

The Satpati handaxe site and the Chabeni uniface site in southern Nepal

A handaxe site in tectonically folded alluvial sandstones at the Frontal Himalayan Thrust zone

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I. Introduction

In January 1991 a second site with handaxes and bifaces could be recorded in Nepal in interesting and particularly important context. This was during a short fieldtrip together with Japanese geologist colleagues, who were doing geological mapping in the area, in order to clarify and check the location of the Himalayan Frontal Thrust as well as the geology around the thrust in the area west of the Narayani River emergence into the Terai Plain in the Nawal Parasi District in western Central Nepal. The Japanese team had worked in this sector of the Nepal Siwaliks for a number of years and produced a detailed geological map of this area (Tokuoka et al. 1986, 1988).

The author's own Siwalik survey (Biostratigraphical investigations in the Siwaliks in Dang Deokhuri District, Corvinus 1988, Corvinus and Nanda 1994) led besides substantial palaeontological findings to the discovery of a great number of prehistoric sites in the foothills of the Himalayas and in the Dun valleys of Dang and Deokhuri, which for the main part are of later Pleistocene and of Holocene age. A first site of handaxe occurrence was discovered in 1990 in basal gravels in Dang Dun valley (Corvinus 1991, 1993) which is of particular interest, as it is a first handaxe site well within the Himalayan mountains.

Acheulian handaxe-cleaver industries are very common in the Indian peninsula to the south of the Gangetic Plain, and also, but much less frequent, in Northwest India in Jammu and Kashmir. But north of the Gangetic Plain no handaxe occurrences had been recorded previously in the Himalayan foothills, nor in the Gangetic Plain itself, as the upper, exposed sediments of the Gangetic basin are much too young to contain remains of early palaeolithic industries. It was therefore of particular interest to have found palaeoliths from the Gangetic basin which have become uplifted and exposed through tectonic movements at the Himalayan front. The site described here, lies 7 km NW of Tribenighat where the Narayani River enters the Terai plain, near the village of Satpati in Nawal Parasi District in Lumbini Zone at the foot of the Siwalik Hills at 27°28' latitude and 83°52' longitude.

II. Geology and site situation.

The foot of the Siwalik range runs here in a NW-SE direction with Lower to Middle Siwalik deposits of the Arung Khola Formation (Tokuoka et al. 1988) bordering the alluvial plain and separated from it by

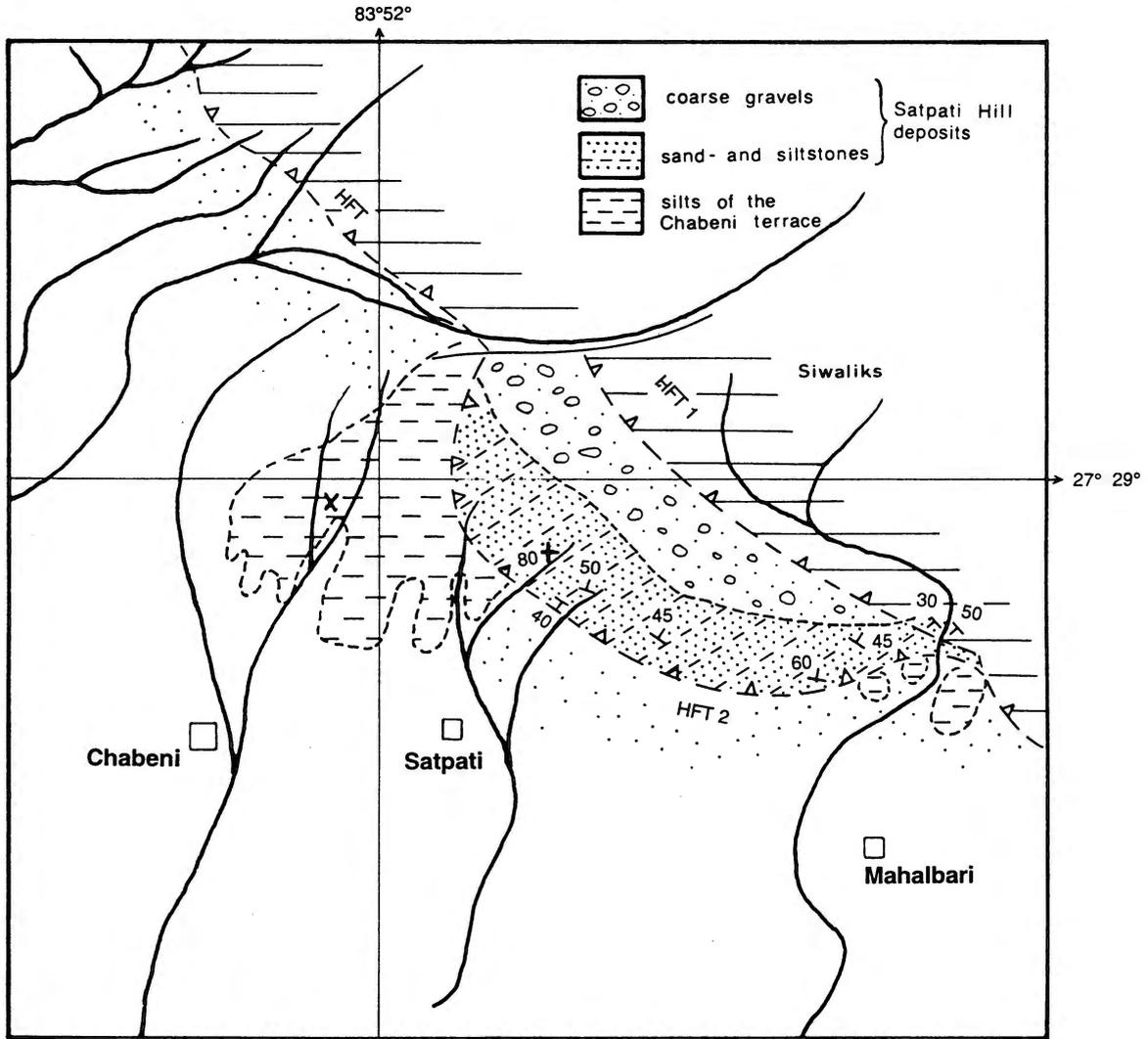


Fig. 1. Geological map of the Satpati area. + indicates the palaeolithic site and x the Chabeni site.

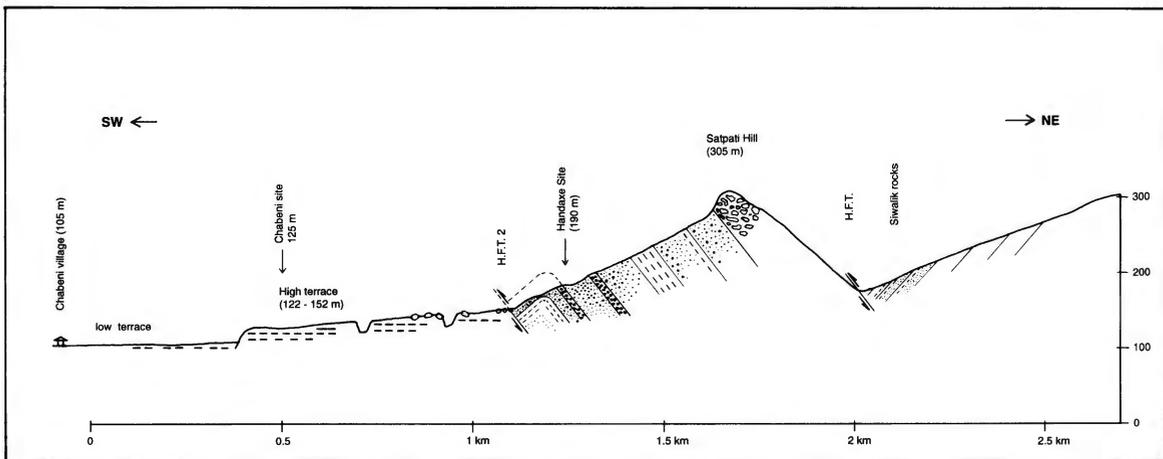


Fig. 2. Geological profile of the Satpati Hill.

the Himalayan Frontal Thrust (HFT), or Frontal Churia Thrust (FCT) as the Japanese call this frontal thrust. Along this thrust the Siwalik deposits override the younger Pleistocene and Holocene alluvium of the Gangetic Plain, which are estimated to be a few thousand meter thick.

At this locality, however, north of Satpati village, the HFT bifurcates into two strands, according to Tokuoka and Takayasu (pers. comm.), around an oblong hill of alluvial deposits of sandstones and gravels, which in Takayasu's opinion are of post-Siwalik age, belonging to the Gangetic Plain alluvium. The deposits at this place are included into the tectonic activities of the HFT and are folded and tilted. That the sediments of the oblong hill, called hereafter the Satpati Hill, in fact do belong to the Gangetic alluvium could be proved by the findings of handaxes *in situ* in these deposits, which was really an unexpected discovery. The Satpati Hill rises, for about 2 km, 200 m above the alluvial plain of Satpati, which lies at an elevation of 106 m above mean sea level (Fig.1). The upper part of the hill consists of a colluvial deposit of very ill-sorted, coarse blocks and boulders of Siwalik sandstones. Below it the hill exposes soft, light-grey, little consolidated, micaceous beds of sandstone, siltstone and gravel. They form a small anticline (Fig.2). Its northern flank dips to the NE and its southern flank to the SW. The NE dipping colluvial deposit at the top of the hill seems to overly conformably the micaceous sandstones and gravels (Takayasu, pers.comm.). The deposits of the Satpati Hill will be called hereforth the Satpati Beds.

On the northern part of the Satpati Hill the Satpati Beds are overridden by the Himalayan Frontal Thrust with Siwalik rocks of alternations of sandstones and mudstones, conforming to the Arung Khola Formation (Tokuoka 1988), and the Chor Khola Formation (Corvinus 1988, 1993). On the southern side of the Satpati Hill the folded and uplifted Satpati Beds are overriding the recent alluvium of the Terai along a southern-most thrust (Fig.1). The Satpati Beds of the oblong Hill of Satpati, which have been affected by the tectonic activities of the HFT are certainly younger than the Siwalik rocks and belong to the post-Siwalik alluvial sediments of the Gangetic Plain.

In order to find evidences for the assumption that the Satpati Beds are indeed of post-Siwalik age, thus belonging to the Gangetic alluvium, the author searched these deposits for any signs of fossils or stone tools. With great surprise and satisfaction we were able to find not only a few fossil bones together with a molar of *Bos cf. namadicus* (Badam, pers.comm.), eroded out from the micaceous sandstones, 30 m up the hill, but also a number of early palaeolithic stone tools, particularly a few bifaces of undoubtedly early palaeolithic age (Fig.3). The stone tools were found on the hill slope at the same place as the *Bos* tooth, and in a narrow gully on the hill slope. They are definitely deriving from the Satpati Beds, as some of them also show calcrete adhering to them. The tool locality on the hill, called here the Satpati site, is situated exactly at the crest of the small anticline, where a lower gravel layer of mainly well-rounded quartzite cobbles in association with Siwalik sandstone cobbles is exposed on the hill slope. The palaeoliths are in all probability derived from this gravel layer and maybe from the sandstone just overlying this gravel, as they are all found within the direct vicinity of this gravel and sandstone. Besides that, a butt part of a fresh biface was found *in situ* (with 80 % probability of being *in situ*), in a NE dipping sandstone in the lower part of the Satpati Hill, exposed on the hill a little further east of the main handaxe locality. It is completely fresh and unweathered. Further up the hill an upper gravel layer is exposed above the sandstones. But this gravel differs from the lower one in that it contains mainly pebbles and smaller cobbles of Siwalik sandstones and very few pebbles of quartzite (Fig.2). It is unlikely that this deposit is the tool-bearing deposit.

These findings of early palaeolithic tools within folded sandstones and gravels at the Himalayan Frontal Thrust is of particular interest for several reasons:

- 1). It is the second, rare occurrence of early palaeolithic tools in Nepal, the other being the site of Gadari in the Dang Dun valley in basal gravels of the Dun alluvium in the western Siwaliks (Corvinus 1991).

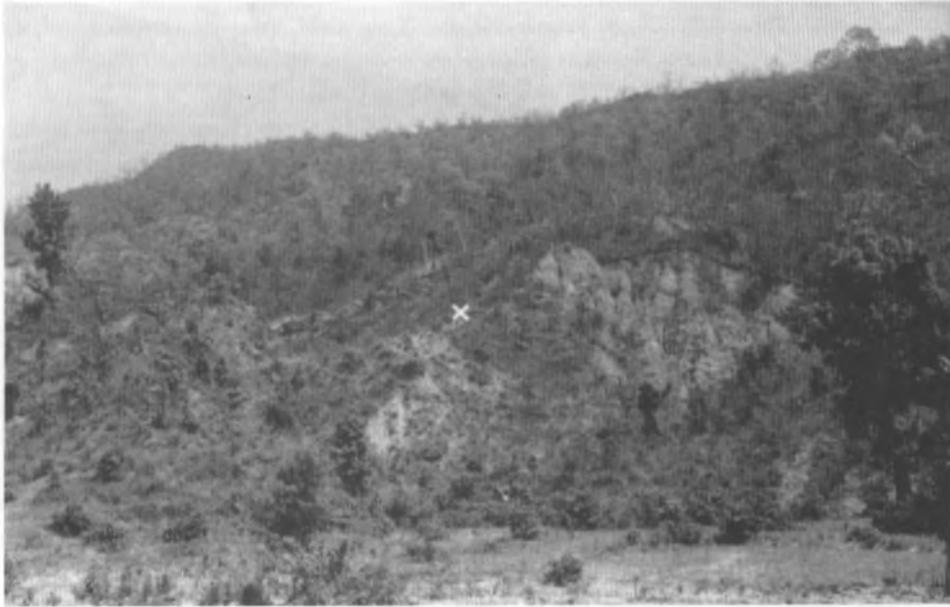


Fig. 3. The handaxe site (x) on the Satpati Hill.



Fig. 4 The Satpati handaxe site. The original horizon is at the place where the man stands. A handaxe is seen below, at +, eroded out in the gully.



Fig. 5. The Chabeni terraces below Satpati Hill.



Fig. 6. The main gully of the Satpati Hill, into which artefacts have been washed down.

2). There have not been any previous incidents along the Indian and Nepali Himalayas of finding definite palaeolithic implements within folded sediments of the Himalayan tectonics. Only recently Rendell and Dennell (1985) reported from Pakistan a few bifaces *in situ* in Upper Siwalik contexts that can be dated with some confidence to between 700 000 and 400 000 years b.p.

3). The finding of probably late Middle Pleistocene bifaces in these folded alluvial deposits give age indications for the movement of the Himalayan Frontal Thrust along the foot of the Himalayan mountains, bordering the Gangetic Plain. The deposits are younger than the Upper Siwaliks, but older than the young, recent Terai terrace deposits which they underly. They seem to belong to older Gangetic molasse deposits, buried by about 200 m of younger alluvial and colluvial deposits.

The tool-bearing deposits have become exposed only due to the tectonic events and uplift at the HFT. The palaeoliths are *in situ* in these deposits (Fig.4) and indicate a probable late Middle Pleistocene age for these deposits which the tooth of *Bos cf. namadicus* confirms. Palaeolithic man must have lived here at the foot of the rising Siwaliks along a sandy and gravelly river bank which became buried by at least 200 m of younger alluvial sediments. They became exposed again, after the deposition of the 200 m of younger alluvium, by the last tectonic events along the Himalayan front which could have happened only very recently in late Pleistocene times.

Furthermore terraces have formed along the Himalayan front in the Terai at this place below the Satpati Hill and the Siwaliks. The villages of Satpati and Chabeni are situated on the low, recent wide alluvial plain of the Terai of an elevation of ca.100 m. above mean sea level. 20 m above this low terrace plain a higher, older terrace has formed, just north of the village of Chabeni. It consists of alluvial silts, topped at places by narrow colluvial fans of Siwalik sandstone blocks and boulders. These colluvial blocks are, in my opinion, of much younger age than the thick colluvial sheet of Siwalik sandstone blocks overlying conformably the Satpati sandstones on the top of the Satpati Hill. Such colluvial fans are very common along the foot of the Siwalik hills and seem to be sudden, small flush deposits (as in the case of the Chabeni terrace) or larger landslide deposits from the hills into the foreland (as probably in the case of the colluvia on top of the Satpati Hill).

This higher terrace of Chabeni has yielded another very interesting prehistoric occurrence of an occupation site of yet unknown but certainly Holocene age. The Chabeni site contains a large number of rough flakes and waste debris together with unifacial adzes, unifaces and unifacial scrapers, which show surprising affinities to Hoabinhian unifacial tools from South East Asia. The artefacts are in the process of being eroded out from the top part of the alluvial silts of the higher Chabeni terrace. The Chabeni terrace was thus formed just prior to the occupation of the Chabeni tool people. The terrace is probably only a remnant of a formerly much more extensive terrace plain and is at present rapidly being eroded away by the recent streams flowing out from the Siwaliks (Fig.5).

III. The cultural remains

1. The Satpati early palaeolithic assemblage

Altogether 18 artefacts have been collected from the Satpati deposits of the Satpati Hill together with a tooth of *Bos cf. namadicus* as well as unidentified limb bone fragments with a matrix of micaceous sandstone in its cavities.

a. Location and situation

The Satpati handaxe site is marked with x in the map (Fig.1). All the artefacts come from the slope and the gullies of the central part of the Satpati Hill at a cliff face called Satpati NE. The first handaxe (Nr. 1) was found in the cobbly bed of the small, dry stream or khola * which drains from the Satpati NE cliff,

* Khola means here: a small, dry stream bed which carries water only during rains.

(Fig.6) and cuts the Satpati deposits of micaceous sandstones and gravels. The cobbles in the little stream at this place are mainly of Siwalik sandstones but also of less frequent quartzite cobbles, which derive from the lower gravel layer within the sandstones, silts and gravels exposed in the Satpati NE cliff. It is uncertain whether the handaxe has derived from the sandstone or the gravel. It has no matrix adhering and is somewhat rounded, but not broken and it is more likely to have derived from the sandstone.

Another very well-made, but anciently broken handaxe (Nr. 2) was found in a small western gully which drains from the NE cliff deposits into the central stream of the Satpati Hill, some 5 m above the bed of the central khola bed (Fig.4), amongst cobbles of quartzite and Siwalik sandstones, which derive from the lower gravel bed. From the same gully, some 10 m higher than handaxe Nr. 1 comes another large biface (Nr. 13), made of white quartzite, with a particularly well-made rounded point, which was found in May 94.

A third, small and very fresh biface (Nr. 3) was found higher up on the hill, some 40 m above the central Satpati khola bed. It seems to have been freshly eroded out from the Satpati sandstone above the lower gravel layer of the Satpati NE cliff. Nearby this biface we found the molar of *Bos* cf. *namadicus*, weathered out from the Satpati sandstone at this place. It has a sandstone matrix in its cavities.

Two large, fresh flakes (Nr. 4 and 5) and two bifacial artefacts (Nr. 6 and 7) were found here, too, on the slope just below the upper gravel layer, some 40 m above the central khola bed. Nr. 5 and 6 both have calcrete crusts adhering to their surfaces and are very fresh and completely unweathered. They seem to have only recently been derived from within the micaceous sandstone beds at this place. These sandstone beds have a NE-dip and belong therefore already to the northern flank of the small anticline of the Satpati deposits.

A very fresh, rough, probably unfinished biface (Nr. 10) was found near the other bifaces on the same slope, some 20 m above the central khola bed and seems to have recently been eroded out from within the same deposits.

An endchopper (Nr. 15) was found in May 94 on the slope in direct contact with the lower quartzite gravel outcrop, 30 m above the central khola bed. It has calcrete adhering to its surface and seems to have come out from the gravel. Three small flakes (Nr. 16-18) were found at the same place together with 3 fragments of fossil bones and there seems no doubt that they, too, are derived from the same gravel.

Two more artefacts, a pick and the butt part of a biface (Nr. 8 and 9) were located in a small stream bed just west of the main locality. They must have been eroded out from the same deposits as the others, but were washed down the slope to the west instead of to the east as the others.

Nr. 11, a slightly rounded bifacial endchopper or unfinished biface, has been recovered from the cobbly central khola bed, just upstream of the mouth of the small gully with the bifaces Nr. 2, 3 and 13. In the same stream bed the blue biface (Nr. 14) was found recently in May 94.

After climbing over the steep ridge to the next eastern cliff of the Satpati deposits the most convincing *in situ* implement, (Nr. 12), was extricated from a NE-dipping sandstone bed within the lower part of the succession of Satpati Beds. A few meters above it, it is overlain by the upper gravel layer, which is the continuation of the upper gravel layer described previously. It is the broken butt part of a very fresh, unweathered biface with calcrete adhering to its surface.

Summing-up the occurrences:

Nr. 1, 11 and 14 were found in the cobbly, sandy bed of the central khola at the Satpati NE cliff;

Nr. 2, 10 and 13 were found on the slope, 5 - 20 m above the central khola bed, at Satpati NE. Nr. 2 is 5 m, Nr. 13 is 15 m and Nr. 10 is 20 m above the central khola bed;

Nr. 3, 4, 5, 6 and 7 are from the slope at the Satpati NE cliff, just below the outcrop of the upper gravel layer and above the lower gravel layer, about 40 m above the central khola bed;

Nr. 15, 16, 17 and 18 are found at the outcrop of the lower gravel bed, about 30 m above the central khola bed;

Nr. 8 and 9 are found in the adjoining khola bed, west of the main artefact location, washed down from it towards the west instead towards the east like the others;

Nr. 12 is found *in situ* in the sandstone between the lower and the upper gravel layer, but a little to the east of the main locality.

b. Description of artefacts

Bifaces from Satpati:

There are 7 bifaces, of which Nr. 2, though broken, is the finest specimen. It is the lower part of a large handaxe with only little cortex left near the butt (Fig.7). It has a flat biconvex section and is trimmed bifacially by shallow, primary flakes and deep and shallow stepflakes and has a fine retouch along both lateral edges, so that a straight sharp edge of an angle of 65 degrees is formed on both sides. Both sides were well used, considering the usemarks.

The handaxe Nr. 1, too, is a fine specimen of almost planoconvex section. The lower face is well-trimmed all over its surface by large, shallow primary flaking and by stepflakes along the edges, while the upper part has been reshaped by a few large stepflakes which seem to have removed the original, probably pointed apex. The upper face retains a fair amount of cortex in the lower part. The butt has a straight, unifacial edge, while both lateral edges are shaped by bifacial stepflakes, forming slightly sinuous edges of 70 to 75 degrees. The tool is slightly weathered and fairly rounded, like Nr. 2 (Fig.8).

The small biface Nr. 3 is sharper and fresher and seems to have been derived from the sediment only recently. It is a small pointed ovate with little refinement and a thick biconvex section. It is made by deep primary flakes and a few stepflakes, so that the edge which runs around the whole tool is zigzag and sinuous and does not seem to have been used.

The large biface Nr. 10 seems to be unfinished (Fig.9). It retains much cortex at the heavy butt and has a thick irregular biconvex section. The tip of the well-made apex is broken off, leaving the tool rather useless. The lateral edges are bifacial but seem to be unfinished. A heavy percussion mark is seen at the left edge, where only a small part of the intended large flake broke off, which would have produced a sinuous, usable edge.

Nr. 12, which has come from *in situ* in the sandstone, is a broken butt-half of a biface and is very fresh indeed. It retains cortex on its upper face next to a few large primary flakes. The lower face shows a large shallow flake surface with a number of small flakes and stepflakes removed along one edge. It has a round butt with a sharp, straight edge, and the left side has a used, partly bifacial, rather straight edge.

Nr. 13 is a fine oval biface, made on a white, fine-grained quartzite cobble or very large flake, of which cortex is retained on both sides and partly on the butt (Fig.10). The lower flat face is trimmed by large, shallow flakes and secondary stepflakes at the right side, taken off from the marginal cortex, so that a unifacial edge is produced. The other face has only few primary flakes. It is the point which is particularly well-shaped, and this must have been the main focus of the tool. It is shallow, tongue-like, and very delicate and thin compared to the overall heaviness of the tool, with a very straight, sharp edge. The photo is not able to show the refined apex.

Nr. 14 is an elongate ovate, unfinished biface, made from a fine-grained blue-grey quartzite cobble with a cortical butt. It is fashioned only by large primary flakes from both sides, forming zigzag lateral edges which have probably not been used. The point has broken away, probably by use, as a large, longitudinal flake has removed the original point. Except a few small secondary flakes at the crippled point there is no other secondary retouch. This tool was found in the sand in the recent central gully bed below the location of the other tools from the hill slope.

Other tools from Satpati:

Nr. 9 is either the broken butt part of a biface or more likely it is a scraper. It is made on a large, split flake where half of the flake broke off during detachment, as the point of percussion is situated at the

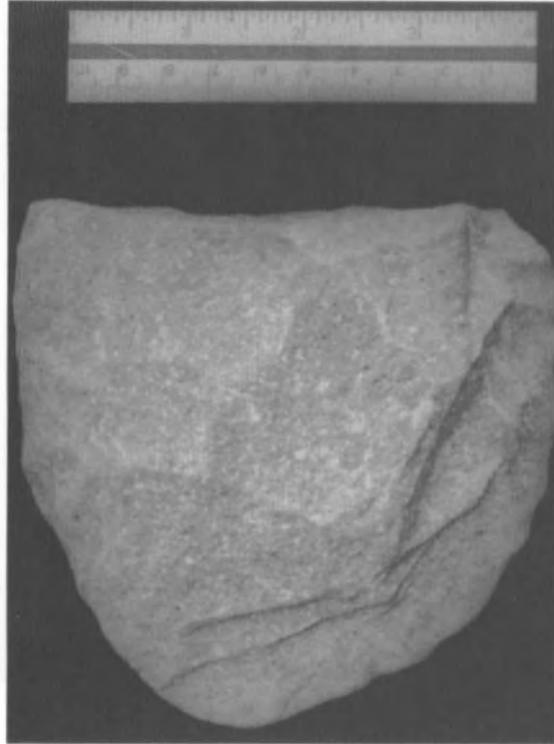


Fig. 7. The butt end of the large handaxe Nr. 2

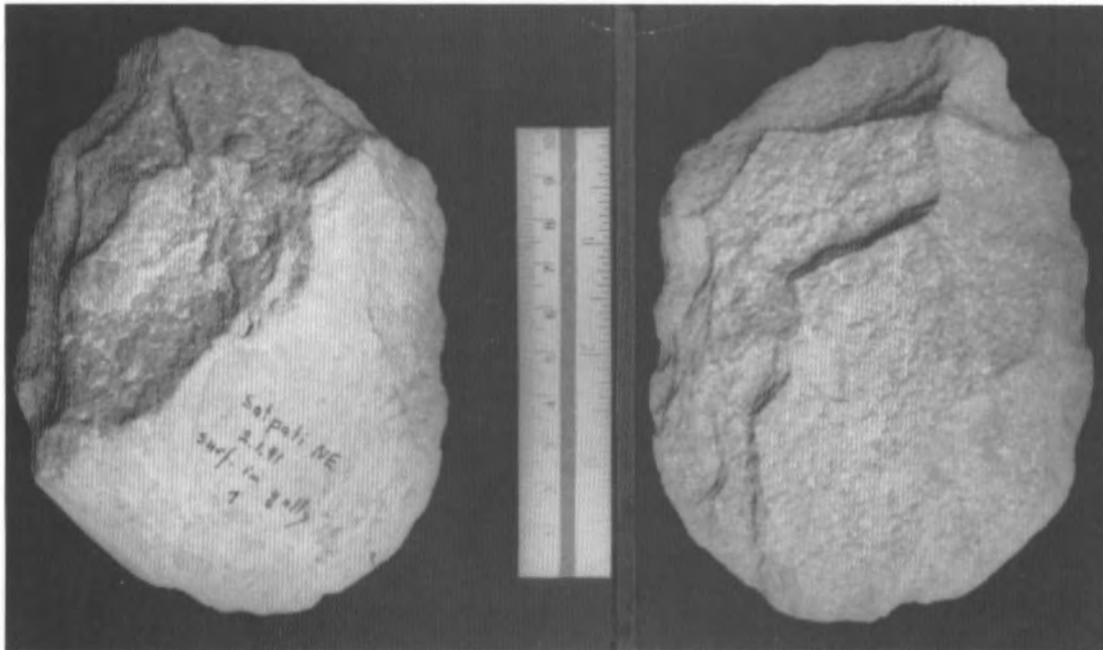


Fig. 8. (left and right): Handaxe Nr. 1 from Satpati Hill.

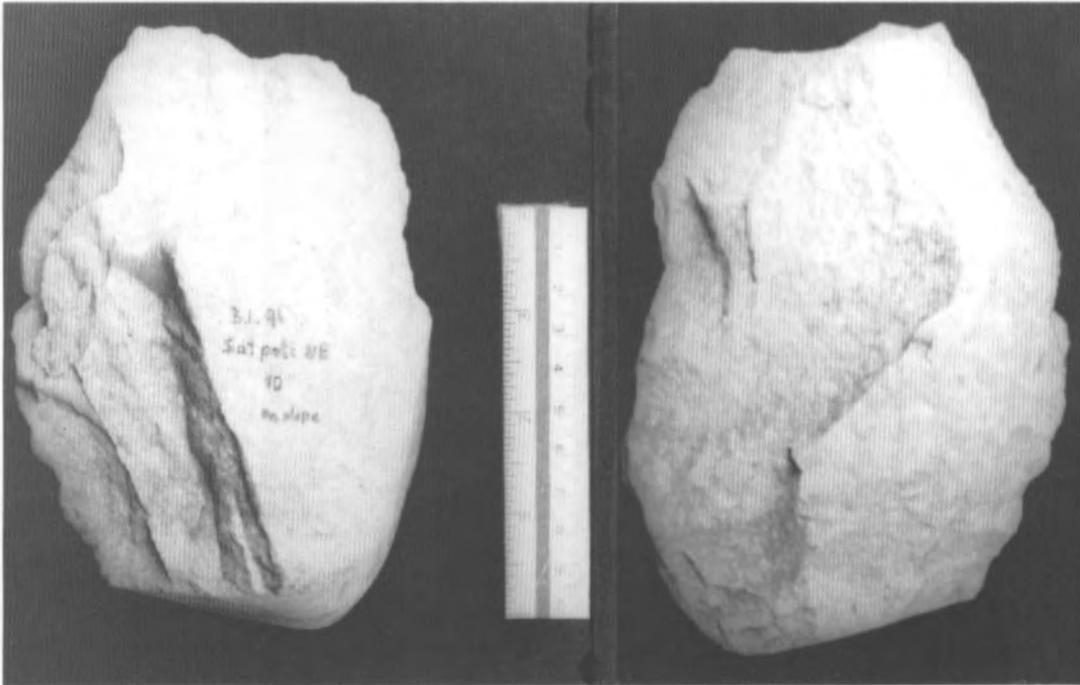


Fig. 9. (left and right): Unfinished biface Nr. 10 from Satpati Hill.



Fig. 10. (left and right): The large biface Nr. 13 from Satpati Hill.



Fig. 11. A bifacial endchopper from Satpati Hill.

place where the flake had split into 2 pieces. It has a straight, used working edge opposite the point of percussion, and is trimmed by small flakes from both faces. It is slightly weathered and rounded like the bifaces 1 and 2.

Nr. 11 is an interesting bifacial endchopper on an oblong cobble. It has a bifacial distal edge with fine, shallow trimming and has an angle of 70 degrees and has been used. Two flakes have been removed from the cortex body of the tool, a small one on one side and a deep, angular one on the other side (Fig.11).

Nr. 15 is a unifacial endchopper from an oblong quartzite cobble with only few unifacial primary flakes and some secondary retouch and heavy usemarks which caused the distal edge to become blunt and concave. This tool was found together with the 3 flakes and 2 fossil bone fragments on the hillslope at the outcrop of the lower quartzite gravel lense in the sandstone.

Nr. 8 is a pick from a split cobble slice with just a few shallow flakes taken off near the pointed apex. This tool does not look as if it belongs to the same period as the other palaeoliths, but seems to be much younger. It was not found together with the bifaces but on the surface in the lowest part of the khola bed.

Nr. 6 is probably the broken-off tip of a biface. It has bifacial primary trimming. It is a very fresh piece with a thick calcrete crust at one place.

Nr. 7 is a bifacial tool with a used, bifacial rounded point, made by unifacial stepflakes. The edge of the apex probably continued down along the left side, but a very large flake from the lower face has obliterated most of the lateral edge and seems to have rendered the original small biface rather useless.

Flakes from Satpati:

Nr. 5 is a very large cortex flake, detached from a very large cobble, showing no other trimming.

Nr. 4 is a simple, wide-angled, pointed flake with no cortex and no trimming.

Nr. 16 and 17 are simple flakes found together with flake Nr. 18 and with the endchopper Nr. 15 and the bone fragments at the outcrop of the lower gravel. The two flakes have been detached from the same light-grey quartzite core, both showing plain platforms and some lateral cortex and no secondary trimming, but both have a lateral edge, which may have been used.

Nr. 18 is a simple waste flake of quartzite with plain platform and some stepretouch at the platform edge prior to detachment of the flake.

c. Summary of the Satpati cultural remains

Though the cultural material of the Satpati site is not very abundant, it is of great importance due to the reasons stated in the beginning. The bifaces are made in the Indian tradition and there is no doubt that the connection of the people responsible for the Satpati bifaces is to India. They have crossed the wide Gangetic Plain and occupied the terrain at the foot of the Himalayan mountains probably during one of the glacial periods, not the last one but probably before the Eemian time. The climate then must have been cooler and drier and the vegetation less thick than in interglacial and recent times during which the Himalayan foot was covered by the thick Babai forest zone.

After the Satpati handaxe population lived here, the rivers from the north have deposited a few hundred meter of thick alluvial sediments on top of the site, thereby burying it deeply under their sediments. It is only due to the tectonic uplift and folding that the site has been exposed and has come to the surface again, offering a chance for the searching geo-archaeologist. We must presume therefore, that Acheulian man, whose sites we find so abundantly in India south of the Gangetic Plains, also occupied the Gangetic Plains and that their sites are buried under thick alluvial sediments. It also seems obvious, that they ventured further north to the foot of the Himalayas, as evidenced by the Satpati site, and that they even penetrated right into the Himalayan foothills, as evidenced by the Gadari handaxe site in the Dang Dun valley within the Siwaliks.

These are interesting findings, especially since they are primary, stratified *in situ* sites, and throw new light on the extension and migration of Acheulian man. It is not the Gangetic Plain which formed the northern and north-eastern border of the handaxe population on the Indian subcontinent, and it is not the Himalayan foothills, but it is the higher Himalayan mountain belt which forms the N and NE boundary of their migration.

2. The Chabeni cultural assemblage

a. Location

West and south-west of the Satpati Hill there stretches a wide, higher river terrace surface along the foot of the Siwalik hills, which is made up of yellow silt deposits overlain, at places, by colluvial blocks and boulders of Siwalik sandstone, washed down from the Siwaliks. Its elevation is 15 — 20 m above the lowland plain (see Fig. 5). The silt surface of the terrace slopes down to the south to a small canal and here breaks up into badlands. Here erosion has set in heavily due to the cutting away of the forest.

At the erosional margin one sees artefacts of quartzite and chert eroding out from the uppermost horizon of the silt at the contact to the overlying colluvial deposit. It must have once been an occupation site of a larger camp site, called here the Chabeni site. The artefacts on the surface are spread over an area of about 100 by 100 m. They consist only of stone implements and stone debris and there is no pottery associated with them.



Fig. 12. Chabeni site, place 1, covered with artefacts, eroding out from the silt.



Fig. 13. Chabeni site, place 2, on the terrace surface, with the Siwalik hills in the background.

The terrace was certainly of a much wider extent during the time of the occupation of the Chabeni people, stretching further to the west along the foot of the Siwalik hills, as well as to the east along the foot of Satpati Hill. But erosion has removed much of its former extension, leaving now only a very reduced terrace surface. The terrace is covered only by brush and an occasional tree. If one proceeds for some few hundred meters on the terrace to the east one encounters a large area with enormous amounts of potsherds on the surface, but no stone artefacts. Before occupation of the present people of Tharus, Kumals (pottery-making community) and Kuwars (idol-making community) who live in the recent villages, there must have existed a potters village north of Chabeni on this terrace. A few flat ancient-type bricks also can be found here, which are not of the modern type. At one place, at a small shrine amongst the brush, there are hundreds of broken potsherds especially of fragments of pottery horses. These seem to be still produced here by the Kuwar community, ordered for special festivals to be offered at the shrines by the Tharus and Kumals. But these are young archaeological sites and we will deal here only with the Chabeni stone age site.

The site, as exposed now, is about 100 by 100 m in extension. It has been divided into 4 'places': Place 1, 2, 3 and 4 are areas within the Chabeni site, each of them not more than 50 by 50 m. Chabeni 1 is the richest place, also called the 'flake spot', as here many flakes and waste chips come out from the silt (Fig.12). Place 2 is a small area just south of the 'flake spot', where the terrace deposits break up into the badlands. It is also called the adze place, as here particularly many unifacial adzes have been recorded in 1991 (Fig.13). Place 4 is just northwest of Place 2 and west of Place 1, and here in 1994 many uniface have been found. Place 3 is a small area north of Place 4 with only a small sample collection.

b. The cultural material of the Chabeni site

The collections of all the places are sample collections and are therefore selective. An analysis on waste to tools is not possible and therefore it is uncertain whether the site was a factory and/or camp site. But from the interpretation of the 53 tools we can deduct nonetheless, that the site was a camp- and working place. The artefacts consist in the majority of flakes and stone waste of quartzite and white cherty quartzite and rarely of chert.

Besides the waste there are a number of tools: corescrapers, scrapers and choppers, and particularly frequent are uniface, which are very special for this site. In fact these unifacial tools do resemble Hoabinhian unifacial tools from northern South-East Asia.

The collection contains 118 artefacts. They consist of:

- 38 artefacts from Chabeni, Place 1;
- 40 artefacts from Chabeni, Place 2;
- 12 artefacts from Chabeni, Place 3;
- 27 artefacts from Chabeni, Place 4;
- 1 artefact from Chabeni, east of canal.

118 sum

Of the 118 artefacts at Chabeni there are:

- 26 uniface or unifacial adzes, (all made from cobble);
- 1 unifacial disc, (from cobble);
- 1 knife, (from a flake);
- 7 scrapers, (3 are unifacial, from cobble, 4 are from flake);
- 5 choppers, (4 are unifacial, from cobble, 1 is partly bifacial);
- 4 corescrapers, (all 4 are unifacial, from cobble);
- 1 sling-ball, (from a round cobble);
- 1 polished, broken cylindrical stone;
- 7 used flakes;
- 62 flakes, i.e. waste flakes;

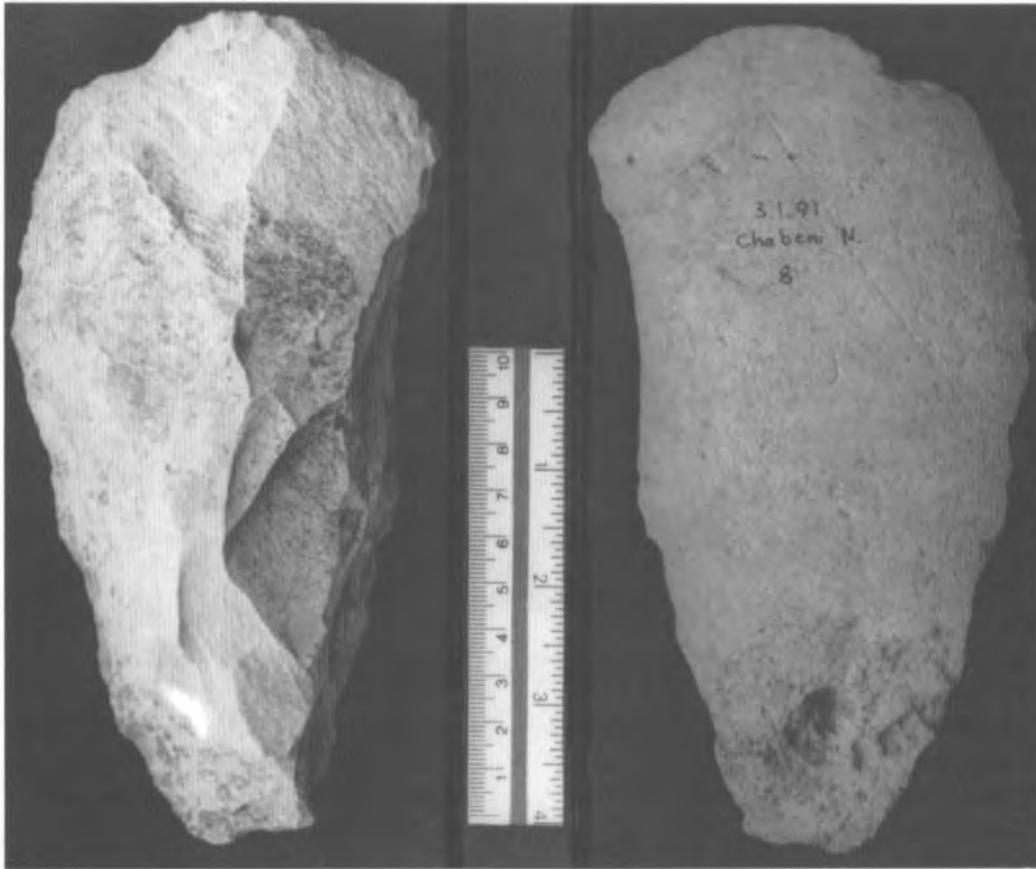


Fig. 14. (left and right): Uniface Nr. 1 from Chabeni.

2 flake-like pieces;

1 core;

38 of the 53 tools of the collection at Chabeni are unifacially trimmed tools, that means that 72 % of the tools are unifacial tools made from cobbles or from split cobbles, where one face was left completely untrimmed or almost untrimmed, showing cortex. This high percentage of unifaces is surprising and is, so far, not found at other sites in Nepal, not even in Patu.

The unifaces were made from quartzite or chert cobbles, from which large, flat primary flakes were removed, or they were made from split cobbles. One face was left entirely cortical, or has only a few shallow scars, while the other face was trimmed by shallow flaking along the circumference (Fig.14). The diagram of Fig.15 shows that they are of a standardized oval shape, their B/L ratio with a peak at 0.5 to 0.6 showing that they are neither very long, nor very short. Their apex is not made into a straight or oblique straight transversal edge like most Patu adzes, but are unifacially trimmed into a convex apex. They have an amazing resemblance with Hoabinhian unifacial axes (Fig.16). The length of the unifaces is rather unstandardized (Fig.17). Some of the unifaces are very small, only 60-70 mm in length. Others again are very large, up to 175 mm. The thickness ratio of the unifaces is also quite standardized with medium Th/B values (Fig.18), with neither very thin nor very thick section. Only the few choppers and corescrapers are heavy tools with thick section, as is usual for them.

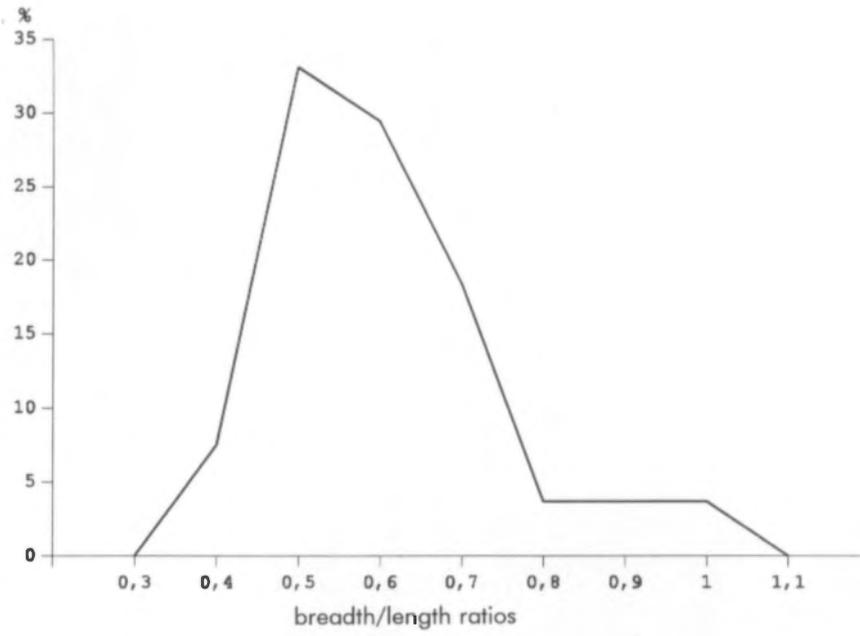


Fig. 15. Diagram of the breadth/length ratios of 27 uniface from Chabeni.

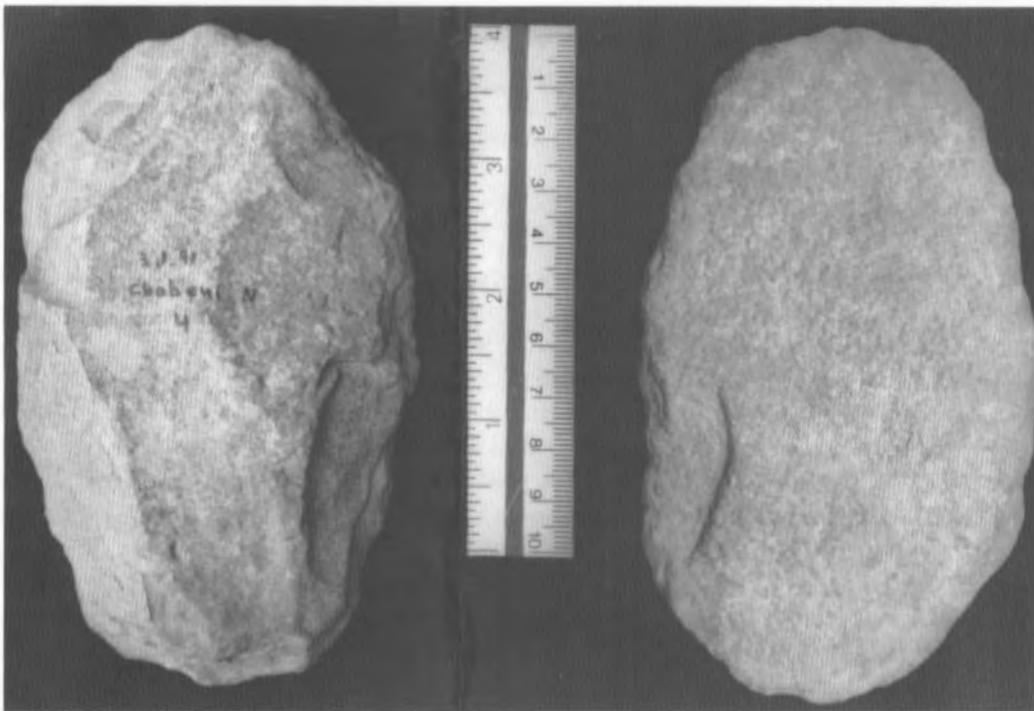


Fig. 16. (left and right): Uniface Nr. 4 from Chabeni.

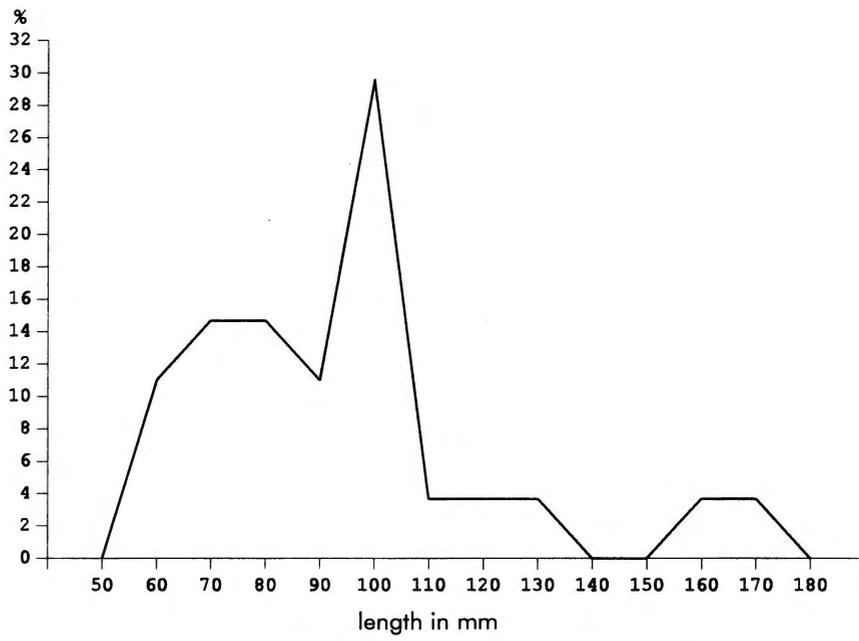


Fig. 17. Diagram of the length of 27 Chabeni unifaces.

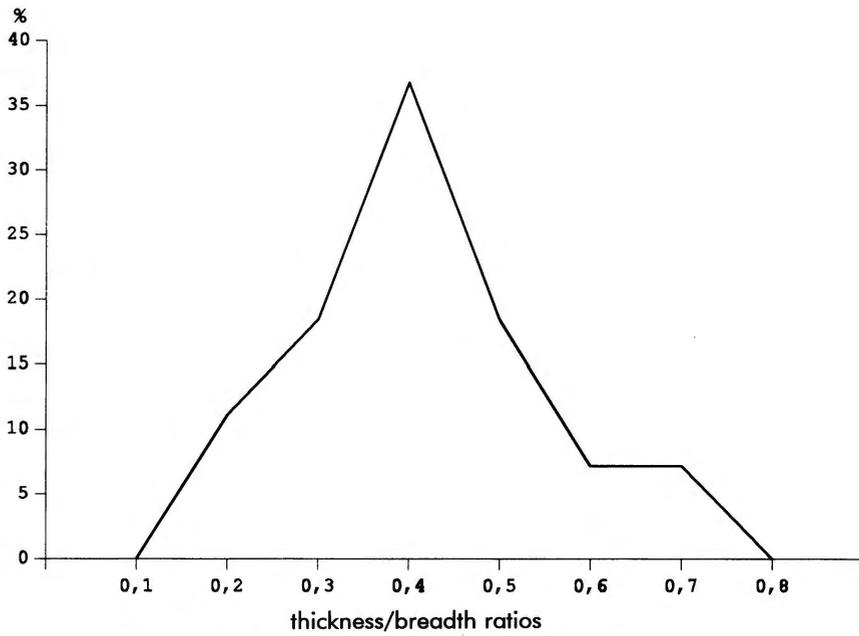


Fig. 18. The thickness/breadth ratios of 27 Chabeni unifaces.

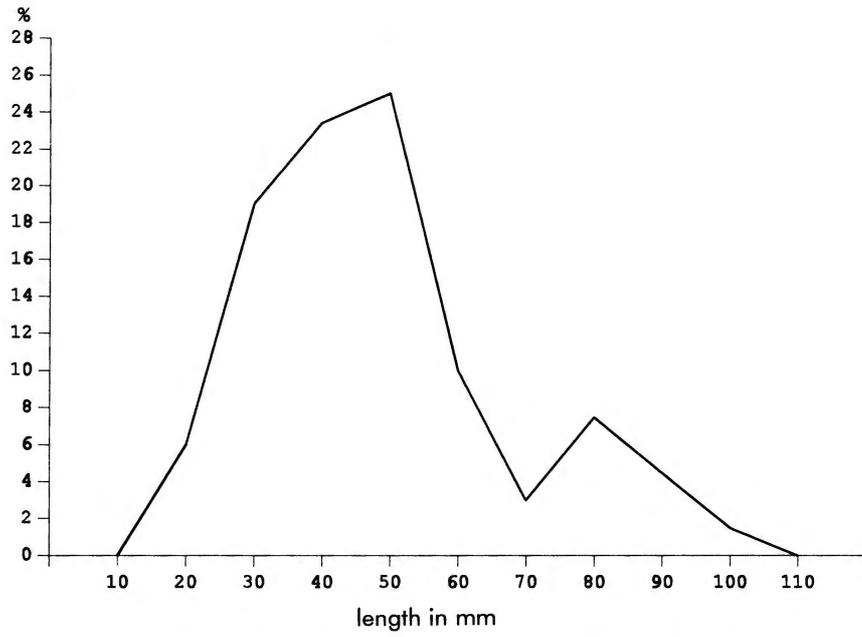


Fig. 19. Diagram of the length of 68 Chabeni flakes.

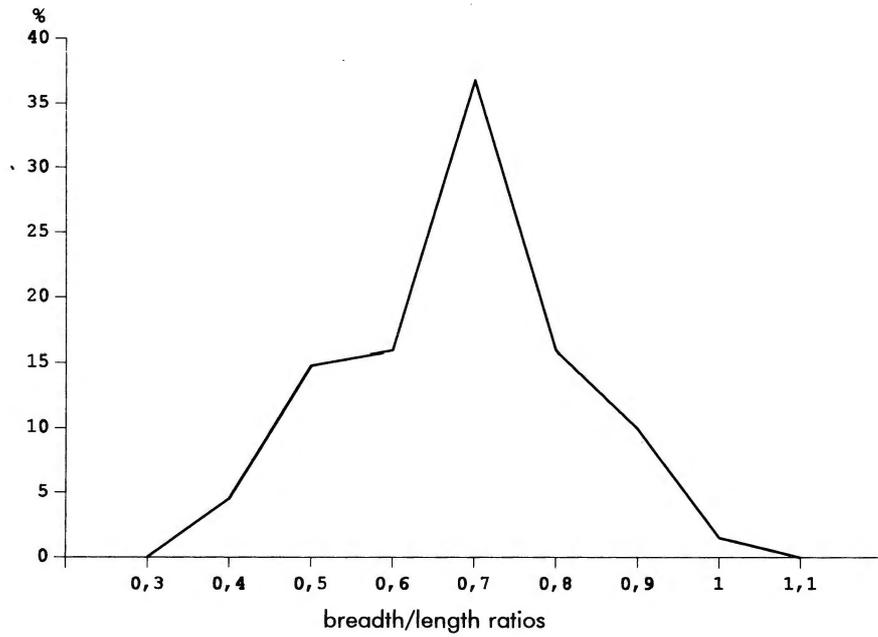


Fig. 20. Diagram of the breadth/length ratios of 68 Chabeni flakes.

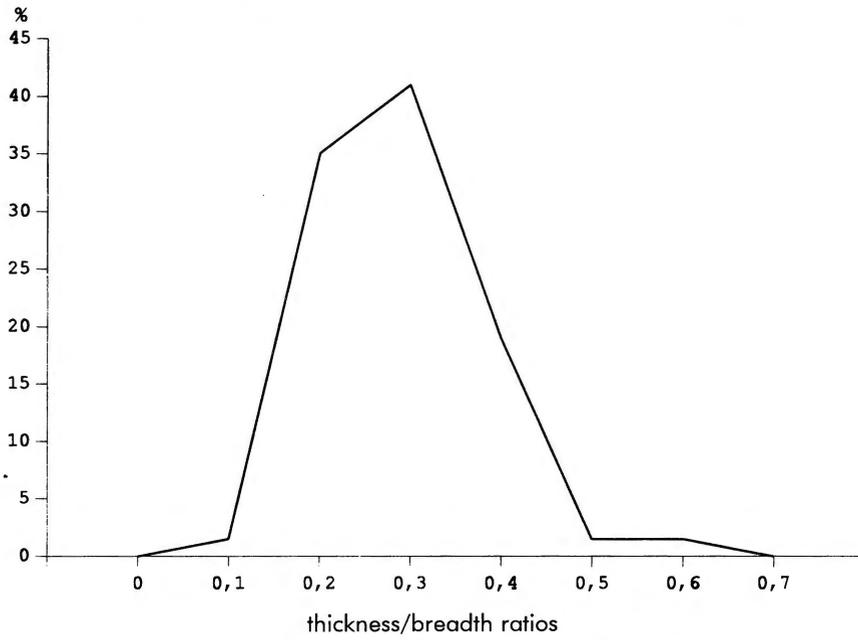


Fig. 21. Thickness/breadth ratios of 68 Chabeni flakes.

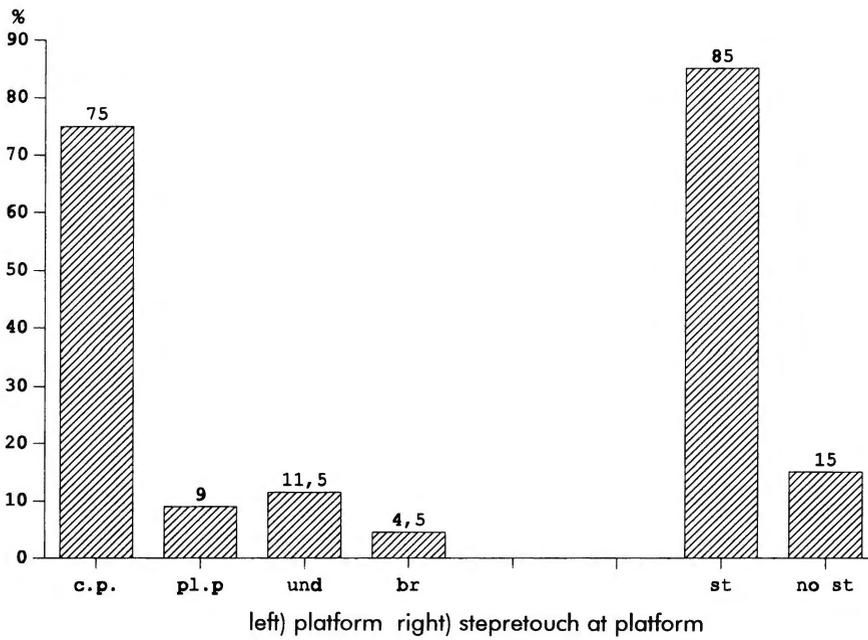


Fig. 22 The characteristics of the platform of 68 Chabeni flakes.

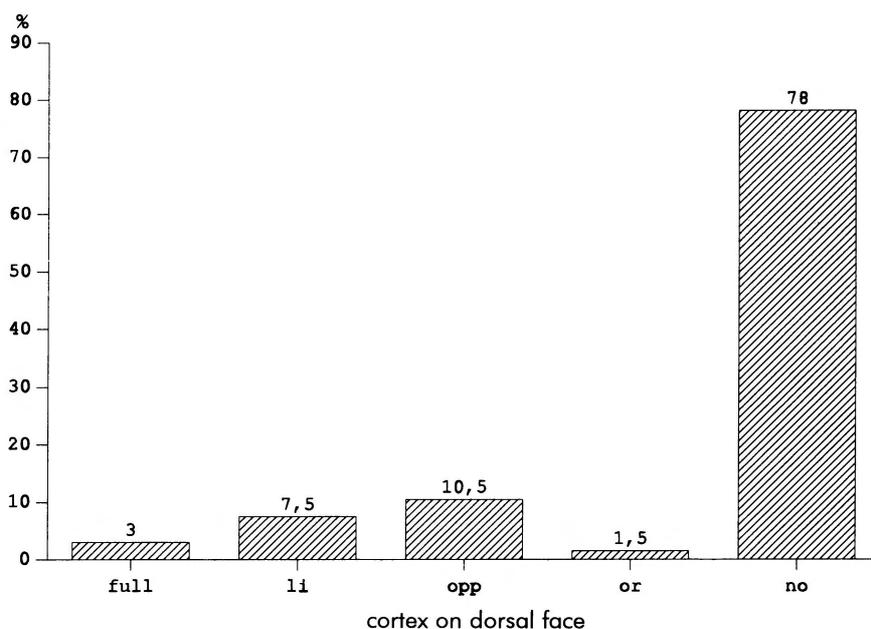


Fig. 23. The dorsal cortex on 68 Chabeni flakes.

The few scrapers partly resemble unifaces, as 3 of them are made from cobbles and are unilaterally trimmed. 4 other scrapers are from flake and are either unifacial, or bifacial.

Of the 69 flakes 7 are used flakes. The flakes show no special features. Their length ranges from 20 to 100 mm (Fig.19). Their shapes are peaked at a B/L ratio of 0.7, i. e. they show little inclination towards elongate flakes or blades (Fig.20), and their thickness/breadth ratios with a definite peak at 0.2 to 0.4 are rather regular, showing neither very thin nor very thick flakes (Fig.21).

The flakes of Chabeni show the same characteristics as those from Patu (Corvinus 1987). They are struck with 75 % from cortical platforms from the core and not from prepared cores: 75 % have cortex platform, none have a prepared platform and only 9 % have plain platform (Fig.22). And like at Patu, the large majority of flakes have stepretouch or stepflaking at the platform edge on the dorsal face and no other trimming (Fig.22). This stepflaking was done on the core and indicates that the flakes are probably manufacturing flakes of larger cobble-tools like choppers, corescrapers and unifaces. Surprisingly few flakes are cortex flakes: only 3 %, while 78 % have no cortex at all (Fig.23), apart from the cortex platform. 10.5 % have also some cortex opposite the platform and 1.5 % have cortex along one side like orange slices. There is a great resemblance with the Patu flakes.

c. Interpretation of the Chabeni artefacts

The Chabeni artefact assemblage is a cobble-tool industry. The tools have been manufactured from quartzite cobbles by predominantly unifacial trimming, leaving one face as a cortical face, so that the edge is a partly cortical edge made by shallow primary and smaller stepflaking to shape the edge from one side only.

The predominant tool type is the uniface, oval or elongate oval in shape, with an edge along the whole circumference. A few scrapers, choppers and corescrapers make up the rest of the tools. Flakes are manufacturing debris of tool-making and only few flakes seem to have been used. The unifacial tools have

a striking resemblance to Hoabinhian tools from South East Asia. In peninsular India such tool types are not encountered and it is possible that the connection of these people was not with India, but with South East Asia via North East India. The Chabeni assemblage is the first of its kind in Nepal and similar artefacts have so far not been encountered in other parts of Nepal.

IV. Conclusions

The area of Satpati/Chabeni in the Lumbini zone in southern Nepal has yielded two cultural assemblages, one from the palaeolithic and one from the mesolithic period.

The palaeolithic site of Satpati is situated in a small hill, the Satpati Hill, at the foot of the Himalaya, bordering the Gangetic Plain. Early palaeolithic bifacial tools of bifaces have been discovered within alluvial sediments in this hill, belonging to the alluvial body of sediments of the Gangetic Plain, which, at this particular place, have been subjected to tectonic uplift and folding by the activity of the Himalayan Frontal Thrust zone. The tools had been embedded in the Gangetic alluvium in the later Middle Pleistocene, probably more than a 100 000 years ago, and had been buried by subsequent alluvial deposits of probably more than 200 m thickness. Normally they would have remained buried for ever, if not recent tectonic activities at the Himalayan foot had uplifted these deposits in this particular small place, just where by chance the handaxe site was embedded, and had exposed these deposits by thrusting them over the youngest alluvial sediments of the recent Gangetic Plain.

This is a unique find in a unique situation. Normally much older rocks of the Tertiary Siwalik Group of sediments of the Siwalik Hills are thrust over the Gangetic alluvium at the Himalayan mountain front. But at this particular place at Satpati, the frontal thrust bifurcates into two strands: the older northern Himalayan Frontal Thrust thrusting Siwalik rocks over the Gangetic alluvium, and the younger southern thrust uplifting and folding a small slice of the older Gangetic alluvium and thrusting this slice over younger Gangetic alluvium. And by chance an occupation place of handaxe people was embedded in this small slice of older alluvium and thus got exposed by this recent tectonic phenomenon. The handaxe population lived here at the Himalayan foot in the plains, after crossing the wide Gangetic Plain, but they certainly belonged to the people of Acheulian tradition from India.

Much later, probably in early Holocene times, much younger people came to live here almost at the same place at the mountain front, settling on the higher alluvial terrace remnants north of the neighbouring Chabeni village. They produced unifacial tools made from cobbles, which seem to have no traditional affinities to the prehistorical cultures of peninsular India south of the Gangetic Plain. They instead seem to have closer affinities to cultures which lie to the south east and east, i. e. to industries akin to the Hoabinhian industry of South East Asia.

Further to the east in Nepal the author had discovered in 1985 another very particular cultural assemblage, the Patu industry at Patu at Rato Khola, (Corvinus 1987), with unifacial and bifacial adzes which also seems to have affinities to South East Asia rather than to India. Further to the west in Nepal, where the author is working extensively in the Dang-Deokhuri Dun valleys within the Himalayan foothills, a great number of prehistoric sites could be recorded, from the early palaeolithic period (with a first handaxe assemblage discovered in Nepal from basal deposits of the Dun alluvium, Corvinus 1991, 1993) via late Pleistocene flake and chopper industries and microlithic industries to neolithic remains (Corvinus 1985, 1994) which all have doubtless connections with the prehistoric traditions of the Indian peninsula.

Research in Nepal is continuing by the author in order to further unravel the intricate and intriguing patterns of the prehistoric occupations along the Himalayan mountain front.