

ARCHAEOLOGICAL EXPLORATIONS IN THE ANDAMAN ISLANDS

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From January to April this year (1985) a survey was carried out in the Andaman Islands (Figure 1) with a view to locating potential archaeological sites for excavation, and to obtaining samples for radio-carbon dating. The survey was part of a two-year research programme that aims to elucidate the origins of the Andamanese.

In all, 39 shell midden sites were located this year, and the one at Chauldari, which was investigated in 1959-60 by P.C. Dutta (1962), was partially excavated. Samples of material were collected from various sites in order to derive a series of basal dates that might provide an idea of the duration of human occupation on different islands. As many of the data are still to be analysed, this article will be concerned mostly with general observations on the types and locations of the sites.

In order to ascertain whether sites existed on all the major islands, brief exploratory trips were undertaken from the administrative headquarters of each of them, namely, North Andaman, Middle Andaman, South Andaman, as well as Baratang Island and Little Andaman Island.

It would have been virtually impossible to trek through dense tropical forests and mangrove swamps without the guidance and help of forest officers and forest guards who knew the area well. Interestingly enough, sites are invariably situated close to sources of freshwater, a vital resource which also determines the locations of the camps of the Forest Department. Hence, it is hardly surprising to find the juxtaposition of the Forest Department camps with middens.

The entire western portion of Middle Andaman and South Andaman, an area of approximately 800 sq. km, had to be excluded from the research programme as this area constitutes the Jarawa Reserve. Although the local government has established friendly contacts with a small group of Jarawas, most of them are still hostile, and are, therefore, unapproachable.

ENVIRONMENT

The Andaman Archipelago comprises 257 islands which encompass an area of about 6334 sq. km. Luxuriant tropical forests cover the hilly terrain which reaches a maximum elevation of 731.5 m. Beaches and lagoons are frequently bounded by coral reefs which form the

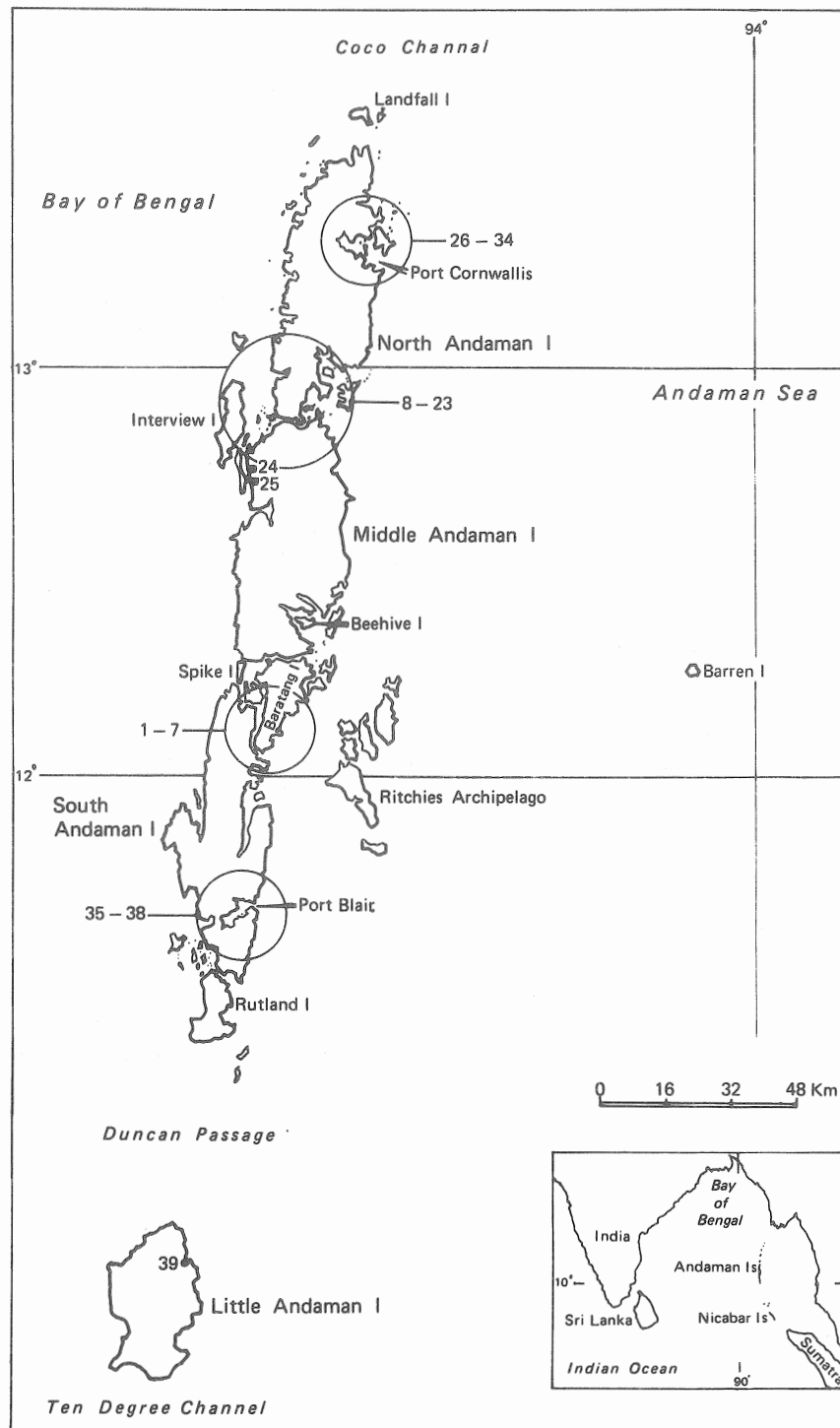


Figure 1. The Andaman Islands, showing locations of site surveys.

<u>Site</u>	<u>Location</u>		<u>Area (sq. m)</u>	<u>Height (m)</u>	
	<u>Latitude</u>		<u>Longitude</u>		
1	12°	15'	92° 44'	263.86	2
2	12°	25'	92° 45' 10"	160	2.6
3	12°	25'	92° 43'	60.9	0.20
4	12°	10' 5"	92° 45' 5"	306.24	1.7
5	12°	10'	92° 42' 25"	147	1.2
6	12°	5' 10"	92° 45' 5"	235.2	0.70
7			D E S T R O Y E D		
8			D E S T R O Y E D		
9	12°	59'	92° 55'	168.48	1.2
10	12°	52' 33"	92° 51' 25"	134.32	1.2
11	12°	52' 37"	92° 52'	150	2
12	12°	59' 10"	92° 52' 32"	221.2	2.3
13	12°		92° 52' 30"	193.68	1.5
14	12°	55'	92° 30' 24"	58.8	0.70
15	12°	55'	92° 30' 22"	72.16	0.70
16	12°	55' 4"	92° 30' 21.5"	361.2	2.2
17	12°	55' 3"	92° 30' 21"	275	2
18	12°	56'	92° 30' 20"	182.32	0.50
19	13°	1'	92° 56'	120	0.30
20	12°	52' 10"	92° 51' 31"	215.9	1.5
21	12°	55' 22"	92° 47' 31"	324	1.2
22	12°	52' 31"	92° 47' 32"	628	1.7
23	12°	22' 30"	92° 42' 35"	184	2.3
24	12°	42' 10"	92° 45'	180	3
25	12°	42' 30"	92° 47' 30"	427.04	3
26	13°	22' 29"	92° 59'	210	1.6
27	13°	22' 30"	92° 59' 5"	285.6	0.50
28	13°	19'	92° 57' 35"	260.7	1.3
29	13°	22'	92° 58'	272	2
30	13°	19'	92° 39'	144	1.4
31	13°	18' 10"	92° 39' 2"	182	1.2
32	13°	17'	92° 37' 10"	224	3
33	13°	15' 10"	92° 37' 5"	161.88	0.70
34	13°	14. 5"	93° 20' 32"	256	0.70
35	11°	38'	92° 42' 30"	220	2.4
36	11°	37' 35"	92° 40' 22"	448	2.5
37	11°	37' 24"	92° 40' 24.5"	166.4	0.50
38	11°	37' 24.5"	92° 40' 24.5"	525	4.45
39	10°	47' 5"	92° 34' 5"	50	0.20

Table 1 : The locations and sizes of middens in the Andaman Islands

outer margin of the islands. Mangrove swamps extend along channels and creeks and account for one-tenth of the area of the Andamans.

The south-west and north-east monsoon winds bring heavy rain (annual mean about 350 cm) from mid-May to mid-November. The rest of the year is comparatively dry, the average annual temperature being 30°C.

Geologically, Eocene sandstones and shales predominate, while conglomerates, limestones and serpentinites also occur.

SIZES OF SITES

Table 1 indicates the locations and sizes of the middens, with the exceptions of numbers 7 and 8 which were almost entirely destroyed, most of the shells having been removed for the manufacture of lime.

Scatters of mollusc and gastropod shells were noticed on Bluff Island and appeared to be the result of recent Jarawa activity, for this island is part of their territory. These locales are not included in the list of sites, although it is noteworthy that the scatters are thin and are superimposed by bones of spotted deer (introduced to the islands in the 1920s, but apparently not hunted by the Jarawas) that had been killed by poachers.

The average basal area for the middens is 234.02 sq. m., while the mean height is 1.6 m. Average lengths and widths are 17.55 m and 12.47 m respectively. It is interesting to note that the height of a midden was once associated with pride in the number of shellfish that were collected, and the animals that were hunted. This probably encouraged refuse heaps to be built up more rapidly and higher than they otherwise might have been. However, the introduction of the dog in the last century facilitated hunting to a considerable extent, thus diminishing the prestige to be gained from the returns of the hunt (see Man 1881-2:269). Moreover, iron became easily available after the establishment of the British penal colony at Port Blair in 1858, thus rendering hunting implements more effective.

LOCATIONS OF SITES

The shell middens are generally located on rocky platforms, just behind or within the mangrove belt that borders the innumerable creeks and sheltered bays. While the majority of the sites are found within 1 km of freshwater springs or streams, some, like numbers 10 and 11, are situated 3 to 4 km away from sources of drinking water. Undoubtedly, these water sources determined the locales of semi-permanent or permanent encampments, as witnessed by clusters of sites around perennial springs (e.g. sites 14 to 18 on Swamp Island, 30 to 33 in North Andaman, and 36 to 38 in South Andaman). The densities of sites seem to vary from about 2 or 3 to 5 middens per sq. km.

At this stage it is difficult to recognise in the archaeological record any sharp differentiation between inland and coastal camps. Most of the islands are narrow enough to have allowed individual bands to have access to both the interior forests and the sea. Separate inland and coastal groups are reported, however, in the ethnographic literature, and were termed eremtaga (inland) and aryoto (coastal). Man (1881-2:281) noted that those groups who lived inland used to deposit their rubbish at some distance away from their village in order to be free of offensive odours. The aryoto, on the other hand, who were more mobile owing to their greater dependence upon coastal resources, and who tended to migrate more in response to changes in wind direction (which in turn determined local fishing and turtling conditions), were not so concerned about sanitation, allowing refuse to accumulate close to their encampments.

The possibility that most of the archaeological middens were associated with long-term occupation is supported by the observation of Cipriani (1960:69, 1966:80) that middens formed as a result of rubbish being thrown out of communal huts, which are open on all sides near the ground. These huts generally served as semi-permanent shelters and could accommodate 50 to 80 people at one time. With the help of Onge informants, Cipriani (1960:69,76) compiled a list of communal huts no longer in existence, on the basis of the locations of the shell middens in Little Andaman Island. It appears that these sites were abandoned from time to time and others were established nearby, either due to the death of one of the members of a group (when it was customary to leave camp for about 3 months) or due to environmental factors. For example, at Tombebuea in Little Andaman it was noted that a communal hut had been shifted from its former position and rebuilt closer to the sea, for recent tectonic movements in that part of the island had resulted in the uplifting of the coast, thereby obstructing the sea breezes (Cipriani 1960:73). This shows that locales were chosen after taking into consideration a number of factors.

Unfortunately, due to the sharp decrease in the Negrito population (probably less than 300 individuals exist today, including the Great Andamanese, Jarawas, North Sentinalese and Onge) communal huts are no longer built, thus rendering it difficult to study the processes of midden formation. However, molluscs still contribute to the diet of the Jarawas and Sentinalese, and probably the small band of Onges inhabiting South Bay in Little Andaman.

FACTORS CAUSING DISTURBANCE/DESTRUCTION OF SITES

1. Out of the 39 middens located this year, 15 (38%) are being steadily eroded by tidal waters, which is not surprising as local subsidence and sea-level fluctuations are well-known phenomena in the Andamans. For example, sites 9,14,15,21 and 23 are located along the coast, and have literally been cut in half by the sea. In the case of site 21 I was informed by an elderly Karen fisherman

that approximately 30 years ago he had seen about 50 Andamanese camping beside this midden (not on it), at the very spot that is now being washed away by the sea. This provides an insight into camping patterns in the early part of the century, besides indicating the extent to which old sites were and are being destroyed by pedoturbation.

2. Eleven sites, especially those situated in the mangroves, have disturbed edges, bearing witness to the activity of crabs that burrow into the mud and shells to create small heaps of material unearthed from the lower deposits. Insects, rodents and birds of prey speed up the process of bioturbation. Middens in the interior of the forests are often flattened by a dense covering of vegetation, while water seepage eventually leads to the disintegration of the deposits.

3. In the damp tropical forests of the Andamans, middens seem to have been put to good use as camping platforms not only by the Andamanese but also by modern settlers. On mounds along Austen Strait and in the nearby islands it is not uncommon to see shelters serving as hunting or fishing camps, constructed by the Karens on top of shell mounds. The Karens (Burmese farmers and fishermen) were first brought to the Andamans in 1924 as labourers, and have since settled at Webi (north-eastern Middle Andaman). In two instances, the forest department had put up small wooden buildings on middens, while at Dugong Creek there was an abandoned Onge shelter on a deflated midden (site 39). Constructions of this nature eventually lead to the destruction of sites. In three cases it was observed that footpaths traverse mounds, causing extensive trampling of shells and other debris.

4. At least three sites had large quantities of shells removed from them for the extraction of lime. For the same reason, there were practically no traces of sites 7 and 8. Lime is used in construction work and is also an essential ingredient to be mixed and chewed with betel-nut.

CHAULDARI

This shell midden is located 19.2 km west of Port Blair, on South Andaman. It stands at the base of a hillock 24.35 m high, on a dyke of intrusive serpentine which is 12.67 m above sea-level. The midden is oval in shape, measures 25 x 21 m, and is 4.45 m high. There is a freshwater spring about 400 m to the north-west, while 300 m to the east the waters of Flat Bay wash the mangrove-fringed shore.

Twenty-five years ago, Dutta excavated the southern portion of the midden (see Dutta 1962, 1978). As no radiocarbon dates were available for this site I decided to lay a 1.5 m wide trench down to basal rock, along the eastern margin of the mound, in order to collect material for dating, and, if possible, to gain more

information on the contents. Many of the data are still to be analysed, though some have already been processed and the results are summarised below:

1. Samples collected every 20 cm down through the stratigraphy for laboratory analysis weight about 110 kg in total, excluding material for C14 dating. 77% (85.5 kg) of these samples consist of shells. Sieving was carried out with an ordinary kitchen sieve with a mesh size of 2 mm. Unbroken shells number 8090 (34.5 kg), while fragments weigh 51 kg. The rest of the material consists of soil, rocks and bones. The identification of various mollusc and gastropod species is still to be verified, though for the present it would suffice to say that rock-oysters (Saccostrea sp.) account for 50.19% of the shellfish represented; mussels (Macra sp.) account for 13.63%; Gafrarium sp., 10.02%; Scapharca sp., 8.28%; Nerita sp., 6.45%; and Anadara sp., 5.3%. Stoliczka's (1870) excavation of a midden near Port Blair revealed more or less similar species of shellfish.

It may be mentioned that until the 18th century, Port Blair, including a major part of South Andaman, constituted Jarawa territory. In fact, Man (1885:267) and Cipriani (1966:78) give us to understand that Jarawa middens could be distinguished by the existence of certain shellfish species that were not exploited by the other Andamanese groups. The prevalence of a traditional bias in subsistence strategies with reference to sea foods has clear implications for economic and demographic research, though, at this stage, it is difficult to identify and confirm this fact on the basis of preliminary investigations of sites.

2. Dates have been obtained on charred and uncharred shells for the lower half of the midden (based on a half-life of 5570 ± 30 years). These indicate that the basal layer (at 4.45m) dates to 2280 ± 90 years B.P. For depths of 2.2 m and 2.8 m the dates are 2070 ± 100 years B.P. and 2040 ± 100 years B.P. respectively. These results indicate a rapid accumulation of debris, i.e. about 2 m of deposit within approximately 200 years, and more or less agree with Dutta's estimate of the age of the site based on the fluorine content of pig bones (Dutta 1978:25).

3. The soil is highly alkaline (the samples do not show any variation in pH, which is about 8 in all cases), and consists of colluvio-alluvial loams modified by man. Electrical conductivity tests were carried out to determine the percentage of soluble salts, and these indicate low salinity in spite of the site being near the coast. The salts have probably been leached down or washed away.

X-ray diffraction analysis of shells shows that aragonite predominates in all layers, suggesting few post-depositional changes. However, the cementation of shells and the presence of calcite at 2.1 m, probably the results of exposure and pedogenic change, indicate a break in the sequence. This is supported by an increase in calcium carbonate from 2.1 m downwards, with a simultaneous

decrease in organic carbon, and a sharp drop in the phosphorous content which is extremely high in the upper layers. Charcoal and charred shells are abundant in the lower half of the mound.

4. The cutting yielded 97 potsherds which have an average maximum dimension and thickness of 5.3 cm and 0.7 cm respectively. Roughly one-third of these are incised, probably with the edges of shells or with sharp sticks (cf. Figure 2). This is in keeping with the fact that pots in South Andaman were incised, and were larger than those in North Andaman which are supposed to have been plain, though I have found evidence of incised ware in the middens of North Andaman. Pointed-based pots were made in all areas as they obviously served the practical purpose of being able to stand upright in the sand, and could be easily carried about in baskets. In South Andaman both sexes were responsible for making pottery, whereas in North Andaman only women carried out this task.

The sherds from Chauldari are coarse-grained, poorly fired, and appear to have been made by the coiling technique. Although the pottery becomes increasingly coarse-grained in the upper levels at Beehive (Middle Andaman), no such difference was observed at Chauldari. It is hoped that in future a comparison can be made of pottery from various sites in the Archipelago on the basis of X-ray diffraction analysis and other analytical procedures.

It is a paradox that people who were ignorant of the art of making fire could manufacture pottery. The basal layer of the Beehive midden in Middle Andaman did not contain pottery or pig bones, thus indicating that these were probably introduced to the Andamans during a later phase of human occupation (Cipriani 1966:74,75). Chauldari is obviously a younger site than the Beehive middens, as pottery and pig bones occur throughout the sequence, right down to the basal layers. In addition, pieces of iron were also found to the base of the midden at Chauldari, and were undoubtedly collected from shipwrecks.

5. There were only 12 stone artefacts in the entire trench. Among these was a hammerstone of porphyritic diorite, five flaked quartz pebbles 3-5 cm in length, two pointed tools (one made on jasper and the other on serpentine), and four quartz chips. In addition, there were four unworked quartz pebbles and a flat sandstone pebble with one sharp edge. The latter was found at a depth of 1.5 m, and although its function is yet to be determined it seems to fit the description of the object seen by Pandit (1983:32) in the possession of some Jarawas. One such stone having a "knife-like edge" was gifted to Pandit, who reported that it had a fishy smell, suggesting that it may have been used for cleaning fish. The hammerstone could have been utilised to hammer pieces of iron in order to shape them into implements, and/or for smashing animal bones.

According to ethnographic records stone flakes and chips were used mainly for shaving and tattooing purposes. These tasks were generally performed by women, who were also responsible for making the flakes, which were seldom used more than once (Man 1882-3:380).

Surface collections from shell middens in the islands further north revealed an amorphous industry, with chert being the predominant raw material (Figures 3, 4). The edges of some flakes seem to be denticulated, though their functions are yet to be determined.

The paucity of stone tools, in Chauldari at least, may be partially explained by what appear to be shell implements which occur as mollusc shells with their edges neatly cut away. Among these there are four Nerita shells with square-shaped holes on their dorsal sides. The Andamanese are known to have used at least six species of shells for different purposes. As wood and shell implements comprised a major part of the material culture of the Negritos, it is perhaps hardly surprising to find that stone was considered to be of secondary importance, and therefore to be poorly represented on sites.

Among the numerous perforated shells that the excavation yielded there were several Nerita apertures. Even today these serve as necklace beads worn by Jarawa women and men, thus providing evidence for the continuation of a two thousand year old tradition and definite proof that this locale was a Jarawa camp-site.

6. The site is rich in animal bones, particularly those of Sus scrofa. Two bone points (barbs?) were recovered from the trench, and these as well as a sharpened incisor are derived from Sus. The preliminary analysis indicates the presence of a larger and a smaller species of Sus, thus raising the question of whether a wild as well as a feral species exist in the Archipelago, and whether they were introduced by man.

A few bones of Varanus (monitor lizard), rodents and primates are also represented in the midden. Dutta's (1978:21) excavation yielded some human bones, though none could be found this year.

Crab claws were present in all the layers, and numbered 64 in all. Twenty-two (34.37%) of these were split or broken along their length, which makes one wonder whether the Jarawa smoked crab claw pipes like those of the Onges, or whether these crustacea were caught mainly for food purposes.

On the basis of the material evidence, it is probable that the Chauldari midden was associated with food processing, manufacturing and maintenance activities. In the later stages of its formation, when it reached a convenient height, it may have served as a camping platform, though this is difficult to prove owing to the disturbed surface of the site.

The 1985 season of field work has not only proved the occurrence of numerous sites, but has also demonstrated their potential to provide a wealth of information about the past, as well as scope for settlement pattern studies and ethnoarchaeological research, particularly with reference to recent sites. It is hoped that during the next year earlier dates for human occupation may be forthcoming from cave or rock-shelter sites.

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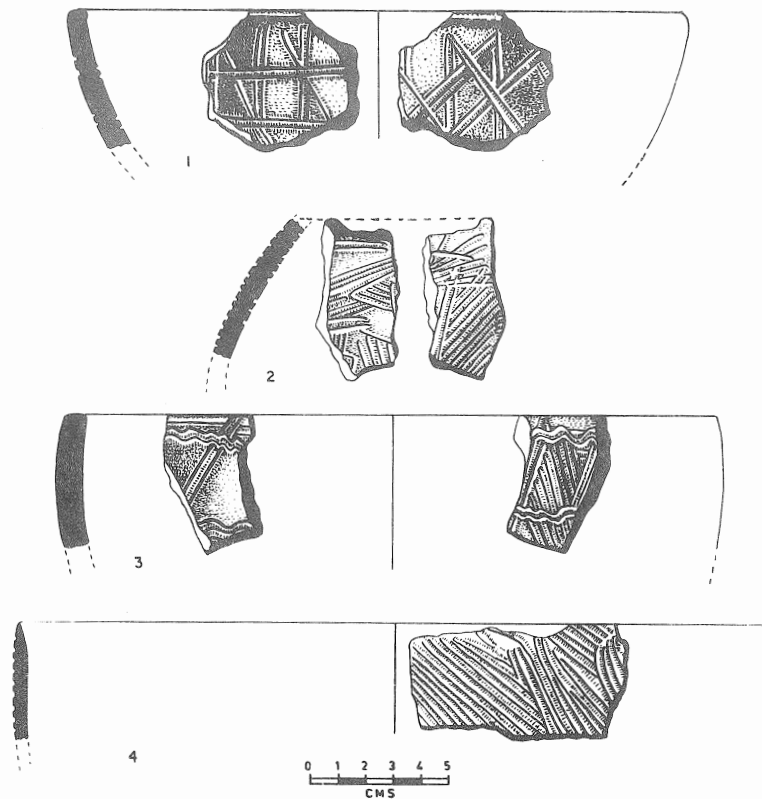


Figure 2. Incised sherds from Baratang Island, Andaman Islands.

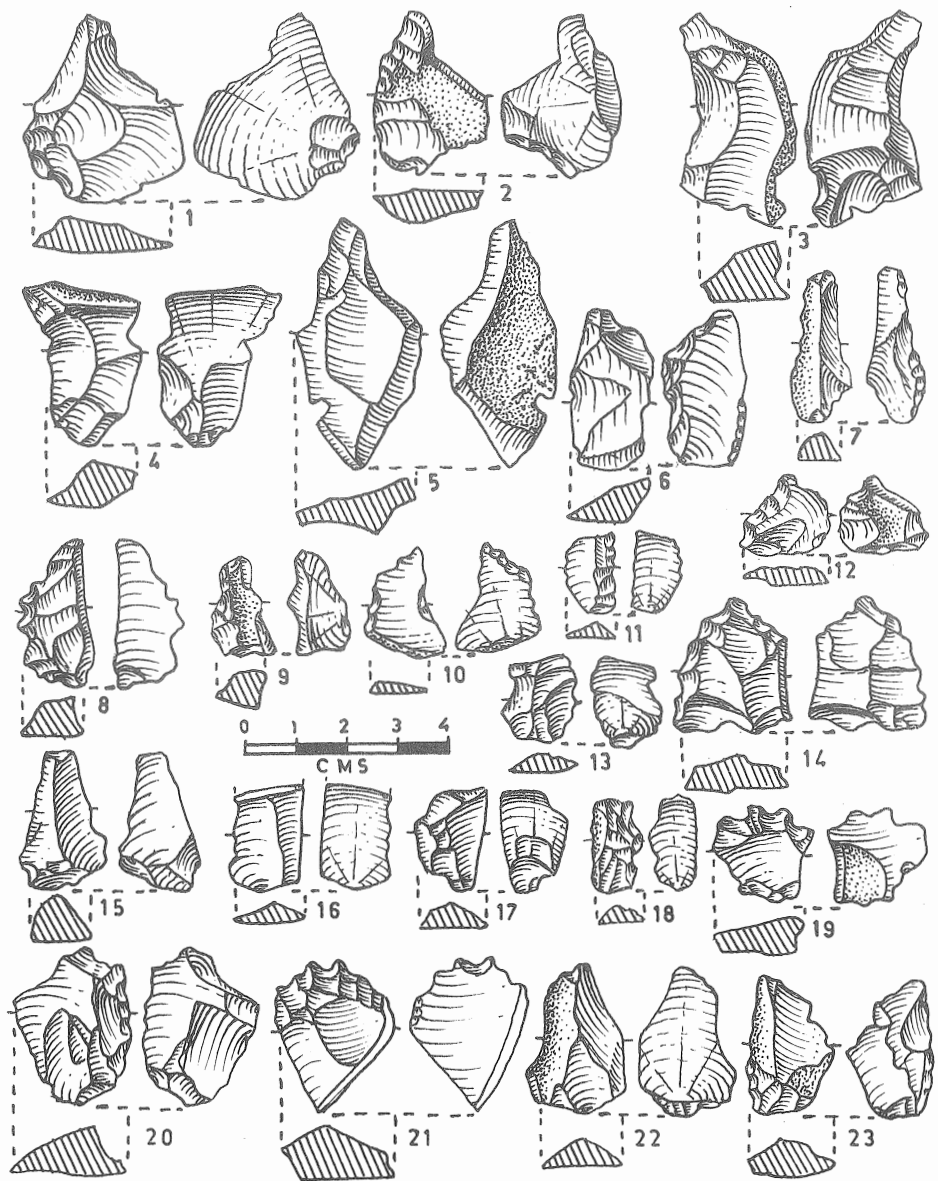


Figure 3. Chert flakes and chips from shell middens on Middle and North Andaman Islands.

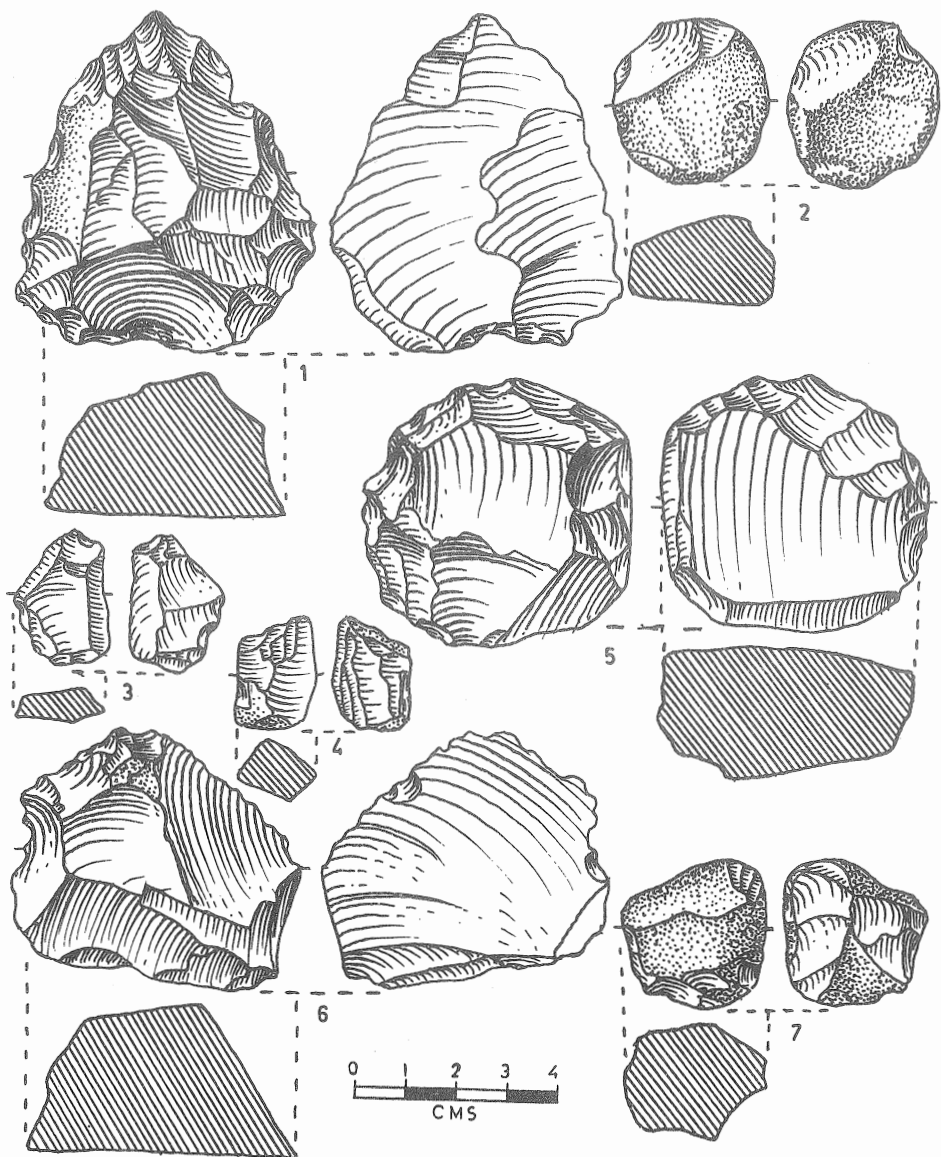


Figure 4. Chert tools from surface collections from middens along Austen Strait, Andaman Islands.