbital breadth (left)	41.5
Orbital breadth (right)	40.0
Orbital height (left)	31.0
Orbital height (right)	30.5
Mastoid process length (right)	31.0
Maxillo-alveolar length	60.0
Maxillo-alveolar breadth	70.0
Palatal length	50.0
Palatal breadth	44.5
Palatal depth	14.0
Occipital foramen length	32.0
Sagittal cranial arc	394.0
Transverse cranial arc	321.0
Horizontal cranial circumference	550.0
Bi-auricular breadth	127.0
Outer bi-orbital breadth	113.0
Inner bi-orbital breadth	106.0
Greatest occipital breadth	125.5
Frontal arc	137.0
Parietal arc	137.0
Occipital arc	120.0
Frontal chord	116.0
Parietal chord	117.0
Occipital chord	97.0

Indices of the skull No. SRN-4

TABLE 2

Length-breadth index	76.04
Length-height index	64.58
Length-auricular height index	59.89
Breadth height index	84.93
Sagittal cranial curvature index	42.38
Transverse cranial curvature index	39.56
Transverse fronto-parietal index	73.29
Superior facial index	43.10
Zygomatico-frontal index	73.79
Inter orbital index	26.11
Orbital index (left)	74.70
Orbital index (right)	76.25
Nasal index	53.61
Maxillo-alveolar index	116.67
Palatal index	89.00
Transverse cranio-facial index	99.32
Fronto-parietal index	100.00
Fronto-occipital index	87.59
Parieto-occipital index	87.59
Fronto-sagittal arc index	34.77
Parieto-sagittal arc index	34.77
Occipito-sagittal arc index	30.46
Frontal curvature index	84.67
Parietal curvature index	85.40
Occipital curvature index	80.83

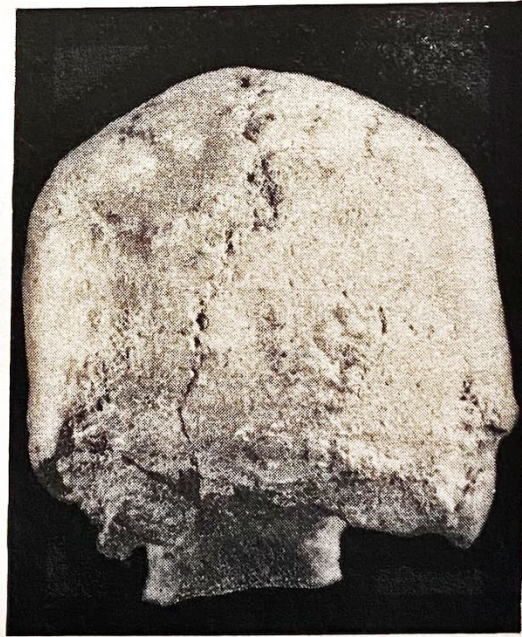
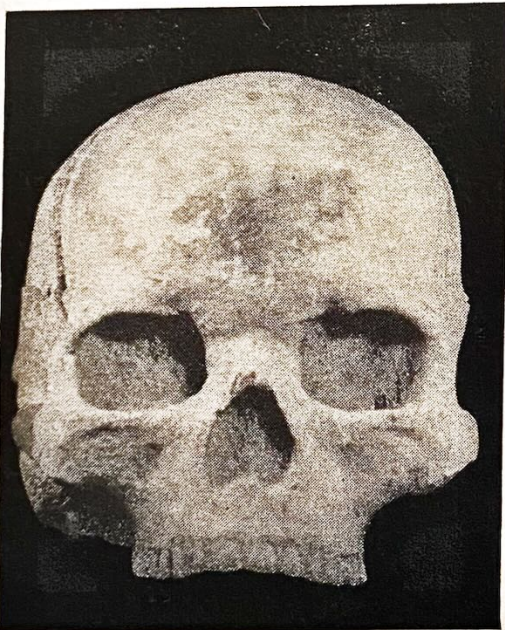
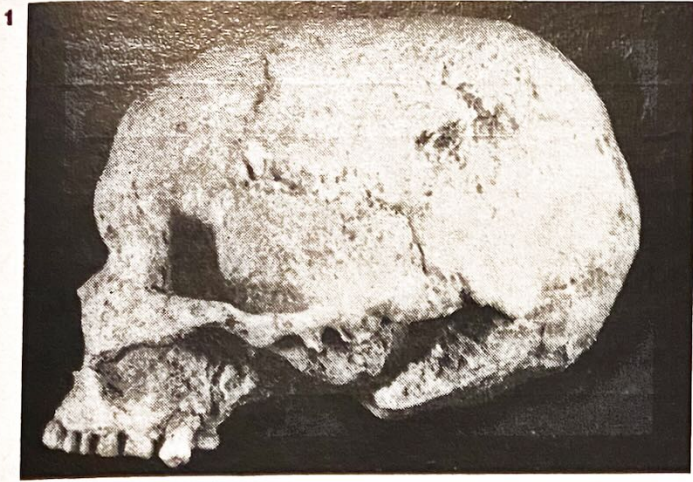


Illustration to the article Pratap C. Dutta

Dimensions (in mm) and indices of permanent maxillary dentition

TABLE 3

(MD = mesiodistal. BL = buccolingual. CH = crown height. CI = crown index. CM = crown module. and RV = robustness value)

	I ¹		I ²		C		PM ¹		PM ²		M ¹		M ²		M ³	
	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L
MD	8.7	8.5	7.0	7.0	8.0	8.0	6.5	7.0	6.6	6.6	10.0	10.2	9.5	9.2	7.9	8.0
BL	8.5	8.2	7.0	7.0	9.3	9.2	9.6	10.0	10.0	10.1	11.1	11.2	11.5	11.5	10.2	10.4
CH	8.3	8.3	8.0	8.1	9.5	9.3	6.8	6.9	6.1	6.1	6.6	6.6	6.0	6.0	6.0	6.0
CI	97.7	96.5	100.0	100.0	116.2	115.0	147.7	142.8	151.5	153.0	111.0	109.8	121.0	125.0	129.1	130.0
CM	8.6	8.5	7.0	7.0	8.6	8.6	8.0	8.5	8.3	8.3	10.5	10.7	10.5	10.3	9.0	9.2
RV	73.95	69.70	49.00	49.00	74.40	73.60	62.40	70.00	66.00	66.66	111.00	114.24	109.25	105.80	80.58	83.20

R denotes right side
L denotes left side

Comparison of Sarai Nahar cranium characters with those of Langhnaj

TABLE 4

Site Character	Sarai Nahar Rai	Langhnaj						
	No. SRN-4	SKL-1	SKL-2	SKL-3	SKL-5	SKL-11	SKL-4	SKL-12
	Male	Male	Male	Male	Male	Male	Female	Female
Maximum cranial length	192.0	187.0	139.0	197.0	187.0	194.0	190.0	185.0
Maximum cranial breadth	146.0	124.0	132.0	136.0	137.0	127.0	136.0	132.0
Nasioninion length	167.0			181.0				
Basion-bregma height	124.0			120.0	130.0			
Minimum frontal breadth	107.0	97.0		106.0	103.0	100.0	95.0	97.0
Horizontal circumference	550.0	506.0		545.0	560.0	528.0		
Bizygomatic breadth	145.0			136.0	138.0			
Nasion prosthion line	62.5				67.0			
Nasal breadth	26.0				26.5			
Nasal height	48.5				47.0			
Inter-orbital breadth	26.0		20.0		25.0			
Orbital height (right)	30.5			34.0	36.0			
Orbital height (left)	31.0			32.0	36.0			
Cranial index	76.04	66.3	68.4	69.0	73.3	65.5	71.6	71.3
Length-height index	64.58			60.9	69.5			
Nasal index	53.61				56.0			
Upper facial index	43.10				48.5			

velling and the tuberculum dentale on the incisors are absent. Molars are tetracuspid. M¹ exhibit a well-developed hypocone (4), but it is reduced (4-) in M² and in M³. There is absolutely no wearing on the left M³, while the enamel of right M³ shows slight attrition. Dentine is barely exposed on the occlusal surface of incisors, second PMs and second Ms and on the cusp-tips of the canines. The dental wear links most of the cusps of first PMs and first Ms. Attrition perhaps suggests a possible coarse food of the individual. Measurements of crown dimensions are presented in Table 3. The dentition is mesodont (43.90).

4. DISCUSSION AND CONCLUSION

It may be said that the owner of this skeleton, a male of about 40 years of age, had a rather large head of mesocranial type and stature of medium

category. Possibly, he had been suffering from left hemiparesis with consequent shortening and atrophy of bones of the left side as a whole. The vault of the head was markedly low-roofed with a flattened keel. Glabellar region and the superciliary arches were well developed with a very broad and receding forehead. The eyes were compressed and rectangular, and they were placed apart. The nose was flattish broad, depressed at the root. The face was markedly short and distinctively broad with slight alveolar prognathism.

As far as his body form is concerned, the data of which have not been provided here, it may be said, on the basis of robustness and marked musculatures of the long bones, that he was of robust built.

When compared with the Langhnaj cranium (Ehrhardt and Kennedy, 1963) from a microlithic site in Gujarat, dated 1,925 BC, a significant difference in

characters could be recognised (*Table 4*). While the length of the Sarai Nahar Rai crania lies within the variation of the Langhnaj crania, the breadth of the former cranium is certainly much higher than any of the values obtained for Langhnaj. The head form is also much different. In the Langhnaj material the head form tends to be hyperdolicho and dolichocranial (66.3 to 73.3), but in the present case the head form is mesocranial (76.04). The dimension of the horizontal circumference also expresses that the Sarai Nahar Rai cranium is much larger than those of Langhnaj. The face of the present cranium is also distinctively shorter and broader than Langhnaj. In nose form, however, there is no difference, both being of chamaerhine type; but in orbital characters again there are differences between the finds of these two sites. The post-canine dentition is different, the crown diameters of the present cranium are smaller than those of the Langhnaj (comparative data have not been cited here).

There are of course certain similarities between the two materials as far as non-metrical traits are concerned. Notable among them are the similarities in sloping forehead, pronounced supraorbital ridges as well as in slight alveolar prognathism.

In stature also there is a difference. The Langhnaj skeletons give an estimate of living stature which varies between 1665 to 1740 mm.

Lastly, it may be said that there are certain similarities between the Sarai Nahar cranium and some of the tribal populations of Central India as far as characters of face, nose and the forehead region are concerned. The similarity in certain facial morphological features perhaps suggests a genetic continuation, but the paucity of skeletal material precludes us from making any suggestions. But it is certain that the present material from Sarai Nahar Rai, the owner of which may be considered as the sole representative of a population which lived some ten thousand years ago in this part of the Indian subcontinent and being the earliest ever found in India, raises problems of

ethnogenesis in this subcontinent, which can be only resolved when we have more materials for study in future.

Acknowledgement

The author is greatly indebted to Late Dr D. K. Sen, former Director, and Dr S. C. Sinha, the present Director of the Anthropological Survey of India, for rendering him opportunities to study the skeleton. He is thankful to his colleague Mr A. Pal for collaborating in this study. The author also takes this opportunity to express his appreciation and thanks to Dr A. K. Roy Chowdhury, Professor of Medicine, R. G. Kar Medical College, Calcutta, for supplying the observations relating to the pathological change in the skeleton.

LITERATURE CITED

- DUTTA, P. C. (1971): Earliest Indian human remains found in a Late Stone Age site. *Nature, Lond.*, 233 (5320): 500—501.
- DUTTA, P. C. and PAL, A. (1972): The earliest Indian human skeletal find and the estimation of stature. *Curr. Sci., Bangalore*, 41: 334—335.
- DUTTA, P. C., PAL, A. and DUTTA, B. C. (1971): Sarai Nahar Rai: a Late Stone Age site in the plain of the Ganga. *J. Indian anthrop. Soc.*, Calcutta, 6: 15—28.
- DUTTA, P. C., PAL, A. and BISWAS, J. N. (in press): Late Stone Age human remains from Sarai Nahar Rai: the earliest skeletal evidence of man in India. *J. Indian anthrop. Soc.*, Calcutta
- EHRHARDT, S. and KENNEDY, K. A. R. (1965): *Excavations at Langhnaj: 1944—63*. Part III. The Human Remains. Deccan College, Building Centenary and Silver Jubilee series. 27, pp. 1—54.
- LEE, A. and PEARSON, K. (1901): A first study of the correlation of the human skull. *Phil. Trans. Roy. Soc.*, London, series A, 196: 225—264.
- MARTIN, R. (1928): *Lehrbuch der Anthropologie*. Gustav Fischer, Jena.
- MOLLISON, TH. (1938): Spezielle Methoden Anthropologischer Messung. In: *Handbuch der biologischen Arbeitsmethoden* (ed. Emil Abderhalden), Berlin and Wien, Urban and Schwarzenberg, 7: 523—682.

P. C. DUTTA

Anthropological Survey of India,
27 Jawaharlal Nehru Road,
Calcutta 700013, India