Discovery of stone age tools from Tripura and its relevance to the Prehistory of Southeast Asia

N.R. RAMESH Geological Survey of India Shillong, India

Abstract: Recent discovery of stone age sites in the Quaternary fluvial terraces has brought Tripura on the prehistoric cultural map of India and Southeast Asia. Artifacts have been collected from 25 localities spread over 45 km radius around Agartala in course of Quaternary mapping in West Tripura. These findings demonstrate the existence of multiple dispersed colonies of stone age people on the stabilised river terraces.

The geological context of these sites is well established. The tools occur in open stations (primary sites) mostly on the dissected remnants of the upper most terrace (T_1) lying between 5 m and 15 m above extent floor regime (20 m-83 m) above m.s.l. These are found profusely scattered in open fields, and as interlayers within the moderate yellowish brown light brown and greyish orange (10 YR 5/4, 5 YR 5/6 and 10 YR 7/4), loamy latosols up to a depth of 1.7 m. The soil mantle overlies a fining upward, polycyclic, fluvial sequence, comprising ferruginised, dark yellowish orange (10 YR 6/6), arkosic, medium sands. Generally, mottled soft latosols occur below the humus enriched A-zone. Locally, hard concretionary laterite is also observed. The above terrace sequence is unlithified and belongs to the Upper Pleistocene (34680 ± 2960 Y.B.P. by C¹⁴ dating). It lies over the folded Neogene strata with a demonstrable angular unconformity. The younger, unoxidised/unaltered, Holocene terrace sediments (T₃) dated at 3450 ± 110 to 1100 ± 90 Y.B.P.,and (T₄ = nascent floodplain) at 165 ± 80 Y.B.P. by C¹⁴ method, occur as successive insets. T₂ has very limited distribution.

Typologically, the artifacts include flaked axes, polished celts, chopping (bifacial) tools, adzes, scrapers, points, hammerstones, grooved stones, prepared cores, blades, pebble tools and a bulk of flakes. It is noteworthy that 98% of the tools are made of silicified wood embedded within or derived from the Neogenes by recycling. Interestingly, the flakes are removed from the silicified wood core, generally either oblique to or across the wood structure, possibly for controlling the size of the flakes. Controlled flaking is extremely difficult in petrified woods, except along an axis transverse to the growth rings. Consequently, the tool types are restricted mainly to tabular varieties. Rarely, levalloisian technique of flaking is seen. The tool assemblage points to a wood land ecology in the area.

The tool ensemble can be grouped into: (A) Preneolithic assemblage without polished axes but having typological affinity with neolithic tools and (B) Neolithic assemblage dominated by polished axes. The Preneolithic assemblage belongs to the Late Pleistocene(?) age (much younger than 35,000 Y.B.P. and older than 3,500 Y.B.P. as indicated by the dated stratigraphic records of the older and younger terrace deposits). In its totality, the artifact assemblage bears a close semblance with the Anyathian and Neolithic tools reported from the Irrawaddy valley of Burma. The present discovery thus establishes cultural linkages across the barrier of the Indo-Burma ranges during the prehistoric times.

INTRODUCTION

Since Capt. Steel in early 1960s first recognised the Stone Age relics in Assam, prehistoric archaeological finds have been reported by several workers from different parts of Northeast India (Lubbock, 1867; Anderson, 1871; Hutton, 1871; Barron, 1872, Godwin Austin, 1875; Cockburn, 1879; Brown 1914, 1917; Banerjee, 1924–25;

Mills, 1933, Singh and Sharma, 1969; Bopardikar, 1972; Singh, 1972, 1980; Rao, 1973; Sharma, 1974, 1978 and Sharma, et al, 1978. Not including three explored areas in the region containing Neolithic sites viz, Garo Hills in Meghalaya, Daojali Hading and Saraturu in Assam, the rest of the known occurrences east of longitude 90°, e.g. from the Khasi Hills, Naga Hills, Arunachal foot-hills and Brahmaputra Valley, comprise only stray finds (Sharma, 1979). However, prehistorically Tripura had hitherto virtually remained a *terra incognita*, except for a brief mention in the Tripura District Gazetteers (Govt. of Tripura, 1975) about an accidental find of some stray neolithic implements while digging a house foundation at Nandanagar near Agartala, without any reference to their actual geomorphologic or geologic context. With regard to the knowledge of the prehistory of Tripura and adjoining Mizoram, it is important to note the observations made by Sharma (1984, pp. 6, 9 and 15). He observed, *Large areas of* Assam, Meghalaya, Nagaland, Manipur and Arunachal Pradesh are yet to be trodden by archaelogists. In Mizoram, archaeological investigations are yet to start. Tripura which has given some very interesting Stone Age industries based on utilization of fossil wood as a raw material like Anyathian of Burma, is yet to begin researches into the prehistory of the state. Palaeolithic cultural relics are yet to be reported from Assam, Nagaland, Mizoram and Tripura. He adds There are large collections of smooth stone tools from Nagaland, Arunachal Pradesh, Assam, Meghalaya and Manipur. From Mizoram and Tripura, the evidence is still meagre.

The situation has radically changed now as a result of systematic Quaternary geological mapping conducted by the Geological Survey of India (GSI) during 1980-83 to unfold the Quaternary history of the western fringe segment of the Indo-Burman Ranges—in Tripura, flanking the Bangladesh plains. This has led to the discovery of several stratified Stone Age sites and pottery sites in the Upper Pleistocene and Holocene terrace deposits respectively, which occur in large spreads in the river valleys of West Tripura district.

This paper attempts to present an account of the geomorphic/geologic framework of the Stone Age sites, a broad typology and technology of the stone industry and the implications of the discovery in the regional context.

Location: The area mapped falls in the Sadar and Khowai Sub-Divisions and covers a major part of West Tripura district. It has an international border with Bangladesh on its northern and western limits, while to the east and west lie the North and South Tripura districts. It is bounded by latitudes $23^{\circ}30' - 24^{\circ}14'$ N and longitudes $91^{\circ}15' - 91^{\circ}45'$ E and is covered in Survey of India toposheet Nos. 78 P/8, P/12 and 79 M/5, M/6 and M/9 (Fig. 1).

GEOMORPHOLOGY

Physiographically, the area represents the western fringe of the typical 'ridge and valley' (structural) province of the late Tertiary fold mountain belt, commonly known as the Indo-Burman Ranges (Purbachal Range). The general altitude of the area varies from 10 m to 346 m above mean sea level. Two prominent, roughly north-south trending anticlinal strike ridges, called the Baramura and the Atharamura with peaks around 249 m and 346 m above sea level, dominate the topography. These ranges



Fig. 1. Location map of Tripura within India. A, Map of India, B, Map of North East India, showing, 1-Arunachal Pradesh, 2-Assam, 3-Meghalaya, 4-Nagaland, 5-Manipur, 6-Tripura and 7-Mizoram, C, Map of Tripura showing the area mapped.

together with two smaller dome-like ridges, namely Sonamura and Rokia, comprise the folded Neogene strata.

The main streams and major tributaries run parallel as well as transverse to the structural grain of the area. The two important rivers of West Tripura viz., the Khowai (perennial, 6th order) and the Haora (perennial, 5th order), drain into Bangladesh plains towards north and west, respectively. The valleys are terraced, a greater part being made up of deeply dissected highlands of the upper most terrace, characterised by steep erosional scarps of 15–20 m in height along river banks (Plate 1). The intermontane Khowai valley which broadens and slopes down towards north lies in between the Atharamura and the Baramura and is drained by the northerly flowing meandering Khowai river. In contrast, the valley sectors situated due west of the Baramura ridge; has a general westerly slope and is drained (besides the Haora) by the perennial streams e.g. Buri Gang, Sonai Gang, Sonai nadi, Lohar nala etc., which flow in highly meandering channels generally towards west into Bangladesh. Trellis drainage is a rule where strike ridges of the Neogene rocks are present, while dendritic pattern is well marked in the upper most (Pleistocene) terrace developed in the valley regions and in some pockets of the hill ranges.

There are two fundamentally different landform domains in the area.



Plate 1. Narrow inset of Holocene terrace (T_3) , flanked by Tilla Unit (T_1) having a steep spectacular scarp of 20 m height hugging the bank of the Haora river; in the foreground is the extra ordinary floodplain (T_4) . Around Jirania.



Plate 2. Dissected Upper Pleistocene Surface (T_1) at Kunjaban, Agartala. Note the intensive gully erosion.

A. *Neogene Fold Ridges:* These constitute the roughly N-S aligned anticlinal ridges with rounded to nearly flat-topped Baramura, Rokia and Sonamura and comparatively more rugged Atharamura with several spurs, comprising sub-flysch and molasse sediments of Mio-Pliocene age.

B. Alluvial Terrain: The terraced alluvial terrain is divisible into three groups on the basis of characteristic relief, slope, degree of dissection, soil character, landform assemblage and nature of alluvial fill. These in chronological order are: (1) the table lands (*Tilla* lands) and rolling mounds formed by the Upper Pleistocene terraces characterised by maximum dissection, drainage density and weathering, (2) the low lands (*Lunga* lands) of the Holocene terrace comprising stablised, undissected, higher floodplains, and (3) the recent floodplains constituting the present-day flood-prone belts fringing the rivers and streams.

QUATERNARY GEOLOGY

Morphostratigraphic mapping in parts of Khowai, Haora, Sonai Gang and the adjoining valleys of West Tripura has demonstrated the existence of extensive outcrops of Quaternary fluvial deposits which form a four-tier system of terraces. These correspond to the stratigraphic units in the same order of antiquity.

Unit-1 (T_1) : This constitutes the uppermost and the oldest terrace extensively developed in the valley sectors having maximum areal coverage and thickness. It has a paired character and is intricately dissected into incipient badlands (Plate 2). Dendritic drainage is characteristic. Lying generally between 15 m and 93 m elevations above mean sea level, it forms a gently sloping plateau surface abutting against the hill ranges. The fluvial sediments of this unit unconformably overlie the folded strata of Mio-Pliocene age (Plate 3). This formation consists of at least two fining upward fluvial sequences made up mainly of dark vellowish orange, medium, arkosic unlithified sands which is highly oxidised and weathered into an ubiquitous latosolic profile, capped by a fairly thick, moderate yellowish brown (10 YR 5/4) light brown (7.5 YR 6/4) and very pale brown (10 YR 7/4), sandy and silty loam soil. Locally, the soil (Alfisol, and Oxisols in pockets) overlies some hard lenses of concretionary laterite containing goethite and haematite. Rolled marine molluscan fossils consisting of gastropods and bivalves i.e. Drilla Sp. and Clementia Sp., occur (Ramesh, 1982). They have a geological range from Eocene to Recent but more common in Miocene and known from the Boka Bil formation. Stone implements, silicified woods, pebble beds and occasional clay layers containing peaty material occur. Pockets and lenses of plastic clay and silica sands are present. This formation is emplaced by several sand plugs containing profuse caliche nodules, Radiocarbon dating by Birbal Sahni Institute of Palaeobotany (BSIP) on the peaty material found in the upper part of the formation has indicated the age of 34680 \pm 2960 years B.P. This confirms the Upper Pleistocene age of the unit.

Unit 2 (T_2) : This occurs as low mounds and small islands, a step (6-8 m) lower than Unit 1. It is a minor component in the terrace sequence and contains mainly oxidised, yellow, sticky clay with thin soil (Entisol) cap. It is also assigned an upper Pleistocene age on geomorphological and geological grounds.



Plate 3. Angular unconformity between the dipping Neogene siltstone sequence overlain by flat-lying Kalyanpur formation of Upper Pleistocene age; Teliamura.



Plate 4. Dissected Baramura Range having low denuded hills and narrow Holocene Valley fills, around Champaknagar.

Unit 3 (T_3) : This unit (paired terrace) is less extensive than Unit 1 and occurs in roughly linear belts flanking all the present day major rivers/streams and as minor valley-hills (Plates 4, 5). Its upper surface is flat and immune to floods, lies at the level of the general valley floor and never forms a dissected country in contrast to Unit 1. Where both Unit 1 and this occur in the same exposure, the latter always overlies the former and the contact represents an erosional unconformity. It consists of unoxidised or weakly oxidised/altered light grey (5Y 7/2) and pale yellow (5Y 8/4) silty clay, grading down to pure sand (rarely silica sands) and occasionally pebble beds. The sand sequences show polycyclic character with infrequent cross stratification of small scale unlike that of T, sequence which exhibits mega cross-bedding. Thin soil (Entisol) cover is present. The sediments generally show graded sequences and their texture is loose and porous. It is often interstratified with peat layers enriched with fungal spores, and proto-historic potsherds of impressed type, wheel turned and showing well fired character. A cluster of C¹⁴ dates ranging from 1190 \pm 90 to 3450 \pm 110 Years B.P. on the peat confirm the Holocene age of this unit surmised earlier on the basis of physical character and stratigraphic position of the unit (Ramesh and Kar, 1981; Prasad and Ramesh, 1983).

Unit 4 (T_4) : This is the youngest unit and it is still forming. This occurs in linear belts fringing the present drainage to which it is clearly related (Plate 6). The extraordinary flood-plains and neo-flood deposits of the channel bars, point bars, channel fills constitute this unit. It is made up of fresh deposits of well sorted sands, silts and some clay. Semi-carbonised tree trunks and twigs are commonly present. Radiocarbon dating on the wood sample confirms that the deposit is modern (160 \pm 80 Years B.P.)

STONE AGE SITES

The discovery of some stray celts and pebbel-tools and stratified pottery sites were first made in the Khowai and Haora valleys during the course of Quaternary mapping in 1981–82 (Dy. Director General, GSI., 1982; Ramesh, 1982). The pottery sites were found in Khas Kalyanpur and Seratoli in the Khowai valley and Kolaghar in the Haora valley (Plate 7). Potsherds are interstratified with the unaltered, Holocene sedimentary sequence which constitutes the extensive *Lunga* terrace (Unit 3) lying above the floodplains. Radio-carbon dating (BSIP) on the semi-carbonised wood fragments from this sequence has confirmed the late Holocene age of the sequence (1430 ± 80 Y.B.P.) indicating that the potsherds possibly belong to protohistoric/historic period (Plate 5). However, stone implements collected from the top soil of the latosolic profile of Unit 1 (T₁) at Teliamura and Kolaghar suggested a mixed range (Preneolithic to Neolithic).

The above chance finds encouraged the writer to make a renewed methodical and planned search during 1982–83 season. This has led to the discovery of at least half a dozen rich Stone Age sites and some stratified pottery sites in the Sadar and Khowai Sub-Divisions of West Tripura district, thus establishing the existence of multiple dispersed colonies of late Stone Age Man who found the *Tillas* to be ideal camping grounds. The camping sites on the elevated grounds (Tillas) on the river banks must have provided a good view of the surroundings. The location of the sites must have been guided by the availability of raw materials close by. The proximity of the hill



Plate 5. Stratified Holocene terrace sequence (T₃) around Kalyanpur. Circle indicates location of dated wood sample (1430 \pm 80 Y.B.P. by C¹⁴). Note some pot-sherds on the right.



Plate 6. The successive bank line migration of the Khowai river to the right as indicated by several meander scrolls, produced a wide belt of neo-floodplains near Teliamura. Note settlements on the Teliamura Surface (T_3) . The skyline with forest cover shows the uppermost, upper Pleistocene terrace (Kalyanpur Surface $= T_1$).



Plate 7. Historic pottery site containing stratified pot-sherds in unaltered silt sequence on Haora river bank, around Jirania.



Plate 8. Implement-rich layer in the oxidised sand-silt sequence of the Upper Pleistocene formation, on Sanai Gang bank, Sonai Bazar.

ranges must have facilitated transportation of raw materials for tool making, besides providing game for easy hunting near water courses. They probably lived close to the major rivers but immune to devastating floods which must have swept the *Lungas* during the pluvial phase of the early Holocene when the relative sea level was also higher compared to the present. Our Stone Age ancestors of Tripura were, indeed, keen observers of 'geography' for they 'felt' the terrain and used it appropriately (Dy. Director General, GSI, 1983; Ramesh, 1984).

The Stone Age sites mostly occur in 'open stations' mostly in the uppermost, Pleistocene (T_1) terrace lying between roughly 20 m and 80 m above mean sea level. The cultural relics are found profusely scattered in open fields and within the top soil of very pale brown, light brown or pale yellow colour upto a depth of 1.70 m in both disseminated and stratified context (Plates 8, 9). In the Holocene terrace and neo-flood plains, implements showing rolled nature occur, although rarely (Fig. 2).

A large number of artifacts have been collected from about 25 localities spread over 50 km radius around Agartala (Fig. 3). Some of the important sites are located around Teliamura, Jirania, Sonai bezar, Sonaram, Mohanpur and Agartala in West Tripura district and Jamjuri near Udaipur (Gumti Valley) in South Tripura district. The important sites are described below (Fig. 4).

1) Teliamura site: It is located in the outskirts of Teliamura town, in the southern periphery of the U-shaped intermountainous Khowai Valley. The site lies in the complex of the Govt. Agricultural Farm, situated on the left bank of the Khowai river. The artifactual material is found on a small, isolated flat-topped *Tilla* rising from the surrounding valley floor to a height of about 100 m above mean sea level, and measures about $150 \text{ m} \times 50 \text{ m}$ in area. The implements are found strewn on the surface and also disseminated within the top oxidised soil upto a depth of 0.50 m below ground surface. The soil (Alfisol) comprises sandy loam of very pale brown colour, in which the horizon contains profuse small ferruginous pisolites. The cultural material collected from here includes ground stone axes, adze, scrapers, points, grinding stone and some pebble halves of quartzite.

2) Sonai Bazar area: A cluster of five rich sites were discovered in the *Tilles* on the banks of the Sonai Gang river in and around Sonai Bazar, located some 12 km southeast of Mohanpur. These sites are significant because the cultural relics are abundantly found in both lateral and vertical continuity. The site No. 7 located in a cultivated field, is very extensive about 250 m \times 200 m in area and is by far the richest Stone Age site. The tools are found densely scattered on *Tilla* top and slopes and also embedded in the top soil. The tools collected includes adzes, ground axes, bifacial (chopping tool), blade and a large number of flakes. Tiny potsherds of impressed type made of impure clay were found in a small quantity. The significance of which is, however, not so far fully understood. Site No. 5 is located in the weekly market place just on the right bank of Sonai Gang. The implements were found embedded in the oxidised top soil upto a depth of 0.40 m below ground surface. Bairagibari (Site No. 9), a small tribal colony with a few houses, is located on the foot-hill of the Baramura and just on the bank of the Sonai Gang. Large tools including flaked axes and scrapers were collected from here. The Sonai Bazar Scarp (Site No. 10) is located one km west of Sonai Bazar proper on



Plate 9. Stone implements layer in the oxidised sand-silt sequence of the Upper Pleistocene formation (T_1) in Sonai Bazar, around Mohanpur.



Plate 10. Excavations in the oxidised, Upper Pleistocene unit exposing abundant artifacts in Sonai Bazar, around Mohanpur.



Fig. 2. Schematic cross-section of the Khowai Valley, West Tripura district, Tripura state, India (Showing the different geomorphic surfaces with typical landuse and ancient habitation sites).



Fig. 3. Map showing distribution pattern of archaeological sites discovered in West Tripura district, Tripura State, India, during 1981-83.

the Mohanpur-Sonai Bazar road. Two sites were found here close to each other on either side of the metalled road, overlooking the river Sonai Gang. The river flows below the bank scarp of 9 m height. Excavations in the *Tilla* and the river-cutting exposes the *Tilla* unit upto a depth of 9 m (Plate 10). However, the cultural material does not occur beyond the depth of 1.6 m below ground surface. It is interesting to note that the tools here occur in distinct layers, and also in clusters, in oxidised, very pale brown, sandy loam soils at depths of 0.6 m to 1.6 m below ground surface (Plates 8, 9; Fig. 4 A,B). Ground stone axes were found only at the surface whereas, large crudely shaped tools, including scrapers, bifacial (chopping tool), hammer stones and a lot of debitages were found at deeper levels. In site No. 10, unusually large number of calcareous siltstone pieces were found in association with fossil wood artifacts. No ground stone axe was found here.

3) Sonaram Area: The site is situated on a Tilla about half a kilometre west of Sonaram market, on the Sonaram-Mohanpur road. The perennial stream i.e. Aghale Chhara flows about 200 m away from the site. The area is covered by open scrub vegetation. The site occupies about $200 \text{ m} \times 100 \text{ m}$ area. Here the tools occur both on the surface and at depth, upto 0.8 m below surface, embedded in oxidised dark yellowish orange, sandy loam soil showing fining upward sequence (Fig. 4C). The artifacts collected include ground stone axes, limace, scrapers and a number of flakes including a Levalloisian flake. A few tiny pieces of primitive potsherds of grey, dull red to light brown, made of very coarse material were found in the site. The size of the sherds is too small to provide any idea of the shape of the vessels.



Fig. 4. Lithostratigraphic Sections of Stone Age sites in Sadat Sub-Division, Tripura State, India.

In all these sites huge quantities of cores, waste flakes and unfinished tools have been found in association with unrolled artifacts. This suggests the primary nature of the sites.

Typo-technology: Typo-technologically the following broad tool types can be identified from the collections (Fig. 5 a, b, c).

1) Celts (axes) type: These can be sub-divided into four classes viz: (i) completely polished, (ii) partly polished (iii) edge polished and ground and (iv) flaked without grinding. The various shapes include (i) roughly U-shaped types resembling cleaver, (ii) with pointed butt, unlike sharp points of South Indian celts and (iii) very short with flaring edge (similar to SE Asian Neoliths). Axes are prepared parallel to the wood structure. Some show heavy edge damage and wearing marks due to usage. Rarely, axes show re-shaping of the edge indicating re-utilisation. The size of the axes ranges from 5/3.5 to 12/6 cm. Cortex is hardly found on the surface. Some axes are unfinished. Adzes are rare.

2) Scrapers: These are comparatively large; small scrapers also occur. In large scrapers, the dorsal surface contains the cortex and ventral is flat, resulting from removal of one big flake or several small flakes. Re-touches on both ventral and dorsal faces are seen. Scrapers are made on cores and also on flakes. Scrapers on cores are generally bigger in size. Various types viz: end scrapers, side scrapers, concave/hollow scrapers are noticed. Edges are either sharp or steep. Big scrapers are prepared parallel to the primary wood structure.

3) Points: They are big in size $(5.0 \text{ m} \times 4.5 \text{ cm})$ and are different from mesolithic points. These are rare, seen prepared on flake.

4) *Heavy tools:* These comprise only bifacial (chopping tools). They are partly flaked on the body, as a result cortex is still seen. The tools are U-shaped. Most of them show heavy damage indicating constant or heavy use. They are prepared along the wood fabric.

5) *Hammer stones:* These show battering marks on one or both ends, sometimes partly chipped on surface.

6) *Fluted blade cores:* They show removal of flakes from both the ends. These are rarely seen.

7) *Limace (slug):* This shows worked dorsal surface and flat ventral surface. Steep retouches on both sides of the dorsal face are marked. Use-marks are distinct. It must have been used for smoothening of irregular surfaces.

8) *Pick axe:* They are comparatively large in size and crudely flaked. These are rare and have been found in the Baramura (Tertiary range).

9) Miscellaneous types: These include large and small cores as well as large and small flakes, grinding stones and chips. Blade element is rare. The blade type is reminiscent of



Fig. 5(a). Types of Stone axes from West Tripura. 1-5, 9, 11, 12, Ground Stone axes; 6, pecked Stone axe; 7, unfinished adze; 10, unfinished axe.



Fig. 5(b). Assorted Stone Artifacts from West Tripura. I, pebbel tool (?); 2, transverse scraper; 3, blade; 4, core; 5, 10, 13, 14, flakes; 7, polished chip; 8, 12, points; 9, 10, chip.



Fig. 5(c). Some rare stone implements from West Tripura. 1. Grinding Stone; 2, 6, Bifacials (chopping); 3, unfinished adze; 4, point; 5, pecked axe; 7, End scraper; 8, limace (slug); 9, pecked stone axe; 10, prepared core (Levalloisian flake); 11, transverse scraper; 12, polished axe (Garo Hills).

the Haobinian culture of Indo-China. The grinding stones made on fossil wood were collected from some sites along with ground stone axes. They show several concave grinding facets.

The most interesting aspect of the flakes is that most of them are removed from the silicified wood core across or oblique to the wood structure. It is noticed that majority of the flakes, from all the heavy tools like celts, bifacial tools and big scrapers, are removed either across or oblique to the wood fabric and not parallel to it, possibly for controlling the size of flakes. Controlled flaking is extremely difficult in petrified woods, except along an axis transverse to the growth rings. Consequently the tool types

are restricted to mainly tabular varieties. Some artifacts show low patination. Levalloisian flakes are rare. Some celts show use-marks at the edge, oblique to the longer axis of the tool. Thermal flaking is seldom discernible. The tool types on the whole suggest a wood land ecology in the area.

Typologically, the stone tools from Daojali Hading in Assam consist of a variety of ground stone axes (triangular, quadrangular and shouldered variety), grinding stones, pestles and mullers (Sharma, 1979). Whereas the tools from the Garo Hills in Meghalaya, range from crudely flaked tools to finely polished types. Ground stone axes have been collected from other parts of North Eastern Region.

It is remarkable that the stone industry of West Tripura is almost wholly based on the utilisation of silicified fossil wood, procured chiefly from the Tipam sandstone formation of the hill ranges. Broken halves of river pebbles of quartzite, vein quartz and calcareous siltstone (specially in Sonai Gang scarp site) are however, occasionally seen in association with the artifact assemblage. There are clear indications with the artifact assemblage. There are clear indications of the utilization of quartzite pebbles, judging from the working marks on them. It may be important to mention here that no true hard rock is available in Tripura. However, some localised lenses of calcareous siltstone occur towards the core of the ridges. But these rocks could not serve the purpose. So, the nomads depended heavily on the limited resource of fossil woods. Here again, they had to resort to only those woods which are completely silicified (chertified).

Whereas, the neolithic stone industry of Daojali Hading is based on the utilization of sedimentary rocks, mainly hard shale and sandstone and in Garo Hills, on fine grained volcanic rock, namely, basalt.

The absence of fauna in the Stone Age sites is no doubt enigmatic, particularly when we consider the primary and prolific nature of the sites. Systematic excavation of some promising sites is warranted to confirm it.

A perusal of the relevant literature shows that the artifact ensemble, in general, bears close affinity with the tool types of South East Asian Complex, specially the late Anyathian and Neolithic tools reported from the Irrawaddy Valley of Burma (Movius, 1943, 1944, 1953; Dani, 1960 and Sankhalia, 1974).

This conclusion is based on the following grounds:

- 1. Silicified fossil wood is by far the dominant raw material of the Prehistoric tool ensemble of both Burma and Tripura.
- 2. In view of identity of the raw material, the technology of flaking has been adopted in both cases, resulting in production of similar type of implements.
- 3. The Upper Anyathian assemblage is characterised by the presence of true scrapers, points, hand-adzes and pick-like elements. This is remarkably similar to the Tripura assemblage which is dominated by wide variety of core

implements including adzes which comprise both polished and pecked types. Hand axe is significantly absent in both the assemblages.

- 4. The Neolithic celts of Tripura show close semblance with those of Burma as evident from the illustrations given in Dani, 1960 (compare illustrations Fig. 5a 12 with Pl. 55, Nos. 15, 16; Malaya (Fig. 5a 7 with Pl. 44 No. 3; Indochina (Fig. 5a 5 with Pl. 37 No. 4). A thread of uniformity appears to run through Tripura, Anyathian and Haobinian assemblages.
- 5. Thus the present discovery of Prehistoric record of Tripura strengthens the theory that cultural links existed between North East India and South East Asia from the Upper Palaeolithic time onwards, despite the formidable barrier of the Indo-Burman ranges.

Chronology of Stone Age culture: Based on the geomorphological, geological and typo-technological grounds and as well as radiocarbon dating of the implementbearing terrace deposits, the Stone Age assemblage of West Tripura district can be tentatively classified as follows:

- (i) Neolithic assemblage dominated by polished axes and
- (ii) Pre-neolithic assemblage without polished axes but having typological affinity with neolithic tools.

At this stage, it may be difficult to classify pre-neolithic material into standard palaeolithic classification system (e.g. Mesolithic, Upper Palaeolithic, Middle Palaeolithic, etc.). In the light of field data and C^{14} dating of implement bearing formations, the pre-neolithic assemblage appears to be of late Pleistocene age.

Sharma (1984, p. 16), while commenting on the North East India in Neolithic times observes, "The Neolithic tool tradition of North East India which include distinct elements viz, the high percentage of shouldered celts (37 per cent), quadrangular axes and adzes, Jadeite tools and the chord impressed pottery are some of the strong evidences in support of the theory of Eastern Asiatic affinities of the Neolithic cultures of Assam. Further these cultural traits make abundantly clear the distinctive character of the Neolithic cultures of North East India". It is important to point out here that no shouldered tool or Jadeite tool or the chord impressed pottery has been found in Tripura so far. There are however only a dozen or so polished celts in the total collection of about 800 specimens. The rest of the tools consists of some heavy bifacials (chopping tool), big points, fluted blade core, hammer stones and a large quantity and variety of scrapers. From the above traits in conjunction with the field data and radiometric dating it may be surmised that the tool traditions of Tripura predates the Neolithic culture found elsewhere in the region.

CONCLUSIONS

The present discovery brings Tripura in the pre-historic map of India and South East Asia, and it opens up a new vista for understanding the development of Prehistoric culture in the region and its linkage across the barrier of the Indo-Burman

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ranges in the shadowy prehistoric past. An integrated study of prehistory of South East Asia and North East India would throw considerable light on the adaptation of early man in the changing scenario of the tropical environment. The association of Stone Age sites with the Upper Pleistocene terrace, and pottery sites with the Holocene terrace clearly demonstrates man's cultural progress with time.

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