

This paper is dedicated to Prof.Dr. Ekrem Akurgal, the renowned scholar, and one of the pioneers of Turkish archaeology, on his 80th birthday

## SALVAGE EXCAVATIONS AT THE PRE-POTTERY SITE OF AŞIKLI HÖYÜK IN CENTRAL ANATOLIA

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## PART I : SALVAGE EXCAVATIONS AT THE PRE-POTTERY SITE OF AŞIKLI HÖYÜK IN CENTRAL ANATOLIA (pls. 1-16 and fig. 1)

by Ufuk Esin

### 1. INTRODUCTION

Aşıklı Höyük is situated at the village of Kızılkaya, 25 km South-East of the province of Aksaray in Central Anatolia within the coordinates 38° 15' E and 38° 22' N, on the bank of the river Melendiz-Su which is a branch of the Uluirmak (pls. 1-3, 6/1).

A barrage, the Mamasın-dam, has recently been built on the Uluirmak river for producing hydraulic, electrical energy and also for the irrigation of agricultural land in the province of Aksaray (pls. 1-2).

In 1988 a plan was announced by the State Hydraulic Works to raise the water level of the Mamasın reservoir within the next few years. This will inundate part of the Aşıklı mound, which is one of the most important aceramic sites of the Near-East (pls. 2-3. 6/1). Archaeological operations therefore started immediately in 1989 at Aşıklı Höyük (Esin 1991).

The excavations at the Aşıklı mound are undertaken by a team from the Prehistory Department of the Faculty of Letters of the University of Istanbul<sup>1</sup>. Two members from the Biological-Archaeological Institutet of the State University at Groningen joined the team during the second campaign in 1990 with a special project for archaeo-zoological and archaeo-botanical research at Aşıklı, sponsored by the same institute.

The excavations are carried out under the auspices of the Faculty of Letters of the University of Istanbul; the General Directorate of the Ancient Monuments and Museums; TEKDAM (Center for Salvation and Investigation of Historical and Archaeological Finds) of the Middle East Technical University (METU) and AKSAY (Archaeometry Group) of the Scientific and Technical Research Council of Turkey (TÜBİTAK)<sup>2</sup>.

<sup>1</sup> Under the direction of the writer the team consisted of the following members in both seasons : Ass. Professors Dr. Savaş Harmankaya and Nur Balkan-Atlı. Architect Ing. Korkut Atlı, Research Asistants : Mühraban Özbaşaran, Erhan Bıçakçı, H. Gönül Egeli, Yüksel Dede (Lecturer, I.Ü.), Nilgün Dede (M.A. Student). İlhan Devir, Ceren Soylu, İbrahim Tıgılı (B.A. Students). Participants only in 1989 are : Research assistant Aslı Özdoğan, Dilek Büyükdora (M.A. student). Adnan Baysal, Zafer Görür (B.A. students) and Dr. Süleyman Belen (Mimar Sinan University). Participants only in 1989 are : Dr. Hylke Buitenhuis (archaeo-zoologist), Mr. Henk Woldring (archaeo-botanist) both from the Biological-Archaeological Institute of the State University at Groningen, Füsün Yaras (lecturer, I.Ü.), Aymelek Karasu (M.A. student), Hasan Batubay, Kemal Ercan, Gülay Sert, A. Ekrem Sokol, Kerem İnanc, Oya Şenkardeşler (all B.A. students). In 1989 Mr. Tevhid Kekeç and in 1990 Mr. Alaaddin Eryılmaz were appointed as the representatives of the Ministry of Culture by the General Directorate of the Ancient Monuments and Museums. I have to express my heartfelt thanks to all my colleagues and students mentioned above for their valuable cooperation and help during the Aşıklı excavations in both seasons.

<sup>2</sup> We are very much indebted to the following persons and institutions for their valuable, each kind of support and fi-

Aşıklı Höyük lies in the alluvial plain of the narrow valley of Melendiz-Su in a basin formed by the eruption of the volcanic mountains of Hasandağ and of the Melendiz-range to the South-East of Aksaray.

The splendid Cappadocian land-landscape, containing many tufa cones and natural caves has many obsidian sources in this part of Aksaray.

The climate of the Aksaray region is continental with hot, dry summers and cold, wet winters. The economic life of the region is based on crops — mainly wheat — gardening, wine and the animal husbandary of sheep, goat and cattle.

According to geomorphological studies the pluvial-lake of Tuzgölü did not reach the part of Aksaray where Aşıklı is situated during the end of the Pleistocene (Erol 1976, 1). It therefore seems possible that at the beginning of the Holocene, some ten thousand years ago, the hunters and food-collectors of the region could settle down at Aşıklı to start a new way of life. Suitable conditions were available here in the narrow valley of Melendiz-Su, near running water, where there were abundant game animals and edible plants ready for cultivation.

Aşıklı Höyük was first pin-pointed by E. Gordon in 1963 and then visited by many scholars until a thorough archaeological surface survey was carried out by Ian Todd in 1964 and 1965 (Todd 1980, 39).

During his survey at Aşıklı Todd collected also five  $^{14}\text{C}$  samples which have been analyzed by Stuckenrath and Lawn (1969, 153) at the University Museum of the University of Pennsylvania, and published by Todd (Todd 1966; 1968, 157; 1980, 149; Esin 1981, 31; Breunig 1987, 58). According to these  $^{14}\text{C}$  assessments Aşıklı settlements can be dated with

nancial aids which helped very much for the success of our excavations at Aşıklı : Prof. Dr. N. Atasoy, Dean and head of the executive committee of the Faculty of Letters, University of Istanbul. Mr. Altan Akat and Mr. M. Akif Işık, (former and present General Directors of the Ancient Monuments and Museums), Mr. Tevhid Kekeç and Mr. Alaaddin Eryılmaz (representatives of the Ministry of Culture), Assoc. Prof. Dr. Mustafa Özbakan (director of TEKDAM of the Middle East Technical University), Prof. Dr. W. van Zeist and Dr. S. Bottema (Biological Archaeological Inst. Groningen), Prof. Dr. W. Schirmer (Chairman of the Institute for History of buildings, Univ. Karlsruhe), Prof. Dr. Aliye Özten (Director of Acemhöyük excavations), and also to Mr. Ferruh Anık and Mr. Özden Bilen (General and Vice Directors of the State Hydraulic Works), Mr. Galip Aknıl (President of the Aknıl Engineering and Consulting Company), Mr. Rıdvan Yenişen (Governor of the Province Aksaray), Mr. Memiş Akın (Mayor of Aksaray), Mr. Mustafa Özateş (Director of the 44th Division of the State Hydraulic Works), Mr. Ruhi Özkanlı (Director of Cultural Activities at Aksaray), Mr. Özcan Şimşek and Mr. Fariz Demir (former and present Directors of the Archaeological Museum at Aksaray), Mr. & Mrs. O. and S. Baturay (Presidents of Technion Company at New Jersey- U.S.A.), Mrs. Teyhan Balkan, Mr. Maarifi Orhon, Mr. Utku Aldıkaçtı, Mr. Çetin Soylu, Mrs. Sevim İşgüder, Mr. Erdal Erkut, Mrs. Irene Esin, Mr. Ahmet Boratav, Mr. Erhan Bıçakçı and the student group at the University of Karlsruhe. Our special gratitude should be expressed also to the following persons who are elected in 1990 as our honor-members by the excavations-team at Aşıklı and to their companies for their valuable financial supports : Mrs. Altın Soylu ( Head of the Department for Public Relations of Doğu Holding), Mr. Yücel Çelik (President of the executive Committee of the Garanti Bank and depute member of the executive Committee of the Garanti Bank and depute member of Doğu Holding), Mr. Ferit Şahenk (Vice President of Doğu Holding), Mr. Haluk Akbaşoğlu (President of AKMETAL), Company for the Iron and Steel Casting Industries), and also Mr. Tamer Gökler and Mr. Doğan Şahin (Representatives of the executive Committee of Garanti Bank).

the Libby's standard half-life between  $8958 \pm 130$  B. P. ( $7008 \pm 130$  B.C., P-1240, charcoal) and  $8611 \pm 108$  B.P. ( $6661 \pm 108$  B.C., P-1239, charcoal)<sup>3</sup>.

## 2. EXCAVATIONS

### 2.1. Objectives

The aims of the excavations at Aşıklı can be summarized as follows:

1. Before the partial inundation of the mound, to excavate large areas in order to understand the stratigraphy, the development of the building activities, settlement-patterns, social, economic life, traditional customs of the settlers of Aşıklı, the ancient environment and the ecology of the region.

2. To try protect the areas of the mound which will not be flooded by the Mamasın-dam reservoir and also to try to undertake a project to build up an open-air museum at the site, since it is the most important and oldest example of the beginning of village-life in Central Anatolia.

### 2.2. Method<sup>4</sup>

The Aşıklı mound measures ca. 230 m East-West and ca. 150/240 m North-South. Due to steep slopes to the East and South-West, the height of the mound varies between 15.35 m in the North and 13.16 m in the South (pls. 13, 6/1). The altitude of the highest point of the mound at 1119.45 m is accepted as datum, that is as the zero point (0 : 1119.45 m) for the areas to be excavated. All measurements according to the heights are given below the zero point. When the water-table of the artificial lake of the Mamasın-dam reaches the height of 1109.25 m the area at Aşıklı below this level will be flooded (pls. 3-5, 6/1).

The site covers an area of ca. 35 000/40 000 m<sup>2</sup> (pl. 3). The Melendiz-Su surrounds the mound on its northern, western and part of its southern sides (pls. 3, 6/1).

Bordering the site to the east is a narrow road between Kizilkaya village and the nearby İhlara valley (pl.3). In this famous valley are cave churches dug into the tufa cones from the Early Christian Era containing beautiful frescos.

Almost 1/3 of the mound seems to have been eroded in the course of time due to many changes in the riverbed of the Melendiz-Su and much ploughing (pls. 3, 6/1).

<sup>3</sup> New samples for <sup>14</sup>C assessments of the excavations were collected in the 1989-1990 seasons. They are still in process at the <sup>14</sup>C laboratory of the State University at Groningen, to which I am indebted.

<sup>4</sup> See here for a new method for undertaking "Relevée" at Aşıklı, K. Atli, Appendix II.



The method used for the excavation is the grid-system. Each plan-square on the mound, which is to be seen on the plans here, measures 10 m x 10 m : 100 m<sup>2</sup>. It is divided into 10 small squares of 1 m x 1 m : 1 m<sup>2</sup>. For the labelling of the 10 m x 10 m squares arabic numbers are used in East-West, and capital letters in North-South directions (pls. 3-4). For the 1 m x 1 m squares small letters are used in the North-South and arabic numbers in the East-West directions. Trenches are named according to the 10 m x 10 m plan-squares such as "5 J" or "17 S" etc. Between the neighbouring trenches in the plan-squares a space of 2 m is left for the grids. When necessary the grids are also excavated for better understanding of the settlement-pattern (pls. 3-4). Sieving and flotation is undertaken especially for botanical remains.

### 2.3. Operations

In 1989 the excavations were started in three step-trenches, one on the North and two others on the West slope of the mound in plan-squares 4 H-G, 2-3 J-K, 2-4 P-R (pls. 3-5). Also two deep soundings were undertaken on the recent plain to the West next to the slope of the mound in plan-squares 2 M and 2 P-R, the latter one being the continuation of the South-Western step-trench (pls. 3-4).

In 1990 additional operations were carried out in 15 trenches in plan-squares 2-5 J-K, 5 L-P, 4P and 17 S (pl. 3). Most of the trenches are distributed on the top-surface of the mound (pls. 3-4). A deep sounding was also undertaken at the northern step-trench in squares 4 G-H in order to reach virgin soil (pls. 3-5).

All together an area of ca 1300 m<sup>2</sup> was excavated on the mound and on its slopes (pls. 3, 4). More than 100 buildings, all made of mud-brick in various layers were discovered. Only a few of them has stone foundations under the mud-brick walls (pls. 4, 6/2-3, 7).

### 2.4. Stratigraphy

Since the excavated areas on the mound are joined into trench-groups and are not yet connected to each other completely, the layers in each trench-group are separately counted from top to bottom. These trench-groups are located in the following plan-squares on the mound:

1. 4 H-F (northern step-trench with deep sounding, pls. 3-4, 5),
2. 2-5 J-K (north-western step-trench and two additional trenches on the top-surface of the mound, (pls. 3-5, 6/2, 7),
3. 5 L-M (on the top-surface of the mound which is already connected with the

trench-group in plan-squares 2-5 J-K, (pls. 3-5, 6/2),

4. 5 N-P and 4 P (on the top surface of the mound and also connected with the latter two trench-groups, pls. 3-5, 6/2-3),

5. 2-4 P-R (south-western step-trench with deep sounding, pls. 3, 4),

6. 2 M (deep sounding on the West, pl. 3),

7. 17 S (on the South slope of the mound, pl. 3).

In the excavations to date there are problems in the stratigraphy which depend either on the building activities or on the settlement-pattern found in the cultural layers. These should be solved by digging larger areas below layer 2 (for further details about the building activities see here E. Bıçakçı and M. Özbaşaran. Part II).

Although there are some indications that the entrances were through the roofs into the buildings via mobile ladders, it is not clear yet if terracing was used for this purpose. It should also be checked whether a horizontal stratigraphy exists (besides the vertical one; see below).

The stratigraphy given here should therefore be considered as tentative and might be changed if the terracing and other problems mentioned above are solved in the next campaigns.

Virgin soil has been reached beneath the water-table of the Melendiz-Su at a depth of - 16.20 m in the north-western trench group by deep sounding in plan-squares 4 F-H (pls. 4-5). There are 9 layers from top to bottom of which the latter one represents virgin soil. Layers 1 and 2 from the top might be connected to the first and second layers in trench groups 3-5 J-K and in 5 L-N (pls. 3-4, 6/2, 7)

The first layer directly under the surface soil is represented by a few pits, remains of mud-brick walls, parts of floors and a channel.

Layer 2 is ca 30 cm below the present surface and it seems that it has two or three sub-phases. The mud-brick buildings in plansquares 4 H-G, 3-5 J-K and 5 L-N seem to belong to the same settlement in Layer 2, although the elevations of the floors are very different from each other (pls. 4-5).

It is not clear yet if the buildings Y, AF, AS and AT in trench 4 G and the buildings BA, BB, AY, Z, AN and AH in trenches 2-3 J-K do belong to layer 3 or were built on the terraces of layer 2 (pls. 4-5). If the former view is correct, there are 4 layers in trench-group 2-3 J-K with the buildings FF, FS and BK representing layer 4 (pl. 4-5).

In plan-squares 5 N-O a street named "GA" was discovered cut into the older layers and filled out with pebble-stones (pls. 4-5, 6/3). The building-complexes on the South of street "GA" seem to be earlier than those on the North in layer 2, because the structure of the soil on both sides — that is North and South of the street — are different from each other. The buildings at the South of the street are therefore tentatively assumed to be earlier than layer 2 and labelled as layer 3 (pl. 4-5, 6/3). Under layer 3 two more layers can be

observed, especially in trench 5 P (pls. 4-5, 6/3). They represent layers 4 and 5.

In the south-western step-trench 4 layers were discovered in 1989 without reaching the virgin soil below the water-table of the Melendiz-Su at -15.52 m depth in plan-squares 2-4 P-R. The soil structure of the south-western step-trench is similar to that found in the trenches 5 O-P and 4 P at the South of street "GA". Also the same type of stone-wall construction found in layer 5 is to be observed in layer 1 of south-western step-trench in plan-squares 4-3 P-R, which are used as foundation walls of the building-complex T, M, N and AK (pl. 4). If in both trench-groups there are no more layers in between, it can be assumed that together with the layers of the south-western step-trench, 7 settlement levels existed in this part of the mound.

In trench 17 S on the South slope of the site 3 layers were discovered where parts of mud-brick buildings and hearths were unearthed. It seems that the buildings in the layers of this section of the mound can be considered as continuations of the settlements excavated in trenches 5 O-P and in 4 P-R (pls. 3-4).

In 1989 a small deep-sounding was undertaken in trench 2 M, which was directly on the alluvial deposit of the Melendiz-Su next to the West slope of the mound. 3 layers are revealed in the deep sounding without reaching the virgin soil even at - 15.28 m depth. Only in layers 1 and 3 were found cultural debris full of small pieces of charcoal, obsidian tools and a few animal bones. Layer 2, between them, was steril.

Of the excavations of two campaigns at Aşıklı, the settlement of layer 2, which is distributed in a larger area than others in trench groups 4 H-G, 3-5 J-K and 5 L-N (pls. 3-5, 6/2, 7) is the most representative one for settlement-patterns. In addition, the buildings of the layers 3-5 in the trench groups 5 O-P and 2-4 P-R are helpful for a better understanding of the settlement-pattern and its reflected social life at Aşıklı (pls. 4, 6/3).

It can be assumed that from the beginning the buildings were constructed closely in quarters leaving narrow spaces in between for small courtyards and passages (pls. 4, 6/2-3, 7). The quarters are planned as "insulae", which are formed by the curved outer walls and some projections of the mud-brick buildings (pls. 4, 6/2-3, 7/1-2). These "insulae" or quarters seem to be distributed radially in the settlements (pls. 4, 6 / 2-3, 7/1-2, fig. 1). This unique model of planning might be considered as traditional from the beginning of the sedentary life at Aşıklı. This indicates a highly organized social life. It is also forerunner of settlement-pattern at Çatal Höyük East, some two thousand years later, especially observed in levels VI and VIII (Mellaart 1962, 46-48, figs. 4-6; 1963, 47, 55, 57-58, figs 2, 5-7; 1966, 173, 175, 179, 185, figs 5-7, 9).

Although the mud-brick architecture in level VII of Can Hasan III at Karaman (Konya) plain has slightly curved walls, it does not seem to be representative of the settlement-pattern at Aşıklı (cf. French 1972, 182, fig. 4).

At present an estimation of the human population of any given settlement at Aşıklı

cannot be made. For the spread and the positioning of the insulae or quarters indicate that they may not be contemporary. When a quarter was abandoned for some reason another one may have been built next to the destroyed one, since the elevations of the floors of different quarters vary greatly from each other. This can be interpreted either as the existence of a horizontal stratigraphy or as terracing (pls. 4-5, see also above).

The buildings at Aşıklı Höyük are approximately rectangular or trapezoidal in plan. Although many are somewhat irregular with slightly concave or convex mud-brick walls (pls. 4, 6/2-3, 7). The plan of a building seems to be dictated by the shape of the immediately preceding structure on that location. The buildings consist of one, two, or three rooms. The dimensions of the rooms vary between 2x3 m and 4x4 m and cover an area of 6 m<sup>2</sup> to 16 m<sup>2</sup>. Only the square building T in plan-squares 3-4 P-R in the south-western step-trench is larger with dimensions of 6.50 x 6.50 m (pl. 4). Entrances are left in the mud-brick walls between the rooms (pls. 4, 7 / 1). No external doors or door-ways into the buildings, courtyards, passages and quarters have been found (pls. 4, 7). It is therefore thought that entrances from the outside were most probably through the roof as mentioned before. The heights of the roofs might also be different from each other so as to form streets (cf. Mel-laart 1966, 173, 175, 285, figs. 5-6, 9). A model study was undertaken for static evaluation of an average one-room building at Aşıklı to make clear whether the structures could be built in one or two storeys (see here Berker, Yağmur and K. Atlı, Appendix I).

There are few internal features in the buildings, but they vary considerably (pls. 4, 6/2, 7/1, 8/3). They consist of hearths, occasional fire-pits, ovens and mud-brick separations slightly above the floors (pls. 4, 6/2, 7/1, 8). Hearths are located mostly in one-room buildings which are probably used as work-shops. The floors of the hearths are paved with pebbles (pls. 4, 8). In some cases two small shallow pits also paved with small flat stones in horizontal and vertical positions were found in front of the hearths and probably used as immobile braziers (pl. 8/3).

Human burials were found mostly under the floors of the rooms containing hearths (pls. 4, 9/1).

In many cases the mud-brick walls and the floors are painted with clay plaster. The colours used are yellow (in CO, CD, CE, CH, CJ, BH, BO) or pink (in buildings or rooms CA, CB, CG, BI) both in trench group 4-5 J-K. They were destroyed or highly weathered (pls. 4, 7/1-2). Shiny red plaster on the inner surface of the walls and on the floors are found in layers 3-5 in the trench-groups 5 N-O (pl. 4) in the buildings DY, EE, ET and EF. These were also weathered and peeling (pl. 4). In layer 5 building "T" with its 5 renovation phases in trenches 4-3 P-R also had painted floors and walls which were badly destroyed (pl. 4). In four renovation phases the paint is red and in one phase it is yellow. The paint on the floors is overlain by a layer of lime of ca 6-8 cm thickness and is highly polished.

So far excavated building T is the largest structure on the site. Two post-holes were

dug into the floor of its first phase. This building seems to have been used for some ritual purposes.

At Aşıklı ovens are rare. The largest one in trench 3 P at the North of building AU-L has been renovated many times by paving with river stones. Its superstructure is domed and made of mud-patches (pl. 4).

Most of the small finds are unearthened either in the small courts or narrow passages which were used for rubbish. Thick debris, full of small pieces of charcoal, animal bones, obsidian tools and *celtis* seeds are found either in the fill of renovated building rooms or between the cultural layers. It is therefore at present hard to identify the functions of the buildings and their rooms. It is also not known yet if each quarter belonged to one big family or to several families.

## 2.5. Burial Habits

The human burials at Aşıklı are intramural. They are found in pits under the floors of the rooms in *Hocker* position (pls. 4, 9/1). Altogether 13 burials were found of which 2 were badly damaged. Among the well preserved burials five individuals were discovered in the south-western step-trench (4 in building AB, 1 in BD) five in the north-western step-trench (4 in building I, one in H), and one in the northern step-trench (in building AS). Also one partly destroyed burial was found in 1990 in trench 5 K in room DA. This has not yet been studied (pl. 4)<sup>5</sup>. Most were single burials, except for a few cases where pairs, probably husband and wife, or mother and child, were buried (pls. 4, 9/1). Traces of burning were observed on bones of some individuals (Özbek 1990, 99). The individuals were laid in the pits in an East-West direction, the heads being to the West. The faces of the women looked to the North and those of the men to the South. Among them there were also a few individuals who were buried in North-South directions suggesting the existence of different burial habits at Aşıklı. So far the identified ages of men vary between 18-19, 35-39 and between 55-57 and those of women between 20-25 (op.cit. 99-100). One child is one year old and two other babies were only in 8-9 months old (ibid.). No burial gifts are left with the individuals, except a few bead necklaces made either of semi-precious or simple stones mixed with small shell beads (pl. 10. AH. 89-120).

Skulls of two men are identified as belonging to the Mediterranean race (ibid.). The oldest brain surgery "trepanation" is observed on the skull of a woman who was buried with her baby under the floor of building AB in trenches 2-3 R (pls. 4, 9/1; Özbek 1990, 99). She

<sup>5</sup> I would like to express my thanks to Prof. Dr. Metin Özbek, who undertakes the anthropological study of the human burials at Aşıklı. His detailed report is forthcoming in XII. Uluslararası Kazı, Araştırma ve Arkeometri Sempozyumu Bildirileri (1990).



was about 20/25 years old when she died. Traumatic arthritis and dental diseases were common among these individuals of Aşıklı (ibid.). Another double burial which has been unearthed also in building AB in trenches 2-3 R belonged to a man and woman, most probably to a husband and wife (pl. 4). Possibly the woman's was of an unnatural death since he was 55 years old and she was only in her twenties.

## 2.6. Economy, Ecology and Social Activities

The economy of the inhabitants of the successive Aşıklı-settlements is based mainly on animal protein supplied by extensive hunting game animals such as wild cattle, pig, onager, hare, red, fallow and roe-deer, birds etc.<sup>6</sup> According to H. Buitenhuis it is not yet clear whether sheep and goat are domesticated, although it is their meat which is mostly consumed (cf. Payne 1985). The large number of young animals indicates that a stage of proto-domestication of sheep and goat may have been reached.

Plant remains are scarce. Even the use of straw in mud-brick is rare. According to H. Woldring only in layer 2 were some grains of emmer wheat found<sup>7</sup>. Only *celtis* seeds are very abundant. Most of them were discovered in veins together with small charcoal pieces of oak trees, animal bones and obsidian tools. They were found in the debris of renewed buildings in courts, passages and also between the cultural layers as thick deposits. It can be therefore assumed that oak and *celtis* trees were growing in the neighbourhood of Aşıklı in the Melendiz-Su valley. Although it is too early to be defined, the presence of wild leguminosae, such as bitter vetch, wild weeds, oak and *celtis* trees and game animals suggests that an open-forest vegetation existed in the Melendiz valley when inhabitants started to settle down at Aşıklı some ten or nine thousand years ago.

To judge by the large number of animal bones found at Aşıklı, it seems that hunting was a more important activity than agriculture and animal husbandry in social life. If this assumption is true, Aşıklı with its large settlements represents a new model of sedentary life based on intensified hunting and gathering and a kind of proto-domestication of wild animals.

Production of obsidian, bone, horn, ground-stone artefacts, the working of animal skin and preparing leather seem also to have been important activities among the inhabitants of Aşıklı. Since the dwellers of Aşıklı had a great surplus of obsidian and meat, they may eventually have developed interregional trade in obsidian with the neighbour coun-

<sup>6</sup> Archaeo-zoological studies of Aşıklı are in preparation and a detailed report will be published by Dr. Buitenhuis. I am thankful to him for the information given here.

<sup>7</sup> I have to express my thanks to Mr. H. Woldring for his research on botanical remains at Aşıklı and for the information given here. His report about botanical remains is also in preparation.

tries and regional exchange of meat for salt and other items which were not available in their area (cf. Mellaart 1975, 33, 94).

## **2.7. Industries**

### **2.7.1. Chipped-Stone Industry**

This is based on obsidian, since many sources of obsidian are found in the vicinity of the site and in the Aksaray province (Todd, 1980. 30-37). During two campaigns at Aşıklı more than 22.000 obsidian pieces were collected and were analyzed by Dr. Balkan-Atlı (see here for detailed information N. Balkan-Atlı, Part III). Among the obsidian tools flakes are abundant (pl. 14), but the industry can be determined as a "blade-tool industry" (pls. 12-13, 15-16). It is worthy of remark that there are few points, javeline and arrow heads, although one of the main activities of the dwellers seems to have been intensive hunting (pl. 15). The chipped tools become smaller in the later layers. The large number of scrapers of various types indicates that they were used for working animal skin and preparing leather (pls. 14-15).

The chipped-stone industry of Aşıklı has many local, distinctive characteristics which are not comparable with any chipped-stone industry of known pre-ceramic neolithic sites in the Near-East (cf. Todd, 1966).

### **2.7.2. Ground and Polished Stone Industries**

The techniques used for producing ground stones and polished artefacts are hammering, pecking, carving, rubbing and polishing. The most abundant ground stone artefacts are grinding-stones (pl. 9/3), mortars, pellets (pl. 11) and hand-stones. Some of them are comparable with the ground-stones excavated at Çayönü (Davis 1982, 135, fig. 3.3, 142. fig. 3.10.2). Mace heads, sling stones and stone vessels are rare (pl. 9/2). The ground stone artefacts at Aşıklı are made mostly of volcanic rocks such as basalt, andesite, granite and tufa.

Polished stone tools are not numerous. A few celts and polishers for bone tools of Aşıklı are similar to those found at Çayönü and Çatal Höyük East (pl. 11; Davis 1982, 140, fig. 3.8 and 149, fig. 3.12; Mellaart 1962, pl. VI/a).



### 2.7.3. Bone and Horn Industries

The great number of worked bone and horn tools represent, next to the obsidian tools, the second important group of industry at Aşıklı (Pl. 10). Among the bone and horn artefacts the awls are most abundant. They are in majority of sheep/goat and cattle bones and deer or goat horns. Many awl types can be distinguished. Skillfully worked hooks and buckles made of bone have parallels at pre-pottery and pottery neolithic sites in Anatolia, such as Cafer Höyük, Çatal Höyük East, Erbaça, and also in South-East Europe for instance at Argissa Magula, Sesklo, Soufli and Nea Nikomedeia (cf. Todd 1966, pl. XXVIII/b; 1980.107.fig. 42/1-4; Stordeur 1988, 213, fig. 3/6; Mellaart 1963, pl. XXVII, 32, 52, 61; 1967, 192, fig.101; Bordaz 1970, 61; Milojevic et al. 1962, 8-22.100; Theodoridis 1973, 169, fig.100; Rodden 1965 (1972), 98-99, fig. a; Esin 1981, 140, 150, 153, 163, 228).

More detailed studies of bone and horn objects found at Aşıklı are needed in order to understand their real functions.

### 2.8. Half-baked Clay Finds

Half-baked objects consist of some crude animal figurines and small cones (pl. 10). It is not possible to identify exactly which kind of animals are represented by these figurines, because the heads of these figurines are missing. Some of the half-baked objects are comparable with those found at Nevalı Çori in Eastern Turkey (Schmidt 1988, 177, 199, fig. 15/3-6). It is important to note that the use of baking clay has already started at Aşıklı.

## 3. CONCLUSIONS

The pre-pottery culture of Aşıklı Höyük seems to be homogeneous from the beginning of the occupation (pls. 4, 6/2-3, 7). The building activities and the settlement-patterns of Aşıklı represent a new model, which might be the forerunner of those found at Çatal Höyük East, dated to two thousand years later (ca 6200-5500 B.C.) According to its settlement-patterns of "*insulae*", the population at Aşıklı must have been dense. The *insulae* display a radial lay-out and are characterized by curved and projecting mud-brick walls of the tightly packed buildings (pls. 4, 6/2-3, 7/1-2).

It is too early to identify exactly the environmental conditions and ecology which existed some ten to nine thousand years ago in the vicinity of Aşıklı, especially in the narrow valley of the Melendiz-Su which is surrounded by volcanic tufa cones and caves of the Cappadocian land-scape formed through the eruptive activities of the Hasandağ and the

Melendiz range. According to the botanical and zoological remains collected so far, and judging from big, rectangular hearths and fire-pits, it could be suggested that during the occupation of Aşıklı there was an open grassland vegetation with scarce oak and celtis woods in the Melendiz Valley and that the climate was probably not very mild.

The subsistence economy at Aşıklı was mainly based on intensified hunting and collecting with some hints at the beginning of food-production. Among the plant remains seeds of emmer wheat are rare and it is not clear yet whether sheep and goat were domesticated. It can be suggested only that protodomestication of both animals may have started. Therefore the main activities of human population at Aşıklı might have been mainly hunting, butchering and leather-working. The big amount of obsidian as well of bone/horn tools are also indicative for the same activities. If obsidian was really traded between Central Anatolia and neighbouring countries, there is no other place than Aşıklı from where the early inhabitants of Jericho could have provided their obsidian.

It can be also assumed that the diet of Aşıklı's population was more or less based on meat of sheep/goat and cattle and completed with collected seeds and fruits. It is also important to note that the here reflected economic pattern indicates a new model for the beginning of sedentary life, since it depends more on hunting than on food-production.

The funeral custom of the human population at Aşıklı is characterized by intramural inhumation. Skulls of two adult men are identified as of the Mediterranean type. The first brain surgery "trepanation" has been discovered on a skull of a young women who was buried with her baby, (pl. 9/1). This is an important fact for the history of medicine.

The anthropological finds together with the animal and plant remains of this unique culture also provide valuable resources for further research in ancient ecology and for genetic studies in order to comprehend the problems of mutation.

## PART II : AŞIKLI HÖYÜK 1989, 1990 : BUILDING ACTIVITIES (Pls. 1-16, fig. 1)

by E. Bıçakcı and M. Özbaşaran

The 1989-90 excavations at Aşıklı revealed building remains which are excavated in an area of approx. 1300 m<sup>2</sup> belonging to different layers (Pl.3). The structures discovered just below the surface soil are mainly of mud, *kerpiç* (Pl. 4,5).

The northern, western and southern slopes of the mound are badly eroded by the meandering of the Melendiz-Su River, and by the overflowing of and fluctuations in the level of the river at various times (Pl. 6/1). Although the extension of the settlement is not yet clear, it is assumed that such things happened in prehistoric times. This will be better understood when excavation of the lower levels and geological research has been undertaken.

The examples of building activity at Aşıklı Höyük, given below, are from layer 2 and are found in plan squares 2-5 J-K, 4 G-H and 5 L-N 30 cm below the surface soil, since these are the most representative at present. The building activities in the lower layers will be mentioned when necessary (Pl. 4, 6/2, 7)<sup>1</sup>.

Buildings of layer 2, where many renewal phases are observed were totally of mud-brick, *kerpiç*. In lower building levels, where different *kerpiç* constructions are recognized, walls were probably built of mud only, but due the fact that they were found in limited areas, a detailed observation was not possible. The mud used in the construction of the walls is light buff in colour, compact and sometimes silted. Such walls are found in the lower phases of buildings AH and Z (Pl. 4).

Walls containing a very thick mud-mortar between mud-bricks are found in the upper phases. Mud-bricks are most probably not molded, but cut. This is inferred from the different dimensions of the bricks, their thickness being not more than 7-8 cm and their length being of varying ratios to their width. Although they are in various dimensions, very small variation in their width is observed. In this respect, it seems that they were cut from their bed and carried to the settlement where they were used.

*Kerpiç* walls are constructed of mud-bricks bonded to each other by a mud-mortar which is as thick as the bricks, that is, a space as thick as a brick is left between 2 mud-bricks for the mortar.

Looser, straw-tempered mud bricks are observed in the upper phases. They were either molded or shaped. After the wall was built up, the facade of the wall was smoothed probably by cutting the uneven parts of the bricks. This process is recognized from the trapezoidal shaped bricks found close to the edge of the wall. After it has been levelled, first

a plaster of ca. 1 cm thick, then a thin, pure, untempered plaster was applied.

The same procedure occurs in floor constructions. Floors are made from loose, buff-coloured *bulgur* like earth. This is spread, compacted, and then plastered with an untempered, pure clay, like the outer wall facades (the purity of the plaster applied to the walls and floors was noted in our first observations). The variation in colour of these plasters, some reddish brown, some dark gray, some buff in colour, could be the result either of the material or the temper used. Further chemical analysis would be helpful to resolve this.

Floor and wall plasters were frequently renewed. These renewals, which took place whilst the buildings were occupied, may have occurred once a year. In one of the building phases of building A, the floor was renewed 13 times (Pl. 4).

The mud-brick walls which have so far been found, have mostly been built on the walls of the previous phase. None of them have foundations. A structural statics model of the mud-brick constructions of Aşıklı is given at the end of the report (see App.I).

The rebuildings in the settlement are called "Building Phases" and partial constructions, "Alterations". In other words, rebuilding means the structural activity but also the occupational stages of the building or building elements. So when we say for example building A, building phase 2a, we mean : a) the process of construction, i.e. the building up of the four walls, floor and roof, b) the period the building is occupied or used (Pl. 4, 5).

The features used in this classification consist of the building elements themselves, such as walls and floors. Since they occur in the process of construction, the term "Building Phase" covers them. The process of occupation can be traced only in such limited situations as renewals of the floor and wall plasters, renovation of hearths, floors etc. The fills found in the buildings do not give any hint for the occupation, because they are not directly related to the destruction of the Building and their reconstruction. Building phases include the reconstructions made by leveling the floors of old buildings, while using their walls and constructing new walls on top.

Building phases are determined separately for each building i.e. the reconstructional stages for each building is recorded independently from top to bottom as 2a, 2b, 2c. The phases for each building may or not be contemporary with phases of buildings in other parts of the settlement. Our preliminary observations indicate that there may have been such contemporary structural activities, but such relationships will be better identified once the earliest phases of layer 2 have been reached.

So far most of the buildings of layer 2 have been excavated to the floor level of 2b, though in some cases only to 2a's floor level (Pl. 4, 5, 6/2, 7). As mentioned before, during the renewal of a building, the walls of the earlier building were used and new walls were built at the same place overlying the older ones, while the inner part of the building was levelled. The fills consist of the debris of the old phase and also probably of rubbish which has been carried from elsewhere to the settlement. This is indicated by different veins seen

in the fill. The fill contains usually small, eroded pieces of mud-brick, floor and plaster and carbonized particles. These characteristics show that the fill of the buildings is not accumulated from the ruins, but is filled deliberately to obtain a new living level.

**Alterations** are of 2 kinds :

- 1) *Building elements added to buildings*
- 2) *Building elements removed*

We don't want to use the designation "to repair" or "repairing phase" in their generally accepted meaning, because to repair means to restore a thing which malfunctions or is ruined. However in this case, the tendency is towards alteration of the functions of the buildings.

Alterations could be made either during the process of building or of occupation. Building Z, for example, in its second building phase is reconstructed as two separate rooms. This could be called both a buildig phase or an alteration. In such cases, we preferred to use the term "Building Phase". The structural activities that have no connection with a building phase are evaluated separately and named "Alterations". They will be classified separately once "Building Phases" relationships have been established. For example, buildings BN, BT, BS, CM, CF and FP are built in the place of a "passageway" after the passage had fallen into disuse (Pl. 4). This cannot be connected with any of the "Building Phases" (Pl. 4, 6/2, 7).

The structural activities are :

- a) Alterations that take place during the process of occupation of a building phase and made at the same time,
- b) Alterations that take place in the process of occupation of a building phase, but done at different times independently of each other,
- c) Activity contemporaneous with the process of construction of a building phase (as in the above mentioned example of building Z, Pl. 4).

**Buildings** of the settlement are studied under 4 main groups :

- 1) *Buildings containing a hearth*

One-room buildings with a hearth. Hearths are placed in one of the corners of such buildings. None of them has a doorway which connects with the neighbouring building. All of them have their own walls and are mostly adjacent to neighbouring walls (Pl. 4, 7/1). There are about 20 buildings with a hearth in layer 2. The hearths are built in one of the corners of the buildings and have approximately the same elevation as the floors (Pl. 4, 8/3).

They are quadrangular in shape, the corners are slightly rounded. Their floors are paved with medium sized pebble stones. Their dimensions are ca. 40/50 x 60/70 cm., and they are surrounded on all four sides by vertically placed medium-sized flat stones. In one example mud plaster covering the paving stones was found in good condition (Pl. 8/2-3). The height of the walls of the hearths is not more than 30 cm and the hearths are slightly rounded at the end. Under the floor, there is a layer of sand and gravel upon which the paving stones are placed. The thin ash layer on and between the stones is probably the remains of the fire in the hearth. The hearth opens always on the short side, which is not adjacent to the wall of the building (one short, and one long side of the earth is always adjacent to the wall of the building). The openings of the hearths in plansquare 4J building CB and 5J building BO are well preserved (Pl. 4). A space of ca. 30 cm in width, north of building BO joins onto the floor of the same building with a slight slope towards north. A similar space in the east corner of the oven, which is situated in the southwest corner of building CB, continues towards the southern wall of the building (Pl. 8/2).

In one example, a space about 20-25 cm in width was found left in the wall. This was probably used as a chimney of an oven (Pl. 8/1). It is situated in the west side of building CG in plansquare 4 K which goes under the wall (Pl. 4, 8/1). The stone paved floor of the oven partially continues in this hole. The narrow space outside, between buildings CH and CG could be the place where the chimney of the oven opens to. The eastern half of the oven where presumably the opening should be situated, is destroyed by a pit belonging to the upper layer.

## 2) "Houses"

We named the buildings that have two or three rooms connected to each other by doorways as "houses" (Pl. 4, 7/1-2). Each house has its own walls, i.e. walls are not common to neighbouring houses. The rooms are separated from each other by a single interior wall containing a doorway (Pl. 4, 7/1-2). Neither a hearth nor a fire-place is found in these houses, but a few features are unearthed. In some of the buildings, pits are found but their purposes are not known yet. There is a *kerpiç* pedestal, round in shape, ca.40-50 cm in diameter in building CH in plansquare 4 K, which was found lying on the floor and which has a height of 3-4 cms (Pl. 4, 6/2, 7/1). The function of the plastered pedestal is unknown. In building DB, 5 K, adjacent to its southern wall two rectangular platforms are found which are parallel to each other (Pl. 4). Both are made up of one course of mud-bricks laid side by side, and surrounded by vertically placed mud-bricks then plastered all over. Their function is not known either. Another feature is a pit, 1.0 m. in diameter, plastered inside which lies in the northeast corner of building DU in plansquare 5 M. It is probably a "storage pit" but nothing was found in it.

An interesting structure, ca.8 cm wide, and 50 cm long and made up of *kerpiç*, and



which lies adjacent to the east wall of building BI in plansquare 5 J, may indicate a stairway to the roof. It lies against the wall with a slope from north to south. Under that one may trace the opening of a doorway. There is another, horizontally placed building element of approximately the same dimensions in the southeast corner of the same building, ca. 35 cm away from the south wall and parallel to it. This could also have some kind of a relation to the above mentioned stairway construction. A similar structure in Çatal Höyük is regarded as a stairway (Mellaart, 1967, p. 365, fig. 4).

The number of small finds found in the rooms are not much; the ones found are probably brought there together with rubbish material from another place to level the ruined remains. Hence, these finds do not help us to distinguish the function of the buildings. These groups of buildings, which we have termed houses might only have served for living, in other words for such activities as sleeping and living and not for productive purposes. As in the buildings with hearths, main entrances were probably from the roof.

The group of buildings regarded as "houses" are as following :

- a) K, J, U in plansquares 3 J-K
- b) V, FK in plansquare 3 K
- c) EK, CC, CD in plansquare 4 J
- d) CH CJ, CK in plansquare 4 K
- e) BI, BL in plansquare 5 J
- f) DA, DB in plansquare 5 K
- g) CY, CZ, DF in plansquare 5 L
- h) DJ, DK in plansquare 5 M

### 3) Rubbish areas

In some parts of the settlement, accumulations of animal bones, obsidian and bone tools and their remnants together with ash, carbonized wood and *celtis* seeds are found. The many thin veins show that the rubbish was being burnt from time to time. Such accumulations are found in two different contexts. Some of them are from areas whose size is yet unknown, such as the area under building AN, western part of BA and BB (Pl. 4). These accumulations belong to lower phases not totally excavated. The second group of rubbish accumulations is found in small buildings at various levels. These are called U in plansquare 3 J, BP in 5 J, EY in 5 O and AD in 2-3 P (Pl. 4).

Such fills were especially found under building AY in 2 J, in the west side of BA and BB, in building AD, plansquare 2 P and CT in 5 L (CT is partially out of the excavation area). Thin lenses or veins are not so frequent in the fills of U, BP and EY; they are ashy and soft and a vast amount of rubbish material is found in them. In building BP, on the western side, apparently many stones have been dumped (Pl. 7/3). Buildings EN and CM in plansquares 5-4 J show a similar feature (Pl. 4).



#### 4) "Passageways" ("streets") (Pl. 4)

Areas lying between one-room buildings and "houses" with a width of 1.0-1.5 m are named as "passageways". Under this group are : a) BN, BT, BS in plansquares 5 J; CM, CF, FP in 4 J (these were built after the passage was out of use), b) the passage between FL in 3 K, CP in 4 K and the southwestern part of 5 K, the space between DA, DB and DC, c) E in 4 G-H. The pebble pavement GA in plansquares 5 N-O could be called a "street". Although they are named as passageways, their function might be to separate the one-room buildings, "houses" and "units" from each other. At groundlevel no doorways are found connecting the passages to the buildings (Pl. 4). The passage in plansquares 4-5 J went out of use in the course of time and has been divided into rooms/areas which functioned for different purposes. The space which is a continuation of the passage towards the east, named as FL and CP also went out of use. The wall built in between DA-DB and DC is probably a supporting wall to connect the buildings at roof level. The floor of the passages is not plastered, but came to resemble a floor through being walked and or lived on. The objects found on these horizons formed an uneven surface. On such uneven surfaces of BT and BN, scattered remains of whitish ash from organic materials are found. This horizon belongs to the first phase when the area was being used as a passage prior to its being divided by walls in the upper phase.

### Settlement Patterns

The buildings studied above under the four groups are presumed to have relations with each other. These relations as a whole determine the main features of the settlement pattern. We tried to analyse them under two main headings :

- relationships in roof level ("units") (fig. 1),
- arrangement of buildings in rows and the lines formed by this pattern.

When trying to examine the relationships in roof level as mentioned above, we saw that in some of the buildings there are fire places and that none are connected to the other with a doorway at ground level. But many that have no fire places are connected to another building with a doorway. The second group, which has connections, consists of two or three rooms and are named "houses". We then came across the problem of the relation between buildings with a hearth and "houses". We know that the passages do not play a role in connecting these two groups. By considering the finds, it can be said that this relation could be fixed at roof level. In many examples the walls of the buildings are adjacent to each other thus forming a connection at roof level, but in some cases, it is difficult to decide, since spaces of about 30 to 35 cm are too small to be a passage. In some cases different indications help to solve the problem, e.g. the chimney of the oven situated at the north end of

CG in plansquare 4 K has an opening into the narrow space between CG and CH on its western side. This space seems to exist at roof level too. In another example, the space between J, V and U in 3 K is filled with mud-bricks and mud. So it's probable that there was no space left at roof level. In general it is difficult to decide on roof connections. In such cases we consider the buildings independent, in other words without a continuous roof (Pl. 4).

Passages contain more finds than buildings and these finds are probably *in situ*. This may be the result of neglecting to fill the passages when the buildings were being filled to obtain an even level for the next building phase. Passages may have been filled by natural accumulation during the process of living and using the space.

The pebble stone paved "street" GA, in 5 N-O must have been built for a different purpose, i.e. to connect the different areas of the settlement (Pl. 4, 6/3). Some fallen mud-brick pieces hint that the buildings on the northern side of the street were supported by stone walls.

Other buildings besides those mentioned above are not classified due to the fact that they are not completely excavated and their relations are not understood yet. Also there are some which are excavated totally; but do not fit into the classifications, e.g. building DG in plansquare 5 M and DZ, EA, DS, DT, DY in 5 N (Pl. 4).

Building groups which are connected to each other at roof level may be called "units". Buildings with a hearth, "houses" and rubbish areas together form a "unit". These are separated either with passages or with very narrow spaces at roof level. Possible "units" are (Pl. 4, fig. 1) :

- a) A, H, I, J, K, U, L, V FK, CJ, CK, CH (EK, CC, CD, CO) in plansquares 3-5 J-K
- b) EM, EL, CB
- c) CA, BH
- d) BI, BL
- e) CE, BO, EN, CG
- f) BM, BP
- g) BV, BZ
- h) DA, DB
- i) CN, CL, DC (?), CR (?), in plansquares 4-5 K-L
- k) CY, CZ, DF
- l) DK, DJ, in plansquares 5 L-M.

Others are not classified yet, in these units it is presumed that the rubbish areas do not have roofs, and the garbage/rubbish material was thrown from above.

The first probable settlement pattern schemes seem to occur through examining the organization of the structures and the rows they form, the classification of single buildings, units formed by the relations between buildings and their distributions (Pl. 4, fig. 1).

We have seen that the above mentioned one-room buildings, units, passageways, etc. stand in rows where spaces are sometimes used as passages or just left as narrow spaces between the walls or where they are even adjacent walls. It seems possible to see two different settlement pattern schemes by following these lines.

These are :

a. Structures sited as groups surrounding a circle whose center is in plansquares 3-4 L-M and not excavated. They are probably in the following order from inside to outside :

- DL, DM, DN, DP, DZ, EA
- CU, CV, DG, DK, DJ, DO, DR, DS, DT, DY
- CN, CL, DC, CR, CY, CZ, DF, DH, (DU, DV, EB?)
- L, U, V, FK, CJ, CK, CH, CG, DB, DA, CT
- K, J, EN, CE, BO (-BV, BZ; -BM, BP, BR, BU)
- EM, EL, CB, FP, CF, CA, CM, BH, BS, BN, BI, BL.

b. A circular settlement whose center is in plansquares 3-4 J-K and distributing in rows starting from this center. Buildings in the center in plansquares 2-4 J-K are: A, I, H, K, L, J, U, V, FR, EK, CC, CD, CO, CH, CJ, CK, CE, BO, EN, CG.

Linear structures are :

- BM, BP, BR, BU
- BV, BZ
- DB, DA, CT
- DC, CR, CY, CZ, DF, DH
- CU, CV, DG, DK, DJ, DO, DR
- DL, DM, DN, DP (Pl. 4).

Slightly curved walls between DP, DR and DZ, EA, DS, DT, DU on the north side of plansquare 5 N could be the outer border of this circle. Buildings lying between this wall and "street" GA, should be studied in another context. GA could be a street surrounding the settlement lay out of the second level settlement (Pl. 4). Apart from the buildings mentioned above, the ones in plansquare 2 J-K and 4 G-H are found in lower layers and their stratigraphical relations have not been definitely solved. Those are : AH, AN, Z, AY, BA, BB, BK, FG, FE, FF in 2 J-K and O, D, E, P, R, AF, AS and AT in 4 G-H.

These buildings might have been built on slopes, on terraces by a different method according to the previous topography of the settlement. The place of these buildings in the settlement pattern is not yet totally understood since they have been excavated only in small areas.

Buildings belonging to layer 3 in plansquares 5 O-P are classified separately, since their stratigraphic relations are not definite. "Street" GA causes difficulties in the stratigraphy (Pl. 4). The buildings of this layer are mostly built of uncompact *kerpiç* and disturbed either by moles or by other surface damage. There are adjacent walls as in level 2. A hearth

found in building EC is different in form and in floor pavement to those of the previous levels. It is quadrangular, the paving stones are larger and flat, it is situated in one of the corner of the building.

Plaster coloured with red ochre is found in the west side of building EE in 5 O and in the north side of ET, in 5 P. It is in a very poor condition and no decoration is found on it. None of the buildings have floors, except EC, which has a poorly preserved floor. It seems too early to comment on the settlement pattern of layer 3 before it has been excavated on a larger scale.

Stone walls on the southwest corner of plansquare 5 P and 4 P belong to the 3-5th level (Pl. 4, 6/3). These might be irregular terrace walls.

The 4th and 5th layers were excavated in 1989 season. The most important structure is building T in plansquares 3-4 P-R of '89 and 4-5 P of '90. Measuring 6.50 x 6.50 m, it is quite a large building. Its floor is plastered with lime and coloured by red ochre. Besides having 5 main building levels, its floor has been renewed several times. A more detailed observation should be done by examining each building phase separately. Buildings on the western side of T (N, AK, M, L, AO, AB, AC, AU, AL) probably belong to a complex which should be considered all together. The 6th and 7th layers consist of buildings and walls observed in very small squares in 2 P-R.

## Conclusion

Preliminary results are as following :

*Kerpiç* walls without foundations are either built of mud-brick or mud only. Usually two different kinds of mud is used in the same wall. *Kerpiç* is most probably unmolded, but given a shape and used when wet. Walls and floors of the buildings are plastered with a thin layer of mud and have been renewed several times.

New walls are built on old ones while the inner parts of the buildings were levelled in order to obtain a new level for the next phase. Structural static observations suggest that buildings were probably one-floored. They probably mostly had flat roofs.

Buildings appear to have served different purposes. According to the building elements found in the rooms and the organization and relation of the buildings, we have divided the structures into four groups : Buildings with a hearth, "houses", passageways and rubbish areas. We named the specific building groups as "units". Units are groups of buildings which are separated from each other either by passages or narrow spaces.

The distribution of the buildings/building groups shows a common settlement pattern type, i.e. a "center" and structures/buildings established around this center. There are two possible schemes : in one of them, there is a center and circular groups lie around this center; in the second, a center and building groups starting from the center lie in straight

rows. The centralized building system seen in both cases is without question due to the socio-economic structure of the inhabitants.

In respect to the settlement pattern, it can be concluded that the type of settlement at Aşıklı Höyük is not "agglutinant", which is frequently seen in sites that have *kerpiç* architecture, but has been "planned". In the course of time, some renovations or alterations were being done but always preserving the main idea of this pattern.

### PART III : THE CHIPPED STONE INDUSTRY OF AŞIKLI HÖYÜK : A GENERAL PRESENTATION (Pls. 12-16) \*

by Nur Balkan-Atlı

This first report on the chipped stone industry of Aşıklı Höyük, excavated since 1989, aims to present this industry briefly in general terms. No strict typological groups and statistical tables have been established yet. They will be treated as technological, stratigraphic and distribution studies, in forthcoming reports.

#### Raw Materials

Aşıklı Höyük chipped stone industry is almost entirely an obsidian industry. So far only five pieces of flint (3 fragments and 2 unretouched blades) have been found. The flint is light brown and fine grained. However, more than 22.000 pieces of obsidian have been registered. This abundance is quite natural considering the geographic setting of Aşıklı, situated in the Central Anatolian source regions e.g. of Çiftlik and Acıgöl. The obsidian found at the site is mainly semi-transparent and dark or light grey. Some have pumice inclusions. Also, a coarser, streaky grey type and a mottled transparent light grey type exist.

The obsidian found on the site is seen in many forms : blocks, tablets, "bombes", primary core preparation elements, blades, flakes and retouched pieces. Looking at this assemblage we can say that the obsidian was transported to the village without being pre-prepared, and all the knapping took place at the site. The large quantity of waste material (about 30 %) is probably the result of this knapping activities.

\* This report is on the excavated material. There had already been an extensive report on survey material of the site done by Ian Todd "Aşıklı Höyük, a Protoneolithic site in Central Anatolia" in *Anatolian Studies* 16, 139-163, 1966.

### *Cores*

Cores may be considered relatively abundant (about 2.5 %). The dimensions vary largely from newly prepared to small exhausted ones. The analysis of the cores has not been done yet, but we can make some observations.

The blade cores are more numerous than the flake cores. Most of them are bipolar and seem to be prepared by forming a crest on the back. This crest is formed by knapping the two sides (Pl.12:1) or only one side, the other being left untouched (Pl.12:2). The crest is observed centrally, decentrally or laterally, which may be due to the initial form of the core as well as to the state of exploitation of the core. This may also be true of those flat blade-cores which have a natural back with a lateral crest (Pl.12:6).

All the bipolar cores do not have crests. Instead we observe either converging surfaces (Pl.12:4) or converging striking platforms (Pl.12:5).

Blade-cores also occur as cylindric and pyramidal cores (Pl.12:3) but they are more rare.

Flake-cores are mostly globular, deformed cores with several striking platforms besides which a more regular "disc" shaped flat flake-core also exists (Pl.12:7). Flake-cores with one striking platform are not numerous and mostly they seem to be the product of re-utilization of pyramidal blade-cores (Pl.12:8).

Exhausted (Pl.12:9) and broken cores are found in large numbers.

### **Debitage**

Blanks in the form of flakes and blades constitute about half of the assemblage. Blades are relatively more numerous than flakes. Bladelets exist in very small numbers. Blades have mostly punctiform and flat butts, and triangular cross-sections. On flakes flat butts are more frequent. On blades or flakes the bulb is rarely removed.

### *Microliths*

Microliths are very rare. The ones found so far are in the form of retouched bladelets (Pl.16:11, 15).

### *Arms and Points*

Clearly defined arrowheads are quite few and usually broken. There is a relatively high percentage of pointed blades, some of which seem to be used as projectiles. So we can group the offensive pieces in two groups : arrowheads and projectiles.

Arrowheads are made of long, regular blades and they have various kinds of tangs :

- On some of the arrowheads the tangs are formed by direct abrupt retouch on both sides of the proximal part of the blade. These retouches form either two shouldered arrow-



heads (Pl.13:3,10) or one shouldered arrowheads (Pl.13:2). One shouldered arrowheads are also formed by one sided retouch (Pl.13:1) which seems to be one of the typological characteristics of Aşıklı Höyük.

- On the other arrowheads the tangs do not form shoulders, they grow narrower towards the proximal end (not figured). These bear direct abrupt retouch on both sides.

- Another type which can be classified as an arrowhead bears steep retouch all along one side with the exception of the central part which forms a kind of a narrow shoulder (Pl.13:4).

- On one arrowhead the tang is formed by the converging edges, one bearing direct and the other bearing inverse retouch (Pl.13:7).

On these arrowheads the tip (distal end) is sometimes left untouched (Fig13:10) and sometimes modified on one side (Pl.13:1) or both sides (Pl.13:2) by steep retouch.

Projectiles are in the form of pointed blades. The tips are naturally pointed or they are modified by abrupt or semi-abrupt retouch. The retouch may be continuous along one side, or limited to the distal or proximal part of the blade (Pl.13:5,6). Another type of these projectiles have obliquely retouched proximal ends.

Bigger pointed blades bearing abrupt retouches may have been used as projectiles (Pl.13:8, 9, 11).

### Scrapers

Scrapers from the most popular tool group at Aşıklı Höyük. They are numerous and they are on any type of blank displaying a variety of forms. For the time being we have grouped them as follows :

#### Scrapers on flakes

These are in the form of circular, semi-circular, end and double scrapers.

Circular scrapers (Pl.14:4,5) are usually on thin, regular flakes with abrupt or semi-abrupt retouch continuing all around the piece giving it a circular form. Circular scrapers also occur on thick flakes (Pl.14:1) or on fragments of cores looking more like carinated scrapers (Pl.14:12).

Semi-circular scrapers are of two types : in the first type the abrupt retouch of the front continues on the sides shaping a semi-circular front (Pl.14:2) and the second type is the "fer à cheval" type (Pl.14:3).

The end scrapers are on thin (Pl.14:9) or thick flakes (Pl.14:1,10). The front is always distal and mostly rounded and rarely straight, the sides being unretouched, retouched and sometimes in the form of cants. In the last case they converge shaping convergent scrapers (Pl.14:8).

Double scrapers on flakes are mostly alternate scrapers with one front on the frontal



face and the other on the dorsal face. The front may be distal, lateral or proximal (Pl.14:6).

#### - Scrapers on blades :

Scrapers on blades are quite frequent in the Aşıklı assemblage. They are on any form of blade : long, short, thick or thin. The front, which is usually rounded, is normally found on the distal end except for the double scrapers. The sides are usually unretouched; inverse retouch exists also (Pl.15:3, 8).

Double scrapers on blades are much more common than those on flakes. These are direct scrapers the front being on the distal and proximal ends. (Pl.15:5, 6, 7, 9).

- Scrapers on broken cores (Pl.15:10, 11), core revival tablets (Pl.15:12, 15) and fragments of cores (Pl.15:13,14) are not infrequent.

#### *Retouched Blades*

Several types of retouched blades are included in this group which constitutes an important part of the tool assemblage.

- Blades with steep retouch : The retouch is direct, continuous and may be unilateral or bilateral (Pl.13:14). There are grossly retouched ones also in infrequent numbers

- Truncated Blades : They are all truncated obliquely on distal or proximal ends (Pl.13:15), and they can also be bi-truncated (Pl.13:16,17).

- Alternate and alternating retouches are widely used on blades (Pl.13:18).

- Blades with direct, continuous retouch are also common (Pl.13:13).

- Notched and denticulated blades are extremely scarce at Aşıklı Höyük (Pl.16:10).

#### *Burins*

Burins are not frequent. They are mostly on blades, rarely on flakes, and on old tools. They are mostly angle burins on a break (Pl.16:1, 3,6), transversal burins (Pl.16:2,5) and rarely dihedral burins (Pl.16:7).

#### *Piercers, Borers*

These are quite scarce in the Aşıklı assemblage. More frequently they are on blades (Pl.16:8, 12, 13) on crested blades (Pl.16, 9) and occasionally on heavy flakes. The tip is formed by steep retouch on one or both edges, and it may be short or long like a drill.

#### *Retouched Flakes*

They are very scarce and the retouch is often marginal and limited (Pl.16:14).

#### *Utilized pieces*

Utilization of unmodified blanks is observed especially on blades. Most of the regular blades bear traces of wear on the edges. (Pl.16:16, 17).

## Conclusion

On the whole this industry appears to enter in the early PPN lithic tradition, but it is too early to conclude this before having looked for local characteristics. For the time being Aşıklı Höyük is the only known aceramic village in the region, so new regional researches are necessary before dating this obsidian assemblage.

## APPENDIX I : STATICAL REPORT ON THE MUD-BRICK CONSTRUCTIONS OF AŞIKLI HÖYÜK

by Doğan Berker, M.S.C.E., Iclal Yağmur, C.E., A. Korkurt Atlı, Architect, M.S.

### Aim

The aim of this report is to consider the mud-brick constructions of Aşıklı Höyük, excavated in 1989 and 1990, from the statical point of view, and consequently to give another perspective for interpretation provided by a science other than archaeology.

### System

Basing ourselves on the settlement pattern and the measurements of the two campaigns, we chose a model and analysed it by constructional statics.\*

### Data and hypotheses about the model

#### 1 Data

- All the measurements and the material types
- Settlement plans of 1/100m and 1/200 m scales

#### 2. Hypotheses

The analysis of the settlement shows that the access to the houses was at roof level. Consequently, the roofs must have been constructed of solid material and techniques suitable to carry people.

#### 3. Model

Considering the constructions of Aşıklı Höyük in general, we chose the following type

\* Structural Statics is the science of the force balance of a structure in the construction system

as a model : mud-brick house with walls of (an average) of 22 cm thick, constructed on compact earth without stones or foundations. This model is of middle-size type within the limits of security.

### General explanation about the statical force balance

Analysed from the constructional point of view, we see that the physical forms of the mud-brick constructions of Aşıklı Höyük are influenced by

- the potentials of mud-brick as a construction material
- the tradition of the construction technics.

If the mud-brick constructions of Aşıklı Höyük are in good condition today, it means that the inner force balances of the structures were built with a certain stability. A construction should live long if its inner stability is well constructed (apart from the human factor).

This balance depends on two different kinds of force :

- vertical forces
- earthquake effects.

The vertical forces are the combination of the stable weights of roofs, walls, foundations, etc. and the motional weights of people and furniture. The first condition for a structure to "stay erect" lies in its reaction to the vertical forces, in other words resistance to force. However, contrary to general belief, the statical longliveness of a structure does not depend upon its being constructed to withstand. Forces that are caused by earthquakes may effect the structure twice as much as the vertical forces. This means, when the earthquake effects are taken into consideration, the measurements must be greater than those calculated for the vertical forces.

### Statical calculation

#### Vertical Loads

Floor weight	$4,00 \times 3,00 \times 0,3 \times 1.800$	: 6,48 ton
Wall weight	$(4,00 \times 3,00 - 3,56 \times 2,56) \times 2,00 \times 1.900$	: 10,97 ton

On the ground level

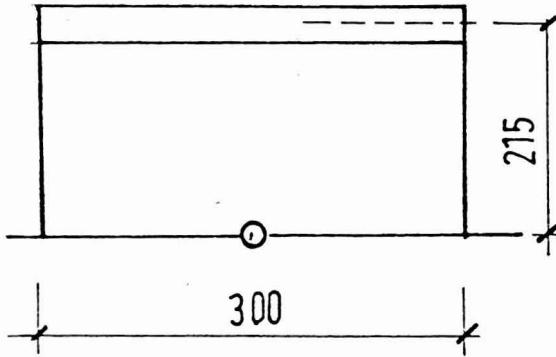
$$\text{B bot. : } \frac{6,48 + 10,97}{(4 \times 3 - 3,56 \times 2,56)} : \frac{17,45}{2,89} : \begin{matrix} 6,04 \text{ t/m}^2 \\ 0,6 \text{ kg/cm}^2 \end{matrix}$$

$$\beta \text{ allowable mud-brick stress} : \frac{\text{worst mud-brick quality}}{2} : \frac{3}{2} : 1,5 \text{ kg/cm}^2$$

On the ground level, wall thickness had been dimensioned according to the allowable stress.

Earthquake effects : Aksaray, the district where Aşıklı H. is situated, is in the 4th degree zone according to the Turkish earthquake code\*. This means earthquake effects are not very important here.

- Investigation on a 3.00 m wall direction



$$\begin{aligned} 17,45 \times 0,03 &: 0,52 \text{ ton} \\ M_o &: 0,52 \times 2,15 : 1,12 \text{ tm} \\ T_o &: 0,52 \text{ ton} \end{aligned}$$

compression stress

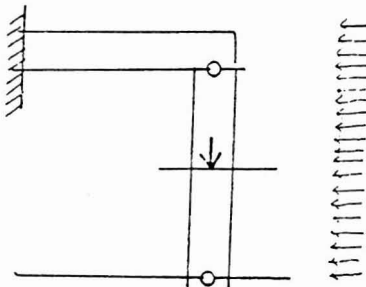
$$\Delta\beta : \frac{1,12 \times 6}{0,44 \times 3,00^2} : 1,70 \text{ t/m}^2 : 0,17 \text{ kg/cm}^2$$

sheet stress

$$T : \frac{520}{28.900} : 0,018 \text{ kg/cm}^2 \text{ estimate}$$

$$\beta \text{ total} : 0,604 + 0,17 : 0,874 \text{ kg/cm}^2$$

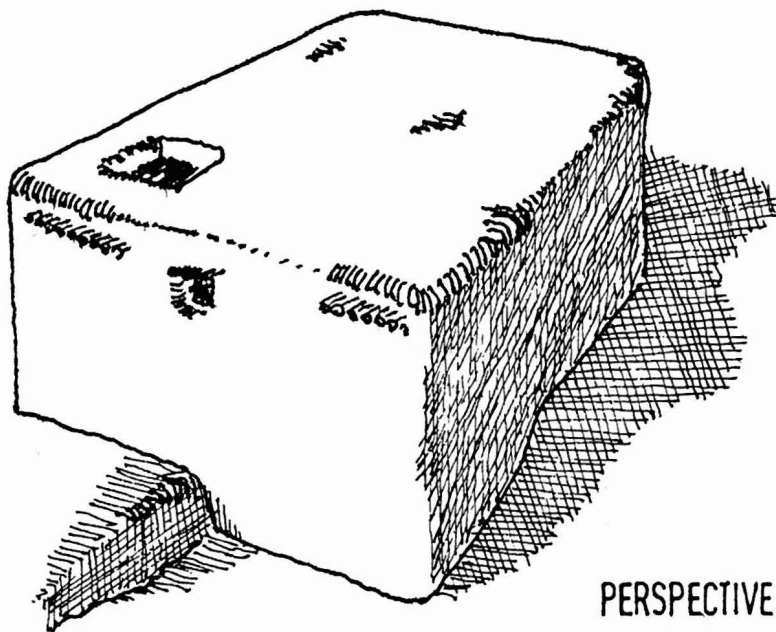
Investigation on the 4.00 meters wall direction



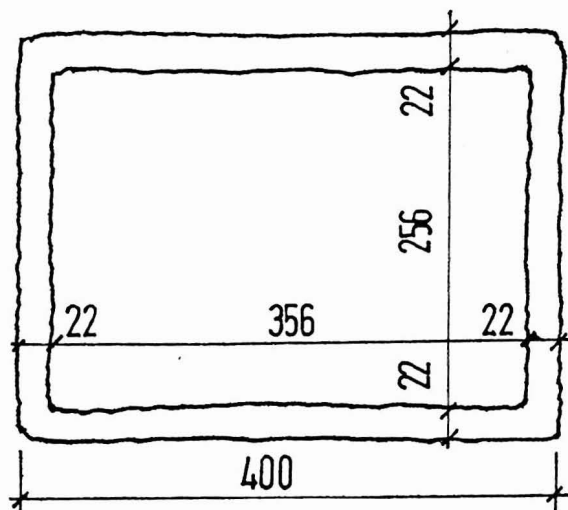
$$1.900 \times 0,03 : 0,057 \text{ t/m}$$

$$M : \frac{0,057 \times 2^2}{8} : 0,0285 \text{ tm}$$

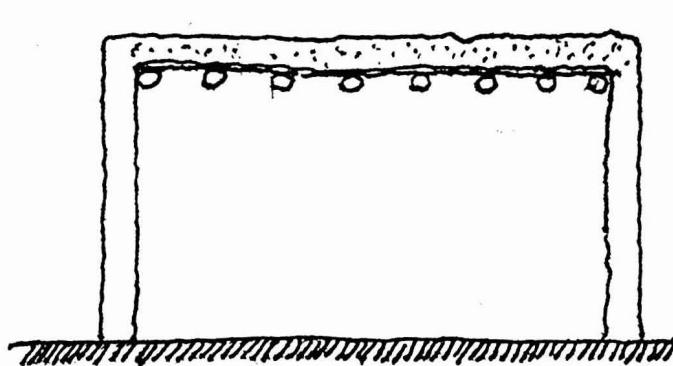
\* T.C. Bayındırlık Bakanlığı — specification for constructions to be in disaster zones.



PERSPECTIVE



PLAN



SECTION

Axial Force

$$\beta \text{ A.F. } (6,48 \quad 5,48)/2,89 : 4,138 \text{ t/m}^2$$

Bending Movement

$$\beta \text{ B.M. } \frac{0,0285 \times 6}{1 \times 0,22^2} : 3,533 \text{ t/m}^2$$

$$\beta \text{ comp. 1 : } 7,671 \text{ t/m}^2$$

$$\beta \text{ comp. 2 : } 0,605 \text{ t/m}^2$$

**Conclusion**

1. It seems that the building would carry itself if it was a one-story construction.
2. However, the buildings here are without foundations. The stresses on these types of structures could be twice our calculations in accordance with random settlements.
3. We consider that those structures were one story. It seems that even a partial second floor over them is impossible.

**APPENDIX II : A METHOD OF "RELEVÉE" USING THE THEODOLITE**

by A. Korkurt Atlı, Architect M.S.

**Explanation**

After considering the "relevée" systems used in the Aşıklı Höyük 1990 campaign, a more systematic and precise method had been found necessary; and as a result we thought of a new method which is explained here.

A portable computer besides the theodolite is needed to realise this method.

In reality this method is a parallel one to those used in more sophisticated equipments where the "relevée" points are noted with electro-mecanic systems and are turned into drawings. In other words, what we propose here is a system which can be helpful in the case of a lack of advanced equipment.



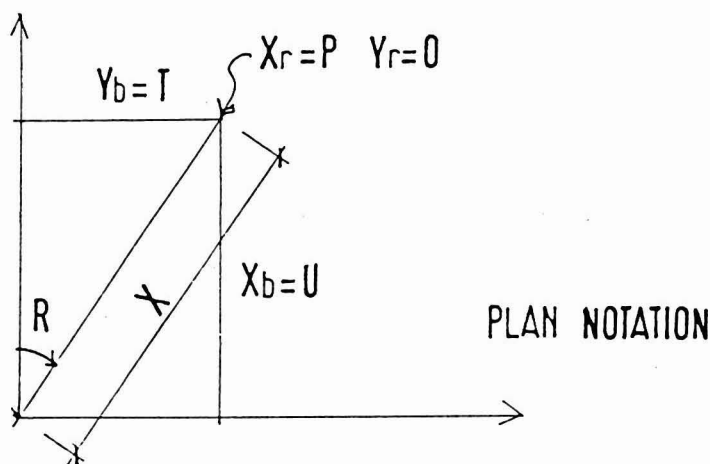


## Aim

The aim is to realise the "relevée" of a given trench in the excavation field in a quick and a systematic way.

## Theory

The theory is based upon the mathematical relations between the observed points and the theodolite's spot which are calculated for the "relevée".



## Computer Program

The work can be done with different kinds of computer languages. Here a program written in "Basic" is given as an example.

```

10 print "Program of "relevée"
20 input "Landmark Xr =", P
30 input "Landmark Yr =", O
40 input "Tool height  =", B
50 input "Reference level =", W
60 input "Horizontal angle =", R
70 input "Vertical angle =", C : C = (200-C)
80 input "Soil mire  =", L : L = (L/100)
90 input "Wall mire  =", G : G = (G/100) : H = B x Sin C : H = H/tan C
100 input "Slope dist. =", E : E = (E/100) : Z = ASN (H/E) : N = H/tan Z
      : A = M+N

```

```

110 X= A x Sin C : Y= A x Cos C : T=0+X x Sin R : U= P+X x Cos R
120 if L>0; if G=0 then K=W-Y+B-L : S= W - Y+B
130 if L=0; if G=0 then 200
140 if L>0; if G>0 then K=W-Y+B-L : S= W-Y+B+G-L
150 rem print "Hor. dist. = "; INT (X x 100)/100
160 print "Ground Level"; INT (K x 100)/100; "Wall level="; INT (S x 100)/100
170 print "Xb ="; INT (U x 100)/100; "..Yb ="; INT (T x 100)/100
180 go to 60
200 K=W-Y+B
210 print "Point level="; INT (K x 100)/100
220 print "Xb="; INT (U x 100)/100; "..Yb ="; INT (T x 100)/100
230 go to 60

```

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### ABBREVIATIONS

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*AS* : Anatolian Studies

*TAD* : Türk Arkeoloji Dergisi

*UISPP* : Union International de Sciences Prehistoriques et Protohistoriques

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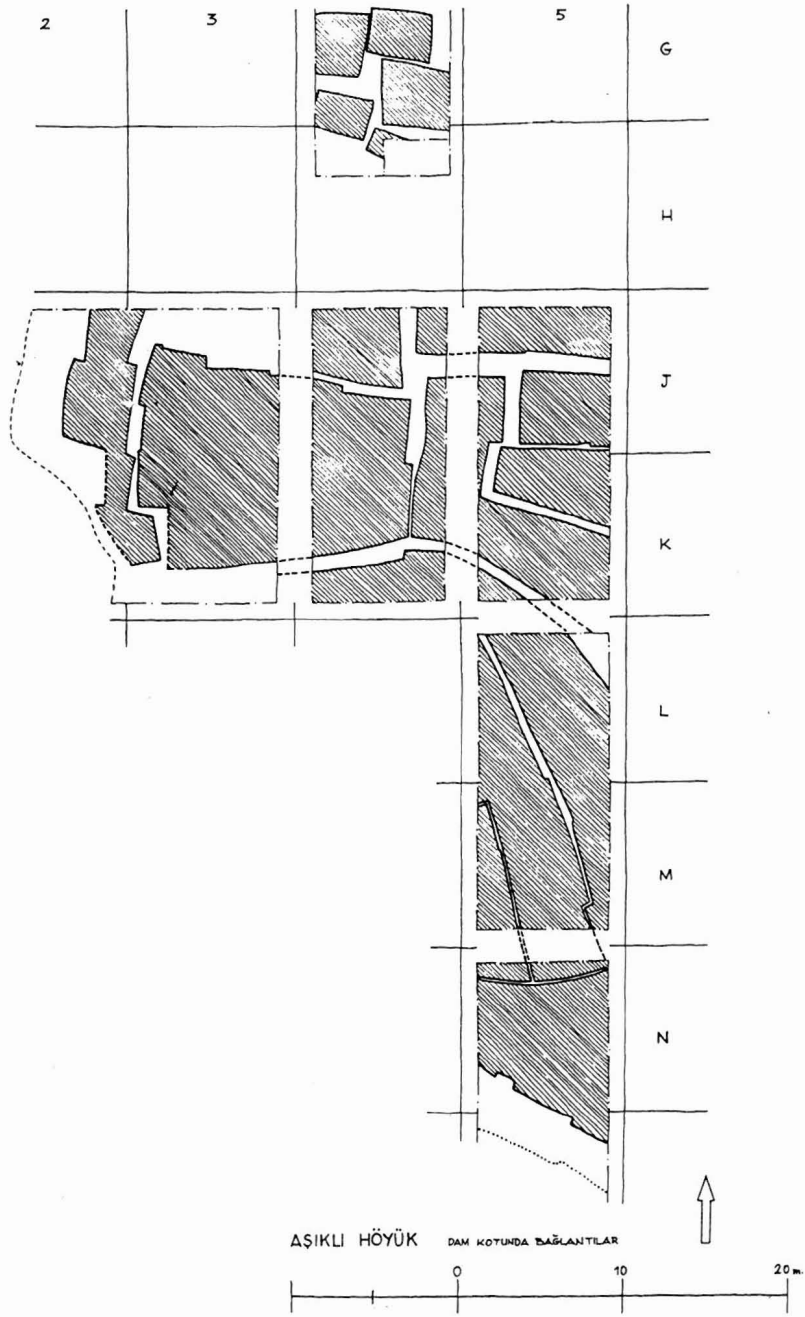


Fig. 1. Aşıklı Höyük. Tentative suggestion for the "insula" division at roof level.

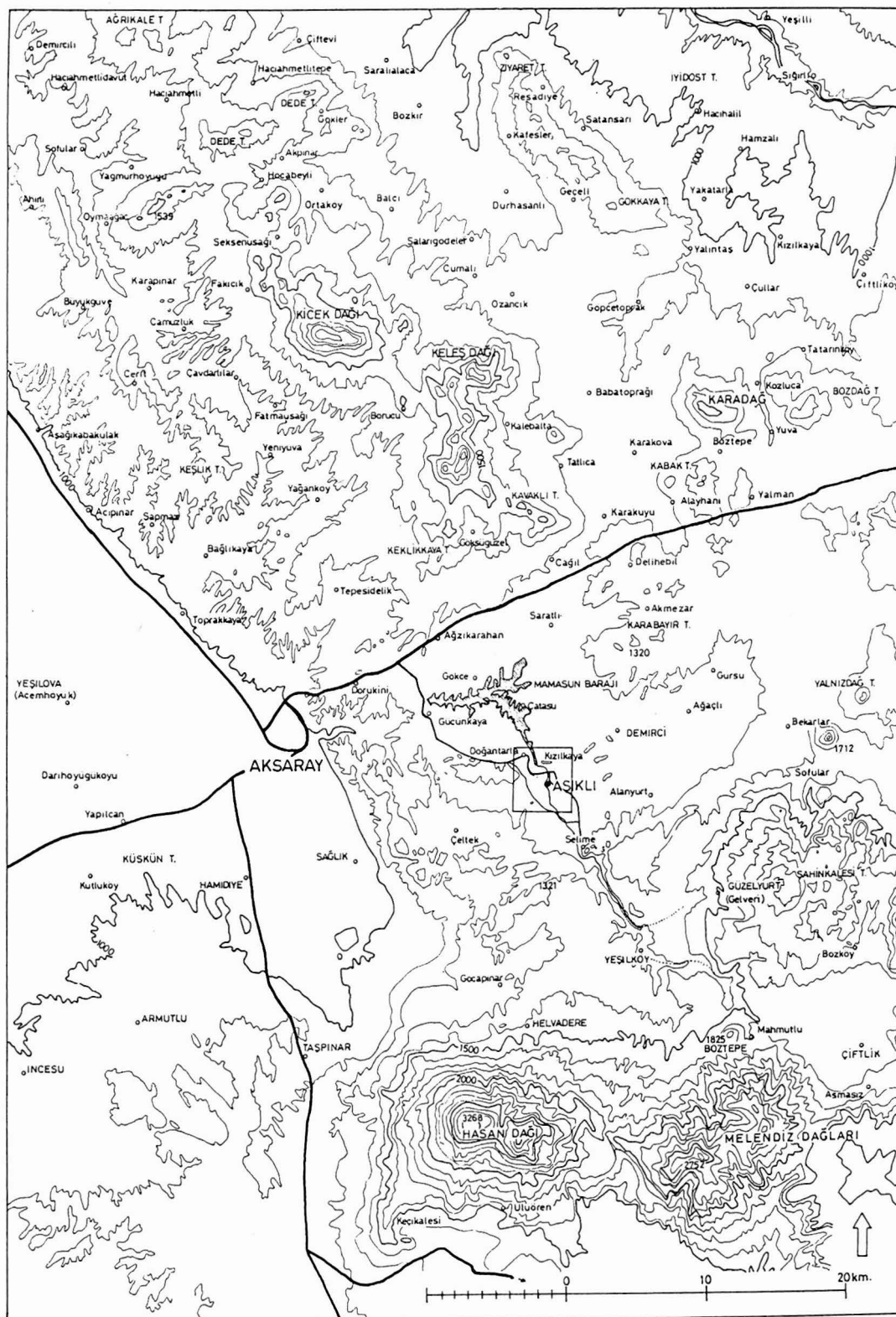


Plate 1 — Map showing Aşıklı in the province of Aksaray.

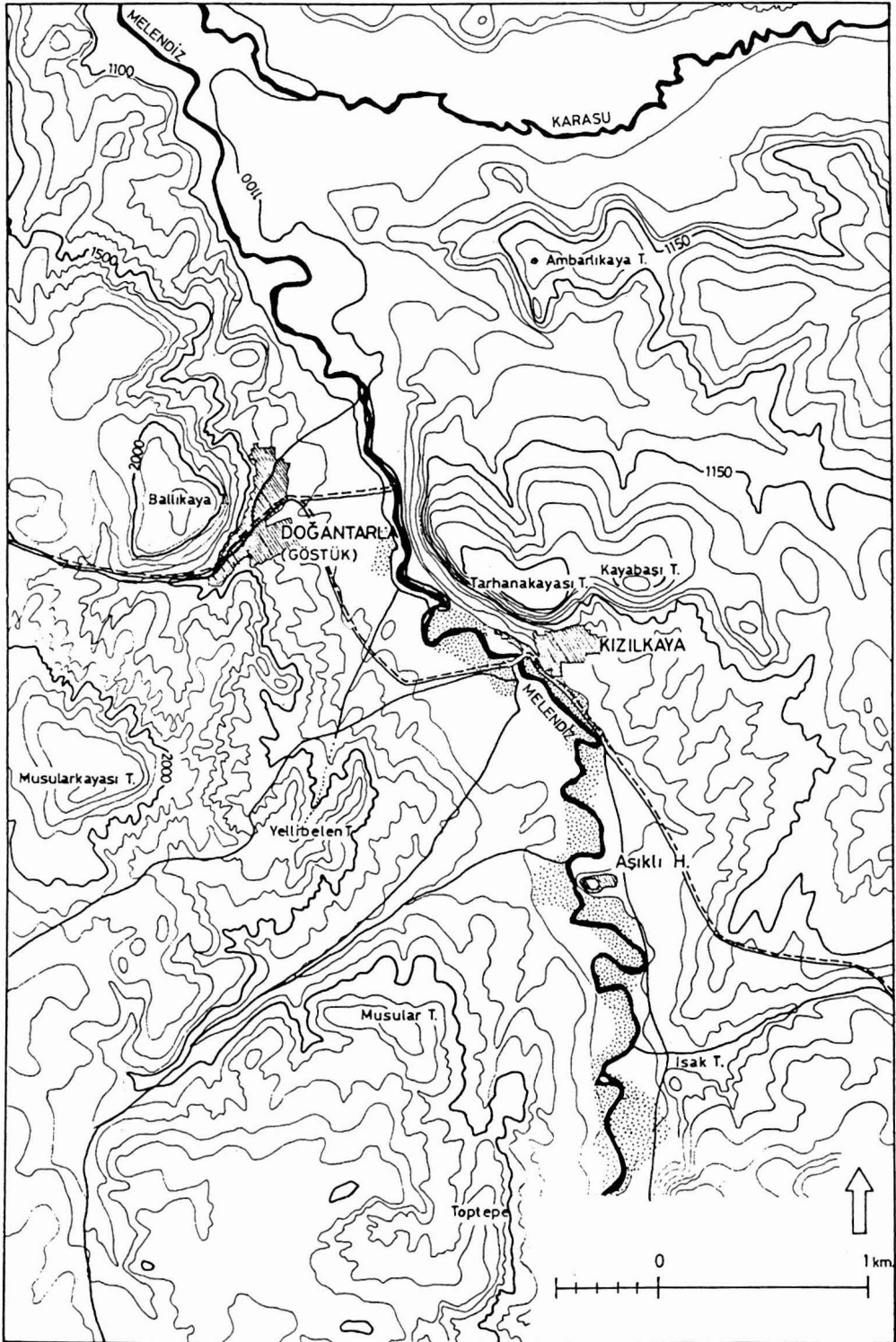


Plate 2 — AŞIKLI HÖYÜK at the Lake area of the Mamasin dam

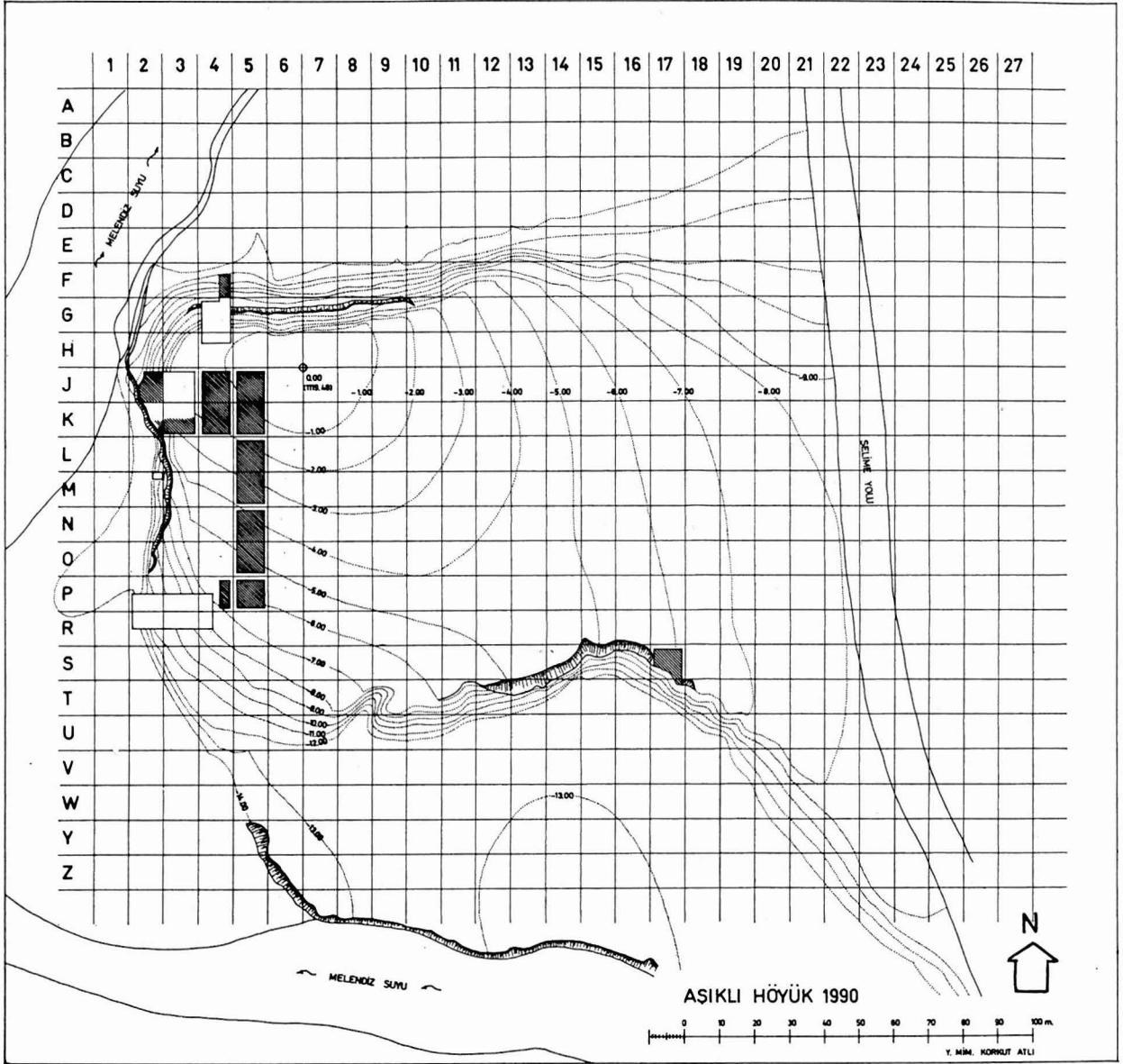


Plate 3 — AŞIKLI HÖYÜK. Trench Location Plan.



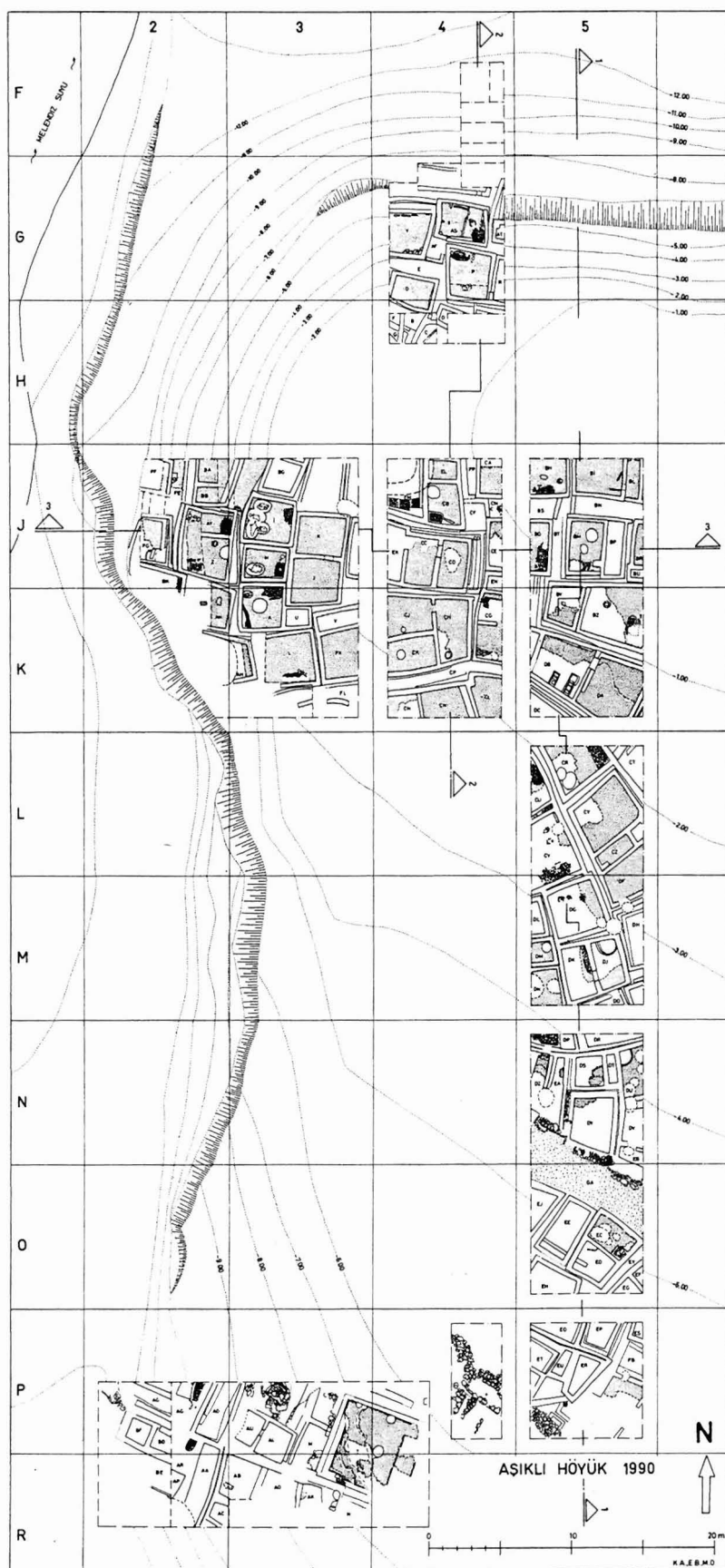


Plate 4 — AŞIKLI HÖYÜK. Schematic plan of the mud-brick buildings, except trench 17S.



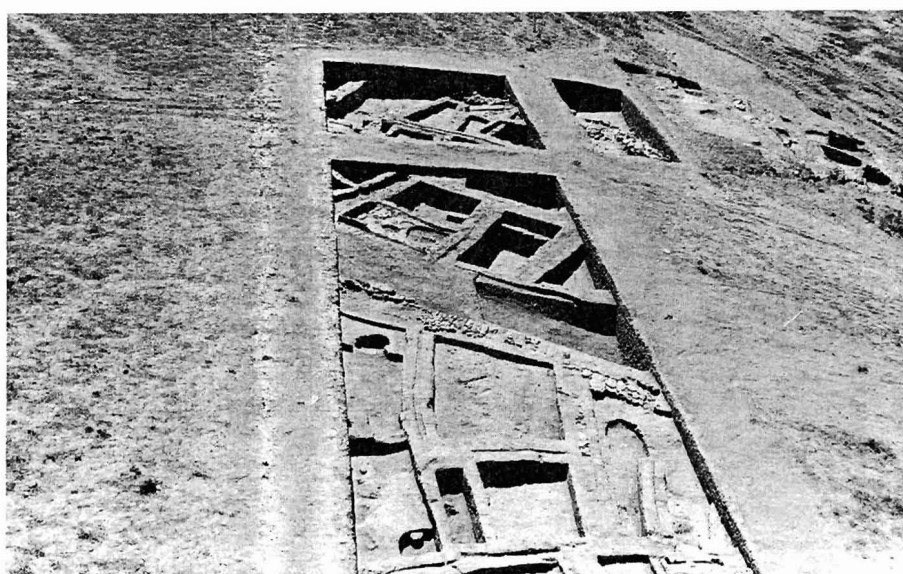
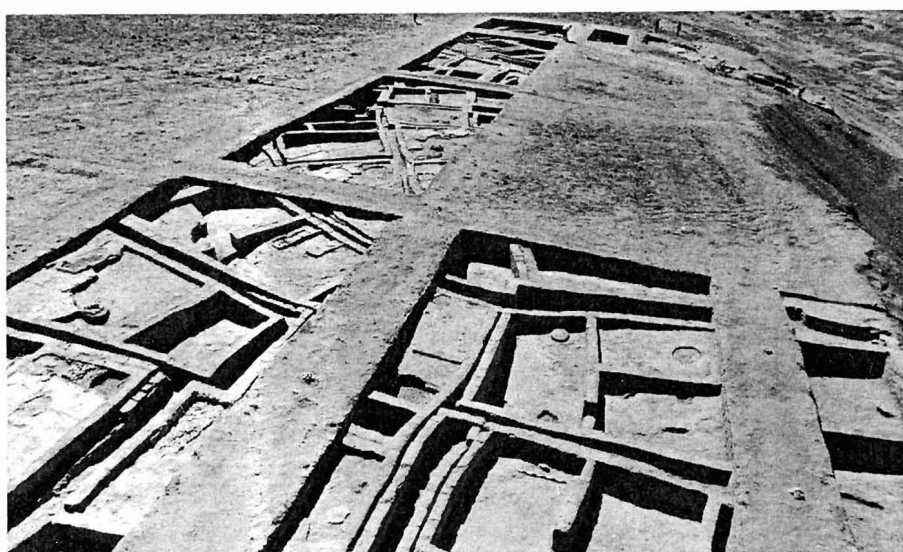


Plate 6 — 1. AŞIKLI HÖYÜK 1990: View from the West; 2. AŞIKLI HÖYÜK 1990: A general view of the buildings in layer 2 from the North-West; 3. AŞIKLI HÖYÜK 1990: An air view of the buildings in layers 2-7 from the North.

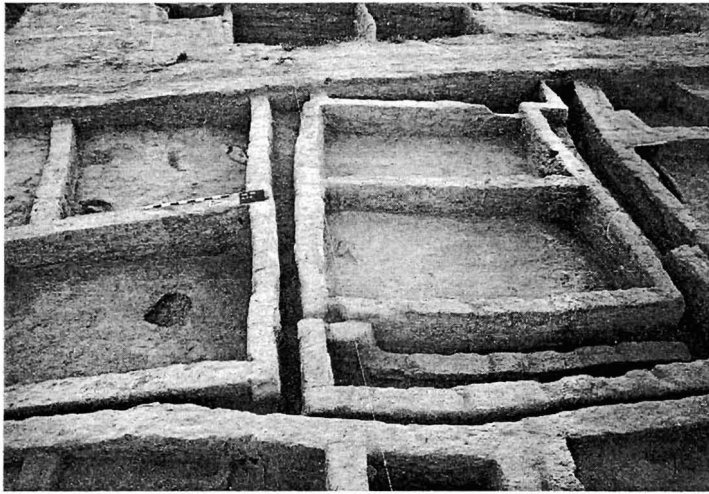


Plate 7 — 1. AŞIKLI HÖYÜK 1990: An air view of the mud-brick buildings of layer 2 in plan-squares 3-5J-K from the East; 2. AŞIKLI HÖYÜK 1990: Buildings of layer 2 in plan-square 4J, from the East; 3. AŞIKLI HÖYÜK 1990: Buildings of layer 2 in plan-square 5J, from East to West.

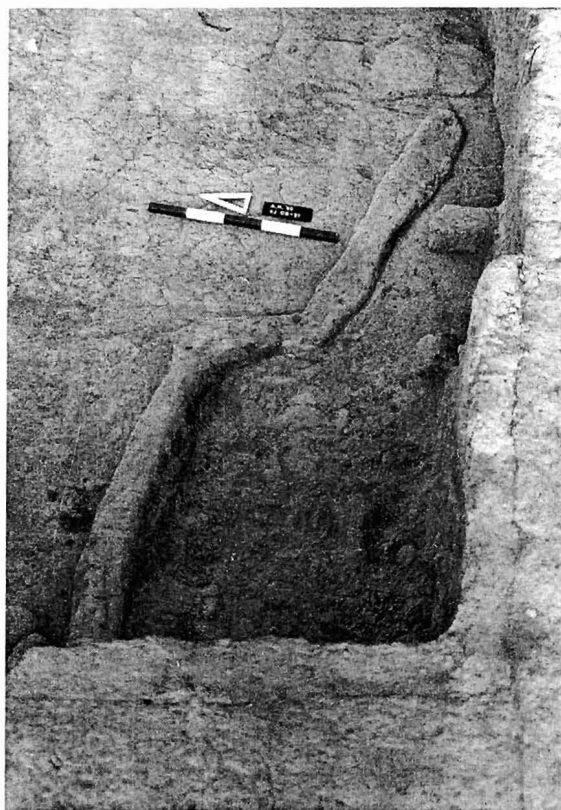


Plate 8 — 1. AŞIKLI HÖYÜK 1990: Hearth in building CG in plan-square 4 K, from East to West; 2. AŞIKLI HÖYÜK 1990: Hearth in building CB in plan-square 4 K, from West to East; 3. AŞIKLI HÖYÜK 1990: Hearth in building BH in plan-square 5 J, from North to South.



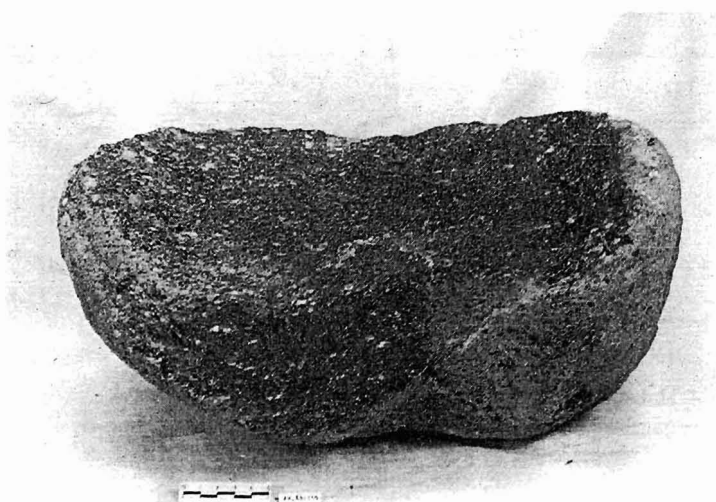
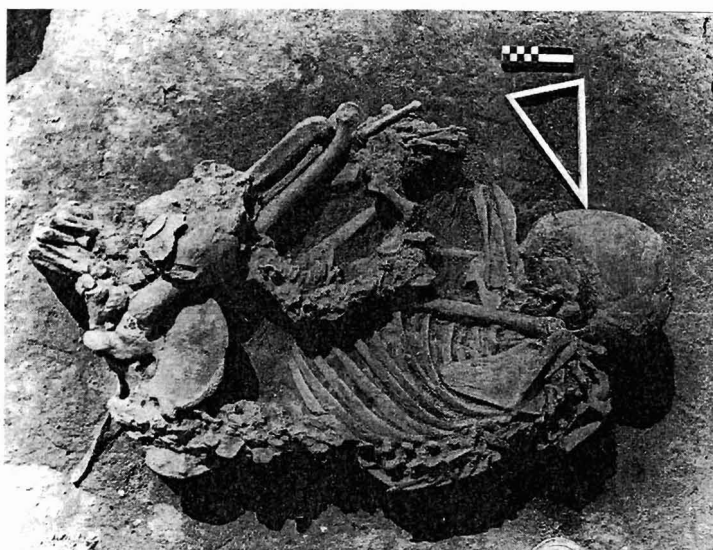


Plate 9 — 1. AŞIKLI HÖYÜK 1990: Human burials: woman and child in building AB, plan-square 3 R; 2. AŞIKLI HÖYÜK 1990 – 186: Stone mortar, surface find, plan-square 7 R; 3. AŞIKLI HÖYÜK 1990 – 339: Grinding stone from building Z in plan-square 2 J.

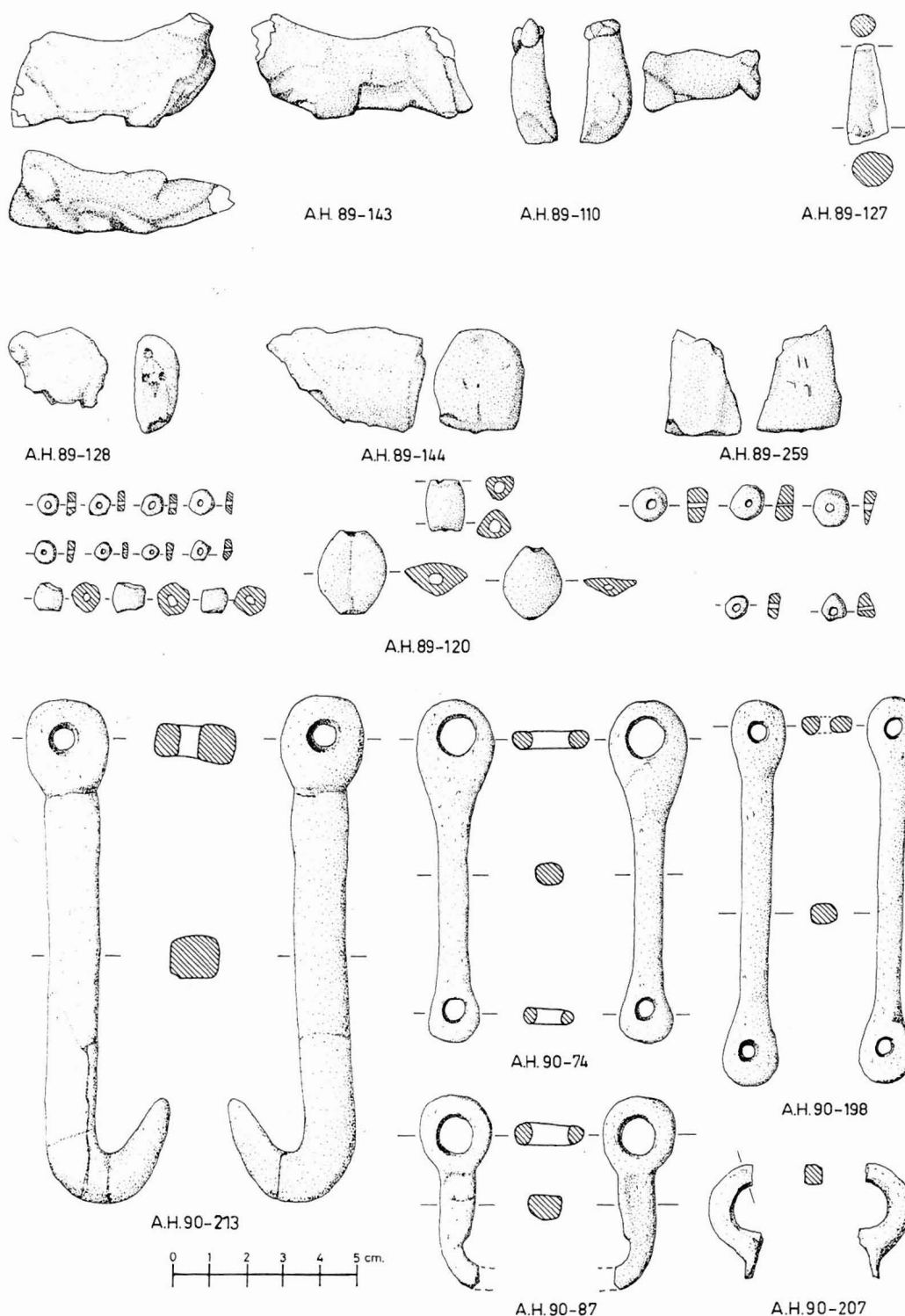


Plate 10 — AH.89-143: Half-baked clay figurine, building U, plan-square 3 K; AH.89-127: Half-baked clay figurine, building U, plan-square 3 K; AH.89-128: Half-baked clay figurine, building U, plan-square 3 K; AH.89-144: Half-baked clay figurine, building U, plan-square 3 K; AH.89-110: Half-baked clay figurine, building E, plan-square 4 H; AH.89-259: Half-baked clay figurine, building AA, plan-square 2 P-R; AH.89-120: Stone and shell beads found with the burial no. 14, building H, plan-square 3 J; AH.90-213: Bone hook from plan-square 17 S; AH.90-74: Bone buckle from plan-square 4 J; AH.90-198: Bone buckle, building DZ, plan-square 5 N; AH.90-87: Bone buckle, building CY, plan-square 5 L; AH.90-207: Bone buckle, building FG, plan-square 2 J.



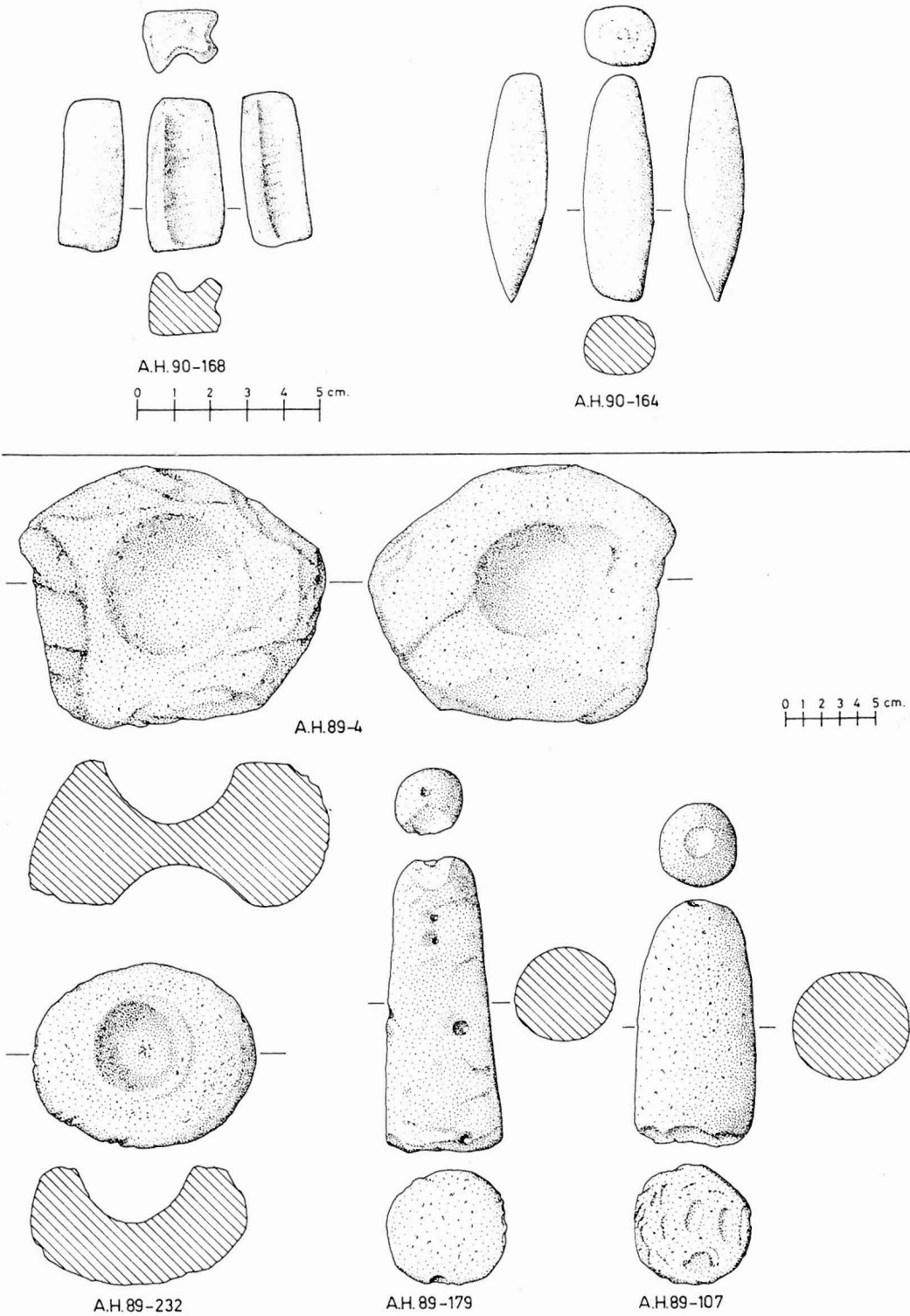


Plate 11 — AH.90-168: Sharpener made of stone, building CP, plan-square 4 K; AH.90-164: Stone celt, building BI, plan-square 5 J; AH.89-4: Basalt mortar used bifacially, surface; AH.89-232: Basalt mortar, plan-square 3 J; AH.89-179: Basalt Pellet, plan-square 2 J; AH.89-107: Basalt pellet, plan-square 4 G, surface.

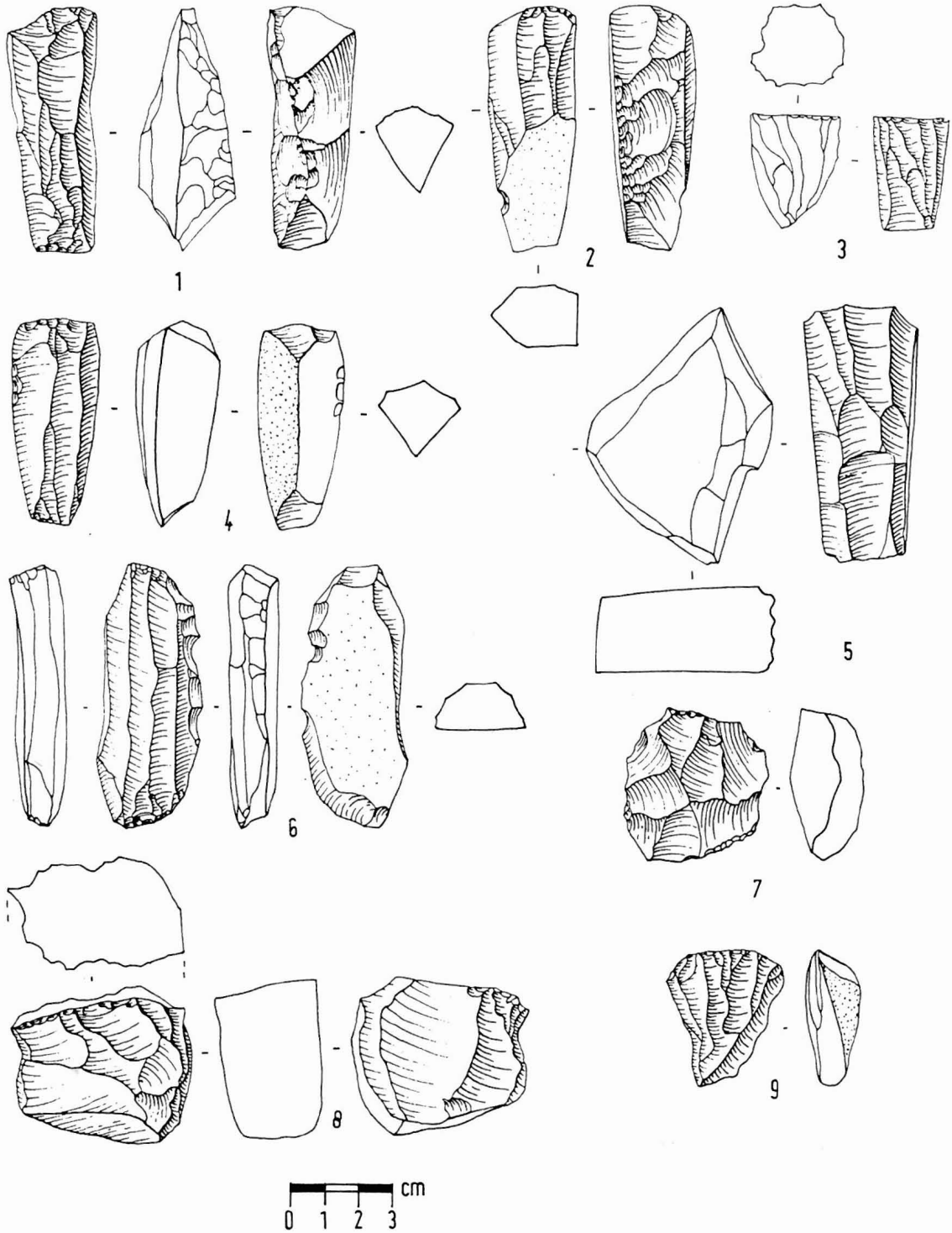


Plate 12 — AŞIKLI HÖYÜK: cores.

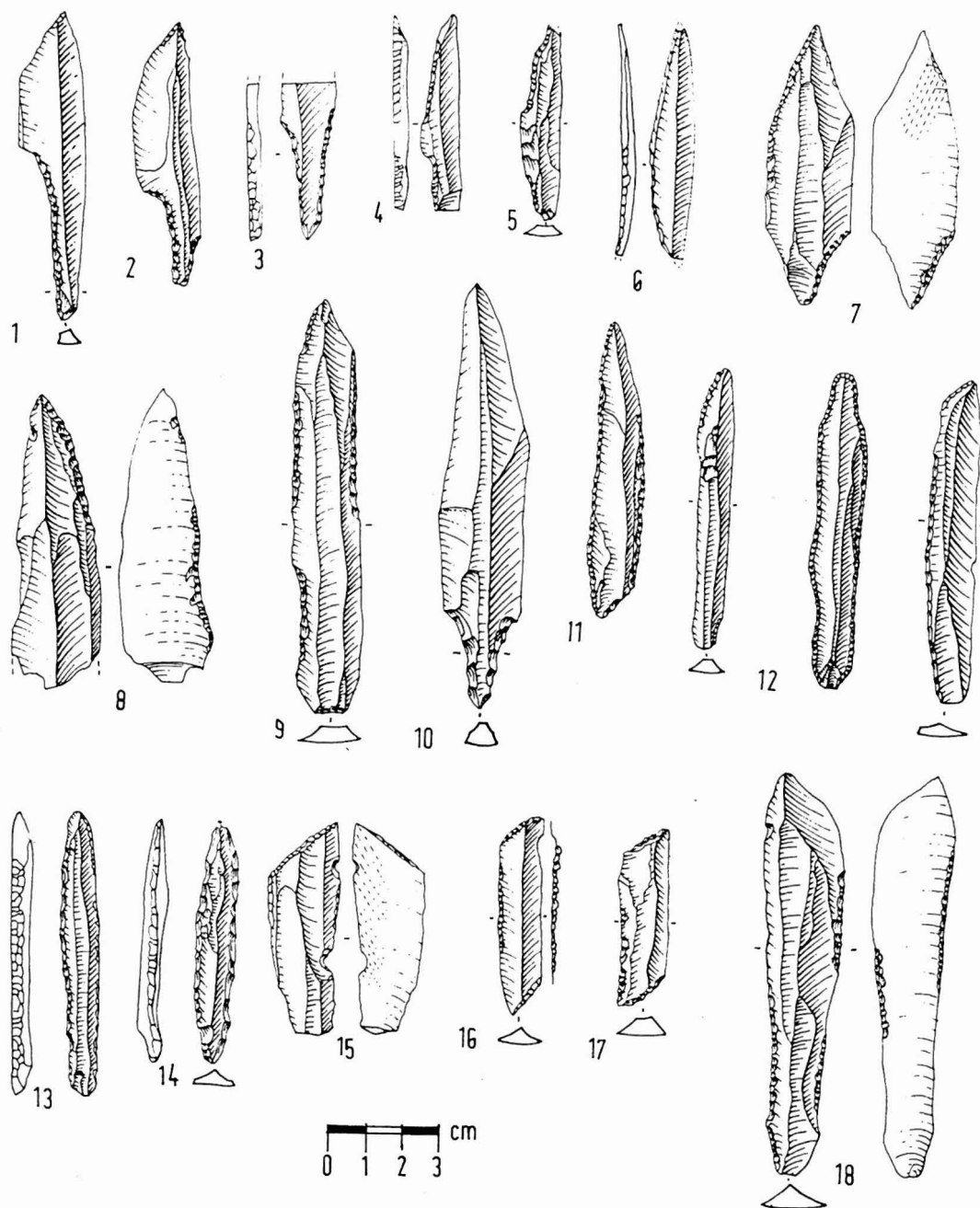


Plate 13 — AŞIKLI HÖYÜK: arms. 1-11; retouched blades, 12-18.

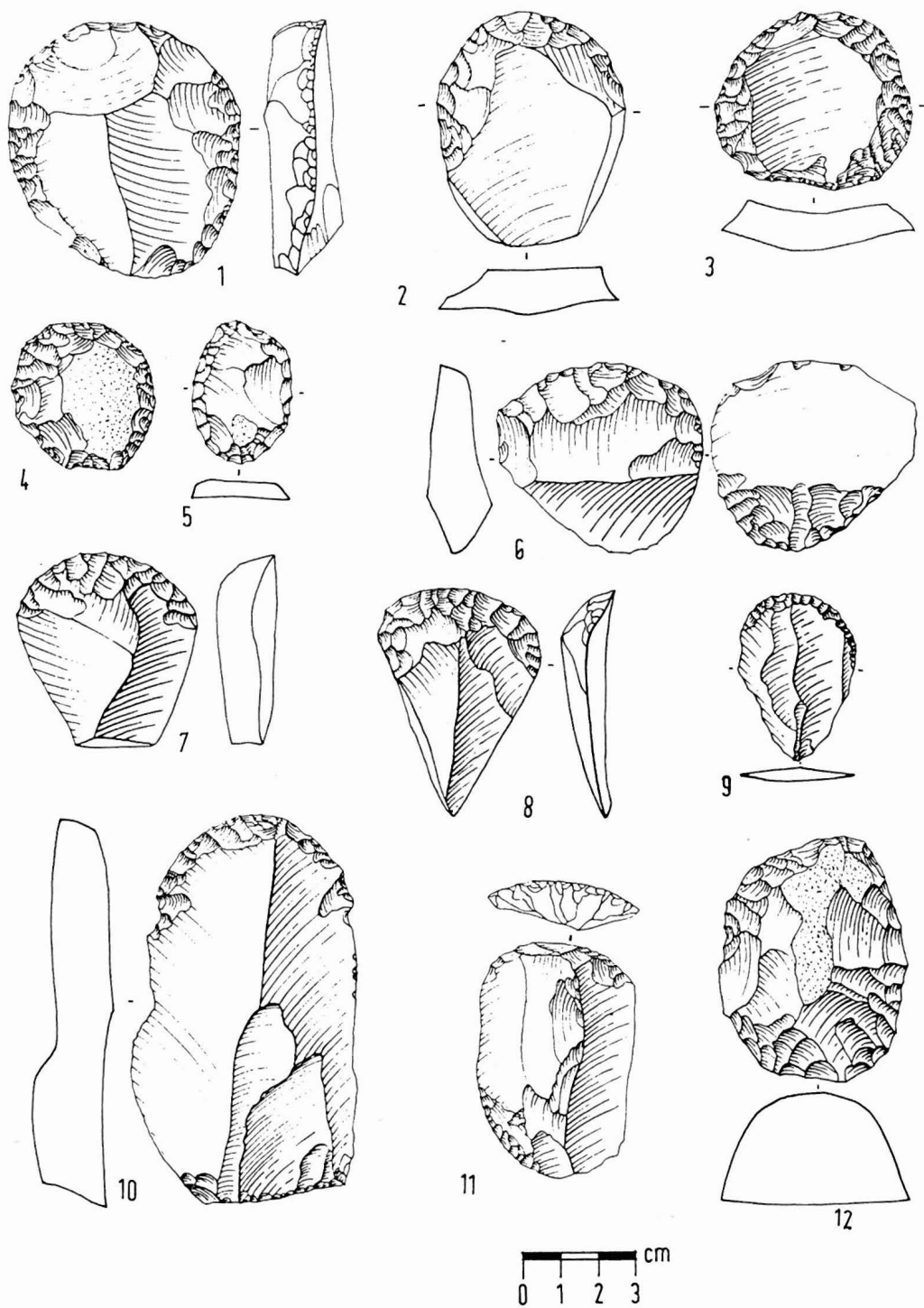


Plate 14 — AŞIKLI HÖYÜK: scrapers on flakes.

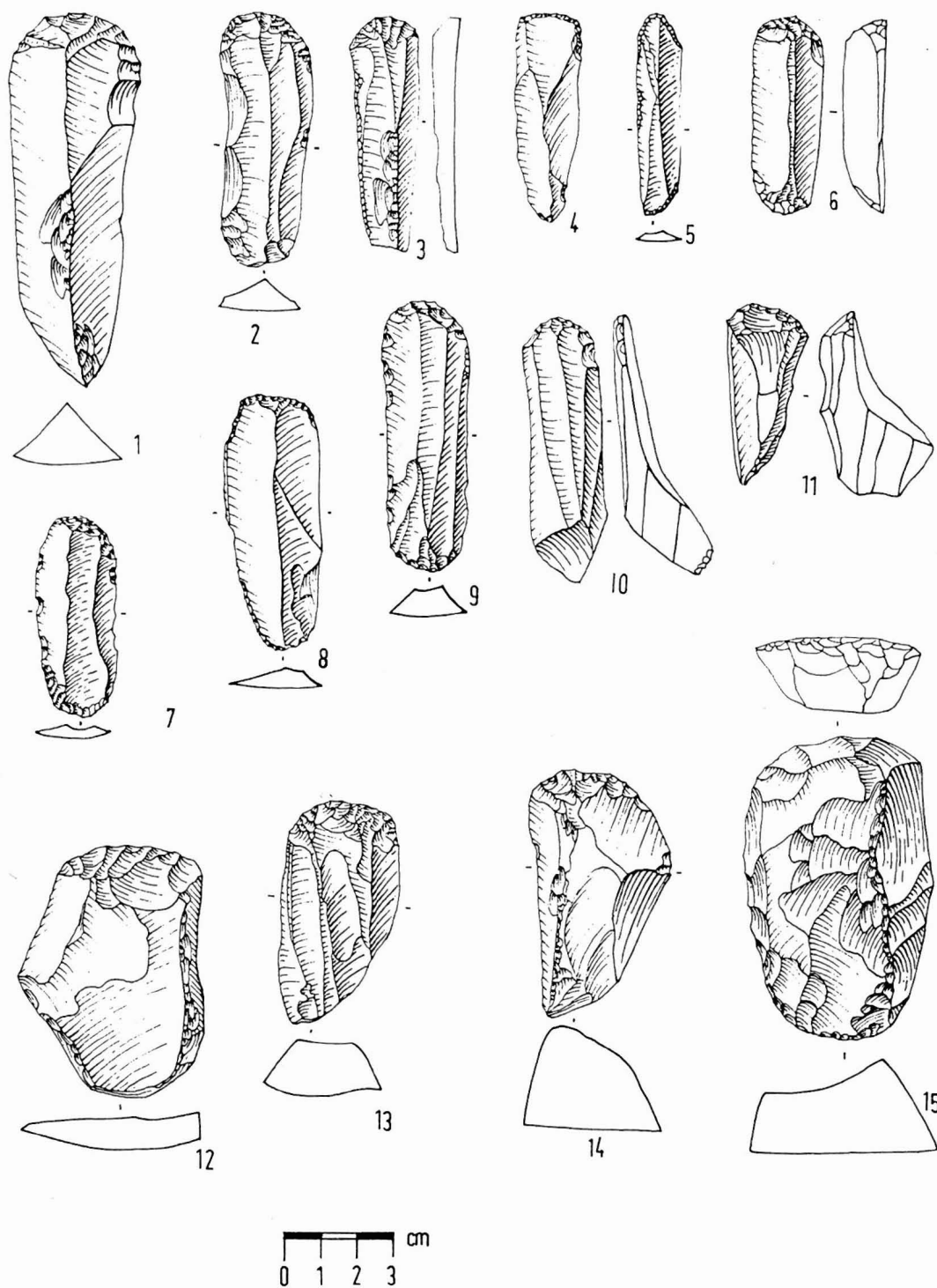


Plate 15 — AŞIKLI HÖYÜK: scrapers on blades, 1-9; on core fragments, 10, 11, 13 and 14; on core reviving tablets, 12 and 15.

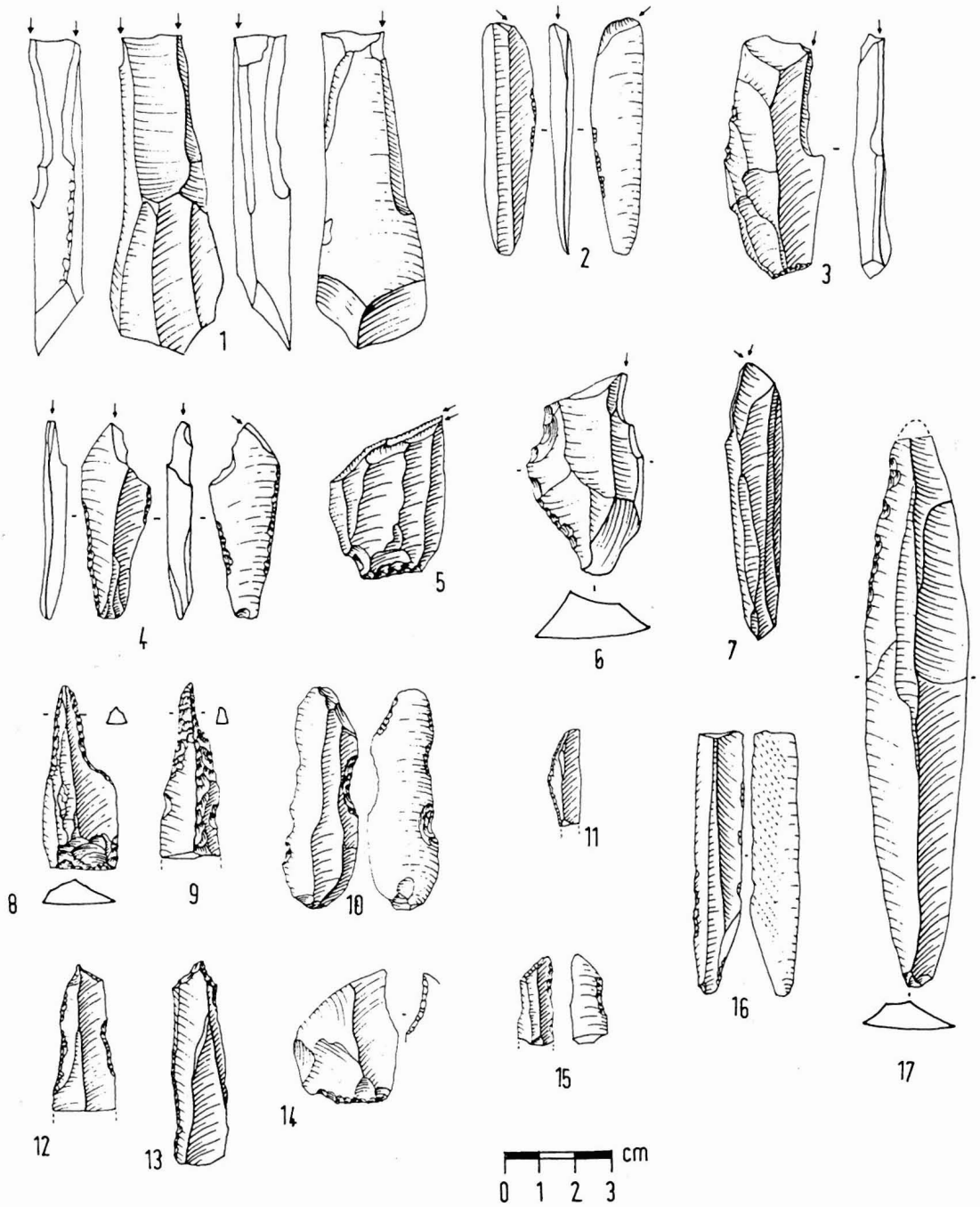


Plate 16 — AŞIKLI HÖYÜK: burins, 1-7; borers, 8, 9, 12 and 13; microlithes, 11 and 15; notched blade, 10; retouched flake, 14; blades with marginal retouch, 16 and 17.