

THE GREAT ANDAMANESE

past and present

PRATAP C DUTTA

This small volume deals with the Great Andamanese one of the most primitive negrito groups of the world. Once more numerous, they now comprise 23 individuals. While we know about their presentday culture, nothing practically is known about their past. Owing to overriding scientific concern, excavation in ancient kitchen-middens was undertaken to have light on their cultural history.

The first half of the book contains basic information about history of the islands and islanders, ecology, problem and design of work, and notably certain specific 'material culture' items discovered by excavations. In the second half, an attempt is made to provide answers to questions connected with past *ways of life* of the people.

The concept of 'ethnological analogy' is used as a model. The study claims a long term stability of culture in the Andamans for nearly past 2,000 years.

THE GREAT ANDAMANESE PAST AND PRESENT

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PAST AND PRESENT

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PREFACE

Although quite recently only a few scholars paid attention to the problem of reconstructing unknown past of primitive communities, none has perhaps broached it yet in the Indian context. Because of its over riding scientific concern, the present inquiry was designed and initiated to unravel the past cultural history of the Great Andamanese Islanders. The Great Andamanese, who were once more numerous occupying most of the Great Andaman, are now being represented by only 23 souls awaiting absolute extinction.

To achieve the goal, explorations and excavations, which are the prerequisites for such studies of ancient kitchen-midden sites in South Andaman were undertaken by me during the field season of 1959-60 as a project of the Anthropological Survey of India. The following pages are the product of my own analysis and interpretation of the material contents exhumed concerning the past society of the Great Andamanese, and also of the matrix in which these were discovered. Special emphasis is given here to document the results of systematic excavation of a site at village Chouldari in South Andaman conducted by me. But, meanwhile, some immediate but brief results, then in the offing, have already been published in some international journals like *Nature* (London), *Wiener Volkerkundliche Mitteilungen* (Vienna), *Ethnos* (Stockholm) and *Current Anthropology* (Chicago). I trust, this small but a comprehensive piece of work and also the question of the peopling of the Andamans dealt with here, will evoke interest in all those who are especially concerned with palaeoanthropological studies in India

I wish to record here my gratefulness to the late Professor M N. Basu, formerly Head of the Department of Anthropology, University of Calcutta, for his interest and general guidance. I am particularly indebted to late Professor N. K. Bose, ex-Director of the Anthropological Survey of India, for initiating the work; to Professor Dr. N. C. Chowdhury, Head of the Department of Sociology and Social Anthropology, North Bengal University, for many wise suggestions; to Dr. Mahadeb P Basu for preparing the index; to Shri Dilip Kumar Chakraborty for permitting me to use some photographs incorporated in the publication; to Messrs B. N. Bagchi, S. K. Chattopadhyay and S. K. Sanyal for the drawings and photography; and to Mrs. Bharati Debi for much-needed

general assistance. A special note of thanks is due to Dr. Anadi Pal for his constant and generous help in the excavation and also to Shri Rathindranath Ghose for his much-needed help in the preparation of the manuscripts. Shri J. R. Chakraborty of the Publication Section of this Survey took the full responsibility of going through the proofs. Lastly, it is my duty and pleasure, too, to express my indebtedness to my wife, Ruby, who had been in the excavation sharing the pains and pleasure of a hazardous life out in the Andamans.

Port Blair,
1st April 1977.

Pratap C. Dutta

To the memory of my father

PRABODH CHANDRA DUTTA, M.D

(1905-1966)

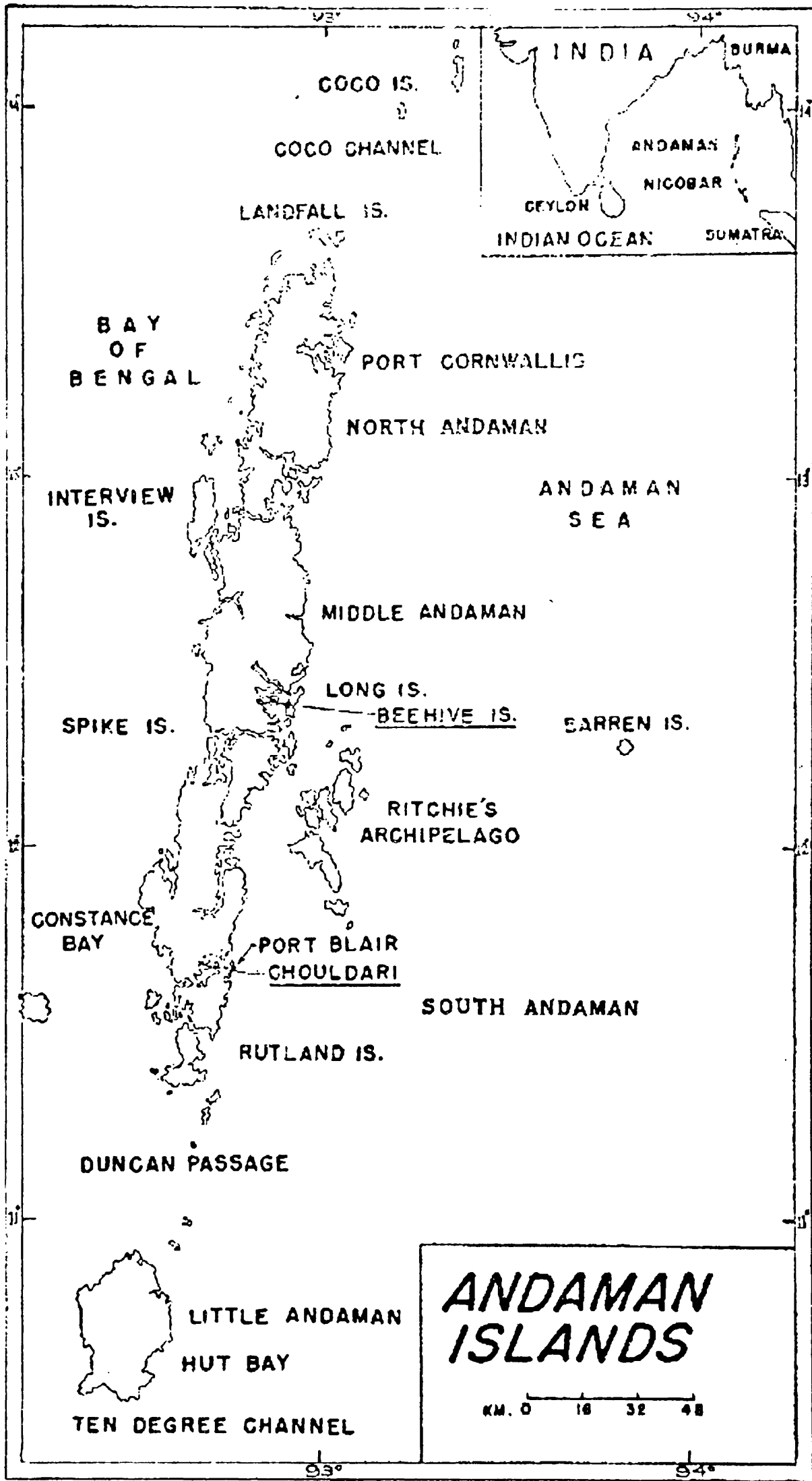


Fig. 1. Showing locations of Chouldari and Beehive midden sites

ONE

INTRODUCTION

The Problem

One of the basic tasks, which interests anthropologists, is to learn as much as they can about the lives of vanished people; for the reconstruction of human history as a whole is one of their prime objectives. It is the realisation that information gathered on the way of life of the communities can serve as a major feedback for a better understanding of the basic tenets of ongoing cultural evolution. But, until very recently, only a few scholars paid enough attention to the problems of reconstructing unknown past of the primitive communities. And in the Indian scene, miserably indeed, perhaps none has yet attempted comprehensive studies for reconstructing culture history of vanished human groups or of those primitives which are just on the verge of extinction. In the Andaman Islands, there is at least one such primitive human group, the Great Andamanese community, which is just on that brink awaiting absolute extinction. Considering the abiding interest, both from the point of view of the subject matter and of the nature of the community involved, an attempt has been made here to unfold the past way of life of the Great Andamanese community.

In this kind of studies it is important to define the basic problem at the very beginning. Because, such studies usually aim at unfolding the past human behaviour and, at the same time, attempt to provide answers to different sets of questions connected with the way of life of human groups which have no recorded history. Although it has been realised that elucidation of man's past can be approached scientifically, its attempts are, however, much exposed to too many hazards which are really difficult to overcome. It may be fair to point out at the very out-set that reconstruction of social structure, and also of cultural morals, is extremely complicated and not beyond controversy (Childe, 1944 : 23; Hawkes, 1954 : 161-62; Trigger, 1968).

The problem that could be identified in the present context was a basic one. We do not know yet what was the past way of life, the *whole culture*, of

the Great Andamanese who once occupied most of the Great Andaman. Since reconstruction of social structure and cultural morals is extremely difficult, as noted already, our present interest rested solely in settling : 'what was the cultural milieu of the Great Andamanese; concerning specifically the technology, economy and subsistence-settlement pattern ?'

The problem at issue immediately generated a more specific hypothesis. This was formulated as follows. Since the Great Andamanese were, and have been until quite lately, very closely linked up with the peculiar Andamanian ecology, which remained more or less unchanged from a distant past, it was expected that cultural system of the past society had been similar to that of the *present**. It was a hypothesis which tried to bring to a sharper focus the phenomenon of a long-term stability of cultural mores of the Great Andamanese. This is a testable one, and it can be confirmed or rejected by the specific nature of data collected bearing in mind the problem. The present hypothesis can be considered as a necessary link between the problem and data, since it provided a suitable framework for reconstruction.

To probe into the problem, let us now first look for the actual historical documents available concerning the Andaman Islands and the people as well.

HISTORY OF CONTACT

The knowledge about the existence of the Andaman Islands as the *Insulae bonae fortunae* in the Bay of Bengal dates back to the second century when Cladius Ptolemy, a Greco-Roman geographer, first published an annotated atlas describing places as far east as Borneo. The first distinct notice about the Andamans and something about their inhabitants were, however, recorded in the chronicles of two Arabian travellers who had passed by the Islands during the ninth century (Renaudot, 1718). In 672 A.D., I-Tsing, a Chinese Buddhist monk, made also some brief references about the Andamans (Temple, 1903 (III) : 47).

Between the 13th and 14th centuries there were a few instances of proto-anthropological writings about the Islands. Marco Polo, the famous Venetian merchant and a great explorer, too, Transmitted to posterity a wealth of information about the land and the people. He recorded :

*Here present denotes a period corresponding to the latter half of the last century.

'Angamanain is a very large Island. The people are without a king and are idolaters, and no better than wild beasts. And I assure you all the men of this Island of Angamanain have heads like dogs, and teeth and eyes ke-wise; in fact, in the face they are all just like big mastiff dogs ! They have a quantity of spices; but they are most cruel generation, and eat everybody that they catch, if not of their own race. They live on flesh and rice and milk, and have fruits different from any of ours' (Yule, 1903 : 309).

Subsequently, Frair Odoric in 1322, Nicolo Conte in 1430, Master Cesare Federici in 1566, and others who traversed the region described the Andamans and their inhabitants (Federici, 1625).

With regard to the name of this group of Islands, it seems that Andaman gets its name from the term 'Angdaman' used by Ptolemy during the second century. Marco Polo later named it 'Angamanain' possibly suggesting the existence of two Andamans. But, as a matter of fact, the origin of the present name is doubtful, and different authorities have interpreted it variously.

Finally, it must be made clear that whatever rudimentary notes and reports of early contact are available, they are so nebulous that virtually nothing can be determined as to what was the state of affairs in the past in the Andaman Islands. On the contrary, descriptions available on the mode of life of the Islanders, recorded during the 2nd to 17th centuries, stand in high contrast to existing cultural patterns noted by colonists and scholars. In reality, therefore, history of the Andaman Islanders was largely unknown till the British contact was established in 1788 for establishing a penal colony by the East India Company.

What boils down from scanning the historical facts gathered above is that the Andamans had virtually no history worth the name. This, of course, is not only the case we have just encountered but the situation is equally true for the various tribal societies still living in the mainland of India (Kosambi, 1965 : 9).

THE NEGRITO ISLANDERS

The Andaman Islands have been the homeland of a few inbred, black skinned, and pygmoid population groups - the Great Andamanese, Jarawa, Sentinelese and Onge. They all live by hunting and food gathering. They are divided into two main divisions, the Great Andamanese and the Onge-Jarawa-

Sentinelese group. These two divisions show many a differences with regard to language and material culture (Radcliffe-Brown, 1948 : 12-13).

Owing to impact of civilisation the Islanders suffered a lot: Their population figure was estimated at about 10,000 strong in 1779, for the first time, which sharply declined to less than half of it by 1858 (Guha, 1951 : 1). And by 1971, their strength was sharply reduced to some 500 and odd. This drastic decaying trend, which could be estimated from census figures set out in Table I, itself indicates that the Negritos will be extinct before long. In this regard, the fate of the Great Andamanese is quite comparable to that of the Red Indians of the United States of America, or the tribes of Oceania, South-East Asia, Tasmania, Australia and Africa. It may be recalled that out of an estimated population of about 7,000 Tasmanians, the last survivor of the group passed away by 1876.

Table I : *Population figures of the Andaman Negritos during 1858-1971*

Tribe	1858	1883	1901	1911	1921	1931	1951	1961	1971
Great Andamanese	3500	2000	625	455	209	90	23	19	24
Jarawa	600	} 1250	468	114	114	70	50	500	300
Sentinelese			117	117	117	50	—	50	100
Onge	700		672	631	346	250	150	129	112

Note : (1) The Great Andamanese could only be enumerated from 1961 to 1971 census years : the figures for others, excepting 1961 and 1971 count for the Onge, are merely rough estimates.

(2) Enumeration made by the Anthropological Survey of India gives a figure of 23 Great Andamanese and 105 Onge as in January 1977.

Two specific reasons are current for explaining the decay of the Great Andamanese. One is attributed to the results of several armed encounters with colonists during the beginning of the penal settlement. The other is ravages from disease like syphilis, tuberculosis and other contagious disease acquired through contact with immigrant population during the years following 1870 (Man, 1932 : 14; Portman, 1899 (1) : 14, 29-31).

The Great Andamanese who were originally composed of some tentribes inhabited most of Great Andaman. They had their own distinctive dialects with

names, and were divided into a number of smaller units labelled as 'local groups'. These tribes were Aka-Cari, Aka-Kora, Aka-Bo and Aka-Jeru belonging to Northern group; and Aka-Kede, Aka-Kol, Oko-Juwoi, A-Pucikwar, Akar-Bale, and Aka-Bea belonging to Southern group. The tribes noted above are not all now represented in the present composition of the Andamanese community as some of them - namely Kede, Kol, Juwoi, Pucikwar and Bea - have been completely extinct. The community comprises only 23 survivors (14 males and 9 females) as in January 1977. The aggregate of the Great Andamanese having its common dialect known as Jeru, has now been settled (since 1970) in Strait Island (area 1.2 sq kms) off the east coast of Middle Andaman.

Another tribe of Great Andaman is the Jarawa. They are still implacably hostile, and several attempts to conciliate them proved futile in the past. The first attempts to establish contact with the people was made in 1790 by Archibald Blair. But recently, in April 1974, came a breakthrough when one group finally responded to friendly gestures by the Island administrators (Singh, 1975). Since then regular contacts are being maintained with a group of Jarawa in and around Foul Bay and Chotalingbang at the western coast of Middle Andaman. In the past they lived at the southern portion of South Andaman, but now they inhabit the western coast of Middle and South Andaman. The group has so far escaped the influence of modern civilisation, thus retaining their primitiveness. Information on this group is now being gathered by and large.

The Sentinelese is the third tribal group of Great Andaman inhabiting North Sentinel Island, situated some 64 kms off the west coast of South Andaman. It is believed that this group originated from the Onge and Jarawa tribes, but remaining in isolation in this small Island the Sentinelese have acquired distinct features of their own. The tribe has never come in contact with outsiders, and, therefore, nothing is known about this group. Among the Andaman tribes, the Sentinelese are now absolutely outside the pale of any contact.

Little Andaman is inhabited entirely by the Onge. The group comprises 105 individuals (January 1977) and the population has recorded a considerable decrease in 1977 from 1961. During early days of the British contact, the Onge, like other Andaman Islanders, were hostile. The first effective attempt to conciliate them was made between 1885 and 1887 by Muric Portman, and since then the people have been behaving in a very friendly manner.

These groups have all been classified, anthropologically, as the Negrito or Pygmy race, because they bear, in general, a close biological resemblance with the Negritoids. Owing to the absence of admixture with outsiders, barring the Great Andamanese of recent time, these Andaman Negritos have succeeded in retaining most of their original racial characteristics in a much purer form than perhaps any other known people whom we know of intimately. B.S. Guha (1954 : 133) believes that, barring some negligible differences, the Great Andamanese and the Onge can be considered homogeneous. Earlier, while claiming a uniformity between these two groups, Von Eickstedt (1928) postulated that the Onge represented an earlier wave of migration, and the Great Andamanese immigrated later. There is a general feeling, however, that all the four Andaman groups are, on the whole, uniform and homogeneous in regard to their physical composition (assessment on the Jarawa and Sentinelese is, however, based simply on eye-estimation). But cut off by circumstances into smaller communities since the distant past, they must have developed local variations through the process of microevolution – a matter remains yet to be probed into.

The Negritos, in general, are characterised as very short statured (pygmy class) people with well-proportioned body build, broad head (brachycephalic), broad face having somewhat full but not everted lips, and straight nose. Their body hair is scanty, skin colour varies from reddish brown to sooty black, the head hair is black, and the hair type is of peppercom pattern. They have been labelled as infantile because of smoothness of the brows associated with high orbits and low alveolar index. Besides, another trait characterises the females. They possess true steatopygia an excessive accumulation of fat at the gluteal region combined with lumbar curvature like the Bushman, Hottentot, and some other African tribes. Steatopygia is also found in the Andamanese male in a lesser degree.

On the grounds of similarities in physical characters with the South-East Asiatic Negritos, the Andaman Islanders have been regarded as survivors of the Asiatic Pygmy, or the Negrito race. Their collaterals are to be found in the Semang an aboriginal group inhabiting central region of Malay Peninsula and also East Sumatra and in the Aeta another aborigine group residing at the northernmost part of Luzon in the Philippine Islands (Martin, 1905 : 185, 1022-23; Lapieque, 1908; 22-26; Sullivan 1921 ; 174-99; Schebesta, 1952 : 326-91; see also dis-

cussion in Mitra, 1969). In the opinion of Lidio Cipriani (1966 : xi), the people of the Andamans represent the purest living example of Negrito stock and culture.

PHYSICAL ENVIRONMENT

The geographical position of the Andaman Islands in the mid-seas is of strategic importance. This is because of the fact that the Andamans are located between the Indian subcontinent and the landmass of South-East Asia.

The Andaman Islands, comprising a chain of 257 islands and 190 rocks, are situated in midwaters in north-south direction between 10° and 14° North and 92° and 94° East at the mouth of Bay of Bengal (Figure 1). This group of islands is located about 950 kms to the south-east of the Hooghly River mouth in West Bengal and some 1,127 kms to the east of Madras.* The Nicobar Islands, consisting of 62 islands and 58 rocks and stretching over 260 kms on sea, lie about 129 kms to the south of the Andamans; the depth of sea in between these two groups of islands is more than 700 fathoms, and the Ten-Degree Channel separates them.

Although the constituent islands of the Andamans are separated from one another by innumerable narrow water passages, they just look like a closely-knitted elongated stretch of land. The entire length from Landfall Island in the north to Little Andaman in the south is slightly less than 353 kms, the maximum breadth being 51 kms with an average width of 24 kms. Total land area of the Andamans is estimated at about 6,340 sq kms.

The Andaman Islands are divided into two main groups of islands, Great Andaman and Little Andaman, separated by the Duncan Passage which has a width of 48 kms and a depth of 21 fathoms, Great Andaman is further subdivided into three separate groups—North Andaman, Middle Andaman and South Andaman. Total length of Great Andaman is about 258 kms, while the maximum length and breadth of Little Andaman are 42 kms and 26 kms respectively. The entire land surface of the Andamans is hilly, enclosing narrow valleys; the tendency of slope

*Port Blair is situated at a distance of 1,255 kms from Calcutta and 1,135 kms from Madras.

is from east to west. All elevations are located at the eastern coast, the highest being the Saddle peak, 731.5 metres, in North Andaman. There are no rivers as such; during monsoons only a few non-perennial streams drain the islands.

The geological information on the Andaman and Nicobar Islands is quite adequately available by now (Chatterjee, 1967; Karunakaran *et al*, 1968; Srinivasan, 1968, 1969, 1977; Srinivasan and Azmi, 1976*a*, 1976*b*; Srinivasan and Sarma, 1969*a*, *b*, 1973; Srinivasan and Srivastava, 1972*a*, 1972*b*; Srivastava *et al*, 1976). Both the groups of islands are nothing but the elevated peaks and flat tops of curved submarine ridges which connect the Cape Negrais of Burma on the north and with the Achin Head of Sumatra on the southeast. The geological affinity between the islands and the Arakan Yoma Range in Burma has also been discussed and suggested (Rink, 1847; Oldham, 1885; Tipper, 1911; Gee, 1926; Srinivasan, 1968).

The main Andaman ridge mostly comprises early tertiary sedimentations overlying the basic rocks. The following stratigraphic sequence has recently been proposed by C. Karunakaran *et al* (1968) in ascending order: Older Sedimentaries (consisting of Quartzites, Jasper and Crystalline Limestone); Ophiolite Suit (consisting of Serpentinites, Ultrabasics, etc); Mithakari Group (consisting of Grit, Conglomerate and Shales); Port Blair Group, followed by the Archipelago Group and the Nicobar Group. Recently, Srinivasan and Sarma (1973) and Srinivasan and Azmi (1976*c*) have proposed a revised stratigraphic sequence for the Archipelago Group. According to them, the Group ranges in age from early Miocene to Pleistocene. The sequence is as follows in ascending order: Strait Formation, Round Formation, Inglis Formation, Long Formation, Sawai Bay Formation, Guitar Formation, and Neill West Coast Formation.

According to J. H. Miller (1842), the Andamans were isolated at a period when the mammals now typical of the mainland of India and Burma did not exist there. On the basis of a botanical study of the islands, S. Kurz (1868) claimed that a direct land connection between the islands and the mainland of Burma was in existence. B. C. Kloss (1903), who identified nineteen species of mammalia, however, refuted the thesis of Kurz on the possibility of any land connection. R. B. Seymour Sewell (1938: 4-14), who carried out extensive oceanographic researches in the Andaman Sea Basin, affirmed strongly that the land connection, if it were ever in existence, would have been before the advent of mammalia and later completely separated by wide seas. Another oceanographic investi-

gation made earlier by G. A. F. Mollengraaf is extremely important in this connection. His work relates to the rise and fall of sea level during glacial epoch in the Quaternary Age (Mollengraaf, 1921). On the basis of the evidence forwarded by Mollengraaf, it was argued by Walter Kaudern (1939) that a fall of nearly 300 metres in sea level had taken place during one of the great glacial periods when land connections exposing submarine ridges, were established between the mainland of Asia and the islands of Andaman.

But it must be made clear here that the present physiographic characteristics of the Andaman Sea and the Bay of Bengal basin floor do not support the contentions of Mollengraaf (1921). Furthermore, the recent findings obtained through oceanographic explorations and deep-sea drillings in different oceans and also in Bay of Bengal and in Northern Indian Ocean clearly suggest that the Andaman and Nicobar Islands do represent an emerging marine-ridge, akin to mid-Atlantic or Ninety-east ridge. Therefore, the question of the islands connection with the mainland of Burma does not arise.

The climate of the Andamans is tropical. It is characterised by warm and humid weather with two well-marked seasons, wet and dry. The wet, or rainy, season generally continues from the end of April upto December with intermittent breaks, while the remaining period of the year is dry. The annual normal rainfall is 3,180.59 mm. Monthly mean minimum and maximum temperatures fluctuate between 20.1°C in January and 32.5°C in April as recorded at Port Blair in 1973. The annual average humidity is 80 per cent. Wind blows at an average rate of about 18 kms per hour. Storms and terrific gales, which follow each other, are not very infrequent phenomena.

Of 6,340 sq kms of geographical area, 2,415 sq kms are covered by exceedingly dense tropical growths of the evergreen and deciduous types. Paduk (*Pterocarpus dalbergioides*) is the principal tree of deciduous variety which includes Dhup (*Canarium euphyllum*), Didu (*Bombax insigne*), Black chuglam (*Terminalia bialata*), and Badam (*Terminalia procera*). The evergreen type includes, among others, Gurjan (*Dipterocarpus*), Nutmeg (*Myristica irva*), Lalchini (*Calophyllum spectabile*). The deciduous growths mostly occur in lower reaches of elevations, while the evergreen type grows mainly on moist valleys. Mangrove (*Rhizophora conjugata*) swamps are found in abundance on estuaries of the indented creeks.

About 35 species of mammalia and 240 species and subspecies of birds have been recorded in the Andamans and Nicobars (Abdulali 1976). Of them, possibly 12 have been recognised as peculiar to the Andamans (Kloss, 1903). They include Andamanese pig (*Sus andamanensis*), Civet cat (*Paradoxurus tylerii*, Tyler), the Dugong (*Dugong dugong*) or Sea-cow, some thirteen species of rats and sixteen species of bats, tree-shrew, etc; the three first named species are the only large mammals. Several species of birds are resident and endemic to the region (Ball, 1870 : 240-43). Snakes of larger size and lizards (*Varanua salvator*) inhabit the islands. Chital and some other deer, and also dog, are not the native mammals, but have been introduced. In spite of the ideal habitat, ferocious animals as well as larger games are so far conspicuously absent. The islands are, however, very rich in sea fauna. This includes an enormous variety of different types of fish, crocodile, shark, turtle, oyster, and a large range of shell fauna. Common species of mollusca are : *Murex adustus*, *Trochus niloticus*, *Pteroceras chiragra*, *Nerita albicilla*, *Turbo articulatus*, *Arca scapha*, *Arca granosa*, *Arca fasciata*, *Cyrena* sp., etc.

RESEARCH DESIGN AND MODEL

Among the literature that have been published so far, only a few—especially Bruce G. Trigger (1968)—have devoted exclusively to the problems connected with the reconstruction of past. The skill needed comprises the methods of palaeoanthropology which attempts to trace human history and takes up the study of man's past from the point where recorded history does not appear. Palaeoanthropology is a discipline which chiefly concerns with portraying the episodes of man's development and tries to explain what happened in the past.

Anthropologists have to depend generally on the objects of 'material culture' discovered by excavations, and it is from these limited and largely technological nature of evidence they try to build up the outlines of past way of life. Therefore, the most important and basic issue or element is the archaeological evidence comprising the remnants of material culture and the matrix in which these are discovered (McCall, 1964 : 28-37, 101-06). This category of evidence is often supplemented by ethnological, physical anthropological, linguistic, and oral tradition evidence (Trigger, 1968 : 3). While physical anthropology, on the

basis of excavated human skeletal finds, helps in studying the racial history of the group involved, linguistics has been recognised as another valuable tool for revealing culture history (Shrzer and Bauman, 1972 : 131). By using oral tradition also the information about the not-too-distant past can be obtained from the stories that are told by the living people about their own history (McCall, 1964 : 37-61; Vansina, 1965 : 1-18; Trigger, 1968 : 10). The reconstruction, however, depends largely upon the knowledge and relationships that exist between these and human behaviour in living cultures.

Recently, various conceptual frameworks are available as 'models' for interpreting the category of data which has just now been referred to (Piggott, 1961 : 11-12, 1965 : 5-8; Clarke, 1972). These models generally attempt to view the entire culture from technological, economic and social perspectives. Among them, the ethnological analogy is current and of crucial importance as an aid to interpreting and reconstructing the past (Trigger, 1968 : 2-10; Lee and De Vore, 1968). The analogy implies similarity between the analogues in some respect and dissimilarity in others, since otherwise the analogy would amount to mere identity (Clarke, 1972 : 2). It involves the application of ethnological findings to archaeological data. Although the above categories of data are quite different, they all concern with human behaviour. There is a general feeling, however, that application of analogy is not beyond controversy, because it implies a vague sense of equivalence in the processes of culture regardless of time difference (Binford, 1968 : 17; Fitzhugh, 1972 : 45). While subsistence pattern can be deduced by analogy, it is difficult to envisage the past social organisation, cultural and moral order. William H. Fitzhugh (1972 : 46-47), however, tells us that controlled analogy can serve an important function in reconstruction, as already realised by Michael D. Coe and Kent V. Flannery (1964) and John M. Campbell (1968).

This concept was deemed useful, since there is much ground to suspect that the customs of present-day aborigines of the Andaman Islands go back to distant past. This is owing solely to similar ecological conditions. In this study, therefore, living ethnographic data were used to interpret the past.

DATA CATEGORIES

The basic data thus comprise two different categories. The first, or

the primary, consists of archaeological data, and the second ethnographic information as recorded, among others, by Edward H. Man (1883) and A. R. Radcliffe-Brown (1948) on the contemporary Great Andamanese society.

In order to generate data relating to the first category, field surveys in some part of South Andaman was undertaken by the author on behalf of the Anthropological Survey of India, Government of India, during the dry season of 1959-60. Although extensive surface explorations were made, only one shell mound, or kitchen-midden deposit, at the village Chouldari could be methodologically excavated.

T W O

THE PAST ALIVE IN KITCHEN-MIDDENS

This chapter embodies the data obtained from excavations and field surveys conducted at South Andaman during one full season in 1959-60. It also presents substantive data collected from another shell mound at Beehive Island in Middle Andaman, excavated earlier in 1952. On the basis of all these available data, an attempt has been made here to survey, in a broad perspective the salient features of cultural history. But, before doing so, it would be in order to present a resume of the investigations that have been made earlier in this direction.

HISTORY OF RESEARCH

During the late 19th century interest in the Andaman Islands and on the aboriginal populations grew as a part of administrative functioning by the Britishers. Thus, early notes on anthropology of the area appear to have begun with these colonists. It should, however, be noted at the first instance that all palaeoanthropological researches done so far in the Andamans have been quite sporadic and confined specifically to the shell deposits. These shell mounds, technically called kitchen-middens, are found scattered helter skelter all over the islands, more numerous behind the mangroves fringing the coastal plains than in the interior of the forests.

The anthropological strategy of the shell mounds, however, needs to be defined before proceeding further. The shell mounds are but the glorified dustbins, in which an assemblage of shells, pottery, implements, equipments and other household objects lie buried under earth in different successive layers. These are, therefore, most important because they preserve the left-overs—the ethnographical evidence—of a society, and bear the most prolific sources of information. Barring this single category of material nothing tangible is evidenced from the islands, which could take us back into the depth of prehistory.

The first observation on the occurrence of shell mounds in and around Port Blair, the Headquarters of the Andaman Administration,

at South Andaman, seems to have been made in 1885 by H. Man who was deputed by the East India Company to take possession of the Andaman Islands. It appears from Edward H. Man's (1883) treatise that H. Man never published any account on the subject. The first published report concerning cultural relics of Great Andamanese is the note made a century ago by W. Theobald (1862). The aforesaid relics, comprising some chert implements, were collected by J. C. Haughton. Theobald in his note states,

‘.....the most finished of which chips seem merely intended to be used with fingers in dividing fish or flesh. The round stone is also used for much the same purpose as the stone hammer from Powari (Bundelkund). The four chips marked with cross may have very well been intended for tipping arrows, to be used only against fish, but none of them would have been very effective against Andaman pig or indeed any land animal. As, however, the Andamanese depend on fish, which they shoot with arrow for their food, Major Haughton is probably correct in regarding many of these chips as arrowheads which are usually found accompanying celts’ (Theobald, 1862 : 362).

A few years later, in 1879, was reported another discovery of a kitchen-midden mound, near the penal settlement at Port Blair, that proved significant for viewing the past culture of the Great Andamanese. Fr. Ad. de Roepstroff, the discoverer, brought it to the notice of F. Stoliczka. Stoliczka (1870), realising at once the significance of the finds, conducted the first scientific survey of the shell mound and emphasised that the mounds, or the middens, of Port Blair were exactly the same in nature if comparison be made with the kitchen-middens near Copenhagen or any other place in Denmark. Thereafter, L. Lapique (1894*a*, 1894*b*, 1894*c*) initiated investigations into one kitchen-midden at Bamboo Flat, near Port Blair, and recorded his observations regarding the formation and content of the midden. He observed, ‘.....the middens, no doubt, belonged to the actual indigenous population of the Andaman Islands’ (Lapique, 1894*b* : 361).

During subsequent years, Man (1883), Muric V. Portman (1899), T. H. Holland (1904), A. R. Radcliffe-Brown (1948), and others referred frequently to the occurrences of kitchen-midden deposits in the islands. In 1952, B. K. Chatterjee of the Anthropological Survey of India also conducted an excavation and collected some material from a kitchen-midden site located at Beehive Island in Middle Andaman (Dutta, 1959).

The first purposeful study of the phenomena of the middens was undertaken during 1952-53 by Lidio Cipriani (1955), again, on behalf of the same Survey.

Stoliczka's midden site at Hope Town in South Andaman was round in shape having a diameter of 60 feet with a height of about 12 feet. The mound contained mollusc shells, bones of pig, fragments of pottery and numerous stones of different size and shape along with some other artefacts like rude hatches, knives and a typical arrowhead. He also collected a trapezoid celt made of sandstone, referred to as belonging to the Neolithic period (Stoliczka, 1870). The kitchen-midden at Bamboo Flat, near Port Blair, excavated by Lopicque, was round in plan; it was about 50 metres in circumference at the base and 4 metres in height. Lopicque informed that the middens were formed by the accumulation of shells, wild boar bones, a large number of pottery, grinding stones, sharpening stones, baking stones, arrowheads, flint points, glass splinters, etc. He also noticed the existence of huts under large common roof upon the debris (Lopicque, 1894*b* : 367). In conclusion, he (p. 371) remarked that the stone industry of the Andamans was very rudimentary, and it was never developed.

Cipriani (1955 : lxviii) inferred that these accumulations showed almost the same appearance as those formed by the primitive populations in other countries, including Europe and Africa. His investigations revealed that the mounds were of fairly regular geometric shape having 90 per cent of shells, nearly all bivalves. He concluded that the Negritos did not possess pottery when they arrived in the Andamans. The ancient pottery was prepared by coiling. The Great Andamanese buried their dead at the kitchen-midden sites. The Andamanese pig appeared later than the introduction of pottery. Arrow points made of bones and shells were common, but those of stones were not found. Obsidian and several hard stones were chipped into tiny artefacts for shaving and for ornamental purposes. In Cipriani's (p. lxx-lxxi) opinion, the size of the middens, changes in sea level during their formation, contemporary changes in the species of shells, and in the frequency of occurrence, all point to a long period of life of the middens certainly to be counted by millenniums.

From the foregoing account, it follows, therefore, then that despite the earlier studies of Theobald, Stoliczka, Cipriani, and others, the past culture in the Andaman Islands is largely unknown. None had either attempted much to understand the phenomena of the kitchen-middens,

or carried out any systematic, scientific excavations for yielding the material relics of the past. The corollary is that useful observations, regarded basic for inferring outlines of cultural history of the Great Andamanese, are lacking. In short, neither the essential palaeoanthropological contribution basically needed for the purpose is fully available, nor we do have any written history—as already noted earlier—that would have otherwise helped us in understanding the events of past culture and the people responsible for it.

PRESENT INVESTIGATION

The kitchen-midden mounds scattered in abundance all over the Andaman Islands, more on the coast line, are the only authentic sources, which, no doubt, can be exploited profitably for reconstruction of past of the Andaman Islanders. And here alone one can find a wealth of information left by the islanders about themselves and about their way of life, especially their material artefacts. Unfortunately, many such deposits have been disturbed and plundered badly by the recent settlers for extracting lime out of shells. In the present section, it is proposed to summarise the results of excavation conducted in a shell mound in South Andaman.

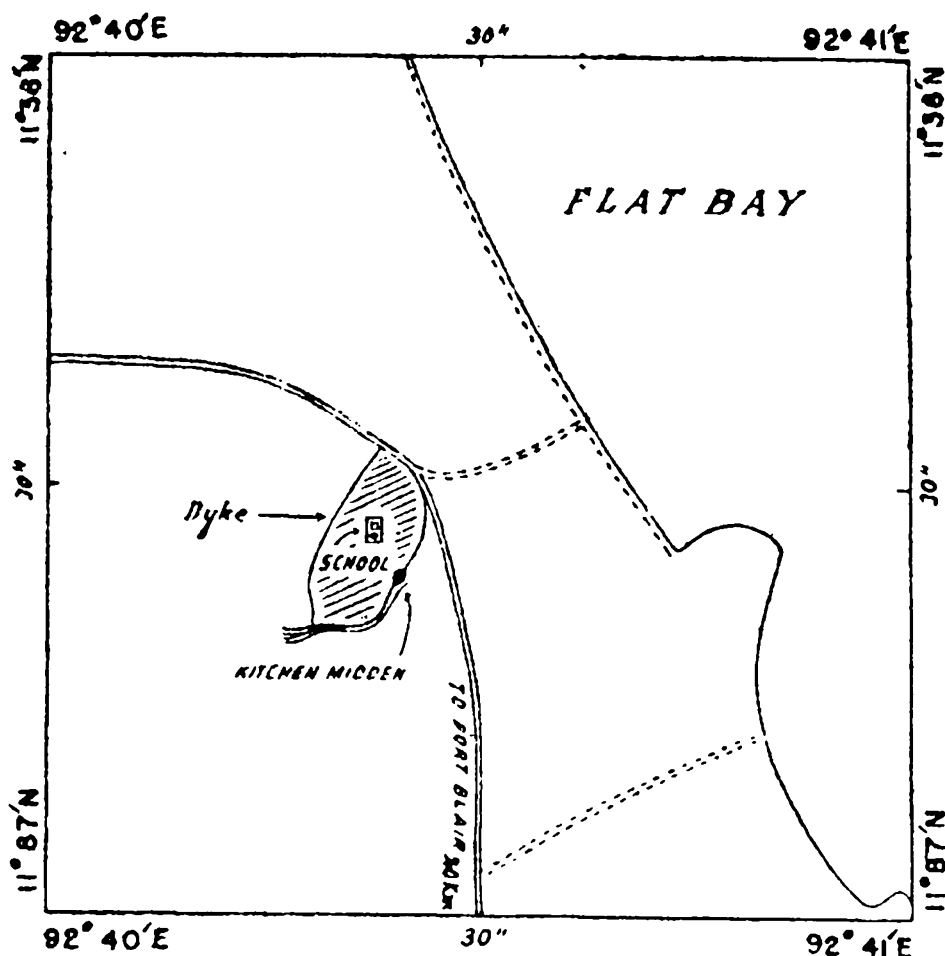


Fig. 2. Location of the kitchen-midden site at Chouldari in South Andaman

PLATE 1



Kitchen-midden site at Chouldari in South Andaman

PLATE 2



The Chouldari kitchen-midden after clearing the vegetations

On the basis of several surface explorations undertaken in some areas in South Andaman, one shell mound at village Chouldari was selected for inquiry (Dutta, 1962; 1963 *a*, 1966). The site falls on $10^{\circ}37'24.5''$ North and $92^{\circ}40'24.5''$ East. Chouldari is now a refugee settlement, situated on the east coast of South Andaman about 20 kms west of Port Blair. It lies on the shore of a sheltered bay, called Flat Bay, and the distance from seashore to the site is about 800 metres west. The deposit is located about 60 metres westward off the metalled road leading to Port Blair (Figure 2). It is at the foot of a natural elevation of 80 feet height which was formed by a dyke of intrusive serpentine. On the top of it there was a primary school. A narrow course of water, rather a rain gully, was there adjoining the southern border of the site, the bed of which was dry at the time of excavation.

Vertical digging, down to the natural soil, was resorted to for excavating a restricted area in depth, represented by the cutting CHD 1. The technique of digging was adopted after Wheeler (1947). The cutting was laid out transversely on southern slope of the mound, beginning almost from near about its midpoint towards the southern periphery. It was laid in north-south direction. The area of trench measured 24 feet in length and 7 feet in breadth. The digging was undertaken in two phases. The area denoted 0-IV was excavated first, and then the area IV-VIII was taken up.

The midden was oval in outline on plan, the longitudinal and transverse axes being 76 feet by 60 feet respectively. The height of the mound was 11 feet 6 inches. In the cutting, successive shell layers were identified, establishing a number of arbitrary sequences following the variation in colour and texture of shell layers. Altogether eleven layers in succession were exposed as illustrated in Figure 3. Actually ten layers could be related to inhabitational* deposit, and the remaining one to sterile. This sterile layer, labelled 6, demonstrated a definite break of considerable time indicating the desertion of site for certain period in past history of the mound between the upper and lower continued occupancy. Variation in inhabitational debris within and between layers was virtually negligible, and the formation of mound had the persistence of same materials throughout. The digging brought to light two main settlements, one above the other, while rest was real debris formed when the site was used for habitation.

*The term is used here to denote the deposit that pertained to erstwhile human habitation.

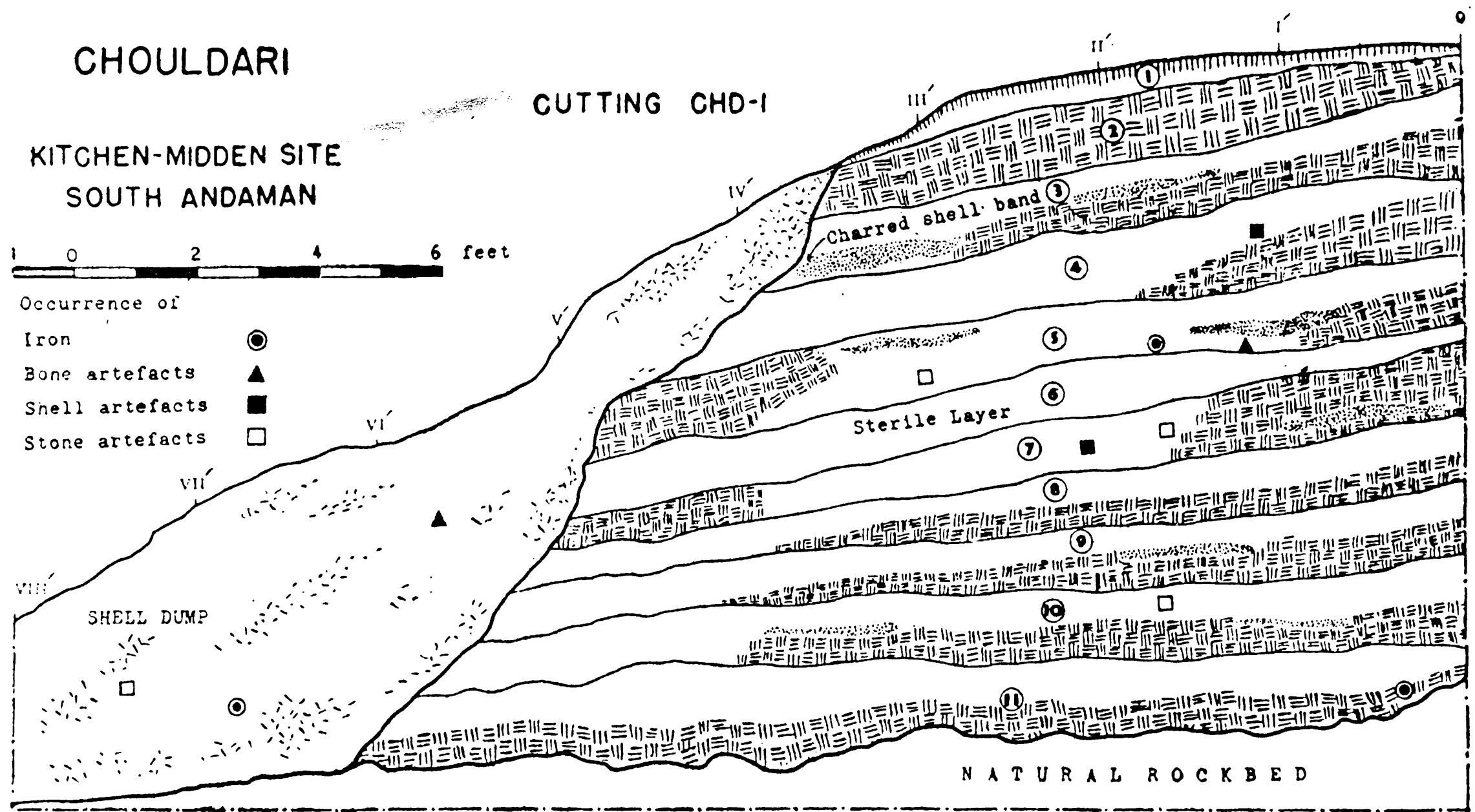


Fig. 3. Cutting CHD 1 of the kitchen-midden mound at Chouldari

Digging yielded a great quantity of mollusc shells, fragments of pottery and animal bone remains, but very few and poor artefacts made of bone, shell, and stone. This meagre yielded of material objects may be owing to our handling with a single cutting of a very limited area and, secondly, the temporary nature of settlement in this camping site.

Shells

The recovered mollusca shells belong to Gastropoda and Bivalvia Class, the species of the former being by far less numerically represented than that of latter. The common species were identified as: *Murex adustus*, *Trochus Niloticus*, *Pteroceras chiragra*, *Nerita albicilla*, *Turbo articulatus*, etc; and among the Lamellibranchia, the species represented were *Arca scapha*, *Arca fasciata*, *Arca granosa* and *Cyrena* shells. *Cyclophorus foliaceus* and *Spiraxis haughtoni* were extremely common out of land shells. Of course, 90 per cent of the accumulation was composed of *Arca* and *Cyrena* varieties. Examination revealed that all these specimens are similar in morphological features with the shells that are occurring at present in the islands. Calcified shells were also found to occur in some layers, especially at the bottom layer, numbered 11. Patches of charred and calcined shells were exposed in certain layers, notably layers 3, 5, 9 and 10.

Pottery

Fragments of pottery from the major and important contribution to the midden. The craft tradition was examined and analysed from a large number of pottery fragments.

The body clay, possibly obtained locally, is of course gritty in nature. The clay was not well levigated, and sand might have been used in clay mixture as tempering material.

The pots were prepared by coil-building technique. They were hand-made and formed simply by coiling strips of clay paste one above the other. Fragments exhibit very imperfect moulding leaving marks of crude craftsmanship. There is no evidence that the people of this site ever used any wheel for forming pottery. The form and size of pots are difficult to estimate because only much fragmented potsherds could be recovered. However, the curvature and mould of majority of sherds suggest that pots were medium in size and conoidbased. Some fragments also indicate vaseform pots with rounded base. Average thickness of sherds is approximately 6 mm.

No sherd was found bearing the application of burnish, slip or dressing. Only the surface of pots was made smooth, especially along the joints of coiling. This had probably been achieved by using shell spatula or *Arca* shells as revealed from parallel markings on the body. Some designs or decorations, such as simple incised linear and cross marks, are noted in a small percentage of sherds. These designs, illustrated in Figure 4, were probably imprinted and executed by the help of *Arca* shells.

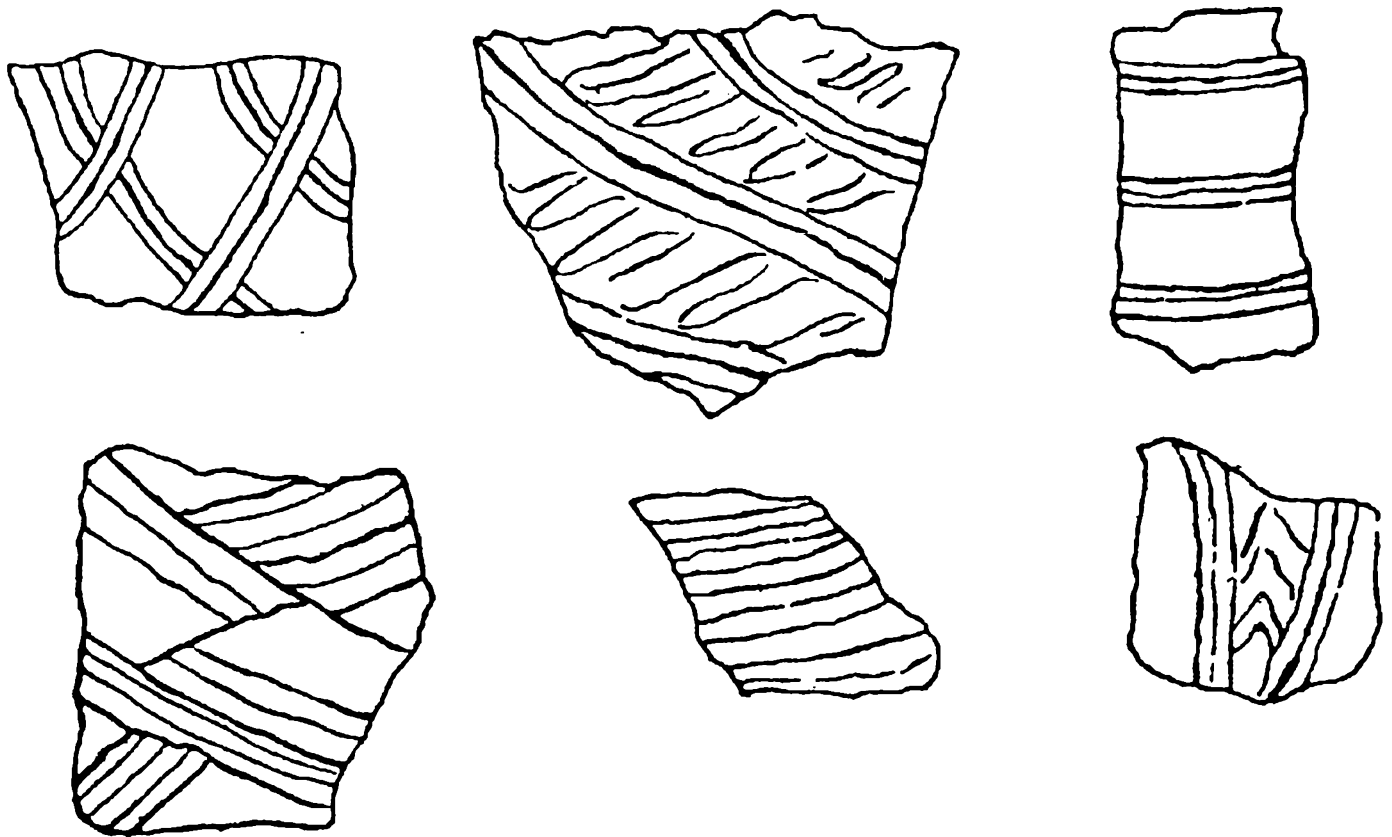


Fig. 4. Showing designs of potsherds

Evidence suggests that pots were not well fired in most cases, but they were half baked. No structure of any fireplace could be detected in the cutting, however. The colour of sherds is either reddish or black.

Animal Bone Remains

Mingled with shells and potsherds, there occurred a great number of animal bones in all layers, excepting the sterile one. The bones are mostly split and fractured long bones, including some broken lower jaw pieces. Most remains belonged to Andaman pig, the *Sus andamanensis*. Besides, some bones of fish, broken pincers of crab and shells of turtle were also recovered. In certain layers, small quantity of charred bones was found deposited,

Human Bone Remains

Only a few fragmentary bones were recovered. These came from layers 2, 3 and from the marginal dump area. They comprise a portion of distal end of left humerus, a portion of ilium, a fragment of the head of ulna and some more disintegrated lots. However, no evidence of any human burial could be detected at the site.

Bone Artefacts

Worked bones discovered from the digging are very few. They were mostly manufactured from split animal bones belonging to pig. There are some bone points (Figure 5, *b*). These points are narrower and

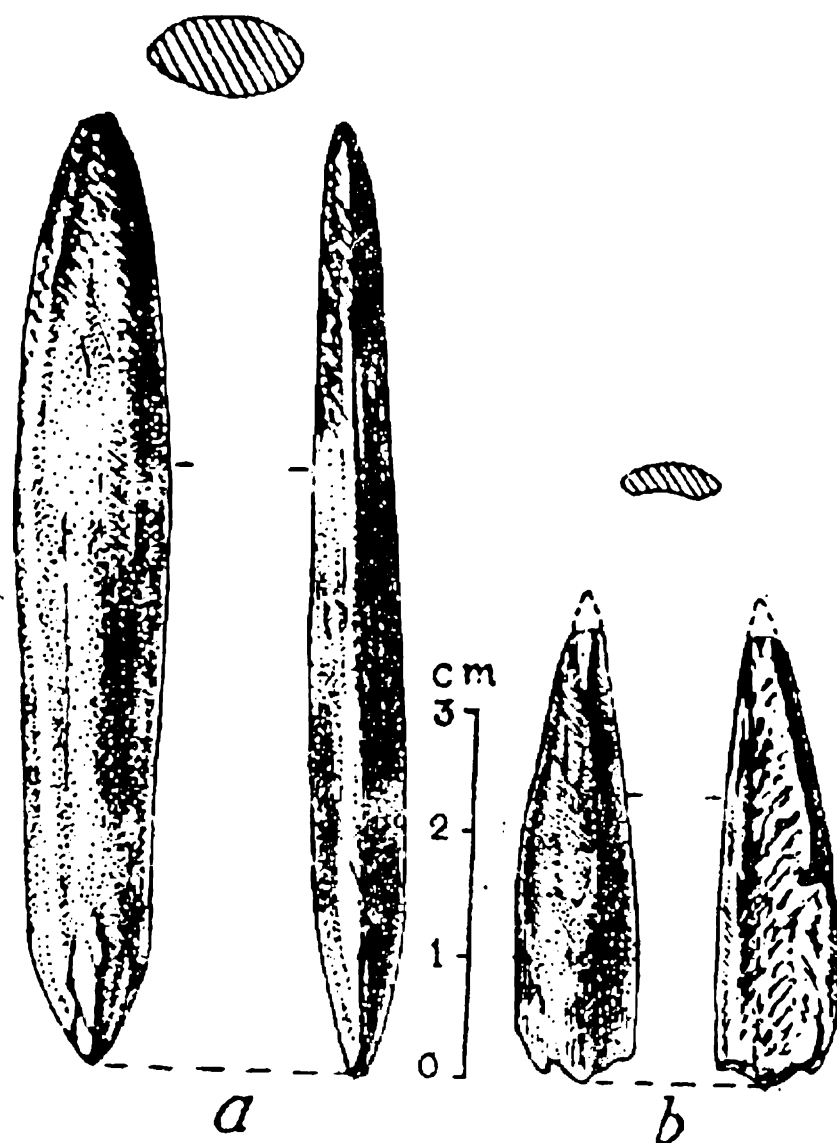


Fig. 5. (a) One finished spearhead
(b) Bone point

longer and suggest that they might have been used as arrowhead for hunting fish. Also another variety of points is available, one end of which

was made pointed while the other end was given a form of a large facet by grinding. This type of points, varying in length from 3.4 cm to 4.5 cm, might have served the purpose of barbs, either for arrow or for harpoon. Among the bone artefacts, there is a fine specimen of a finished spearhead. This specimen possibly represents a bone point of Mudak type described by McCarthy (1940). The cross-section is flattened oval, and the length of this spearhead is 7.6 cm (Figure 5, a).

Shell Artefacts

Artefacts made of shells are quite peculiar and distinctive of all. They show how the ancient islanders made a judicious selection of a particular part of a shell for use as implement. Mention may be made of the central spiral axis of Gastropod shells, the columella, which had been given a form of spatula by grinding (Figure 6). The implement might

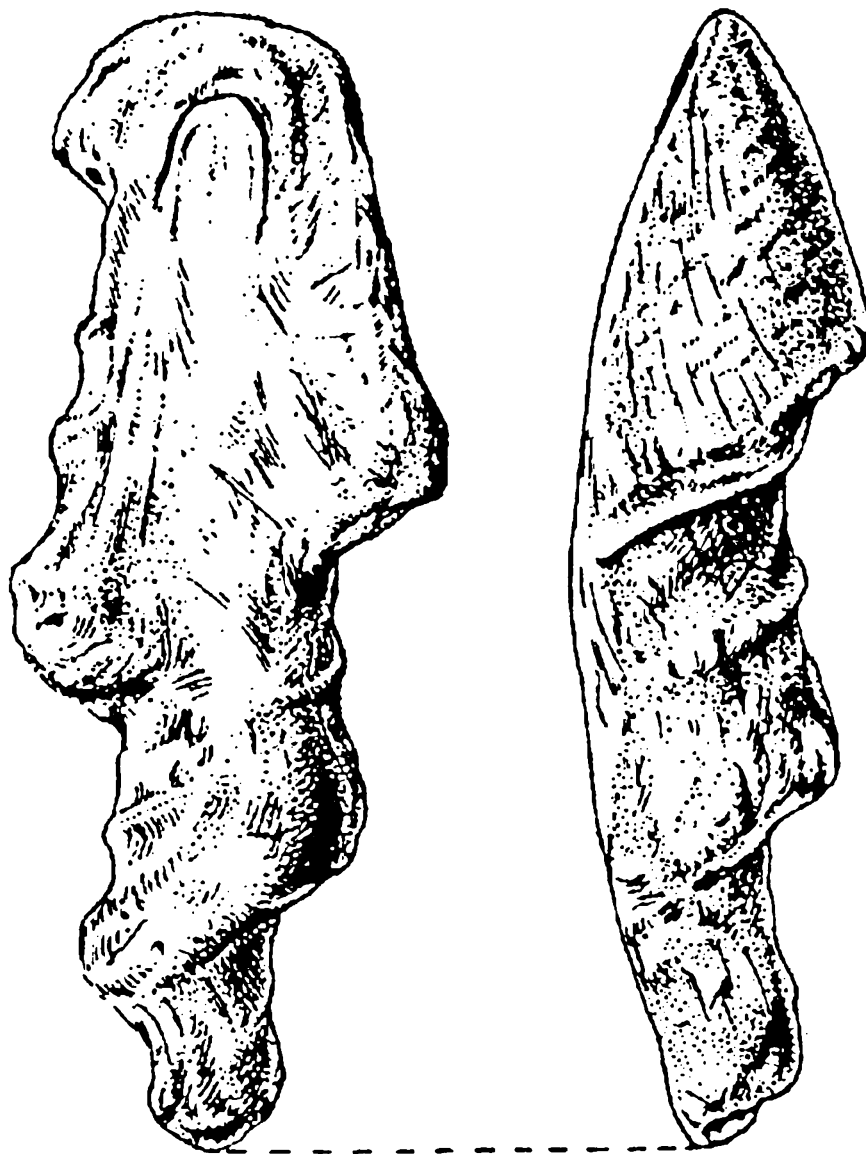


Fig 6. A shell spatula

have been used for shaping pottery. Again from the outer portion of Gastropod shell, scraper was prepared by grinding. The working edge

of the tool is very sharp, broad and somewhat convex. The implement is heavy and suggest that it was used for scraping, especially the harder materials (Figure 7).

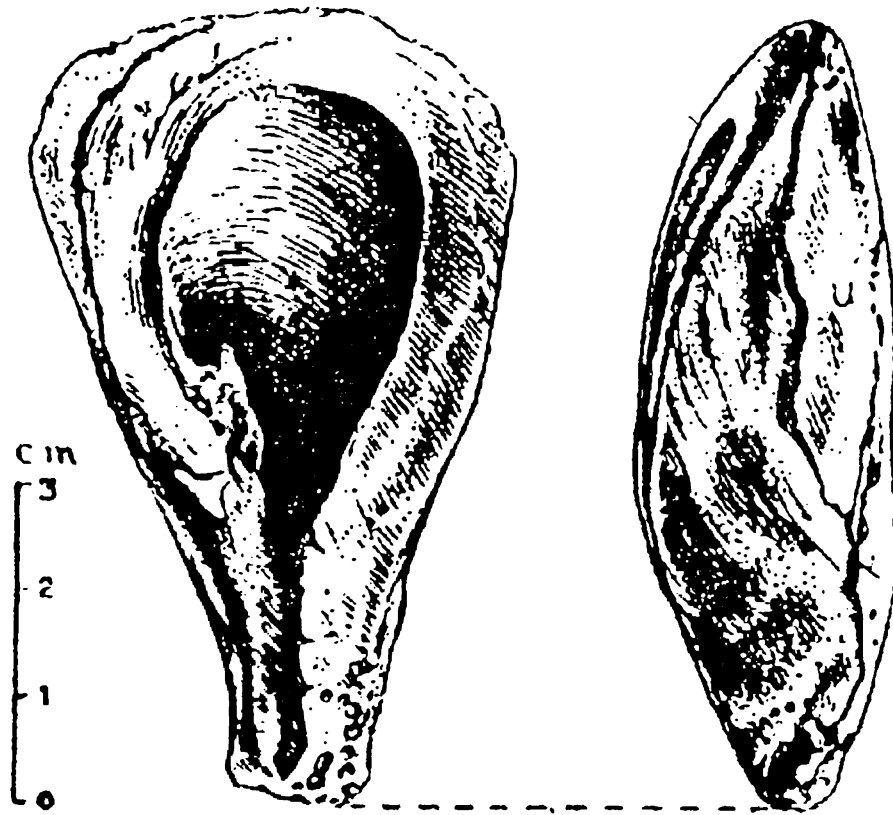


Fig. 7. A scraper made of shell

Stone Artefacts

It appears that a great variety of stone artefacts was also employed as some kind of rough instruments or to serve the purpose of grinding, hammering and of quern-stone. The last named specimen is illustrated in Figure 8. There are also some thin but round or oval polished stones

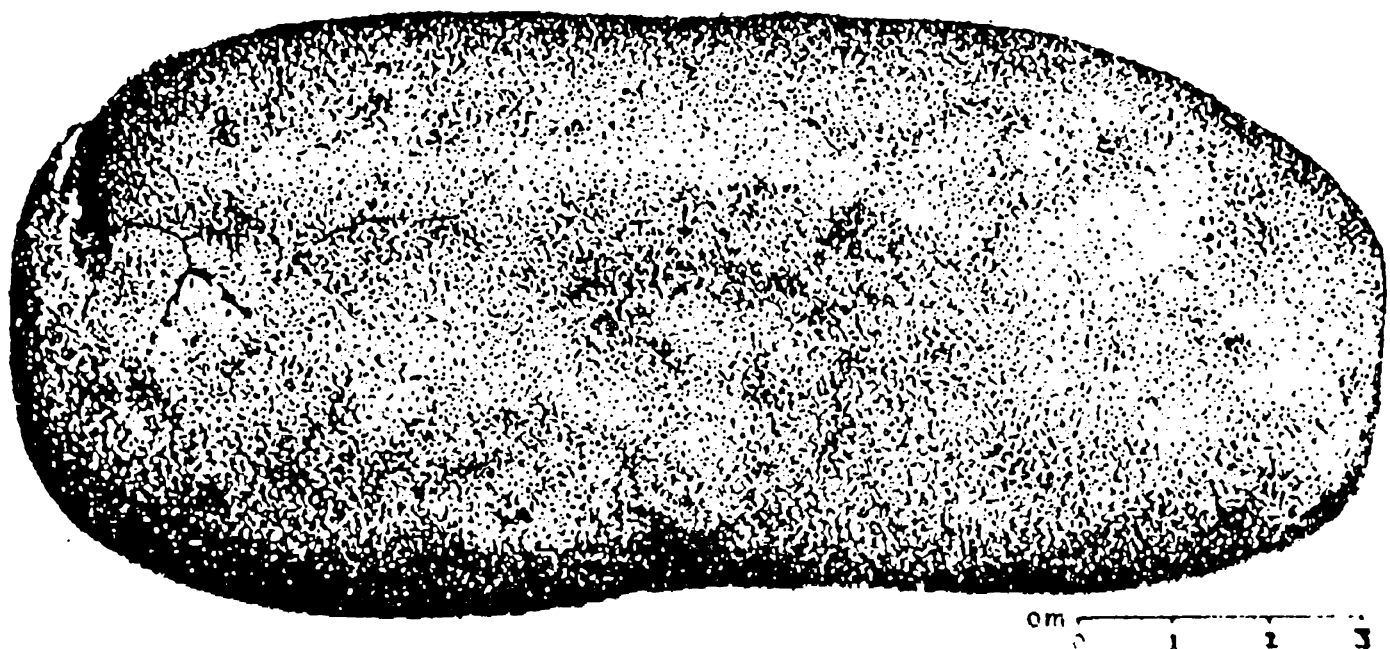


Fig. 8. A stone quern

which might have been used as cooking stones. In some instances, however, certain stone pieces indicate that they were used in some way or other, because the fractures on their surfaces cannot be attributed to a mere weathering off. Also a few adzes made of sandstone were recovered. Margins of them are parallel-sided or slightly converging towards the working end, cross-section being rectangular (Figure 9). Cut-

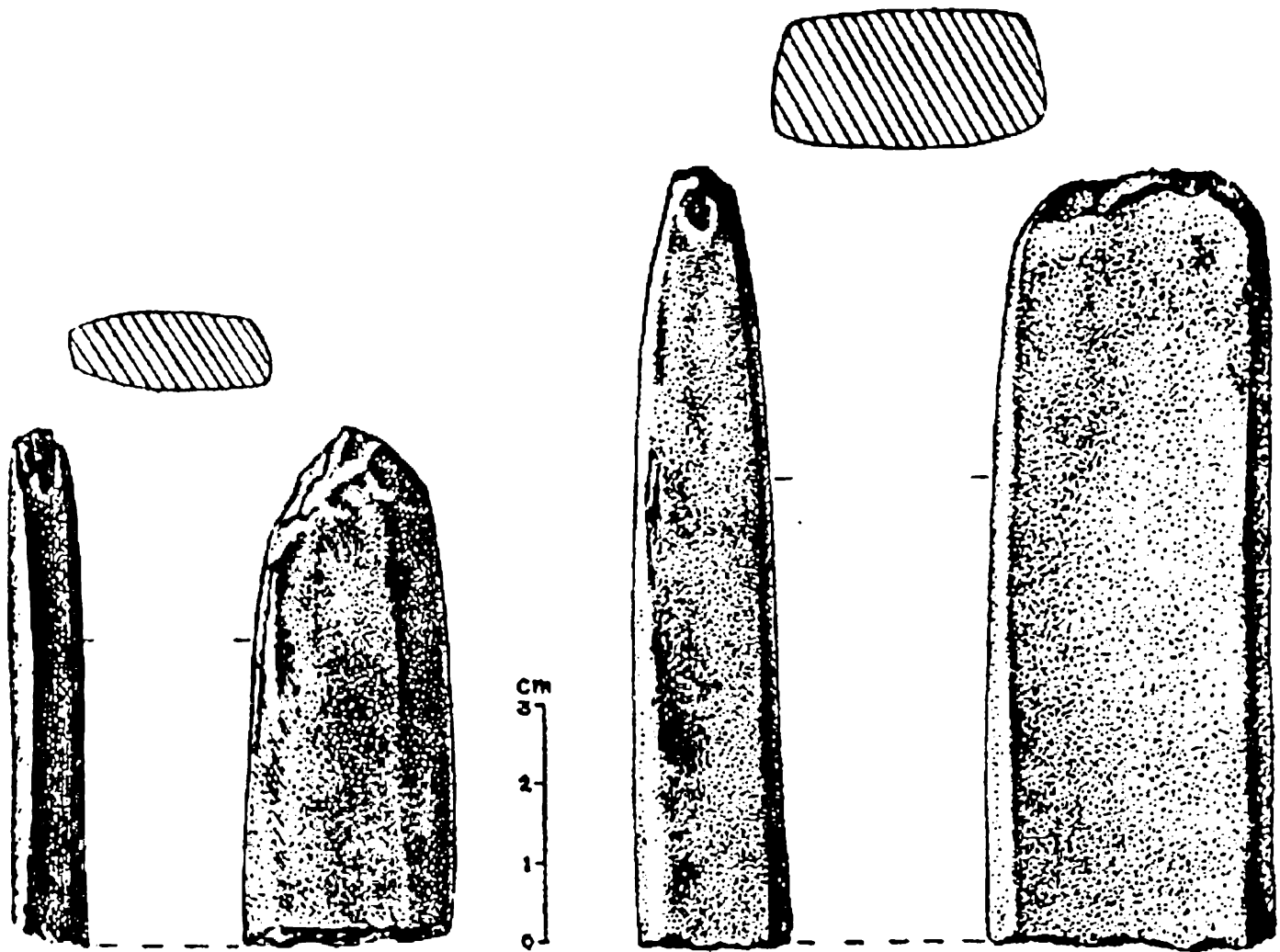


Fig. 9. Stone adzes

ting edge of adzes, which is somewhat pointed or in some cases transverse and broad, bears working signs. Both the dorsal and ventral surfaces are polished.

Iron Objects and Charcoal

Three badly rusted pieces of iron were yielded from layers 5, 11 and from the dump area. They weight 12 gm, 32 gm and 2.5 gm; two of them are rectangular in shape. The pieces appear to be portions of some objects which could not be identified.

Bits of charcoal occurred in at least seven layers. But the sparsely available bits of charcoal do not indicate the existence of regular hearths.

Flourine Content Analysis

The progressive fixation of flourine by bones embedded in a deposit gives us an objective criterion of relative age. But it has been seen that this method of dating is not applicable in region where flourine is excessively abundant, or in regions of tropical weathering where profound mineralisation can occur rapidly and in a haphazard way (Oakley, 1951 : 44).

Three animal bone samples of *Sus andamanensis*, recovered from three different shell layers of the cutting CHD 1, were chemically analysed in order to estimate flourine content of the samples. The results obtained are set out in Table 2.

Table 2. Chemical analysis of animal bone samples from CHD 1

Sample	Layer	F	P, O ₂	100 F/P, O ₂
1	3	0.15%	43.75%	0.32
2	7	0.15%	43.75%	0.32

The third sample collected from layer 11 showed no fluorine; it tried out to be mostly CaCO_3 . The results do not thus indicate any between-sample variation in flourine fixation by bones occurring from two different layers. They really suggest nothing when considered in isolation. Unless adequate series of samples from different adjacent deposits are subject to this test, their relative antiquity and dating cannot be indicated. It can be said with certainty that the examined samples possess a very low flourine content suggesting more recent occurrence. It would be of interest to compare the average result of flourine fixation, obtained by A. Carnot (*cf.* Oakley, 1951 : 44) by analysing a number of fossil bones recovered from various localities belonging to the Recent geological horizon, which is < 0.3 .

In this context, it may be recalled that the midden with which we are now concerned, yielded three rusted iron pieces. And the history of using iron, procured from ship-wrecks, by the aboriginal inhabitants of the Andaman Islands could be traced back to 1771 from John Ritchie's account (*cf.* Portman, 1899 [1] : 99-102).

THE LITHIC INDUSTRY

The lithic industry about which we are concerned presently was the outcome of an excavation in a kitchen-midden mound located at Beehive Island. The island lies between $12^{\circ}24'$ and $12^{\circ}26'$ North and between

92°55' and 92°56' East and is situated some 4.8 km off the western coast of Long Island in Middle Andaman (see Figure 1). Although the lithic collection accounted below renders rather a limited scope, for the yield being from a single site, the importance lies in the fact that this gives us a basic and first-hand knowledge about the prehistory of the Andaman Negritos. It may be mentioned that the occurrence of pigmy tools is completely lacking so far in other excavated middens which we know of. Brief technical analysis of the collection has already been given elsewhere (Dutta, 1963*b*, 1963*c*, 1964). It must be noted that this midden was, as usual, characterised by the accumulation of great mass of shells intermixed with potsherds and bones of the Andaman pig. The character of this shell mound was different from that of the midden described earlier because it yielded pigmy stone artefacts. The midden also contained human burial. Although one case of interment could be detected in the mound, it is unfortunate that the bones were not exhumed for study.

The stone artefacts (Figure 10) were fabricated out of some form of crypto-crystalline silica. The state of preservation of artefacts is fresh and without any sign of weathering. The entire collection, although small, is divided into broad categories of flake, core and finished tool, as shown in Table 3. The latter represents nearly 33 per cent of the total, while the by-product comprising flake and core is 67 per cent. The composition of the collection itself reflects two significant points. One is that the ratio of occurrence of finished tool to by-product comes roughly to 1 : 2 which favours the view that the site was possibly a factory site. On the basis of this, it could be suggested that the Great Andamanese had set up here a sort of workshop for manufacturing stone implements. Secondly, the presence of flakes in such an abundance is alone indicative of the basic character and nature of the industry.

Table 3. The Beehive lithic collection

Category	No.	Per cent
Flake	161	65.04
Core	5	2.03
Finished tool	81	32.93

TYPOLGY AND DESCRIPTION

In classifying the tool, a purely descriptive system has been adopted (Rouse, 1960). The collection is first classified into major tool classes,

THE GREAT ANDAMANESE : PAST AND PRESENT

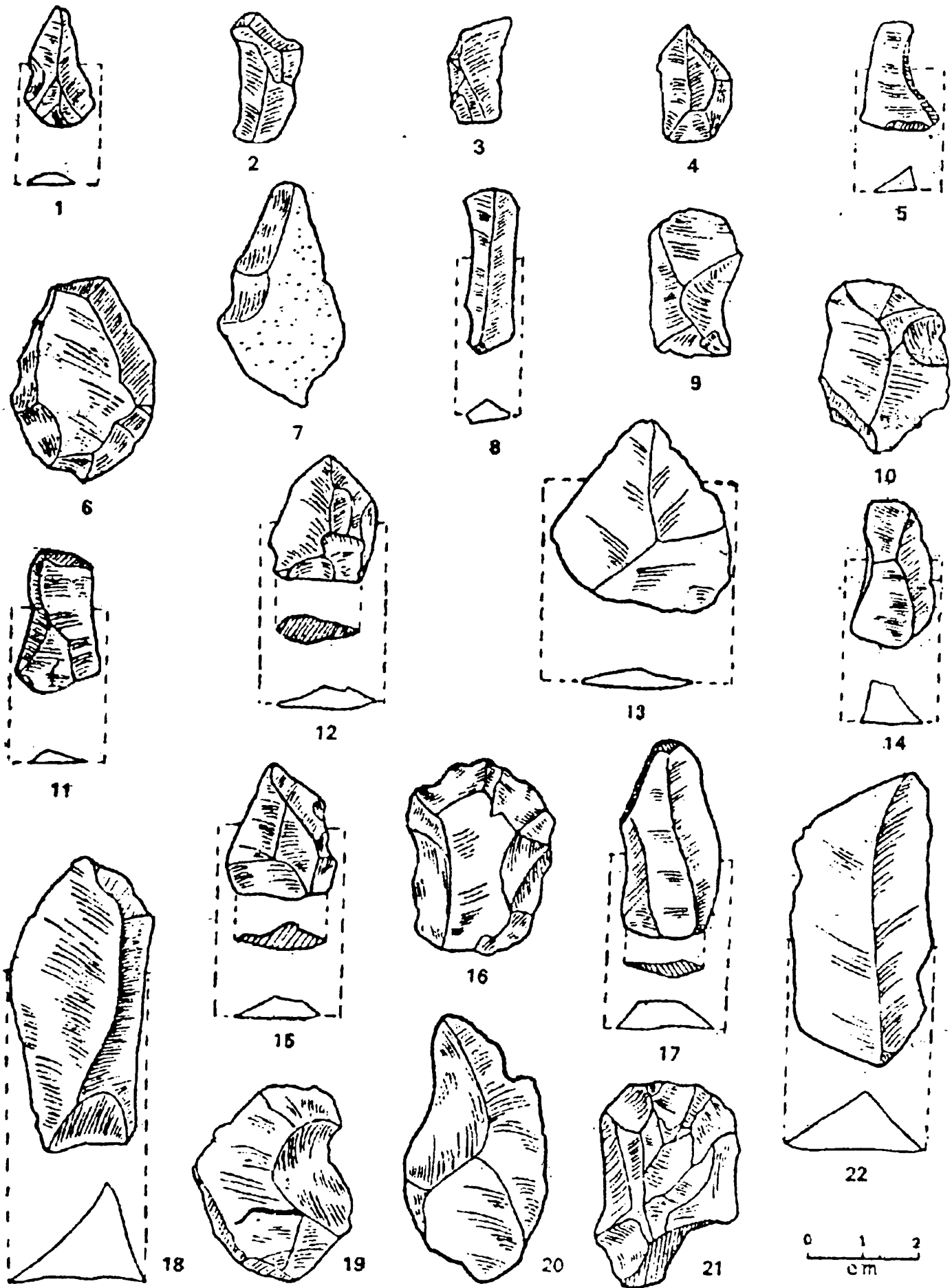


Fig. 10. Showing some of the pigmy tools made of crypto-crystalline silica recovered from the Beehive kitchen-midden

generally on the basis of function. The range of major classes that goes to constitute the industry included blade, point, scraper, trapeze and trapezoid, and the utilised flake. Wherever possible, these classes are further broken down into subclasses. The flake category comprises both the utilised and unutilised groups. Of them, 19 per cent can be considered as utilised flake and the remaining 81 per cent as unutilised ones. The latter, however, consists of flakes mostly of waste material. Among the cores, two are found to be double-platformed, while one is an irregular core.

Table 4. Classification of tool types

Class	No.	Per cent
Blade	24	20.86
Point	16	13.91
Scraper	19	16.54
Chopper	1	0.86
Trapeze & trapezoid	12	10.43
Perforator	7	6.08
Core	5	4.34
Utilised flake	31	26.95

The artefacts, mostly made on flakes, may be typologically analysed as shown in Table 4. It appears that the occurrence of blades among the finished artefacts is nearly 21 per cent, while scrapers (16%), points (14%) and trapeze and trapezoids (10%) come next in gradual descending order; when, however, the utilised flakes are considered as a class they register nearly 27 per cent occurrence, topping the tool classes in the Beehive collection. It may thus be realised that these major classes contributed considerably to constitute the collection we are dealing with. Among the finished tools the blade class, however, tops the list. All these artefacts have their dorsal surface worked up, while ventral surface is usually the main flake surface, the bulb of percussion being chipped off occasionally. Free flaking was the general norm, but in some controlled and pressure methods as well as perhaps steep retouches are seen to have been employed for finishing. Further subclasses of blade, point, and scraper are shown in Table 5. Some of the typical specimens are illustrated in Figure 10.

BLADE

The specimens of this class have longitudinal flake scars on their

dorsal surfaces. Ventral surfaces are unworked because they are the mainflake surfaces. Secondary retouches are absent, excepting in few. On the basis of technique of manufacture and the disposition of working edge, the specimens classed as blade may be subclassed as follows : Parallel-sided rectangular blade, pen-knife blade, concave blade, blunted back blade and bladelet.

Parallel-sided Rectangular Blade (Fig. 10 : Nos. 8, 11, 17, 22)

The blades under this subclass have more or less parallel edges and are roughly rectangular in form. Length of such blades varies from 18 mm to 50 mm. Each shows a pronounced dorsal midrib. Of them, two

Table 5. Subclassification of blade, point, and scraper

Subclass	No.	Per cent
<i>Blade</i>		
Parallel-sided rectangular blade	15	62.50
Pen-knife blade	4	16.67
Concave blade	2	8.33
Blunted back blade	1	4.17
Bladelet	2	8.33
<i>Point</i>		
Simple point	8	50.00
Asymmetrical point	6	37.50
Bifacial point	2	12.50
<i>Scraper</i>		
Disc scraper	1	5.26
Side scraper	8	42.11
Concave scraper	8	42.11
End scraper	2	10.52

exhibit double ridges. The striking platform is unprepared and forms an angle over 90° with the mainflake surface.

Pen-knife Blade (Fig. 10 : Nos. 14, 18)

The blades have a convenient margin, opposite to the working edge, where a finger can rest for effecting pressure during operation. The length of the specimens varies from 20 mm to 52 mm.

Concave Blade (Fig. 10 : Nos. 2, 9)

This seems to be a variant of the parallel-sided rectangular blade. The blades have one concave margin.

Blunted Back Blade (Fig. 10 : No. 3)

Only one specimen could be found in the collection. The blade is fine and shows a developed technique. Working edge is sharp, but the opposite side was made blunted by taking out minute flake scars. The blunt edge is curved and ends in a lateral point. The length of the specimen is 18 mm.

Bladelet

The specimens are small and roughly triangular in form. Steep retouches are present in some.

POINT

Points are represented third in the order of occurrence. The specimens are generally triangular in shape. Three subclasses could be recognised as follows : simple point, asymmetrical point, and bifacial point.

Simple Point (Fig. 10 : Nos. 1, 13)

The specimens are more or less symmetrical. They have been denoted as simple points in the sense that they are unifacial having un-faceted striking platform. In some, however, the dorsal surface shows pronounced midrib which is found to have been truncated in others. Ventral surface of the tools is the unworked mainflake surface which sometimes possesses a prominent bulb of percussion. The artefacts are crude without any sign of secondary working. One of them suggests a small tang at the butt-end.

Asymmetrical Point (Fig. 10 : Nos. 4, 12, 15)

The specimens of this group may be considered as a variant of the former type of points. They differ only being asymmetrical in form.

Bifacial Point

Only two findings represent this subclass. The form of the specimens is triangular having both the surfaces worked up. Butt-end possesses no trace of any striking platform.

SCRAPER

Scrapers have the second highest representation in the collection. According to the disposition of working edge, they may be divided as disc scraper, side scraper, concave scraper, and end scraper.

Disc Scraper

It is represented by a solitary specimen, not a very typical one. It seems to offer an all-round scraping edge. The flake scars of dorsal surface intersect with the flake scars of ventral surface to produce the working edge. The specimen shows crudity in technique.

Side Scraper (Fig. 10 : Nos. 6, 7)

One of the sides of the tools possesses working edge. This has been brought out by intersection of primary flake scars of dorsal surface with the ventral mainflake surface.

Concave or Hollow Scraper (Fig. 10 : Nos. 19, 20)

The working edge of the specimens is concave or hollow. A large primary flake scar is taken off from the dorsal surface which was made to meet with the ventral surface so as to form a concave working edge.

End Scraper (Fig. 10 : Nos. 10, 21)

There are two specimens of this subclass. Both of them show steep retouched cutting edges at the distal end. The cutting edge is convex in outline. Dorsal surface has primary flake scars.

CHOPPER

A beautiful small chopper, or chopping tool, was recovered. The middle portion of the dorsal surface shows cortex, while the periphery, excepting the butt-end portion, exhibits small primary flake scars. These upper flake scars intersect with the alternate flake scars of under surface to produce a jagged but sharp working edge (Fig. 10 : No. 16).

Trapeze and Trapezoid

The specimens are made on flakes. Their dorsal surface shows transverse flake scars. The ventral surface is the mainflake surface, which often has retained the bulb of percussion. The working edge of

each of them is transversely situated. This is brought out by intersecting a transverse flake scar of dorsal surface with the ventral mainflake surface. It appears, however, that all of them may not have been fabricated intentionally.

PERFORATOR

The perforators are small tools, generally made on flakes. They have sharp and projecting perforating points. The points have been achieved by sharp retouching.

UTILISED FLAKE

The flakes classified under this subclass show signs of use, though these have not been worked up properly to produce anything of the kind of finished artefacts. Utilised flakes constitute nearly 27 per cent of the collection.

INDUSTRY DESIGNATION

On the basis of typology and technique of manufacture involved, as described in the preceding paragraphs, it can be said that the stone tools recovered from the kitchen-midden site at Beehive Island in Middle Andaman truly represent a recent flake and blade industry attesting the mesolithic* cultural level. It is also apparent that the industry was constituted by certain types of true microliths.

AFFINITY AND DATING OF BEEHIVE ARTEFACTS

In an attempt to evaluate the affinity, or relationship, of the Beehive lithic culture, it is primarily necessary to have a clear idea about the geographical situation of the Andaman Islands. The strategic location of this group of islands in the midwaters of Bay of Bengal is extremely important from the point of view of a possible diffusion of culture from other lands. The case in point is that the Indian subcontinent is situated on one side and the South-East Asia on the other. It may be recalled that these two major areas had developed two distinct and divergent cultures with regard to the manufacture of stone tools during earlier phase of the Recent stone culture, the mesolithic (Clark, 1961 : 201).

*The term mesolithic used here is to denote and indicate the cultural mode of life and does not claim any implication of dating.

Owing to diversity of material techniques, the Andaman artefacts do not show any affinity whatsoever with those represented in India. The development of the Indian microlithic industries, in general, is broadly similar to types occurred in North African Caspian, Oranian and Sebillian, East African Wilton, and others, to Natufian of Palestine (cf. Gordon, 1950; Sankalia, 1946; Subbarao, 1958). The features of Recent stone industry of the Andamans, although lacking in much confirmatory details, on the whole, indicate that the industry bears a general resemblance in the sum total of characters with the flake and blade industries that had developed in South-East Asia. This does not necessarily imply, however, that they should be considered coeval in time. It may be noted that flake and blade industry was classically developed in south-western Celebes, which included artefacts, such as, flakes, blades, knives, arrowheads along with numerous waste products, and some true microliths (Heine-Geldern, 1945; Heekeren, 1957). This industry, commonly called *Toalean* after the existing Toale aboriginals of Celebes, has registered a spatial distribution over South-East Asia.

The Swiss naturalist cousins Fritz and Paul Sarasin (1905a, 1905b) discovered a blade industry of a semi-microlithic and microlithic character around Lamontjong in south-western Celebes. The industry found there consists of blades, knives, scrapers, points, barbed arrowheads, and numerous waste products. On the basis of mammalian remains from the said site, the Sarasins dated the industry as post-Glacial (Paul and Fritz Sarasin, 1908). This industry was found to have matured in south-west Celebes and spread over variously in its pure state or in its ramifications to different regions including Indonesia. This cultural tradition has been identified with the hunting peoples of Negrito stock (Clark, 1961 : 203).

Another Toalean site at Leang Tomatua Katjitjang, which also yielded flakes, blades, barbed arrowheads, bone points with serrated edges, bone spatula and bone spearhead, was excavated by P. V. van Stein Callenfels (1938). This site has been dated by Callenfels between 300 and 100 BC. Another site at Ara in south-west Celebes has been considered as one of the latest Toalean sites, and H. R. van Heekeren (1937 : 33) believes that its dating is '.....well up into historical times'. The Toalean culture materials have been found in more than 19 different caves, and Heekeren (1957 : 95) observes that the people responsible for the growth of this culture lived mainly on edible fresh-water molluscs as well as on hunting small games, fishing and gathering edible

wild plants. The associated fauna of this industry belonged to geologically Recent date (Hooijer, 1950). Graham Clark (1961 : 203) states, there seems little doubt that culturally they represent a drift south from the general area extending from Manchuria to Japan'.

This industry has also been discovered at Sumatra, Java, Borneo, Lesser Sunda Islands and West Flores (Bandi, 1951; Heekeren, 1935; Hoop, 1940; Koenigswald, 1935; Sarasin, F, 1936; Verhoeven, 1952; Zwierzycki, 1926). However, the site at Tanjong Bunga at the tip of Malay yielded so far the only Malayan artefacts which could possibly be recognised as representing flake and blade industry (Tweedie, 1953). With a view to having a better understanding of spatial distribution of this mesolithic flake culture in South-East Asia, Figure 11 would appear quite useful.

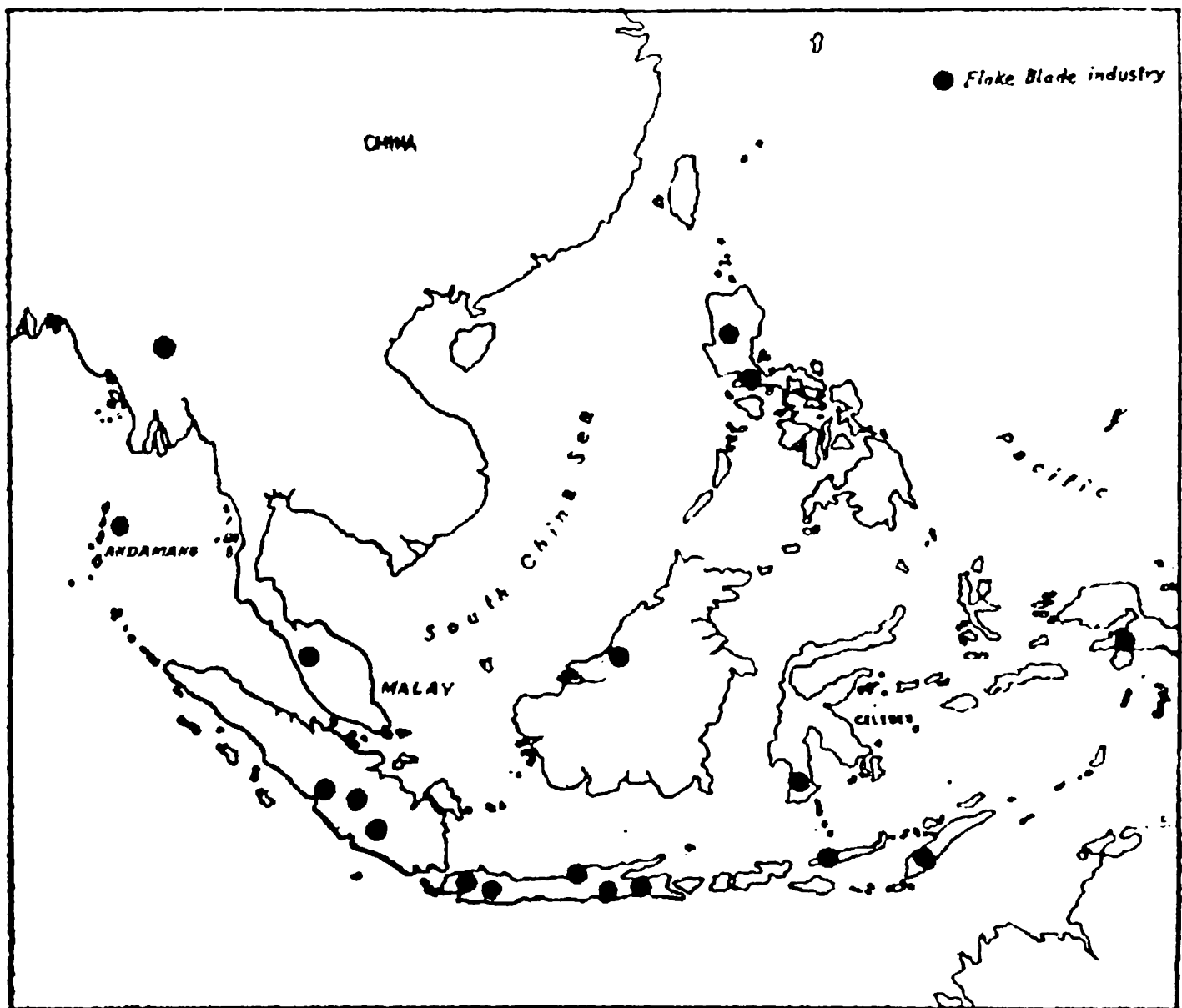


Fig. 11. Distribution of mesolithic flake culture in South-East-Asia

It must be noted further that there is no evidence of the Hoabinhian element being associated with Andaman shell middens. Although this is a native culture of Indo-China and Malay, it is found to have co-existed with flake and blade industry elsewhere (Heekeren, 1957 : 67).

The coastal middens associated with a late industrial stage of Hoabinhian culture along with potsherds were discovered in Province Wellesley of Malay (Earl, 1863; Stein Callenfels, 1935, 1936; Gorman, 1971). M. W. F. Tweedie (1955 : 5) believes that this industry is the only remnant of mesolithic culture, which was developed in Malay '..... from some time after 10,000 years ago until about 4,000 years ago'.

On the basis of tool classes available from the Andaman Islands, it may be suggested that the flake and blade industry of Beehive Island in Middle Andaman is broadly similar in character to the so-called Toalean mesolithic flake culture. But it should be noted, however, that the stone flakes or bone points with serrated edges, identified as an element of Toalean industry, are conspicuously lacking in Beehive collection. The most important of all, in this context, is of course the occurrence of potsherds in direct association with the flakes in Beehive kitchen-midden, which must one consider.

While considering the problem of dating the artefacts, one comes across the primary lacunae which is that there is no stratigraphical evidence for ascribing any date of the kitchen-midden culture of the Andaman Islands. However, one way of dating lies in the application of the indirect method, the relative procedure. This procedure, while taking due cognisance of the spatial distribution and developments of different kitchen-middens in the Andamans, should involve in comparing the material equipments of the middens with those of South-East Asia. It has been pointed out earlier that the faunal evidence of different Toalean sites of South-East Asia generally suggests a post-Glacial date for the flake and blade industry. It has also been noted that the anterior date limit of this industry is assumed to have corresponded to a date bracket of 300-100 BC.

The faunal evidence available from the Andaman shell mounds demonstrates the existence of animal life which are still surviving in the islands. This evidence, therefore, indicates a Recent date geologically for the middens. Furthermore, if the typology of the tool that constituted the lithic industry of Beehive Island is considered as face value and compared with that identified in the neighbouring regions of South-East Asia, it leads us to infer that there was absolutely no chance for the kitchen-midden culture or rather the bearers of this culture being existed in the Andaman Islands earlier than at least 300 BC. Again, the mesolithic flake culture of the Andamans is directly associated with one of vital traditions, the pottery. It should be recalled that the pottery

could only be found present in the Upper Toalean layer in Indonesia. The origin of pottery there seems late chronologically. Therefore, considering the relativity and also allowing due time concession for its spread and drift, the mesolithic culture might, it seems close an approximation, have possibly arrived in the Andaman Islands sometimes around the beginning of the Christian era. This proposition, however, sounds well under the concept of relative dating methodology, still there is scope to make it more authentic by dating the kitchen-midden contents of various sites using methods of absolute dating.

ETHNOGRAPHIC DATA

According to our model of ethnological analogy, the study demands that we should bear in mind an exact image of the living society of the Great Andaman Negritos. Because, as appraised of earlier, it will help us in reframing the past way of life of the Great Andamanese by projecting the discovered archaeological evidence against this living ethnographic background. Therefore, even at the risk of repetition, this section abstracts the salient features concentrating on settlement pattern, technology, economy, and social structure of the Great Andamanese as they were in existence during the latter half of the last century. The information has been drawn from, among others, Man (1883) and Radcliffe-Brown (1948).

SETTLEMENT PATTERN

The Great Andamanese habitation was featured by three kinds of dwellings—permanent, temporary and hunting camps. Permanent camp consisted of either a communal hut or a careful built-in-village, and was recognised as the headquarters of local groups. The communal huts were usually circular beehive shaped with an approximate diameter of 60 feet; the height of hut varied from 20 to 30 feet at the centre. It consisted of fixing up of two rows of posts of two different lengths in two concentric circles; taller posts were planted near the centre forming one concentric circle and shorter ones were put around the periphery of a hut. Both the circles were then connected by a number of slanting roof-timbers. Finally, the roof was covered by palm leaf mats which invariably made their way down to the ground. The village type camping places generally consisted of some eight huts built around a central open space, or in some cases in two rows, the open space was used for retiring and dancing; the doors were towards the central open place. Each hut or a part of the communal hut was used as the residence of a



A Great Andamanese man

PLATE 4



A Great Andamanese woman

single family. This type of permanent encampments was the highlight of the coast-dwelling folk.

The temporary camps were built mainly for use for two or three months. Those were planned in the form of a village just described earlier, but the huts here were never prepared diligently. This type of camps was a characteristic feature of forest-dwellers. The hunting camps were prepared only for a few days' use, and, therefore, these were absolutely temporary in nature. Examples are the thatched 'lean-to' or 'wind-break' shelters.

STRUCTURE OF SOCIETY

They lived in small groups scattered over Great Andaman, mostly in coastal region and some in interior of the forest. They were divided into two main divisions—the coast-dwellers and forest-dwellers. These divisions were known as 'Ar-yoto' and 'Eremtaga', respectively, in their own language.

Two main divisions had a number of local groups which were recognised as the landowning groups. A number of family units, comprising 40 to 50 individuals, constituted a local group. A family was composed of a man, his wife, and their unmarried children, either own or adopted. Each local group used to move within its own recognised territory with full freedom of hunting rights over it. They were semi-nomadic and moved about in quest of food within their own area. The coast-dwelling people were, however, more nomadic; they never used to stay at a particular locality for more than a month or so, but went on changing camps continuously. Their camps were even of a shorter duration in the exigency of death of any member, or if the camp site became unsuitable due to decomposition of animal refuse accumulated at the site.

Frequent shifting of camps was possible for the coast-dwellers, because they could make use of canoes for transportation. On the contrary, the forest-dwellers had no such means of transport, and for the purpose they had to depend on their own physical prowess.

There was no organised form of government. Affairs of the society was controlled and regulated by senior members who had possessed certain personal qualities.

TECHNOLOGY

Bow and arrow were the only vital implements for hunting and

fishing. They were also the only weapons used in war and chase. Radcliffe-Brown (1948 : 418) aptly defines them as '.....the essentially a bow and arrow people'. The bow was made of a hard wood. For hunting in the interior of forest, the bow used was generally of 4 feet in length. But a little larger bows were used by the coast-dwellers for hunting and shooting fish.

Two kinds of arrows had been in use : one for shooting fish, and the other for hunting pig. The simple form of arrow used by them had a blunt wooden head. The shaft was prepared from bamboo (*Bambusa nana*) and the foreshaft from the wood of *Areca*. The ordinary fish arrow was the same as above ; but its point was sharpened. Another form of fish arrow about 4½ feet long, consisted of an iron wire head and barb. Man (1932 : 176) states that in former times the head of this arrow consisted of a fish bone. Pig arrow was usually about 3½ feet in length, the foreshaft of which consisted of a triangular piece of flattened leaf shaped iron fastened to the end of a small stick about 4 inches in length. To give shape to the head, stone hammer was used, and whetstone was employed for its finishing. At the base one or two iron barbs used to be fixed to the stick. There had been another form of pig arrow having no foreshaft like the above. In former times, it is believed that pig arrow was headed with *Perna ephippium* shell instead of iron. The pig arrow was generally provided with a detachable head part.

Next important was the harpoon which was used for hunting dugong, turtle, porpoise, and large fish. It was often 18 feet or more in length, and consisted of a strong barbed iron head fastened to a short piece of wood to which a long line was attached. Here also two iron barbs were generally attached by means of thread. It could be operated from canoe. They possessed two types of canoe—one the large dug-out and the other a small outrigger. Sometimes, they also made use of hunting spears. Although there was a kind of pig spear, some 6 feet in length, a true fish spear was unknown. Women used small nets for collecting fish and prawn. The people used to collect roots by digging stick, and fruits were procured by hooked pole. For gathering molluscs and for cutting honeycomb from tree they used adze. The adze, made of iron, was also used for making canoes, buckets, bows and also for digging graves. Its handle consisted of an elbow shaped piece of mangrove wood (*Rhizophora conjugata*).

It may be noted in this context that the use of iron happened to

be a new innovation. The use of iron procured from shipwrecks by the Great Andamanese could be traced back as early as 1771 from Ritchie's account (Portman, 1899 (1) : 99-102). Quartz and glass flakes had been in use for shaving, scarifying, and tattooing. *Cyrena* shells were used variously to serve the purpose of knives.

The people used handmade pottery. The pots were made of clay which was locally available. They prepared these by coil building technique. After moulding pots, those were used to be dried in the sun and then finally baked in fire. In South Andaman the pots used were smaller in size and conical based, while those of North Andaman were larger with rounded bottom. The people, however, had no knowledge how to produce fire. The fire, produced long ago, perhaps accidentally, was carefully kept burning; the people used to carry the fire whenever they moved.

ECONOMY

The coastal group had to depend mainly on food obtained from sea and less on forest produce. The forest-dwellers exploited mainly the jungle produce and, when available, the inland creek resources. The coastal group was naturally more adapted to fishing hunting of turtle and dugong and collecting of molluscs. The forest group, on the contrary, was more skilled in hunting wild pig, collecting honey, fruit, seed, plant and root of edible varieties from the forest. The Great Andamanese depended for food entirely on the natural products of sea and forest. Their diet included dugong, fish, crab, crayfish, prawn and molluscs of sea, and the meat of wild pig, wild honey and edible plants collected from forest. The economy of the aborigines had, therefore, been based solely on collecting roots, fruits and honey, fishing in sea or in inland creeks, and hunting wild animals in the forest.

THE SITUATION IN 1970s

As noted earlier, the Great Andamanese community now comprises an amalgam of five tribes, out of ten, and is represented by only 23 surviving souls (14 males and 9 females). A detailed study of the community undertaken recently by Chakraborty (1976) clearly brings to light its present sorry state of condition. Loosing cohesion and integrity, the living members of erstwhile different Great Andamanese tribes have merged together and struggling hard for their very existence. In the community there are now only seven children (5 boys and 2 girls. below

age 14) and three married women who are still within their reproductive age. The eldest member of the community is a male aged about 90 years and the youngest a male child aged about 18 months.

All the members of the community have been settled by the Andaman and Nicobar Administration in an islet known as Strait Island. All of them have been provided there with tin-roofed wooden apartments with cemented floor. And the government is supplying them with cash doles, food, clothings, medical facilities and other such items of necessities as well. Their techno-complex has changed. Although they are not to subsist on their traditional economy, they still prefer to live on hunting and collecting. While rice, wheat, pulse, etc., are in their store, they seize immediate opportunities of hunting turtle, dugong and fish (pig being rare there) and also collecting roots, fruits, and tubers. At any rate, they cannot now be regarded as mere hunter-gatherers. They have, in fact, lost much of their traditional way of life.

PLATE 5



The oldest Great Andamanese man, named Loka, with his dogs in Strait Island

PLATE 6



Great Andamanese with a turtle shell

PLATE 7



Great Andamanese enjoying a feast on turtle meat

PLATE 8



A Great Andamanese woman digging up tubers for meal

T H R E E

RECONSTRUCTION AND INTERPRETATION

The chief concern of the present study, as may be spelled out once more, is to reconstruct and interpret what was the cultural milieu of the Great Andamanese--concerning specifically to technology, economy, and subsistence-settlement pattern. While trying to address the problem it clearly evinces that there was an apparent culture continuum which persistently maintained a link between the past and the present situations. The main process that have had been in continuous operation behind this was the urge for the Andamanese to seek a solution of existence by adapting the isolated, insular Andamanian environment to themselves.

In order to formulate an workable outline, data relating to physical environment, archaeology, and current ethnography of the Great Andamanese have been presented in the preceding chapters. As already noted, the study attempts to analyse and explain archaeological data in the light of the extant cultural configurations of the Great Andamanese. And for the purpose, the study uses the recent ethnographic information of the group for the construction of an analogical model to aid in reconstructing and interpreting the archaeological data.

It may be realised that this attempt would have remained futile in the absence of the present investigation which has enabled us to bring forward specific data that we need most. Because the kitchen-middens, or shell mounds, as could be realised, have never been systematically excavated earlier excepting the attempts of Lidio Cipriani (1955). It must be made clear, however, that despite the current effort, the quality and quantity of data available, although effective in a way to some extent, are certainly not sufficient to work out a comprehensive and coherent picture of cultural history. Of course, this difficulty of procuring adequate data is generally a common feature of this kind of study. It may be noted also that a major part of our evidence relates chiefly to the 'material culture' of the past. Since this is the product of a very limited range of human behaviour, it offers only a limited basis for reconstruction. Notwithstanding, our purpose will be served, albeit inade-

quately, if the present study can bring in sharper focus certain important parameters relating to technology and economy of the past society. While, in reality, a major part of society's adaptation is based on its technology, inferences about economy are largely guided by tools, equipments and faunal data which a site contains.

From the material so far presented, it clearly bears out that the kitchen midden sites or shell mounds are of paramount importance because of being the most prolific source of past information.

THE ANDAMANIAN NICHE

An analysis of the system of nature, within which the islanders have been living as an entity, is of prime importance. Because it was the interaction and emerged relationship between and among the islanders with different entities of environment—surface features, climate, natural vegetation and all forms of life—that determined and shaped their pattern of culture. The chief causes of ecological variability in the islands are the tropical climatic condition, forest and marine influence.

In the present study, there is however no specific evidence available, namely pollen and palaeoclimatic data, on the basis of which past environment in the Andamans could be reconstructed. The pointer, or marker, that may merit utilisation in this regard is the faunal evidence associated with the kitchen-midden culture complex. An analysis of the available fauna, both terrestrial and marine, shows that the forms of animal life which existed in past, associated with this complex, are now currently existing also. This implies, in general terms, that past climate was not rather dissimilar to that of the present day.

On the basis of currently available meteoric data, it may be inferred that past climate must have been tropical, characterised by warm and humid weather. The rainy season, as usual now, predominated by two monsoons each year. Owing to heavy precipitation, the islands must have been covered by exceedingly dense tropical forests of the evergreen and deciduous growths. But the jungle was then certainly more dense with rich stores of edible and other varieties of plants and hardwoods. At present, some portions have become comparatively thin due to the clearance of forests by colonists for settlements and for commercial use of forest material as well. The territorial area for the movement of the Andamanese has gradually shrunk considerably during the course of the last hundred years or so.

The wild pig seems to have been the only bigger animal game that roamed in dense forest. It may be noted that other than the bones of wild pig, no remains of any larger variety of games could be available from excavation. At present, there are only three large mammalia, and of them the pig is the only bigger one in size. The forest produces the major raw food stuff, namely roots, tubers, fruits, flowers, seeds, and honey. These resources were also available, we may presume, from time immemorial in the islands. The sea was especially important as it is now since it must have provided the major animal protein requirement round the year. The sea supplied edible fishes, shells, crabs and turtle.

Distinctly, therefore, the Andamanian niche provided two clear ecological components, comprising coastal and inland. But since the livelihood was, for practical reasons, more dependable then on sea resources than on the interior forest, the coastal maritime ecology must have definitely permitted a greater cultural adaptation through stability. It can be argued that coastal maritime ecology, in particular, had functionally 'optimised' the life-situations and hunting-gathering expectancy of the Great Andamanese. Because it could have reasonably assured a greater range of marine fauna providing alteranatives and permitting a relative ease in subsistence, resulting to a long-term stability of the Great Andamanese way of life—the whole culture. In them, therefore, we find a fine example of how the way of life of the hunter-gatherers became highly adaptive and closely timed to the local environment.

TECHNOLOGY

The remains of technology preserved at the Beehive site consist of, among others, a series of lithic pigmy tools which is the most important of all. The kitchen-midden culture complex is represented here by a flake and blade industry. The raw material used is crypto-crystalline silica. The ratio of finished tools to by-products comes roughly to 1 : 2, which immediately leads us to view that the site might have been a 'factory site' as well. The major classes of tools that constituted this industry are blades, points, scrapers, trapeze and trapezoids, and utilised flakes. Free flaking was a general practice, while there are instances of controlled and pressure methods being employed for fabricating tools.

The occurrence of stone points suggests that the people of this site used arrows for hunting games including fish, for we know that bow and arrow is a vital weapon of the contemporary islanders. The stone

points appear to have served as arrowheads, which must have been hafted on a wooden line. No remnants of bow or the wooden shaft of arrow are available, however. But it may be conjectured that the form of bow might have been similar to that used by the recent Andamanese. The triangular stone points seem to have been used as arrowheads of pig arrow, while the narrower stone points could have been quite suitable for arrowheads required for hunting fish. While the former type of points can be considered as a substitute for the leaf-shaped iron heads of pig arrow used during recent times, the latter was a representative of ordinary fish arrowheads. Trapeze and trapezoids, which possess sharp and broad cutting edge, were possibly used as transverse arrowheads. It is a possibility that some varieties of blades and scrapers were profitably utilised for preparing food, skinning, gutting as well as piecing games. Pen-knife blades must have been specifically used as cutting implement. Sharper flakes show that these could have been used effectively for shaving head, scarifying skin of the body and limbs. And added to these, the people seems to have utilised a large range of smaller unfinished but quite sharper flakes of different dimensions. It appears probable that smaller blunted back blades and bladelets were used as a composite tool for the purpose of sawing wood or for dismembering games. These stone artefacts were possibly mounted with tree-gum, or some such adhesive, on wooden shafts, as has already been reported from many other mesolithic communities elsewhere.

The site at Chouldari in South Andaman has provided a completely different kind of technology, not comparable to that represented at Beehive Island. It preserved implements and equipments made of stone as well as of bone and shell; the implements of bone and shell are characteristic and most important than those made of stone. All these were used by the people of this site for their domestic need and also for hunting and defending purposes. Raw material used for stone implements is mostly sandstone.

The implements comprise adze, hammer, grinder, quern and possibly cooking stones. The adze, which could have had a wide range of use comprising the making of canoes, bows, buckets, and, perhaps, digging graves, must have been fixed into a natural elbow of a suitable short branch of a tree used as handle. The implement played an important role among the recent Great Andamanese as a multi-purpose tool but instead of stone they used iron blade.

Besides this group of implements, the people of this site also made use

of bone artefacts which comprise points, barbs and spearheads. Bones of pig were the raw material for this. The bone points had, perhaps, a general use of hunting fish and pig, while it seems likely that the spearhead was limited to dugong- and turtle-hunt. Next in category are the shell implements. The spatula obtained from the site might have served the purpose of shaping pottery. The specific use of shell spatula can be inferred by drawing an analogy that this type of implements is still in use at Chowra Island belong to the Nicobar group for the same use. The shell scraper must have been utilised for cutting and scraping woods and harder materials.

It thus becomes apparent that implements made of stone, bone, and shell were used by the people for their domestic as well as for hunting and defending purposes. It is apparent that pigmy² stone tools were the most important of all, at least, in the earlier phase of kitchen-midden culture complex. The raw material used for fabricating stone tools was, and is still, easily accessible locally. In a later time, evidently, this lithic component of the Great Andamanese culture was modified completely replacing a new kind of technology.

The site at Beehive Island in Middle Andaman has yielded a cogent series of lithic pigmy tools. As far as the technology is concerned, it represents a distinct chronological site with the culture complex. The technology here was somewhat equivalent to a cultural phase attributable to the mesolithic stage of culture. The other site at village Chouldari in South Andaman, on the contrary, represents clearly another phase of culture within this complex, which seems to have absorbed certain elements of sub-neolithic category. In this complex, therefore, the technical culture of the Great Andamanese at Beehive site may be considered chronologically earlier than that of the Chouldari site. But, again, this seems to be rather a question of optimality, favouring these local variations of regional technologies at different point of time that were more effective and efficient.

There can be no doubt that the occupants of both the sites were well acquainted with the technology of pot making. The pots certainly formed an important and regular item in their domestic life. The pots, which were rude, were prepared by coil-building technique. And sometimes these were decorated with simple incised linear or cross designs imprinted and executed, possibly with *Cyrena* or *Arca* shells, attesting their taste for art. The evidence suggests that not all the pots were well fired, but many were half-baked. Cooking in pots

might have been a process. But it can certainly be said that cooking was also done either directly on fire or with the help of hot cooking stones as performed by the contemporary people.

It is important to note in this context that recent Great Andamanese did not use any pottery. They completely lost the art and technical know-how of their building. Radcliffe-Brown (1948 : 473) states.the early Andamanese were acquainted with pottery before they were divided into Great and Little Andaman Division.'

Why this vital and useful tradition died out completely from the society of the Great Andamanese is an interesting question. There are example to show, however, that in small and isolated communities sometimes some useful traditions are readily discarded while others die very hard (Allehin, 1958 : 198). Even highly useful ones, as in the case of the Melanesian society, may be forgotten under pressure of cultural crisis (Rivers, 1912 : 109-30).

However, one factor might be responsible for the disuse of pottery in the present case. It seems that this most interesting of the Andamanese domestic utensils had had possibly a marginal functional value for boiling edibles or for other domestic needs of the past society. This was perhaps because of the fact that the pots often cracked while baking. The temporary storing of foodstuff, if any, might have been made in wooden buckets, bamboo tubes or in cane baskets; although nothing can be founded owing to the non-availability of any relevant remains. The deduction is only possible on the analogy of the recent storing system of the aborigines who made use of the aforementioned receptacles for the purpose. Furthermore, in an ever-moving community, the pottery would appear to have a limited appeal because of their fragile nature. It must be realised that extinction of pottery from the Great Andamanese society was greatly accelerated by contact with civilisation which brought for them a better range of material, instead. We know that this complexity was replaced, and at large, by metal vessels during recent times.

Since the coast-dwelling kitchen-midden folk was closely related to sea, it may be conjectured that they must have used some sort of watercraft. In the absence of any evidence, however, it is difficult to guess the exact nature and form of this important item. It is known that the present-day Onge, like the Great Andamanese of the former times, use outrigger canoe for their continued movements. Besides, another less complicated variety of water transport is also available from the Andamans, the bamboo-raft, used by the Jarawa group. The bamboo-raft is believed

to be more primitive than canoes, technologically. All these point towards the possibility that the past Great Andamanese used some sort of watercraft similar to bamboo-raft.

On the whole, it clearly evinces the level of techno-complexes that existed in the past. But notable is the realisation that the same techno-complexes, in principle, have been carried over to the contemporary Great Andamanese society, without much innovations.

ECONOMY AND SUBSISTENCE PATTERN

Struggle for survival is the key tone of prehistoric life. The evidence so far elicited clearly suggests that natural products of sea and forest, which were quite plentiful and inexhaustible in the Andamans, formed the only source of food supply. Incidentally, it is worth mentioning here that most hunter-fisher-gatherer communities are characterised by a long-term stability of demographic structure; and they do not really bother for accumulating food or increasing its production. The result is that food needs, under an unchanging environment and subsistence technology, remain more or less stationary year to year.

The economic life and subsistence pattern of the people who evidently inhabited the two coastal sites under study must have been under the direct influence of the maritime environment rather than terrestrial. Although the diet of these coastal people must have been composed of both vegetable and non-vegetable items, it is no wonder that they depended predominantly on animal nutrition. Their dependence on this particular item of food obtained from sea could be ascertained from the magnitude of shell deposition at these two sites. Of the edible species of shells available in the Andamans, some nine species were, as recorded in a preceding chapter, eaten by the Great Andamanese, infrequently as alternatives. But the major animal nutrition supply as staple was chiefly maintained specifically by three species, namely *Arca granosa*, *Arca scapha*, and *Arca fasciata*. The fleshy portion of the shell was extracted by opening apart the bivalves, and in the case of gastropods by breaking them up at their back. The shells were obtained from coral reefs and brought to the sites by the collectors. The middens were seen to have been tightly composed of ninety per cent of the aforementioned three species of the class Bivalvia. Molluses are particularly very easy to collect during the rainy season, that means end of April through December; these therefore became an important staple for at least nine months of the year.

There is no evidence available for fish remains from the excavated sites. But since this animal food is abundantly obtainable either from open sea or from creeks almost round the year—excepting for the period of heavy rains—it was certainly considered as an important item in the diet of the islanders both in the wet and dry seasons. Besides, the variety of fish, including the cray fish, crab, turtle, lobster, and other such edible species were available to supplement their diet. Except for the rainy months, honey as well as the honeycomb were available to the ancient islanders throughout the year. Honey must have been considered a delicacy by them. Turtle eggs are available seasonally during the months of April and May.

The remains of split and fractured animal bones present in these two sites are adequately indicative that the inhabitants often supplemented their diet by consuming meat of wild pig, *Sus andamanensis*, for subsistence. The nature of fracture in long bones of pig, probably achieved by the help of hammer stone or some kind of suitable heavy stones, suggests further that the people also used to extract bonemarrow to add to the menu as delicacy. It is viewed by the present people that a good diet should always include the meat and fat of pig. During the rainy season they are not only plentiful but are found in a better state. But needless to mention, it was really a tough job for the ancient Great Andamanese to kill wild roaming pigs with nothing but bone- or shell-tipped arrows and to dress carcass by crude stone or shell tools. The game must have been stalked in and around deep coastal jungles by more than one individual, certainly collectively, as was customary with the recent Negritos. The method of hunting could be same alike the recent practice, but minus the employment of dog. A hunting party enters the forest armed with bows and arrows, spears, and a few dogs. The dogs, introduced by the colonists in recent times, are let loose on the pig's trail, and as soon as they scent the presence of a pig they chase it until the latter is brought to bay when the hunters shoot it down. Pig-hunting requires not only skill but endurance and time.

It is likely that the people might have also been in search of civet-cat for its flesh. We can imagine, however, a pig, a dugong, or a giant turtle hunt means an orgy of food for them. There is no evidence to show that they ate flesh of bird.

The important vegetable staples must have been mainly of two kinds, wild fruits and roots/tubers. The wild jack-fruit (*Artocarpus communis*) and screw-pine (*Pandanus andamanensium*) are available in the islands

only during the months of March through June. The fruits are brought down by a long bamboo pole fitted with a blade. If the fruits are ripe, the seeds are taken out, dried in the sun and stored in large baskets. During the rainy season when there is a lull in collecting activities they depend partially on this store. It may, however, be noted that remains of plant food could not be gathered from the two midden sites. This may be owing to the fact that the plant food remains do not survive generally in tropical climate. But it may be appreciated that vegetables must have formed partly the basis of diet because these are easy to locate and gather for an assured collection.

Table 6 indicates the period during which the principal food items are likely to be obtainable either by hunting or by gathering by the Great Andamanese. It suggests the seasonal variation in availability of the important staples.

Table 6. Period during which the important food items are likely to be obtainable

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Jack-fruit				+	+	+						
Root/tuber	+	+	+	+				+			+	+
Honey	+	+	+	+				+			+	+
Shell				+	+	+	+	+	+	+	+	+
Fish	+	+	+	+	+			-		+	+	+
Turtle	+	+	+	+				+				+
Turtle egg				+	+							
Pig				+	+	+	+	+	+	+	+	+

It becomes quite clear now that the islanders associated with the kitchen midden complex derived their food, and also prepared their implements and equipments, from materials easily accessible to them. They must have thrived thus fairly well. On the basis of evidence abstracted from primary archaeological data, there can be no doubt that prehistoric living conditions associated with the hunting and gathering economy determined and influenced the way of life, the *whole culture*, of the past islanders.

Whether there was any division of labour associated with hunting-gathering economy is difficult to infer. But by analogy it may be said that the gathering of food articles could have been the primary responsibility of the members of fair sex, while the more rigorous jobs like hunting games could be credited to masculine responsibility.

The evidence that could be extracted strongly indicates a more general cultural continuity in principle behavioural patterns of the Great Andamanese culture. On the whole, it can certainly be stated that the culture has not changed conspicuously from the basic hunting-gathering stage. This is important since it concerns with and demonstrates a long-term stability of the Great Andamanese culture. But, at the same time, one cannot escape the changes in their technocomplexes that took place during the past two thousand years or so.

The most important of all that merits attention is the change that replaced the pigmy stone tools of the Beehive shell mound in Middle Andaman by a different technology (viz., tools made of bone, shell and bigger implements of stone) of the Chouldari kitchen-midden site in South Andaman. Furthermore, the latter site, which preserved some iron pieces, evidently proves the use and introduction of iron (implements) in the Great Andamanese culture. This new innovation, by and large, became permanent, replacing the earlier technologies because it has undoubtedly equipped the Great Andamanese to cope with the environment in a much better way. But it should be mentioned that iron could not bring conspicuous change in the level of basic technocomplexes of the Great Andaman Islanders.

SETTLEMENT PATTERN

The sites with which we are concerned were the camp sites of a section of Great Andamanese which certainly preferred to live and set-up encampments in plain coastal strip. However, given the aforementioned subsistence pattern their camps must have been located (1) in sufficient proximity to a steady food supply, and (2) close to drinking water source.

Our explorations revealed that the kitchen-midden sites mostly lay at the old beaches between mangrove swamps and the dry wooded country, especially where the elevated ridges near shores shielded them from frequent storms and gales. The location of the two kitchen-midden sites under study was behind the mangroves fringing the coastal plain; furthermore, the serpentine dyke at Chouldari and the hill at Beehive must have provided the sites with adequate protection against such natural odds. Many middens are also located in the interior of forest, mostly beside the inland creeks.

The kitchen-midden mounds at Chouldari and at Beehive clearly represent camp sites of the ancient islanders. It seems that a hut occu-

ped the mound, which must have corresponded to a communal hut being used as a permanent encampment. The midden sites can thus be considered as permanent encampments of the past people. On the basis of the outline on plan of the mound it may be said the huts built on these sites were round- or oval-shaped.

It is known from the behaviour of the recent islanders that each communal hut was the main encampment of a very small group, consisting of few families. During the entire wet season this small group resided in this encampment, and sometimes its stay at the hut might have been prolonged for a further brief period beyond the wet season.

The camp site at Chouldari and Beehive must have therefore been used specifically during the whole of the wet period. Evidence for this has amply been provided by the contents and composition of these mounds. We have recorded earlier that the mounds are mainly composed of about ninety per cent of shells, mostly bivalves, which are abundantly available as a main staple only during the rainy season, that is, end of April through December. During this time of the year only shell and fish become seasonally important in the diet. And if the shells are dropped where they were eaten a mound would accumulate without the shells having to be thrown away in a deliberate pattern. By far the most common shell, as already noted, was *Arca*, which could be gathered easily from the coast at low tide as well as from the mangrove swamps. It may be noted further that the excavated bone points from Chouldari kitchen-midden were a component of fish arrow, and this evidence confirms also that these camp sites were inhabited during wet season. Since there could be found no evidence of any oven in the midden sites, it may be suggested that the 'living' area and the 'cooking' area were possibly separate.

In dry summer the past Great Andamanese must have moved on to live in open temporary settlements located within patches of jungles, a little away from the coast. On the whole, the coastal kitchen-midden sites strongly reflect a direct relationship of the settlement pattern with the availability of seasonally abundant foods. In other words, it can be realised that the camp sites were chosen bearing in mind the possibility of 'maximisation' of food under this particular ecology and subsistence technology. And the middens must have been also associated with wells dug along seasonal watercourses.

We have described earlier that the Great Andamanese were divided

structurally into two main divisions, namely the coast dwellers—'Ar-yoto'—and the forest dwellers—'Eremtaga'. These two main divisions were further organised into very many 'local groups' comprising a limited number of families. Incidentally, it may be mentioned, we have also information that the Onge of Little Andaman have such main divisions like the Andamanese. On the basis of site-size, and under the given background for the Great Andamanese, it may be inferred that the kitchen-midden sites might have permitted shelter to a population which must have been small numerically. Structurally, then, it may be interpreted that these small population groups were nothing but some sort of local groups, and since the sites were located at the coastal strip, it is likely that the occupants were the representatives of coast-dwellers.

THE PEOPLING

There are several theories already current regarding the peopling of the Andaman Islands. Let us discuss some of the widely held views in order to show that in each case they are either based upon inadequate evidence or else more recent knowledge has rendered them untenable.

One of the earlier views is that the Portuguese Negro slaves who, while in their way to Portuguese colonies in India, were stranded in the Andamans as a result of shipwrecking sometimes after the fifteenth century (Yule, 1903 (11) : 310; Dobson, 1875 : 457). This theory, in the absence of biological similarities between the Andaman Negritos and the said slave population, does not stand to reason (Owen, 1861; Kaudern, 1939 : 168; Cipriani, 1955 : lxvi). It would suffice to mention here just one point to militate against it. It is the antiquity of the Andamanese culture, as evidenced from the ancient kitchen-midden sites, that clearly antedates the alleged time of advent of the supposed Negro slaves in the Andaman Islands.

It has been claimed variously that the actual source of the Negritos must have been somewhere in or near southeastern region of the mainland of Asia (Dobson, 1875; Lapicque, 1896 : 408, 1908; Schebesta, 1952). Furthermore, Rudolf Martin (1905) and I. R. Sullivan (1921), both of whom examined craniological evidence, have suggested a racial affinity of the Negritos of the Andaman Islands, with the Semang of the Malay Peninsula and the Aeta of the Philippine Islands. It is believed the people of the Andamans, the Malay Peninsula, the Indonesia and the Philippines were all originated from the same Negrito racial

stock (Martin, 1905). According to Cipriani (1966 : 11), the Negritos have some superficial affinity to the peoples of small stature in New Guinea and Melanesia—namely the Tapiro, Cameveca, Cai and Pesechem—although they are distinguishable by culture.

The most vital issue in this connection must, however, be pointed out here. To solve the questions relating to the origin of the Negritos in the Andamans and their biological relationships with contemporary population groups of South-East Asia, we must have adequate ancient skeletal material from the Andamans for study. Unfortunately enough, barring some dubious skeletal remains recovered from excavations in Indochina, nothing tangible is available to indicate the distribution of the Negritos in prehistoric times.

On the basis of a general consensus that migration had taken place to the Andaman Islands from southeastern region of the Asian mainland, some proceeded to theorise the manner of migration. But the question of how the Negritos originally arrived here in the Andamans has never been resolved satisfactorily.

Many of the earlier writers on this subject forwarded the view that the Negritos must have arrived in the Andamans, via Burma, at a very remote period assuming that there was a land connection between the islands and the mainland. One of them was W. Nippold (1936) who, while discussing in general the problem of the Pygmies, concluded the Negritos, in all probability, arrived here from Burma when the Andamans still formed a continuous landmass of the Asian continent.

Another claim, which has received wide notice, was of Walter Kaudern (1939 : 151-75). It was argued by Kaudern, who depended much on G.A.F. Mollengraaf's (1921 : 95-121) oceanographic work relating to the rise and fall of sea-level during glacial epoch in the Quaternary Age, that a fall of nearly 300 metres in sea-level had taken place when the land connections, exposing submarine ridges, were established between the mainland of Asia and the islands of Andamans and also the Philippines. These land connections, according to Kaudern, had thrown open direct routes for the Negritos for immigration to these islands (p. 161). The implication is, alike the Philippines, the Andamans were also peopled by the Negritos during the Quaternary Age when the world was affected by a cycle of major climatic fluctuations. While subscribing to this view of migration effected through the continuous land bridge, S. S. Sarkar (1953 : 274) further postulates that the inter-island migration of

the Negritos within the Andamans possibly took place using primitive Jarawa rafts during low tides.

But the most recent geological knowledge about the formations of the islands discussed earlier in details, straightway rejects the question of the Andamans connection with the mainland of Burma. Kloss (1903), on the basis of his faunal studies, clearly concluded earlier that no such land connection between the Andamans and the Asian mainland had ever been in existence. Furthermore, Sewell (1938 : 8) confirmed that if a land connection had ever existed, its possibility, was before the evolution of mammalia. In strengthening his claim he further indicated that, excepting for a species of *Paradoxurus* and an insectivore, *Crocidura perotetti*, no indigenous land mammals of the mainland is found in the Andamans.

There can be no denying the fact that during Quaternary Age the world passed through a general phenomenon of glaciation when many land connections in South-East Asia were established with mainlands. But it may be postulated that land connection, if any, might have been there only during the great second glacial cycle for a geologically temporary period, which has been submerged onwards since the third glaciation. Thus the land connection was broken off in so remote a time, the thesis that the Negritos, according to Kaudern, migrated to the Andamans by crossing such a causeway dryfooted becomes clearly redundant.

Radcliffe-Brown (1948 : 6) offers the view that the Andamans were peopled, either by sea or by land, from the region of Lower Burma. He never tried to speculate, however, how and when the people arrived here. Another claim has recently been put forward by Lidio Cipriani (1966 : 141). He says the people reached here during the Palaeolithic era from Sumatra via the Nicobars. Had the Negritos come through the Nicobars then there should have been preserved somewhere in those islands cultural remnants of the people in some recognisable form. The evidence of such is certainly lacking. The people inhabiting the Nicobars are essentially Mongoloid, resembling more to the Indonesian-Malays (Ganguly, 1976 : 128). And we also know that there is no evidence of former existence of the Negritos in the Nicobar group of islands (Radcliffe-Brown, 1948 : 5). Apart from all these claims some others also studied the problem. But it becomes quite clear that no satisfactory solution has yet been forwarded explaining the question of how and when the Negritos originally reached the Andamans.

It is, however, the postulation of some anthropologists in general

that the Negritos originated and came from the region of southern China or central Asia and wandered slowly, relentlessly, southwards over the centuries. Many of them probably moved before the melting glaciers of the last Ice Age raised the sea-level, thereby separating the mainland of Asia from the present-day islands of Philippines and Indonesia. And thus the black-skinned Negritos with comparable physical features have also been found inhabiting further south and eastern regions comprising New Guinea, Melanesia, tropical north-east Australia and Tasmania (Hawkes and Woolley, 1963 (1) : 55). The distribution and possible migration routes of the Negritos have been illustrated in Figure 12 for dropping some hint.

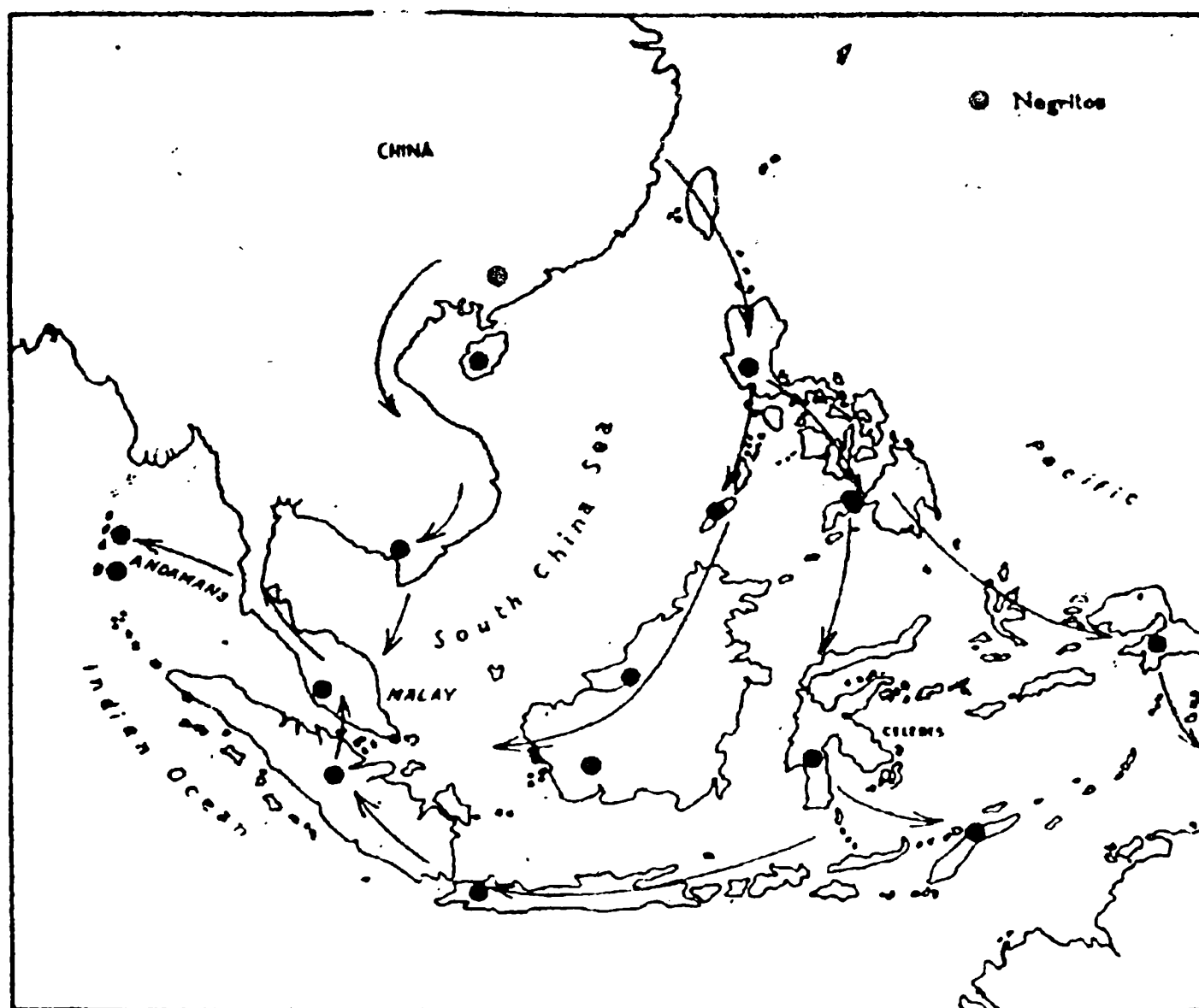


Fig. 12. Distribution and possible migration routes of the Negritos in South-east Asia

But as far as the migration of the Negritos to the Andamans is concerned, there is absolutely no need to postulate a continuous land bridge that might have been there before the melting of glaciers. It is almost certain, however, that the possible course of migration can be traced from the Philippines through the islands of Celebes and Borneo. Using the

Indonesian Islands as stepping stones, the Negritos eventually moved northwards into the Malay Peninsula and further up on to the region of Lower Burma (*cf.* Fig. 12).

The present state of knowledge leads us to formulate that casting off from some points along the coast of Lower Burma the Negritos reached the Andamans by sea. If we look at a physical map of the area cursorily, we can identify many tiny islands along the coast of Lower Burma, including those which belong to the Mergui Archipelago. We have evidence that these smaller islands, particularly the Mergui, were inhabited by the Negritos (Lapicque, 1894c : 230). The gap between these islands and the Andamans is not very large, a distance which was quite possibly within the range of such rafts or primitive canoes as the Andamanese had. The migration in question did not owe for certain to any deliberately planned movement; it was rather the wind and wave that might have ultimately decided the fate of smaller group, unaware. The possibility is that the sea-faring Negritos, while moving in sea for their own business, might have been caught and swept away by a strong north-easterly gale* across the Andaman Sea over the Andaman Islands. They had indeed no choice but to sustain to it. The present claim on the manner of migration would appear quite rational, and we have enough ground for such postulation since, according to R. von Heine-Geldern (1946), the outrigger canoe—which made possible the spread and drift—was developed on the Malayan coast from primitive bamboo outriggers.

The question remains when and how long ago the Negritos reached the Andamans. On the basis of the evidence that has been put forward in the preceding chapter, relating specifically to the chronology of the Beehive site in Middle Andaman, it may be postulated that the Negritos reached Andamans sometimes around the beginning of the Christian era. This holds good, and will also, until some fresh knowledge negates it.

*This generally occurs just before the break of North-eastern monsoon. The Andaman Islands are situated on the path of travelling tropical storms and cyclones. Besides, there occurs a number of typhoons which originate in the South China Sea and travels across China, Burma and the Andamans.

FOUR

EPILOGUE

The present study was undertaken to understand and elucidate the cultural history of the Great Andamanese of the Great Andaman Island. The main objective was to investigate into the basic problem : what was the primitive way of life in the past of the Great Andamanese—concerning specifically to technology, economy, and subsistence-settlement pattern. The problem led us to generate immediately a more specific hypothesis that cultural system of past islanders was broadly similar to that of the present-day Great Andamanese. The data, collected and gathered in the foregoing chapters, not only confirm the hypothesis but also indicate, on the whole, a long-term stability of the Great Andamanese culture for nearly 2,000 years. Further investigation might add to its antiquity, however.

Necessarily, the inquiry was designed, first, to excavate the ancient kitchen-midden, or shell mound, and, then, to look for living parallels from the ethnography of the recent Great Andamanese. The main evidence comprised therefore the two kitchen-midden deposits—one at Beehive Island in Middle Andaman and the other at village Chouldari in South Andaman—and their material contents excavated therefrom. In order to identifying some basic cultural parameter, specific information concerning the 'material culture' of past society of the islanders and the matrix in which these were discovered were examined and analysed. The unknown past society was then reconstructed using the model of 'ethnological analogy'.

It was conceived that an intimate knowledge of the Andamanian environment should form *a priori* basis for the present study; since, it was assumed, the environmental variables must have acted the role of a major determinant in shaping, and also stabilising, the way of life of the Great Andamanese. It evinced that the chief sources of variability of the local niche were tropical climatic condition, forest and marine factors. These three major factors together, indeed, contributed their influences for adaptation and growth of the Andamanese society and its pattern of culture. It has been argued upon, however, the coastal mari-

time ecology, in particular, had functionally 'optimised' the life-situations and hunting-gathering expectancy of the Negritos. A greater range of marine food (animal) provided them with alternatives permitting a relative ease in subsistence, resulting to a long-term stability of the Great Andamanese way of life.

The treatment of the historical perspective has led to the conviction that, until the British occupation in 1788, there is no history worth the name for utilising it insofar as our present attempt of unravelling out the aboriginals' past is concerned. There is no denying the fact, however, that since the brief notice given by Cladius Ptolemy in the second century, many travellers—who passed by the region from time to time—produced variously general accounts dealing with the islands and their inhabitants. It is proved most of these accounts show very little concern for facts. In reality, therefore, cultural history of this primitive group is unknown till the British contact in 1788. It became all the more apparent that this archipelago remained virtually isolated and cut off from the rest of humanity—barring, of course, some temporary visits of a few interested travellers and the Malayan-Chinese pirates as well.

A critical assessment of the earlier research investigations conducted in this island has sharply pointed out that none had either attempted much to understand the phenomena of the shell mounds, or carried out any systematic excavation for yielding the material evidence of the past. The result is that useful observations, regarded basic for any attempt to infer outlines of cultural history, are just lacking. A careful review of all these early research experiences has clearly brought to light that palaeoanthropological approach essentially needed for the purpose has never been resorted to.

As already stated, the main evidence for the present inquiry comprises the kitchen-middens and the contents that were discovered from them by excavations. Therefore, special attention has been paid to document properly the results of excavations and the yields. A careful examination and analysis of the derived evidences have very aptly revealed that the technocomplexes associated with those midden sites could only be attributable to a hunting-gathering society.

The two sites under study have supplied information that they had two technocomplexes. The Beehive site in Middle Andaman was represented by a phase attributable to the mesolithic stage of culture. While the site at Chouldari in South Andaman, in contrast, was repre-

sented by another phase which seems to have absorbed certain elements of sub-neolithic category. It has been worked out that the site at Beehive had antedated chronologically, but the subsistence technology of the two sites remained fundamentally same. The difference in technocraft might be owing partly to dissimilar raw material that could be easily procurable locally for the manufacture of implements, and partly to some marginal innovations that perhaps provided effectiveness in coping with situations in the course of time. This may be regarded as mere local variations of technologies that comprised the whole technocomplex of the Great Andamanese culture.

The technology associated with the Beehive site in Middle Andaman has shown a typological similarity with the industry that had been developed by the Negritos in South-East Asia. It has been argued upon this mesolithic industry at Beehive was drifted here sometimes around the beginning of the Christian era. A careful analysis of the archaeological data derived from those two kitchen-middens and a comparison of those with the ethnographic data of the recent Great Andamanese have sharply brought to focus that, despite some changes in technocraft, the Great Andamanese culture essentially has not modified from hunting-gathering stage during the last two thousand years or so.

The evidence that could be abstracted from data suggested that natural products of sea and forest formed the only source of food supply. But the economic life and subsistence pattern of those who evidently inhabited these two coastal midden sites were guided and influenced more by maritime ecology, rather than the terrestrial environmental component. This observation could be confirmed by analysing the food refuse of these two sites.

It has been shown that these two kitchen-midden mounds represented camp sites of the ancient islanders. It has further been shown that there existed a direct relationship of these ancient settlement pattern with the availability of seasonally abundant foods. It clearly evinced that camp sites were so chosen by the ancient islanders that they could maximize the possibility of food resources under the given subsistence technology. Examining the location of the sites it has been suggested that the people inhabiting there were coast-dwellers; and from the site-size it has been inferred that those sites were occupied by local groups of ancient coast-dwellers, comprising a small number of families. And, furthermore, it has been affirmed these coastal midden sites were

used by the local ancient coast-dwellers as their main encampments during the whole of wet season. It appears that the ancient islanders had separate living and cooking area.

Lastly, attention was drawn to the question of paramount importance : how and when the Negritos originally reached the Andamans. It has been demonstrated that some of the theories and claims, which have received wide notice, concerning the question are either based upon inadequate evidence or else more recent knowledge has rendered them absolutely untenable. It has been argued upon there is no need to postulate a continuous land bridge between the Andamans and the mainland of Asia, specifically Burma, as claimed by many writers on this subject, for explaining migration of the people to the Andamans. Considering the more recent knowledge as discussed and gathered in the present study, and also keeping in view the bare possibilities, it has been inferred that, casting off from some points of lower Burma, the seafaring Negritos reached the Andamans by sea, sometimes around the beginning of the Christian era. It was, however, not a venture attempted deliberately, but rather accidental—decided by the action of wind and wave.

The various evidence that could be brought to bear on the problem, on the whole, and in conclusion, led us to view clearly that the kitchen-midden sites, or shell mounds, of the Andaman Islands offer an unbroken and continuous link between the past and present. The present-day Great Andamanese are just the living example of their ancestors.

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