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# EARLY SETTLEMENT IN THE PLAIN OF YENIŞEHIR (NW ANATOLIA)
## The Basal Occupation Layers at Menteşe

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THE FIELDWORK
by J. Roodenberg

### Introduction

Since 1987 a multidisciplinary research project is being carried out in the eastern Marmara region to study early farming communities. Fifteen summer seasons have been spent to investigations at Ilıpınar Höyük including next to purely archaeological work, landscape studies, analyses on human, botanical and faunal remains and dating techniques. Within the framework of this project, limited excavations were carried out on the mound of Menteşe situated in the Yenişehir plain ca. 25 km south of Ilıpınar. With a final campaign in 2000, fieldwork at Menteşe was concluded. As it was meant from the outset as a rescue excavation under the auspices of the Museum of Iznik, it had purposely kept the scale of a sounding. Three preliminary reports have been published on previous work at Menteşe, one dealing with the archaeological data (Roodenberg, 1999) and two with human remains (Roodenberg-Alpaslan, 1999, 2001). The current article links the occupational evidence from previous seasons with the stratigraphy and findings from the basal layers uncovered in 2000. In addition, a technological and typological analysis is presented of the most important find category of basal Menteşe – the pottery. In conclusion, an appraisal is given of the position of this settlement in the chronology of the Marmara region (fig. 1).

The deep sounding of basal Menteşe was carried out along the northern and eastern section of square K15 where the virgin soil was reached. This L-shaped area was chosen because of good evidence for occupation debris. Apart from a 1.5m thick layer almost entirely composed of midddens from Roman, Bronze Age and Chalcolitic periods (stratum 1) preceded by a thin band of black ashy surfaces – the cultivated fields period (stratum 2), the soundings from the former fieldwork in 1997 had revealed groundplans of three buildings (top of stratum 3). Their walls had consisted of either pisé or mud slabs for the lower part and of wattle-and daub for the upper, evidenced here and there by thin (carbonized) wooden posts and imprints of wickerwork in the mud (fig. 3). In addition, at the same time mud-brick constructions seem to have occured as well. Although the groundplans for the greater part extended outside the excavated area, there is little doubt

that the buildings resembled the ordinary dwellings from Ilıpınar's earliest levels. These dwellings consisted of a ca. 30m$^2$ building surface with walls of mudslabs or of timber posts enclosing a single room with spaces for living and cooking (Roodenberg, 1993:253). The 'burnt house' of Menteşe was formerly described (idem, 1999:24). Most remarkably this building yielded the first traces of wattle and daub walling ever encountered since excavations in the Iznik-Yenişehir area had begun. It seems these walls consisted of a lower wall base made of pisée for which dark grey loam was used. In these walls, which were preserved at an average height of 20 cm, thin posts or stakes (ca. 5cm in diameter) were planted at 10-15cm wide intervals. From a wickerwork of horizontally twisted branches no impressions were left, but long stretches of mud coating curling around the posts were still visible. The outside of the walls consisted of yellow clay – probably the remains of a coating that had been smeared all over the exterior of the building. The inner floor was smeared with mud plaster resulting in a hard and smooth surface where a few pots were standing in situ. Its northern half was largely destroyed, among other things by the pits of burials UF and UH. According to stratigraphic evidence these burials – both of male adults – should be linked to an occupation level that rather closely followed the destruction of the dwelling. Two more buildings belonging to the same occupation level were found Northwest of this dwelling. Their southern walls – the only building parts visible in the trench – were made of blocs cut from natural clay deposits called mud slabs set on a surface that gently sloped up to the west. At the corner of the eastern-most building a portion of the courtyard was preserved showing mud-plastered installations for food storage and processing. From this occupational horizon, which constitutes the top of stratum 3, the sounding of the 2000 season occurred.

**Deep sounding**

For reasons of time the deep sounding of basal Menteşe had to be restricted to the former trench SSK15, measuring 9 x 3 m, which was enlarged by an extention to the west of 4 x 2.2 m along the northern section of square K15 (fig. 2). As stated above, the 1997 fieldwork had exposed three contemporary buildings that belonged to the top of stratum 3 occupation, the most western of which laid outside the sounding area of the 2000 season. Inspection of the northern section of the deep sounding revealed a succession of three buildings shown by yellow clay floors (fig. 4). The upper one, known from the 1997 dig, had two floors and was constructed on a levelling layer of grey earth. In fact, the 'burnt house' corresponds with the upper ones whose eastern part was eroded. While the northern sounding area was a build-over area, the eastern part seems to have been constructed only once. The 'burnt house' had no predecessors. Underneath its floor level, two burials were uncovered, UF and UH, both containing the skeletal remains of a male adult. By chance, burial UH's imprint is engraved in the eastern section demonstrating that the pit was dug through the destruction layer and floor of the house, but was overlaid with ash lenses of stratum 2 (fig. 4, East section). Hence the moment of their inhumation must be fixed between ca. 7100 and 6800 BP. Probably connected to the burnt house were the

burials UJ and UK, respectively belonging to a child and a young woman. It is thought that these individuals were intentionally inhumated under the house floor (fig. 4, East section). The bodies lay ca. half a meter under the floor, the woman in what may have been a wooden chest, which not only had pieces of horizontal planking preserved but also fragments of wooden uprights, while the skeletal bones were covered with fibrous fragments of decayed wood. Next to a sheep horn and scapula, the deceased was found with a terracotta box near her chest (fig. 5a). The box, square in shape, stood on four legs and had a horizontal handle which was broken. It was decorated with incised and incrustated geometric motifs on three sides (fig. 5b). The woman wore a necklace judging from the many tiny stone beads that were found at the place of her neck (fig. 6). Burial UJ was from a ca. 2 year-old child. There were also a scapula and a horn positioned near the body. Moreover, five thin, square bone plates, each of them pierced by six holes were found on the body (fig. 7). There is no conclusive evidence for linking the child and the woman; although the burial pits had been dug one next to the other at equal depth, viz. 80 and 90 cm respectively. However, the apparently special care to surround these burials, and their close position both vertically and horizontally may strengthen the idea of kinship. If this is true, then the suggestion that the deceased were buried under their own dwelling is likely. It would be the first time that intramural burials (in the sense of 'within a building', and not as often wrongly stated 'within a village') can be established in the Iznik-Yenişehir region. There were more house floors and burials uncovered during these soundings at Menteşe, but no such potential connection could be observed a second time.

## Stratigraphy

When examining the northern and eastern sections of the sounding area, one discovers some regularities in the stratification of the debris: inner surfaces (house floors) and outer surfaces (courtyard floors) are often, but not always, provided with a 3-5 cm thin level of yellow clay. This floor was applied on a compact layer of grey to brown clay whose function was to level an uneven subsoil and constitute a firm foundation for a walking or living surface. As it appears, a second regularity is that a higher frequency of finds (these may be pottery sherds, stone, bone or flint tools and chips, debris from meals and butchering) occurs in relation to the above-mentioned surfaces. The exception was that inner floors were usually void of finds, while the corresponding courtyards were rich of such debris, not only laid on the surface but also trampled in the ground. Statistic processing of mobilia provides evidence for such surfaces that rather well corroborates with what the sections demonstrate. The northern section shows the succession of five such surfaces. The upper surface (with a refection a few centimers below) is the floor of a building (north section building 1= nsbl) whose east corner was cut by ancient ploughing and whose western wall is not visible in the section (fig. 4). The building was overlain by a thin layer of black and red burnt building debris. This layer can be observed in the eastern section as well, where it overlays a courtyard surface and the floor of the so-called 'burnt house'. The walls of this house are not visible in section either.

The next building (nsb2, see projected transverse wall AF) according to the northern section had its floor ca. 40 cm below the floor of the upper one. This is the one that is shown in fig. 3 together with the burnt house and a third one to the west (nsb3). However, the eastern section does not show a matching building, because during the period preceding the burnt house this sector appears to have been an open space. The third building was found (nsb4, see projected transverse wall AH") 20-30cm beneath it, its loam floor resting on a somewhat loose brownish mottled soil. From this level down to virgin soil (ca 2.20m) a succession of burnt occupation debris alternating with trodden surfaces, some paved others unpaved, most of which can be tracked in the eastern section. Usually these surfaces yielded larger quantities of finds. For the convenience of tracing pottery development in the accumulation of destruction and building levels of basal Menteşe, a distinction has been made between

upper occupation levels (levels 100-109 )
middle occupation levels (levels 110-125)
lower occupation levels (levels 126-130)

The lower occupation levels consist of 1 to 1.50 m of debris above virgin soil, the middle occupations levels contain the most distinct courtyard surfaces, while the upper occupation debris include three building levels (North section).

**The use of space**

Though visible in section the yellow mud floor of the lowermost building was hard to recognize at the surface (fig. 8, plan nsb4). This was also true for the eastern and western walls which, moreover, did not leave contours in the section. Its nearly 6 m long southern wall (AH), however, could be easily traced, not least because of a neat row of charred stakes set at irregular intervals in the mud slab or pisé foundation wall. This foundation wall, preserved at ca. 20 cm high and on avarage 20 cm wide, bore a thick coating of yellow mud along its outside (fig. 8, wall sections). Such loam was noticed on walls of esbl and nsb2 as well, and probably the exterior of all buildings was coated likewise. The yellow colour of the coating refers to clay that was not polluted with household refuse but was extracted from natural deposits. In addition, burnt pieces of this loam demonstrated that it was free of vegetal additives. In line with the construction level of this building, a trodden surface can be distinguished in the eastern section extending south. Judging from three postholes found south of the building's SE corner the yard seems to have been confined by a fence running parallel to the southern wall. An example of a trodden surface consisting of clay patches, burnt rubble and ash lenses is given in fig. 9. Although no special surface treatment was apparently applied, this area was used as an activity zone judging from concentrations of stone bolders, a grinding slab and a stone with a shallow hole (door socket?). Burial UL comprised the remains of an infant that was dumped in the building debris.

While digging down, more such surfaces were encountered, some neatly paved with plaster. No structures were recognized except one. At a depth of half a meter above

the virgin soil in the northeastern part of the trench stood a structure: a fragment of thick mud footing with one side turning into a blunt angle and with two rows of thin posts, one along the inside of the footing, the other running in a sharp angle with the former (fig. 10). Big pieces of walling, apparently broken off from the footing laid in front of this structure. The surrounding surface as well as the described parts were heavily burnt. Though the groundplan is rather odd, these were probably the remnants of a storage device. One post yielded a radiocarbon sample. The deepest man-made deposit above virgin soil was built up of half a meter of clayish levelling layers alternated with ashy trodden surfaces; there were no traces of burnt building debris.

Considering that from a settlement of approximately one hectare only a minute surface of stratum 3 has been investigated, not much can be told about how space was used in the village. Yet, as the area of excavation constitutes the heart of the settlement mound, the mere fact that vacant areas were frequent horizontally and vertically, suggests that the village ground was not density built. The same may be deduced from the lack of repetitiveness of building over the same parcel. Rebuilding on the same plot was customary during Ilıpınar's early phases, when up to eight times parcels had been built over with similar dwellings (Roodenberg, 1995). In contrast, only three successive buildings were counted in the sounding of Menteşe: nsb1, 2 and 4 along and underneath the northern section, while the burnt house along and underneath the eastern section had neither predecessor nor successor. Yet, the heavy deposits of refuse and debris noticed in the sounding trench prove the nearby presence of habitation. The thin black lenses noted as stratum 2, which were visible all over the sections, give the impression that at that time the village ground was entirely taken into cultivation: no traces of building, neither debris, nor even adduction of earth. From the levels of stratum 1, which were dug in a much larger plan, no clear picture could be made about village development (supra).

From basal Menteşe evidence of five buildings was collected, four of which could be partially investigated horizontally. Walls found preserved up between 20 or 30cm maximum were made of pisé or mud slabs. Sometimes traces of wattle-and-daub were noticed on top. This may imply that these walls were mere foundations for wickerwork walling. Whether this is true for all walls can not be confirmed. Still, their preservation at equal height may be understood as an indication in that direction. However, the presence of a six-course high mudbrick wall in the southern section of the sounding trench demonstrates the simultaneous occurrence of different building modes in stratum 3. The orientation of the buildings is due NS-EW. The wall length of the various building plans runs from 5 to 6 m and corresponds with house plans from Ilıpınar X to VIII. Inner floors are plastered with yellow loam, as well as the exterior of the walls. The building plans exposed in the sounding area were too incomplete to conclude on the arrangment of the inner space, such as bins and ovens. The least one can say is that such installations occurred at the outside, as is evidenced by cooking and storing structures at the SW corner of building nsb2. The burnt house is the only building where heavy posts stood in the inner space. These posts, of which the biggest yielded a charcoal sample for radiocarbon deter-

mination, were thought to have supported the roof. An idea that can not be corroborated by the other buildings, because of their groundplans largely lay outside the sounding area.

## Burials

Altogether eleven burials were excavated during the field season of 2000. Added to the burials found in the previous season, a total of 20 individuals was reached. Since these human remains have already been extensively described (Alpaslan-Roodenberg, 2000; Alpaslan-Roodenberg e.a., 1999), we will confine ourselves to contextual information. Apart from this, a burial in the upper levels of the mound comprising few skeletal remains on a stone paved bed was erroneously ascribed to the Roman period (Roodenberg, 1999:29). We acknowledge colleague Jürgen Seeher's comment that it better suits the Early to Middle Bronze Age stone chamber tomb tradition known from the Eskişehir region.

Whenever visible, the contours of burial pits as a rule could be traces at skeletal level. It was rarely recognized at the surface from where the pit was dug down. Being aware from direct and indirect evidence that the depth of these pits varied between 50 cm to 1 meter below the surface, we are able to approximately assign the individual burials if not always with certainty to the distinct surface levels then at least to the corresponding (sub)period. As a result, we reckon ten burials to the upper stratum 1, none to stratum 2, and the remaining ten to stratum 3, provided that burial UH was dug from the top of stratum 3 as shown in the eastern section; UF probably likewise, while the other burials had been dug at various levels of the basal occupation debris. As has been shown above, a young woman and child (UK and UJ) were presumably inhumated below the floor of their dwelling. These graves as well as the double burial UM-UP, which contained the remains of a female of over 40 resting with a child aged between 10 and 14, showed evidence for funeral rituals as there were sheep horns and scapulas placed near the deceased. This is remarkably different from the infant corpses from basal Menteşe, which had been carelessly dumped in occupation debris. Burials with gifts also occurred among the group from stratum 1 : a man, aged between 31-34, with a clumsily made pot near his face, and a woman between 23 and 34 also with a pot, resting on wooden planking. Furthermore, a 3-5 years old child wearing a necklace with stone beads. The majority of the dead rested on their left side in a Hockey position with moderately to strongly flexed legs and hands joint near the face. All were primary burials. Although a considerable lapse of time distances the earliest burial from the last, maybe by a thousand years, no changes in funeral practice were perceived.

## All radiocarbon determinations (fig. 11)

*Stratum 3*

This stratum is referred to as 'basal Menteşe. Nearly 3 m of basal occupation deposits have been dated by nine radiocarbon determinations running from 7550±50BP to

7050±35 BP. Eight of them, since they were sampled in the sounding area, are projected on the sections (fig. 4). The results provide a regular distribution of determinations from the successive layers. Despite the fact that the number of processed samples comparing to the sequence of Ilıpınar is rather small for determining the age of a 3 m thick occupation deposit, this consistency adds quite some credit to the reliability of the overall age of basal Menteşe.

*Stratum 1*

To complete the chronological picture, the samples from stratum 1 were added. The upper half of the mound's stratigraphy (we leave flimsy Bronze Age and Roman vestiges out of this analysis) is represented by a thus-far badly understood Early Chalcolithic occupation of stratum 1, approximately determined between 6800 and 6600 BP (fig. 11). This is largely in accordance with the material evidence: pottery from stratum 1 horizons recalls on typological grounds pots and pans from Ilıpınar VA (Roodenberg, 1999:23). When comparing other categories such as architecture, Ilıpınar VA buildings were constructed with mud bricks, had plaster floors, built-in as well as exterior facilities for cooking and storing food. Nothing of this kind was clearly detected in stratum 1 at Menteşe, with the exception of a trunk of mud brick walling, a piece of plaster floor and the footing of a round oven. Otherwise the investigated zone seems to have been largely used as an open area.

*Stratum 2*

Since no suitable charcoal samples could be collected from the scorched surfaces of stratum 2, more precise Radiocarbon determinations than the *ante* and *post quem* datings from the previous and following strata delimiting this period of time between 6800 and 7050 BP are not available. During this interval or part of it, presumably the entire mound was arable land. Judging from the section drawings, tillage activities levelled the very top of stratum 3, as is exemplified by the missing right part of the uppermost floor in the northern section. Hence, the stratum 3 period may have lasted slightly longer than is expressed by the datings.

## A TECHNOLOGICAL AND TYPOLOGICAL ANALYSIS OF THE POTTERY
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### Material and methods

The study of the earliest Neolithic pottery of Menteşe includes the analysis of the manufacturing technique (shaping, finishing, decoration and firing technique) as applied by the potters and the analysis of the clay body used by them (fabric analysis). Next, a classification of the shapes of the pottery is presented. Finally, an impression is given of comparable pottery of Fikirtepe, Ilıpınar X and some other sites[1].

The entire ceramic assemblage that was studied includes a few more or less complete vessels and a good 1300 sherds stemming from the deep sounding, levels 126-130 (lower occupation levels), levels 110-125 (middle occupation levels), and levels 100-109 (upper occupation levels).

For the analysis of the manufacturing technique the complete vessels and – after a thorough inspection of the entire number of sherds – a representative sample of 700 diagnostic sherds (473 rim fragments (some with handles, lugs or knobs); 91 base fragments; 100 fragments of handles; 5 fragments of lids; and 18 decorated sherds; and 13 varia have been studied. To enable easy reference to the archaeological context (area, level and lot number) of each sherd, the sherds have been numbered.

For practical reasons, first a preliminary classification of the sherds was made in order to obtain an impression of the various vessel types present in the assemblage.

The pottery has its own typical characteristics. It has simple but well balanced forms. The profile of the body of the vessels is generally not carinated. Its red/brown to grey/brown surface was usually smoothed and then entirely or partly burnished. As a consequence, the structure of the vessels is strong and their permeability low. The nice highly burnished vessels could easily be cleaned. All in all the earliest earthenware vessels of Menteşe are qualitatively good products.

The shaping and decoration technique of the pottery was analysed through the explanation of the various technical features that could be observed. Since smoothing and burnishing largely erased the marks of the earlier primary forming technique, this was not an easy task. Another factor in this respect was the quality of the mineral-tempered clays that were used. Coils of these clays adhere very well. Therefore it was barely possible to notice traces of the coiling technique. Nevertheless, indications of this technique

[1] The investigations were carried out by the authors between 7 and 16 August 2002 at the excavation house of the Ilıpınar archaeological expedition at Gölyaka. Traveling expenses and subsistence were financed by the Foundation for History, Archaeology and Art History (SHW) which is part of The Netherlands Organization for Scientific Research (NWO). Refiring tests and detailed fabric analysis were executed in the Ceramic Laboratory of the Department of Pottery Technology of the Faculty of Archaeology at Leiden University. The pottery drawings were made by Bengü Kılıçbeyli; fielddrawings were adapted by Ben Claasz Coockson. We heartily thank collegue Mehmet Özdoğan who afforded us the opportunity to see the pottery of Fikirtepe stored in the building of the Faculty of Archaeology of the University in Istanbul.

could be found in the horizontal breaks following the joints of the coils. Cracks square to the joins of the coils and other details such as slight thickenings where the coils had been joined together form other indications. It goes without saying that the complete vessels and larger fragments yielded the most unambiguous information.

The colours of the sherds (inside, outside, and core) measured by using the Munsell Soil Color Charts (MSCC) (revised edition 1992) enabled us to judge the firing conditions. The firing temperature was estimated by measuring the hardness using the Mohs scale and refiring tests.

The fabric analysis included the study of the matrix, pores, and non-plastic inclusions of a sample of 50 sherds using a stereo-microscope (magnification 10-40x).

## Pottery technology

All pottery analysed was handmade. The following methods could be distinguished.

*Pinching*

Evidence of only a few pots made by this technique have been found (e.g. fig. 12: 1). The potter using the thumb of one hand made a hole in a piece of clay held in the other hand. Subsequently the wall was formed and made thinner by pinching the clay between thumb and the other fingers. In this way, the shape gradually became wider. During the process the small pot was turned while it was supported by the palm of one hand. This shaping technique can be recognized by the traces left by the fingerprints during the pinching process. The size of these small pots is limited by the size of the potter's hands. Using a clay that includes coarse-grained inclusions, the rupture around the grains during pinching can be problematic. To prevent this the potter has to work fast with a clay in a rather soft condition. For the same reason it is also possible to use a clay without many coarse-grained inclusions.

*Coiling*

First the base was made in one of two different ways. A piece of clay was flattened, either between both hands for the small bases or on a surface of porous material for the large bases. As a result, a flat or slightly curved base was obtained. The more pronounced convex bases were probably made in a mould. In the external surface of such a base small cracks are visible. These are the remains of larger cracks that are the result of pressing the clay into a mould, as the clay of relatively small forms is stretched out by this action. However, by contact of the soft clay paste with the hard surface of the mould these cracks were partly or completely filled up.

After the bottom section, either flat or curved, had been shaped, the remainder of the pot was made using coils of clay. Sometimes a mark of the join is visible on the edge of the base. The joins of the coils, however, are often invisible. In general, they are only

indicated by slight thickenings of the wall and by traces of strengthening the wall at these places by tapping, scraping, smearing and smoothing .

Usually, there is a gradual transition from the base to the body of the vessels. The construction of this flowing form is strong because it prevents the development of cracks in the base whereas the joined coils do not easily come loose due to shrinkage during drying and firing. Sometimes the base-body transition is rather angular on the outside as a result of scraping, tapping or adding some clay.

In a single case a ring of clay was added beneath the base (fig. 15: 5). The join was strengthened with some extra clay.

## Finishing technique

*Handles*

Some vessels were furnished with handles and grips (see fig. 16). The potters of Menteşe did not make the handles heavily tempered to reduce the shrinkage and to strengthen the attachment to the vessel's body as is often done in the case of the manufacture of storage jars in other archaeological periods elsewhere (Franken 1993/1994: 48). To attach the handles or lugs properly, the surface of the vessels of Menteşe was often roughened by cutting it slightly with a sharp object. After the pre-shaped handle had been attached, a small coil of clay was worked around the handle. This was then smoothed in order to produce a handle which would become part of the wall without any sharp edges indicating the joints. The handles were usually joined horizontally. They were attached before the pot was burnished.

*Burnishing*

After the vessels had been left to dry, most of them were carefully burnished by rubbing them with a very hard and smooth pebble. This was done in one direction, either horizontally or vertically. An even better result was obtained by doing it alternatively first in one and then in another direction. In any case it was not done arbitrarily. This certainly holds true for the external surface of the vessels since these are usually more intensively burnished than the inside. The inside was often carelessly burnished as a result of which lustreless strokes are visible between the glossy ones. This means that the main motivation for burnishing was esthetic rather than functional. It is also true that it is easier to burnish a round external surface more thoroughly than a concave surface on the inside.

The intensity of the polish varies from satin gloss to high gloss. There seems to be no direct relationship between the surface colour of the vessels and the intensity of the gloss. Although dark grey and black surfaces are very glossy all other colours are also shiny. The development of the gloss was dependent on various factors, such as the phase of burnishing, the fineness of the clay, and the absence of salts soluble in water.

The extent to which the vessel was dried determined the gloss of the object: the harder the clay the glossier the surface. As a rule, a rather dry clay gives the best results. However, if the clay is too dry or too hard scratches are formed.

A well burnished surface exists of flat orientated clay particles. During firing above ca. 950° C this structure changes as a consequence of which the gloss disappears. Coarse or protruding inclusions in the clay can disturb the gloss. This can be prevented by smoothing or 'pre-burnishing' the surface in a rather soft condition in advance. In this way the inclusions are pushed into the clay and covered with clay particles. The inside of the vessels was often only smoothed.

If there are non-plastic inclusions just beneath the burnished surface, little hair cracks are easily formed in the exterior surface during shrinkage as a result of drying and firing. In order to keep the gloss of burnish after drying and firing clay or water that contains too much salt should not be used. Finally, it should be noted that the post-depositional conditions can have an influence on decrease of the gloss. On the other hand, the gloss can increase by wiping the surface of the vessel after the burnishing procedure with a soft dry knot of wool or similar material.

## Decoration technique

Three types of decoration were distinguished: (1) incision; (2) appliqué; and (3) slip decoration (see fig. 17).

The first type of decoration includes a criss-cross pattern of lines that were incised after the burnishing procedure. Since the clay is already very dry and hard in this stage, the incised lines showed serrated edges. Especially, when the clay contained a lot of inclusions. The incised lines are not very deep. Sometimes they are filled in with a loam of a contrasting light colour. The deeper incised lines must have been made before the burnishing procedure when the clay was still soft.

In the case of appliqué decoration, small rolls or strips of clay were applied to the surface of the pottery.

An example of a slip decoration is found on a yellow-red fired rectangular bowl. Since the red and white firing zigzag slip lines are rather thick, they tend to crumble off.

## Firing technique

After 50 sherds (see fabric analysis) were refired in an electric kiln under oxidizing conditions at 750° C for half an hour, the sherds turned from weak red (2.5YR6/4) and red (2.5YR6/6/- 10R5/6) to yellowish red (5YR5/6) and strong brown (7.5YR5/6). This means that the clay that was used contained components of iron. The surface of the vessels is often in mottled colours. Almost every hue between black, grey, brown and red is found. This indicates the use of open bonfires in which the pottery was in direct contact with fire and fuel. Such a firing technique produced an alternating oxidizing, neutral or reducing atmosphere if no further action was undertaken. Sometimes the differences

within the bonfire were so big that a diversity of colours became visible in one and the same vessel. Wherever the surface is monochrome (black, brown or red), the potters obviously succeeded in keeping better control of the firing process.

In general a distinction can be made between rather dark and lighter hues. The interpretation of the colours of the surfaces and cores of the sherds resulted in a number of firing conditions (see appendix 1).

1. Fired under controlled heavy or less heavy reducing conditions. The vessels were completely enclosed by fuel, probably covered with sherds and smothered. As a result of the penetration of some oxygen during smouldering at the end of the firing process the atmosphere became neutral.
2. Initially fired in a reducing atmosphere and at the end of the firing process a short period of neutral/oxidizing atmosphere.
3. Fired under neutral conditions.
4. Fired under neutral conditions with a short oxidizing phase at the end.
5. Fired in a completely oxidizing atmosphere or almost oxidizing atmosphere.
6. Mainly fired under oxidizing conditions. At the end of the firing process the atmosphere was reduced by closing off the inflow of oxygen.
7. Mottled colours on the surface indicate an open fire under mainly neutral, neutral/oxidizing, or neutral/reducing conditions. Some vessels fired under mainly neutral oxidizing conditions with a dark reduced surface on the inside indicate that the vessels were put upside-down over the fuel in the bonfire. This method of piling results in a better and more even heating of the base parts. Consequently fewer vessels are spoiled by thermal shock during the process of firing and cooling down.

Hardness is an aspect of pottery which points to the original firing temperature. Mohs'hardness number 3 is prevalent. The original firing temperature could be estimated at approximately 700 - 850° C by measuring the hardness and shrinkage behaviour of the sherds after refiring in increments of increasing temperature.

**The manufacturing technique of some complete vessels**

Coiled restricted bowl with a flat base (fig. 12: 2). Since the building up of the wall in the coiling technique is easier as soon as the diameter is wider, the wall below is rather thick compared to the higher part. The wall below is also more irregular as a result of scraping the outside in a leather-hard condition in order to make the wall thinner. The upper part of the wall could be made thinner by pinching during forming. The surface on the outside was completely burnished. The inside was burnished until four centimetres below the rim. This means that it was not done for reasons of making the bowl less porous or impermeable for liquids. The direction of burnishing was mainly horizontal. The bowl was fired in a reducing atmosphere with a neutral end phase. For the colour description of this and next vessels see appendix 1.

Coiled restricted bowl (fig. 12: 3). The surface on the outside has been burnished completely, the inside till ca. one centimetre below the rim. The inner surface was smoothed. The bowl was fired in a reducing/neutral atmosphere.

Coiled unrestricted bowl with rather thick irregular wall (fig. 12: 4). The bowl has been burnished completely on the outside. The surface was roughened before attaching the handles. The bowl was fired in a lightly oxidizing atmosphere.

Box (fig. 12: 5] made in the coiling and pinching technique. The decoration was made by engraving and cutting the clay. The surface has been burnished in a mainly horizontal direction. The coulours indicate that the bowl was left in the ash layer after firing. Consequently no oxygen could reach the bowl's surface.

## Fabric analysis

A sample of 50 sherds was taken for fabric analysis using a stero-microscope (10 - 40x magnification).

In all cases the matrix is normal. Only one sherd has a very high amount of fine calcite grains, which caused a crumbly structure after re-firing at 750°C under oxidizing conditions.

The highest total amount of grains is ca. 30 %. Though rather high, such quantities of grains still give an acceptable result. Since organic fibrous temper was not added to the clay, the structure of all fabrics is normal. The sorting of the grains varies from good, moderate to bad. Good sorting means that all grains are of about the same type, size and shape. The mixture of clay and grains is homogeneous. Bad sorting means the opposite. Moderate sorting is a situation in which the grains do not differ very much. The shape of the grains varies from angular to rounded (A = angular; SA = sub-angular; SR = sub-rounded; R = rounded). The average upper grain-size limit was around 1.5 to 2 mm. Rather often, however, a small amount of coarser grains occurs. This points to a certain, probably partly natural selection of grain size, not by sieving. Sometimes grains with a diameter up to almost one cm do occur. It seems that such grains escaped from the control of the potter.

Considering the dominant grain types, four main fabric groups can be distinguished: (1) calcite (ca. half of the sample); (2) quartz (ca. one fourth of the sample); (3) calcite and quartz (ca. one sixth of the sample); (4) iron schists and micaceous schists (ca. one tenth of the sample). Groups 1-3 could be subdivided based on criteria, such as sorting grain size and quantity.

Calcite is a soft mineral, easy to cleave and vulnerable to erosion. Since sharp non-eroded calcite grains are present in large quantities they are probably added to the clay. It must have been a preferable temper material. Lumps of calcite can easily be crumbled by pounding them. Calcite tends to break in fine angular grains, which can be mixed through the clay. The calcite grains in the non-refired sherds proved to be completely intact and the calcite was still in its crystalline shape. Because such grains tend to decompose when heated

above 750° C, it was concluded that the ceramics were baked at rather low temperatures. This is confirmed by the original firing colours and the relative softness of the fabrics.

Quartz grains may have been an alternative to calcite, though quartz is much harder and therefore more difficult to break in small grains. Quartz grains may have been available in the form of sand deposits and in small quantities they are often already present in a lot of clays. Such is also the case with frequently occurring grain types like mica's, rock-fragments and compounds of iron or calcium. The grains are often angular and sub angular in shape. This points to a situation where clays are found not far from mountains and rock formations.

In some local deposits micaceous schists, micas and iron compounds occur in large quantities. Schists are rather soft and easy to cleave. Because of this characteristic and their behaviour under heat-shock, they have good properties as a tempering material. However, because the pottery of Menteşe was rather low fired, almost any other tempering material could be used.

From a technological point of view and in terms of pottery production, the differences in clay composition may have had some implications. Since no fibrous organic material was added to the clay, a certain amount of grains was necessary to improve the adhesive capacity and to avoid cracks during drying and firing.

## Classification of shapes

The sample contained a few complete/partly complete vessels (four in total). However, four possible basic shapes could be distinguished among the sherds analysed:

1. (Restricted) pots
   The inward angle of inclination of the vessel wall is more than ten degrees. The mouth diameter is less than the belly diameter. In general the ratio between mouth diameter and height of the pot is estimated in a minimal proportion of two to three.
2. Restricted bowls
   The inward angle of inclination of the wall is between zero and ten degrees. In general two types can be distinguished:
   a. deep bowl: ratio between mouth diameter and height of the bowl is approximately one to one;
   b. shallow bowl: ratio between mouth diameter and height is between three to two and two to one.
3. Unrestricted bowls
   The outward angle of inclination of the vessel wall ranges from zero to twenty degrees. In general two types can be distinguished:
   a. deep bowl: ratio between mouth diameter and height of the bowl is approximately one to one;
   b. shallow bowl: ratio between mouth diameter and height of the bowl is between two to three.

4. Boxes
   Rectangular shaped with vertical walls. Ratio between short side and long side estimated to be three to four. The boxes have four feet and may be provided on one of the sides with a rather large handle.

The various shapes will now be discussed in more detail. It has to be noted, however, that partly due to the size of the fragments, a fair amount of the sherds could not be ascribed with certainty to one of the vessel shapes. In total the sample consisted of 28 rim fragments (plus one partly complete vessel) of the unrestricted or open type and of and of 390 fragments (= two almost complete vessels of restricted or closed shape. Of the restricted rims only 52 could be ascribed to a shape.

*Pots*

There are no complete or even partly complete vessels of this type among the sample. Within this category three types could be distinguished.

The first type has a straight rim. The thickness of the vessel wall changes very little or increases slightly towards the lip. The lip is rounded or flattened (hole mouth, fig. 13: 1; 2; 3). In total 23 fragments could be allotted with certainty to this shape, of which 14 from levels 120-130. Most fragments had a wall thickness of ca 10 mm or slightly more, which is rather heavy in comparison to the common wall-thickness of the rim fragments in the sample (between 4 and 7 mm). Mouth diameters were not always easy to measure, but seem to vary between 17 and 30 cm. If this is correct it would mean that these hole mouth jars were fairly large sized.

In the second type the vessel wall changes very little towards the lip, but the lip is tapered interior, and may have a slight tendency to curve outward (fig. 13: 4; 5). One of the larger fragments in this category had the remains of a vertical pierced lug some four cm below the lip (fig. 13: 6). One fragment had a vertically pierced lug directly inside the rim (fig. 13: 7).

In the third type the rim was bent outwards at approximately two centimetres below the lip, thus creating a pseudo-collar. In the sample were three larger fragments of this type (fig. 13: 8). Real collars, which are stuck to the wall at a sharp angle, were not found in the sample analysed.

*Restricted bowls*

For fragments with a mouth diameter > 15 cm, which had broken of above the widest diameter of the belly, it is not possible to discern deep bowls from squat bowls. However, from the amount of fragments which are broken below the widest belly diameter, we get the strong impression that the squat bowl was more common. Two of the complete vessels belong to this type (fig. 12: 2; 3). Both are flat based. The vessel wall is thinning towards the rim, the rim turns slightly outwards and the lip is blunt. For most fragments, which can be described as either deep or squat bowl, this seems to be the basic shape (fig. 9: 9; 10; 11).

Mouth diameters range between 8 and ca 25 cm. Several fragments, which could be ascribed to the squat type, were oval shaped.

The complete bowls did not have handles. However, among the fragments which can be ascribed to squat bowls were three fragments with a vertically pierced lug right, placed right above the largest belly diameter (fig. 13: 12 and fig. 14: 1). Of these fragment fig. 14: 1 is strongly oval shaped: however, the knob is placed just beside the apex. This could possibly be compared to an oval bowl with four symmetrically opposed vertically pierced knobs from Fikirtepe; this bowl has at one apex remains of a kind of "panhandle" (Özdoğan 1999: fig. 33). Another oval rim fragment had a horizontally pierced knob (fig. 14: 2), again placed right above the largest belly diameter. Some of the rims have a 'mending hole' just below the lip (fig. 14: 3; 4). From the levels 126 not one fragment of the restricted rims could with certainty be ascribed to the squat bowl type.

*Unrestricted bowls*

One of the partly complete vessels belongs to this type (fig. 12: 4). It is slightly oval shaped and has a fairly irregular wall, which tends to thicken towards the rim. The lip is blunt. It has a plano-convex base (the change form base towards wall is rounded, rather than angular). It has the scar of a lug attachment some 6 cm below the lip.

Again, for the smaller fragments with a mouth diameter >15 cm, it is not possible to ascribe them to either deep or shallow type. However, the curvature of some of the sherds (fig. 14: 5; 6; 7) seems to indicate the mouth-diameter/height ratio of the shallow shape. Wall-thickness lies in general between 4 and 7 mm; mouth diameter varies between 6 and 22 cm. This probably is also true for the one fragment (fig. 14: 8 – with missing lip), which has a vertically pierced lug just below the rim.

*Boxes*

One of the partly complete vessels belonged to a rectangular box (fig. 12: 5). Long side 15 cm, short side ca 11 cm. On the bottom the scars of two of the leg are visible. At the corner of the long side the scar of a possible handle can be noticed in the middle of the wall, near the corner towards the left small side of the box. Judging by the position of the scar this should have been a horizontal placed handle (opening vertical). Both short sides are decorated in a pattern of vertical bands with with excised triangles.

Among the sample are seven more fragments of boxes. Six of them are decorated with incised line patterns, at least four of them consisting series of cross-hatched triangles (fig. 15: 1: 2; 3; 4). One of the boxes had a painted decoration zig-zag lines in white and red (the flaky white slightly thicker than the red).

Not among our sample (it being at the Iznik museum), but also discovered during the Menteşe 2000 excavations is a complete square box with four feet, a horizontal handle and again incised decorations in a cross-hatched triangle pattern on the sides (fig. 5a).

*Base shapes*

The sample contained a fair amount of bases. With the exception of one ring base fragment (fig. 15: 5) these were all flat. Among these two types could be distinguished:

1. a flat base with rather sharp angles towards the wall of the pot (e.g. fig. 12: 2; 3 and fig. 15:6; 7; 8; 9). The sample contained 32 fragments of this type.
2. a plano-convex base with curved angles towards the wall of the pot (e.g. fig. 15: 10; 11; 12; 13). Several of the bases of the first type were more or less oval in shape. The sample contained 56 fragments of this type.

*Handles*

The sample contained about hundred handle fragments (including scars or broken fragments). In general one can distinguish three types:

1. Pierced knobs.
   These included rather small knobs (fig. 16: 1; 2) and more boldly shaped larger knobs, which are occasionally slightly angular (fig3488), elongated (fig. 16: 3; 4) – resembling tubular lugs - or slanted (fig. 16: 5; 6). Although in general they seem to be vertically pierced, but as we have seen earlier, there is at least one example which was pierced horizontally. In general they are placed slightly above or on the belly diameters of restricted shapes. As stated by L. Thissen (Roodenberg and Thissen, 2001: 13) strings were connected through the (vertically) pierced lugs, to enable suspension, transport and – possibly tight covering by lids (pottery, cloth, wood or hide). He remarks that pots in general have four knobs, placed symmetrically opposing. In fact, among the five complete(d) vessels from the Menteşe 2000 excavations, which are at present in the Iznik museum is one pot with four symmetrically opposed vertically pierced knobs, placed slightly above the belly diameter as well as a miniature bowl/cup with four vertically pierced knobs, placed on the belly diameter. The sample contained around 36 fragments of this type (broken fragments and pierced knobs on rim fragments not included).
2. Lugs.
   Either (vertically) pierced (fig. 16: 7) or not pierced (fig. 16: 8; 9). They were placed horizontally, probably, as was the case with the pierced lugs, slightly above or on the belly diameter of the vessel. Thissen (as above, p 16) states for Ilıpınar that lug handles occur solely on pots (they have two opposing lugs). Our sample contained in total 15 lugs.
3. Large handles
   The sample contained one fragment (fig. 16: 10). A large flattened strap handle, (length ca. 6,5 cm) placed vertically (with the opening horizontally), probably on a box or large cup (cf. Özdoğan 1999: fig. 5 and fig. 30).

*Decorated fragments*

The sample contained in total 16 fragments with incised decoration. Of these 14 fragments with shallow incised cross-hatched patterns, included the seven fragments of decorated boxes described above. This decoration type was, however, not exclusively used on boxes (fig. 17: 1; 2). It may have occurred also in other 'patterns' than the triangle patterns

found on the boxes. In some cases the incised lines showed traces of having been filled in with a lighter clay-slip. Two fragments have a more deeply incised linear decoration (fig. 17: 3; 4). Two fragments are decorated with a pattern of excised vertical parallel grooves (fig. 17: 5).

There was one fragment of appliqué decoration (fig. 17: 6) – a rather shallow, large crescent. As described under the heading boxes, the sample included one fragment, actually two pieces, of painted decoration a pattern of parallel running zigzag lines, executed in a combination of red and white on a buff surface (fig. 17: 7). The white is slightly thicker and flaky.

*Varia*

The sample included one fragment of a sieve (fig. 17: 8), four fragment of flat, disc-shaped lids with holes (to attach the string through) (fig. 17: 9; 10; 11), two fragments of raised lids, one spoon-like object, which actually may also be a handle of some sort (fig. 17: 12), one ceramic ring (fig. 17: 13) and one fragment of a spoon handle (with part of the spoon) (fig. 17: 14). This last fragment could also be the handle of a spouted cup. This observation is based on the fact that among the complete vessels from the Menteşe 2000 excavation, which are in the Iznik museum, is a spouted cup/sauceboat with a similar kind of handle.

## Stratigraphic distribution

One of the goals of our research was to see how the pottery of basal Mentese, excavated in 2000, could be placed in the general (Neolithic) sequence of Northwest Anatolia. The radiocarbon dates indicate that the lowest levels (126-130) predate Ilıpınar X by some 400 years. To make the general comparison, we should first see if within the Menteşe sample a 'development' could be noticed. In the sample we studied the pottery from levels 126-130 (the oldest occupation levels found at Menteşe), levels 120-125 (middle-lower occupation levels), levels 110-119 (middle-upper occupation levels) and levels 100-109 (upper occupation levels) showed no marked distinction in development of manufacturing techniques and shapes. However, some slight differences in the shapes could be noticed. Although the total number of rim fragments from the levels 120-130 is certainly far smaller than that from 100-119, the number of rim fragments which could be ascribed to plain, rather heavy walled hole mouth shapes is certainly larger (14 opposed to nine). Fragments of boxes do not occur in levels 120-130. I have the slight impression that highly burnished, really black fragments were very rare in levels 120-130. Incised decoration was also found less in the lowest levels – but here we should not forget that there is a number bias. Lugs and pierced knobs are very rare in the levels 129-130 and common in levels 100-119.

## Comparison with other sites

During our work in 2002 we also visited the University of Istanbul, to have a look at

the pottery from Fikirtepe, excavated by Bittel in 1956 (Bittel, 1969), which has been studied in extenso by Mehmet Özdoğan. On the whole we noticed that the shape repertories of Menteşe and Fikirtepe showed a strong resemblance. Özdoğan states that in Firkitepe the presence of a "lower" and an "upper" horizon is evident, representing the archaic and classical phases of the culture (Özdoğan, 1999: 213). As is the case in Menteşe there is no clear break between the two phases and the change in the pottery is general. According to Özdoğan the predominant shapes in the Archaic phase are hole-mouth vessels with simple profiles. Due to the large amount of restricted rim fragments which could not be ascribed to a certain shape (23 in levels 126-130 and 49 in levels 120-125) it is not possible to state that the same was true for Menteşe, but it certainly can not be excluded. In the archaic phase at Fikirtepe rectangular vessels (boxes) occur, but are rare and not well developed. At Menteşe boxes did not occur at all in the lower levels (120-130). Decoration is sparse in the Archaic phase at Fikirtepe and when it occurs it is always of the shallow incised type. In the Classical Fikirtepe phase hole-mouth vessels diminish in number, being gradually replaced by typical "S"-profile bowls and jars. Although we are once again hampered by the large amount of restricted rim fragments which could not be ascribed to a certain shape, this may hold true, too for Menteşe (cf both complete bowls, as well as another bowl from Menteşe 2000, at present in the Iznik museum – certainly no classical "S"-profiles, but one can see clearly how the "S"-shaped profile would eventually develop out of this shape). Incised decoration and rectangular vessels (boxes) are relatively more common during the Classical phase at Fikirtepe. As we noticed before, this holds certainly true for the higher levels at Menteşe. Özdoğan noticed in the Classical phase also the introduction of a new ware type, represented by well burnished sherds with an almost jet black surface. I am not entirely sure whether this ware type is similar to the highly burnished, really black rim fragments, which occur in the higher levels of Menteşe.

On the whole the repertory of Menteşe can be compared favourably to the Archaic and Classical phases of Firkirtepe, as illustrated in Özdoğan, 1999 (figs. 5, 28,30,31, 32,33 and 34).

As stated by Özdoğan and noticed also in our earlier studies of the Ilıpınar material, typical Fikirtepe pottery occurs at Ilıpınar X and IX. Although we realise that the C-14 dates indicate that the upper levels of Menteşe are slightly older than (or at the most contemporaneous with) Ilıpınar X, we still made a comparison with Ilıpınar X, as analysed by L. Thissen (Thissen, 2001: 9 ff.). He states that the basic shape of Ilıpınar pots from Phase X is a squat, rather than globular hole-mouth with a flat base and two mutually exclusive sets of handles. The large amount of restricted rim fragments in the Menteşe sample which could not be ascribed with certainty to a shape makes it not possible to say whether this holds true for Menteşe, too. We have the strong impression that indeed squat forms rather than globular were the basic shape in Menteşe, but it seems that there were a fair amount of vessels which did not possess handles. It should however be noted that there exist differences in terminology, especially where shape description is concerned, e.g. Thissen classifies the (oval) bowl as an open form. However, he states (Thissen, 2001: 18) that he assumes that "most likely, many open forms possess restricted or slightly restricted hole-mouth shaped rims, as is clear

from the Phase X pottery from the Section Trench. On the basis of the Section Trench pottery, such 'hole-mouth bowls' are always oval shaped, have usually a small 'bead-rim' and never possess handles of any kind. In shape they are not clearly differentiated from hole-mouth pots, which are, however, never oval mouthed, and always possess handles." The open forms he discerned in his analysis are those that are clearly different from hole-mouth pots. Still, some of those would have been classified in our description as restricted bowls (as are indeed our two complete bowls). The general shape repertory of Ilıpınar X as seen in the illustrations (Thissen, 2001: figs. 6, 7,9, 10 and 11) resembles the shape repertory of (the upper levels of) Menteşe. The Ilıpınar X pottery differs, however, from the Menteşe pottery by the fact that chaff-temper was present from the outset in the earliest pottery at Ilıpınar (i.e. phase X). At Menteşe no organic material had been added to the paste, not even in the lowest levels.

Regarding decoration we notice in the Ilıpınar X sample the shallow incised cross-hatches patterns (Thissen, 2001: fig. 8:9). The decoration on the leg fragment of a box (fig. 14) is slightly different from the decorations as found at Menteşe, since it combines incised and punctured decoration. The Ilıpınar X sample also includes the excised line decoration, which occurred at Menteşe. The box fragment with painted decoration remains a riddle. The Ilıpınar X sample contained one vessel with painted decoration, executed in red linear bands on a crackly white slip; according to Thissen this certainly was an import. The Menteşe fragment seems, as far as regards paste, not different from the other pottery found at Menteşe. The box shape belongs to the repertory, but for the decoration we are hard put to find equivalents. At Hoca Çeşme (II) as well as at Aşağı Pınar linear painted decoration occurs, executed in rather flaky white slip; motifs include the wavy bands. However, the dating for these phases is later than that of Menteşe. There seems to be no strong resemblance to the painted decoration from Central Anatolia, which seems in general better executed. Here it should be noted that we have to go largely by colour illustrations, or the better fragments, which we have seen at Istanbul University.

## Conclusion

The first inference to be drawn from the above is that basal Menteşe was the oldest village in Northwest Anatolia according to radiocarbon datings. The second, that not only its chronology closely precedes Ilıpınar's 600-years-long sequence, but also provides, in combination with the latter, a thousand-years-long framework for the benefit of site-to-site artifact comparison. Radiocarbon dating is in our opinion a far better method for the distinction of chronological relations than the uneradicable habit of comparing 'goodies' from different settlements. On the other hand, when absolute datings are lacking, as in the case with the Fikirtepe group of sites, technological and typechronological study of the material culture is the only alternative. Since handmade pottery of Fikirtepe has not been studied technologically, no conclusions can be drawn in this respect. The pottery of Ilıpınar X evinces the same forming, finishing and firing techniques as those used by the potters of Menteşe (van As and

Wijnen 1995). As in Menteşe, a high percentage of the pottery of Ilıpınar X was burnished. Only one remakable technological difference could be detected. Unlike in Ilıpınar X the potters of Menteşe did not add organic material to the clay body as temper. Regarding the shapes, we can state that the pottery repertories from Menteşe and Fikirtepe show strong parallels and that at Menteşe we probably see a development from the Archaic phase of Fikirtepe into the Classical phase. Ilıpınar shows parallels with the Classical phase as well.

The afore induces to the construction of a tentative chronological chart linking basal Menteşe to Ilıpınar and Fikirtepe, where the relative data seem to fill the absolute framework as follows:

| basal Menteşe | Ilıpınar | Fikirtepe | cal. BC.[2] |
|---|---|---|---|
| — | phase X | classical | 6000 |
| upper | | classical | 6200 |
| middle | | archaic | — |
| lower | | archaic | 6400 |

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## Appendix 1

In the colour description (MSCC) the surface on the inside/outside and core is respectively indicated as I, O and C.

1. Reducing.
[706]
I, O and C 10YR2/1 (black)

[445; 617]
I 10YR3/2 (very dark greyish brown) - 10YR3/1 (very dark grey);
O 10YR3/2 (very dark greyish brown) - 10YR3/1 (very dark grey);
C 10YR4/2 (dark greyish brown).

2. Initially reducing, at the end neutral/oxidizing.
[673]
I 10YR6/4 (light yellowish brown)
O 10YR5/6 (yellowish brown)
C 10YR3/1 (very dark grey)

3. Neutral
[409; 541]
I 2.5Y6/3 (light yellowish brown);
O 2.5Y6/2 (light brownish grey) - 2.5Y6/1 (grey);
C 2.5Y5/1 (grey).

4. Neutral, at the end a short oxidizing phase.
[644]
I 2.5YR6/3 (light yellowish brown);
O 10YR5/6 (yellowish brown);
C 10YR4/4 (dark yellowish brown).

5. Oxidizing.
[12; 183]
I 2.5YR5/6 (red);
O 2.5YR5/6 (red);
C 5YR6/4 (light reddish brown).

6. Mainly oxidizing, at the end reducing.
[387]
I 10YR4/1 (dark grey) - 5YR5/4 (reddish brown);
O 10YR4/1 (dark grey) - 5YR5/4 (reddish brown)-
5YR6/6 (reddish yellow);
C 5YR6/6 (reddish yellow).

7a. Mainly neutral.
[348; 389]
I 10YR3/1 (very dark grey) - 10YR6/3 (pale brown);
O 10YR5/4 (yellowish brown);
C 10YR5/1 (grey) and 10YR5/3 (brown).

7b. Neutral/oxidizing.
[391]
I 5YR5/4 (reddish brown) - 10YR3/1 (very dark grey);
O 5YR5/4 (reddish brown) - 10YR3/1 (very dark grey);
C 5YR6/6 (reddish yellow).

7c. Neutral/reducing.
[209]
I 5YR5/4 (reddish brown)/ 5YR4/2 (dark reddish grey);
O 5YR5/4 (reddish brown)/ 5YR4/2 (dark reddish grey);
C 7.5YR4/2 (brown)/ 7.5YR4/1 (dark grey).

Colour description of some complete vessels:

[707] I 7.5YR5/1 (light brown) - 7.5YR5/2 (grey) and 7.5YR5/4 (brown);
O 10YR6/4 (light yellowish brown) - 7.5YR6/6 (reddish yellow) and 7.5YR6/6 (light brown);
C 10YR5/1 (grey) - 10YR4/1 (dark grey).
[708] I 7.5YR6/6 to 7/6 (reddish yellow);
O 5YR6/6 (reddish yellow) - 7.5YR7/6 (reddish yellow);
C 7.5YR7/6 (reddish yellow) - 7.5YR7/1 (light grey).
[709] I 10YR3/1 (very dark grey) - 10YR5/4 (yellowish brown);
O 1 0YR3/1 (very dark grey) - 10YR3/2 (very dark greyish brown) - 10YR5/4 (yellowish brown);
C 5YR5/3 (reddish brown) - 5YR3/1 (very dark grey).
[710] I 10YR6/2 (light brownish grey) - 5YR6/3 (light yellowish brown) - 10YR2/1 (black);
O 10YR6/3 (pale brown) - 10YR5/2 (greyish brown) - 10YR2/1 (black);
C 10YR5/2 (greyish brown) - 10YR6/3 (pale brown).

## Appendix 2

### Calcite

[9]Dominant grain types: calcite (black grains = carbonaceous calcite); feldspar (sporadically: hematite; siltstone)
Sorting: moderate
Shapes: A
Amount of grains: ± 30 %
Dominant grain size: 50 μ ≤ α ≤ 1000 μ

[322] Dominant grain types: calcite
Sorting: moderate
Shapes: A - SA
Amount of grains: 35 %
Dominant grain size: 50 μ ≤ α ≤ 500 μ

[361] Dominant grain types: calcite
Relatively few: iron oxide siltstone; siltstone
(sporadically: quartz; iron oxide siltstone)
Sorting: moderate.
Shapes : A - SA; some R.
Amount of grains: ± 35 %
Dominant grain size: 50 μ ≤ α ≤ 1000 μ

**

[34] Dominant grain types: calcite
(sporadically: basalt; quartz; siltstone; hematite)
Sorting: moderate.
Shapes: A - SA.
Amount of grains: 25 to 30 %
Dominant grain size: 50 μ ≤ α ≤ 1500 μ

[51] Dominant grain types: calcite
undissolved clay grains; siltstone; iron oxide- siltstone
Relatively few: quartz
(sporadically: basalt; iron schists)
Sorting: moderate.
Shapes: A - SA and R - SR.
Amount of grains: ± 15 %
Dominant grain size: 50 μ ≤ α ≤ 1000 μ (incidentally up to 2 mm.)

[196] Dominant grain types: calcite
Relatively few: micaceous schists
Sorting: moderate
Shapes: A - SA, some SR
Amount of grains: 35 %

stone
(sporadically: quartz)
Sorting: moderate to good
Shapes: A (calcite cleavage)
Amount of grains: ± 25 %
Dominant grain size: 50μ ≤ α ≤ 1000 μ

[528] Dominant grain types: calcite;
Relatively few: iron oxide concretions
(sporadically: quartz)
Sorting: moderate to bad
Shapes: A - SA.Amount of grains: ± 25 %
Dominant grain size: 50 μ ≤ α ≤ 1000 μ

[552] Dominant grain types: calcite
Relatively few: quartz
(sporadically: hematite; iron oxide siltstone nodules; siltstone)
Sorting: moderate
Shapes: A - SR
Amount of grains: ± 25 %
Dominant grain size: 50 μ ≤ α ≤ 2000 μ

[589] Dominant grain types: calcite; siltstone; undissolved clay grains
Relatively few: hematite; quartz; limestone; rock fragments
(sporadically: iron oxide concretions)
Sorting: moderate
Shapes: SA - SR
Amount of grains: 15 - 20 %
Dominant grain size: 50μ ≤ α ≤ 1500 μ

Relatively few: siltstone; quartzite; quartz
(sporadically: iron oxide concretions)
Sorting: moderate
Shapes: A - SA and R.
Amount of grains: 25 - 30 %
Dominant grain size: 50 μ ≤ α ≤ 1500 μ

[625] Dominant grain types: calcite; limestone
(sporadically: quartz)
Sorting: moderate.
Shapes: A - SA.
Amount of grains: 25 - 30 %
Dominant grain size: 50 μ ≤ α ≤ 1500 μ

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[610] Dominant grain types: calcite;
siltstone nodules; iron oxide-siltstone nodules
Relatively few: rock fragments withquartz; siltstone; haematite
(sporadically: basalt)
Sorting: moderate
Shapes: A - SA, some R
Amount of grains: ± 25 %
Dominant grain size: 50 μ ≤ α ≤ 2000μ

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Dominant grain size: 50 μ ≤ α ≤ 1500 μ

[393] Dominant grain types: calcite
Relatively few: undissolved clay lumps (mudrock)
(sporadically: limestone; iron oxide siltstone nodules; siltstone)
Sorting: moderate
Shapes: A and R - SR.
Amount of grains: 25 - 30 %
Dominant grain size: 50 μ ≤ α ≤ 1500 μ

[38] Dominant grain types: calcite
(sporadically: iron oxide siltstone concretions; quartz; limestone)
Matrix / pores: crumbly!
Sorting: moderate to good.
Shapes: A - SA
Amount of grains: ± 35 %
Dominant grainsize: 50 μ ≤ α ≤ 1000 μ

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[223] Dominant grain types: calcite; basalt; limestone
Sorting: moderate - bad
Shapes: A - SA and SR.
Amount of grains: 35 %
Dominant grain size: 50 μ ≤ α ≤ 1000 μ

## Quartz

[25] Dominant grain types: quartz
(sporadically: iron oxide concretions; iron oxide siltstone; basalt)
Sorting: good.
Shapes: SA - SR.
Amount of grains: ± 15 %
Dominant grain size: 50 μ ≤ α ≤ 500 μ

[174] Dominant grain types: quartz; siltstone; iron oxide siltstone; rock fragments
Relatively few: iron ox. concretions
(sporadically: basalt)
Sorting: moderate - good
Shapes: A - SA
Amount of grains: ± 15 %
Dominant grain size: 50μ ≤ α ≤ 500 μ

[351] Dominant grain types: quartz;
sandstone; siltstone iron oxide concretions; iron oxide siltstone.
Relatively few: calcite, some black; quartzite; iron schists
Sorting: moderate.
Shapes: SA - SR and A.
Amount of grains: ± 25 %
Dominant grain size: 50 μ ≤ α ≤ 3000 μ (incidentally up to 7 mm.)

[95] Dominant grain types: quartz
(sporadically : iron oxide concretions; feldspar ; siltstone
Sorting: moderate
Shapes: A - SA
Amount of grains: ± 25%
Dominant grain size: 50μ ≤ α ≤ 2000 μ

[700] Dominant grain types: quartz (various types; siltstone (various types; hematite; iron oxide concretions
(sporadically:feldspar; basalt; sandstone)
Sorting: moderate
Shapes: A - SA; some SR
Amount of grains: ± 15 %
Dominant grain size: 50μ ≤ α ≤ 1000 μ

[387] Dominant grain types: quartz (several types)
(sporadically: greyish siltstone; rock fragments)
Sorting: moderate.
Shapes: A - SA.
Amount of grains: 20 - 25 %
Dominant grain size: 50 μ ≤ α ≤ 2000 μ (incidentally up to 4 mm.)

[4] Dominant grain types: quartz
(several types); basalt
Relatively few: siltstone and iron oxide concretions; micaceous schists
Sorting: moderate - bad
Shapes: A - SA.
Amount of grains: ± 25 %
Dominant grain size: 50 μ ≤ α ≤ 2000 μ

[105]Dominant grain types: quartz
Relatively few: basalt; iron ox. siltstone; mica; iron schists; calcium carbonate
(sporadically: hematite; basalt; siltstone)
Sorting: moderate
Shapes: A - SA and SR
Amount of grains: ± 30 %
Dominant grain size: 50μ ≤ α ≤ 1000 μ

## Quartz and calcite

[102] Dominant grain types: quartz; mica (muscovite); schists; calcite
Relatively few: hematite; basalt
Sorting: moderate to good
Shapes: A - SA
Amount of grains: ± 30 %
Dominant grain size: 50 μ ≤ α

[100] Dominant grain types: calcite; quartz; mica; micaceous iron schists
Relatively few: iron oxide nodules; iron oxide siltstone; siltstone; basalt
Sorting: moderate
Shapes: A - SA and R

[456] Dominant grain types: quartz (milky); calcite; iron oxide siltstone
Relatively few: rock fragments; siltstone. (Sporadically: hematite)
Sorting: moderate
Shapes: A - SA

≤ 1000 μ (incidentally up to 3 mm.)

[234] Dominant grain types: calcite; quartz
(sporadically: iron oxide concretions; siltstone)
Sorting: moderate - good
Shapes: SA - SR, some A
Amount of grains: ± 30 %
Dominant grain size: 50 μ ≤ α ≤ 1000 μ

Amount of grains: ± 25 %
Dominant grain size: 50 μ ≤ α ≤ 1500 μ

[484] Dominant grain types: calcite; iron oxide siltstone; quartz; iron manganese nodules; hematite
Sorting: moderate
Shapes: A - SA and R
Amount of grains: ± 25 %
Dominant grain size: 50 μ ≤ α ≤ 2000 μ

Amount of grains: ± 25 %
Dominant grain size: 50μ ≤ α ≤ 2000 μ

[644] Dominant grain types: calcite (some blackish); quartz (several types); siltstone
Sorting: moderate
Shapes: A - SA
Amount of grains: ± 25 %
Dominant grain size: 50 μ ≤ α ≤ 1500 μ (incidentally 4 mm.)

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## Schists

[129] Dominant grain types: micaceous
schists; mica's (blue greenish muscovite
and biotite types)
Relatively few: quartz; siltstone;
iron oxide siltstone
(sporadically: calcite)
Sorting: moderate
Shapes: SA - SR and shivers
Amount of grains: 25 to 30 %
Dominant grain size: 50 μ ≤ α ≤ 1500 μ

[162] Dominant grain types: iron schists
(very dark brown; most of them
micaceous and very fine dense structured)
(sporadically: calcite; quartz)
Sorting: moderate
Shapes: A - SA.
Amount of grains: ± 30 %
Dominant grain size: 50 μ ≤ α ≤ 1500 μ

[189] Dominant grain types: micaceous iron schists (contains also basalt and calcite in combination with mica)
Relatively few: calcite; limestone
(sporadically: basalt)
Sorting: moderate
Shapes: A - SA (schists with plate structure)
Amount of grains: 25 to 30 %
Dominant grain size: 50 μ ≤ α ≤ 1500 μ

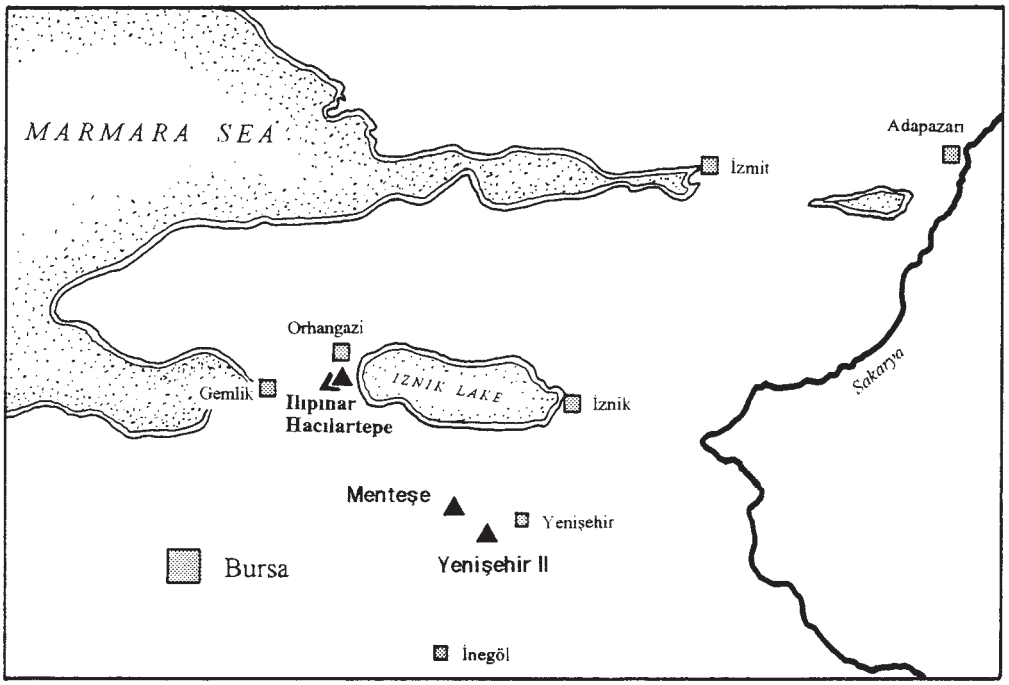


Fig. 1. Regional map

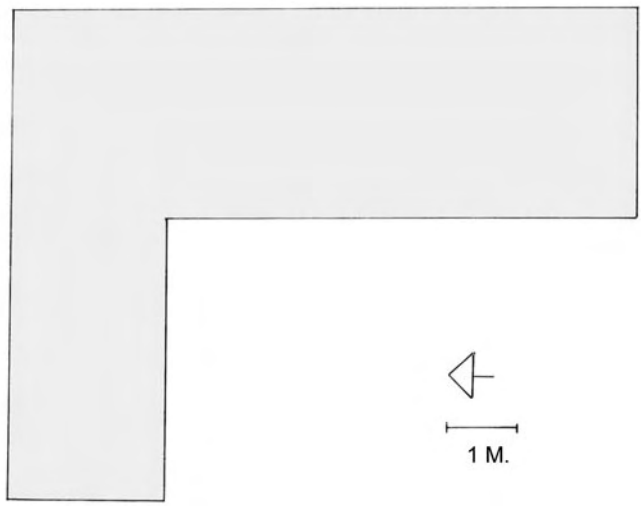


Fig. 2. Shape of sounding trench 2000

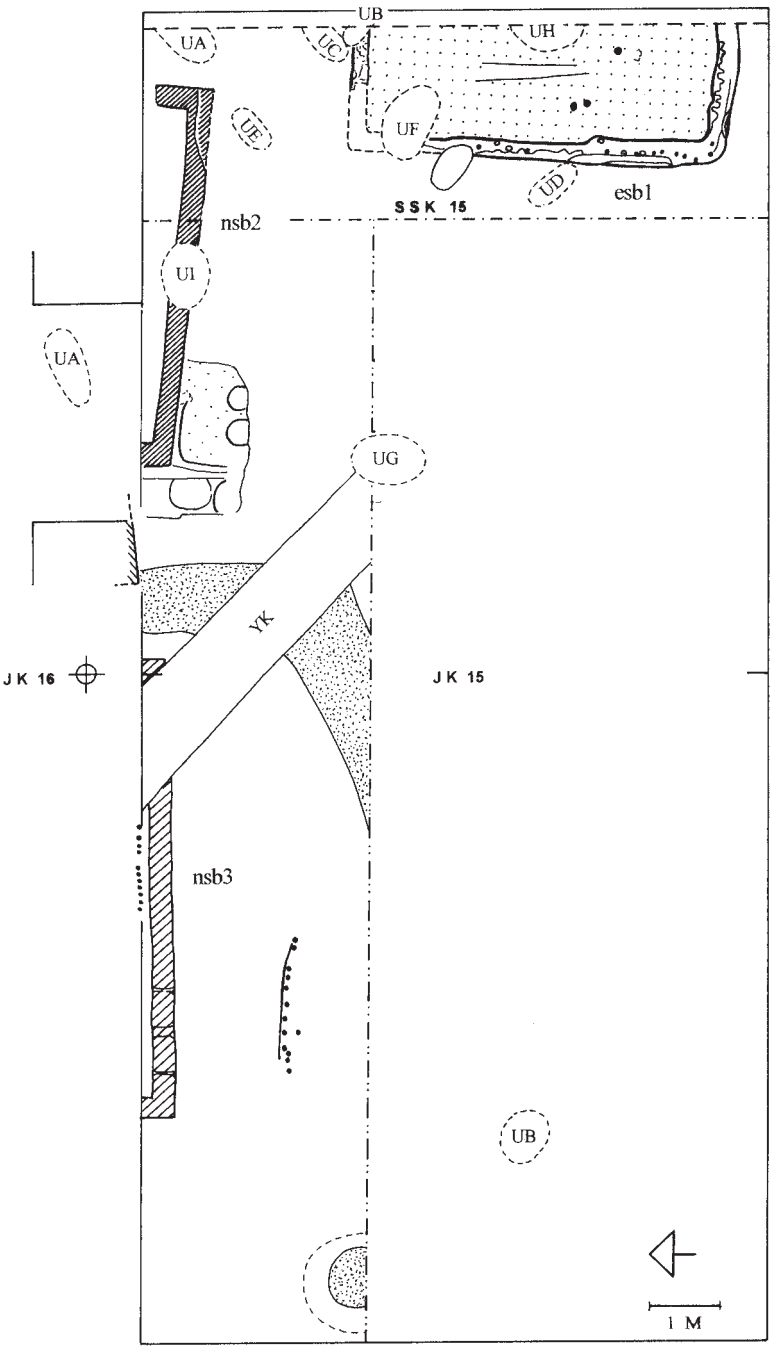


Fig. 3. Plan with three buildings; top of stratum 3.

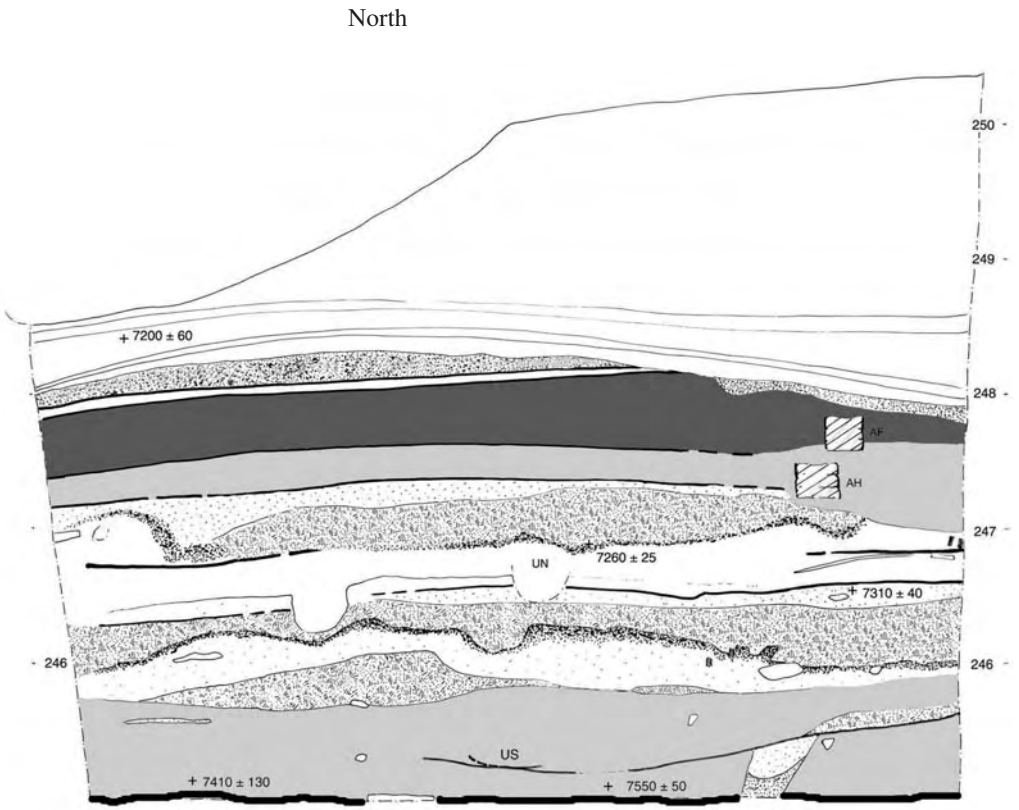
North
250
249
248
247
246
246
+ 7200 ± 60
AF
AH
UN
7260 ± 25
+ 7310 ± 40
US
+ 7410 ± 130
+ 7550 ± 50

Fig. 4. ⟶

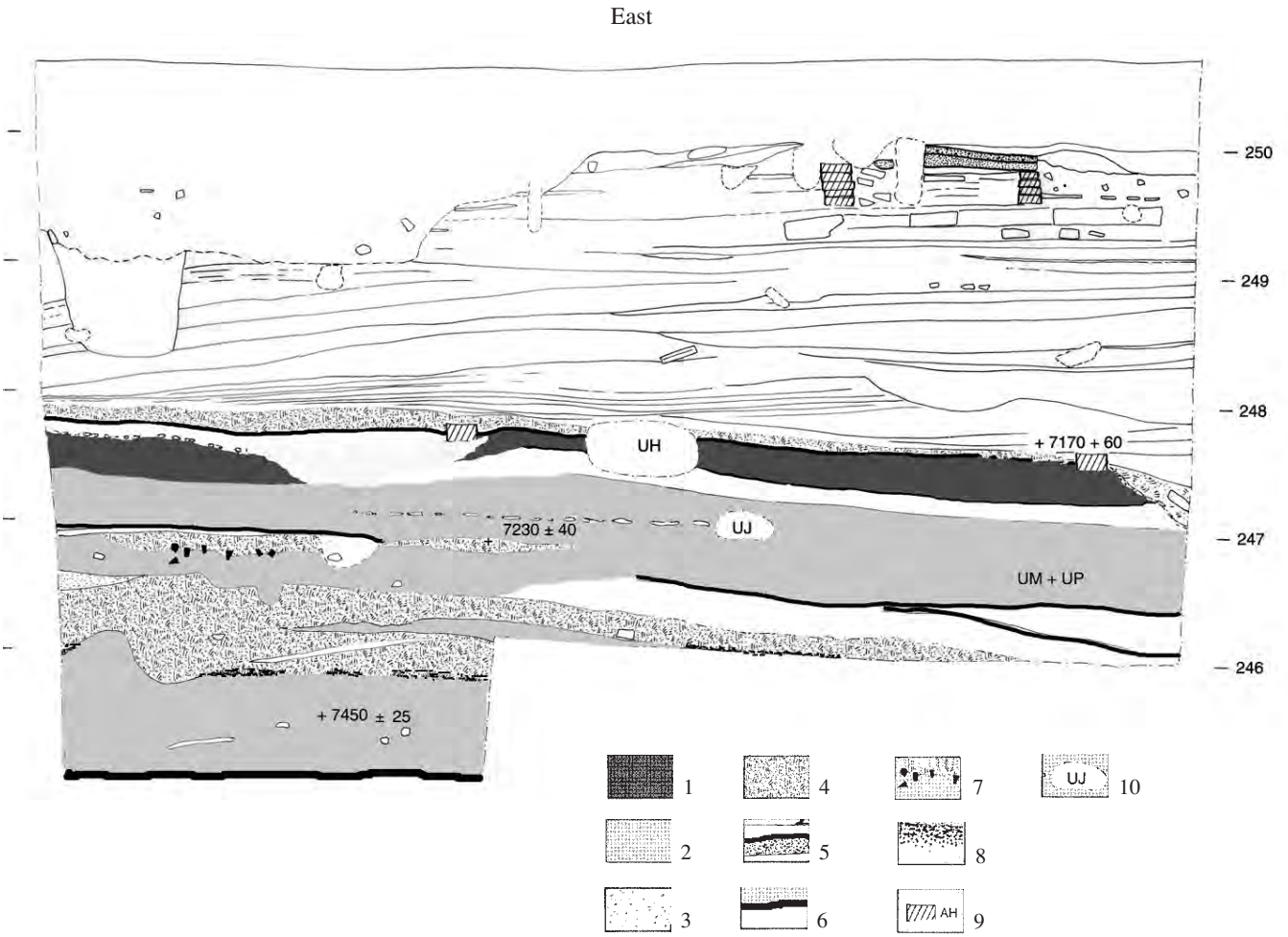


Fig. 4. North and East sections. Legenda: 1 - middle brown; 2 - middle grey; 3 - brownish mottled; 4 - red burnt mottled; 5 - floor level; 6 - top of virgin soil; 7 - charcoal pieces; 8 - ash and charcoal level; 9 - wall section; 10 - burial


Fig. 5a. Young woman's burial UK

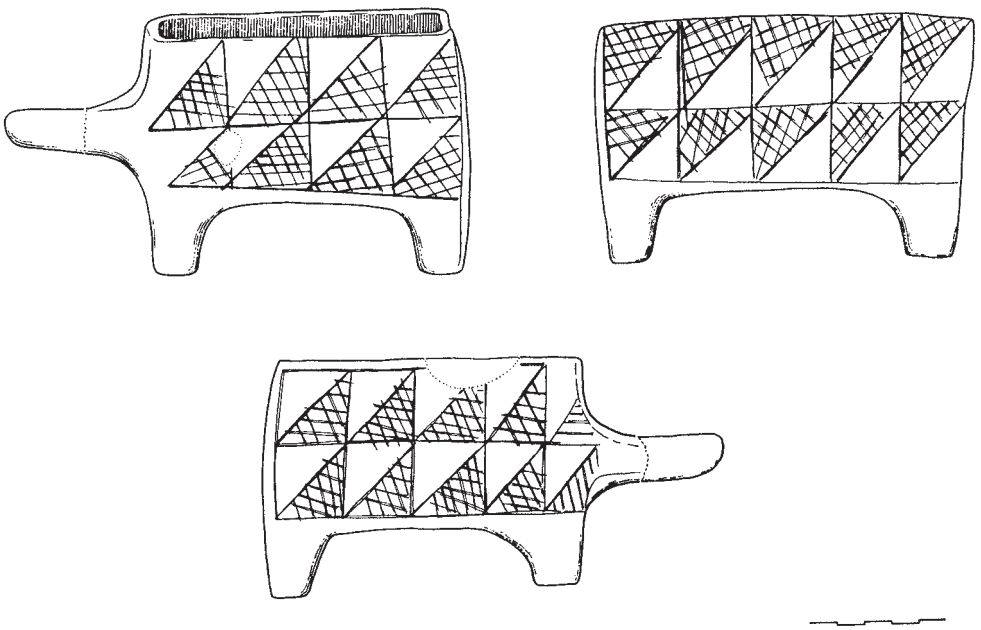

Fig. 5b. Box from burial UK

Fig. 6. Necklace of stone beads from burial UK.

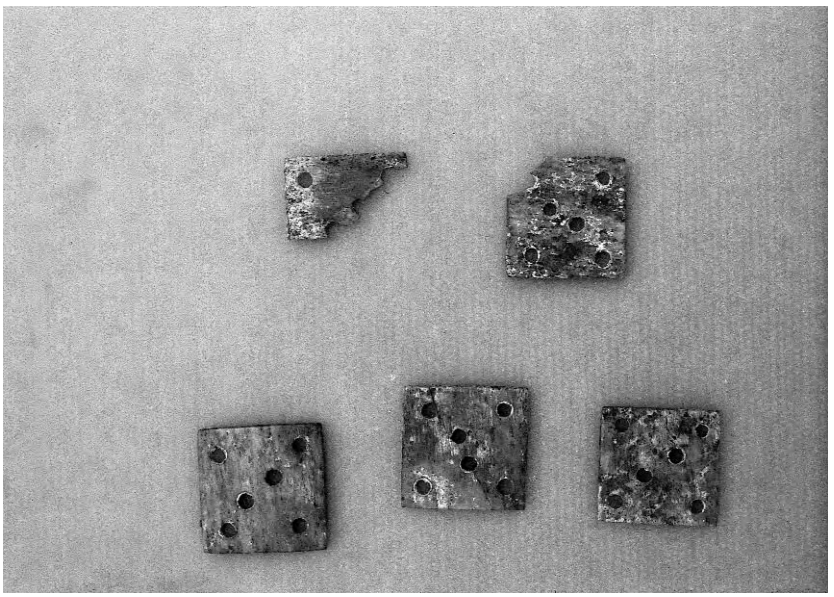

Fig. 7. Thin bone plates from child burial UJ

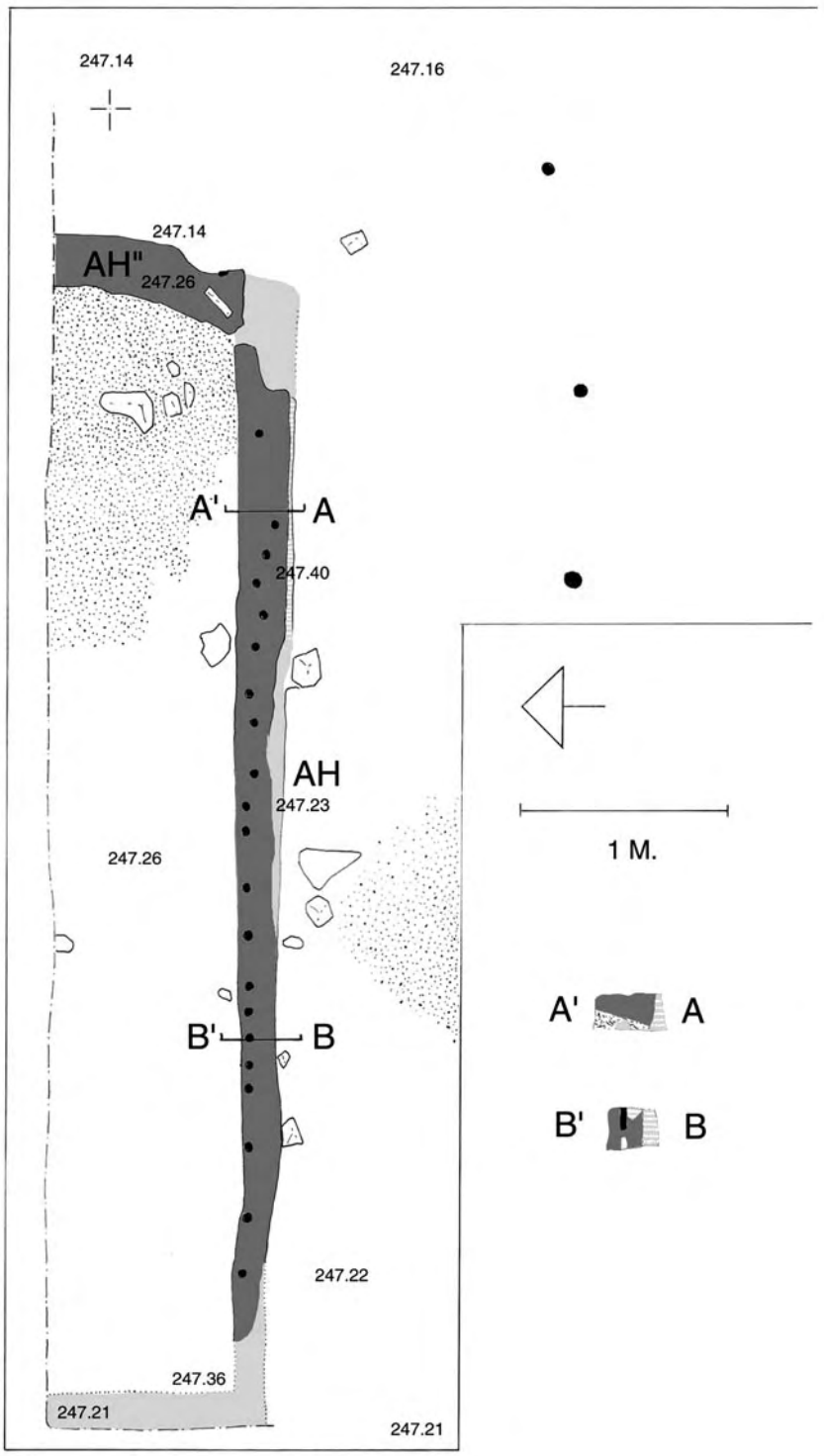


Fig. 8. Plan of building nsb4 and wall sections (stripes indicate yellow exterior coating).

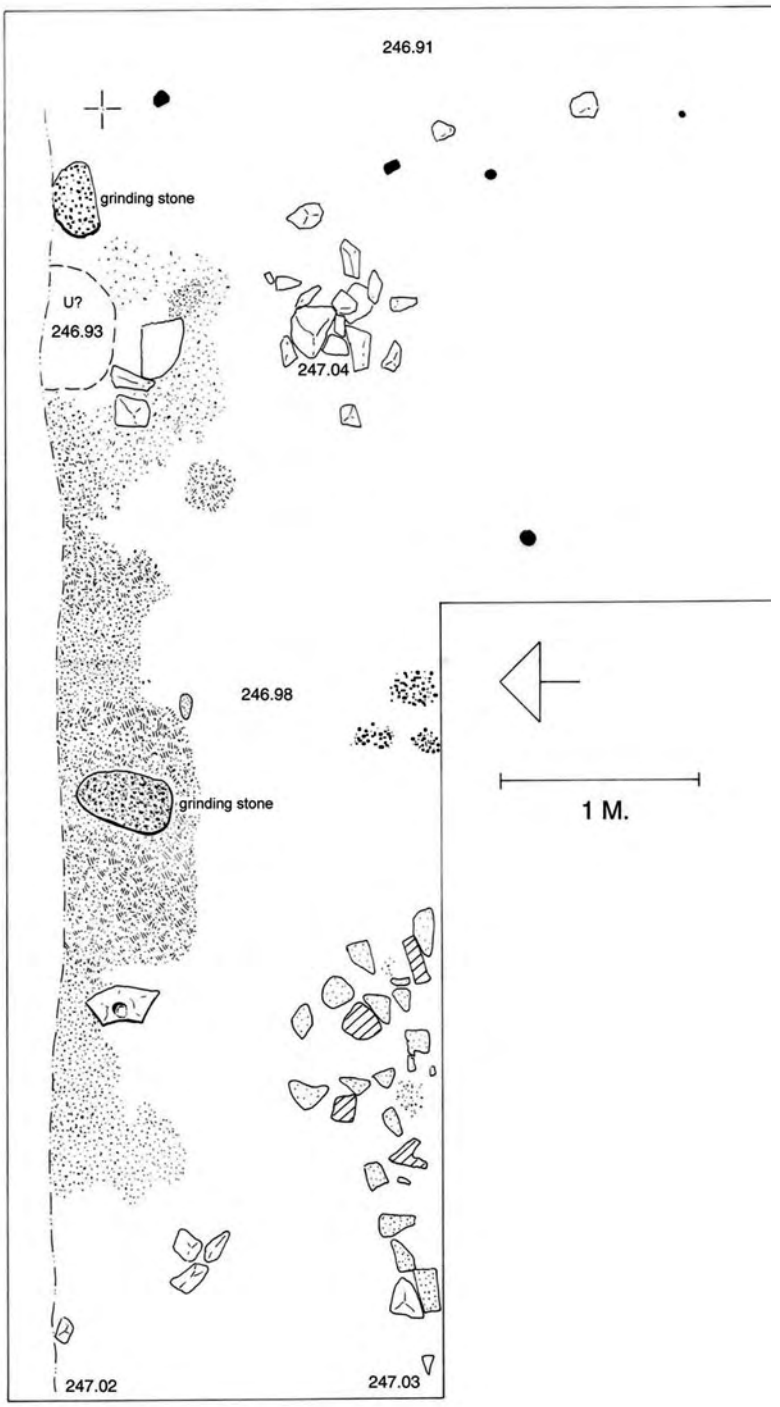


Fig. 9. Plan of trodden surface

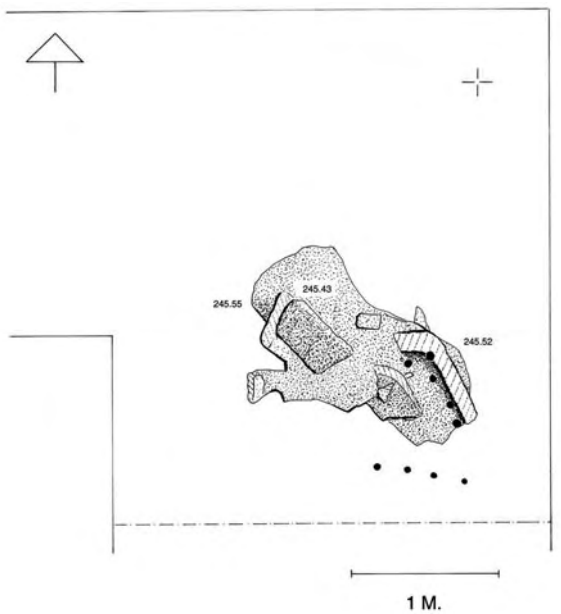


Fig. 10. Remains of a storage structure?

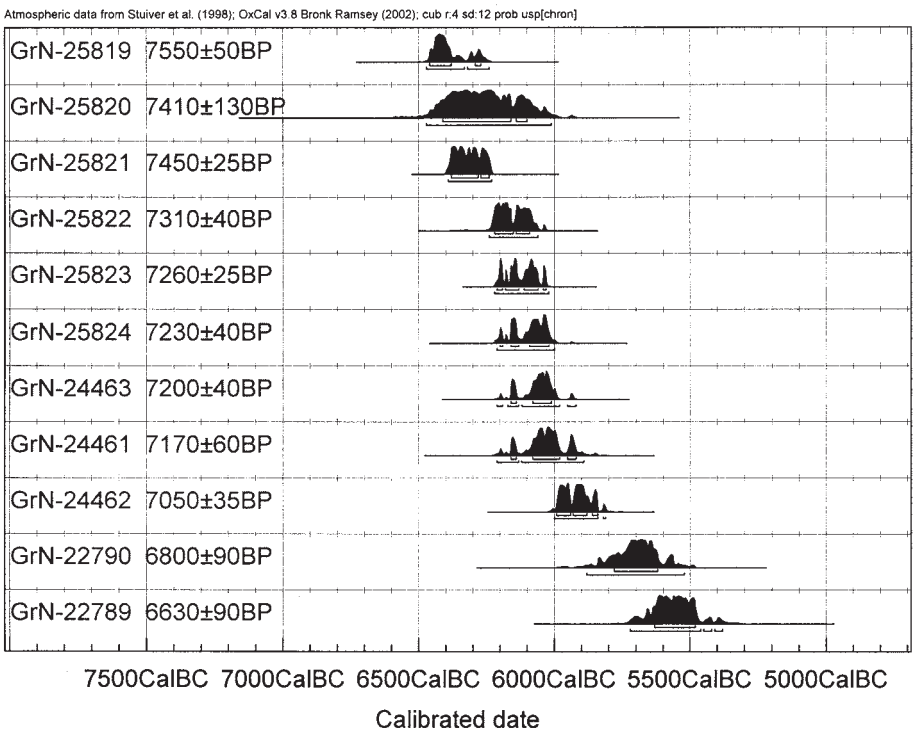


Fig. 11. All Radiocarbon datings from Menteşe

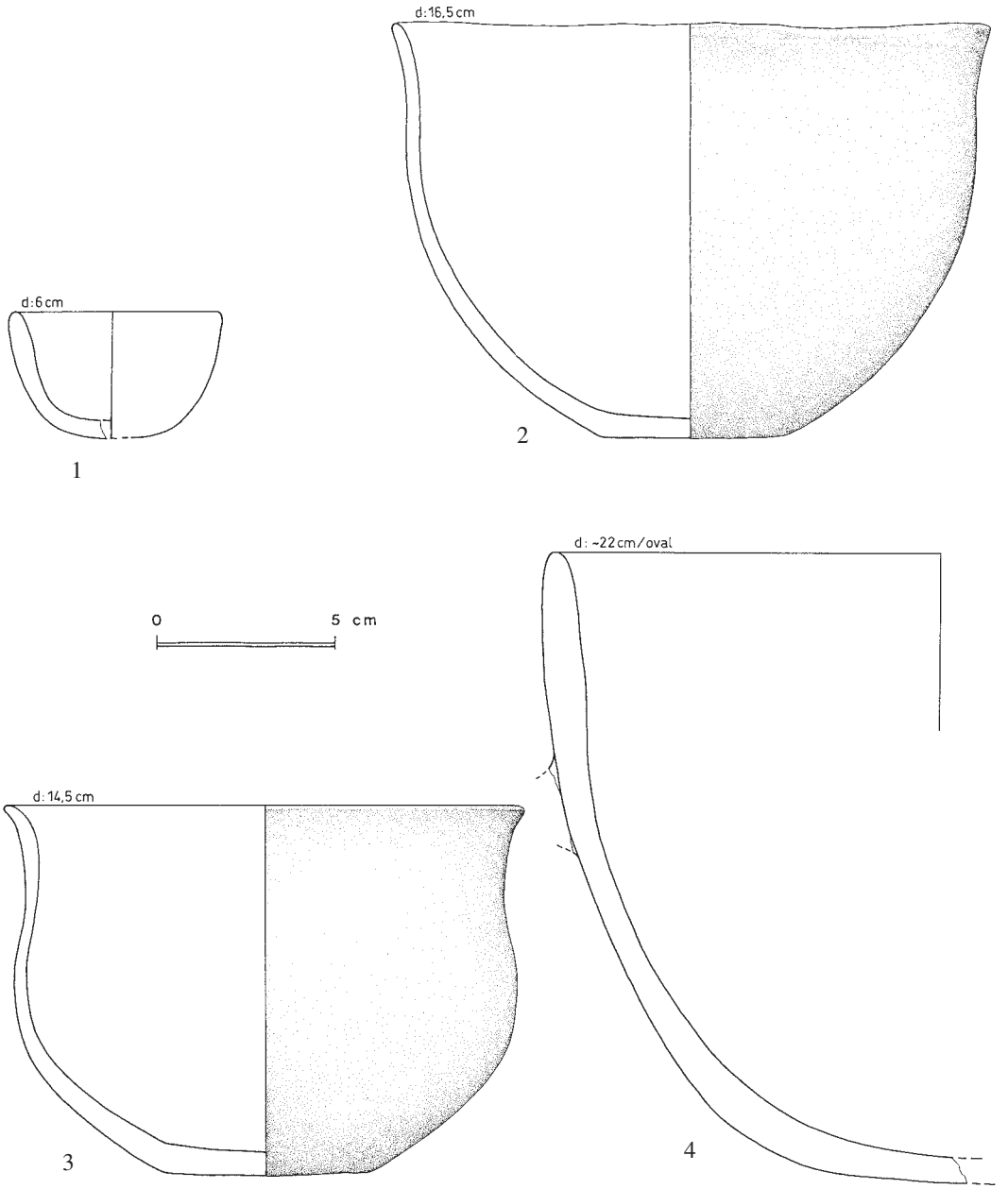


Fig. 12. Pinched pot (1); coiled restricted bowles (2;3); coiled unrestricted bowl (4)

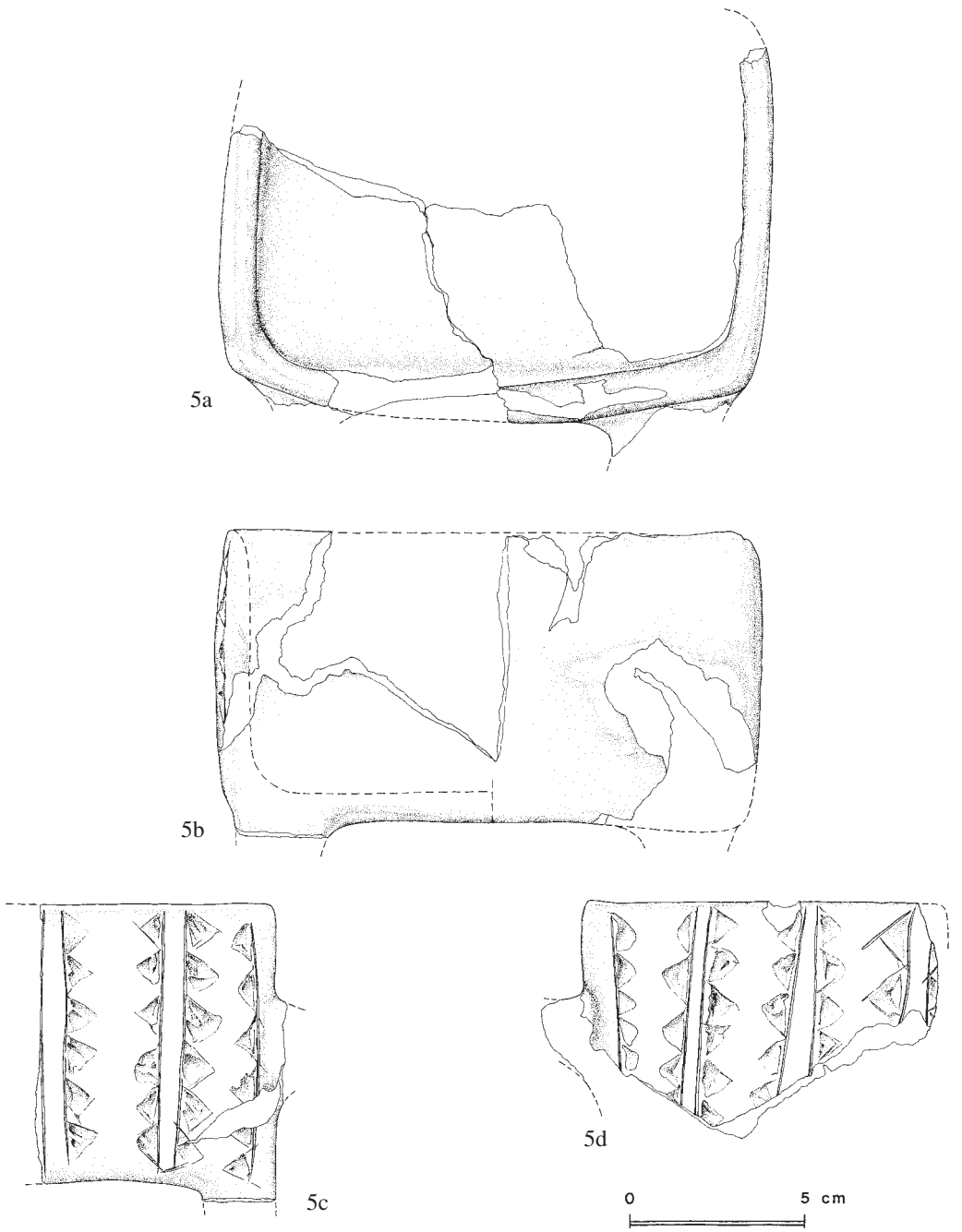


Fig. 12 (continued). Box: view from above (5a); side-views (5b, cd).

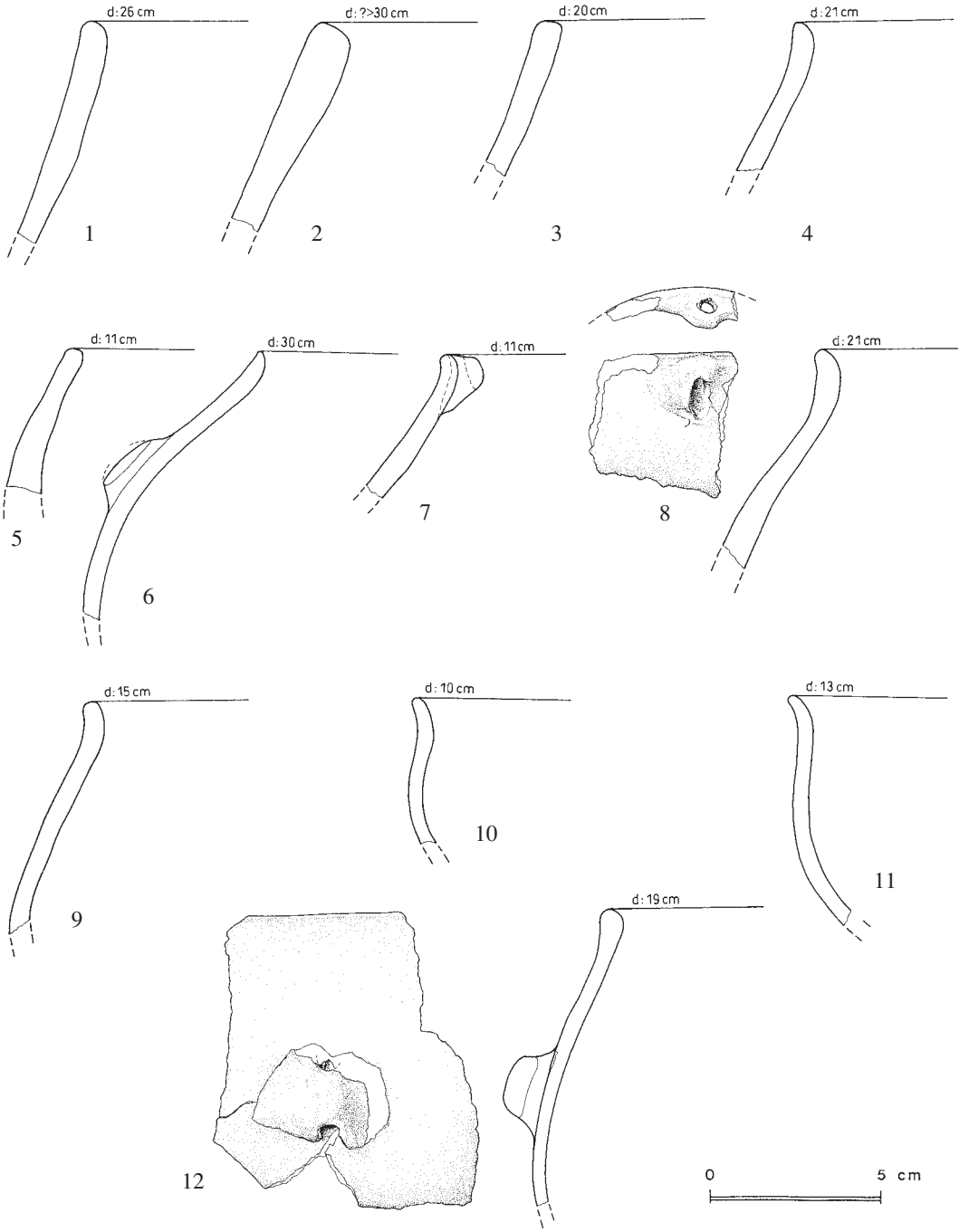


Fig. 13. Pots (1-8); restricted bowls (9-12).

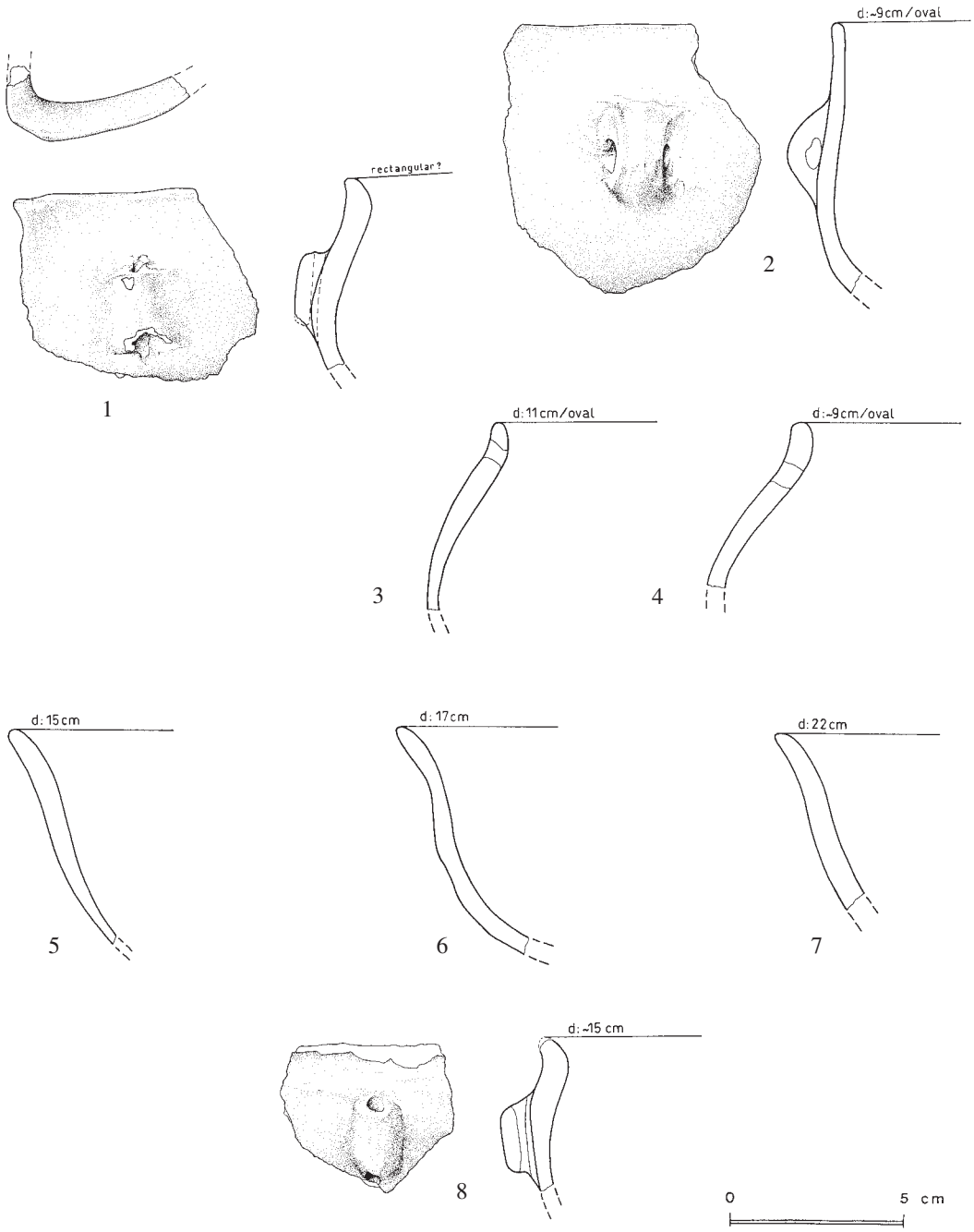


Fig. 14. Restricted bowls (1-4); unrestricted bowls

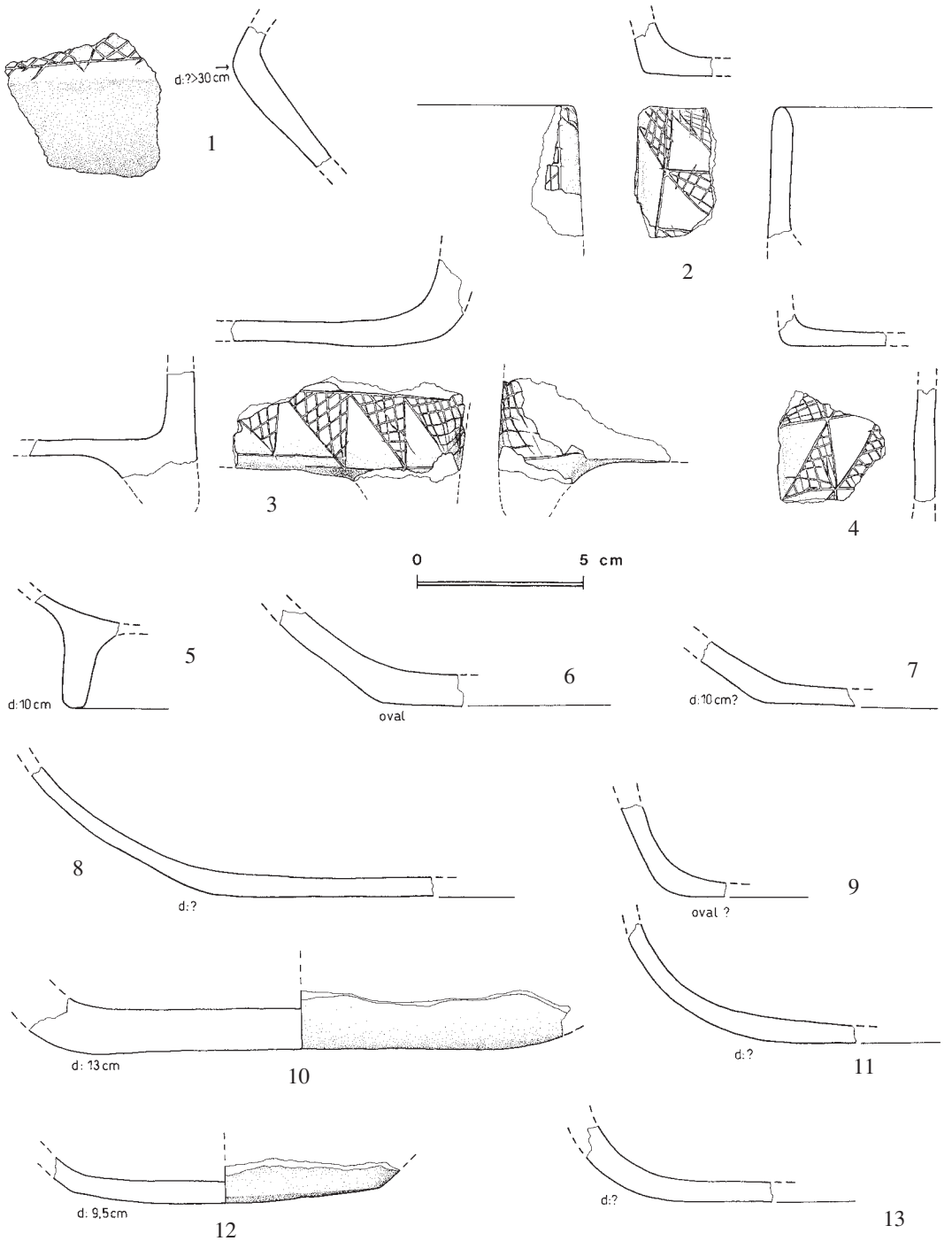


Fig. 15. Boxes (1-4); bases (5-13).

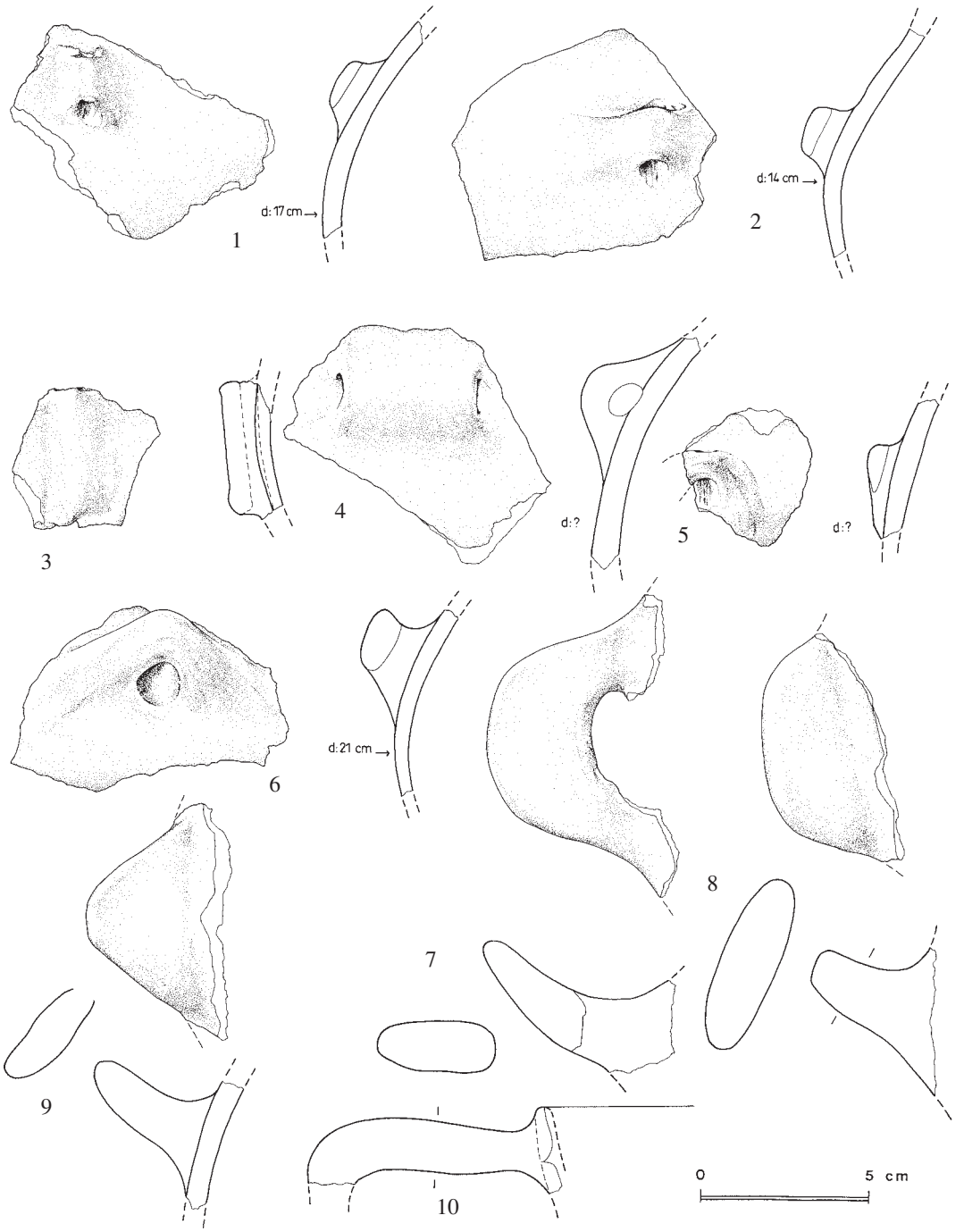


Fig. 16. Handles

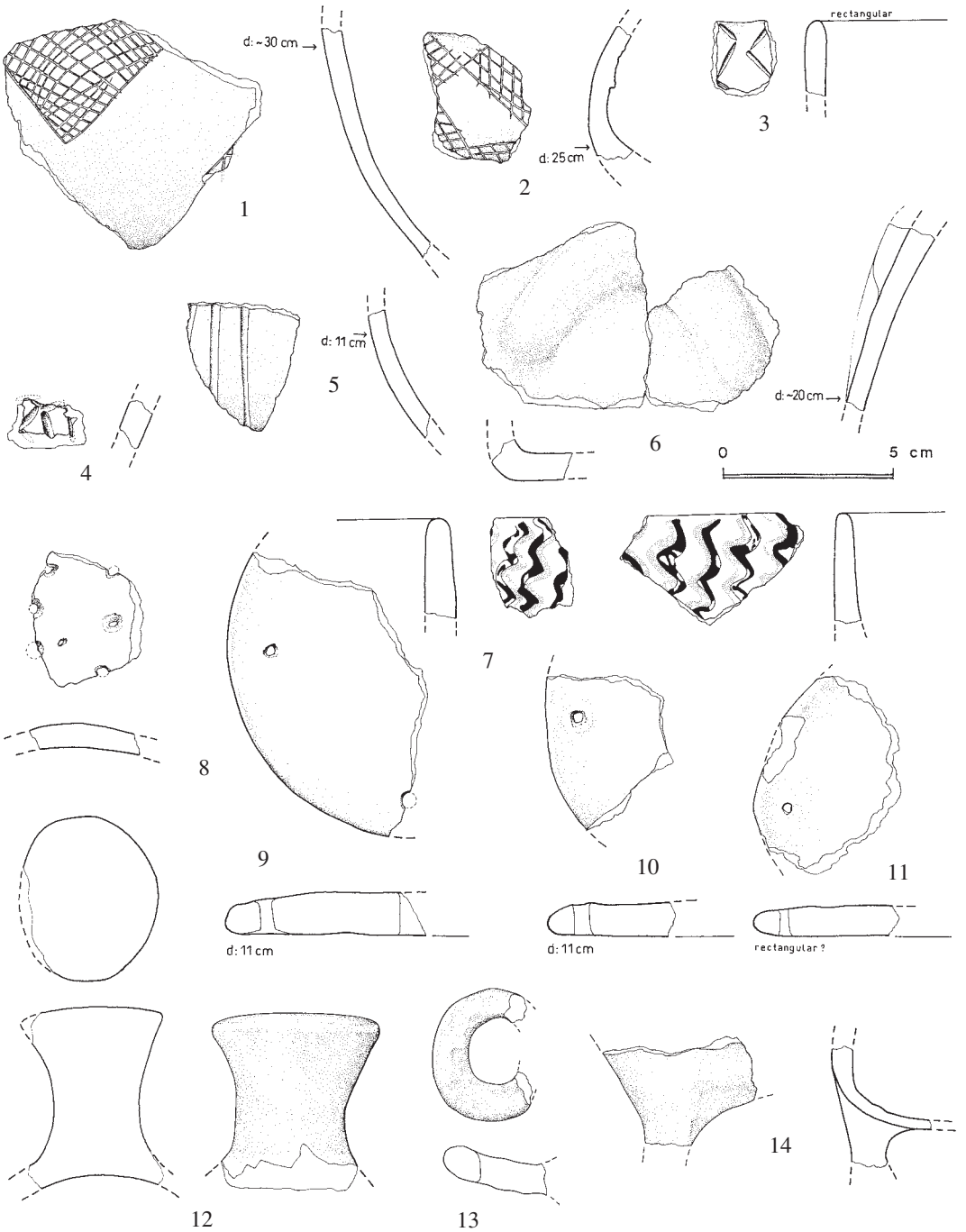


Fig. 17. Decoration (1-6); varia (7-13).