THE MICROLITHIC SITES OF TINNEVELLY DISTRICT, MADRAS STATE

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Of the numerous microlithic sites of India the vast majority are of a late age, ranging well into the Iron Age and possibly the historic period. In view of the lack of true Upper Palaeolithic industries in the European sense in India, it is important to investigate with care all those microlithic sites which suggest at least some geological antiquity. Among these the sites found associated with fossil and Recent red dune-sands called teris, situated in Tinnevelly District of the southern part of Madras State, are of considerable interest both because of their stratigraphical and topographical contents and because of their typology. The present paper reports on observations made in the field, assesses their possible significance and discusses the typology of the industries.

The main group of Late Stone Age sites lies near the coast in Tuticorin and Tiruchendur Taluks in Tinnevelly District. They are known as Teri sites on account of their close association with the large teris or sand-dunes of the region. Today the inhabitants draw their livelihood principally from fishing, salt-panning and agriculture.

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1 Fifth report on the Indian Geochronological Expedition, 1949. Previous reports:
   (i) Stone Age and Pleistocene Chronology in Gujarat, Deccan College Monograph Series, 6 (Poona, 1950).
   (iii) 'The microlithic industry of Langhnaj, Gujarat', Man, 1952, no. 182.
based on tank-irrigation. The coastal plains with their extensive tank-irrigation and rice-cultivation carry a very dense population and were the home of the Tamil civilization of early historic times. The hinterland is formed by the foot-hills of the Ghats and the Mysore plateau. It has generally a lower rainfall, is less densely populated, is essentially a millet-producing area and often forms or has formed a refuge-area for primitive tribes.

It is unfortunate that with the exception of a small collection from Pondicherry the material from Tinnevelly District discussed here is all that is available from the coastal plain. The finds from the inland areas of Mysore are being described by Seshadri.1

1. THE SITES (fig. 1)

Tuticorin and Tiruchendur lie north and south of the Tambraparni river. Apart from a few places such as central Tiruchendur, where marine sandstone rocks of early Pleistocene or Tertiary Age appear, the areas north and south of the river-mouth are made up of late Pleistocene, possibly early Holocene, formations. All sites are situated some distance inland, but in order to understand their geological context, the Recent coastal formations had to be studied. This was done at Tuticorin and on Pandyan Tivou island.

The coast of Tuticorin2 provides an example of what is happening today: an outer bar is being formed at a distance of about 2 miles from the main coast-line. It consists chiefly of coral sand and coarse fragments of marine organisms. South of Tuticorin Bay the lagoon between the bar and the coast-line has been filled in completely, and wind is already playing its part by forming dunes on the lagoon-filling. Similarly, considerable dune-formations exist on the main coast-line north of Tuticorin, where they appear to be superimposed on the next higher level of 20 ft. One thus finds that dunes are being blown on to older land.

Immediately west of Tuticorin, i.e. on the landward side, at Milavittan, sand-pits near the Tuticorin Spinning Mills show sub-recent calcareous sands which are probably of estuarine origin, as they are close to the mouth of the river, south of Tuticorin. They consist of 5 ft. of evenly- and horizontally-bedded slightly yellowish quartz-sand, very slightly weathered to a depth of 2½ ft. Below, a calcareous sand occurs which is almost entirely of organic origin. It contains some quartz-grit and bands of lime-concretions, the latter being the result of eluviation of the soil above. The two beds together appear to represent a fossil-beach overlain by coastal dune-sand. Though not entirely recent (weathering having taken place since their formation), they are geologically very young, since the soils on them are immature, not having reached the stage of formation of a cemented red B-horizon.

As one goes inland, several morphological steps are observed, which appear to represent successive lagoon-floors of a greater age. The steps are often marked by lines of tanks constructed on the bluff between two levels. The first group of tanks passes about 2½ miles west of Tuticorin. Immediately behind it dune-sands occur, which are covered with forest and show a mature soil-profile with about 2 ft. of a bleached A-horizon and about 5 ft. of red cemented B-horizon (site at mile 26 on Tuticorin-Palamatta road.)

2 It is an off-shore bar coast as described by Zeuner, 'Pleistocene shore-lines', Geol. Rundschau, 40, 1 (1952), pp. 39-50.
No implements were found at this point, but the soil-profile remains the same further inland, except that in many places the A-horizon has been blown away, following deforestation and leaving the surface of the B-horizon exposed. Any implements that may have been incorporated in the A-horizon part of the profile or were lying on the original land-surface would thus have sunk down onto the surface of the B-horizon. This process of concentration must have greatly enriched the teri-surface sites.

THE TERI SITES OF TINNEVELLY
TERI SITES —— •
MODERN CITIES ——
SCALE OF MILES

Fig. 1
The section at milestone 26 lies on the 20-ft. level. The next higher level is 50 ft. above the sea and is marked by a line of tanks extending from Kuttampuli to Erak on the Tambraparani river. North of Tuticorin, however, the Korampallam tank appears to continue this line, although it is conceivable that it belongs to the step from the 20 ft. level down to the recent one. Inland from this line of tanks the land lies at 50 to 100 ft. with many dunes (teris) superimposed and attaining sometimes to 200 ft. above sea-level. These dunes consist of reddened sand and are in all probability originally fossil-dunes, revived by deforestation and added to by A-horizon material from the soil-sections of the type described.

Round the teris north of Sawyerpuram three microlithic sites are situated: Kuttampuli and Sawyerpuram on the south and Kuttalangulam on the west. The implements are heavily stained with red hydrated ferric oxide, which implies that they come from within the weathered sand of the original soil-sections. They are, therefore, likely to be older than the teri-accumulation, though perhaps not much so, and certainly older than the red weathering. This is confirmed by a site south-west of Subrahmanyapuram, where the B-horizon has been cut into by erosion and where both cores and flakes are found in the iron-cemented sand.

This observation was correctly made by Foote who, in describing the Sawyerpuram site, states that 'imbedded in the red loam were fragments of chert, silicified wood and limpid quartz, all three stones foreign to that part of the country.' 1 In Foote's day, however, a pedological interpretation of the sections was not possible.

The pedological viewpoint enters into the description of the same site by Aiyappan. 2 He regarded the weathering as lateritic, which, upon re-examination, has proved to be mistaken, as silica is preserved in it. The soil of the teri-area, though as red as any laterite, belongs to the rollehm group of Kubiena, 3 and, in the surface-sections containing the artefacts, it is immature. Its peculiarities may eventually require a special name, but this is not relevant here.

What is relevant is that, following the formation of dune-sand and lagoons, weathering occurred, and this was followed by a second phase of wind-activity. The latter may be equated with the recent or sub-recent phase, which is also represented by the modern lagoon. Between it and the earlier lagoon-phase, therefore, the weathering intervened, and it corresponds thus to a drop of the sea-level from 20 ft. to zero, or even to a negative oscillation, and the prehistoric sites would belong to a phase when the sea-level stood about 20 to 30 ft. higher than today. The original teri-sands, i.e. not the secondary dunes that are mobile at the present day, would therefore be comparable with the recent sand-accumulations north of Tuticorin. The important conclusion thus arrived at is that these microlithic sites are older than a phase of ancient weathering and are associated with a sea-level somewhat higher than at present.

It would be rash to fit this phase into the scheme of relative climatic chronology. Assuming that no earth-movements have interfered, three possible correlations are available for a sea-level of 20 to 30 ft. It could be Late Monastirian, Epimonastirian, or Postglacial. 4 The first alternative would place it in the Last Interglacial. It is the least

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likely, because of the immature condition of the observed soils. The second would place it in the first interstadial of the Last Glaciation of the north temperate zone, still in the Upper Pleistocene. This is conceivable but cannot be decided without further geological investigation. The third alternative is at the present the most likely as it would raise no typological difficulties. It would correlate the phase with the post-glacial climatic optimum of Europe. This has been variously dated, but its maximum eustatic effect is likely to have occurred in Late Atlantic times, about 4000 B.C. This date is here tentatively suggested for the Teri industries, with the proviso that further geological research may push them back into the Pleistocene. In view of the scarcity of datable microlithic sites, not only in India but elsewhere, the Teri sites must be regarded as important.

Returning now to the description of the geological and topographical set-up of the area, it is possible that there is an even higher land-surface at approximately 100 ft. above sea-level, which, however, cannot be clearly separated from another 50-ft. level. South of the Tambraparni river, the beach-levels lie somewhat further east, which appears to be due to the presence of older rocks at Tiruchendur.

South of Tiruchendur the coast-line turns south-west. The sequence of levels, however, appears to be the same as that north of the Tambraparni. Important sites occur near Megnanapuram, north of which lies the Kudiraimoli Teri. At Megnanapuram, on the 50-ft. land-surface, the A-horizon has been denuded and the B-horizon not exposed but even cut into and destroyed over parts of the area. Here, many sections are available in the B-horizon, in which flakes were found. The industry of Megnanapuram differs from the others in the lack of geometric forms, and it is possible that it is older than the other industries, being associated with the sands of which the 50-ft. land-surface is composed. Only 1½ miles east is Manadu, a site with a nondescript flake-industry, which includes a single-trimmed point of a type which occurs at Sawyerpuram. This is a somewhat doubtful specimen (fig. 5, 6) but, if accepted, may be taken to suggest that the Manadu industry at least belongs to the same group as those of the Sawyerpuram neighbourhood.

We will now examine the Tinnevelly sites individually and classify the material found there on the basis mainly of the collection which Dr. B. Subba Rao brought on loan to the Institute of Archaeology, University of London, in 1954. The writers are, however, under the impression that this collection did not include everything and that a more complete set might have given to the industry a slightly more Upper Palaeolithic aspect. The material here recorded is, on the whole, typically microlithic, with geometric elements.

2. THE INDUSTRIES

A. Megnanapuram (58H/15, C1)

It is a hamlet lying half a mile south-west of the Kudiraimoli Teri. The site lies on the 50-ft. beach-level. This fact, together with certain typological differences between the material from Megnanapuram and that from other sites in the neighbourhood, may be taken as indicating an antiquity greater than that of the Sawyerpuram group. The

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2 This and such subsequent references are to the 1 in. = 1 mile topographical map-sheets of the Survey of India.
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differences consist of the absence of blades of geometric forms and points of all kinds. On the other hand, the similarity of the discoids and chopping tools found at this site and others in the neighbourhood might be taken as a link between them. However, this may alternatively be accounted for by the long duration of local tradition in matters of technique, which is known from many parts of the world. All the material is as deeply stained with hydrated ferric oxide as that from the majority of the other sites. The following tools are found in the collection:—

**Hammer-stone** (one), an almost cylindrical quartz pebble battered at both ends. **Flakes and pieces** (one hundred and fiftyfive), many showing signs of considerable use. **Discoids** (nine), bifacial and unifacial types varying greatly in size. (Fig. 5, 2-4.) **Chopping tool** (one). (Fig. 5, 5.) **Concave scraper** (one), on a flake. **Simple point** (one), very crude. (Fig. 5, 1.)

All sites that follow, except Pondicherry, appear to belong to one phase, the Teri industry proper, with Sawyerpuram as its type-site.

B. Kuttampuli (58L2, A1)

This and the two following sites are situated round a *teri* lying immediately north of the Thambraparni river. Owing to deforestation the orange sand, which formed the A-horizon of the old soil-profile, is being blown away. The removal of the sand leaves a residual pavement or hardpan, formed by the old B-horizon. Stone tools and potsherds occur on the surface, but the nature of their association is uncertain. The potsherds are of the Black-and-red Ware closely similar to sherds from the urn-burials at Adichanallur, assignable to the centuries round about the beginning of the Christian epoch. As it is highly unlikely in view of observations made in the field that the stone industry is as late as this, it seems probable that the association is purely accidental. All specimens consist of quartz and various coloured cherts. They are stained deep orange-brown, not quite so heavily perhaps as those from Sawyerpuram, but to a comparable degree. The tools may be classified as follows:—

**Blade-flakes, flakes and fragments** (one hundred and seventyfour), many of which are considerably used but none retouched. The majority have unprepared striking platforms, forming a wide angle with the flake-surface. The angle varies, however, to include a few with a right angle and a still smaller number showing preparation of the striking platform. (Fig. 2, 24.)

**Blades** (twelve), all used, and five broken. **Backed blades** (four), all broken. **Hollow scraper** (one), apparently having had one end snapped off after being fairly heavily used. (Fig. 2, 23.)

**Discoids** (twentyone), varying greatly in size and thickness. There are both bifacial and unifacial examples, and the thinner ones of both types show evidence of heavy use and possibly occasional retouch along the straightest and sharpest edge. (Fig. 2, 25.)

**Chopping tools** (three), grading into the largest bifacial discoids. The main difference between the two groups is that those called chopping tools fit conveniently into the hand, but the discoids do not, suggesting that the latter might have been hafted. (Fig. 2, 26.)
UNCLASSIFIED EDGE-TOOLS (two), small flakes with pressure-flaking on the upper surface from one edge, closely resembling those from Kuthankuli (fig. 2, 12).

LUNATES (six), of varying sizes. One appears to have a serrated edge, possibly deliberate (fig. 2, 21). Four are made on blades and two on flakes.

TRANSVERSE ARROW-HEADS (five), one (fig. 2, 19) having been made on a blade-flake, snapped off at one end and retouched at the other, in a manner similar to many specimens from Ceylon. Of the remaining four, two are made on blades and the other two on flakes. Two show considerable use-marks or ‘nibbling’ along the sharp edge. (Fig. 2, 20.)

SIMPLE POINTS (four), three of quartz and one of chert. Rather crude and possibly fortuitous.

ASYMMETRICAL POINTS (two). (Fig. 2, 17 and 22.)

UNIFACIAL POINT (one), made of quartz and pressure-flaked all round the upper surface only. The centre of the upper surface, however, remains rough, and the striking platform is unprepared. (Fig. 2, 18.)

BLADE-CORES (four), all rather coarse and allowing for the removal only of very short blades.

C. KUTHANKULI

This site does not appear on the Survey of India maps of Tinnevelly District, and it seems possible that the name is simply a different spelling of Kuttampuli and that two separate collections were made from the same site by different persons. The raw material is quartz and chert as at Kuttampuli, with a higher proportion of quartz among the waste material and a higher proportion of chert among the finished specimens. All the material is stained in a colour similar to that from Kuttampuli. The tools may be classified as follows:—

FLAKES AND FRAGMENTS (four hundred and seventyone). Among the flakes the angle of the striking platform to the flake-surface varies greatly. A very few specimens have right-angle prepared striking platforms and are struck from prepared cores. (Fig. 2, 14.) But these are few in number.

HORSE-HOOF SCRAPER (one). (Fig. 2, 13.)

DISCOIDS (eight), bifacial and unifacial specimens of various sizes. (Fig. 2, 16.)

UNCLASSIFIED EDGE-TOOLS (two), one with pressure-flaking all round from both sides, leaving a small unflaked area in the middle of each face, and the other pressure-flaked from one side only along two edges. (Fig. 2, 11 and 12.)

LUNATES (fourteen), of varying sizes, eight made on flakes and six on blades. (Fig. 2, 8, 9 and 15.) They grade into the transverse arrow-heads.

TRANSVERSE ARROW-HEADS (five), two made on flakes and three on blades. (Fig. 2, 10.)

SIMPLE POINTS (seven), of varying shapes and sizes, struck to form points but unretouched. (Fig. 2, 1 and 5.)

SINGLE-TRIMMED POINTS (six), all leaf-shaped and tending to be rather thick in section. (Fig. 2, 2 and 3.)
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Asymmetrical points (four). (Fig. 2, 4.)

Double-trimmed points (seven), all somewhat irregular and several broken.

Bifacial points (two), both giving the impression of being small leaf-shaped points which have had part of the base broken off diagonally and the broken edge then coarsely retouched. Similar specimens occur at other sites in Tinnevelly and also in Ceylon collections alongside more regularly-shaped bifacial points. One must infer either that they were deliberately made in this way or that bifacial points regularly broke in this way in use and were possibly re-used for some other purpose. (Fig. 2, 6 and 7.)

If the collections from ‘Kuttampuli’ and ‘Kuthankuli’ were made from the same site, they illustrate the differing tastes of the collectors. On the grounds of technique and état physique, however, there is no reason why they should not come from the same site.

D. Sawyerpuram (Sayapuram) (58L/2, A1)

This site is historically the most important, for it was first described by Foote and subsequently by Aiyappan.¹ Foote already noticed that artefacts occur in the ‘red loam’ as he called it. He also mentions a sherd, but this lay on the surface as it had suffered from wind-polish. The site was revisited by one of the writers, and artefacts were again recovered from the cemented B-horizon, found to be similar to those of Kuttampuli. The raw material, which consists of quartz and chert in more or less equal quantities, is, if anything, slightly more heavily stained than that from Kuttampuli. The tools may be classified as follows:

Hammer-stone (one), a quartz pebble battered at both ends.

Flakes, blade-flakes and fragments (two hundred and ninety-five), many used and some with possible retouch. The flakes vary greatly in shape and size, a small number having a right-angle striking platform and an occasional specimen a prepared striking platform. (Fig. 3, 10 and 11.)

Blades (six), short and thick, used but not retouched.

Backed blades (nine), three complete and six broken. One of the latter has an irregular retouch along both edges, and four are small sections of fine blades with a steep regular retouch along one edge. The remaining four, including the three complete specimens, are thick blades with steep retouch and battering along one edge. (Fig. 3, 7.)

Discoids (eight), of varying shapes and sizes. (Fig. 3, 13.)

Lunates (four), of varying shapes and sizes. (Fig. 3, 3, 4, 8 and 9.)

Transverse arrow-heads (three), two with retouch along one edge only, as in Ceylon. (Fig. 3, 5 and 6.)

Asymmetrical point (one), tip broken. (Fig. 3, 2.)

Bifacial almond-shaped point (one), pressure-flaked on both sides, along both margins, but not along the butt, which is unworked. It has an unprepared striking platform, making a wide angle with the flake-surface. (Fig. 3, 1.)

Microburin (one). (Fig. 3, 12.)

² Aiyappan, op. cit.
E. Kattalankulam

No place of this name appears on any of the Survey of India maps, but one village-name, Kuttalangulam (58L/2, A1), appears to be a different spelling of the same name. No description of the site is available, but as it is close to Sawyerpuram and Kuttampuli, and as the material is stained to a degree similar to that from those sites, it is probably derived from a similar deposit. The raw material is quartz and chert. The tools may be classified as follows:—

Flakes and pieces (one hundred and nine), many used.
Retouched flakes (eleven), none with any definite form.
Blades (twenty), many used and many broken.
Discoids (twelve), nine bifacial and three unifacial. (Fig. 4, 26 and 27.)
Lunates (four). (Fig. 4, 28.)
Simple points (eight), triangular in form. (Fig. 4, 24.)
Single-trimmed point (one), made of quartz and very crude. (Fig. 4, 22.)
Double-trimmed point (one), broken. (Fig. 4, 23.)
Asymmetrical points (two). (Fig. 4, 25 and 29.)
Blade-cores (seven), having had short, thick blades removed and being very irregular.

F. Kulattur

No geological information is available regarding this site, and it is not marked on the Survey maps.

The raw material of the implements is chert, quartz and rock-crystal, with chert predominating among the finished tools. Some specimens are slightly stained yellowish brown or have brown dust adhering to them, but none are deeply stained like those from Sawyerpuram. The tools may be classified as follows:—

Flakes and fragments (approximately two hundred), many used and almost all of quartz.
Blades (ten), seven complete and three broken. (Fig. 4, 17.)
Backed blades (eleven), all short and thick. (Fig. 4, 6.)
Obliquely truncated blades (two). No comment.
Side-scrappers (four), all on flakes.
Concave scraper (one), a notched flake. (Fig. 4, 21.)
Discoids (fifteen), of varying sizes, bifacial and unifacial. (Fig. 4, 16 and 18.)
Worn tula flakes (two). (Fig. 4, 19 and 20.)
Lunates (forty-nine), with great variations of size and shape and merging into triangles, asymmetrical points and transverse arrow-heads. (Fig. 4, 9, 10 and 11.)
Triangles (four). (Fig. 4, 12.)
Transverse arrow-heads (fourteen). (Fig. 4, 13 and 14.)
Simple points (ten), triangular and leaf-shaped and varying between these two forms. (Fig. 4, 1 and 2.)
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Single-trimmed points (sixteen), including many variant shapes. (Fig. 4, 3, 4, and 5.)

Asymmetrical points (fifteen), including many variant shapes. (Fig. 4, 7 and 8.)

Awl (one). (Fig. 4, 15.)

Blade-cores (two), semi-cylindrical and very coarse.

Further information about this site would be of great value, as the tools clearly belong to the same industrial tradition as those of the Teri sites, while being almost completely without the usual red stain. This suggests that they either come from a different type of site and belong to the surface rather than the B-horizon, or else they have been exposed long enough for an original film of hydrated iron oxide to be removed by solution. The first alternative appears more likely. The absence of bifacial points from this collection is not necessarily an important factor, as their numbers are always small, amounting to only one or two specimens in collections twice the size of this one.

G. PUTTAN TARUVAI (58H/15, C2)

This site was not visited and no information is available about it except that which can be gained from the map, viz. that it lies at the foot of a teri, on the inland side. The tools are heavily stained with red hydrated ferric oxide, as at Sawyerpuram, which indicates a similar type of site. The raw material is chert and quartzite as before. The stone implements are accompanied by shells, animal teeth and bones, pottery and lumps of kankar which were also found on the site. The pottery, although much weathered and quite fragmentary, is recognizable as the Black-and-red Ware similar to that at Kuttampuli (above, p. 9). However, the pottery is not stained like the stone tools, which indicates that it was deposited on the surface and never incorporated in the soil. The shells and teeth are somewhat stained, but the nature of their association with the stone industry is uncertain, as there is no information as to how they were found. The following classification can be made of the stone tools:—

Flakes and fragments (approximately five hundred), many having clearly been used and the majority being of quartz.

Blades (four), all broken.
Backed blades (two), both broken.
Obliquely truncated blades (three). No comment.
Side-scrapers (five), on thick flakes.
End-scaper (one). (Fig. 3, 20.)
Thumb-nail scraper (one). (Fig. 3, 21.)
Discoids (six), unifacial and bifacial. (Fig. 3, 23.)
Chopping tool (one), made on a small pebble. (Fig. 3, 24.)
Lunates (three), all rather coarse. (Fig. 3, 19.)
Transverse arrow-heads (two). (Fig. 3, 22.)
Simple points (six), five triangular and one leaf-shaped. (Fig. 3, 14 and 15.)
Single-trimmed points (two), both leaf-shaped. (Fig. 3, 16 and 17.)
Asymmetrical point (one). No comment.
Bifacial point (one), pressure-flaked along both margins, part of the base apparently broken off diagonally and the broken edge coarsely retouched, similar to those from Kuthankuli. (Fig. 3, 18.)

H. Surangudi

This site does not appear on the Survey maps of the area, but the raw material and état physique and tool-types are closely similar to those of the collections from the Sawyerpuram sites.

The material is all heavily stained with red hydrated ferric oxide and consists of quartz with a few pieces of chert and quartzite. The collection may be classified as follows:—

Blade-flakes, flakes and fragments (ninetyfive), some showing signs of use.
Backed blade (one), thick in section and battered on the retouched edge.
Discoids (three), one bifacial and two unifacial.
Lunate (one), large and well-made.
Blade-core (one), small.

I. Nazareth (58H/14, C3)

The site is located on the inland side of the Kudiraimoli teri, at the north-east corner of the teri which lies south of the Tambraparni river. All the material is stained yellowish brown. On the evidence of this collection alone it is doubtful whether any of the specimens may be regarded with certainty as the result of human labour. The label accompanying the collection reads ‘3 almond-shaped points’, and these, if they were present, would endorse the rest of the collection. In their absence the remainder of the specimens may be classified as follows:—

Flakes and fragments (thirtyseven), some with possible use-marks.
Semi-cylindrical blade-core (one). No comment.
Almond-shaped points (three), not available for study.

J. Manadu (55L/3, A1)

This is the name of a hamlet about 1 mile south-east of the Kudiraimoli teri, about a mile from Megnanapuram and the Sawyerpuram sites.

With two exceptions there are no definite tool-types, but a number of the flakes collected has a sufficiently acute angle between the striking platform and the flake-surface to suggest that they were struck by man (fig. 5, 8). In addition, some bear what appear to be use-marks. The exceptions are a single-trimmed point (fig. 5, 6) with signs of heavy use in addition to the retouch and a small core from which flakes have been struck and which appears to have been used as a discoid or a chopping tool (fig. 5, 7).

K. Kayamoli (58L/2, A3)

This further site was visited by one of the writers, but no collection from it is available for study. It lies on the eastern fringe of the Kudiraimoli teri.
Fig. 2. 1-16, from Kuthankuli: 1 and 5, simple points; 2 and 3, single-trimmed points; 4, asymmetrical point; 6 and 7, bifacial points; 8, 9 and 15, lunates; 10, transverse arrowhead; 11 and 12, unclassified edge-tools; 13, horse-hoof scraper; 14, flake; 16, discoid. 17-26, from Kuttampuli: 17 and 22, asymmetrical points; 18, unifacial point; 19 and 20, transverse arrow-heads; 21, lunate; 23, hollow scraper; 24, flake; 25, discoid; 26, chopping tool. See pages 9-11
Fig. 3. 1-13, from Sawyerpuram: 1, bifacial almond-shaped point; 2, asymmetrical point; 3, 4, 8 and 9, lunates; 5 and 6, transverse arrow-heads; 7, backed blade; 10 and 11, flakes; 12, microburin; 13, discoid. 14-24, from Puttan Tarwai: 14 and 15, simple points; 16 and 17, single-trimmed points; 18, bifacial point; 19, lunate; 20, end-scraper; 21, thumb-nail scraper; 22, transverse arrow-head; 23, discoid; 24, chopping tool. See pages 11, 13 and 14.
Fig. 4. 1-21, from Kulattur: 1 and 2, simple points; 3, 4 and 5, single-trimmed points; 6, backed blade; 7 and 8, asymmetrical points; 9, 10 and 11, lunates; 12, triangle; 13 and 14, transverse arrow-heads; 15, axe; 16 and 18, discoids; 17, blade; 19 and 20, worn tula flakes; 21, concave scraper. 22-29, from Kattalankulam: 22, single-trimmed point; 23, double-trimmed point; 24, simple point; 25 and 29, asymmetrical points; 26 and 27, discoids; 28, lunate. See pages 12 and 13.
Fig. 5. 1-5, from Megnanapuram: 1, simple point; 2-4, discoids; 5, chopping tool. 6-8, from Manadu: 6, single-trimmed point; 7, discoid or chopping tool; 8, flake. ¼. See pages 9, 10 and 14
3. GENERAL OBSERVATIONS

With the probable exception of Megnanapuram, the tools from all these sites may be regarded as belonging to a single industrial tradition and as constituting an industry in the true sense. As material from all the sites except Kulattur is more or less heavily stained with red hydrated ferric oxide, indicating that it is derived from a soil-profile now in process of denudation and forming part of a series of fossil aeolian sands, it seems reasonable to call this the Tinnevelly Teri industry. The distinguishing features of the industry are the use of quartz and chert as raw materials in more or less equal quantities and the presence of geometric forms made indiscriminately on flakes and blades, together with discoids, small chopping tools and points of various types, including a small number of bifacial pressure-flaked specimens. The latter are of particular interest, as they do not occur elsewhere in India, though they are found in Ceylon in small numbers. As far as is known at present, this is the only occurrence of the pressure-flaking technique in India. The use of quartz is common to Ceylon, Tinnevelly, the Mysore plateau and Calicut, as is the indiscriminate use of flakes and blades for geometric forms. Another factor which is common to these regions and possibly concomitant to the use of quartz as a raw material is the poor quality of the blades compared with those of north-west and central India and the north Kanara region, where chert, chalcedony, jasper and other more tractable materials with a smooth conchoidal fracture were used almost exclusively. The elaborate preparation of cores and the production of long narrow blades practised further north is obviously impossible when quartz is used. The resulting short thick blades and amorphous cores are typical of the southern industries. The reason for the choice of quartz as a raw material when other more tractable kinds of silica were available remains a mystery, as it is in Ceylon.

4. PONDICHERY

The only other group of artefacts that has been reported from Tamilnad is a small collection made by Bonnois in Pondicherry, now in the Musée de l'Homme in Paris. Though it does not form part of the Tinnevelly Teri area, it has to be discussed in this context.

The flaked tools are all of chert and other kinds of silica with a conchoidal fracture, and the whole assemblage is typical of the south Indian Neolithic. It would appear that, with the change to a neolithic economy, quartz was abandoned as a raw material for tool-making. This is similar to the change which can be observed further north in Bellary. The tools were all stained reddish brown, similarly to those from the Teri sites, but unfortunately no information regarding the site where they were found was to be had (nor whether they all came from one site). It is, therefore, impossible to tell whether the cause of staining was the same. The collection may be classified as follows:—

Flakes (five). No comment.
Blade (one), broken.
Backed blades (two), one with steep retouch, and one with rather shallow delicate retouch.
Truncated blade (one). No comment.
Stone axe-blades (seven), some ground and pecked, some only ground, but all similar to types from the Deccan.
SPHEROID RUBBERS (three), pecked all over.
There were fragments of pottery, also heavily stained and unidentifiable.

5. CONCLUSION

Thus, in Tamilnad we find, on the one hand, the Teri industry unaccompanied by axes, pottery, etc., and almost certainly made by hunting or fishing people who made their temporary encampments on or near the coast, and, on the other hand, an industry which, in its raw material and tool-types, closely resembles the blade-industries of the neolithic and chalcolithic cultures further north, and apparently accompanied by stone axes. In both cases, the tools are considerably stained with hydrated ferric oxide, but owing to lack of information it is impossible to establish the cause of staining in the case of the second group. The relationship in time of the two groups also remains uncertain, although the geological position of the Teri industry indicates a considerable antiquity for them, prior to the appearance of the neolithic culture in the region. The industry from one of the Teri sites, Megnanapuram (above, p. 8), may be regarded as representing an earlier stage in the culture-sequence of the region, prior to the introduction of the blade and geometric forms. The similarity of the other tool-types, however, suggests a continuity between this and the main groups of the Teri industry. We may thus postulate a sequence of three industries from the Tamilnad coast: an earlier Teri industry consisting of flake and core tools: a later, or main, Teri industry similar to the former but including blades and geometric forms; and a neolithic blade-industry, accompanied by stone axes and pottery.

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