

**EVALUATION OF FOSSIL HOMINID—THE MAKER OF LATE ACHEULIAN TOOLS AT HATHNORA, MADHYA PRADESH, INDIA**

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THE Quaternary deposits laid in the Central Narmada Valley between Bedaghat (23° 08' : 79° 47') and Hoshangabad (22° 45' : 77° 45') in Madhya Pradesh, India, have been the centre of attraction for palaeontologists and geologists for about a century<sup>1-3</sup>. The recent discovery of a skull cap of *Homo erectus*

*narmadiensis* from Hathnora<sup>4</sup> has evoked great interest amongst palaeoanthropologists and archaeologists, interested in the history of human evolution. It would be necessary to recall here the discovery of a cranium of *Homo sapiens* from a conglomerate bed<sup>5</sup>, doubted to be from younger alluvium<sup>6</sup>, in the Central Narmada Valley and subsequently lost in the collections of the Asiatic Society of Bengal which prevented its further investigation.

The site Hathnora (22° 52' : 77° 53') is situated on the northern bank of the river Narmada about 40 km NE of Hoshangabad (figure 1). A thick deposit of about 15 m is exposed at the site of discovery, which can be differentiated into five broad lithological units (figure 2). The basal unit (about 1.5 m thick) comprises

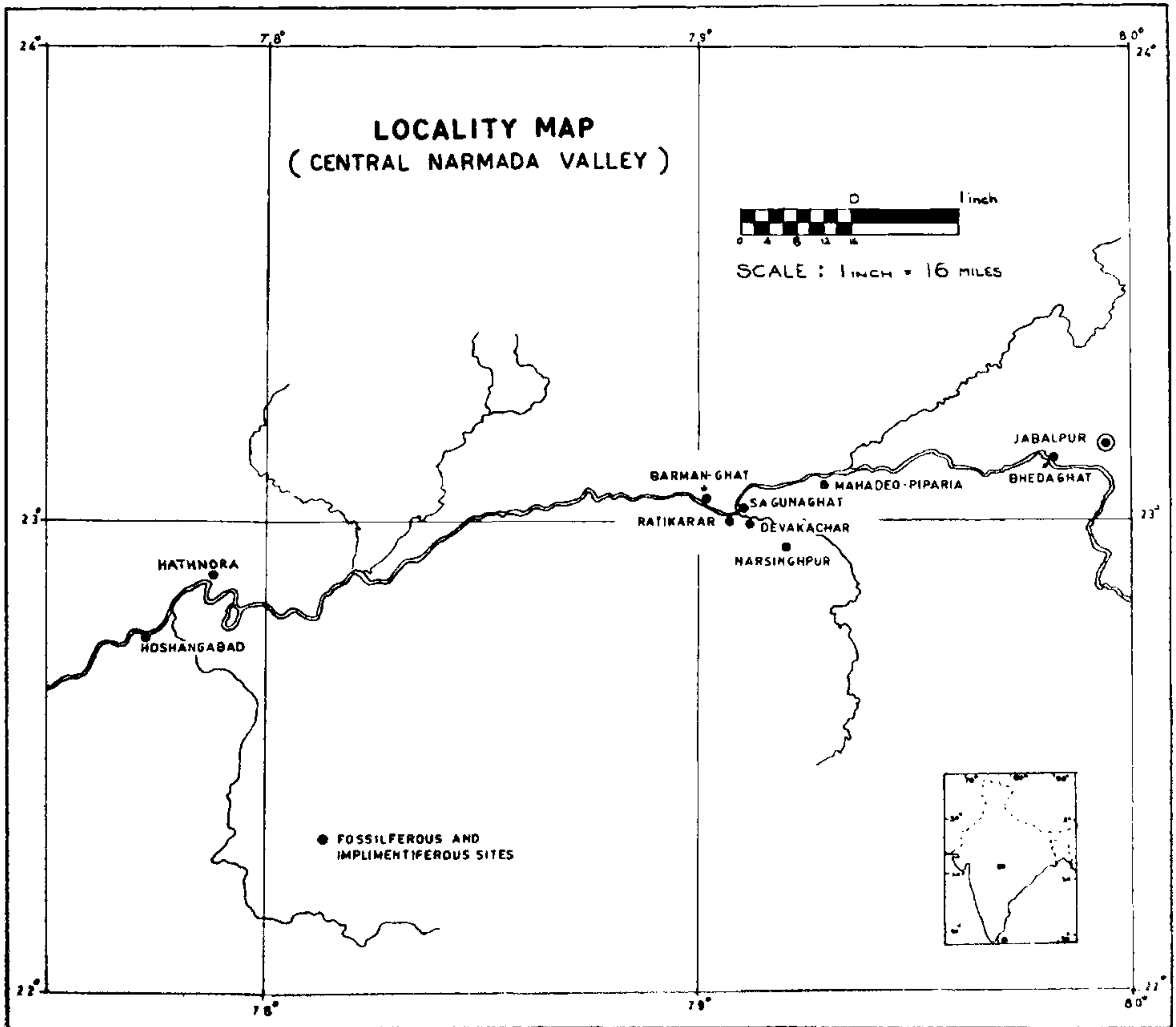


Figure 1. Locality map of Central Narmada Valley.

## LITHOSECTION AT HATHNORA

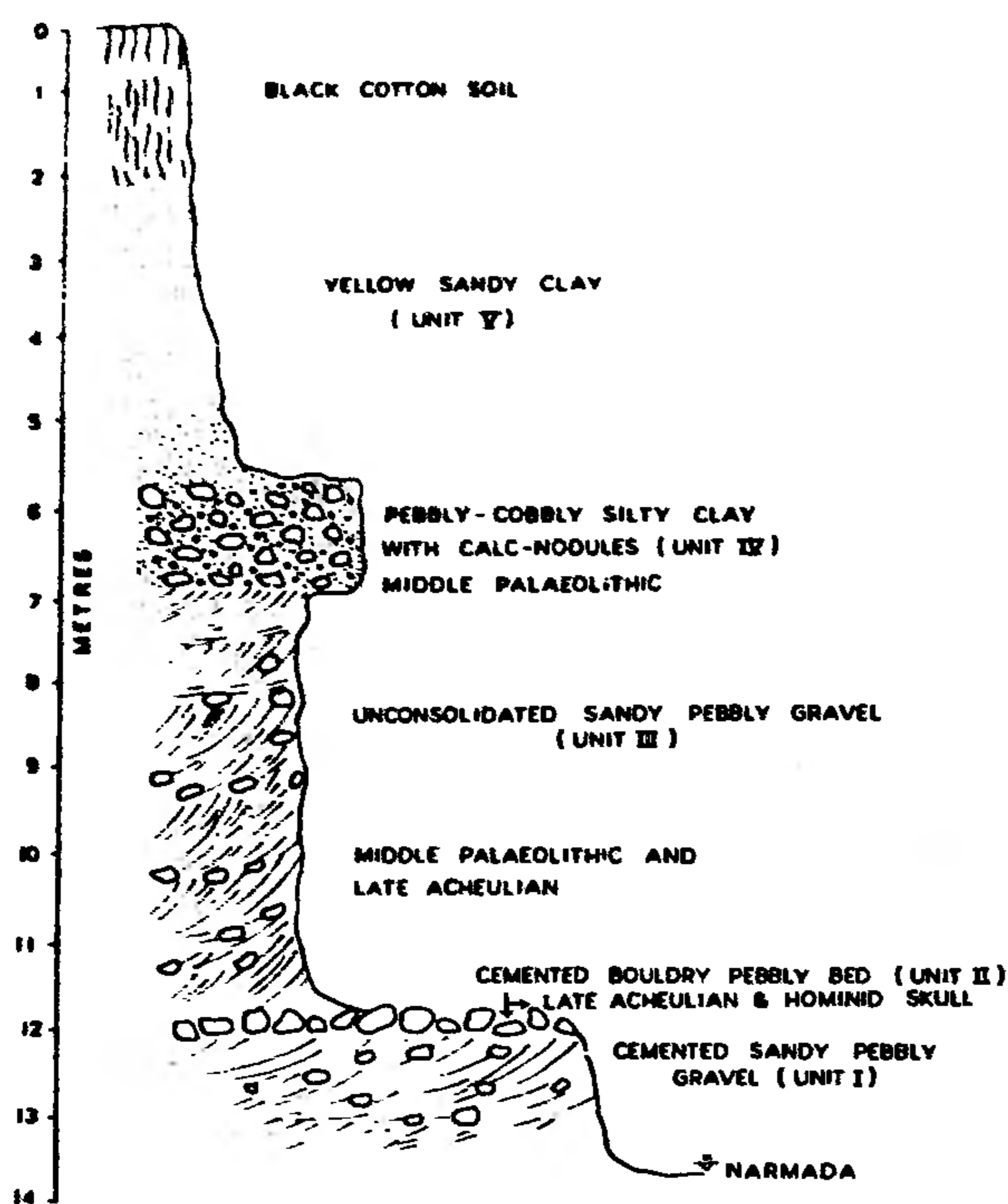


Figure 2. Lithosection at Hathnora.

of cemented greyish cross-bedded sand with matrix supported pebbles at the top. This unit is conformably overlain by cemented bouldry/pebbly gravel about 0.5m thick which yielded the partial skull of the fossil hominid<sup>4</sup>, and a good number of vertebrate fossils comprising of proboscideans and bovids. From this unit Late Acheulian stone age tools were also collected during a recent exploration.

This unit grades into unconsolidated sandy/pebbly gravel about 5m thick, having sub-rounded to rounded and unimbricated matrix supported pebbles/gravels. From this lithological unit elsewhere in the Central Narmada Valley, a very rich collection of mammalian fossils<sup>7-9</sup> in association with Middle Palaeolithic tools and a few Late Acheulian artefacts has been made. Over it lies pebbly/cobbly and silty clay about 2m thick with calc-nodules, yielding Middle Palaeolithic tools only. This unit is capped by yellow silty clay, 4m thick, which in turn is capped by Black Soil.

The Late Acheulian tools collected from the bouldry pebbly bed (unit II, figure 2) are made on Vindhyan Sandstone. The tool kit comprises of amorphous cores, discoidal core flakes (side-, end-, and

indeterminate flakes) and scrapers (see figure 3 a & b). The cores are smaller in size (average length, breadth and thickness 88 mm, 55 mm and 28 mm respectively) and have several flake scars with negative bulb of percussion. Flakes are thin and well dressed with small flake scars on the dorsal side. The flakes have small and defused bulb of percussion indicative of cylinder hammer technique. The Hathnora tools collected from the bed yielding fossil hominid skull thus fulfil the requisite characters of a Late Acheulian industry<sup>10-12</sup>.

No absolute or relative date has so far been possible for any Acheulian industry in India, owing to the absence of any datable material in stratified context,

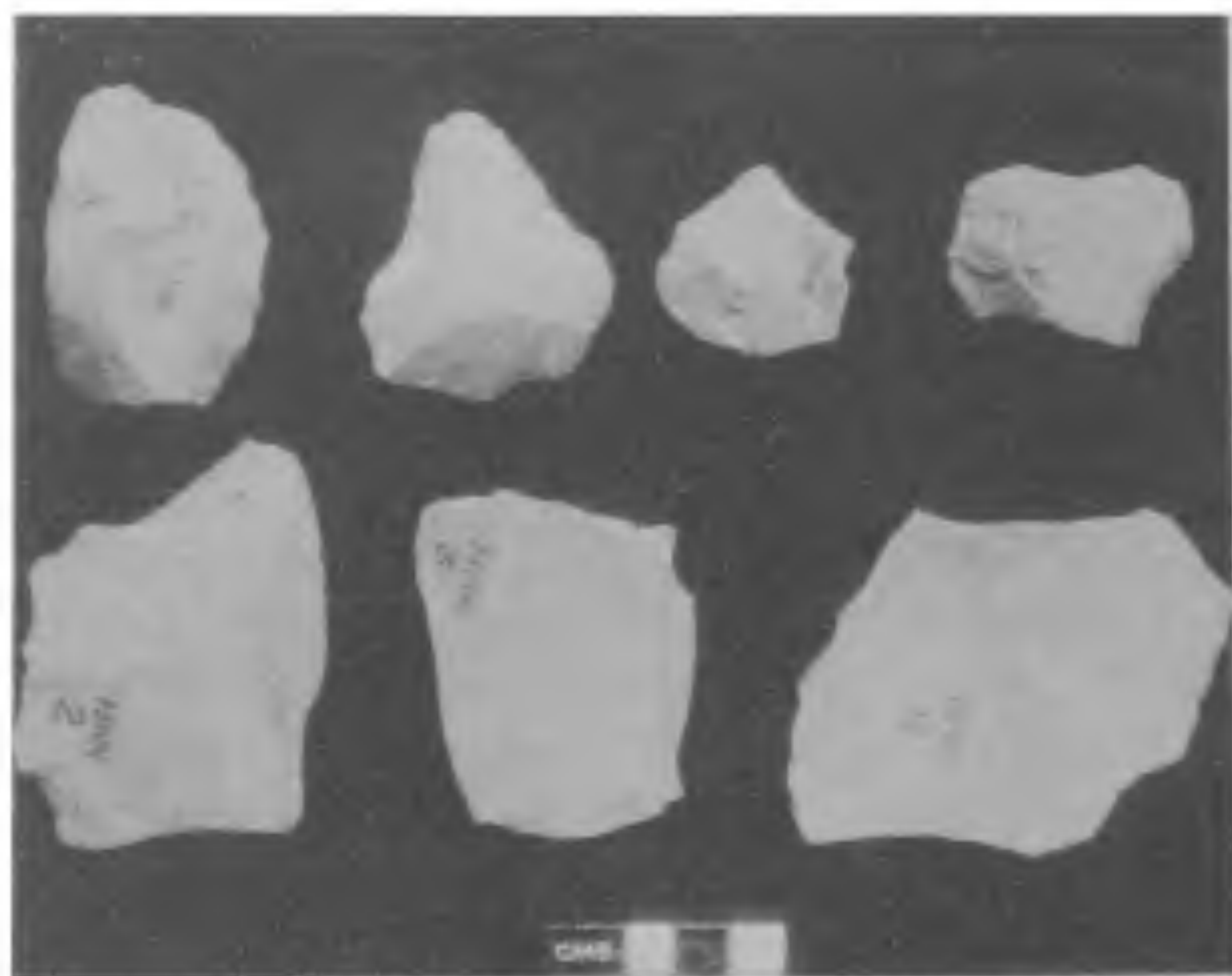


Figure 3a. Flakes and scrapers from Hathnora.



Figure 3b. Cores and a flake from Hathnora.

except at Gangapur (Upper Godavari Valley), Maharashtra, which relatively on geomorphological basis, is dated to Late Pleistocene<sup>13</sup>. Outside India the innumerable dates from various sites of Late Acheulian complexes, spread between North Germany and East Africa, range between 700,000 years BP and 125,000 years BP<sup>14</sup>. The associated hominid fossils with Late Acheulian complexes (outside India) have been morphologically assigned to archaic *Homo sapiens*<sup>15</sup>. It is proved beyond doubt that archaic *Homo sapiens* was geologically at par with *Homo erectus* since the late Middle Pleistocene<sup>16</sup> times.

On the basis of the archaeological investigations at fossil hominid site of Hathnora, and the close similarity of the associated tools with other Late Acheulian complexes in and outside India, the age assigned to the culture and the fossil skull cap is late Middle Pleistocene to early Late Pleistocene. However, it would be premature to comment on the phylogenetic position of the hominid at this stage. But the findings of archaic *Homo sapiens* in association with Late Acheulian complexes outside India, as argued earlier, necessitate a critical reinvestigation into the identification of *Homo erectus narmadiensis*.

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### A NOTE ON THE PLAGIOGRANITE OCCURRENCE IN THE NAGA HILLS OPHIOLITE BELT, NE INDIA

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LATE-STAGE leucocratic rocks (albite granite, trondhjemite and quartz diorite) associated with ultramafic-mafic rocks in ophiolite complexes have been collectively called plagiogranite<sup>1,2</sup>. These differ significantly from their continental equivalents in their low K<sub>2</sub>O, high normative albite and tholeiitic chemistry. In an AMF diagram they follow the Thingmuli trend<sup>3</sup>. Both primary<sup>2,4</sup> and hydrothermal<sup>5,6</sup> origins have been suggested for these rocks. Albite-quartz rocks have been recorded from Nagaland ophiolites<sup>7,8</sup>; however, not many details are published. In this paper the petrography and chemistry of these rocks are presented.

*Geological Setting:* The Naga Hills which form the northern part of the arcuate Indo-Burman Ranges, comprise thick sequence of shale, siltstone, mudstone, greywacke, minor limestone (Disang Formation) and infolded ophiolites (figure 1) of late Cretaceous-Eocene age<sup>9</sup>. The contact between the ophiolites and the enclosing sediments is sharp and marked by a high-angle reverse fault which, at places, have been offset by NW-SE and E-W faults. The various members of the ophiolite suite<sup>10</sup> occur as steep-dipping, fault bounded slices. The ophiolites are, at places, unconformably overlain by immature, ophiolite derived sediments (Phokphur Formation).