CHAPTER VIII

EXCAVATIONS AT PALAVY
A. Introduction

1) The Ash mound Problem - Earlier Views

Heaps of vitrified ash of various sizes in the shape of mounds are known in the peninsular India, mainly in the districts of Bellary, Chitaldrug, Reichur and Gulbarga of Mysore and Mahbubnagar; Kurnool and Anantapur of Andhra Pradesh. These ash mounds are a phenomenon peculiar to south India as far as our country is concerned. They have not been reported from any other areas. Very often their surface is littered with iron slag. The date and origin of these mounds have posed a problem for well over one-and-a-half centuries and have attracted the attention of some well-known archaeologists and geologists. Though a number of hypotheses have been advanced in regard to their origin no convincing explanation has yet emerged.

The history of investigations of this problem is in brief as follows. Col. Colin MacKenzie was the first to notice the ash mounds at the beginning of the nineteenth century in the North Mysore or Karnataka region. This inference is drawn from MacKenzie's assistant Cavelly Venkata Lutchmia's letters to Newbold (1842-43: 129-136). Before Newbold undertook the study of the problem of ashes were believed to be a fossil substance, a very old kankarmore or less calcined and semi-vitrified, and a volcanic limestone slag. In 1843, Newbold, who took keen interest in the ash mound problem twice excavated one of the Aupgal ash mounds situated at the foot

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1. A report of these excavations will be published separately as a monograph in the centenary and Silver Jubilee series of the Deccan College Postgraduate and Research Institute.
of Saudamna hill on the cart-road to Siriveram about two-and-a-half kilometers to the north-east of Sanganaikkalu village. He also questioned the local folk regarding the local tradition of the formation of asmounds and disregarding the evidence obtained in the excavations he concluded that these mounds were associated with the funerary places.

In the last quarter of the last century, Bruce Foote (1887: 259-82), a professional geologist, who made an intensive survey of South India in quest of archaeological remains put forward the theory that these mounds had resulted from the accidental burning of cowdung. Since these mounds are associated with neolithic settlements, Foote thought that they were burnt by the neolithic people. He equated the formation of some of these mounds to the 'zariba process' practised in East African villages. Foote's field work was followed by the excavations on one of the Kupgal mound of Knox and Fawcett, who supported Foote's observations.

Foote's friend Mr. Sewell (1899: 1-16), who also visited some asmounds in Bellary district, besides accepting the so-called 'zariba process' stressed that the asmounds had resulted due to vast funerary holocausts during the Medieval times. Longhurst (1912-13: 145-7) after visiting a number of asmounds excavated the Audatini as mound at Budikanama and confirmed Sewell's theory of their holocaust origin.

Sir J.J. Modi (1927-30: 400), who read Jackson's (1906) contribution on Iranian asmounds visited Lake Urmiah and attributed the mounds to ancient burial places and the occurrence of such mounds in South India, according to Sir Modi, showed cultural
contacts between these countries during the past.

Captain Leonard Munn (1927-28: 27) who criticised Poote's hypothesis regarding the origin of ashmounds neither reconciled with others' views nor he himself advanced any theory to that effect on the problem. Incidentally, he along with his assistants discovered many stone circles covered all round by identical ash at a number of places. Further, he found at one place a circle of huge stones on the top of an ashmound.

Yazdani (1935-36: 20) of the former Hyderabad Archaeology Department opined that the ashmounds were the ancient gold- and iron-smelting places. While describing the Bencalak ashmound in Raichur district, Yazdani said that "the mound in early times must have been the site of an iron smelting factory. After excavation the ashmounds have invariably proved to be the sites of old smelting factories." This theory gained popularity by the support of later workers such as Sir Leonard Woolley (1940: 191) and K.N. Dixit in 1940. Woolley, who collected plenty of iron slag from Budikanama had also tested it chemically to prove that it were the result of iron workings.

Subbarao (1949: 216-7), unsatisfied with the earlier hypotheses sought to attribute ashmounds to some industrial activity. Zeuner (1959: 37-44) who collected ash samples from a number of mounds in the south analysed them and concluded that they are of burnt cow dung.

In recent years the ashmound problem has received special attention from P.R. Allchin of the Cambridge University. Allchin (1960: 132-3; 1961: 72-5; 1963: 5) on the basis of the evidence
obtained by him in the excavations at Pliklike in Raichur district and Utnur in Mahbubnagar district, concluded that ashmounds were the result of ritual burning of cow dung accumulation in cattle-pens by the neolithic pastoral communities. He says that the dung was accumulated in the centre of the pens and then burnt. He did not explain why and how it was burnt at such a high temperature as 1200°C as has been proved by Mujumdar and Rajaguru (1966: 29). He also paid no attention to the vitrification of the ash and as well to the dome-shaped columner structures intentionally arranged for some industrial activity.

Mujumdar and Rajaguru (1966: 47-9) who excavated the Nupgal ash mound I conducted laboratory analysis of ashes and slag and stated that the origin of these lay in the burning of cow dung. They thus confirmed the views of Allchin and Foote.

11) Aims And Objects Of The Present Excavations:

Intensive exploration of South-western Andhra Pradesh comprising the whole of Anantapur and western part of Kurnool districts has brought to light a large number of late stone age, new stone age and megalithic sites. Particularly the area lying in the administrative jurisdiction of Kalyandrug taluk is full of neolithic settlements, ashmounds and at the same time followed by megalithic monuments prolifically.

During the survey of the area in 1965-66, the association of ashmounds and megalithic tombs at a few neolithic sites was noticed (Chapter III). Further, wherever ashmound exist lot of iron ore and slag was lying around the mounds. Such mounds are generally located at the foot of the hills. All this is clear when we look at the iron ore distribution map of south India which shows that the Cuddapah, Kurnool and Dharwar formations in the Penin-
sular gneissic area of Andhra and Mysore contain iron ore deposits, particularly in areas covering the districts of Bellary and Tumkur of Mysore and Cuddapah, Kurnool and Anantapur districts of Andhra Pradesh. Majority of the ashmounds and megalithic monuments are situated in areas where iron ore deposits are available. Such sites not only occur in Kurnool and Anantapur districts of Andhra Pradesh and Bellary district of Mysore where iron ores are available but also observed in areas such as Raichur and Gulbarga districts of Mysore and Mahbubnagar district of Andhra Pradesh where no iron ores are found. This does not by itself disprove their association since iron ores could have been imported to these places. Even Foote (1895: 95) thought that the orea would "yield a slag so rich in phosphorus as to be a valuable artificial manure, and thus command a good market by which the mere by-product would go far to pay the prime cost of smelting."

To test all this we intended to excavate in some of the ashmounds situated in Anantapur district. Our choice fell on those located in Elayandrug taluk of the district. Of all the mounds in this area, the ashmounds at Falavoy have been found to be quite intact. Since the site of Falavoy and its surroundings are full of neolithic settlements, megaliths and also ashmounds as already said, this was chosen for excavation to find out as to who were responsible for the burnings and why they had burnt so systematically at every place. We also thought to know whether the ashmounds in this area would bring out any contrasting evidence and stratigraphy from those of other areas. Finally we aimed at understanding whether the burnings were made right
on the neolithic deposits and whether these deposits are similar to those found at other excavated sites.

iii) The Present Pahavoy Village and Its People

Mudigallu Satyanarayana Rao (1963: 14-7) in his booklet on the glimpses of Ramappakonda of Mudigal village states the non-existence of Pahavoy and its neighbouring villages like Mallipalli, Mudigallu, East Kodipalli, Gedini, Siddarampura, Malapuram, Devadulakonda, Chapiri, Seripiti and Gangavaram—all lying in the administrative jurisdiction of Kalyandrug taluk to the west of Penner river—before they were first built by the polygars who were practising dacoity which could not be tolerated by the ōmen ruler of Gooty Fort, Vijaya Bukkara. It therefore resulted in granting permission to build these village, one each, to all polygars in accordance with the copper plate inscription dated Saka 10-7-1109 (18-6-1155 A.D.) issued by the King. The chance of building Pahavoy village went to a polygar by name Palaekili Hanumappa Nayakudu, who appears to have erected the village after his family name ‘palaekili’. The said copper plate inscription was found in the dilapidated house of the village munsiff of Saverampalli, a hamlet of Mudigal village which is five kilometers to the east of Kalyandrug town.

The recent discovery of a potin (?) Coin (Pl. A, No.6) by us at the site of Pahavoy reveals that this place was under the rule of Sri Satakarni during the second century A.D. As seen elsewhere, the area is strewn over by a large number of megalithic monuments of various types. At this juncture, it would be of great interest if the megalithic monuments of this area can be dated by intensive
explorations and excavations to establish whether this culture has survived at the time when the Satavahanas ruled the tract.

The word 'Falavo' is hereafter adopted from the Annampur district and Kalyanagrup taluk maps for the sake of convenience. The name of this village is spelt in various ways. It is thus called 'Falval', 'Faluvayi' and also as 'Falabavi'. The last mentioned word is a corruptive form of its Kannada counterpart 'Halu-bavi'.

The formation and usage of this word in various ways suggests following explanations. In the first place the word 'Falabavi' literally means 'milk-well' (Falu = milk, bavi = well). The meaning of the word takes us back to the remote past to envisage as to what were the reasons and resources responsible for the emergence of the present state of the word. And who were these people to whom these resources belonged. As said earlier one possibility may be traced to the family name 'Falasteeli' of Hanumappa Nayasudu, who first founded the village. The other explanation can be based on the non-artifactual evidence procured from surface as well as excavations of the site itself. The site with plenty of neolithic settlements and assemblages in their association yielded countless identifiable and fragmentary animal bones, mostly those of domesticated cattle, albeit those of wild animals were also found both from surface and excavations. The keepers of these cattle must have domesticated them chiefly for their milk and beef. These cattle must have been great in number and hence naturally the milk-yield must have been high. We, therefore, conclude that the so called corruptive word 'Falabavi' must have come to be used because
of its associated significance with the wealthy resources of cattle. The fact is further corroborated by our observations of the occurrence of large number of cattle even now in this tiny hamlet like-village.

The village 1 with its fields covers an area of 8257 acres 58 Cents. One hundred and twenty six families with a population of 667 people are living in the village to date. The following table shows the community-wise distribution of families in this village.

<table>
<thead>
<tr>
<th>S.NO.</th>
<th>NAME OF COMMUNITY</th>
<th>NO. OF FAMILIES</th>
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<tbody>
<tr>
<td>1.</td>
<td>Boya</td>
<td>63</td>
</tr>
<tr>
<td>2.</td>
<td>Marijan</td>
<td>19</td>
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<tr>
<td>3.</td>
<td>Sugali</td>
<td>7</td>
</tr>
<tr>
<td>4.</td>
<td>Gandudi</td>
<td>10</td>
</tr>
<tr>
<td>5.</td>
<td>Baniya (Komti)</td>
<td>4</td>
</tr>
<tr>
<td>6.</td>
<td>Brukala</td>
<td>3</td>
</tr>
<tr>
<td>7.</td>
<td>Vaishnava</td>
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</tr>
<tr>
<td>8.</td>
<td>Rummara</td>
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</tr>
<tr>
<td>9.</td>
<td>Bala</td>
<td>2</td>
</tr>
<tr>
<td>10.</td>
<td>Ediga</td>
<td>4</td>
</tr>
<tr>
<td>11.</td>
<td>Gajula</td>
<td>2</td>
</tr>
<tr>
<td>12.</td>
<td>Vadde</td>
<td>2</td>
</tr>
<tr>
<td>13.</td>
<td>Reddy</td>
<td>1</td>
</tr>
<tr>
<td>14.</td>
<td>Weaver (Nase)</td>
<td>2</td>
</tr>
<tr>
<td>15.</td>
<td>Manjula</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>126</strong></td>
</tr>
</tbody>
</table>

1. The data from here has been kindly supplied by Sri A. Ramadasa, Grama Sabha of Salavoy village to whom the writer is deeply indebted in the matter.
Of all the communities or classes, Boyas predominate comprising 63 families (50%) with a population of 363 people. The next significant groups are Marijana and Gandudia.

Culturally the area is very backward. In the matter of education there appears to be less encouragement from the Government as seen from the major proportion of illiterates. The people are medium built and less strong and have an average height of 1.5 meters. Their skin colour is dark brown and they are long-headed with profuse black hair of wavy texture.

As mentioned earlier (p. 29) this is one of the parts in Anantapur district where both Telugu and Kanarese are spoken. They possess a very poor command in both the language.

The people are, by nature, hard-working, but spend whatever they earn within no time. Thus they never bother about morrow. They are much addicted to drinking and other bad habits. Though most of the families possess lands they work as day-labourers. Therefore, their lands are gradually changing to deserts and green pastures in rainy season.

Two tribes - Boyas and Sugalis - are very interesting from the anthropological point of view, about whom a special mention may be made here. A third community in order is 'Vaddas' (tank or well diggers).

Boyas form the dominant community in this village as said earlier. They are found in almost all the villages in Kalyandrug taluk. They have relatives in many parts of the neighbouring Bellary district. In this connection it may be recalled that the Tekkalakota Boyas (Nagaraja Rao and Malhotra 1965: 100-103) are related to several
families of Boyas in Kalyandrug and Kayadrug areas. In most of
the aspects of their culture, they are similar to Tekkaleskota
Boyas.

Boyas in this area are the most powerful people. They are
semi-hunting community. Most of them have taken to agriculture.
It is unfortunate that majority of the Boyas prefer to work as
labourers and hence the food production from their own lands would
be practically nothing. Some members of this tribe practise robbery,
murders and looting in this area. People are sincere and faithful
once if they come under one’s thumb.

Most of the Sugalis in the village are engaged in chunam-
making. They do patch agriculture. Some live on cattle keeping and
a few others on fuel selling. They are living outside Falavoy
village. In many respects they are leading their traditional way
of life.

The two Vadda families live on well-digging as well as agri-
culture and labour. They are a settled community in the village.
As their numbers are small, it is hazardous to speak more about
them here.

iv) The Falavoy Site And Its Environs:
The village of Falavoy (14°30’ N. latitude and 77°10’ E.
longitude) lies about eight kilometers south-east of Kalyandrug
town on the right side of the Kalyandrug-Dharavedaram road in
Anantapur district of Andhra Pradesh (Fig. 21). The site is situat-
ted at the western foot of a steep granite hill (Survey No. 198,
area: 188 acres 45 cents, height 2615’ or 764.5 meters above sea
level) at a distance of about two km. to the east of the village.
The site extends all along the length of the hill in the north-south direction. It comprises neolithic habitational deposits in a number of localities, four ashmounds of unequal dimensions and plenty of megalithic monuments such as menhirs, cists, stone circles and passage burials made by erecting huge flat granite slabs. Besides these, the top of the hill is covered by several neolithic settlements surrounded by rock-shelters and stone alignments.

The site is surrounded by agricultural fields on the west, south and north, and by a huge granite hill on the east. Ashmounds I, II and III are located in a semi-circular fashion in the patta land of Sri P. Ramu Reddy, B.Sc., B.L., advocate, Palavoy, in Survey No. 196, which comprises an area of 32 acres 26 cents. The area all round these mounds is at present under cultivation and the mounds to their east thus got disturbed. The slopes of the hill and ashmounds are full of cactus plants. The agricultural fields in the vicinity of these mounds consists of a poor red sandy soil unsuitable for cultivation of millets or any commercial crops. So only crops like horse-gram (Dolichos lablab) are grown with poor yields.

A little to the south of the above mentioned three ashmounds is another mound named ashmound IV right at the foot of the hill, probably, in Government land almost opposite the patta land of Sri Mulakappa (Nirijan) with Survey No. 199-2A occupying an area of 3 acres 85 cents. This mound is mostly unseen from distance and is protected by huge granite boulders and cactus plants from the west and by the hill on the east. Half of the mound has been dug by the local folk. It is reported that this mound at its lowest levels
yielded a big adult burial lying horizontally in two to three big storage jars. The discoverers are, however, not in a position to disclose anything about these burials in regard to their nature and disposal. The mound in its disturbed stratigraphy appears to have witnessed only a solitary burning. Ashmound III is almost in level with that of the surrounding ground. The stratigraphy of ashmounds I and II which demonstrate two burnings and which are comparatively bigger will be dealt with separately.

A natural spring originates close to the south-west of the site and a little to the north of the village all along and around which plenty of toddy and tamarind trees besides clusters of bushes of various species grow, making the area picturesque and panoramic in appearance. The spring in question is a perennial one and irrigates most of Sri Rama Reddy's land. As no river flows through the area, the ryots irrigate their lands mostly by well and tank waters.

The physio- and orographic features of the village of Falavoy like other villages in Anavandrug taluk are similar to those of other taluks of Anantapur district as well as the neighbouring Bellary and Tumkur districts. It comes under the central geographic division along with Anantapur, Dharmavaram and Rayadrug taluks. It is mostly an arid, treeless tract covered larly with red sandy soils of the worst kind in the district. The area around Falavoy is an open country filled with clusters of isolated granite hills - some flat domical, a few pointed and many of them castellated. Several natural springs close to most of the sites exist even today.
in the plains as well as on the tops of the hills. Kumbhakonam, about 27 km. south-west of Falavoy, is the highest point in the taluk with a height of 898.8 meters above sea level, the next being that of Falavoy hill with a height of 784.5 meters.

Geologically the site of Falavoy belongs to the archean complex. The principal rock types belonging to Dharwarian age consist of dolerite schists, gneiss, quartzites, amphibolite and epidiorite. Two big dolerite and diorite dykes of 50 to 60 meters width in the form of huge spheroid to spherical boulders (Pl.D, No. 4) are running in east-west direction each at the northern and southern extremes of the Falavoy hill respectively. A little to the north-east of the Falavoy hill on the left side of the Kalyandrug-Bhavaram road at its 39th milestone at the western foot of Donabasappagutta is running east-westerly a fine-grained dolerite dyke of about one-and-a-half meters' width into a natural water cistern (Pl. D, Nos. 1-2). Further the hill is traversed by a number of quartz veins.

Mineral corundum of economic importance, which is used in abrasive industry, has been reported from Manirevu and Athishadya - both situated in Kalyandrug taluk. These two places, bordering Anantapur and Bhavaram taluks respectively, are lying about 17 km. and 16 km. to the north-east and east of Falavoy. Iron ore largely occurs at several places of the taluk.

The two rivers - Tenner and Magari that drain Kalyandrug - are lying about 15 km. to the east and west of Falavoy. Both the rivers are shallow and their floods last only for a few days. The recently built Bhyravanithippa on the Tenner is the only irri-
gation facility for this taluk.

Climatically the area represents the arid natural division (Chandra Sekhar 1964: xcvi). March to May are the hottest months in year during which the temperature ranges between 98° Fahn. and 107° Fahn. The south-west monsoon cools down the region in June November to January constitute the winter season in which the temperature falls to 62° Fahn. In winter the average daily minimum temperature varies from 62° Fahn. to 65° Fahn.

The rainy season which lasts from August to October is benefitted partly by South-west monsoon and partly by north-east monsoon. However the average annual rainfall is about 52 cm.

In the matter of vegetation the lands of the area "grow only poor thin grass and stunted trees" (Chandra Sekhar 1964: xcvi). Mango (Mangifera indica) and tamarind (Tamarindus indica) are commonly met within the grooves and gardens. The largest quantity of tamarind in Anantapur district is exported every year from Kalyandrug taluk alone.¹ The babul (Acacia arabica), the ber (Zizyphus jujuba) and the wild date (Eleate sylvestris) abound in the fields and on the outskirts of villages.

The chief crops cultivated in the area include horse gram (Dolichos lablab), cholam, groundnut and to some extent paddy. None of these crops thrives well due to the poor fertility of soils. The area often faces drought and famine conditions.

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¹ Information from Sri Rama Reddy, Advocate, Falavoy. Sri Reddy incidentally mentioned to us that he himself made an income of Rs.16,000 this year on tamarind alone.
In respect of fauna it may be said that the area is devoid
of any wild animals due to the simultaneous absence of forests.

The common grey monkeys of the order quadrumanas belonging to class
mammalia are found everywhere. The rodents include rats, mice,
and squirrels which are everywhere in the area. ox, goat, and sheep
form the domesticated animals. The common birds comprise the Indian
eagle and the vulture. Frogs, toads, lizards and snakes are of
common occurrence in this area.

A. The Trenches And Strata

There are four ashmounds (Fig. 21) of varying dimensions
situated at the western foot of Palavoy hill. Of these one is very
low scarcely rising above the ground level, the second one close
to the south of the earlier is covered on all sides by huge grani­
te boulders and more than half of its deposits have been removed
to fields for manuring. The remaining two are quite big in size
and situated right in the field. The northernmost mound being the
biggest and intact has been designated 'ashmound I' while the one
to its south slightly smaller in dimensions and height is under
cultivation in its eastern portion and has been designated 'ash­
mound II'. The other two farther southward have also been numbered
'ashmound III and IV' (Pl. E, No. 4) respectively.

Ashmound I (Pl. E, Nos. 2-3) the biggest and the least dis­
turbed of the mounds, was selected for excavation. It is roughly
circular to oval in plan measuring 35.05 meters in north-south
direction and 76.20 meters in east-west direction. It is about six
meters (20') in height from the western field level which gradual­
ly rises towards the foot of the hill.
Aaiimouad XI (-el. 1, No. 1 and 3) is situated 112 meters to the south of Mound I. Like mound I, this is also circular to oval in plan measuring 80 meters in NW-SE direction and 70 meters in NE-SW direction.

Both the mounds are located in the field at a distance of about 60 to 80 meters west of the Palevoy hill. The area all along the western foot of the hill is covered by habitation deposits of neolithic and megalithic periods. This occurs in the form of several terraces (Fig. G, No.4) and its deposits are mostly hidden under a thick layer of lateritic gravel derived from the hill slopes due to rain and other natural activities. The settlements in several places were made by taking advantage of the naturally placed huge granite boulders. The arrangement of the boulders gives rectangular to circular plan.

THE TRENCHES

A total of six trenches - two each on ashmound I, ashmound II and habitational area - were dug.

The first two trenches (trench 1 and 2, Fig. 21) were projected on mound I. Trench 1 (hereafter called main trench) measuring 8 (E-W) x 3(N-S) meters was laid on the highest part of the mound while trench 2 measuring 26 (N-S) x 2 (E-W) meters was taken at right angles to the main trench by leaving a baulk of one meter from it.

On mound II trench 1(Fig. 21) measuring 12 x 2.5 meters oriented southwest-northeast was taken. This trench with extensions on its either side was laid on the western slope of the mound.
Trench 2 measuring 9 x 2 measuring 9 x 2 meters oriented east-west was taken on the western slope of the mound (Fig. 21).

A little to the southeast of mound II in the habitational area the last two trenches were cut. The trench taken in habitational area I measures 6 x 2 meters. The other trench measuring 3 x 2 meters was laid in habitational area II which is at a height of about six meters from ground level. The two trenches are situated in north-south and east-west fashion.

**STRATA:**

1. Ashmound I, Trench 1 (Fig. 22, pl. F).

In this trench a sequence of 14 layers was encountered within a depth of 4.35 meters at which rock was touched. The detailed description of all these layers from top to bottom is as follows:

**Layer 1**

This layer, extended all over the trench, consisted of the weathered surface of the upper vitrified ashy layer (layer 2) mixed with numerous tiny grass roots and pale brown ashy soil. It is about 10 cm thick and produced no antiquities.

**Layer 2**

This layer comprised big, irregular, vitrified ash lumps of black to gray colour with greenish glassy appearance mixed with ashy grey loose earth. It is 38 cm thick in the eastern extremity and the thickness increases towards the west resulting in a maximum of 85 cm in its extremity. This thus shows the gradual sloping of the layer from east to west.

Vitrified ash lumps are seen to be arranged in a row with dome-shaped roofs, and the vertical columns of burnt cow dung at
intervals and resting on a purposely made bed measuring between 3 and 8 cm in thickness. The gaps between the columns are hollow and are surrounded by vitrified glittering pale greenish to yellowish coloured glassy slags hanging in flows. The vitrified glassy lumps are porous while the horizontally folded vertical columns are compact comprising cowdung mixed with ash and earth. The foldings of such columns touching the cavities are blackish while those embedded in the cores are whitish resembling 'Chunam'. Occasionally there are black ashy pockets nearly circular in form and soft in texture. They were probably resulted due to incomplete burning. A sample of 307 grams from these carbonaceous ash pockets has been sent for C-14 dating, the result of which is awaited. The roof and bed of the columnar structures comprise vitrified whitish to light grey ashy flakelets.

A close examination of the composition of this layer shows the presence of innumerable quartz grains of varying sizes. These quartz particles were intentionally added as a flux, probably to attain a high temperature, which undoubtedly caused the vitrification of the whole compound.¹ The horizontal foldings of the vertical columns indicate that the cowdung in question was arranged in that fashion. The vitrified ash lumps are hard, compact, light in weight and hard to dig.

The finds from this layer include two rubbing stones – one complete and one broken, a hammer stone, three blotchy grey ware

¹ This view is corroborated by Rayamajhi and Rajaguru (1966: 29), whose laboratory experiments have proved that a temperature of 1200 to 1250 °C was responsible for the formation of vitrified glassy slag.
and two dull red ware sherds - all belonging to neolithic period. Besides these, this layer brought to light 41 potsherds of megalithic period. Of these sherds, five are of black burnished ware, 25 of all-red ware and 11 of chocolate-slipped ware. This evidence was further supported by the findings of a solitary iron slag lump, many heavily burnt iron containing rocks and burnt as well as charred identifiable and fragmentary animal bones. The iron slag lump was recovered from a cavity of the vitrified ash lumps while rectifying the section at a depth of 52 cm from the ground level.

Floor 1 (Fig. 23).

The surface of floor 1 sealing layer 3 consisted of compact ashy earth ranging from whitish to light grey colour, and this soil is similar to the one used for the bedding as well as top of vitrified ashy columnar lumps. The surface is smooth and undulating in appearance. It is designated as floor 1. On this floor were exposed a total of 23 post holes of roughly circular to oval shape. Six of these post holes measure between 5 and 6 cm in diameter while the remaining 17 measure between 8 and 10 cm. These post holes are 12 to 27 cm deep. They suggest a rectangular plan of two to three houses. The thickness of the floor taken at several points ranges between 3 and 8 cm. In the northeast corner of the trench the surface of the floor looks oily and dark the explanation for which is not clear.

Layer 3

Floor 1 sealed two different types of deposits beneath it. The upper deposit is composed of soft-greyish earth whose thickness varies from 5 to 15 cm. It is very compact and appears to
have been rammed well. The lower deposit consists of loose gravelly earth save for a few patches of brownish earth possibly resulted due to high temperature from layer 2. The thickness of this deposit ranges from 3 to 19 cm. The deposit, though hard, is composed of small irregular clods showing vertical fissureous appearance here and there. It got sunken at several spots possibly due to the ramming of the upper soft greyish earth and also possibly on account of unequal distribution of the material on the surface. In the section facing west, this deposit exhibits five circular holes of 32 to 35 cm diameter. These holes are seen running in the east-west direction of the trench. On clearing to the possible extent these holes went to depth of 1.55 meters. Similar holes but only three in number were encountered in layer 4 of trench 1 on Rupgal ash mound (Kujumder and Majaguru 1965: 13, fig. 4) and in the ash mound at Rudatini. The purpose for which they were made with so much accuracy will be known only when the whole mound is excavated carefully. Alchin (1965: 54) thought that similar holes at Rudatini were the activity of procupines. The holes at Balavoy are too regular to be the result of procupines. This deposit seals floor 2 covering layer 4. On the whole the general thickness of this layer with its two deposits varies from 19 to 22 cm. The layer yielded no finds.

Floor 2 (Fig. 23).

Floor 2 covering layer 4 is dark-brown in colour. The colour may be due to charring. The significance of this is considered elsewhere. It is composed of light greyish any earth occasionally mixed with sand grains. Its thickness varies from 2 to 15 cm.
Three post holes were exposed on this floor. Two of these are circular having a diameter of about 12 cm. and depth ranging between 16 and 19 cm. while the third post-hole is fairly large, oval in form, measuring 30 cm. in length and 13 cm. in breadth. It is 42 cm deep from the top of the floor. This post hole was found to contain sand mixed with soft earth.

Layer 4

Like floor 1, floor 2 also covers two deposits below it. Even the composition of the deposits of this floor is very much similar to that of the deposits set within layer 3. Both these deposits vary in thickness from 0 to 20 cm. and 3 to 18 cm. respectively.

The general thickness of the layer measures between 17 and 20 cm, the maximum being seen in the middle of the trench. Two blotchy grey ware sherds and a black-and-red ware anerd along with several bone splinters were recovered from this layer. A few granite pieces in the process of disintegration and many quartz grains were observed in this stratum.

Floor 3.

After digging layer 4 completely, at a depth of 1.05 meters in the eastern extremity and 1.45 meters in the western extremity of the trench, the top of floor 3 was touched. On this floor were found eight circular post holes measuring 8 to 12 cm in diameter and 8 to 19 cm in depth, their average diameter and depth being 12.1 cm and 8.2 cm respectively. These post holes roughly demonstrate a circular plan of the house. The floor composes of pale greyish earth and is about 2 to 3 cm thick. The top floor of this
floor runs slightly unevenly.

Layer 5

Unlike floors 1 and 2, floor 3 covers only one deposit of loose, cloddy earth of greyish brown colour. The deposit develops vertical fissures frequently. Thus the composition and nature of this deposit are similar to the lower deposits of floors 1 and 2 of layers 2 and 3 respectively. The thickness of this deposit varies from 4 to 11 cm while the overall thickness of the layer itself is between 2 and 11 cm. No antiquities were found in this layer excepting a few bone fragments.

Floor 4.

The top of layer 6 known as floor 4 consists of pale brownish ashy earth which develops vertical fissures like layer 9 described in the coming pages. The spread of this soil is of uniform thickness varying from 1 to 2 cm throughout. The floor in question is evenly levelled unlike the earlier floors. A maximum thickness of 10 cm of this floor has been well observed in the section facing east in about a meter long patch and as well in a small pocket of about 35 cm long visible in the section facing north.

Layer 6

This layer has two kinds of deposits - the upper comprising soft compact grey ashy earth and the lower consisting of cloddy granular grey to pale brown earth respectively. Thus, these deposits are in every respect similar to those of the earlier three floors. The thickness of the upper deposit runs from 6 to 15 cm while that of the lower ranges between 2 to 10 cm. It is very thin in the south-eastern side of the trench. The layer on the
whole varies from 12 to 18 cm thickness. The only antiquities found in this layer include one grey ware sherd and a few bone pieces.

Floor 5.
This floor belonging to layer 6 covers layer 7.

Layer 7
This layer known by the name lower or earlier burning is almost similar in composition and formation to that of layer 2 but for a few contrasting features here and there. Firstly, this layer exhibits clear vertical dome-shaped columnar structures and cavities. Their vitrified lumps were loosely packed, easy to dig but heavy in weight. Their empty spaces and cracks have been filled with brownish earth. The thickness of this layer measures from 60 to 80 cm, the minimum and maximum measurements obtainable at the western extremity and about the middle of the layer. The vitrified lumps are more glassy than those of layer 2. These glassy flows are porous in appearance. One hammer stone, one rubbing stone and a dull red ware sherd were found. Besides, megalithic pottery comprising one sherd of black burnished ware, eight sherds four each, of chocolate-slipped ware and all red ware was recovered. Also some bone fragments with bluish tinge on their surfaces were found in this layer.

Floor 6 (Fig. 23).
Layer 7 at its bottom has a well rammed surface called floor 6. The surface of this floor exhibits burnt patches all over the trench. It is composed of pale-brown earth whose thickness varies from 4 to 18 cm. In the south-western part of the trench this
floor exposed five circular post holes, having a diameter of 8 to
12 cm and depth of 9 to 20 cm, the average diameter and depth
being 10 cm and 16.2 cm respectively.

Layer 8
Below floor 6, there are two deposits - the upper consisting
of soft compact greyish ash earth filled in the depressions of
the lower bedding to make up an even level. This sort of filling
has led to the formation of deep concave pockets which were not
visible in the earlier beddings. Since its filling is frequently
unequal in thickness, it occurs from 0 to 21 cm. The lower bedding
consists of grey to brown loose cloddy earth whose thickness also
varies between 0 to 25 cm. This uneven filling was due to the
very unevenness of the floor (floor 7) of this layer. The layer in
general has a thickness between 11 and 27 cm, the maximum being
seen in the north-eastern corner of the trench. Both the deposits
of this layer are very similar to the earlier ones.

The finds of this layer include a crudely made iron nail,
three sherds of chocolate-slipped ware and one of all - red ware -
all the specimens assignable to neolithic period. Besides, a
solitary rubbing stone was found.

Floor 7 (Fig. 23).
The top of layer 9 is designated as floor 7. A total of 18
post-holes - 10 circular, five square and the remaining three
rectangular - were exposed on this floor. All these post holes
were found in the western half of the trench alone. The circular
post-holes range in diameter from 6 to 10 cm, the average being
6.3 cm. The squarish post holes measure 10 cm in their lengths and
breedths while the three rectangular post holes measure 10, 11 and 12 cm. in length, and 8, 9, and 10 cm. in breadth. In depth all the post holes measure between 14 and 30 cm, the average depth being 26.7 cm. The post holes give plan of two to three circular huts.

Layer 9

This layer is composed of light or pale brownish sticky clayey earth which ranges from 30 to 58 cm. in thickness. The soil of this layer developed wavy vertical fissures and huge cracks throughout the trench after it became dry. The earthen lumps are light in weight. The composition, structure and nature of this layer are similar to those of the neolithic period encountered in Sangasanakkalu excavations (1965), where such material was believed to have been used for wall constructions. When this layer was in the process of digging, it could be observed that the wet sticky nature of the soil is an indication of its use as a wall material. A large quantity of charcoal was found in this layer. A sample of 232 grams has already been sent for C-14 dating.

This layer has brought to light many antiquities. Pottery comprises 141 sherds of blotchy grey ware, 71 sherds of dull red ware and 33 sherds of black painted red ware. These fabrics include both unburnished and burnished sherds. Two edge ground sherds of grey ware and two curious clay objects were also recorded. The pecked and ground stone industry includes six rubbing stones four hammer stones and two by-product flakes. One utilised parallel sided blade and a beautiful lunate - both of chert were also found. A nicely carved object of granite is another interesting object.
from this layer. This layer besides yielding a large quantity of many identifiable and fragmentary bones of bovines brought to light, eight bone points and a solitary specimen of the edge ground bone scraper.

Layer 10

This layer is entirely different from layer 9 in composition, colour and texture of the soil. The soil occasionally mixed with gravel is of pale ashy-brown colour. A large quantity of charcoal occurs in this layer. The charcoal forms a rectangular band of 9 to 26 cm thickness in all the corners of the trench. The charcoal band probably belongs to the burnt posts of a house that existed beyond the southern section the tracing of which would have involved further extension of the trench to its south alongside. This was impossible due to limited resources of the project. The section facing south (Fig. 22) indicates that its material was dumped and rammed deliberately to attain a plain even surface possibly to use it as a courtyard to the house mentioned to have existed to the south of the trench. The thickness of the layer is uniform throughout the trench having a thickness of 20 to 25 cm.

The antiquities from this layer comprise 108 grey ware sherds, 48 dull red ware sherds and 13 black-on-red ware sherds. Further, three rubbing stones, two hammer stones maling stone and a by-product flake - all of the packed and ground stone industry, a single bone point and 70 unbaked clay objects were also found. Like layer 9 this has also yielded a large number of cattle bones besides a long curved bovine horn.
Floor 8 (Fig. 23).

Layer 10 rests on a floor called floor 8 with a cluster of 30 post holes. The post holes are roughly circular measuring between 8 and 20 centimeters in diameter, the average being 9 cm. Majority of them have their depths between 8 to 45 cm with an average depth of 18.5 cm. Half of the total number of post holes measure in depths between 10 and 20 cm. The position of the post holes suggests a circular plan of the house. However, some of the post holes indicate rectangular plan. It is interesting to see most of the post holes occurring on the southern periphery of the trench.

Layer 11

The soil of this layer is yellowish brown in colour. It has a thickness of 9 to 15 cm. In the centre of the trench an irregular area showed a very hard compact charred earth mixed with charcoal but which does not throw any light on its identity as hearth.

A rubbing stone, two broken querns and 55 clay objects along with several bovine bones were the only antiquities found in this layer.

Layer 12

This layer consists of deep or dark brown soil occasionally mixed with lateritic murum. Its thickness varies from 10 to 15 cm. This layer is completely devoid of antiquities. It is therefore called a sterile layer.

Layer 13

This layer too did not yield any antiquities. This layer dug
in only one-quarter length of the trench in its western extremity, composed of weathered pale yellow soil containing more quantity of murum than the earlier layer. Its thickness varies from 12 to 20 cm. This and the previous layer formed a chronological gap between the neolithic and pre-neolithic periods.

Layer 14

The layer comprises the virgin soil of brownish-red murum mixed with disintegrated granite pieces. Like layer 13, this also has been dug in only two meters' length of the trench. After going to a depth of 60 to 65 cm in the layer rock was touched.

The finds of this layer representing the pre-Neolithic period included 16 patinated flakes of trap in association with artifacts of Late Stone Age culture. The latter industry includes two flake cores, one core-rejuvenation flake five unused and one used flakes, three chips, two unused parallel sided blades, one obliquely blunted blade and one side scraper.

Trench 2 (Fig. 21).

The purpose of taking this trench was to know the extension and behaviour of various layers encountered in Trench 1. This trench measuring 26 x 2 meters was dug a meter to the south of trench 1 at right angles to the latter. In respect of length the trench was to cover the southern periphery of the mound. All the fourteen strata, their composition and colour observed in the main trench are well represented in this trench too. But unlike the strata of the main trench, the layers of this trench became thinner as they proceeded towards the periphery of the mound and most of them terminate or disappear abruptly or merge with other layers of the trench. This tendency of layers is possibly due to the very forma-
tion of the mound in the remote past. The trench was therefore dug in the form of steps each step representing each floor and its make up, thereby demonstrating all the floors at various depths. As all the 14 layers and eight floors are found in this trench too, here only a physical description of these layers, their thickness and artifactual yield is given. Layers 2 to 10 yielded animal bones in varying quantities and hence no individual mention is made here.

Layer 1
Humus.
Layer 2
The layer consisting of vitrified ash lumps is similar to its counterpart in the main trench. It is 90 cm thick at zero point on northern extremity of the trench. The layer terminates and merges with the ground level at a length of 21.5 meters of the trench where its thickness is only 15 cm. The finds from this layer include two sherds of grey ware and one each of dull red ware and black burnished ware.
Layer 3
The surface of this layer is a floor on which 33 circular post-holes were found. The floor suddenly slopes down at a length of 10 meters towards the periphery. The layer when dug from 3 meters onwards shows a thickness of 25 cm and merges with layer 9 at a distance of 23 meters. Only four hammer stones along with two sherds of grey ware, five of black burnished ware and one of red ware were recovered from this layer.
Layer 4

This layer exposed from the point of fifth meter has a thickness of 24 cm. while thinning down towards the periphery it joins layer 3 at a length of 20.5 meters. The layer yielded two hammer stones along with seven sherds of grey ware, and one of dull red ware. Besides these, seven all-red ware sherds, four burnished black ware sherds and two chocolate slipped ware sherds all of megalithic period were recovered from this layer.

Layer 5

This layer dug from the sixth meter point is 12 cm. thick. The layer terminates to join layer 4 at 11.1 meters. A solitary sherd of chocolate slipped ware was the only find yielded by this layer.

Layer 6

This was exposed from 8 meters onwards at which its thickness is 15 cm. The layer slopes down and meets layer 4 at a length of 12.5 meters. It has a maximum thickness of 34 cm. beyond a length of 15 meters of the trench. Two rubbing stones, 11 grey ware sherds and a dull red ware sherd were recovered from this layer.

Layer 7

The digging of this layer was started from the point of 10 meters onwards where its thickness is 62 cm. The layer gradually slopes down and meets layer 4 at 19.4 meters. No antiquities were found in this layer.

Layer 8

This was dug from 14.70 meters onwards when it is 13 cm. thick. The layer merges with layer 7 at 18.5 meters. The antiquities pro-
duced by the layer include five sherds of grey ware, two of dull red ware, one chocolate-slipped ware and three of red ware.

Layer 9

This and the succeeding layers were dug from 22 meters onwards. This layer continues up to 23 meters where it abruptly joins the ground level. Its thickness ranges from 20 to 46 cm. This layer has brought to light a single hammer stone, a broken saddle quern and a blade core.

Layer 10

At 22 meters, the thickness of this layer is 18 cm and this remains constant up to the end of the trench. This layer yielded 42 grey ware sherds, 35 incised grey ware sherds, two incised dull red ware sherds, two appliqué over incised decorated sherds, 29 dull red ware sherds and one black-on-red ware sherd.

Layer 11

This layer is 10 cm thick throughout its length and did not yield any antiquities.

Layer 12

Like layer 11, this is also 10 cm thick and is a sterile layer.

Layer 13

This is only 8 cm thick and is another sterile layer.

Layer 14

The surface of this layer is a floor on which seven circular post-holes were exposed. These post-holes might be the continuation of those found on floor 8 of layer 10. They vary in diameter from 10 to 20 cm and in depth from 10 to 42 cm. Their average
diameter and depth are 12.2 cm and 21.3 cm, respectively. This layer was dug to a depth of 10 cm in which were found 12 patinated trap flakes, one core rejuvenation flake of chert, three unused flakes, one plunging flake, six chips and two unused parallel sided blades—all of quartz.

ii) Mound II (Fig. 21).

The two trenches on this mound were cut with the aim of confirming the stratigraphical sequence witnessed in the two trenches on mound I.

Trench 1 (Fig. 24).

This trench measuring 12 x 2.5 meters was dug to a depth of 1.2 meters. The strata met within this trench are as under:

Layer 1

This consists of the weathered surface of vitrified ash lumps mixed with grass roots and rootlets. It is 10 cm thick and gets thinner towards the north-eastern periphery. The layer is similar to that of trench 1, mound I.

Layer 2

This layer comprises very loose brownish earth mixed with vitrified ash lumps. This layer sealed below it a layer similar in nature and in the yield of antiquities to layer 9 of trench 1, mound I. As such this layer is taken to be equivalent to layers 8 and 7 though these are different in composition from this layer. The layer is 70 cm thick in the south-western extremity and becomes thin towards the north-east where it finally merges with the ground level. This layer has yielded an iron ring of 1.9 cm diameter and thickness of 0.3 cm.
Layer 3

This consists of pale brown fissurous clayey sticky soil exactly similar to layer 9 of the main trench. It is 55 cm. thick at the highest level of the mound and 40 cm. towards the ground level. This layer yielded two bone scrapers, one blade and a point and a large quantity of cattle bones. Pottery comprises 96 sherds of blotchy grey ware, 20 sherds of dull red ware, 13 sherds of black painted red ware and five incised sherds - five of coarse grey and three of dull red wares. This layer also yielded two artifacts of blade industry and 15 of pecked and ground stone industry. Also a copper object was found in this layer. It is probably the fragment of an arrowhead.

Layer 4

This is a sterile layer consisting of deep brown to pale yellow soil mixed with lateritic murum. The layer was dug to a depth of 20 cm. This can be equated to layers 12 and 13 of the main trench.

Digging was given up in this trench beyond this layer as the layers appeared to be similar to those found in trench 1, Mound 1. Trench 2 (Fig. 24).

As trench 1 could not show the two burnings seen in the main trench, this trench measuring 9 x 2 meters was opened with the aim of seeking the above evidence.

The trench was dug on the western slope of the mound to a depth of 2.55 meters in the eastern extremity of the trench at which level brownish red murum was struck and this layer was dug
to a further depth of 20 cm. All the strata are described as under:

Layer 1
Humus.

Layer 2
This layer consists of vitrified ash lumps similar to those of layer 2 of the main trench. It is one meter thick. The ash lumps are hard, compact and vitrified. No antiquities were found in this layer excepting a lump of iron ore, which is very heavy and highly burnt. This piece was recovered at a depth of 59 cm. from the surface of the mound. In the same layer was found a burnt stone at a depth of 56 cm.

Layer 3
This is a layer of loose brown sandy earth capping a sloping floor. It is 20 cm. thick and has no parallel in the main trench.

Layer 4
This layer comprising loose vitrified ash lumps mixed with a lot of loose earth and is about 20 cm. in thickness which becomes thinner towards the western portion of the trench. This probably represents layer 7 of the main trench.

Layer 5
This consists of pale brownish sticky soil similar to layer 9 of the main trench. It is about one meter thick. The layer yielded 103 sherds of blotchy grey ware, 50 sherds of dull red ware and 18 of black painted red ware. Further, 16 artifacts of pecked and ground stone industry, one crested guide flake of chert, two bone scrapers and one bone blade were unearthed from
layer 6

The soil of this layer is pale brown to yellowish in colour mixed with murum occasionally. The layer having a thickness of 20 cm. can be equated to layers 10 and 11 of the main trench. From this layer 28 grey ware sherds, 11 dull red ware sherds, five implements of pecked and ground stone industry and three bone points were recovered.

Layer 7

This layer was dug in only four meters' length of the trench to a depth of 20 cm. It was possibly levelled for a floor as some post holes containing lot of disintegrated wood were exposed. The soil is brownish red mixed with lot of murum but can be equated with layers 12 and 13 of the main trench in the absence of antiquities.

iii) Habitational Areas

Habitational Area I, Trench 1.

This trench measuring 6 x 2 meters was located a little to the south-east of mound II at the foot of the hill. On all sides it is surrounded by granite boulders. The following two layers were exposed in this trench.

Layer 1

This layer of 10 cm thickness represents humus.

Layer 2

This consists of dark brown earth. It was dug to a depth of 42 cm throughout the trench. In this depth four child burials were found in vertically placed pots. Besides these, 46 sherds of blotony
grey ware, 34 of dull red ware, 27 black-on-red ware sherds and two incised grey ware sherds along with eight artifacts of pecked and ground stone industry were recovered from this layer.

Habitational Area II, Trench 1 (Fig. 24).

This trench measuring 3 x 2 meters was taken at a height of about six meters from the field level, on a plain ground of the hill slope, a little to the north-east of habitational area I.

Layer 1

Humus. It is 5 cm. thick.

Layer 2

It consists of loose ashy grey earth with a thickness of 14 cm. throughout the trench. It has no parallel in any other trench. The finds include 2 grey ware sherds, 5 red ware sherds and five artifacts of ground stone industry.

Layer 3

This layer comprises loose pale reddish brown earth of a maximum thickness of 14 cm. The antiquities consist of five grey ware sherds and six artifacts of ground stone industry.

Layer 4

It is a layer of loose ashy grey earth similar to layer 2 of this trench. It is 8 cm. thick and contained no antiquities.

Layer 5

This layer with a thickness of 8 cm. consists of dark brown murum. It can be equated to layers 12 and 13 of the main trench in being sterile.

Layer 6

This is a layer of brownish red murum with a thickness of
8 cm. It is physically similar to layer 14 of the main trench but has not yielded any antiquities unlike the latter.

The following table gives the correlation of strata of all trenches in regard to the culture sequence.

<table>
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<th>Sequence of culture</th>
<th>Ashmound I</th>
<th>Ashmound II</th>
<th>Habitation Area</th>
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<td>(Palavoy I)</td>
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</table>
PALAVOY ASHMOUND I TRENCH 1
PLAN OF POST HOLES
SCALE: 1 INCH = 1 METRE

Fig. 23
C. Study Of Archaeological Finds

1) Surface Collection

Pecked and Ground Stone Industry:

One hundred and fifty-four specimens of this industry were collected from the surface. The collection was made from the top and slopes of the hill and the surrounding fields.

The raw materials for the manufacture of the artifacts of this industry comprise dolerites, diorites, granites, granodiorites, granite gneisses, schists, etc.

The techniques of manufacture are the same as mentioned for neoliths from the surface of other sites.

All the types with their characteristics are described below:

AXES: (24 specimens)

But for two specimens made on granodiorites all the axes are made out of medium to coarse-grained dolerite. Technologically one axe each is flaked and edge ground, eight are flaked and pecked, seven are pecked and edge ground, four are flaked and edge ground and the remaining three are flaked, pecked and edge ground. In shape 19 axes are triangular while the remaining five are rectangular with broad butt.

In size, axes measure between 7.9 and 15.7 cm in length, 3.7 and 7.3 cm in breadth and 2 and 5.8 cm in thickness; the mean measurements being 11.7 cm in length, 6.1 cm in breadth and 3.4 cm in thickness.

In 15 axes the cutting edge is curved with slight or prominent convexity while in nine specimens it is straight. In all specimens it is medial and bifacially ground.
Oval cross section is most at the butt and in the middle, while at the cutting edge it is lenticular.

Several specimens show marks of prolonged use on the edge and at butt.

CHISELS: (1 specimen)
It is made on dolerite, broken at the butt and measures 7.9 cm in length, 3.5 cm in width and 2.6 cm in thickness. It has a rectangular cross section. Its straight working edge bears use marks.

CHOPPER-CHOPPING TOOLS: (3 specimens)
They are made-one each- on dolerite, sandstone and quartzite. One of these is unifacially flaked while the other tools are bifacially worked. The technique of steep flaking produced cutting edge in the former tool while in the latter two specimens alternate flaking gave rise to a zig-zag, wavy cutting edge. In size, these tools measure between 6.4 and 11.4 cm in length, 5 and 10.9 cm in breadth and 2.8 and 7.4 cm in thickness. Two of these are roughly circular in shape and one rectangular.

POINTED TOOL: (1 specimen)
This is a flat almond-shaped nodule of dolerite one end of which is bifacially and bimarginally flaked to produce a pointed tip. The broader end and both surfaces retain cortex. Both the ends bear battered marks. It measures 12.9 x 7.1 x 2.8 cm.

FLAKE TOOLS: (2 specimens)
These comprise one side, and one end scrapers. One is made on dolerite while the other is on sandstone. Both are end flakes. They measure 7.7 x 7.5 x 2 cm and 6.6 x 6.0 x 2.9 cm respectively.
BY-PRODUCT FLAKES: (11 specimens)

All the flakes are of dolerite. Of these six are deeply patinated, four are lightly patinated and one is a fresh. The patina is of orange colour. The deep patination on the surface of these specimens indicates that they are older than those from the excavations. They appear to have been removed by a light stone hammer technique. However, as they occur in an unstratified state they are for the present thought to have resulted during the manufacture of finished tools.

All are end flakes. One of these has a faceted platform while the remaining have a cortexed platform. They measure between 4 and 9.8 cm in length, 3 and 5.7 cm in breadth and 0.9 and 2 cm in thickness. The mean measurements are 6.2 x 4.0 x 1.3 cm. In all the flakes the length is less than twice the breadth. The maximum thickness in all the specimens is only 2 cm. The sides are roughly parallel or so. We can therefore call them flake-blades. The flake surface makes an angle between 90° and 110° with the platform. The bulb is prominent. All the flakes show working on their dorsal surfaces. The thin sharp edges of these flakes bear marks of battering. It is not clear whether these marks resulted due to use or fracture.

RUBBING STONES: (22 specimens)

All the specimens are made of granite. Only complete specimens are taken into account for the study of shape and size. Ten rubbers are oval to oblong, six circular and the rest irregular. Some of the broken specimens suggest rectangular to circular shapes. In cross section they are rectangular to oblong and planoconvex. In size they vary from 8 to 16.7 cm in length, 6.6 to 12.1 cm in
breath and 2.2 to 7.3 cm in thickness; the average dimensions being 11.8 x 9.4 x 4.4 cm.

Almost all the rubbers are made from natural slabs. None of them exhibits signs of flaking but are pecked all over to give them a flat surface and produce dentitions for grinding.

On the basis of the extent of the working and use of the surfaces, sides and ends, rubbers are broadly divisible into two groups - 1) worked and used on one surface only, and 2) worked and used on both surfaces. Eight specimens belong to the former group while the remaining 14 to the latter group.

SAWLE QUENS: (51 specimens)

In length saddle querns measure between 32 and 61 cm, in breadth between 4 and 7 cm. Thus they are generally long, broad and shallow. They were probably used for pounding grain and other cereals.

AXE HAMMERS: (7 specimens)

Six of these are made on dolerite and one on diorite. In shape three are triangular and four sub-triangular. Technically, two are flaked and pecked, one is flaked and ground, and other four - two each - are flaked, pecked and ground, and only ground. Two of these are used ases while the remaining five have been made intentionally. Their maximum, minimum and average dimensions are 11.0 x 7.0 x 4.7 cm, 5.9 x 4.9 x 3.3 cm and 10.7 x 6.9 x 4.6 cm respectively. In all specimens the butt and edge bear marks of use.

HAMMER STONES: (26 specimens)

Nineteen specimens are made on dolerite and the remaining seven on epidote granite. In shape they are roughly circular or discoidal,
square or cylindrical. They vary in size from 5 to 10.6 cm in length, 3.3 to 8.8 cm in breadth and 2.6 to 8.0 cm in thickness. These are made by the technique of pecking and for classifying them into various groups only the amount of use has been considered. Thus five are one end used, eight two ends used, 12 all round used and one used as hammer as well as rubber.

SLING STONES: (4 specimens)

These are perfectly spherical stones and the absence of battering marks on them suggests that they were the final products of the process involved in making of hammer stones discussed earlier. All these are made of granite. They measure in diameter between 6 and 7 cm. They were most probably used as sling stones for hunting.

PERFORATED RINGS: (2 specimens)

Both the specimens are made of fine-grained micaceous sandstone. In shape they seem to be roughly circular to oval. Both the specimens are broken halves. The central hole appears to have been drilled from both surfaces. It is likely that they were used as weights for digging sticks in primitive agricultural operations.

Blade industry:

The surface collection of the artifacts of this industry comprises 171 specimens as a result of nearly one-and-a-half months during the period of excavations and therefore does not signify that the site is rich in blade tools.

The raw materials comprise chert, chalcedony, agate, carnelian, quartz and rock crystal. Chert of various hues - dark brown, chocolate, green, red and white - was the chief material; it accounts for 74.16 per cent of the industry. The remaining 25.84 per cent
specimens are made of chalcedony (14.61%), quartz (6.18%), crystal (3.93%), agate (0.56%) and carnelian (0.56%).

Quartz which occurs in the form of veins in the Falavoy and its surrounding hills is the only locally available rock. The nearest source for the siliceous rocks could have been the gravel beds of the Renner and Bagari, both about 15 km. away from the site. However, since no such rocks are seen in the river beds at present, one cannot be sure they were available in the past. Therefore, it is more likely that man must have imported siliceous rocks from Tungabhadra river beds which lie 140 km. to the north of Falavoy.

The techniques involved in the manufacture of artifacts are similar to those known from other neolithic sites in the neighbouring regions and already described earlier (Chapter VI). The occurrence of several cores, flakes and a crested guide flake indicates that the industry was locally made.

**Typology**

The tool types consist of flake cores, blade cores, core rejuvenation flakes, plunging flakes, crested guide flakes, chips, utilised flakes and blades; microliths comprising retouched blades, serrated blade, straight backed blades and obliquely blunted blades; points, burin, borers, scrapers and notched flakes. The characteristics of all the types are described as under:

**FLAKE CORES**: (2 specimens)

These are ordinary cores from various planes of which flakes have been removed. They measure 2.7 to 4.1 cm in length, 2.4 to 3.4 cm in breadth and 1.8 to 2.3 cm in thickness. Both the specimens came from surface.
BLADE CORES: (59 specimens)

These are regular cores with broad mostly prepared platforms; from these thin, parallel-sided flakes or blades were removed. In shape the cores are cylindrical, tubular or quadrilateral with pointed, chisel or flat based ends.

They measure between 1.5 and 3.8 cm in length, 1.2 and 2.8 cm in breadth and 0.6 and 2.5 cm in thickness, and the average dimensions are 2.4 x 1.8 x 1.3 cm. Majority of the cores (52 specimens) measure between 1.5 and 3 cm in length, 1.2 and 2 cm in breadth (47 specimens) and 0.6 to 1.5 cm in thickness (46 specimens).

The occurrence of core rejuvenation flakes (10 specimens), as also the existence of more than one platform, shows that many cores were subjected to more than one phase of blade-removal. Of the total 59 cores, 47 specimens have faceted platforms while the remaining 12 are unfacetted having either a plain cortexed surface (seven specimens) or a single flake surface (5 specimens). Forty-four cores possess only one platform while the remaining 15 have two platforms.

CORE REJUVENATION FLAKES: (10 specimens)

These flakes were removed from the apex and base of the cores to strengthen the existing platform or to provide a fresh one to remove blades from another point of the core. The surfaces of these flakes exhibit traces of original blade scars as well as platform. In size they vary from 1.2 to 3.1 cm in length, 0.9 to 2.9 cm in breadth and 0.5 to 1 cm in thickness.

PLUNGING FLAKE: (1 specimen)

It resulted from hinge fracture and measures 3.4 x 0.9 x 0.5 cm.
CRESTED GUIDE FLAKE: (1 specimen)
It has a triangular section and bears use marks.

CHIPS: (28 specimens)
These are irregular by-product flakes resulted from the preparation of blade cores and other types of artifacts. They show neither marks of retouch nor of utilisation.

FLAKES: (10 specimens)
All these are utilised flakes. Nine of these are end flakes while one is a side flake. They measure between 2 and 4.7 cm in length, 1.2 and 4.3 cm in breadth and 0.7 to 2.3 cm in thickness. They appear to have resulted during the preparation of blade cores and in the process of blade production. All the flakes are fully worked save for one specimen which retains cortex on its dorsal surface.

UNRETOUCHED BLADES: (11 specimens)
Eight of these bear use marks on one lateral side only and the remaining three on both sides. Six of these blades are complete while five are broken. Ten specimens of these are with a single mid-ridge while the remaining one has two parallel ridges on the dorsal surface.

In size, blades measure between 7.4 and 4.3 cm in length, 0.7 and 1.7 cm in breadth and 0.2 and 0.6 cm in thickness. The average measurements are 2.4 x 1.1 x 0.4 cm respectively.

MICROLITHS: (12 specimens)
There are four types of microliths in the present collection. They are 1) retouched blades, 2) serrated blade, 3) straight backed blade and 4) obliquely blunted blades. In the first two types re-
touch was meant to strengthen the working edge while the remaining it was aimed at blunting one of the longer sides usually the thicker one, by steep retouch, probably for hafting.

1) RETOUCHEDE BLADES: (3 specimens)

In two of these blades only one side is retouched while the other side bears use marks. But in the third specimen both lateral sides are retouched. The illustrated specimen measures 1.9 x 0.8 x 0.3 cm.

2) SERRATED BLADE: (1 specimen)

The specimen measuring 2.7 x 0.8 x 0.4 cm bears a single midridge on its dorsal surface. Its right side is fully retouched with three semi circular dentitions. While the left is prepared to half its length by two dentitions.

3) STRAIGHT BACKED BLADES: (4 specimens)

All these blades are steeply retouched on the left lateral side while the right bears use marks. In size, they range between 1.7 and 2.2 cm in length, 0.7 and 0.9 cm in breadth and 0.3 and 0.4 cm in thickness; the average dimensions being 1.9 x 0.8 x 0.35 cm.

4) OBLIQUELY BLunted BLADES: (4 specimens)

Unlike in the backed blades the blunted side in these tools curves to meet the unretouched side. Their maximum, minimum and average dimensions are 2.5 x 1.2 x 0.6 cm, 1.9 x 0.9 x 0.3 cm and 2.1 x 1.0 x 0.45 cm respectively. Three of these are blunted all along the right side while the fourth one is retouched on its left side as well as at the base. In one of the left sided specimens even the working edge, i.e. the left side, is retouched for strengthening it.
POINTS: (10 specimens)

Four points are retouched unifacially and bimarginally while two specimens are retouched bifacially and bimarginally. The remaining four - two each - are tanged and beaked points respectively. The beaked points are regularly retouched on one side while the other side is hollowed out near the tip to give a beaked appearance. Three points are made on end flakes while the remaining are made on indeterminate flakes. One specimen is made on a blade. In size, points measure between 1.7 and 4.7 cm in length, 0.9 and 3.1 cm in breadth and 0.2 and 1.7 cm in thickness. The average measurements are 2.7 x 1.6 x 0.8 cm.

BURIN: (1 specimen)

The only specimen of this made on quartz has been worked on a fluted core with an oblique facet on one side and three small flake scars on the other side forming a chisel end. The distal end is trimmed bimarginally to have a tang. The specimen measures 2.5 x 1.5 x 0.9 cm.

BORERS: (7 specimens)

Three of these are made on end flakes, one on side flake and the rest on indeterminate flakes. Their maximum, minimum and average dimensions are 3.3 x 2.8 x 1.4 cm, 1.6 x 1.3 x 0.6 cm and 2.6 x 2.1 x 0.9 cm respectively. In all the specimens the two notches from either side produced a well pronounced working edge.

SCRAPERS: (17 specimens)

This is the largest single group among the finished tools. Of these 13 are made on end flakes while the remaining 4 - two each - are made on side and indeterminate flakes. Scrapers vary in size
from 1.9 to 4.5 cm in length, 1.2 to 3.7 cm in breadth and 0.5 to
1.8 cm in thickness. The mean measurements are 2.9 x 2.0 x 1.0 cm.
Ten specimens measure in length between 2 and 3 cm.

On the basis of extent of retouch and shape scrapers are
divided into three varieties, namely, 1) side (9 specimens), 2)
and (4 specimens) and 3) round scrapers (4 specimens).

NOTCHED FLAKES: (2 specimens)

On account of the presence of a secondarily prepared 'notch' on
one of the sides, these flakes are treated as a separate type.
Functionally, they may be similar to concave scrapers. The dimensions
of the two specimens are 3.5 x 2.4 x 1.2 cm and 2.5 x 1.3 x 0.3 cm.

Bone Tools:

Only four specimens of this class were collected from the sur-
face of the site. These can be classified into three types; they are
1) scrapers, 2) chisel and 3) punch.

1) SCRAPERS: (2 specimens) Fig. 27, Nos. 3-4.

These tools found for the first time on a neolithic site in
India are very similar to stone axes in their shape, size and tech-
nique of manufacture.

They were made on horizontally split bovine shoulder blades.
Their dimensions are 14.9 x 5.7 x 2.8 cm and 13.1 x 5.2 x 2.2 cm
respectively. Both the specimens are roughly semi-triangular in
shape. In one specimen the butt end is slightly broken and its work-
ing edge is unifacially ground (Fig. 27, No. 4) while in the other
the bifacially ground medial working edge is broken on one of its
sides to nearly one-third of the specimen (Fig. 27, No. 3).
2) CHISEL: (1 specimen) Fig. 29, No. 13.

The only specimen of this type was found on the surface of mound II. It belongs to the tip of an antler of a wild deer or stag. In this condition it measures 5.5 cm in length and 2.1 cm in breadth as well as in thickness. The specimen is very much charred.

It is ground on both the faces forming a convex, bifacial medial edge; half of which is missing. The working edge has a lenticular cross section while the specimen in its middle has a circular section. This has a close resemblance to those found at Halakundi (Poote 1916: pl. 46, No. 347) and Tekkalakota (Nagaraja Rao and Malhotra 1965: pl. 34, No. 1 and fig. 30d) in Bellary district though differs from them materially.

3) PUNCH (?): (1 specimen) Fig. 29, No. 3.

This is an interesting bone object found on the surface of ash mound II at Palavoy. It is a broken long flat canine tooth of a wild animal. In its present condition it is 6.1 cm long, 3 cm broad and 1.1 cm thick. The sides of the specimen were unequally ground. Further, near the tip, it was ground around its circumference possibly to achieve a blunt round point. All this working shows that the specimen was not meant for a point. The flat tip of the point suggests its use possibly as a punch.

Neolithic Pottery:

Besides a large quantity of pottery got from excavations, a relatively small quantity comprising 96 sherds was collected from the surface of the site. These comprise 59 sherds of blotony grey ware, 13 of dull red ware and the remaining 24 of black-on-red ware.
All the three wares, their sub-wares, with types and designs are as follows.

I. **BLOTCHY GREY WARE**: (Fig. 38)

Two sub-wares are distinguished in this ware. They are 1) unburnished and 2) burnished varieties.

1) **Unburnished Grey Ware**: (Fig. 38)

There are 26 sherds of this ware. Only one of these bears impressed decoration. The shapes are a concave necked pot, a circular lid, handle of a lid, a lug and looped handles.

**TYPES:**

T.1 Rim fragment of a pot with short concave neck and convex flaring rim. Edge sharp.

T.2 A circular lid with a steam hold and flat under surface.

T.3 Handle of a lid. Round, tapering to one end.

T.4 Broken lug of a vessel or basin.

T.5 Part of a looped handle possibly of a basin.

T.6 Angular looped handle of a lid.

**DECORATION:**

D.1 The only sherd depicting nail-impressed decoration probably belongs to a globular pot.

2) **Burnished Grey Ware**: (Fig. 38)

This ware includes 33 sherds. Eight of these are painted with red ochre wash. The shapes are pots with constricted, concave, or high tapering neck and flaring rim; a basin; a dish and bowls of various sizes.

**TYPES:**

T.7 Fragment of a pot with constricted neck, flared mouth,
short sloping shoulders and bulging body. Variant 7a is small in size.

1.8 Fragment of a pot with short concave neck and convex flaring mouth.

1.9 Fragment of a pot with high tapering neck and out-turned rim with prominent ridge at the neck.

1.10 Part of a basin with almost vertical sides and everted rim.

1.11 Part of a shallow dish.

1.12 Part of a bowl with convex flaring sides and flat in-turned edge. Variant 12a has a rounded edge and below this there is a groove on the exterior. Variant 12b is shallow with tapering sides.

DECORATIONS: (Fig. 39)

The only decoration is of painted red ochreous wash. It occurs on types 9, 10, 11, 12a and 12b.

D.2 Either side of the ridge on the neck of a pot painted with red ochre wash (T.9)

D.3 The everted rim of a basin is painted with red ochre (T.10)

D.4 The sharp edge of a dish painted (T.11).

D.5 The edges of bowls painted (T.12a and 12b).

II. DULL RED WARE: (Fig. 39)

Only 13 sherds of this ware were collected. Twelve of these belong to unburnished variety while the remaining one is burnished. A solitary sherd is applique decorated. The shapes consist of small and big sized constricted as well as concave necked pots and spouted pots.

TYPES:

T.13 Rim-fragment of a pot with constricted neck and slightly
concave mouth. Slip micaceous. Variant 15a is a small storage jar with slightly convex flaring mouth.

T.14 Part of a small pot with short concave neck and convex flaring mouth. Edge round. Outer surface burnished. Variant 14a is bigger in size with unburnished exterior.

T.15 Tubular spout with 1.6 cm in diameter at the mouth. Variant 15a is smaller with 1.1 cm diameter, broken.

**DECORATION:**

D.6 Part of applique decoration.

**III. BLACK-ON-RED WARE:** (Fig. 39)

Twenty-four sherds of this ware were found. The shapes comprise a small pot with short concave neck, and dishes. The designs consist of one or two horizontal bands either singly or in combination with slanting lines between, lattice design and suspended strokes from the edge of the rim.

**TYPES:**

T.16 Rim fragment of a small pot with short concave neck and convex flaring mouth having sharp edge.

T.17 Dish with convex flaring lips.

T.18 Part of a shallow dish.

T.19 Fragment of a dish with everted rim.

**DESIGNS:**

D.7 Painted externally below the edge at the neck with a thick horizontal band and below this a group of strokes slanting to the right. Further on the interior from the rim a row of separate elongated hanging triangles (T.16).

D.8 Externally painted with a broad band of 2.0 cm thickness and two small bands above and below it (T.17).
D.9 Internally painted with triangular strokes at the rim and a horizontal band just below them.

D.10 Internally painted with a group of slanting strokes from the edge.

D.11 Sherd with carination, externally painted with two horizontal bands connected by an oblique band.

D.12 Sherd, probably, of the shoulder of a pot painted with a pair of horizontal bands.

D.13 Sherd painted with continuous slanting lines to right between two horizontal bands, on the shoulder.

D.14 Diagonal lattice design on the shoulder possibly between two bands.

POTTERY DISC: (Not illustrated)

Only a single specimen of this belonging to coarse red ware has been found on ashmound I. It is gritty containing sand and quartz particles. The piece has been ground to circular shape. No attempt has been made to bore a hole in the centre to use it as a spindle whorl. Its diameter is 3 cm.

Terracotta Object:

The only specimen of this class is represented by a terracotta toy bull (Fig. 42, No. H) which was found a little away from ashmound II at the foot of the hill. It is a crudely modelled specimen. The clay is micaceous with red dressing. The specimen has a long face with a slightly curved nose. It has a small hump which appears to have been separately made and looted on. The eyes are shown by stick impression and the ears by small additions. Both fore and rear legs as also the horns are broken and tail is missing. It has a
sloping back and the body gets thinner as it approaches the back. In length measures 9.1 cm.

The most interesting feature of this bull is that it has two pointed projections (one slightly broken) on either side above the fore legs. These projections were probably meant for yoking purposes. The bull is probably neolithic.

Terracotta bulls are of common occurrence on Deccan and South Indian neolithic sites. One such specimen was first collected by Foote (1914: 183, No. 2783-87; 1916: 126) at Maski. Foote thought it to be a votive offering. Similar specimens were later found at Brahmagiri (Wheeler 1947-48: 269, pl. CXXXI, No. 3), Piklimal (Allchin 1960: 79-80, Nos. 2, 3, 24; pl. 40, Nos. 2 to 5) and at Tekkalakota (Nagaraja Rao and Malhotra 1965: 81, pl. XL, 9 and fig. 30 i and j).

Bead: (Pl. H, No.5, second from left)

A single bead was found on the surface of habitation deposits close to a huge granite boulder at the western foot of the hill and a little to the east of mound 1. The specimen, made of carnelian of orange colour, is a thick discoid with roughly flat upper and under surfaces through the centre of which it is perforated. It is a crudely made object having an ascenetal perforation. Its diameter and thickness are 1.2 cm and 0.3 cm respectively. In cross section it is rectangular with rounded ends. It is likely to belong to neolithic, firstly, because it occurs right on the surface of neolithic deposits and secondly due to its crude craftsmanship.

Beads of similar kind were collected at a number of other neolithic settlements in Kurnool and Anantapur districts described
earlier (Chapter VI).

Further, similar beads were found in the neolithic levels at Srehmagiri (Wheeler 1947-48: 264-7), Sanganakallu (Subbarao 1949: 125), Maski (Thapar 1957: 104-9), Piklihal (Allchin 1960: 109-111) and Tekkalakota (Nagaraja Rao and Malhotra 1965: 79-80) in the adjoining Bellary and Raichur districts.

Animal Remains:

During the course of excavations a total of 404 bone segments were collected from the surface of the site. The collection was mostly confined to mound II since it is rich in bones and secondly the mound is very much disturbed due to cultivation and other natural activities. These disturbances thus exposed the neolithic levels (layer 3 of trench 1) of the mound. It is therefore clear that the collection undoubtedly belongs to neolithic period.

Three hundred and thirty-three (82.43%) of these yielded to identification while the other 71 (17.57%) specimens were found to be very small for identification. Most of the bones are of grey colour (69.07%) like those from the excavations. Unlike the excavated bones the surface specimens are completely fossilized. The reason for this state may be due to their exposure to atmospheric conditions which affected in heavy and complete fossilization.

Table 50 on pages 310-311 shows the bone-wise identification of animals. As seen from the table 319 (95.80%) bones belong to cattle while the remaining 14 segments are those of sheep/goats

1 Contributed by Prof. K.R. Alur, Retired professor of Anatomy, Bombay Veterinary College and U.P. Agricultural University.
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</tbody>
</table>

|               | 95.80 | 2.70      | 0.30 | 1.20 | 100.00 |

The underlined figures represent percentage.
Like the excavated bones here also the collection includes majority of part bones (261 specimens; 78.38%) with a small proportion of whole bones (72 specimens; 21.62%) comprising mostly either teeth or short and irregular bones. Similarly an analysis regarding the maturity and immaturity of bones shows that 303 (90.99%) bones belong to matured animals while the remaining 30 (9.01%) constitute those of immatured animals.

An attempt to know the size of the animals shows that 69 bones (20.72%) belong to big sized animals, while 79 (23.72%) and 185 (55.56%) pieces are those of small and normal sized animals. Thus small and big sized animals or nearly equally represented in proportion which together constitute about 45 per cent of the total stock thereby differing from the excavated specimens.

The animal species include cattle (*Bos bubalis, Bos indicus*), sheep/goats (Caprines) and hogs as among the specimens from excavations. Canines represented within the excavated are absent among those of the surface while this gap is filled by the occurrence of four antlers of antelope/deer (Fig. 43, No.13) which were totally absent in the excavated pieces. The presence of only antlers of this animal may be due to the discarding of bones while the other bony fragments of the body are too fragile and may be disintegrated. However the evidence of these specimens indicates that the stag or deers were hunted for their meat to use as diet. Three antlers have been reported at Tekkalakota (Nagaraja Rao and Malhotra 1965: 86, pl. 10b, Nos. 1-3) also.
Some interesting bone fragments are studied as under.

**SPECIMEN NO. 37: FOOD HABITS OF THE INHABITANTS:**

This specimen bears a chopping mark of a sharp instrument resulting in the deprivation of the compact tissue from the area. As the bone was green the cancellated tissue has been pressed down resulting in a smooth area with small pores of cancelli being visible. Besides this a vertical cut has also been tried before chopping it. Perhaps finding the resistance too great and no marrow coming out the piece was discarded. It may be noted that the medullary cavity does not extend to the region of condyles.

**SPECIMEN NO. 312 AND 315, 105 AND 296, 16 AND 284, 33 AND 41 AND 236, 107, 114 AND 217 SHOWING EVOLUTIONARY CHANGES IN ANIMALS:**

In the ontogenetic history of animals bones are the primary structures that undergo evolutionary changes as animal features are built round about them. Besides these, osseous changes are the only available evidences in the present excavations because the softer parts of the body composition either disintegrate or dissolve. It is one of the established conventions that antiquity of bones is mostly arrived by the comparative changes seen in contrast to the present day animals. In our excavations the above mentioned species are but few which are picked up to indicate these changes. It is not uncommon to find bony characters changing from animal to animal but the fundamental and structural changes are a clear evidence of their antiquity.

Medullary cavity is a stable feature in long bones but its variation and disappearance in certain segments indicates that the animals possessing such bones were under the duress of hard life.
For example, specimen No. 236 which is the distal end of the metacarpus is described in the present day books on anatomy to contain a medullary cavity which is divided by septum. In the same group of collection from an identical side and position in the body there is another distal end of metacarpus which is entirely filled with cancellated tissue, thus obliterating and occluding the medullary cavity which should exist. The character is continued much higher to the middle of the shaft in the same bone as seen in specimen No. 114. Fragment No. 217 is a contrast specimen indicating the bifurcation of medullary cavity.

From the same lot specimen No. 234 which is the distal extremity of humerus indicates the extension of a well defined and large medullary cavity into the region of the medial epicondyle. In the same specimen the lateral epicondyle is completely engulfed by the cancellated tissue with no indication of medullary cavity in it. Specimen No. 16 is quite in contrast to this as it indicates the division of the medullary cavity in the region of the shaft extending on either way to both the epicondyles.

Specimen No. 296 which is the proximal extremity of the radius and ulna indicates a well defined medullary cavity in the region of the shaft of the ulna which in the present day bone is solid. Specimen No. 105 is the distal extremity of the same and presents the existence of medullary cavity even as low as the styloid process.

Specimen No. 312 which is the acetabular part of the inominate bone also presents a medullary cavity in the distal end of ilium. The composite bones of the inominate (that is ilium, ischium and pubis) are flat bones and hence should not possess a medullary
cavity. Specimen No. 51 which is also from the same collection does not indicate the existence of a similar cavity. The indifferent appearance of medullary cavity indicates that the animals having these bones are in the transitory stage of evolutionary changes. Thus a few which have changed the characters are either in the later phase of evolution or the genetic manifestation has not yet completed in them.

This is also corroborated by features seen in specimen Nos. 33 and 41. Both these are parts of humerus presenting tuberosities at their proximal end which is said to curve medially over the inter-tuberal groove. The tuberosity is vertical in specimen No. 33 and curved in No. 41. This indifferent character indicates that the feature of curving over the inter-tuberal groove was not a stable factor during this period.

The points mentioned above give another indication that the collections made from Falavoy site are not from the animals of the present day. This factor is also substantiated by the heavy fossilization seen in the collection.

SPECIMEN NO. 350: ANCHYLOSIS:

Specimen No. 350 is the lind and iiiird fused carpal anchylosed with radial carpal bone. This usually occurs in animals which suffer from arthritis due to heavy and prolonged concussion. In this condition either the ligaments or the intervening sinovial membrane gets ossified. The disability to the animal is by the arrest of the movement in the joint. Anchylosis is not a character generally seen in animals which are either wild or let loose on soft grazing grounds. Animals used for heavy traction or prolonged draft-work are the common sufferers. The specimen indicates that at least some
of the animals were used for heavy work and land tilling in agricultural operations, indirectly denoting that advanced agriculture was in vogue in those days.

SPECIMEN NO. 394:

The inhabitants had known the use of pork the source for which might have been either by hunting or by domestication. Though the skeletal segments of the pig are few the evidence about its existence is proved beyond doubt by the presence of the above specimen and others. The molar from the present case is a deciduous one. So probably domestication was in vogue in those days.

Megalithic Pottery:

The Megalithic pottery from surface comprising 90 sherds was collected on and around the mounds as well as from the cultivated fields. On the basis of external surface colour it is divisible into three main wares. They are 1) Black ware, 2) black-and-red ware and 3) red ware.

Red ware comprising 68 sherds accounts for more than two-thirds of the total collection. Black and black-and-red ware comprise ten and 12 sherds respectively. Chocolate-slippered ware is absent in the collection. Only some sherds yield simple shapes. All the three wares and their types are described below.

1. BLACK WARE: (Fig. 40)

The pots of this ware are black in colour on both internal and external surfaces. The external surfaces of the vessels are always burnished. Besides this, in bowls and dishes even internal surfaces...
are burnished. The ware is a wheel-made one. The clay is gritty sometimes mixed with quartz and sand grains over which a thin wash of ochreous slip is applied. The pots are fired under a reducing temperature. The fabric has a thickness of 0.4 to 1.1 cm.

The common types in this ware are a wide mouthed pot and bowls.

TYPES:

T.1 Fragment of a wide-mouthed pot with grooved in and externally flattened rim, and sloping sides.

T.2 Open-mouthed bowl with internally thickened rim and externally grooved.

T.3 Fragment of a convex-sided bowl.

II. BLACK AND RED WARE: (Fig. 40)

This ware is characterised by black colour on the interior and black-and-red on the exterior. This resulted due to inverted firing. The ware is wheel-made and its surfaces are shining due to burnishing. The clay is fine occasionally mixed with quartz and sand grains. The fabric has a thickness of 0.5 to 0.9 cm.

Only two shapes occur in this ware and they are a deep bowl and a carinated dish.

TYPES:

T.4 Fragment of a deep bowl with convex outgoing sides.

T.5 Carinated dish with internally beaded rim and externally grooved.

III. RED WARE: (Figs. 40-41)

Both internal and external surfaces of the pots of this ware are red in colour save for one pot whose internal surface is black in colour (T.11). All the sherds are externally slipped in pale red to
bright red colour. The core is pale grey to black and sometimes red in colour. The clay is gritty frequently mixed with quartz particles. The thickness of the fabric ranges from 0.3 to 1.2 cm. Twelve of the total sherds of this ware are externally grooved.

The common shapes are a neckless carinated pot, a wide-mouthed pot, pots with short concave as well as constricted necks, a pot with funnel-shaped neck, a basin and various types of bowls.

**TYPES:**

1.6 Fragment of a neckless carinated pot with sloping shoulders, externally grooved near the rim and possibly round base.

1.7 Fragment of a pot probably with wide mouth, clubbed rim with sharp edge and slightly outgoing sides.

1.8 Fragment of a pot with short concave neck, beaded rim, bulging-out sides.

1.9 Fragment of a pot with constricted neck and convex flaring rim.

1.10 Nearly three-fourths of a pot with constricted neck, externally grooved shoulder, squat or ovoid body and rounded base.

1.11 Pot with high funnel-shaped neck, externally grooved near the rim and globular body.

1.12 Fragment of a basin with inturned clubbed rim.

1.13 Fragment of a bowl with convex outgoing sides and internally grooved near the edge.

1.14 Fragment of a bowl with squarish rim and slightly bulging sides externally grooved.

1.15 Fragment of a bowl with bevelled rim internally ledged.
One coin was found at Falavoy in a cultivated field a few meters to the east of ashmound I. It is roughly circular in shape, and measures 1.9 cm in diameter, 0.3 cm. in thickness and 3.1 grams in weight. The metal it is made of appears to be an alloy (probably potin) of copper, zinc, lead and tin. The coin is in a well preserved state. Its obverse side bears the symbol of an elephant with upturned trunk to the right and above it on the margins is a legend in Brahmi reading (SI) ri sa ta ka ni, while the reverse side has the Ujjain symbol with a pellet in each orbit and tourin (?) above it.

This is comparable to the coins recovered from the Late Andhra levels at Chandravalli (Wheeler 1947-48: 219, Nos. 4 and 5) and in the Indo-Roman Period (Period V) at Navasa (Sankalia and others 1960: 181-2, Fig. 79, No.1), and can be tentatively dated to c. 200 A.D.

ii) Finds From The Excavations:
Pre-Neolithic Period (Falavoy I)

This period, stratigraphically separated from the neolithic (Falavoy II) by a pair of sterile layers (layers 12 and 13 which together have a thickness of about 28 cm in trench 1 and 20 cm in trench 2), is represented in the lowermost layer (layer 14) overlying basal rock in both trench 1 and 2 of mound I. The area dug at this level measures 2 x 3 meters in the western portion of trench 1 and 4 x 2 meters in the southernmost part of trench 2. The layer consists of brownish red marum mixed with several disintegrated granite pieces.
1) deeply patinated basaltic flake industry and 2) blade and microlithic industry. The finds of the former industry occurred at the basal portion of the layer touching rock while the latter industry is confined to the topmost zone of the layer touching the sterile layers. This shows that the patinated basaltic flakes are older in date than the blade and microlithic industry.

1) PATINATED BASALTIC FLAKE INDUSTRY: (Fig. 25, Nos. 1-4).

There are 28 patinated flakes all of basalt of which 16 were recovered from trench 1 and 12 from trench 2. All the specimens are affected by a very deep brownish patination. Twenty-two of these are end-flakes and six side flakes.

The flakes exhibit the levallois technique; they possess a plain striking platform which makes an angle of 90 to 110° with the bulbar surface. The dorsal surface in 20 specimens is worked completely (Fig. 25, Nos. 1-2) while in the remaining it is partially worked (Fig. 25, Nos. 2 and 4). In shape these flakes are rectangular, leaf-like, triangular and irregular.

In size they measure between 2.3 and 5.1 cm in length, 1.6 and 4.4 cm in breadth and 0.6 and 1.5 cm in thickness. Their mean dimensions are 4.0 x 3.0 x 1.1 cm.

The edges are sharp even in the patinated condition and there is no evidence of retouch.

2) BLADE AND MICROLITHIC INDUSTRY: (Fig. 25, Nos. 5-15).

From the upper levels, touching the sterile layers, of layer 14 were recovered 29 specimens of the blade and microlithic industry. Sixteen of these artifacts were unearthed from trench 1 while the remaining 13 derived from trench 2. Of these, five specimens are
made on chert while 24 are of very coarse-grained quartz.

The following table shows the stratigraphical distribution of the artifacts of this industry.

<table>
<thead>
<tr>
<th>Md. Tr. Layer</th>
<th>Artifact Types</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Flake Core</td>
<td>Blunt.</td>
</tr>
<tr>
<td></td>
<td>cores rej.</td>
<td>flake</td>
</tr>
<tr>
<td>1</td>
<td>14</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>14</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

As could be seen in the above table the industry is very poorly represented like the patinated flake industry. Waste products (14) comprising flake cores, flakes and chips constitute nearly 50 per cent of the total collection. Next to these come unfinished types (13), which include unutilised flakes and blades. The remaining two specimens alone represent the category of finished types. They include an obliquely blunted blade and a side scraper.

All the types with their characteristics are briefly described below.

**FLAKE CORES:** (2 specimens) Fig. 25, No. 5.

These are ordinary cores from which flakes were freely removed without any regularity. None of these specimens bore prepared platform. Both the pieces came from trench 1. The example measures 3.1 x 2.4 x 1.8 cm.
CORE REJUVENATION FLAKES: (2 specimens) Fig. 25, No. 6.

One specimen is from trench 1 and the other from trench 2. They appear to have been removed from the apex of the cores to improve the existing platform. The illustrated specimen recovered from trench 1 is leaf-like in shape, made of chert with a convex upper surface and a hollow under surface having a prominent bulbar scar. The specimen measuring 2.9 x 2.0 x 0.7 cm is partly retouched on left side.

PLUNGING FLAKE: (1 specimen) Fig. 25, No. 11.

The only specimen of this type measuring 3.6 x 0.8 x 0.7 cm came from trench 2. It is made of quartz.

CHIPS: (9 specimens) Not illustrated.

These are shapeless by-product or waste flakes resulted from the preparation of blade cores and various types of artifacts. None of them shows signs of retouch or utilisation. Six of these came from trench 1 and the remaining three from trench 2.

UNUSED FLAKES: (9 specimens) Fig. 25, Nos. 7-9.

All these are end flakes. Of these six specimens were found in trench 1 and three in trench 2. In size they measure between 1.5 and 4.3 cm in length, 1.2 and 2.6 in breadth and 0.4 and 0.8 cm in thickness. Their average dimensions are 2.6 x 1.6 x 0.6 cm. Only in two specimens the length is more than twice the breadth. One specimen is almost circular in shape. None of these flakes bears marks of use or retouch.

UNUSED BLADES: (4 specimens) Fig. 25, Nos. 12-14.

Two were found in trench 1 and two in trench 2. One of them is broken. All specimens bear a single midridge on their dorsal surface.
In size they measure between 1.8 and 2.2 cm in length, 0.6 and 0.9 cm in breadth and 0.3 and 0.5 cm in thickness; the average dimensions being 2.0 x 0.7 x 0.4 cm. None of these blades shows either marks of retouch or use.

**OBLIQUELY BLUNTED BLADE:** (1 specimen) Fig. 25, No. 15.

The only specimen of this type was recovered from trench 1. It is made of chert and measures 2.0 x 0.9 x 0.5 cm. The specimen is blunted on its right side to facilitate hafting while the left side is thin and sharp. Even the base of the specimen is steeply retouched.

**SIDE SCRAPER:** (1 specimen) Fig. 25, No.10.

It is made on a thick end flake with a cortexed convex upper surface. The specimen is retouched dorsoventrally. Its right lateral side bears two deep scars probably removed for holding at the time of use. The specimen came from trench 1.

**COMPARATIVE:**

The period was completely devoid of pottery or any other remains. These two facts are enough to speak of it as a separate culture though we do not know when the site was first occupied.

Similar patinated flakes but of sandstone and basalt associated with a crude microlithic industry of quartz and chert were earlier noticed by Subbarao (1949: 116-8, 134-8) from Sanganakallu. Subbarao thought them to be the by-products of an early neolithic industry, because he found similar but lightly patinated flakes on the surface of several sites. But regarding the patinated sandstone flakes of which no specimens occurred on surface Subbarao thought them to be products of a pre- and proto-neolithic industry.
In a recent excavation (1965) on the top of Sankalasamma Hill Sankalia found that these industries represent a separate culture - Pre-Neolithic. This was followed by two more excavations - one on Kupgal ashmound I by Majumdar and Rajaguru (1966: 22) and the other by Sankalia in a field a little to the north-east of Sangannakallu village. Both the excavations revealed that the patinated flake industry is overlain by microlithic industry.

Neolithic Period (Palavoy II):
Pecked and Ground Stone Industry:

The pecked and ground stone industry unlike the blade and microlithic industry is remarkably well represented at Palavoy and is comparable to that of other known neolithic sites in the neighbouring Bellary and Raichur districts. The chief reason for this seems to be the availability of raw materials in the form of dolerite and diorite dykes which occur on the northern and southern extremities of Palavoy hill.

Eighty-four specimens were recovered from the excavations. Igneous rocks - both basic and acidic - comprising fine-grained basalts to medium to coarse-grained dolerites and epidiorites, granites, granodiorites, etc. were the most favoured materials for the manufacture of artifacts of this industry at Palavoy. Similar is the position at other sites in Anantapur and Kurnool districts of South-Western Andhra Pradesh (Chapter V) as well as its neighbourhood. All these rocks are locally available in the vicinity of the site. The two dykes mentioned earlier must have been the chief source for making tools at this site.
The choice of raw materials varied in accordance with the tool types man wanted to make. Thus dolerites, diorites, etc. were mostly used in making edge tools like axes while granites and granite gneisses were employed in making rubbing stones, hammer stones, querns, etc. This feature has been found at other neolithic sites in Anantapur district as well. The techniques of manufacture are also basically similar to those employed at other sites.

**TYPOLOGY:**

Table 51 on page 326 shows the mound/area-, trench-, layer-, and type-wise distribution of specimens from excavations. More than 50 per cent of these are in broken state. The highest number of tools (36) was found in trenches 1 and 2 of mound II as well as those of mound I (33). Most of these tools came from layers 9 and 10 of trench 1, mound I and 3 and 5 of trenches 1 and 2, mound II. Rubbing stones and hammer stones occurred in all layers and trenches excepting layer 9 of trench 2, mound I in the former type and layer 11 of trench 1, mound I and layer 2 of trench 1, habitation area I in the latter type. Axes were recovered from layer 3 of trench 1, habitation area II alone. Flakes and saddle querns were found in the strata of ashmound trenches only while sling stones occurred in mound I and habitation area II. Besides, an interesting carved stone object was found in layer 9 of trench 1, mound I. Because the excavation material is small, certain types present in the surface collection (described earlier) are missing here.

All the types with their characteristics are described below.
TABLE 51. MOUND/AREA-, TRENCH-, LAYER- AND TYPE-WISE DISTRIBUTION OF PICKED AND GROUND STONE TOOLS

<table>
<thead>
<tr>
<th>MOUND TRENCH LAYER AREA</th>
<th>MOUH</th>
<th>TRSMCH</th>
<th>LAYKR</th>
<th>AND TYPEWISE</th>
<th>TOTAL</th>
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<tbody>
<tr>
<td></td>
<td>AXEFL</td>
<td>FLAKE</td>
<td>RUBBING</td>
<td>STONE</td>
<td>CARVED</td>
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</tr>
<tr>
<td></td>
<td>9</td>
<td>2</td>
<td>6</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>10</td>
<td>1</td>
<td>3</td>
<td>8</td>
</tr>
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<td></td>
<td>11</td>
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<td></td>
<td>2</td>
<td>9</td>
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<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>Total of Mound I</td>
<td>1</td>
<td>3</td>
<td></td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>II</td>
<td></td>
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<td>1</td>
<td>5</td>
<td>9</td>
<td>1</td>
<td>6</td>
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<tr>
<td></td>
<td>2</td>
<td>6</td>
<td></td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Total of Mound II</td>
<td></td>
<td></td>
<td>19</td>
<td>4</td>
<td>13</td>
</tr>
<tr>
<td>H1</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H2</td>
<td>2</td>
<td></td>
<td>4</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Total of Habitatsional Areas</td>
<td>2</td>
<td>3</td>
<td>81</td>
<td>7</td>
<td>26</td>
</tr>
<tr>
<td>Total artifacts from all trenches</td>
<td>2</td>
<td>3</td>
<td>41</td>
<td>7</td>
<td>26</td>
</tr>
</tbody>
</table>
AXES: (2 specimens) Fig. 28, Nos. 7 and 9; pl. J, Nos.1-2.

The two specimens of this type made on fine-grained dolerite were recovered from trench 1, habitational area II. Both the specimens were technically flaked, pecked and edge ground. In shape they are triangular with pointed butt. The dimensions are 12.2 x 5.6 x 3.2 cm and 12.4 x 5.7 x 2.9 cm respectively. The cutting edge is convex-curved, median and bifacially ground. The cross section is oval at the butt and in the middle while it is lenticular at the cutting edge. The two specimens appear to have been heavily used as seen from the use marks. Further one of the axes (Fig. 28, No. 9) even got broken due to its heavy use in cutting and splitting operations.

FLAKES: (3 specimens) Fig.26, Nos.8-10.

These are by-product flakes probably resulted during the manufacture of finished tools. All the three flakes derived from trench 1 of mound I alone. None of the specimens is patinated. Their dimensions are 5.1 x 3.0 x 1.0 cm, 4.6 x 3.0 x 1.1 cm and 7.1 x 5.0 x 2.0 cm respectively. In all the flakes the length is less than twice the breadth. One of the flakes (Fig. 26, No. 10) is fully worked while the other two are partially worked. All the three are end flakes.

RUBBING STONES: (41 specimens) Pl. J, Nos. 3-8.

These implements occurred in all the trenches excepting trench 2 of mound I. Twenty-eight of these are broken while the remaining 13 are complete. In shape they are oval to ellipsoidal and sometimes irregular. In cross section they are rectangular to oblong and plano-convex. Their maximum, minimum and average dimensions are 16.9 x 12.2 x 7.4 cm, 8.9 x 6.6 x 3.0 cm and 11.9 x 9.7 x 4.4 cm. Twenty-one of
these are worked and used on one surface only and 20 on both surfaces. All are made of natural granite slabs.

SADDLE QUERNS: (7 specimens) Pl. G, No. 3.

All these are broken specimens.


These were found in all the trenches excepting trench 1 of habitational area 1. All are made on granite excepting two which were made of dolerite. In shape they are roughly circular or discoidal, square and irregular as well. In size they vary from 5.2 to 10.6 cm in length, 3.0 to 8.2 cm in breadth and 2.4 to 7.5 cm in thickness. On the basis of the extent of use these can be divided into five groups. Thus seven are one end used, six two ends used, seven all round used, five irregularly used and three used as rubber cum hammer stones.


One of these was found in trench 1, mound 1 and the other in trench 1 of habitational area 11. Both are spherical in shape and made on granite. They measure in diameter between 6.0 and 7.0 cm.

CARVED OBJECT: (1 specimen) Fig. 26, No. 11.

This is an interesting object made on granite. It measures 6.9 x 5.4 x 4.7 cm in dimensions. It was found in layer 9, trench 1 extension, mound 1. The specimen has two intentionally vertically made notches giving it a saw-like edge.

The industry is broadly similar to that of Aklihal and Sanganskalu but not so rich as at the latter sites. But certain types like adzes and picks are completely absent on surface and excavations at Palavoy. At this site itself the number of specimens from excavations
is less than that from surface. Many types like chisels, chopper-chopping tools, axe hammers, perforated rings, etc. occurred on surface were absent in the excavations. However, a large number of rubbing stones and hammer stones in the excavations indicate their use as house-hold implements.

Blade Industry:

The excavations at Palavoy yielded only seven specimens of this industry. The industry though poorly represented is comparable to those known from other neolithic sites in Southern India.

All the specimens are made on chert. The small number of artifacts suggests that they were made outside the houses. The distribution of the finds from the excavations in various layers and trenches is as under:

A used parallel sided blade and a lunate were recovered from layer 9 from trench 1, mound I; while a fluted core was found in layer 9 of trench 2 at the same mound. On mound II, layer 3 of trench 1 yielded an unutilised flake and a used blade while layer 5 of trench 2 brought to light a created guide flake. Layer 2 of trench 1 in habitational area I yielded a solitary specimen of borer.

The characteristics of all the types are described as under.

BLADE CORE: (1 specimen) Fig. 26, No.1.
This is a regular core of blackish chert measuring 2.8 x 1.3 x 1.0 cm. It is cylindrical in shape possessing only a single platform.

CRESTED GUIDE FLAKE: (1 specimen) Fig. 26, No.2.
This is derived from layer 5 of trench 2, mound II and measures
4.6 x 1.5 x 0.9 cm.

UNUTILISED FLAKE: (1 specimen) Fig. 26, No. 3.

It was recovered from layer 3 of trench 1, mound II. Its dimensions are 2.0 x 1.3 x 0.3 cm. It is an end flake fully worked on its dorsal surface.

UNRETouched BLADES: (2 specimens) Fig. 26, Nos. 4-5.

These blades bearing use marks on one of the lateral sides measure 4.3 x 1.7 x 0.6 cm and 2.6 x 1.0 x 0.2 cm. One of the specimens (Fig. 26, No. 5) has a single midridge on its dorsal surface while the other (Fig. 26, No. 4) has a pale whitish cortex on its upper surface.

LUNATE: (1 specimen) Fig. 26, No. 6.

The only specimen of this type came from layer 9 of trench 1, mound I. It measures 1.5 x 0.5 x 0.3 cm. The arc is fully blunted while the chord bears use marks. Further one end of the specimen is made into a pointed tip by bimarginal retouch.

Borer: (1 specimen) Fig. 26, No. 7.

This specimen came from layer 2 of trench 1, habitational area I, and measure 1.8 x 1.0 x 1.0 cm. It is made on an indeterminate flake of blackish chert. The two notches from either side of the tool produced a well pronounced working edge.

The blade industry of Falavoy is poorer in quantity of artifacts than those of Siklihal, Sangasankallu, Tekkalakota and Maski though typologically similar to the latter sites. It is however comparable to Útnur but better represented than the latter in both raw materials and tool types, when surface and excavated specimens
are viewed together. Utnur, though, is very near (about 11 km.)
to Tungabhadra river in whose beds are available chert, chalcedony,
quartz, etc. these were not fully exploited as seen from Allchin's
collection (131 specimens from surface and excavation), and hence
specialized types were not made. But at Falavoy though raw materials
were to be imported from far off places many important types are
present. This shows that the people of Falavoy were more civilized
than those of Utnur.

**Bone Tools:**

A total of 21 bone tools were recovered from the excavations
at Falavoy. These can be classified into three types; they are:
1) scrapers, 2) blades and 3) points. The last named variety is the
most common. The largest number of artifacts were found in trench
1 of ashmound I, and majority of these came from layer 9.

The mound-, trench-, layer- and type-wise distribution of all
these artifacts is given in the following table:

<table>
<thead>
<tr>
<th>Ashmound</th>
<th>Trench</th>
<th>Layer</th>
<th>Artifact Types</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Scrapers</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>1</td>
<td>9</td>
<td>1</td>
<td>8</td>
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<td>10</td>
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<td>1</td>
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<td>6</td>
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<td>-</td>
<td>11</td>
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<td></td>
<td></td>
<td>-</td>
<td>21</td>
</tr>
</tbody>
</table>
The chief source of material for making these artifacts consisted of the bovine bones in the shape of splinters, rib fragments and shoulder blades.

The techniques of manufacturing these tools are similar to those of the stone artifacts, but they involved less labour unlike in the latter. Excepting the pecking process the application of which is however unnecessary in the working of bone due to its fragility; the other two techniques, namely, flaking and grinding are very well depicted. The technique of grinding was executed on all the types in the present collection while flaking in combination with grinding was restricted to scrapers alone. This shows that grinding was more important than flaking in making bone tools.

All the three types with their characteristics and illustrations are dealt with below.

1) SCRAPERS: (5 specimens; Fig. 27, Nos.1-2; Fig. 28, Nos. 6 and 8; Pl. II, Nos. 1-4.

These tools have been found for the first time on a neolithic site in India. In their shape, size and technique of manufacture these tools are very similar to stone axes.

They were made on horizontally split bovine shoulder blades. In the available condition they show a thick narrow proximal end acting as butt and a thin broad distal end which after splitting was ground to form working edge. All the specimens are roughly triangular in shape. In no case the natural shape has been disturbed by their makers.

Their size mostly depended on the original bone piece selected for the purpose. Further, their dimensions particularly the maximum
breadth will enable us to suppose how big the animals to which these bone tools belong were. The biggest specimen, which is charred, measures 16.2 cm in length, 8 cm in breadth and 2 cm in thickness (Fig. 27, No. 2) while the smallest one has the dimensions of 6.1 x 3.1 x 0.9 cm (Fig. 27, No. 5). The former was recovered from the earliest floor level belonging to layer 9, of trench 1 on mound I, while the latter came from layer 5 of trench 2 on mound II. Their mean measurements are 13.1 x 6.2 x 2.1 cm.

The natural high ridges and tapering sides of the shoulder blades were carefully trimmed wherever necessary. Then the broader ends of the blades were ground either unifacially to form a bevelled working edge or bifacially to achieve a medial edge. In the present collection only one specimen is found to be bifacially ground (Fig. 27, No. 1). While the remaining four have been ground unifacially (Fig. 27, Nos. 2 and 5; Fig. 28, Nos. 6 and 8). In some specimens grinding was extended to the sides too. The working edge is roughly straight in all specimens (Fig. 27, Nos. 1 and 5; Fig. 28, Nos. 6 and 8) excepting one which bears slightly convex edge (Fig. 27, No. 2). In cross section the working edge is plano-convex or lenticular while the whole specimen is irregular due to the possession of natural high ridges.

Though similar to stone axes in shape, size and technique, these tools differ functionally from the former. As the material used is bone, which is softer than stone, functions like the felling of trees or cutting of branches by these tools would have been practically impossible. We are inclined to think that these tools were employed for lighter duties such as skinning, scraping and
cutting of the hides. Similar tools made of iron are in use by present day cobblers in India for scraping and cutting the hides.

Very similar tools have been brought to light from the site of Andronovo in Eastern Kazakstani (Chernikof 1957: 19, Fig. 3, No. 19) in U.S.S.R.

2) BLADES: (3 specimens) Fig. 29, Nos. 1-2.

The three specimens included in this type are called blades because of their long, parallel sides, one or both of which are sharp bearing signs of use. Two specimens are rib fragments of cattle (Fig. 29, No. 1) while the third is a splinter of some long bone. In one of the former specimens the sharper lateral side remains minute notches which resulted, probably, due to its use as a knife while the other side is intentionally blunted. Further, both the flat surfaces of this specimen exhibit several cut marks deliberately made, possibly, to give a good grip to the user. The second one is a beautiful thin blade ground on both faces and sides (Fig. 29, No. 2).

Similar specimens are known from the neolithic levels of Tekkalakota (Nagaraja Rao and Malhotra 1965: 85, Pl. Xa, Nos. 2 and 6).

3) POINTS: (13 specimens) Fig. 29, Nos. 4-8 and 11.

All the pieces of this type belong to fragments of long bones. One of the ends of these specimens is narrowed to a pointed tip by grinding. The largest of the points is 7.4 cm long (Fig. 29, No. 8) while the smallest measures 1.8 cm in length. The average length is 4.6 cm. The larger specimen came from layer 6, trench 2 of mound II and the smaller one from layer 9, trench 1, Mound I. All the imple-
ments are complete save for one which is a broken tip (Fig. 29, No. 5).

Bone points are known from several other neolithic sites such as Sanganakallu (Subbarao 1949: 126, pl. XVIII, Nos. 5-6), Fiklihal (Allochin 1960: 112, Pl. 57a) and Tekkalakota (Nagaraja Rao and Malhotra 1965: 85, Pl. 1a, Nos. 3-5 and 7-11, fig. 30c), also.

COPPER OBJECT:

Fig. 42, No. 1; Pl. A, No. 5 (First from left).

The present excavations yielded a solitary copper object from layer 3 of trench 1, mound II at a depth of 92 cm below surface. Stray copper objects have also turned up in the neolithic levels at Brahmagiri, Maski, Tekkalakota and Fiklihal.

It is a flat thin specimen with one side roughly straight and the other convex. The object is pointed at both ends. The straight side appears to be broken. Possibly it is the fragment of an arrow head.

The object in its present condition measures 3.6 cm in length, 1.4 cm in breadth, and 0.2 cm in thickness. It weighs 3.7 grams. The specimen is covered with a thick film of black encrustation, which even after chemical treatment firmly sticks to the surface.

None of the other neolithic sites has yielded comparable object.

Pottery:

The stratified deposits of neolithic period yielded a total of 1,020 potsherds. Pottery occurred in all the trenches but the two trenches on mound I yielded the largest number of sherds.
(525 sherds; 51.48%) while those on mound II (352 sherds; 34.50%) and in habitational areas (143 sherds; 14.02%) together account for less than 50 per cent of the total collection. Of all the trenches, trench 1 of mound I contributed for more than 40 per cent (422 sherds; 41.38%) of the total sherds. Layer 9 of trench 1, mound I accounts for one-fourth (245 sherds; 24.02%) nearly of the entire collection. Unlike the poorly represented pecked and ground stone and blade industries, the ceramic industry of Pulavoy is thus proved to be a very rich one.

On the basis of the external surface colour, the pottery has been divided into three main wares — blotchy grey ware, dull red ware and black-on-red ware. The grey ware comprises 636 (62.25%) sherds and occurs in all the strata of all the trenches. The other two wares account for 273 (26.76%) and 109 (10.69%) sherds respectively. Dull red ware was found in all the layers excepting layer 3 of trench 1, habitational area II. Also, black-on-red ware occurred in all the trenches excepting trench 1 of habitational area 2II.

Table 52 on page 337 gives the stratigraphical distribution of the three wares.

The pottery is mostly hand-made and occasionally shaped in moulds. The clay is of a fine micaceous class sometimes mixed with sand and quartz particles. On the basis of surface treatment, nature of clay, technique of manufacture, shape and decoration the pottery is divided into several sub-wares as under.

1. **BLOTCHY GREY WARE**; (Figs. 30-33).

This ware is characterised by grey colour on the exterior and black on the interior. The blotchy grey colour on the outside is due
### Table 52. Stratigraphical Distribution of Neolithic Pottery from Excavations

<table>
<thead>
<tr>
<th>MOUND TRENCH LAYER</th>
<th>WARES</th>
<th>TOTAL SHERDS OF ALL WARES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unbur-</td>
<td>Bur-</td>
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<td>nished nished</td>
<td>nished</td>
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<tr>
<td>---------------------</td>
<td>-----------------</td>
<td>----------------------------</td>
</tr>
<tr>
<td></td>
<td>Blotchy Grey</td>
<td>Dull Red</td>
</tr>
<tr>
<td>Mound I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>9</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>Total of Mound I</td>
<td>19</td>
<td>35</td>
</tr>
<tr>
<td>II</td>
<td>11</td>
<td>90</td>
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<td>5</td>
<td>12</td>
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<td>6</td>
<td>5</td>
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<tr>
<td>H1</td>
<td>7</td>
<td>48</td>
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<tr>
<td></td>
<td>2</td>
<td>24</td>
</tr>
<tr>
<td>H2</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Total of Hab. area</td>
<td>9</td>
<td>68</td>
</tr>
<tr>
<td>Total of all localities</td>
<td>75</td>
<td>563</td>
</tr>
</tbody>
</table>

The underlined figures represent percentage.
to uneven firing. The fabric is hand-made, coarse and sometimes gritty. The core is always black. The thickness of the fabric ranges from 0.4 to 1.8 cm. Some of the sherds of this ware are black both inside and outside.

This ware comprising 638 (62.25%) sherds was found in all the trenches. A little above half the sherds (329 sherds; 51.57%) are derived from mound 1 alone. Layers 9 and 10 of the main trench together yielded 40 per cent sherds.

Two varieties - unburnished and burnished grey wares - are noticed in this ware.

1) UNBURNISHED GREY WARE: (Fig. 30).

There are only 75 (7.35%) sherds in this sub-ware forming about one-eighth of the grey ware (638 sherds). None of the sherds of this ware bears decoration. The pots are crudely made and they are unalipped. The commonest shapes are storage jar, stand base, dish and bowl. The ware occurs in all the layers of all trenches excepting layer 3 of trench 1 in habitational area I.

TYPES:

T.1 Rim fragment of a storage jar with short concave neck and convex flaring mouth. (55 FLY Md.11, Tr. 1, layer 3).

T.2 Part of a stand base of a vessel. (74 FLY Md.1, Tr.2, layer 10).

T.3 Fragment of a shallow dish with slightly externally bevelled rim (66 FLY Md.11, Tr.2, layer 5).

T.3a Fragment of a thick bowl with convex flaring sides (66 FLY Md.11, Tr.2, layer 5).
2) **BURNISHED GREY WARE:** (Figs. 30-33).

Five hundred and sixty-three sherds (55.20%) of the collection belong to this ware. Of these, 460 sherds (81.71%) are undecorated while the remaining 93 (18.29%) are decorated either with red ochre paint (34 sherds), applique (1 sherd), applique combined with incised and painted designs (3 sherds) or only with incised designs (45 sherds).

The outer surface of the pots is coated with a thin clay-coloured wash and burnished to a fine smooth appearance. The common shapes are small-sized pots with concave neck and flared or beaded rims, storage jars, pots with high concave neck, various bowls and dishes, bases, pots with constricted neck as well as cylindrical neck, carinated pot and a lid.

**TYPES:**

T.4 Rim-fragment of a small pot with short concave neck and flared mouth (84 PLY H2, layer 2).

T.5 Lip portion of a pot with flared mouth and beaded-out rim (79 PLY H2, layer 2).

T.6 Rim-fragment of a small pot with concave neck and flared mouth (72 PLY Md.1, Tr.1, layer 10).

T.7 Rim-fragment similar to T.6 but with thick rim (73 PLY Md.1, Tr.1, layer 9).

T.7a Pot with high concave neck and sloping shoulders (101 PLY Md.11, Tr.1 layer 3).

T.8 Fragment of a storage jar with concave neck and convex shoulders (78 PLY H2, layer 2).

T.9 Fragment of a bowl with straight sides tapering towards
base (60 PLY Md.II, Tr.1, layer 3).

T.9a Part of a deep bowl with straight sides and possibly convex base (63 PLY Md.II, Tr.2, layer 5).

T.9b Part of a lip possibly of a bowl (67 PLY Md.II, Tr.2, layer 6).

T.10 Part of a shallow dish with sides thinning towards the centre (69 PLY Md.I, Tr.1, layer 9).

T.11 Part of a dish similar to T.10 but with thick sides. (70 PLY Md.I, Tr.1, layer 10).

T.12 Part of a flat base possibly of an open-mouthed vessel (71 PLY Md.I, Tr.1, layer 9).

T.13 Fragment of a pot with constricted neck, short flanged rim and convex shoulders (82 PLY H2, layer 2).

T.14 Rim-fragment with short concave neck and flared mouth. Externally burnished black (78 PLY H2, layer 2).

T.15 Rim-fragment of a pot similar to type 14 with small convex flared mouth (75 PLY Md.I, Tr.2, layer 10).

T.16 Rim-fragment of a pot similar to type 15 but with steep sloping shoulders (62 PLY Md.II, Tr.2, layer 5).

T.17 Rim-fragment of a pot with high cylindrical neck and convex flared mouth (58 PLY Md.II, Tr.1, layer 3).

T.18 Fragment of a carinated belly of a pot (76 PLY Md.I, Tr.2, layer 10).

T.19 Part of a small concave lid with broken knob (376 PLY H.1, layer 2).

T.20 Fragment of a pot with concave neck, convex flared mouth and externally grooved at the rim (64 PLY Md.II, Tr.2, layer 5).
T.21 Rim-fragment of a pot with short concave neck and convex outgoing sides (59 FLY Md.II, Tr.1, layer 3).

T.22 Fragment of a pot with long tapering neck and convex shoulders with a raised band at the base of the neck (86 FLY H2, layer 2).

T.23 Fragment of a pot with short concave neck and flanged rim (80 FLY H2, layer 2).

T.24 Rim of a huge storage jar with constricted neck and convex flaring lips tapering towards the rim (77 FLY H2, layer 2).

T.25 Fragment of a big basin burnished externally and internally (57 FLY Md.II, Tr.1, layer 3).

T.26 Fragment of a bowl with convex sides tapering towards the edge (81 FLY H2, layer 2).

T.27 Rim-fragment of a pot with concave neck and convex flaring mouth (61 FLY Md.II, Tr.1, layer 3).

T.28 Positive mould of the incised decoration (32 FLY Md.I, Tr.2, layer 10).

T.29 Belly portion possibly of a storage jar (87 FLY H2, layer 2).

T.30 Fragment of a basin with a prominent ridge (56 FLY Md.II, Tr.1, layer 3).

T.31 Sherd with incised decoration (21 FLY Md.I, Tr.2, layer 10).

T.32 Sherd similar to T.31 (23 FLY Md.I, Tr.1, layer 10).

T.33 Sherd similar to T.32 (24 FLY Md.I, Tr.1, layer 10).

T.34 Sherd similar to T.33 (25 FLY Md.II, Tr.1, layer 3).

T.35 Sherd similar to T.34 (26 FLY Md.II, Tr.1, layer 3).

DECORATION: (Figs. 31-33).

Ninety-three sherds (18.29%) of this ware bear decoration.
Four types of decoration are seen. They are 1) red ochre painted, 2) applique combined with incised and painted designs, 3) applique and 4) incised.

1) PAINTED DESIGNS: (Figs. 31-32, Types 20-26).

There are 34 sherds of this decoration. Of these, 30 sherds - 15 each - are derived from the strata of the trenches on mound I and II while the remaining four were recovered from layer 2 of trench 1, habitational area II.

This decoration occurs on the rim edges of concave necked flaring mouthed pots, constricted necked storage jars, basins and bowls.

D.1 A band of red ochre paint applied on the rim of a pot with flared mouth.

D.2 A red ochre band similar to D.1 applied on the rim of a concave necked pot.

D.3 The raised band on the shoulder of a pot painted with red ochre.

D.4 Rim of a concave necked pot painted with red ochre wash.

D.5 Rim of a storage jar painted.

D.6 Rim of a basin painted.

D.7 Edge of a bowl red ochre painted.

2) APPLIQUE COMBINED WITH INCISED AND PAINTED DESIGNS:
(Fig. 33, Types 27-28).

This type of decoration is seen on three sherds, two of which were found in layer 10 of trench 2, mound I and one in layer 3 of trench 1, mound II. The shapes of the pots bearing this decoration are similar to those found in painted designs.
D.8 The concave neck of a pot bears an applique ridged band painted with red ochre wash, while the shoulder is incised roughly in diagonal fashion.

D.9 Red ochre painted applique decoration bears positive mould of the incised decoration.

3) APPLIQUE DESIGN: (Fig. 33, T.29).

D.10 The only sherd of this decoration came from layer 2 of trench 1, habitational area II. It appears to be a part of the belly of a storage jar, and bears the decoration of an applique band.

4) INCISED DESIGNS: (Fig. 33, Types 30-35).

There are 45 sherds of this decoration. Of these, 38 came from the strata of mound I, five from layer 3 of trench 1, mound II and two from layer 2 of trench 1, habitational area I. Of the first lot 31 sherds came from layer 10 of trench 2 alone while the remaining seven occurred in its counterpart from trench 1, both on mound I.

D.11 Above the prominent ridge of a basin irregularly pricked triangular decoration.

D.12 Sherd decorated with incised diagonal lattice on the external surface.

D.13 Sherd with parallel incised lines on the outer surface.

D.14 Sherd bearing parallel slanting lines in opposite directions.

D.15 Sherd with a date palm design.

D.16 Sherd with close incised diagonal design.

II. DULL RED WARE: (Figs. 34-35).

This ware comprising 273 (26.76%) sherds forms the next significant ware in the neolithic ceramic industry of Falavoy. It is made
of coarse clay which is at times micaceous. The surfaces are uneven especially in unburnished red ware. The outer surface colour ranges from brick-red to burnt-sienna, while the inner is mostly black and sometimes pale red. It has a uniformly black core with a thickness of 0.6 to 1.1 cm.

The ware is represented in varying proportions of sherds by all the strata of all trenches save for layer 3 of trench 1, habitation area II. The largest number of sherds (150 or 54.95%) occurred in trench 1 and 2 of mound 1 with 71 sherds (26.01%) from layer 9 of trench 1 alone. The ware is classified into two sub-wares - unburnished and burnished.

1) UNBURNISHED DULL RED WARE: (Fig. 34).

This ware contains 133 sherds (13.03%) which account for nearly half of the total dull red ware sherds (275). There are three decorated sherds in this ware.

The usual shapes are pots with or short concave necks and flared mouths, and bowls of various sizes and shapes.

TYPES:

T.36 Fragment of a pot with short concave neck and flared mouth (41 FLY H1, layer 2).

T.37 Fragment of a pot with high concave neck and slightly flared mouth (42 FLY H1, layer 2).

T.38 Mouth of a narrow-necked pot, rim missing (35 FLY Md.II, Tr.2, layer 5).

T.39 Fragment of a bowl with convex outgoing sides (89 FLY H2, layer 2).

T.40 Fragment of a deep bowl with flaring mouth and slightly
bulging body (36 FLX Md.II, Tr.2, layer 5).

T.41 Fragment of a spherical bowl with the sides thinning towards the edge (43 FLX h1, layer 2).

T.42 Fragment of a shallow bowl with converging sides (34 FLX Md.II, Tr.2, layer 5).

T.43-44 Sherds of pot shapes of which not discernable (28 and 31 FLX).

T.45 Rim-fragment possibly of a dish (32 FLX h1, layer 2).

DECORATION: (Fig. 34, Types 43 to 44).

The only decoration seen in this ware is that of incised designs. Only three sherds depict this design. Two of these were found in layer 2 of trench 1, habitational area I while the third occurred in layer 3 of trench 1, mound II. Only one sherd gives shape of a dish.

D.17 Sherd externally decorated with a group of incised parallel lines.

D.18 Sherd externally decorated with a group of incised parallel lines in vertical and horizontal directions.

2) BURNISHED DULL RED WARE: (Figs. 34-35).

This ware includes 140 sherds (13.7%). Only three sherds are decorated with incised design.

The shapes are pots with high concave or constricted neck and flared or flanged rims, lipped pots, carinatea pots, storage jars, ordinary as well as lipped bowls, circular dish and basin.

TYPES:

T.46 Fragment of a pot with high concave neck, flared mouth and sharp edge (47 FLX Md.1, Tr.1, layer 9).
2.47 Fragment of a pot with constricted neck short flanged rims and convex shoulders (33 PLY H2, layer 2).

2.48 Fragment of lip of a pot with flared mouth flaring towards the rim (44 PLY H2, layer 2).

2.49 Fragment of lip of a pot similar to 2.48 but with uniform thickness of the lips and rounded rim (45 PLY H2, layer 2).

2.50 Fragment of a thick straight-sided pot with carination at the shoulder (39 PLY H1, layer 2).

2.51 Fragment of a miniature pot with straight neck and flat excurred rim (50 PLY Md.1, Tr.1, layer 10).

2.52 Fragment of a small pot with sloping shoulders and featureless rim (51 PLY Md.1, Tr.1, layer 10).

2.53 Fragment of a storage pot with constricted neck and straight flaring rim (38 PLY H1, layer 2).

2.54 Fragment of a bowl with convex sides and flat excurred rims (48 PLY H1, layer 2).

2.55 Fragment of a lipped bowl (52 PLY Md.1, Tr.2, layer 10).

2.56 Part of possibly a lipped bowl (40 PLY H1, layer 2).

2.57 Fragment of a deep bowl with flaring sides and excurred rim (49 PLY Md.1, Tr.1, layer 10).

2.58 Fragment of small shallow circular dish (37 PLY H1, layer 2).

2.59 Fragment of a deep basin with flaring lips (46 PLY H2, layer 2).

2.60 Fragment of a storage jar (53 PLY Md.1, Tr.2 layer 10).

2.61 Sherd of a pot, shape not clear (30 PLY Md.11, Tr.1, layer 3).
DECORATION: (Fig. 35, T.61).

INCISED DESIGN:
D.19 The external surface of a sherd is decorated with incised strokes executed by a pointed instrument.

III. BLACK-ON-RED WARE (Figs. 36-37).
This ware includes 109 sherds (10.69%). But for the strata of trench 1, habitational area II the ware formed a regular feature of the neolithic levels at Palavoy. Layer 9 of trench 1, mound I and layer 2 of trench 1, habitational area I together yielded about 55 per cent sherds of the painted ware while the remaining sherds occurred in all the other strata.

The occurrence of this ware in the neolithic levels at Palavoy is the first of its kind as far as South India is concerned, though other excavated sites like Brahmagiri, Sangankallu, Haski, Piklihal, Utnur, Tekkalakota, etc. also yielded this ware but there it formed an insignificant part of the pottery. The ware at these sites has therefore been thought to be of an extraneous origin. But at Palavoy it seems to be a local product in view of its larger quantity, variety of shapes and designs as well as the nature of the clay, technique of manufacture, etc quite different from those of the northern Deccan. All these features are dealt with in the following pages.

Three other sites, namely, Mudigal, Kunduripi and Katamadevudu Hill - all in Anantapur district have also yielded a few unstratified sherds of this ware. The first two sites are about 4 and 27 km north and south-west of Palavoy in Kalyandrug taluk while the last
mentioned site in Dharmavaram taluk is about 56 km east of Palavoy.

The ware is hand-made but with the help of some kind of mould as seen from the unevenness of the internal surfaces which also bear numerous scratches all over. The clay is fine but occasionally very micaceous and the core is pale grey to black in colour. The external surface is red in colour treated with a prefiring red ochreous slip of brownish-red to orange-red colour and burnished, while the internal surface is of dull grey colour. Sometimes both interior and exterior are red in colour. This happens with the open vessels and bowls. Purple to black painted designs were then drawn on the external surface alone. The fabric is 0.2 to 0.9 cm thick.

The common shapes are globular pots of various sizes with high cylindrical, narrow, short concave or constricted necks and flared mouth. Other shapes include a slightly carinated pot, a basin, a pan, a lipped bowl and a few ordinary bowls. Carinated bowls and spouted vessels typical of Jorwe and Nevasa are absent at Palavoy.

The painted designs are confined to the surface of the pots usually on their neck and shoulder, sometimes on rim and occasionally on the interior of the neck. The designs consist of a simple band, a band with vertical strokes above or below it, two parallel bands joined by vertical strokes, a zig-zag, a lattice design and sometimes with chevrons and lattice design. Occasionally, a looped design occurs on the interior just below the rim which is painted with several vertical strokes. In one instance a vertically hatched body of an unknown animal (Fig. 37, T.81, D.39) is seen.
TYPES:

T.62 Fragment of a small pot with high cylindrical neck and slightly beaded-out rim. (1 PLY Md.I, Tr.1, layer 10).

T.63 Fragment of a pot with short concave neck and sharp edged rim (2 PLY Md.I, Tr.1, layer 10).

T.64 Fragment of belly portion of a globular pot (3 PLY Md.I, Tr.1, layer 10).

T.65 Belly portion of a pot (4 PLY Md.I, Tr.1, layer 10).

T.66 Fragment of a pot, shape missing (5 PLY Md.I, Tr.1, layer 10).

T.67 Fragment of neck portion of pot (20 PLY H1, layer 2).

T.68 Part of a globular pot with concave neck and convex outgoing sides (11 PLY Md.II, Tr.1, layer 3).

T.69 Fragment of a pot with constricted neck and short flaring rim possibly having globular body (19 PLY H1, layer 2).

T.70 Belly portion of a pot (16 PLY Md.II, Tr.2, layer 5).

T.71 Belly portion of a pot showing a mild carination. (15 PLY Md.II, Tr.2, layer 5).

T.72 Shoulder portion of a globular pot (13 PLY Md.II, Tr.2, layer 5).

T.73 Fragment of a pot, shape not known (12 PLY Md.II, Tr.1, layer 3).

T.74 Shoulder portion of a pot (10 PLY Md.I, Tr.1, layer 9).

T.75 Fragment of a small pot with vertical narrow neck (6 PLY Md.I, Tr.2, layer 10).

T.76 Fragment of a basin with flaring sides (7 PLY Md.I, Tr.1, layer 9).
T.77 Rim-fragment of a pan (33 FLX Md.II, Tr.2, layer 5).
T.78 Fragment of a bowl with a prominent spout lip and short flared rim (18 FLX M1, layer 2).
T.79 Fragment of a bowl (8 FLX Md.I, Tr.1, layer 9).
T.80 Sherd of the body of a pot, shape not clear (17 FLX Md.II, Tr.2, layer 5).
T.81 Sherd of the body of a pot similar to T.80 (9 FLX Md.1, Tr.1, layer 9).

DESIGNS:
D.20 The outer surface of a pot below the rim is painted with a broad band (T.62).
D.21 The outer surface is painted with a band around the neck and shoulder; and on the interior several vertical strokes are hanging from the rim (T.63).
D.22 Externally painted with a pair of thick horizontal bands and similar pair of vertical bands above the space between which is a diagonal lattice (T.64).
D.23 Externally painted with a horizontal row of chevrons opening to right and bisected by a band (T.65).
D.24 A horizontal band and a group of vertical lines below it (T.66).
D.25 A zig-zag line between two thick horizontal bands (T.67).
D.26 Two broad bands one touching the rim and the other at the base of the neck; below the neck is a ridge over which a band of chevrons opening to right is painted. Below the ridge there is a horizontal band joined by arched bands and the space between the arches is filled with diagonal lattice. Similar design occurred on
a sherd from layer 5, Tr.2, Md.II (T.68).

D.27 A horizontal band at the neck and four vertical bands hanging from it (T.69).

D.28 Painted with a broad band and portions of arches with lattice in between (T.70).

D.29 A horizontal band (T.71).

D.30 Two horizontal bands and below it is a lattice design (T.72).

D.31 Painted with a horizontal band at the base of the neck from which several slanting strokes are drawn; below this there is another horizontal band (T.73).

D.32 Painted with a band below which is a lattice design (T.74).

D.33 Externally painted with a broad band (T.75).

D.34 Internally painted with a thick wavy line below the rim on which painted vertical strokes are drawn (T.76).

D.35 Internally painted with two bands joined by a vertical band; straight strokes hanging from the rim on the upper band (T.77).

D.36 Externally painted with short strokes on the rim, four slanting lines below the neck near the lip and a pair of bands running down to a point and the space between the bands filled with horizontal lines; below all this design is a thin horizontal band (T.78).

D.37 Externally painted with vertical band touching the rim (T.79).

D.38 Painted with a thick horizontal band above which there are right slanting lines across the tips of which is a horizontal band (T.80).

D.39 Painted with a vertically hatched body of an animal of
Let us now recapitulate the entire evidence in the following lines.

The largest quantity of pottery occurs in blotchy grey ware from excavations (62.25%) as well as surface (61.46%). Layer 9 of trench 1, mound I yielded the largest number of sherds (245 or 24.02%) and close to this frequency comes those of layer 10, trench 1, mound I (177 or 17.36%) and layer 5 of trench 2, mound II (171 or 16.76%).

In all the main wares the proportion of burnished sherds (812 — or 79.62%) is higher than that of the unburnished specimens (208 or 20.38%). Same is the case with other sites in South-Western Andhra Pradesh (Chapter VI).

None of the wares or sub-wares is represented by all the types and designs. A close examination of the wares shows that the globular pots of various sizes with concave or constricted necks and straight or convex flaring rims and sometimes with beaded-out rims are of common occurrence in all the wares. The next common shapes include bowls and dishes in all the wares. A single specimen of stand base occurs in unburnished grey ware while a wide-mouthed pot is represented by burnished grey ware. A few carinated pots are restricted to burnished grey ware, burnished dull red ware and painted red ware. Pots with high concave neck occur in burnished grey ware and unburnished dull red ware only. Pots with cylindrical neck are characterised by burnished grey ware and painted red ware. Lipped bowls are limited to burnished dull red ware and painted red ware while lipped pots are found in the former ware alone. Basins occur in the above two wares; and a pan is represented by painted
ware. A solitary lid occurs in burnished grey ware. All this analysis is based on the pottery from excavations.

The surface collection is very small and as such any analysis of the shapes will not be of much significance. However, small and big sized globular pots with concave as well as constricted necks and flaring rims are common in all the three wares as in the pottery from excavations. Lids, lug and looped handles occur in the unburnished grey ware from surface but are absent in the specimens from excavations. Dishes occur only in burnished grey ware and painted red ware while bowls also occur in the earlier ware. However, these types are common to all wares from the excavations. Basins occur in burnished grey ware both from surface and excavations. Tubular spouts absent in all the wares in the excavations are represented by dull red ware of unburnished variety from surface. Such spouts are common in all the wares excepting painted red wares at several sites in South-Western Andhra Pradesh also.

In burnished grey ware, pots painted with red ochre include globular pots with constricted and short concave necks and flaring rims, bowls and basins. Similar is the position with surface pottery. Further, a sherd from excavations belonging to a lipped bowl occurs in burnished dull red ware alone.

Applique decoration is represented on storage jars of burnished grey and dull red wares.

Incised decoration is found on several sherds of burnished grey ware one of them belonging to a basin, on a dish of unburnished dull red ware and a few sherds of burnished red ware as well. The designs comprise irregularly pricked triangles, diagonal lattice, date palm,
groups of parallel lines, parallel lines running in opposite directions, simple strokes, etc.

Applique combined with incised and red ochre painted designs occurs on pots of burnished grey ware. This and applique decoration are absent on the surface pottery of Palavoy as well as that of other sites. But a piece of applique decoration is found in dull red ware from surface at Palavoy.

Nail-pressed decoration is seen on a solitary sherd of unburnished grey ware and is absent on excavated pottery.

Perforated designs found on a few sherds from other sites are unknown at Palavoy.

Black painted decoration with various designs is remarkably unique at Palavoy. As these designs have been fully discussed earlier (pages 350-1) here mere repetition of the same is felt unnecessary.

As regards the functional importance of the various types of pots it may be mentioned that storage jars were possibly used for preserving cereals, etc. while small sized pots were used in cooking. Bowls, dishes, etc. might have been used for carrying liquids as well as other food-stuffs. Pots with various decorations might have been used on special occasions.

Terracotta and Clay Objects:

The finds considered here comprise four edge ground grey ware sherds, a single specimen of dabber and as many as 127 unbaked clay objects. All these specimens came from excavations.
EDGE-GROUND POTSHERDS: Fig. 26, No. 12.

Two of these come from layer 9 of the main trench while the other two were recovered - one each - from layer 5 of trench 2, mound II and layer 3 of trench 1 of habitational area II, respectively. Almost all the specimens though broken appear to be oval to circular in shape. They are thin and belong to burnished grey fabric.

The purpose for which they were ground is not clear. It is likely that they were intended to be shaped into spindle whorls. Or the grinding might have been caused by using potsherds for clearing the pots. This practice exists among the lower stratum of the present day rural society.

Similar edge-ground potsherds occur in the neolithic levels at Maski (Thapar 1957: 110), Nevasa (Sankalia and others 1960: 381) and Tekkalakota (Nagaraja Rao and Malhotra 1965: 63, pl. XIIb).

DABBER: Fig. 42, No. 11.

The only specimen of this type derived from layer 2 of trench 1 in habitational area II. It is made of a very coarse grey fabric tending to black colour. This is almost a complete piece, roughly circular in plan with a slightly broken knob and a smooth convex under surface. The specimen is very heavy and appears to be very badly fired. It is almost certainly a potter's dabbler.

This has a close affinity to those found at Maski (Thapar 1957: Fig. 11, Nos. 16, 18), Palkihal (Allchin 1960: 43-4, pl. 23, type 40c) and Tekkalakota (Nagaraja Rao and Malhotra 1965: 62, fig. 30a). Allchin (1960: 44) wrongly compares the Palkihal dabbers with Subbarao's (1949: 113, pl. XV) type VIII which is actually "a small,
coarse dish with a central lug for holding."


All the 127 specimens of these were found in layers 9, 10 and 11 of the main trench in the order of two, 70 and 55 specimens respectively. They are irregular in shape. Several of them are elongated flattish, sometimes round with knob-like projections. Some are even spherical but very small in size varying from 1.5 to 3.2 cm in diameter. A few are cylindrical but very asymmetrical. The elongated flattish specimens were measured for their lengths, breadths and thicknesses, in length they measure between 1.4 and 6.7 cm, in breadth between 1.1 and 3.5 cm and in thickness between 1.0 and 1.9 cm. Their mean measurements are 4.0 x 2.1 x 1.5 cm.

On chemical examination these objects have been found to contain ash and clay occasionally mixed with small quartz particles. They are very light in weight in relation to their size. Sections of some specimens on microscopic examination showed that their peripheries got slightly baked indicating further that after they were prepared came into contact with heat. This is a supporting evidence to presume that these objects were right in the neolithic house and that too very close to the fire-place or hearth.

From the large number and amorphous nature of these objects they appear to be primitive play things for children. Such clay toys still persist among the present day village children.

Objects of this type have not been found so far on any other neolithic site in India.
Burials And Human Skeletal Remains:

Four burials - all of children - were encountered in the present excavations (Pl. K, No.3). They all were found in vertically placed grey ware pots at a depth of 10 cm below surface in layer 2, trench 1, habitational area 1.

BURIAL NO.1: (B1).

This is a single pot burial kept vertically and lying close to the section facing west at a distance of 2.3 meters from the southern extremity of the trench. The pot is small-sized with spherical body, concave neck, wide flared mouth and rounded base. It is 17.3 cm in height and 15.3 cm in diameter at the mouth. The pot is burnished externally and its neck is painted with red ochre all round. On clearing the debris tiny bone fragments probably of a child were found at the bottom of the pot. It was very difficult to detect the orientation of the skeleton since many of its parts got disintegrated, possibly, due to the soft nature of the bones. It shows that it was a fragmentation burial.

BURIAL NO.2: (B2).

This is a two-pot burial vertically arranged like the previous one. The burial occurred close to the section facing east 3.25 meters alongside from the southern extremity of the trench. The pots are of unequal size.\(^1\) They have constricted neck, wide flaring mouth, globular body and rounded base. They were externally burnished; besides the edge of the upper part is painted with red ochre wash. The larger pot was placed vertically while the smaller one was

\(^1\) The height and diameter of these pots could not be taken as both broke to pieces while being lifted.
placed with its upside down over the mouth of the lower pot. On clearance was found the skeleton of a child placed in a crouching position and oriented north-south. It was lain on the left side of the pot. The foot bones of the skeleton were missing. The arm bones were lying at the distal end of the skeleton. The skull, ribs and a few other parts were available in a fragmentary condition, which precluded any measurements.

BURIAL NO. 3: (B3).

This burial lay touching the eastern section at a length of 4 meters from the northern end of the trench. The urn containing the burial has constricted neck, flaring mouth with out-turned rim, rounded edge painted with red ochre, globular body and rounded base. It is 27 cm in height and 24.3 cm in diameter. This pot was covered by a channel-spouted bowl with in-turned rounded edge painted with red ochre wash. It is 9.5 cm in height and 16 cm in diameter at the mouth. Both pot and bowl are externally burnished. The bowl contained nothing, but at the base of the pot were found a few fragmentary bones.

BURIAL NO. 4: (B4) Pl. I, Nos. 3-4.

This burial was found close to the section facing east and about 55 cm from the northern end of the trench. The burial pot, as in burial No. 3 was covered with a bowl. The pot has a constricted neck, flaring mouth with red ochre painted rounded edge, globular body and round base! The bowl has bevelled-in rim painted with

1. This urn also broke while taking out of the trench and hence its dimensions could not be recorded.
red ochre band, and sides converging towards the base. The bowl is 10.1 cm in height and 23.6 cm in diameter at the mouth. On clearance the pot was found to contain a few bone fragments at its base.

All the four burials occurred in one trench alone in close proximity to one another and just 10 cm below surface. Further, all are infant burials and of urn type. These features indicate that the dead, particularly children, used to be buried outside the house. The burial practice consisted of either a single pot (as in burial No.1), or a pot covered over with a bowl (as in burial Nos. 3 and 4), or two pots placed face to face (as in burial No. 2). All burials are of vertical type as at Brahmagiri (Wheeler 1947-48: 224-9) and Tekkalakota (Nagaraja Rao and Malhotra 1965: 31) but different from the horizontal burials of Nevassa and Chandoli. The burial pots are of blotchy grey ware, hand-made and externally burnished. The neck or rims of the urns or bowls are always painted with red ochre wash. In no case have been found burial goods along with skeleton as at Nevassa, Chandoli, Tekkalakota and Diamabad. All the burials appear to be those of children below the age of one year as seen from the softness of the bones and sizes of the pots.

Animal Remains:

The excavations yielded a total of 523 bone fragments whose stratigraphical distribution is shown below.

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The bone fragments furnished in the above table include mostly either proximal or distal ends which favoured identification.

Besides, a large number of small splints were recovered from the excavations. As seen in the table, mound I yielded the highest number of bones (348 or 66.54%) and in this again layer 3 of trench 1 was the richest (174 or 33.27%).

**General Remarks On The Nature Of Collection:**

An analysis of the identifiable specimens (325) according to their external colour showed that majority (65.25%) have assumed grey colour due to their burial in the deposits. The remaining 24.75% bones are of yellow, pink and cream colours. The bones are generally well preserved and are not much acted upon by the putrefactive organisms. The discolouration seen in some few may be due
to their contact with the borders bearing earth or may be due to auto-combustion on account of extreme heat in the deep burial.

None of the bones are secondarily broken due to the weight of overlying debris. It is so because the debris was very light.

Preservation Of Bones:

The bones present an appearance of having been well preserved as their protuberances or projections have not been rounded. The bone matter as a whole has in most cases been fossilized which is indicated by the metallic sound they produce, hardness to splitting or sawing and the gain of weight. However, this has not changed the bone colour complex. The high percentage of fossilized bones (269 specimens; 82.77%) may be due to the absence of the activity of destructive putrefactive organisms which do not thrive in ash and clay media, which has deprived them of vegetative matter and oxygen. However, a few of the bone segments have become porous and light—perhaps due to the crevices in the mounds and subsequent entry of these organisms.

Identification Of Bone Segments:

Table 53 on pages 362-363 gives the bone-wise identification of animals. Three hundred and twenty-five (62.14%) of the total bones (523) yielded to identification while the remaining 198 pieces (37.86%) are too small for identification. Most of the bones (283 or 57.08%) belong to cattle. Among the remaining bones (42 or 12.92%), sheep/goats (39 or 12%), canine (1 or 0.31%) and hog (2 or 0.61%) are the other animals represented.
TABLE 53. BONE-WIDE IDENTIFICATION OF ANIMALS OF NEOLITHIC PERIOD (PALAVOY II)

<table>
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<th>DESCRIPTION</th>
<th>CATTLE</th>
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<th>CANINE</th>
<th>HOG</th>
<th>TOTAL</th>
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<td>39</td>
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|               | 87.08  | 12.00 | 0.31 | 0.61 | 100.00 |

The underlined figures represent percentage.
Size And Maturity Of Animals:

It is a general feature that during any excavation only bone fragments are recovered. This may be due to the immaturity of the bones, their fragmentation for the purpose of food, or due to their disintegration by bearing weight on spots which cannot stand the same. In the present collection there are 259 part bones (79.69%) and the remaining 66 (20.31%) are whole bones. The whole bones are mostly either teeth or short and irregular bones, which enter the composition of the joint. It can be seen from the statistical figures of the mature (270 specimens; 83.03%) and immature (55 specimens; 16.92%) bones that the proportion always weighs heavily towards the matured ones for the reason that animals have a long span of life in matured stage, and the fragments are not identifiable as immature unless they present a portion which indicates the zone of junction between the diaphysis and epiphysis. Hence the small proportion of immature bones is no indication to the representation of animal population in the herd.

It is possible to reconstruct the size of the animals from the available fragments with a small margin of error. The nature of breeds, their size and the purpose for which they are commissioned for work is an understandable feature from the study of bone fragments. In this period there are bone fragments indicating that there are 20 (6.15%) big, 45 (13.85%) small and 260 (80%) normal-sized animals. This points towards the methods of animal-husbandry being employed by the people. In any form of pastoral culture there is a combination of animals of different size because the people are selective to suit the nature of work they undertake from them.
Besides, the better-bred animals have their source of origin from the general stock of the herd. In a site from hunting culture there will be a contrasting picture of the collection of large-sized bones with a high percentage of matured heavy segments. The reason is not far to seek because the wild animals are known to be of bigger size and the younger stock are always protected by the confronting of their matured parents. The present size seems to be one of pastoral culture.

Nature Of Animals Represented:

From the bone collections it is inferred that cattle including larger bovines (*Bos bubalis, Bos indicus*), sheep/goats (*caprines*), canines (dogs), and hogs (pigs) were present on the site. The cattle bones are the maximum because they are in close society with human beings and have also been associated with his vocation. The sheep/goats are few because they have unitory utility and do not form a larger population of animal stock. The canines are mostly domesticated dogs whose death rarely takes place in a habitation place. The hog bones must be due to hunting because their bone-wise representation is very little.

Summary:

From the study of the bone fragments it may be concluded that the inhabitants of Palavoy knew the use of animals in agriculture and that some of them were intensively used for that purpose. But for a few large animals which may be from the hunted ones by the settlers, the general class of animals were of medium size, strong and stout in structure and fed on the farm-produce. Besides, it is
clear from the evidence collected that they used animal flesh as an article of diet either by slaughtering or from animals dead of natural causes. In settlers' colonies which appear to be the order in the present site wild animal infestation is a remote occurrence, hence non-recovery of such bone segments.

A few of the bone fragments belonging to this period which are of special interest are taken up for study and report.

SPECIMEN NOS. 39, 3, 244, 267; 6 and 478, and 156 and 416 (Fig. 43, Nos. 1-8).

MEDULLOSIS IN BONE:

In the structure and composition of bones medullary cavity is known to exist distinctly in the type of long bones (Oasa longa). It is described as one of the typical characters of long bones in all books of anatomy. In short (Oasa brevia) and irregular (Oasa irregularia) bones this cavity has an indifferent phase of development, and is mostly extinct in the present day animals. These bones are mostly placed in locations where concussion is to be primarily avoided. Regarding flat bones (Oasa plana) there is cancellus space between the two layers of compact tissue which has no resemblance to medullary cavity. Ribs (costae) which are a form of long bones are described as elongated. The presence of medullary cavity is not specified though some authors (Igar 1964: 14) have described the existence of the same.

Among the bones from the present excavations, specimen No.39 (Fig. 43, No.1) which is the shaft of a rib presents a medullary cavity measuring 1.5 by 0.7 cm all through its length. Similarly
specimen No.3 (Fig. 43, No.2) which is from the proximal end of the shaft of a rib also presents a similar cavity measuring 1.5 by 1.2 cm to reach and terminate at the neck. Specimen No.244 (Fig. 43, No. 3) which presents the articular head of a rib also shows a medullary cavity which is 0.7 by 0.5 cm terminating in the neck region. From this it could be inferred that the animals whose bones are now excavated had a distinct medullary cavity, which is the source of additional strength to stand concussion and prevent traumatic injuries. Specimen No.267 (Fig. 43, No. 4) which is the olecranon process of ulna also presents a medullary cavity of 7 cm depth in the process. Specimen Nos. 6 and 478, and 156 and 416 (Fig. 43, Nos. 5-8) bear the distal ends of ulna; of which specimen Nos. 6 and 478 (Fig. 43, Nos. 5-6) terminate into the styloid process while Nos. 156 and 416 (Fig. 43, Nos. 7-8) present a medullary cavity measuring 2.5 by 1.3 cm and 1.2 by 1 cm respectively. The indifferent existence of medullary cavity indicates that the character is slowly receding and converting an originally long bone into an elongated or reduced long bone. In the text books of today where there is controversy about the existence of medullary cavity, it is stated that the character is seen only in adult animals and that too at the proximal extremity (Sisson and Grossman 1962: 91).

SPECIMEN NO. 174 (Fig. 43, No. 9) showing the presence of heavy breeds of cattle:

A few bone fragments (Nos. 7, 8, 15, 272, 327, 329, 330, 332, 337, 343, 356 and 384 of cattle and 311 of sheep/goat) have been
found to belong to large-sized animals. This observation was also made at Utnur (Allochin 1961: 52-3). Specimen No. 174 (Fig. 43, No. 9) is a rib from the middle of the shaft. It measures 5 cm wide which is at least 20 to 25 per cent in excess of the normal ones. Measurements of other bones are not given as they are too fragmentary for statistical information. However, the existence of two breeds, one large and the other small, is clearly seen.

**SPECIMEN NO. 250 (Fig. 43, No. 10) ARTHRITIS OF THE HIP JOINT:**

The specimen presents the articular head which rotates in the acetabular cavity of the inominate bone. Normally as this is a diarthrodial joint (enarthrosis) with all types of movement including rotation and circumduction, the whole of the articular area takes part in movement. In the present specimen half of the articular head including fovea capitis is smooth and is bordered by a margin. The rest is rough and pitted indicating that it has been non-articular. Hence it is inferred that this animal had some injury which permitted only a partial movement of the hip joint limiting to the margin indicating the wear was possible.

**SPECIMEN NO. 281 (Fig. 43, No. 11) SHOWING THE FORMATION OF MANUS:**

As a vertebrate even cattle should carry five metacarpals of which the present metacarpal is apparently single is said to have been formed by the fusion of the IIIrd and IVth metacarpals, and the Vth which is rudimentary remains as a small metacarpal bone. The IInd is said to unite with the IIIrd while the Ist disappears completely. This evolutionary character is occasionally seen to
revert or sometimes manifest characters of the pentadactylus nature of the manus. In this specimen which is the distal end of the metacarpus presents two clean medullary cavities divided by a septum. They measure about 0.7 and 0.6 cm respectively denoting that the larger being the axial. On either side of the medial septum which persists as a perfect septum bears on either side too thin laminar plate of bone with an intervening cavity between them. In the present specimen in the region of the shaft there are in all two major medullary cavities and two rudimentary. This confirms the belief that the cattle were originally pentadactylus.

SPECIMEN NO. 264 (Fig. 42, No.12) EXOSTOSIS:
The specimen is the third phalanx from the axial side. It presents besides the extensor process on the lateral side a bony growth (exostosis) the base of which is 1 cm and height of 0.7 cm. On the process the common digital extensor is attached. A bony growth by its side indicates that this animal was heavily worked which produced concussion. This is also corroborated by the point of the toe which is much raised from the ground. It not only produces instability on the part of the animal's working efficiency but indicates that the people were advanced in agricultural methods, necessitating the use of animals to a state till bony growths developed on them.

SPECIMEN NOS. 2, 14, 55 and 207 INDICATING AUTOCOMBUSTION:
Dried bone consists of organic and inorganic matters in the ratio of 1:2 approximately. If bones are exposed for desiccation the animal matter evaporates and condensed cellular matter remains
in the haversian spaces. If buried, the organic matter is digested by the putrefactive organisms remaining in the earth and the bone pores (haversian spaces) become empty rendering it light. During this process if by any chance the underground heat were to increase the carbon material lying there will undergo a phase of combustion in which case the debris will be charred either partial or complete. In the specimens mentioned above there has been varying stages of combustion which is indicated either by change of colour which usually turns either grey or black as also by the surface layer of bones which become dry, desiccated and start cracking. All these characters are seen in the above specimens. It indicates that these bones got buried in a state in which they had combustible animal matter on them, probably food remnants. This is one of the evidences to show that the Falavoy neolithic people were beef eaters.

**Plant Remains**

**Material:**

The plant remains recovered in the Falavoy excavations belong to Neolithic period. The provenance of these is furnished below:

<table>
<thead>
<tr>
<th>Material No.</th>
<th>Sample No.</th>
<th>Mound</th>
<th>Trench</th>
<th>Layer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>145</td>
<td>I</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>399</td>
<td>I</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>144</td>
<td>I</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>190</td>
<td>II</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>228</td>
<td>II</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

1. This part has been kindly contributed by Prof. T.S. Mahabale, Head of the Department of Botany, University of Poona.
STUDY:
The materials detailed above have been studied as under:

Material 1:
This material bearing sample No. 145 and consisting of seeds was recovered from layer 10 of trench 1, mound I. These are carbonised seeds of *Zizyphus* (fl. X, No. 1, first from left) and compare well with the seeds of *Zizyphus horida* (fl. X, No. 1, second from left), a species also now found in that region and elsewhere in South India, especially in Andhra Pradesh (Kurnool district), Mysore, etc.

Material 2:
This is a soil sample (No. 399) derived from layer 10 of trench 1, mound I. Maceration of this soil yielded (a) pollen grains of dicots of unknown identity and (b) some fungal spores. They were also carbonised and are probably not of the modern plants growing there in the vicinity.

Material 3:
This includes sample Nos. 144, 190 and 223. Of these, the first one came from layer 10 of trench 1, mound I while the other two derived from layer 3 of trench 1, mound II. All these are fragments of one and the same plant species, though found in different layers and mounds. This shows that both the populations though inhabited different localities of one and the same site used identical wood for erecting posts in their house constructions. Therefore their contemporaneity to one another is proved beyond doubt.

Microscopic examination of sample No. 223, which is better preserved than Nos. 190 and 144, has shown well preserved characters
which suggest that it belongs to some member of the family Leguminosae, perhaps Acacia or Balbergia species (Pl. K, No. 2). To identify its genus correctly it will take more time and will also need some more material, as it easily breaks and gets reduced to pieces due to its fragile nature.

Inferences:

Looking to the nature of preservation and the two identifiable plants above it seems that they were growing on rocky plains forming probably a scrub community having predominantly arid topography and dry climate.

The matrix of the wood No. 223 consists of lime carbonate which suggests that the material was preserved due to some sort of water charged with lime percolating in the area from some higher source, but not a very powerful one, like the monsoon brooks drying up after winter months as now.

The chalcolithic levels at Maaki (Thaper 1957: 140-1; fig. 45, 1 and 2; fl. XXXIV, 10-12) also yielded some plant remains in the form of charcoal which has been identified as Acacia species similar to the one detected at Kalavoy. These Acacia species grow a very strong wood of great economic importance. The occurrence of this species at Kalavoy indicates that this was locally available and its significance has been realised since Neolithic times; mostly for posts in house constructions.
Post-Neolithic Period (Palavoy III):

Stone Objects:

Only 14 stone objects comprising six rubbing stones and eight hammer stones were found in the excavations. The following table gives the stratigraphical distribution of these objects.

<table>
<thead>
<tr>
<th>Mound</th>
<th>Trench</th>
<th>Layer</th>
<th>Artifact Types</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Rubbing Stones</td>
<td>Hammer Stones</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>I</td>
<td></td>
<td></td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>II</td>
<td>2</td>
<td>3</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>-</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>6</td>
<td>8</td>
</tr>
</tbody>
</table>

As seen in the above table, eight objects came from mound I and the remaining six from mound II. Both the types of objects are described below.


Four of these derived from mound I and two from mound II. One of them is a broken half. In shape all are roughly oval in size, they measure from 6.2 to 10 cm in length, 5.7 to 7.8 cm in breadth and 3.3 to 5.9 cm in thickness; the mean measurements being 6.9 x 7.1 x 4.8 cm. Five of the rubbers are worked and used on one surface alone while one bears working and use marks on both surfaces. Both ends and sides also exhibit bettering marks occasionally.
HAMMER STONES: (8 specimens) Pl. J, Nos. 16-17.

Six of these were recovered from trench 2, mound II while the remaining two were found in trench 1 of mound I. Seven of these bear irregular marks of battering all round while one specimen has been used at both ends alone. The specimens are mostly circular and measure in size from 6.5 to 7.9 cm in length, 5.1 to 7.2 in breadth and 5 to 6.9 cm in thickness. The average dimensions are 7.1 x 6.3 x 5.8 cm.

The occurrence of these stray objects in the strata belonging to Post-Neolithic period is not surprising since these objects must have been in use by the Post-Neolithic communities. This could be so because even today such stones are used in the modern village houses.

Iron Ore And Slag Lumps:

The excavations at Kalavoy yielded of what appear to the naked eye as a lump of iron ore and other of slag. One of these (sample 'A') came from layer 2 of trench 1, mound II at a depth of 59 cm from the surface of the mound while the other (sample 'B') was found at a depth of 52 cm in layer 2 of trench 1, mound I.

Sample 'A' weighed 75 grams and 'B' 40 grams.

Experimental Methods:

Each sample was finely ground to 100 mesh B.S.S. sieve. Qualitative analysis of the samples revealed the presence of Fe, Al, Ti, Ca, Mg and P.

1. The analyses of these samples were carried out by Sri B.V. Subrahmanyan and Sri B.R.A. Murthy with the kind cooperation of Dr. V.V. Dadage at the National Chemical Laboratory, Pune.
Quantitative Analysis:

The following methods were adopted for the quantitative analysis of the ore:

a) Iron was estimated volumetrically (titration with \( \text{K}_2\text{Cr}_2\text{O}_7 \)) and reported as \( \text{Fe}_2\text{O}_3 \).

b) \( \text{SiO}_2, \text{TiO}_2, \text{CaO} \) and \( \text{MgO} \): About one gram of the ore was fused with (Analysar) Fusion mixture and the estimations were carried out as described in 'Select Methods of Metallurgical Analysis' by Naish, Glennel and Kingswood (published by Chapman and Hall Ltd., London, 1953 Edn.).

i) Silica was determined gravimetrically by weighing as \( \text{SiO}_2 \) and by volatilisation with HF.

ii) Aluminium was estimated gravimetrically by precipitating and weighing as Aluminium Phosphate (\( \text{AlF}_4 \)).

iii) Titanium was estimated gravimetrically by precipitating as \( \text{TiO}_2 \) and estimated colorimetrically by comparing with standard solutions of \( \text{TiO}_2 \) (prepared from \( \text{K}_2\text{TiF}_6 \)).

iv) Calcium was estimated volumetrically by precipitating as Calcium Oxalate and titrating with a standard solution of \( \text{KMnO}_4 \).

v) Magnesium was estimated gravimetrically by precipitating as Magnesium Aluminium Phosphate and weighing as Magnesium Pyrophosphate.

vi) Manganese: A definite amount of the ore was taken in a platinum crucible and fused with fusion mixture. The melt was extracted with concentrated \( \text{HNO}_3 \). To it \( 1\% \text{AgNO}_3 \) solution and a crystal of Aluminium phosphate were added. The contents were titrated against a standard Sodium Arsenite solution and Manganese was
estimated as Mno.

\( P_2O_5 \) was estimated as described in the reference already cited. All the reagents used were analytical reagents (BDH).

The results of the analyses are reproduced in the following table:

<table>
<thead>
<tr>
<th>Sample</th>
<th>Percentages of</th>
<th>Loss on ignition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( Fe_2O_3 )</td>
<td>( SiO_2 )</td>
</tr>
<tr>
<td>A</td>
<td>21.10</td>
<td>46.51</td>
</tr>
<tr>
<td>B</td>
<td>21.65</td>
<td>49.82</td>
</tr>
</tbody>
</table>

**Iron Objects:** (Fig. 29, Nos. 9 and 12; Pl. A, No. 5), (First two from right).

Iron objects have been found for the first time in the excavations of an earth mound and have posed a problem for the dating and origin of earth mounds which were recently thought to have been solved by Allchin (1963: 5). Significance of these objects for this problem is considered elsewhere; here we only give a description of them.

Only two objects have been found in the present excavations. One of them (Fig. 29, No. 12; Pl. A, No. 5, first from right) is a crudely made quadrangular nail with a square cross section in its centre. It was found at a depth of 2.52 meters below surface in layer 8 of trench 1, earth mound 1. It measures 2.7 cm in length, 0.4 cm in breadth as well as thickness, the latter being obtained at the blunt end. The specimen weighs 1.55 grams. Its tip is made obliquely pointed probably to use it as a nail.
Nails of similar type but displaying a higher degree of craftsmanship are known from megalithic burials at Adichanallur (Res 1915: 16, pl. iv, Fig. 1) in Tinnevelly district of Madras and from the megalithic levels at Brahmagiri (Wheeler 1947-48: 254, Fig. 40, No. 39), Maski (Thaper 1957: 119, Fig. 38, No. 26) and Fiklihal (Allchin 1960: 108, No. 12 and 13).

The second object is a ring (Fig. 29, No. 9; Pl. H, No. 5, second from right). It was found at a depth of 45 cm below surface in layer 2 of trench 1, mound II. It is circular in shape with internal and external diameters of 1.0 cm and 1.5 cm, thereby giving a breadth of 0.25 to 0.30 cm. Its thickness is 0.2 cm. The specimen weighs 0.9 grams. It is much corroded. The object might have been used as a ring.

The only comparable specimen of a fragmentary ring with two nails affixed to it was unearthed from a pit circle at Brahmagiri (Wheeler 1947-48: 254, Fig. 39, No. 35).

Pottery:

From the deposits of Post-Neolithic site at Maski were recovered 81 megalithic and 41 neolithic sherds. They all came from trenches 1 and 2 of mound I alone. Of the megalithic sherds, 55 were found in trench 1 and 26 in trench 2. Sixteen sherds belong to burnished black ware, one to black-and-red ware, 41 sherds to red ware and the remaining 23 to chocolate-slipped ware. Layer 2 of trench 1 and 4 of trench 2 together yielded 54 sherds. Red ware is the most common ware comprising 41 sherds, the next considerable being the chocolate-slipped ware with 23 sherds. Of the neolithic sherds, nine came from trench 1 while 32 came from trench 2 alone. Thirty-
Nearly half of the total number of sherds derived from layers 4 and 6 of trench 2. Layer 8 of trench 1 and 5 of trench 2 did not yield any neolithic sherds but yielded megalithic sherds. Similarly layer 6 of trench 1 from which a blotchy grey ware sherd was recovered was devoid of megalithic pottery.

Table 54 on page 379 gives the stratigraphical distribution of megalithic and neolithic pottery obtained from the excavations.

Though the number of sherds is quite large, none of the sherds could give a definite shape. This is possibly so because the ash layers which yielded the sherds did not form occupation debris. The occurrence of neolithic sherds in a later deposit does not pose any problem. The neolithic sherds also do not show any shapes.

Almost all the sherds show signs of severe heating over a long period. Mujumdar and Rajaguru (1961: 45), who conducted technical studies of pottery from Upgal mound held the same view. On one of the sherds (Fig. 42, No. 11) from Falavoy the externally applied slip was affected by high temperature and has led to the very peeling of the slip from the original surface of the sherd.

The megalithic pottery is undoubtedly wheel-made and the clay is of fine texture occasionally mixed with quartz particles. The core is black in all the wares excepting red ware in which it is sometimes completely red or partially black and red. The neolithic sherds occurred in this period are similar to those found in the neolithic levels. The following 16 sherds representing all the wares are illustrated (Fig. 42, Nos. 1-16). Numbers 1 to 6 derived from layer 2 of trench 1, mound 1 and they all belong to red-slipped ware. All these are different rim fragments.
<table>
<thead>
<tr>
<th>MOUND</th>
<th>TRENCH</th>
<th>LAYER</th>
<th>MEGALITHIC POTTERY WARES</th>
<th>NEOLITHIC POTTERY WARES</th>
<th>TOTAL SHEARDS OF MEG. WARES</th>
<th>TOTAL SHEARDS OF NEO. WARES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Black</td>
<td>Black-and-red</td>
<td>Red</td>
<td>Chocolate-slip-ped</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>25</td>
<td>11</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1</td>
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<tr>
<td>1</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
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<td>1</td>
<td>7</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>1</td>
<td>8</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Total of trench 1</td>
<td>6</td>
<td>1</td>
<td>30</td>
<td>18</td>
<td>55</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TRENCH 2</th>
<th>2</th>
<th>1</th>
<th>-</th>
<th>-</th>
<th>1</th>
<th>2</th>
<th>1</th>
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</thead>
<tbody>
<tr>
<td>3</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>6</td>
<td>2</td>
<td>-</td>
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<tr>
<td>4</td>
<td>4</td>
<td>-</td>
<td>7</td>
<td>2</td>
<td>13</td>
<td>7</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>-</td>
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<td>8</td>
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<td>-</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Total of trench 2</td>
<td>10</td>
<td>-</td>
<td>11</td>
<td>5</td>
<td>26</td>
<td>27</td>
<td>5</td>
<td>32</td>
</tr>
<tr>
<td>Total of both trenches</td>
<td>16</td>
<td>1</td>
<td>41</td>
<td>23</td>
<td>81</td>
<td>33</td>
<td>6</td>
<td>41</td>
</tr>
</tbody>
</table>
1. Fragment with concave neck and beaded-out rim; surfaces smooth, core dull-black.

2. With broad flat-edged rim, black core.

3. With beaded-out externally under-cut rim; core pale-black.

4. With rounded internally under-cut rim; black core.

5. With clubbed rim; clay containing small quartz grains.

6. With externally grooved neck and convex out-turned rim; red core.

7. Fragment of burnished black ware with concave neck, externally grooved and internally ridged above neck (FLY Md.1, Tr.1, layer 2).

8. Fragment of chocolate-slipped ware with flat edge and externally ridged neck (FLY Md.1, Tr.1, layer 2).

9. Fragment of burnished black ware externally curinated, probably belonging to a small pot (FLY Md.1, Tr.2, layer 2).

10. Sherd of black burnished ware with shapeless graffiti marks on the exterior (FLY Md.1, Tr.2, layer 4).

11. Sherd of red slipped ware; slip turned to black colour and part of it gradually peeled off the surface of the sherd due to high temperature (FLY Md.1, Tr.1, layer 7).

12. Sherd of black-and-red ware burnished on both external and internal surfaces (FLY Md.1, Tr.1, layer 4).

13. Rim-fragment of dull red ware with sharp edge, micaeous clay and black core (FLY Md.1, Tr.1, layer 2).

14. Rim-fragment of dull red ware with sharp edge (FLY Md.1, Tr.1, layer 6).

15. Sherd of red ware externally scooped (FLY Md.1, Tr.2, layer 8).
16. Fragment of grey ware with concave neck and flared rim having sharp edge painted with red ochre wash; burnished (FLY Md.1, Tr.2, layer 6).

The excavations on Rupgal mound (Mujusader and Rajaguru 1966: 17) have also yielded a large number of potsherds belonging to neolithic and megalithic periods comparable to those found at Falavoy.

This study enables us to make the following observations.

The number of potsherds belonging to megalithic period found on the surface of the site (90 sherds) is slightly more than that of the excavations (81 sherds). The chocolate-slipped ware present in the excavations is totally absent on surface. Though the number of sherds from excavations is large, none of them has given any shape at all, while those from surface yielded at least 15 shapes. The explanation for the former situation has already been sought earlier (page 378). The common shapes among the latter collection are bowls occurring in all the three wares. Wide-mouthed pots occur only in black ware and red ware, while a solitary dish is present in black-and-red ware. Other types comprising a neckless carinated pot, pots with short concave, constricted or funnel-shaped necks and a basin are confined to red ware alone.

Let us now examine the evidence of the Falavoy megalithic ceramic industry against the one available from the surface of many sites in South-western Andhra Pradesh. Excepting the red-and-black ware and coarse grey ware which neither occurred in the excavations nor on surface, all the other wares were found at other sites in South-western Andhra Pradesh as well as at Falavoy. The predominance
of red ware as at other sites is also well known at Falavoy. Even in the matter of types of pots the site is closely akin to other sites. Only a big trough with lugged handle found at the site of Sastipadu in Kurnool district is absent at Falavoy. Other notable evidences absent at Falavoy include graffiti marks on the surface of pots and pottery discs which were noticed at other sites of this region.

**Animal Remains**

This period has brought to light only 99 bone fragments whose stratigraphical distribution is as follows:

<table>
<thead>
<tr>
<th>Ashmound</th>
<th>Trench</th>
<th>Layer</th>
<th>Number of bone fragments</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>28</td>
</tr>
<tr>
<td>Total bones from ashmound I</td>
<td>33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>2</td>
<td>3</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>44</td>
</tr>
<tr>
<td>Total bones from ashmound II</td>
<td>66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total bones from both mounds</td>
<td>99</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The above table shows that the proportion of bones from ashmound II is twice that from mound I. Further, no bones were found

in the strata of trench 2 of mound I and trench 1 of mound II belonging to this period. The small number of bones from this period is another supporting evidence to assume that the activity of vitrified ash burnings has had a different purpose altogether.

As regards the nature of collection it may be mentioned that 47 pieces are part bones while only 17 are whole bones. This is an expected phenomenon in any excavation. The whole bones as in the preceding period comprise mostly teeth and short and irregular bones.

The figures of mature and immature bones are 58 and six respectively, showing the heavy proportion towards the matured animals. About the size of the animals it may be said that six bones belong to big-sized animals, 11 to small and the remaining 47 to normal-sized animals. Thus the species of normal size are more in number than the big and small sized animals.

Sixty-four of the bone fragments were identified. Majority of them acquired grey colour. Surfaces have developed a concrete encrustation involving the outer compact layer of bones which can not be removed even after scrubbing. This may be due to the active ash which is hydroscopic. However the extraneous material has failed to percolate into the cancellated tissue.

The bones are well preserved and none of them indicates the action of putrefactive organisms. Save for four specimens all the bone fragments are heavily fossilized. This confirms that ash is a good medium for preservation and fossilization of bone segments.

Table 55 on page 384 gives the identification of animals to which the bones belong. Excepting one piece of jaw of sheep/goat
### TABLE 55. BONE-WISE IDENTIFICATION OF ANIMALS OF POST-NEOLITHIC PERIOD

<table>
<thead>
<tr>
<th>Description</th>
<th>Cattle</th>
<th>Sheep/Goats</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKULL:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teeth (molar)</td>
<td>2</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Jaw</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Cranium</td>
<td>3</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>VERTEBRAL COLUMN:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atlas</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>VERTEBRAE:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cervical</td>
<td>2</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Thoracic</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Lumbar</td>
<td>3</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Ribs</td>
<td>11</td>
<td>-</td>
<td>11</td>
</tr>
<tr>
<td>FORE LIMB:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humerus</td>
<td>6</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>Radius</td>
<td>3</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Ulna</td>
<td>2</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Carpus:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) II and III carpal</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>b) Radial carpal</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>c) Intermediate carpal</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Metacarpus</td>
<td>5</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>PHALANGES:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First</td>
<td>5</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>Second</td>
<td>2</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Inominate</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>HIND LIMB:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Femur</td>
<td>3</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Tibia</td>
<td>3</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Tarsus:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tibial tarsals</td>
<td>4</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>61</td>
<td>3</td>
<td>64</td>
</tr>
</tbody>
</table>

The figures underlined represent percentage.
and two inominate bones of a small unidentified species, all the bones belong to cattle indicating the existence of these animals during the post-neolithic period. But other animals like canines, hogs and antelopes/deers known win the neolithic period or characteristically absent in this period, it is possible we might have missed the bones of these animals. Their absence therefore can not be attributed to the non-occurrence of bone fragments in the excavations.

The following specimens of bone fragments are of special interest for study.

SPECIMEN NOS. 54 and 82 INDICATING THE FOOD HABITS OF THE INHABITANTS:

On the basis of the available data from the present excavations we find evidences of man making use of flesh. However the method of slaughter except for hunting has not yet been established. Animal flesh is closely adherent to bone and edible marrow is contained in a very strong casing of bone specially in long bones. Specimen No. 54 indicates the attempts made by the then inhabitant to remove the enclosed marrow by splitting the shaft which is the chief seat of marrow content. He has probably used sharper instruments like the iron ones because if they happened to be stone tools it would have splinted the shaft. Besides, there is indication that the bone was wet when it came to be shattered as fragments are even now holding on to the shaft though depressed. The incisions taken are transverse as he found handling the bones lengthwise very convenient.
Specimen No. 82 is also another indication of man's food habits. It is a piece of rib fashioned as a fork to dislodge the adherent flesh on the shaft. But for scraping with an object of leverage it will not be possible to remove the flesh from the bones. They have been very selective in the type of bone to be employed for this purpose and nothing but a rib would answer which is not only solid but has a strong layer of compact tissue which will scrape smooth the surface. The present specimen indicates its handling by human hands as seen from the smoothness and glass it developed under the thumb-placement and the horizontal sliding under the index.

SPECIMEN NO. 59 SHOWING TRAUMATIC INJURY ON THE FACE:

The above specimen presents a bony depression in the region of intersuture on the frontal bone. This may be in all probability due to goring which is the chief method of offence amongst cattle with objects above the level of ground. As this animal happened to be an immature one it has resulted in a depressed feature pushing back into the frontal sinus. The animal must have lived fairly long after the injury as it had effaced the suture and calcified the depression. This has been stated to indicate that animals then must either be free or let loose on a grazing ground.
Fig. 27

Palavoy: Ground Bone Scrapers
D. Interpretation and Chronology at Palavoy:

On the basis of the material evidences the excavations at Palavoy could be divided into three cultural periods. They are Palavoy I (Pre-Neolithic), II (Neolithic) and III (Post-Neolithic) respectively. All the three periods with their characteristics are described below.

PALAVOY I: PRE-NEOLITHIC PERIOD:

This is the earliest occupation period at Palavoy. The period is represented in layer 14 of trenches 1 and 2, as mound 1. The layer comprises the virgin soil of brownish red murum mixed with disintegrated granite pieces. This has a thickness of 60 to 65 cm at which rock was touched in the main trench. In trench 2 the layer was dug to a depth of 10 cm only. From the basal zone of the layer, 28 deeply patinated trap flakes — 16 in trench 1 and 12 in trench 2 — were recovered. These flakes (Fig. 25, Nos. 1-4) are rectangular to leaf-like in shape with a thickness of 0.6 to 1.5 cm. The flakes depict levallois technique of working. These are therefore thought to be the products of a culture different from and earlier to those of late stone age. From the upper levels touching the sterile layers of layer 14 were found 29 artifacts of quartz and chert similar in shape, size and techniques of manufacture to those of late stone age. Sixteen of these occurred in trench 1 and the remainder in trench 2. Of these, five specimens are made on chert while 24 are of very coarse-grained quartz. The artifacts consist of two flake cores, two core rejuvenation flakes, nine unutilised flakes, one plunging flake, nine chips, four unutilised blades, one obliquely blunted blade and one scraper (Fig.
25, Ann. 5-15]. The industry is thus a non-geometric one and very crude. The industry belongs to late stone age people who immediately succeeded the authors of the painted trap flake industry.

This period is stratigraphically separated from the succeeding period (Palavoy II - Neolithic) by two sterile layers (layers 12 and 13) which together have a thickness of 22 to 35 cm in the main trench and 18 cm in trench 2. The top of layer 7 of trench 1 on Kupgal Ashmound was found to be sterile in the absence of antiquities (Majumdar and Rajaguru 1966: 14, Fig. 4). From the basal zone of this layer were unearthed several patinated basaltic flakes comprising scraping and chopping tools. But the stratum did not yield any artifacts of microlithic industry. However, Subbarao (1949: 109) found a large number of deeply patinated flakes of trap and sandstone along with artifacts of a crude non-geometric microlithic industry chiefly of quartz and chert at Sanerasamma Hill. Subbarao (1949: 135), in the absence of tools on sandstone at all neolithic sites, thought that the sandstone flakes obtained in the excavations would belong to a pre-neolithic or proto-neolithic industry while trap flakes, according to him (1949: 137), were the by-products of an early neolithic industry because of the occurrence of similar flakes on the surface of several sites. We did not come across any sandstone flakes in our excavations at Palavoy nor were they found at Kupgal or Sanganyakallu Nala site excavated by Prof. Sankalia. However, the Nala site excavations yielded trap flakes from layer 2 and artifacts of microlithic industry from layer 1. These two different industries are comparable.
to those found at Palavoy. Alchin (1961: 15) in his excavations at Utur seems not to have dug the natural soil comprising orange red murum lying below layer 12. Therefore, there is no evidence about the pre-neolithic period at Utur.

On the surface of layer 14 in trench 2 seven circular post-holes were exposed. These must be the continuation of the post-holes found on the top of layer 11 of the neolithic period. The pre-neolithic settlers seem to have levelled the natural murum and lived on it. However, it is not yet clear from what date these folk occupied the site. But the sterile layers comprising fossil soil varying from deep brown to pale yellow colour yielded no antiquities and thus they represent a distinct chronological gap between the pre-neolithic and neolithic periods. Further, as the pre-neolithic period yielded neither pottery nor pecked and ground stone tools we are justified to take it as a separate culture.

**PALAVOY II: NEOLITHIC PERIOD:**

Palavoy II represents the neolithic period of a short duration. The period overlying the sterile layers (12 and 13) includes layers 9 to 11 of trenches 1 and 2, mound I; layer 3 of trench 1 and layers 5 and 6 of trench 2, mound II; layer 2 of trench 1, habitational area I and layers 2 and 3 of trench 1, habitational area II. The cultural debris of the period has a thickness measuring between 20 and 120 cm. It thus varies from trench to trench. In trenches 1 and 2 of mound I the period as a thickness of 59 to 98 cm and 20 to 74 cm while in the trenches of mound II it is 40 to 55 cm and 120 cm thick. The trenches in habitational areas I and II show a thickness of 42 cm and 28 cm respectively.
Only one floor called floor 8 (Fig. 23) with a cluster of 30 post-holes has been found over layer 11, in trench 1, mound I. The post holes are roughly circular with a diameter of 8 to 20 cm and depth of 8 to 43 cm. Most of the post holes suggest a circular plan of the house though some indicate rectangular plan too. Settlement at the site started with the levelling up of a pale brown soil mixed with sand. A huge quantity of charcoal occurred in layer 10. It was mostly found close to or inside the post holes and clearly belongs to burnt posts of a house, probably existed beyond the southern section of the trench. The debris of layer 10 overlying floor 8 seem to have fallen from the thatched roof of a house. Layer 9 consisting of light or pale brownish sticky clayey soil is thought to have been used as wall-building material as at Sanganakallu. However, no direct evidence regarding the types of houses has been noticed in the excavations. But there are several terraces of various sizes covered by habitational deposits all along the slope of the hill. The settlements in many of these terraces appear to have been made within the areas of the naturally placed huge granite boulders while some such boulders seem to have been intentionally put for the purpose of making dwellings. The arrangement of these boulders in either case exhibits a rectangular to circular plan comparable to the one observed in the excavations. It is also probable that the neolithic folk of Falsvoy chose the top of the granite hill clustered with several rock shelters quite suitable for habitation. The finding of many saddle querns on the surface of the plain ground and a few made on in situ boulders right at the entrance of some of the rock shelters indicates that these formed the human living places. It is possible
that the saddle querns, besides functioning as domestic implements, were as well used for grinding axes and other edge tools.

The terraces on the hill slope, in addition to serving as habitational places, might have been cultivated as well by the neolithic folk, as such practice survives in a fragmentary form even today in many parts of South-Western Andhra Pradesh and Becon. We can therefore assume that the method of terrace-forming originated during neolithic times and it is interestingly retained by the so called aboriginals in the Peninsula.

We now switch over to the material equipment of these people. The two lithic industries - pecked and ground stone and blade - common on neolithic sites in the south were known to the neolithic folk of Jalsavoy as well. They are however poorly represented. Further, the number and types of artifacts from the excavations is very small in relation to those from surface. For instance, stone axes, excepting two (Fig. 28, Nos. 7 and 9; Pl. J, Nos. 1-2), showing pecking and edge grinding are totally absent in the excavations while on surface they are common. This possibly suggests that these axes were meant for cutting and splitting of trees or clearing of bushes away from the settlements. Similar is the explanation for the absence of tools like chisels, choppers, mace heads, etc. As such their non-occurrence in the excavations may not reflect on the poverty of the industry. The finding of large number of rubbing stones, hammer stones, querns, etc. (Pl. J, Nos. 3-13) in the excavations indicates their specific functions as domestic implements. On the whole the raw material, though available in the form of huge dykes, has not been fully exploited and
this shows that the people besides stone implements were using tools made of perishable materials like wood. Even the stray occurrence of blade and microlithic artifacts in the excavations compared to the remarkably large collection from surface speaks of their utility out of doors. These small implements could be hafted into bone or wooden handles and used.

The occurrence of a solitary object of copper, probably the fragment of an arrowhead (Fig. 42, No. 1; Pl. H, No. 5, first from left), from the late levels of this period signifies that the neolithic people of Palavoy were in contact with or contemporary to the early chalcolithic people of the northern Deccan.

The discovery of bone tools (Figs. 27-29; Pl. H, Nos. 1-4) comprising scrapers, chisel, blades, punch and points is another significant feature of this period. Of these, the scrapers made on bovine shoulder blades (scapulae) resemble stone axes in shape, size and techniques of manufacture. These however differ in function from the latter as bone is softer than stone. They were probably used for skinning of carcasses and cutting and scraping of hides.

The ceramic industry consisting of blotchy grey, dull red and painted red wares demonstrates a much advanced skill. The blotchy grey and dull red wares are the most common accounting for nearly 90 per cent sherds. The painted red ware which is most uncommon at other neolithic sites constitutes slightly over 10 per cent of the total pottery at Palavoy. It is thus possibly an indigenous ware. The earlier two wares are mostly hand-made while the third appears to have been manufactured with the help of some kind of mould. The fabric is very thin and fine in appearance. The finding
of a single specimen of dabber shows its use in potter's work. The most common types in pottery are globular pots of big and small sizes probably employed for storing grains and in cooking, and bowls and dishes used for carrying liquids. Four edge ground grey ware sherds occurred in this period show that they were used for house hold purposes like cleaning the bottom portions of the vessels. Along with these evidences 127 curious unbaked clay objects of various shapes were recovered from this period. The purpose for which they were made is not clear. We may however say that they were prepared and used as play things by children as this practice still survives in rural society.

The neolithic folk though settled in the sense that they had permanent dwellings, their economy ranged from hunting activities to primitive agriculture. There are several terraces lined with granite boulders on the top and slope of the hill. On these some kind of patch agriculture might have been carried out as this practice is still in vogue among the rural peasants of this area. The discovery of charred grains of horse gram (Polidonas lablab) in the Tekkalakota (Sankalia 1964: 155; Nagaraja Rao and Malhotra 1965: 91) and of Ragi in Ballur (Nagaraja Rao 1966: 120) neolithic levels suggest that similar cereals were possibly grown by the Falavoyites. These grains are produced all over the region today. In most of the houses in the present day Falavoy village the boiled horse gram grains mixed with jaggery are ground and eaten by the poor people. Rich peasants generally use these grains for feeding the draft animals. The seeds recovered from this period in the present excavations are those of zizyphus closely comparable to those of *Zizyphus horide*, a species common to this area.
fruits of this plant are not only eaten direct but are also used in the preparation of 'chutnies' (sauce) at present. This and a few other species of this plant are prolifically grown in the waste lands of this area.

This evidence is supported by the appearance of several querns and rubbing stones in the excavations and on surface. These were used for grinding and pounding grain. Stone axes were used in making clearings in the surrounding jungles for farming. Ring stones were possibly used as weights for digging sticks. The sowing of seeds was possibly done after making holes with the pointed tip of digging sticks. This system is still practised by peasants in some of the interior villages. Microliths could have been used as knives or sickles for harvesting cereals.

The study of animal bones from surface as well as excavations shows that domestication was the mainstay of the economy. The domestic species comprise cattle including larger bovines (Bos bubalis and Bos indicus), sheep/goats (caprines), canines and hogs. Majority of the bones belong to cattle. Most of the bones from the habitation deposits are charred, and show cutting or chopping marks on their surfaces. They must have domesticated cattle both for their milk and meat. Small and medium-sized pots appear to have been used for storing milk. A terracotta bull (Fig. 42, No. 8) made of red ware found on surface probably belongs to this period.

The wild species include antelopes or deers whose antlers were found on surface. Besides, small vertebrates like squirrels, rats, etc. have apparently formed subsidiary items of food. These could be hunted by using sling stones as missiles which occur at the site.
We have discussed earlier (page 297) that the raw materials for the preparation of artifacts of blade and microlithic industry were brought from distant places like Tungabhadra valley. Further, a single specimen of a crudely made cornelian bead (Fig. 29, No. 10; Pl. A, No. 5, second from left) from surface indicates that it was brought from outside, probably, as an exchange article. As such, there seems to be little doubt that the people of Jalavoy have established contacts with distant stone age communities. It is also possible as Allchin (1960: 133) thinks for Biklihal that the cattle bred by this community could be exported to distant places for sale.

Some evidence for the disposal of the dead was recovered from trench 1, habitational area I (pages 357-359). All these were four child burials found in vertically kept pots. Due to the fragmentary condition of the bones their anthropometric analysis was not possible. No grave goods were found with these burials; only painted pottery could be recovered in the vicinity. The deceased were buried away from the living places. This is different from the burials found at Brahmagiri, Biklihal, Tekkalakota and Hallur. We had information from the Jalavoy villagers that the skeleton of an adult was found in horizontally kept big-sized storage jars at the lowest levels of ash mound IV while they were digging it for manure. In the absence of skeletal remains we do not know the physical features of these people.

The only evidence of art among the people is in the form of paintings and decorations on pottery. Incised and painted decorations in various styles were the most commonly noticeable. The
method of disposing the dead in pots testifies the belief of these people in future life.

In summary, the Falavoy neolithic people were living quite a different way of life compared to their predecessors of late stone age. Many features such as round or rectangular houses, terrace agriculture, hunting activities, domestication of cattle, the use of saddle querns and rubbing stones as well as axes, ring stones, etc. are characteristic of this culture. These are still persisting in the modern rural society with slight modifications here and there.

**Falavoy III: POST NEOLITHIC PERIOD.**

Falavoy III is known from layers 2 to 8 in trenches 1 and 2, mound 1; layer 2 of trench 1, and 2 to 4 of trench 2, mound II. The thickness of the deposit measures between 0.52 and 2.70 meters. In trenches 1 and 2 of mound 1 the period has a thickness of 2.50 to 2.70 meters and about 2.50 meters respectively while in trenches 1 and 2 of mound II it is 52 to 80 cm and 1.20 to 1.50 meters thick.

It is in this period that the composition of strata and their finds differ from the earlier two periods. We do not know how the neolithic period came to an end when the post-neolithic communities arrived at the site. Also it is not clear as to what happened to the movable property of these people. Suffice to say that these communities, however, did not face extinction before their successors appeared on the site.

Within these strata seven floors were encountered. Each floor is covered by soft greyish and loose gravelly earth deposit
respectively. Two vitrified ash layers separated by five floor levels were witnessed in both the trenches of mound I while in those of mound II these vitrified ash layers are separated by a single layer (layer 5 in trench 2) of loose brown ash earth. Thus the floors and the deposits observed in the trenches of mound I are absent here.

Thus the post-neolithic people were the immediate successors of the neolithic folk. The occupation began with the levelling up of light or pale brownish ash debris of the walls of the neolithic dwellings. The top of this debris designated as floor 7 exposed a total of 18 post holes giving a plan of two to three circular huts (Fig. 23). This floor is sealed by layer 8 which consisted of two kinds of deposits mentioned earlier. The floor (floor 6, Fig. 23) on the top of this layer showed five circular post holes. It is sealed by layer 7 of vitrified ash lumps. Similar floors with or without post holes were encountered in the succeeding strata. The purpose with which these floors were made before first vitrified ash layer (7) was probably for camping to carry on iron smelting process while those between the two burnings might have been temporarily occupied.

The vitrified ash lumps are of black to grey colour with greenish glassy appearance mixed with many grey loose earth. In section they were seen to be arranged in a row with dome-shaped roofs and the vertical columns of burnt animal dung at intervals are resting on a purposely made bed. The arrangement of the vitrified lumps thus shows a circular structure of a kiln with cow dung forming walls, and domical roofs and flat base made of chunam-like mud. The gaps between the columns are hollow and are surrounded by
vitrified glittering pale greenish to yellowish coloured glassy slag hanging in flows. The vitrified glassy lumps are porous while the horizontally lying vertical columns are compact comprising dung mixed with sand and earth. The foldings of such columns touching the cavities are blackish while those embedded in the cores are whitish like 'chunam'. Occasionally there are black pockets containing soft ash probably resulting due to incomplete burning. Numerous quartz grains of varying sizes are present within these lumps. These particles were intentionally added as a flux possibly to attain a high temperature. The vertical dome-shaped columns can be seen in the section in Fig. 22 and Plate F.

This period has brought to light two iron objects - a nail and a ring (Fig. 29, Nos. 9 and 12; Pl. H, No. 5, first two from right) - an iron ore lump and a slag lump. Besides these, plenty of megalithic potsherds belonging to black burnished ware, black-and-red ware, red ware and chocolate-slipped ware were found. These sherds show traces of intense burning. Similar pottery giving various shapes was found on surface. The surface around the ashmounds is completely strewn over with iron ore and slag lumps thus confirming the evidence from the excavations. The discovery of an iron-smelting site (Pl. D, No. 3) close to an ashmound on the south-eastern slope of Mudigal Hill about 4 km. north of Falavoy forms another supporting evidence for our finds from the excavations. Now the process of smelting was carried on will be known in the light of future excavations at this and a few fresh ashmounds. As our views on the problem are discussed separately here this description is enough to distinguish it as a separate period.
The basic principles of economy observed in the neolithic period appear to have persisted during this period also as we could recover several bone fragments belonging to cattle and a few to sheep/goats. These people also like their predecessors continued to use animal flesh as an article of dietary as seen from the cutting marks on bones. It has also been established according to Dr. K.R. Alur that there is evidence of use of sharper instruments like the iron ones to remove the enclosed marrow because stone tools would have splintered the shaft of the bone.

Comparative Chronology:

We shall now consider the relationship between the Palavoy sequence and that of other excavations in the Peninsula.

So far in South India nine sites have been excavated. These consist of Brahmagiri, Songasakallu, Maski, Nagarjunakonda, T. Narsipur, Piklihal, Pappampalli, Tekkalakota, and Ballur. Besides, two ashamed sites, namely, Utnur and Kuppal have been excavated and Palavoy is the third one.

At Brahmagiri (Wheeler 1948) a sequence of three cultures was found. They are: I. Stone axe culture divided into two sub-periods, namely, IA and IB cultures; II. Megalithic culture and III. Andhra culture. No comparable phase to Palavoy I is found at Brahmagiri. Palavoy II is closely comparable to Brahmagiri I in the occurrence of pecked and ground stone and blade industries, ceramic wares, etc. However, the dull red ware present at Palavoy is absent at Brahmagiri. Also the painted red ware at Palavoy is in high proportion (10.69%) of the total pottery, while at Brahmagiri only a handful of sherds of this ware have been found. Copper objects occur at
both the sites; from the topmost level of IB Brahmagiri and the last stratum (layer 3 of trench 1, mound II) of Falavoy II respectively. Besides which occurred at Brahmagiri were absent from Falavoy. Burials occur at both the sites. But at Falavoy only child burials have come to light while at Brahmagiri besides adult burials were also found.

The Falavoy sequence has a close resemblance to that of Sanganakallu (Subbarao 1948). The pre-neolithic period characterised by patinated trap flake and non-geometric microlithic industries corresponds to phase I of Sanganakallu. The sterile layers representing a stratigraphical gap between the pre-neolithic periods are present at both sites. Falavoy II neolithic period is similar to phase II of Sanganakallu.

Maski (Thapar 1957) revealed a four-period sequence. Period I at Maski correspond to Falavoy II while the pre-neolithic period of Falavoy is absent at Maski as at Brahmagiri.

At Nagarjunakonda (Soundara Rajan 1958) and T.Narsipur (IAR 1956-59) the neolithic period is similar to Falavoy II.

The lower and upper neolithic periods at Fiklihal (Allchin 1960) are comparable to Falavoy II Neolithic. But the intrusion found at Fiklihal is absent at Falavoy.

Phases I and II at Tekkalakota and period I at Mallur (Nagaraja Rao 1966) are similar to Falavoy II. Similar sequence has been found at Taliyampalli as well.

The painted pottery at all the above sites - Brahmagiri IA, Fiklihal lower and upper neolithic, Sanganakallu phase II; sub-period 2 and Tekkalakota phase II - occurred in small quantities while at Falavoy it was remarkably in a good proportion and was
a regular feature of the neolithic levels. However, other wares like blotchy grey and dull red as well as the lithic industries are strikingly similar at all the above sites and are comparable to those of Falavoy. The stray occurrence of copper objects as at Brahmagiri, Piklihal, Tekkalakota, Maaki, etc. is also observed from the neolithic period of Falavoy.

Falavoy III represented by Post-Neolithic period though comparable to the Megalithic period at Brahmagiri (Period II), Sangamakallu (phase III), Maaki (Period II), Nagarjunakonda, T.Keralipur, and Mallur (Period II) differs from the latter because the vitrified ash burnings at Falavoy do not form occupational debris as at other sites. Therefore any attempt of comparison of Falavoy III with the Megalithic period of other sites is not of much significance.

Allchin (1961) proposes five periods of occupation for Utnur ash mound. Four of these he postulates as the neolithic periods of occupation followed by ritual burning of cowdung while the 5th one formed due to later activities. In our excavations at Falavoy the burning activities belong to post-neolithic period. According to Allchin (1963: 23-4) the very formation of ashmound at Utnur started with the making of an enclosure initially for cattle and then after some duration accumulating the dung and burning resulted. Such evidences were not observed at Falavoy at all.

However, the Rupgal ashmound excavations (Nujumdar and Rajaguru 1966) more or less confirmed our sequence at Falavoy by the presence of a pre-neolithic flake industry and two stages of vitrified ash layers. But these deposits at Rupgal were assigned
to Neolithic period unlike those at Palavoy.

**Absolute Chronology:**

Four samples — two of charcoal from Palavoy II (Neolithic) and two of carbonaceous ash from Palavoy III (Post-Neolithic) have been sent for C-14 dating to the Tata Institute of Fundamental Research, Bombay but the dates for these samples have not yet been received.

Radiocarbon dates for the Southern Neolithic Culture are available from the sites of Utnur (2160 ± 150 B.C.), Tekkalakota (between 1780 and 1540 B.C.), Hallur (1710 ± 105 B.C. and 1050 ± 105 B.C.), Sanganakallu (1590 ± 110, 1550 ± 110 and 1585 ± 105 B.C.), T. Narsipur (1805 ± 110 B.C. and 1495 ± 110 B.C.) and Bainapalli (1485 ± 110 B.C.).

It can be seen from the above dates that the Southern Neolithic Culture existed between 2200 and 1000 B.C. The first of these from Utnur is a solitary date for the lower limit of the Neolithic Culture while the other, also the only date, is available from Hallur for the upper level of this culture. Thus, the clustering of the dates lies between 1800 and 1500 B.C. At majority of these sites, evidences like painted pottery and copper occurred in the late levels. Similarly at Palavoy, painted pottery which figured in all levels is more predominant in the upper from which copper was also known. We are, therefore, justified to assign a date between 1800 and 1500 B.C. for the Palavoy Neolithic Culture as well. This statement is purely provisional at the moment (for more details on chronology see pages 448-450, below).

Allchin had no dates for the vitrified ash burnings. He (1963: 158), however, postulates a period of 1250 years ranging
from about 2000 B.C. to about 750 B.C. as the duration for the burnings. But our observations and material evidences obtained in the Palavoy excavations suggest that the post-neolithic people were the early and immediate successors of the neolithic folk. However, when they actually started the smelting activities is not clear to us at this stage. Further, the fate of the neolithic culture by the time the post-neolithic people arrived at the site is also not known as there is no stratigraphical break between the neolithic and post-neolithic periods.

E. New Light On The Ashmound Problem:

The evidence obtained from Palavoy excavations has revealed three distinct periods, namely, Pre-Neolithic (Palavoy I), Neolithic (Palavoy II) and Post-Neolithic (Palavoy III). Palavoy III is represented in layers 8 to 2 of which layers 7 and 2 are vitrified ash deposits. Thus, deposits are part of an ashmound.

The stratigraphy at Palavoy, particularly, the two layers of vitrified ash deposits, closely corresponds to that of Utnur and Kupgal. The problem is not with regard to the numbers of vitrified deposits but the cause or causes of their formation.

For this, the geographical distribution of ashmounds in relation to neolithic settlements, megalithic settlements or monuments and iron ore in this region and its neighbourhood has been considered first as shown in table 56 on pages 404-405. Then their existence in relation to place names and nature has been examined. Finally the archaeological evidence obtained from Palavoy excavations is sought to explain our views on the origin of ashmounds.

Explorations in the region brought to light 14 ashmounds
### TABLE 56. DISTRIBUTION OF ASHMONDS IN RELATION TO NEOLITHIC
**SETTLEMENTS AND MEgalithic settlements OR MONUMENTS IN**

**South-western Andhra Pradesh and its Neighbourhood**

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of Ashmound</th>
<th>Associated with Neolithic settlement</th>
<th>Associated with Megalithic settlement</th>
<th>Not associated with any monument</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Andepalli</td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>Mulikal</td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>3.</td>
<td>Gudikallu</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>Ranchagarabellagallu</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>5.</td>
<td>Lingadahalli</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>6.</td>
<td>Malapuram</td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>7.</td>
<td>Malleripalli</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>8.</td>
<td>Mudigal</td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>9-12</td>
<td>Palavoy I to IV</td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>13.</td>
<td>Suguru</td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>14.</td>
<td>Ventareddipalli</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Outside South-western Andhra Pradesh**

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of Ashmound</th>
<th>Associated with Neolithic settlement</th>
<th>Associated with Megalithic settlement</th>
<th>Not associated with any monument</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.</td>
<td>Megalapuram</td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>16.</td>
<td>Kolimipalyam</td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
</tr>
</tbody>
</table>

**Bellary district**

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of Ashmound</th>
<th>Associated with Neolithic settlement</th>
<th>Associated with Megalithic settlement</th>
<th>Not associated with any monument</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Kupgal</td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>Halakundi</td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>3.</td>
<td>Gadiganuru</td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>Sanavaapur</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>S.No.</td>
<td>Name of Ashmound</td>
<td>Assoc. with Neo. sett.</td>
<td>Assoc. with Meg. sett. or monuments</td>
<td>Not associated with any</td>
</tr>
<tr>
<td>-------</td>
<td>------------------</td>
<td>-----------------------</td>
<td>-------------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>5.</td>
<td>Kurikuppa</td>
<td>Yes</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6.</td>
<td>Kakaballa</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7.</td>
<td>Nimbapur</td>
<td>Details not known</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8.</td>
<td>Kudatini</td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Raichur district</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Hire Benekal</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>10.</td>
<td>Chikka Benekal</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>11.</td>
<td>Sivapur</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>12.</td>
<td>Piklihal</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>13.</td>
<td>Lingaagur</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>14.</td>
<td>Yergunti</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>15.</td>
<td>Kurkundi</td>
<td>Details not known</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>16.</td>
<td>Wandalli</td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>17.</td>
<td>Gaudur</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>18.</td>
<td>Manvi</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>19.</td>
<td>Sirwar</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Mubbubnagar district</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>20.</td>
<td>Utnur</td>
<td>-</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>21.</td>
<td>Machanpalli</td>
<td>Details not known</td>
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<td>-</td>
</tr>
<tr>
<td>22.</td>
<td>Talmar - Akukunur track</td>
<td>Yes</td>
<td>-</td>
<td>-</td>
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<tr>
<td></td>
<td>Gulbarga district</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23.</td>
<td>Benkamhalli</td>
<td>-</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>24.</td>
<td>Thanamandi Thanda</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>25.</td>
<td>Hanamangar - Rodekap path</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>26.</td>
<td>Mallur</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>27.</td>
<td>Rajankallur</td>
<td>-</td>
<td>Yes</td>
<td>-</td>
</tr>
</tbody>
</table>
majority of which are new finds. They are located in Adoni and Alur taluks of Kurnool district, and Aalyandrug and Uravakonda taluks of Anantapur district. Of these, nine are situated in the vicinity of neolithic and megalithic settlements at the feet of granite hills, three are associated with only neolithic sites while the remaining two are away from such sites. Similar is the position with other aashmounds outside our region and this can be seen in the above table. On and around these mounds a lot of iron ore and slag lumps was found. Neolithic sites devoid of aashmounds did not yield any iron ore or slag lumps and even megaliths are absent at such sites (Fig. 2). This shows that aashmounds, iron ore and slag pieces and megaliths go together. All this is clear when we look at the iron ore distribution map of South India which shows that the Cuddapah, Kurnool and Dharwar formations in Andhra and Mysore particularly the districts of Bellary and Tumkur of Mysore and Kurnool, Cuddapah and Anantapur in Andhra Pradesh contain iron ore deposits. Majority of the aashmounds and megalithic monuments are situated in areas where iron ore deposits are available. However, neolithic sites, aashmounds and megaliths are also observed in Raichur and Gulbarga districts of Mysore and Mahbubnagar district of Andhra Pradesh, where no iron ore are found. This does not by itself disprove their association since iron ores could have been brought to these places.

In our region two kinds of traditional explanation of the origin of aashmounds are known. One is that the aashmounds had resulted when the great demon Hidimbassura was killed by Pandavas and burnt. The other story is that these were the ancient iron-
smelting places. Some places like Kolimipalyam (in Mysore) have been even named after these mysterious mounds. The word Kolimipalyam means "smelting place" (Kolimi = smelting; palyam = furnace). This mound yielded iron ore and slag pieces. Thus, none of the places linked with the element "būdi" in Anantapur district mentioned by Allochin (1963: 90-1) from the work of Narayana Rao (1935-6) has showed either ash mounds or any traditional stories about these. It is therefore clear that the place names have no relation to the ash mounds and their existence. This is the explanation with Falavoy and most of other ash mounds in South-Western Andhra Pradesh. Similar stories have been recorded for Kupgal (Bellary district) and Wandallli (Raichur district) mounds by Subbarao (1949: 77) and Allochin (1963: 96).

Both layers 7 and 2 consisting of vitrified ash lumps of the main trench on ash mound I at Falavoy present the appearance of a row of vertical columnar structures with dome-shaped roofs resting on a purposely well made base or floor. The arrangement of the vitrified lumps thus showed the circular structures of several kilns with cowdung forming walls, and domical roofs and flat base made of chunam-like mud. The gaps between the columns were hollow and were surrounded by vitrified pale greenish to yellowish colour ed glassy slag hanging in flows. The vitrified glassy lumps are porous while the horizontal columns are compact comprising burnt animal dung mixed with earth. The foldings of such columns touching the cavities are blackish while those embedded in the cores are whitish like chunam. Occasionally there are black pockets containing soft ash which probably resulted due to incomplete burning. Further, numerous quartz grains were found in the vitrified lumps.
All these observations have led us to think that the burning of
the cowdung alone would not form the vitrified deposits. The adding
of quartz grains seems to have been intentionally done to obtain
high temperature. We therefore attempted to find more sound expla-
nation for this phenomenon.

We started exploring the region around Palavoy for similar
sites. During our explorations we found in a field, a little to
the north-east of Mudigal village about four kilometers north of
Palavoy, a big vitrified ash lump similar in structure and composi-
tion to those found in the excavations. This find aroused our
curiosity as there was no ashmound in the vicinity. We thus resumed
our searches in the area and at last found a circular kiln in a
field to the north of Mudigal village, which we were told had been
recently used for lime-making. In and around the kiln several
vitrified lumps were collected. As the owner of the kiln was not
available to tell us the process we made enquiries in Palavoy whether
there were similar lime-makers in that village. The Sugalis
(Lambadis) were found to be carrying on this occupation. An elderly
lambadi took us to his own kiln and showed similar vitrified ash
lumps. While describing the process of lime-making the said lambadi
emphasised that unless cactus twigs are added vitrification can not
take place. Further, for attaining high temperatures the addition
of quartz and feldspar pieces, and tamarind bark are the essential
ingredients according to the elderly lambadi. On these lines of the
process we conducted the experiment in the following manner.

The materials for the experiment consisted of semi-dried and
dried cowdung cakes, cactus (milk hedge) twigs, two iron ore lumps
and quartz and feldspar pieces.
About a cart-load of semi-dried and dried cowdung cakes was collected and made into two equal heaps. The cowdung cakes were arranged in a dome-shaped fashion and iron ore lumps were placed in the centre of both the heaps. One of the heaps was then covered with green, semi-green and dried cactus twigs which were largely available on the hill slope; and the other was left uncovered. The roofs of both heaps were finally covered with earth and were lit with fire simultaneously. When all the corners of the heaps took to fire quartz and feldspar pieces were thrown. The heaps were allowed to burn over-night. The following day both the heaps were found to be fully burnt.

On clearing them the following results were noticed. The heap to which cactus was added yielded partially vitrified ash lumps. Further, the iron ore lump from this heap changed its colour, lost hardness and showed the signs of fusion. The other heap resulted in soft ash and the iron ore piece in it remain unaffected. Both the heaps as expected naturally lost volume.

The resultant vitrified lumps, were, when compared with those from the ash mound excavations showed identical features with regard to their external structure as well as composition. We are therefore led to conclude that for the vitrification of the deposits cowdung burning at high temperatures is not enough but the addition of green, semi-green and dried cactus twigs is important. When once we know that the cactus plants were the chief material for the vitrification and high temperature we are again asked to answer the question why they were burnt at such high temperatures. For this the arrangement of the vitrified ash deposits in the form of a row resembling the shape of small sized kilns as seen from the
by the discovery of an iron ore piece from layer 2 of trench 2, mound II and an iron slag lump from layer 2 of trench 1, mound I. To these products were added two iron objects — a nail from layer 8 of trench 1, mound I at a depth of 2.52 meters (Fig. 29, No. 12; Pl. H, No. 5, first from right) and a ring from layer 2 of trench 1, mound II at a depth of 43 cm below surface (Fig. 29, No. 9; Pl. H, No. 5, second from right). To these observations may be added the finding of a large number of megalithic potsherds of burnished black ware, black-and-red ware, red ware and chocolate-slipped ware. Some of the potsherds show signs of burning at a high temperature.

The material evidences from the excavations have been corroborated by the finding of megalithic monuments, pottery giving various shapes, iron ore and slag lumps on the surface of the site. The discovery of an iron smelting site (Pl. D, No. 3) close to an ashmound on the south-eastern slope of Mudigal hill about four km. north of Palavoy forms another supporting evidence for our finds from the excavations.

Looking at all the evidences from the excavations and surface together we are inclined to think that these were the result of iron-smelting by post-neolithic communities. Thus the problem of chronology and the origin of ashmounds, which were recently thought to have almost been solved by Allochin is now reopened in the light of our new findings in the Palavoy excavations.

The present explanation is not altogether new as similar explanation was earlier propounded by Ghulam Yazdani and supported by Rao Bahadur K.N. Bikshit and Sir Leonard Woolley. But the present one is based on archaeological evidence from stratified deposits and on experiment.
However, we do not claim to have solved the problem. But to test our hypothesis more work on ashmounds is very essential. If our hypothesis regarding the origin of ashmounds is confirmed in the ensuing investigations, it will change the so far accepted chronology and opinions of their origin and place them in the early Iron Age of South India. Further, these investigations will also throw considerable light on the economy of the people to whom the ashmounds owe their origin. The study of ashmounds in relation to iron ores and megalithic monuments in this part of the Peninsula is very necessary and the writer wishes to work further on this very problem in the near future.