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IN MEMORIAM
ANTHONY W. McNICOLL

On December 17, 1985 Anthony Walter McNicoll died at the early age of 42. Born in Ayre, Scotland,he was educated at Scotch College Melbourne and the University of Melbourne where he took his first degree in Classics. His career in field archaeology commenced late in 1964 with his participation in the Jordan Government excavation at the Damascus Gate in Jerusalem.

Early in his career he came under the influence of the late Dame Kathleen Kenyon, working with her in her excavations at Jerusalem and later received his D. Phil., under her guidance, at Oxford. His thesis on Hellenistic fortifications is considered among the best works ever written on the subject and widely quoted. His relationship with Kenyon was very close and it was to have a considerable influence on his later career in the field of Near Eastern archaeology.

In twenty-one years, following his first dig at the Damascus Gate, he excavated at Alahan and Asvan in Turkey, Ghubeira in Iran, Jerusalem, Iktanu and Um El Biyara in Jordan and was, for two years, the director of a major archaeological survey in Baḥrain whilst holding the prestigious Wainwright Fellowship from Oxford.

In 1974, at the early age of 31, he was appointed Director of the British Institute of Afghan Studies at Kabul where he directed a major excavation at the important Hellenistic site of Kandahar. In 1976 he was appointed lecturer in Near Eastern archaeology at the University of Sydney in Australia. For the past nine years also co-directed with Professor Basil Hennessy the University's large-scale excavations at Tuleilat Ghassul and Tabaqat Faḥil-Pella in Jordan. Tony's close relationship with Hennessy was to have a considerable influence on his career as a field archaeologist and researcher in Near Eastern archaeology.

He was a very promising scholar and leaves an impressive list of monographs and articles. His achievements were great in the short time granted to him; but perhaps his greatest offering was his humanity and sympathy which made him a much loved teacher both in the field and lecture room. He will be deeply missed by his friends and fellow archaeologists.

IN MEMORIAM
DR. HENRY FIELD (1902-85)

Dr. Henry Field world traveller, explorer, author, and internationally known anthropologist died in Miami, his home for more than three decades, at the age of 83. Dr. Field was born in Chicago on December 15, 1902. Educated at Oxford where he got his B.A. in 1925 and Doctor of Science in 1937, Dr. Field became fascinated with the nature and history of mankind. In 1925, before his graduation from Oxford, he visited Egypt to see firsthand the tombs of the Egyptian Pharaohs. Over the years, his research led him on numerous other expeditions which included Jordan, Syria, Iraq, Saudi Arabia, the Arabian Gulf, Iran, Egypt, Kenya, West Pakistan (Baluchistan and Bahawalpur), and Central Asia.

In December 1925 Dr. Field travelled with two of his Oxford colleagues from Jerusalem to Baghdad via Amman. This was followed by several exploratory trips into the North Arabian Desert (the area between Qatraneh and Kerak in the south and Azraq and Qasr Burqu' in the east) in 1926; 1927; 1928; 1934; and 1950. The results of these explorations were published in his important *North Arabian Desert Archaeological Survey, 1925-1950,* (Cambridge, Mass. 1960).

In 1926 Dr. Field was appointed as an assistant curator of physical anthropology in the Field Museum of Natural History in Chicago, and from Dec. 1927 to March 1928, he was attached as a physical anthropologist to the staff of the Field Museum, Oxford University Joint Expedition to Kish in Central Iraq. In 1934 he directed the Field Museum expedition to Iraq, Iran, and the Caucasus.

Dr. Field served as a special anthropological advisor to presidents Franklin D. Roosevelt and Harry S. Truman. In 1950 he was appointed as a Research Fellow in Physical Anthropology at Peabody Museum, Harvard University, and in 1959 he became Research Associate in Anthropology at the University of Miami.

The book *The Track of Man,* which made Dr. Field a popularly known author, represented a small fraction of his published output which include hundreds of articles, monographs, and books. Dr. Field's illustrious career is reflected in the fact that he was a member of more than fifty national and international scientific societies. His archives and documents which are kept in the Field Museum, Chicago are treasures which have not yet been fully tapped, and they will continue to serve as important source of information for many years to come.

EXCAVATIONS AT 'AIN GHAZAL 1984: PRELIMINARY REPORT

by
Gary O. Rollefson and
Alan H. Simmons

Introduction

The third consecutive field season at 'Ain Ghazal began on 7 July and continued through 23 August 1984. The primary goals of the 1984 season included the following: a) continuation of the investigation of the architecture and associated cultural material exposed during the 1982 and 1983 seasons (hereafter referred to as the Central Field). One particular facet of attention was directed towards the possibility of associating the 1983 statuary cache[1] stratigraphically with observable occupational units to the south, west, and north of the cache; b) excavation probes into the area dominated by the fifteen metre expanse of plaster floors and associated stone walls visible in the bulldozer cuts that created the car park in the southern area of the site[2] (hereafter, the South Field); c) testing of some visible architecture and cultural deposits in the eastern enclave of the village across the Wadi Zarqa from the main village site (hereafter, the Eastern Field); and d) additional reconnaissance of the immediate site vicinity in an effort to establish discretely the site boundaries of the Neolithic 'Ain Ghazal. Results of the preliminary analysis of the finds from the various parts of the 1984 season are presented below.

Site Size

An increase in the size of the 'Ain Ghazal community was revealed during a geomorphological survey of the immediate vicinity of the main village area. In addition to the 600.00 x 160.00 m. (9.6 ha) main village area and the 450.00 x 60.00 m. (2.7 ha) eastern enclave across the Wadi Zarqa to the east,[3] a newly created bulldozer section across the Wadi Fakhit, a major tributary to the Wadi Zarqa just to the northwest of the main village area, was identified. Here, in a cut measuring some 35.00 m. on a side and approximately five metres deep, an *in situ* plastered floor and a deep claylined/pottery-lined pit(?) were visible in the section. The location of this extension of the site has not yet been accurately mapped, but it now appears that the Neolithic settlement far exceeds twelve hectares, making it the largest known Neolithic village in the Near East.

Artefacts from this part of the site were very rare and non-diagnostic, but it appears that this section probably dates to the final phases of the Pre-Pottery Neolithic (PPN) or perhaps the earlier part of the succeeding Pottery Neolithic A (PNA). It should be noted here that a thick layer of yellowish clay, very fine in texture, was located in the lower portion of the bulldozer section. Clay of similar properties was used for the manufacture of human and animal figurines in the main village site as well as for unfired (and fired?) ceramic vessels found in PPNB loci.

East Field

Two excavation trenches of approximately 3.00 x 2.50 m. each probed nearby areas in the northernmost reaches of the east enclave. Both trenches revealed a minimum of three construction phases of houses situated on a relatively steep slope, although it is not possible at this point to

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[1] G. Rollefson, Ritual and Ceremony at Neolithic 'Ain Ghazal (Jordan), *Paleorient*, 9:2 (1983) p. 29-38.

[2] G. Rollefson and E. Suleiman, Survey of Exposed Neolithic Structures at 'Ain Ghazal *ADAJ*, XXVII (1983) p. 471-480.

[3] G. Rollefson and A. Simmons, The 1983 Season at 'Ain Ghazal: Preliminary Report, *ADAJ*, XXVIII (fc).

correlate the events in these two trenches.

In Square 8547, the lowest floor had been replastered, although due to the limited area of the probe, as well as to severe erosion and damage inflicted during the construction of a water line in the area, no associated walls were encountered. Approximately 0.20 m. above this house floor, another plaster floor was exposed, once again without any associated walls. The most recent occupation is reflected by another floor approximately 0.15 m. higher in the section, complete with the corner formed by remnants of the eastern and southern walls of the structure.

The second test probe (Square 8344) was located approximately 15.00 m. to the southwest of Square 8547. Here the lowest occupational level was indicated by a compacted layer of soil just above the basal clay and possibly a terrace. Above this earliest evidence of habitation was a plaster floor associated with a wall constructed of massive limestone blocks (ca. 0.70 x 0.40 x 0.40 m.), much larger in size than the stones normally used for wall construction elsewhere in the Eastern Field or in the main village area. The most recent occupational episode was constructed 0.40 m. above the middle floor with an associated corner formed by parts of the eastern and southern walls.

Artefacts were relatively rare in both trenches, and the paucity of animal bones was particularly remarkable. Charcoal was present in minute quantities only. Nevertheless, characteristics of both the technology and typology of the chipped stone artefacts from the East Field permit a tentative correlation with the South Field of the main site, later in time than the late PPNB layers that characterize the cultural material in the Central Field (see discussion below).

South Field

An area of approximately forty-five square metres was excavated in the South Field, and the average depth in this area was more than 2.50 m. down to the floors of the fifteen metre structure visible in the bulldozer section. This field produced some of the most surprising results of the season, and this part of the site holds particular promise for future investigations.

Five major layers (and many units of microstratigraphy) were identified in the South Field excavations (Fig. 1). The uppermost of these — Layer 1 — was a heavily disturbed zone associated with relatively recent agriculture, especially the plowing of garden plots in an orchard. A large variety of artefacts was recovered from this layer (including an iron spear point of probable Islamic date), but it was evident that considerable mixing of formerly discrete temporal episodes has occurred.

Layer 2 yielded the first unsuspected results. This layer of up to a metre or more deep contained substantial quantities of well-made ceramics, including several *in situ* storage jars (Figs. 2, 3). The decoration and technique of the pottery is distinctive of the Yarmoukian phase and places this layer in the earlier part of the PNA period. Sherds with banded herring-bone incision are identical with specimens from Tell Abu Thawwab,[4] and many pieces bear a dark red burnished decoration.[5] So far, analysis of the ceramic material has not revealed any evidence of painting *per se* in geometric designs common, for example, at Sha'ar Hagolan,[6] Dhra,[7] and other early PNA sites in the area.

Associated with the ceramics were poorly preserved architectural remnants that suggest less substantial and durable housing for the inhabitants, although the small area exposed in the 1984 season may reflect a sampling problem: were the thin walls and beaten-earth floors the remains of dwellings or of outbuildings/structures associated with animal husbandry? Chip-

[4] E. Gillet and C. Gillet, Jebel Abu Thawab, Jordan, *Levant*, 15 (1983) p. 187-191; Z. Kafafi, Yarmouk University, Irbid, Jordan, Personal communication.

[5] M. Adler, personal communication.

[6] M. Stekelis, *The Yarmoukian Culture of the Neolithic period, Jerusalem, 1972.*

[7] *C.-M. Bennett, Soundings at Dhra', Jordan, Levant*, 12 (1980) p. 30-39.

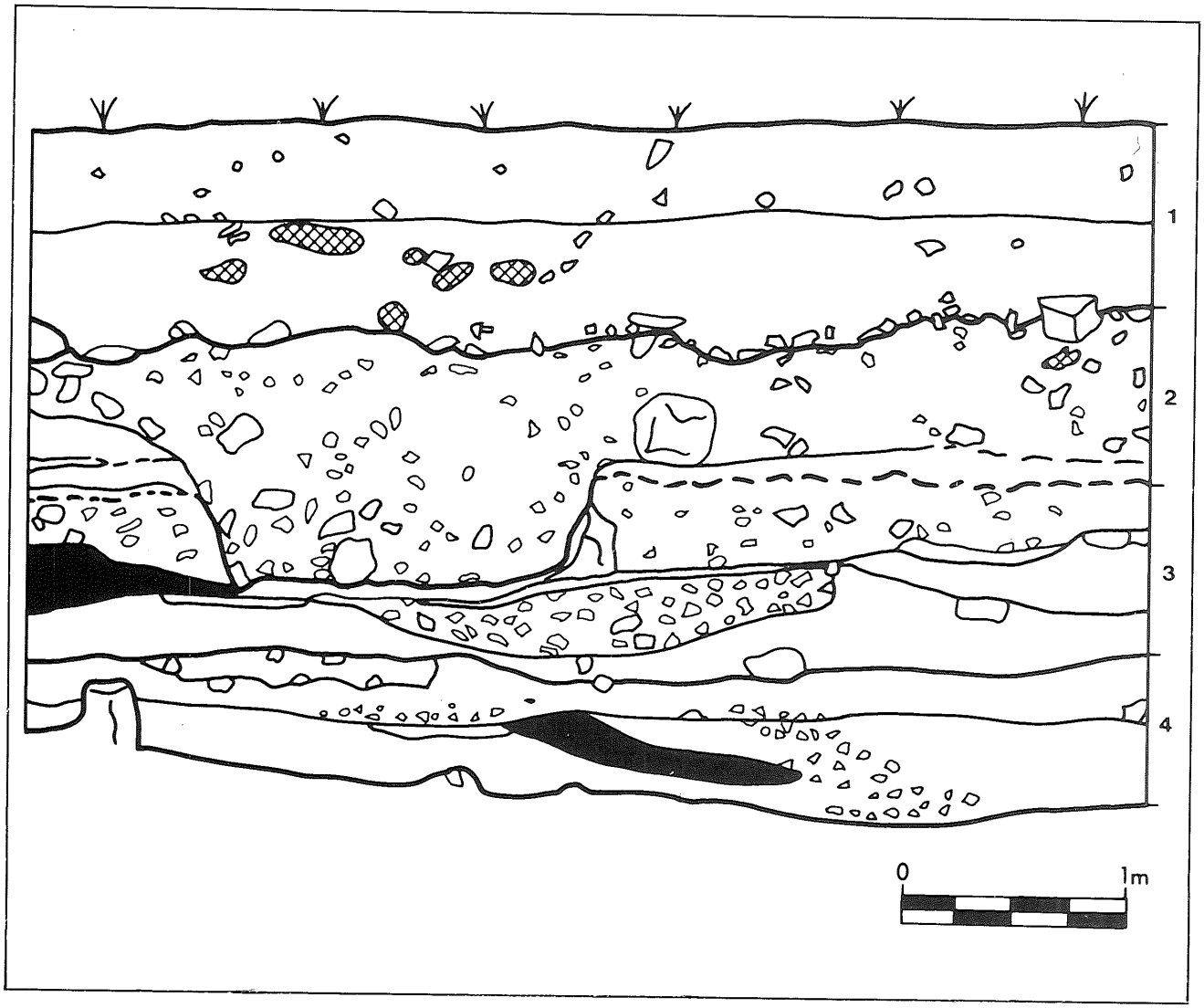

Fig. 1. West section of Square 4452 showing the major stratigraphic units found in the South Field. (Drawing: Deborah Fridell).

ped stone artefacts include characteristic early PNA types such as elaborately worked arrowheads and macro-denticulated sickle blade segments. A single human burial was found in the corner of one structure, in a flexed position with the skull absent.

Layer 3 consists of an aceramic period fili of, for the most part, structures that were erected before the formation of Layer 3. (An exception here may be some substantial architecture in the northernmost trench, Square 4454, which may be contemporary with the Layer 3 deposits in Squares 4452 and 4453. This correlation is very tentative and will be clarified when the microstratigraphic analysis is completed). The artefacts from Layer 3 included no pottery except for intrusive elements from Layer 2, indicating that the cultural deposition occurred before the emergence of the Yarmoukian phase. Chipped stone tools were abundant, as were small finds, ground stone objects, and animal bone. Several human burials were also recovered. As was the case for Layer 2, charcoal and macrobotanical evidence (seeds, etc.) were extremely rare.

"Layer 4" consists of the floors and walls of the fifteen metre structure and other architectural evidence, and it does not refer specifically to any accumulation of other kinds of occupational debris. The re-use and modification of the buildings by the people responsible for the formation of Layer 3 has introduced a strong complicating element in the interpretation of the "Layer 4" architecture, and only after intensive microstratigraphic analysis will we understand the nature of the original construction and subsequent remodelings of the fifteen metre building (Pl. I,1).

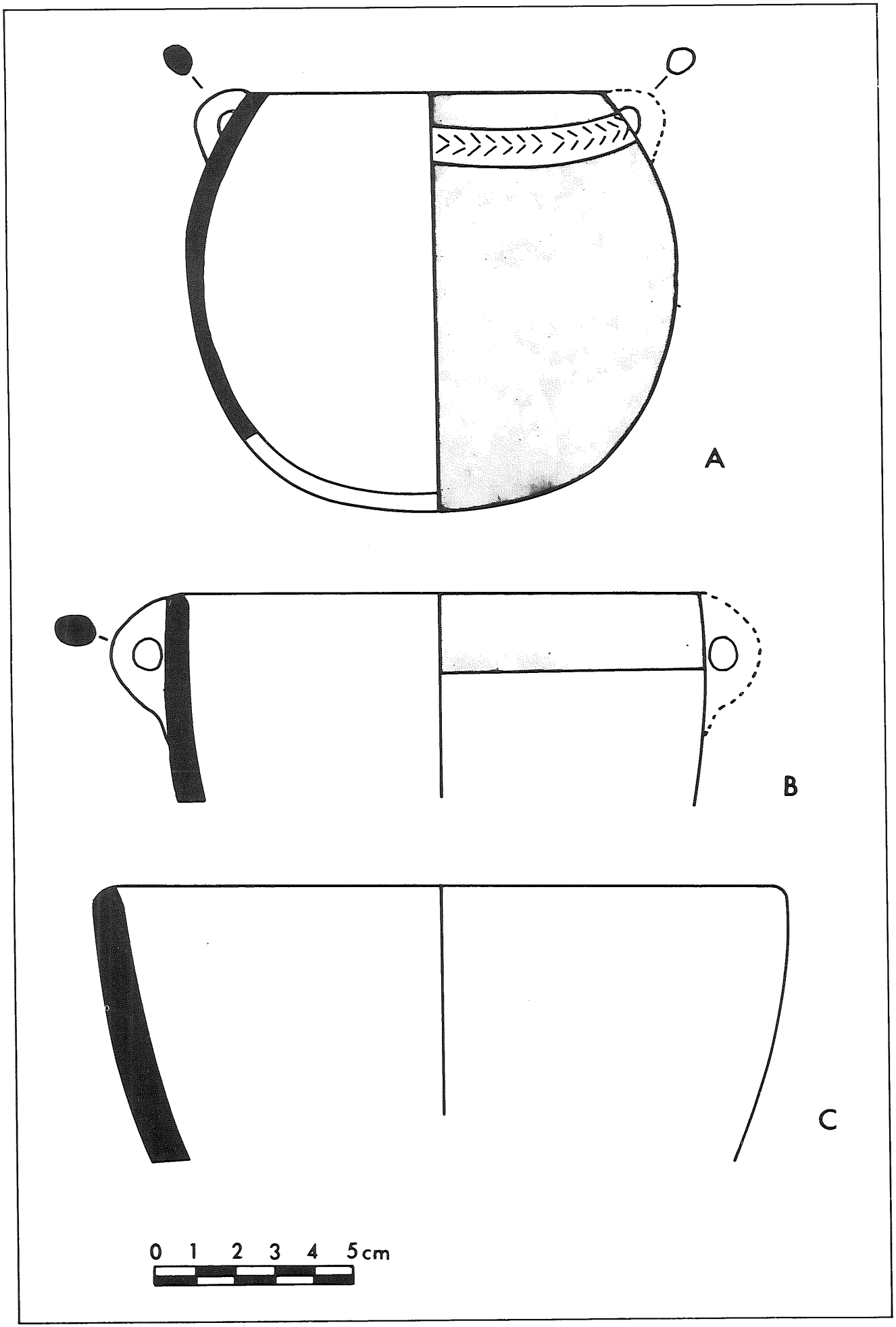

Fig. 2. Pottery from Layer 2, South Field, 'Ain Ghazal 1984. (Drawing: M. Adler).

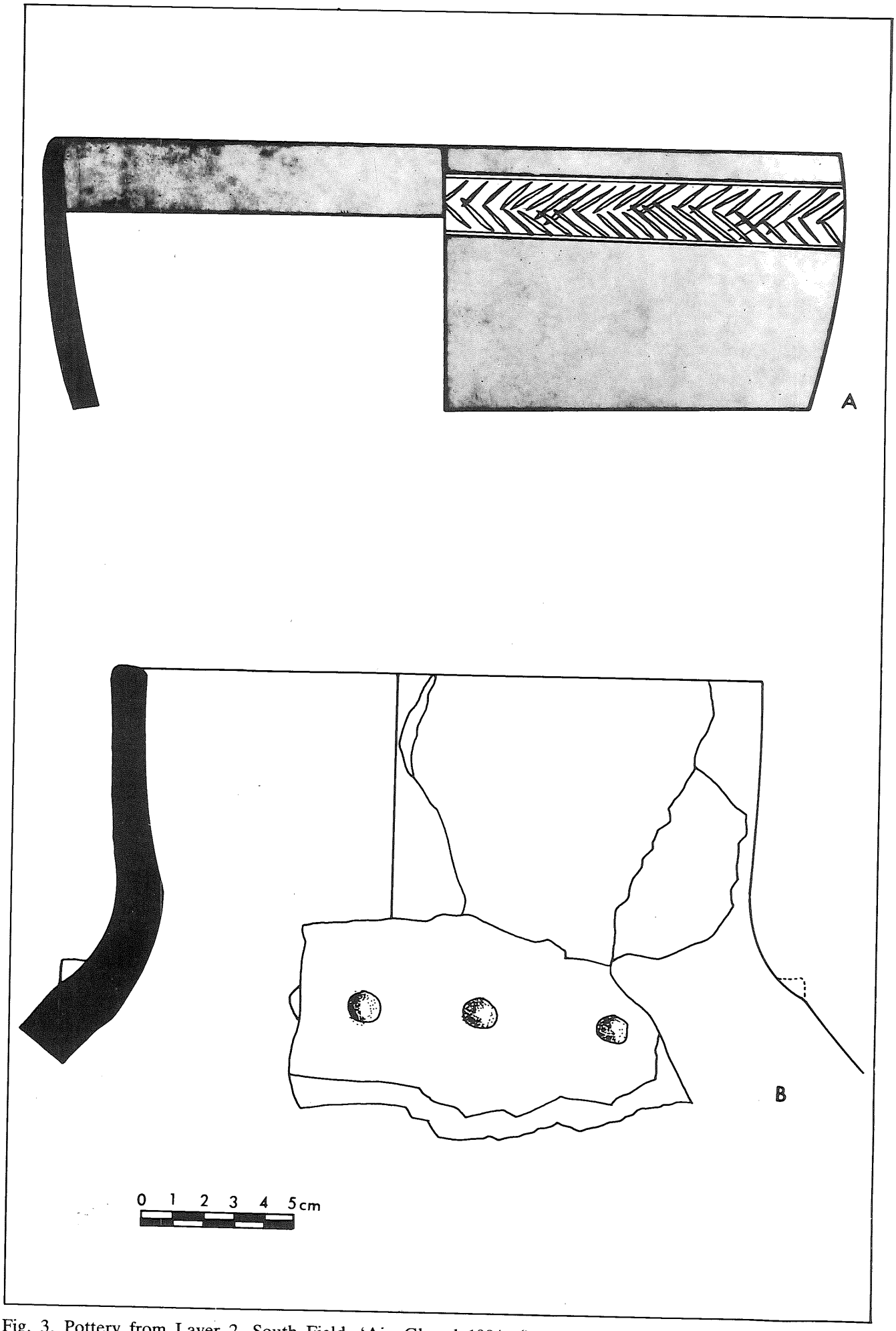

Fig. 3. Pottery from Layer 2, South Field, 'Ain Ghazal 1984. (Drawing: M. Adler).

Layer 5 is the temporary designation for the archaeological material lying beneath the floors of "Layer 4". Several pits dug by the inhabitants of Layer 3 for burials and other purposes cut through the floors into Layer 5, mixing the artefacts from these three discrete habitation layers. Excavation in the South Field did not probe Layer 5, although a small test pit approximately 25.00 m. to the southeast of the fifteen metre structure sampled deposits roughly contemporaneous with Layer 5.

Because the microstratigraphic analysis is still in progress, the artefacts tabulated in Tables 1-11 are not segregated according to the separate layers. Instead, all are lumped together in the "South" column. (Artefacts from the disturbed Layer 1) are included in the *ex situ* column). Although this arrangement distorts the interpretations at this preliminary stage of our assessment, it is interesting to note that substantial differences can be seen in comparisons with the Central Field. While small units of cultural development are not apparent at this time, it seems that the South Field behaves as a distinctive entity, at least in terms of Layers 2-4. This tentative conclusion is supported in part by intuitive impressions obtained in the field as the artefacts and features were excavated, as well as during preliminary sorting in the laboratory. These differences are elaborated below.

Central Field

The excavations in the Central Field continued the research initiated in this sector in 1982 and 1983. Primary concerns concentrated on the stratigraphic history of this part of the village in the Step Trench (Squares 3073/3273) as well as the complete exposure of dwellings discovered in the first two field seasons.

The Step Trench confirmed that a minimum of nine major construction phases occurred during the occupation of this area, and close examination of the unexcavated parts of the bulldozer section revealed that one or more of the later phases possibly overlap in time with the PNA occupation in the South Field. Two floors, one above the other, exposed in Sqs. 3073/3273 (Phases V and VI) showed intricate painted designs, evidently applied using a "finger painting" method. Both floors were in a poor state of preservation, and only limited areas of each preserved the painted designs. These consist of parallel and sub-parallel lines that occasionally intersect (Pl. I: 2), and while the overall pattern is elusive, parallels with wall paintings from the "Vulture Shrine" at Çatal Hüyük in Anatolia are striking.[8] It should be noted that "finger painting" also characterized the floor of the easternmost room of the three-room Phase IV house in the same trench, just below Phase V.

Perhaps the most remarkable feature of the architecture in the Central Field was the abundant evidence of renovation in nearly every structure that was investigated. Dwellings witnessed several rearrangements of interior (and perhaps exterior) space with the erection of new walls (Pl. II: 1), creation of doorways, blocking of doorways, (Pl. II: 2), building of screens and storage facilities (Pl. III: 1, 2), and abandonment of certain rooms. These remodeling episodes evidently reflect the changing needs of the inhabitants over more than just one generation, although additional microstratigraphic work is necessary to unravel the sequence.

Another element of interest is the variation in room sizes. The west room of the house in Sqs. 3083/3283 (Pl. II,2), for instance, measured nearly 5.00 x 5.00 m. This contrasts with the western room of the house in the adjacent Square 3082 (Pl. III,1), which had dimensions of approximately 6.00 x 3.00 m. The centre room of the three-room house in Sqs. 3073/3273 (Pl. III,2), on the other hand, was even smaller, measuring ca. 4.00 x 2.25 m.

The number of human and animal figurines recovered from the Central Field was substantial, although most were in a poor state of preservation. Two figurines, however, merit special attention here. In a

[8] J. Mellaart, *Earliest Civilizations in the Near East*, London, 1965, Fig. 86.

tiny pit beneath a pavement of limestone flagstones in the SW corner of the western room of the house in Sqs. 3083/3283, two clay figurines of cattle lay side by side (Pl. IV: 1). Each of the figurines had been pierced by two flint bladelets while the clay was still wet: one bladelet penetrated the chest area from the side while another entered the heart area from the front. This is the only evidence of "ritual killing" of animal figurines known from the PPNB period, and the implications for the interpretation of this sort of small finds, which were so abundant in 1983, become much clearer. It is apparent that these figurines played a ceremonial role in human-animal relationships, and they probably represent artefacts associated with magic/luck in wild cattle hunting and fertility.

The faunal remains from the Central Field were once again very abundant and well preserved. The preliminary analysis of the relative numbers of species conforms to patterns witnessed for the earlier seasons at 'Ain Ghazal.[9] Of note among the animal bones, three *Bos* metacarpals were found at the bottom of a plastered stone-lined storage feature in the house in Square 3082 (Pl. IV: 2). Beneath one of the bones lay a small *Bos* figurine. The bone itself had been incised with three sub-parallel grooves along its length, and cross-hatching had been carved into the bottom groove at various intervals. The incised metacarpal was rather poorly preserved, and it has not been possible to examine the incisions in much detail. Nevertheless, whatever the association with the storage feature may entail, the correspondence of the three *Bos* bones and the figurine is indicative of some ceremonial correlation.

Paleobotanical evidence was also relatively abundant, and a broad range of utilized plants — both domestic and wild — has now been identified. (Table 12). In a pattern that appears to differ from contemporary settlements in the Near East, domesticated peas and lentils appear to have constituted the primary staple in the diet of the 'Ain Ghazal population, with supplements provided by domestic wheat and barley as well as fig, chickpea, almond, and pistachio.[10] The westernmost room of the house in Sqs. 3073/3273 had been subdivided by a low wall, and to the north of this wall were the remains of tens of thousands of charred peas and lentils, with barley occurring less abundantly (Pl. III,2).

Human burials from the Central Field have expanded our understanding of the post-mortem treatment of 'Ain Ghazal residents in PPNB times. Burial styles continued to reflect the patterns noted in the first two seasons,[11] although the previously noted association of sub-floor burials with room hearths must be reassessed.

Instead of the previously observed one-to-one correspondence of burial pits to the south of room hearths, the evidence from the western room of the house in Sqs. 3083/3283 revealed that five burial pits were arranged *around* the hearth (although one was situated to the south). In addition, at least one more adult was found beneath the SE corner of this room. An infant had been placed beneath the doorway connecting this room with the the eastern room of the house. A cache of three skulls (a male older than 60, another male between 21-30, and a child of above 11 years) was found along the SE wall of the western room, all in a line facing the wall (Pl. V). Along the western wall of another house (Sq. 3080), four infants had been placed *on* the floor at roughly one-metre intervals; the significance of this disposition is difficult to determine at the moment, but evidently infant mortality had some ceremonial influence among the village residents.

Finally, the skull of a 7-8 year old child was found beneath the floor in the SW corner of the eastern room of the house in Sqs. 3083/3283. Although the cranium had been badly damaged during a later remodelling of the room, it appears that a black pigment had been applied to the back of

[9] Ilse Köhler-Rollefson, personal communication; G. Rollefson, *et. al.*, Excavations at the PPNB Village of Ain Ghazal (Jordan) 1982, *Mitteilungen der Deutschen Orient Gesellschaft,* 116 (1984) (In press).

[10] R. Neef and M. Donaldson, personal communication.

[11] Rollefson and Simmons, *op. cit.*

the skull. While there is no direct evidence that this skull was plastered, the black colour may have represented hair. This interpretation is consistent with the treatment of some of the Jericho plastered skulls,[12] although the pigment used there was red. Another possible parallel was noted by Tubb on some of the statuary discovered in 1983.[13]

Intra-Site Comparisons

At this early stage in the analysis of the stratigraphy and artefacts, it is not possible to make detailed comparisons among the various areas excavated in 1984. Furthermore, it will be several months before our radiocarbon samples are processed so that temporal relationships among these widely spaced areas can be established. Nevertheless, several features stand out in vivid contrast, and these can be cited to provide a preliminary assessment of the occupational history of the site.

There is no doubt that Layer 2 in the South Field represents a major occupation later than the classic late PPNB habitation levels in the Central Field. The presence of well-made pottery of the Yarmoukian phase places Layer 2 in the early part of the PNA period, probably around 5,700-5,000 B.C.[14]

Layers 3-5 in the South Field are not so easily assigned, on the other hand. Their situation beneath the Yarmoukian layer and the aceramic nature of the artefact inventory confirm that Layers 3 and 4 are clearly PPN, but the degree of contemporaneity they share with the PPNB strata in the Central Field is questionable. But several factors of the cultural material suggest that Layer 3, at least, is later than the excavated levels in the Central Field.

A comparison of the chipped stone artefact classes in Table 1, for example, reveals that the South Field is heavily dependent on a flake technology, which is in stark contrast with the blade: flake ratio from the Central Field Layers. The differences are significant beyond the .0001 level of probability in Chi-Square comparisons. Notably, the artefacts from the East Field are also significantly different from the Central Field artefacts in terms of the flake: blade ratio, although differences between the East and South Field ratios are not statistically meaningful.

Furthermore, there are also major differences in the types of tools produced in the South and Central Fields: arrowheads outnumber spear points in the South, while arrowheads are absolutely rare in the Central Field (Table 2). Among the wide variety of burin types, which can be lumped into "simple", "complex", and "truncation" classes, there are also significant departures between the two tool kits (Table 3).

Equally important in the comparison of the South and Central Fields are the faunal remains (the sample from the East Field is too small for meaningful comparisons). In the Central Field, the only certain domesticated species is goat, although there is some slight evidence to suggest that cattle were also under some degree of cultural control.[15] In the South field, on the other hand, definitely domesticated species include goat, cattle, pig, and dog. This evidence is the most conclusive basis for stating that Layer 3 represents a later period of cultural development than the PPNB.

Substantiating the cultural/economic differences manifested by the artefacts and faunal remains are differences in human burial practices between the two investigated areas. In marked contrast to the model style of the Central Field, the sub-floor interments in Layer 3 are multiple burials, with two or three individuals stuffed into the same pit. Furthermore, no instances of decapitated skeletons were found from Layer 3, signifying another major departure from the cultural practices

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[12] K. Kenyon, *The Archaeology of the Holy Land*, London, 1979.

[13] G. Rollefson, *et. al.*, Excavations at the PPNB Village of 'Ain Ghazal (Jordan) 1983, fc.

[14] J. Weinstein, Radiocarbon Dating in the Southern Levant, *Radiocarbon*, 26: 3 (1984), p. 333.

[15] Rollefson, *et. al., op. cit.*

of the Central Field PPNB.

From these three independent sources of evidence, there is little doubt that Layer 3 represents a time period intermediate between the "classic" late PPNB *(ca.* 6,600-6,000) of the Central Field and the later PNA period (57/5500-5000 B.C.). Whether the material from Layer 3 represents a previously unrecognized stage of cultural development ("PPNC" or Early Neolithic III?)[16] cannot be determined on the basis of a single site, but certainly the least that can be said is that a period of local transition leading to the PNA exists at 'Ain Ghazal, even though such a transitional phase has not been noted in stratigraphic succession elsewhere in the Levant up to this time. Some aspects of archaeological reports suggest, however, that several sites may correspond to this time period, such as Beisamoun and Abu Ghosh,[17] Labweh in Lebanon,[18] and perhaps the desert sites of southern and eastern Jordan.[19]

The architectural complex we have provisionally designated as "Layer 4" in the South Field also provides some details which allow a tentative correlation with the Central Field PPNB levels. Although the basic construction techniques are similar, the complex design of the exterior walls and interior rooms suggest major differences compared to the simpler two- and three-roomed dwellings in the PPNB. Comprising a *minimum* of eight rooms, "Layer 4" is much more complicated than PPNB structures. In one section of the fifteen metre building several rooms open onto a plastered interior corridor. Interior walls of the complex are sometimes curvilinear, and room sizes are often much smaller. (One room, for example, measures only 1.00 x 0.60 m. Pl. I,1 center bottom). This architectural complexity is unmatched by other Palestinian/Jordanian PPNB examples, although rough parallels may be seen at Bouqras.[20]

Some of the architectural arrangements in "Layer 4" are undoubtedly due to modifications of the original structure by Layer 3 inhabitants. The question remains, then, how does the original building relate in time to the PPNB period?

More analysis of the microstratigraphy is necessary to clarify the sequence of the use of the fifteen metre complex, but there is one element that may complicate correlations with the Central Field structures. It has been noted, for example, that at Jericho and Beidha the PPNB inhabitants constructed at least one building at each site which served as a public structure rather than as a domestic dwelling. This interpretation was based in part on the extraordinary size of the buildings compared to normal house sizes, as well as differences in interior room arrangements. If the original fifteen metre building of "Layer 4" was a public structure, then its relative uniqueness inhibits the determination of temporal correlations with domestic buildings at 'Ain Ghazal based only on architectural comparisons.

Statuary

Two discoveries made in the closing days of the field season deserve special comment in view of their remarkable nature. A small, shallow pit beneath the house floor in Sq. 3081 had been dug into the culturally sterile basal clay. The contents of this pit consisted of numerous large fragments of plaster sculpture similar in

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[16] Weinstein, *op. cit.*, p. 304.

[17] M. Lechevallier, Abou Gosh et Beisamoun, *MTJ*, 2, Paris, 1978.

[18] D. Kirkbride, Early Byblos and the Beqa'a, *Mélanges de l'Université Saint Joseph*, 45 (1969) p. 45-60.

[19] D. Kirkbride, The Neolithic in Wadi Rumm: 'Ain Abu Nekheileh, p. 1-10 in R. Moorey and P. Parr (eds.), *Archaeology in the Levant*, Warminster, 1978; J. Waechter and V. Seton-Williams, The Excavations at Wadi Dhobai 1937-1938 and the Dhobaian Industry, *Journal of the Palestine Oriental Society*, 18 (1938) p. 172-186; G. Rollefson and B. Frohlich, A PPNB Burin Site on Jabal Uweinid, Eastern Jordan, *ADAJ*, XXVI (1982) p. 189-198; G. Rollefson and M. Muheisen, Chipped Stone Artefacts from a specialized PPNB Camp Near Kharaneh Castle, Eastern Jordan, *ADAJ*, n.d.

[20] P. Akkermans, *et. al.*, Bouqras Revisited: Preliminary Report on a Project in Eastern Syria, *Proceedings of the Prehistoric Society*, 49 (1983) p. 335-372.

several respects with the statuary discovered at 'Ain Ghazal in 1983.[21] The material, which was painted pink, appears to represent from one to three or more statue heads. Unfortunately, the plaster fragments have become cemented to the pit walls in the course of the past 8,000 years. Due to the lateness in the season and the paucity of funds remaining in the budget, the pit was backfilled and protected until arrangements can be made for excavation by a trained conservator.

The second discovery occurred on the final day of the excavation season. In the process of cleaning back a bulldozer section prior to drawing the exposed stratigraphy, the edge of a large pit appeared at about 2.50 m. below the surface of the cut behind (i.e., to the west) of Sq. 3282. Within the visible portion of the pit, fragments of plaster statuary were discernible. It appears that the pit is another cache of statuary comparable in size and importance to the 1983 discovery. It was impossible to excavate the objects, so the pit was covered to protect the contents until an emergency excavation season can be arranged.

Concluding Remarks

The 1984 excavation season at 'Ain Ghazal was unusually successful in terms of answering questions we had developed based on the data recovered in the 1982 and 1983 seasons. What appears to be a sequence of continuous occupation from the Late PPNB through the onset of the PNA periods will provide an unmatched opportunity to examine the course of cultural change during a critical period of human development. Many of the agonizing problems concerning human control over animal and plant species may now be resolvable or at least be brought into a clearer perspective. The evolution of ceramic technology can be traced in an unbroken line from the initial tentative experimentations in the PPNB through the flourishing pottery production of the Yarmoukian phase of the PNA. Aspects of social structure and religion can be brought under more intensive scrutiny than was previously possible, and the symbolism entailed in Neolithic art will come into clearer focus.

It should be emphasized that the statuary discoveries in the last days of the dig season present an unparalleled opportunity to examine more closely the social, religious, economic, and perhaps even political facets of community life that such highly significant objects entail. With this goal in mind, proposals to fund an emergency excavation season in 1985 are currently being written for submission to appropriate granting agencies.

Acknowledgements

Funds for the 1984 field season were provided by the National Geographic Society (USA), the Center for Jordanian Studies at Yarmouk University, and the University of Kansas. Post-season analysis is supported in part by the Cobb Institute of Archaeology at Mississippi State University and by San Diego State University. We would like to thank Alia, the Royal Jordanian Airlines, for their invaluable assistance with international travel for most of the staff. We would also like to express our gratitude to the Ministry of Education for providing us with lodging at the Abdul Monim Riyadh school in Marka. We also deeply appreciate the help and support provided by the American Center of Oriental Research in Amman, the British Institute in Amman for Archaeology and History, and Stanley Consultants.

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[21] Rollefson, Ritual, *op. cit.*

Table 1. Absolute (above) and relative frequencies (below) of artefact classes among the chipped stone material from the South, Central, and East Fields of 'Ain Ghazal, 1984.

	in situ		*No Context*					
	Central	*South*	*East*	*C*	*S*	*E*	*X*	
Class	*n*	*n*	*n*	*n*	*n*	*n*	*n*	
Blades	10,252	5,334	129	2037	755	63	199	
Bladelets	2,923	1,043	9	299	166	8	42	
Flakes	9,414	9,514	189	1558	1191	68	197	
C.T.E.	643	125	3	113	25	—	4	
Burin spalls	445	226	6	53	24	2	16	
Other	21	93	1	14	12	9	1	
Microflakes	4,469	3,193	10	296	416	2	56	
Debris	5,460	3,089	32	550	440	8	136	
Cores	135	311	11	51	15	7	2	
(Tools)	(2,156)	(1,702)	(20)	(564)	(248)	(38)	(85)	
Subtotals	33,761	22,926	390	4965	3044	167	653	
Paleolithic	15	16	1	14	—	—	—	
Totals	33,776	22,942	391	4979	3044	167	653	65,952 Total

	Central			*South*			*East*		
Class	*%*	*%'*	*%"*	*%*	*%'*	*%"*	*%*	*%'*	*%"*
Blades	30.4	43.0	52.1	23.3	32.0	35.9	33.1	37.1	40.6
Bladelets	8.7	12.3	—	4.5	6.3	—	2.3	2.6	—
Flakes	27.9	39.5	47.9	41.5	57.2	64.1	48.5	54.3	59.4
C.T.E.	1.9	2.7	—	0.5	0.8	—	0.8	0.9	—
Burin spalls	1.3	1.9	—	1.0	1.4	—	1.5	1.7	—
Other	0.1	0.1	—	0.4	0.6	—	0.3	0.3	—
Microflakes	13.2	—	—	13.9	—	—	2.6	—	—
Debris	16.2	—	—	13.5	—	—	8.2	—	—
Cores	0.4	0.6	—	1.4	1.9	—	2.8	3.2	—
(Tools)	(6.4)	(9.0)	—	(7.4)	(10.2)	—	(5.1)	(5.7)	—
Totals	100.1	100.1	100.0	100.0	100.2	100.0	100.1	100.1	100.0
Paleolithic	(0.0)			(0.0)			(0.3)		

Note: C.T.E. refers to "core trimming element".

Table 2. Absolute and relative frequencies of tools among the chipped stone artefacts from the three excavation areas at Ain Ghazal 1984.

	Central		*South*		*East*	
Type	*n*	*%*	*n*	*%*	*n*	*%*
Spear points	45	4.9	14	2.1	1	6.2
Arrowheads	2	0.2	22	3.2	—	0.0
Sickle blades	82	8.9	4	0.6	—	0.0
Burins (all types)	395	42.9	217	32.0	5	31.2
Truncations	82	8.9	76	11.2	2	12.5
Scrapers (all types)	18	2.0	49	7.2	1	6.2
Denticulates	52	5.7	46	6.8	1	6.2
Notches	136	14.8	119	17.6	1	6.2
Perf./drills	72	7.8	65	9.6	2	12.5
Bifaces	12	1.3	50	7.4	3	18.8
Knives	1	0.1	10	1.5	—	0.0
Backed blades	6	0.7	5	0.7	—	0.0
Tanged blades	17	1.8	2	0.3	—	0.0
Subtotals	920	100.0	679	100.2	16	99.8
Retouched blades	268	18.9	168	13.9	3	13.6
Retouched flakes	159	11.2	294	24.3	2	9.1
Other	73	5.1	71	10.5	1	4.5
Subtotals	1420		1212		22	
Util. blades	176	10.1	140	8.5	1	3.3
Util. flakes	72	4.1	156	9.4	4	13.3
Indeterminate	73	4.2	143	8.7	3	10.0
Totals	1741		1651		30	

Table 3. Absolute and relative frequencies of burin classes in the Central and South Field assemblages.

	Central			*South*	
Class	*n*	*%*	X^2	*n*	*%*
Simple burins	292	73.9	.0000	108	49.8
Complex burins	90	22.8	.0000	86	39.6
Truncation burins	13	3.3	.0001	23	10.6
Totals	295	100.0		217	100.0

Table 4. Groundstone objects from 'Ain Ghazal 1984.

Object	*Central*		*South*		*East*		
	A	*B*	*A*	*B*	*A*	*B*	*X*
Basalt axe	1	—	—	—	—	—	—
Basalt fragments	3	4	1	10	—	—	—
Basalt discs	11[a]	3	3	1	1	—	—
Pestles	1[b]	2	3	—	—	—	1[b]
Limestone discs	4	—	4	—	1	—	—
Mullers	5	3	4	2	—	—	—
Indet. groundstone	18[c]	12	17[c]	2[c]	2	—	—
Sandstone fragments	4	—	—	—	—	—	—
Mortars	3[d]	—	4	—	—	—	—
Stone bowl (Limestone)	13[e]	3	8	1	1	—	1
Stone bowl (basalt)	—	—	1	—	—	—	—
Limestone torus	—	1	3	—	—	—	—
"Worked stone"	9[c]	3	4	2	—	—	—
Grooved stones	—	3	3	—	—	—	—
Burnishing stones	8	1	1	—	—	—	—
Hammerstones	7	—	5	—	1	—	—
Totals	87	35	61	18	6	0	2

Notes: A: in situ
B: ex situ
X: general site surface
a: one is incised
b: basalt
c: one stained with red ochre
d: one is basalt
e: one is miniature

Table 5. Bone tools from 'Ain Ghazal 1984

Type	*Central*		*South*	
	A	*B*	*A*	*B*
Awls	18	1	14	2
Spatulas	12	4	4	—
"Comb"	—	1	—	—
Indeterminate	26	9	9	2
Other	1[a]	—	—	—
Totals	57	15	27	4

Notes: A: in situ
B: ex situ
a: incised *Bos* metacarpal

Table 6. Plastic objects from the Central Field, 'Ain Ghazal, 1984.

Figurines	*In Situ* clay	*In Situ* plaster	*ex Situ* clay	*ex Situ* plaster
Human	7a	—	—	1
Cattle	10	—	—	—
Indeterminate animal	10	—	1	—
Animal head	1	—	—	—
Appendages	1	—	1	—
Animal horns	5	—	—	—
Subtotals	34	0	2	1
Modelled fragments	4	2	—	—
Totals	38	2	2	1
Geometric Objects				
Balls	46	4[b]	2	2[b]
Hemisphere	1	—	—	—
"Tablet"	1	—	—	—
Cuboid	1	—	—	—
Pyramids	3	—	—	—
Cones	3	—	—	—
Totals	55	4	2	2
Other Plastic Objects				
Painted fragment	1[c]	—	—	—
Molded fragments	10	—	—	—
Reed-impressed fragments	6	X	—	—
"Loomweight"	1	—	—	—
Totals	18	X	0	0

Notes. a: two bear rocker-stamped impressions
b: one incised
c: red ochre
X: more than 10. Pieces of statuary?

Table 7. Plastic objects from the South Field, 'Ain Ghazal, 1984.

	In Situ	*Ex Situ*	
Figurines	*Clay*	*Other*	*Clay*
Human	1	2[a]	—
Indeterminate animal	1	—	2[b]
Animal horns	2	—	—
Subtotals	4	2	2
Modelled fragments	1	—	—
Totals	5	2	2
Geometric Objects			
Balls	2	3[c]	—
Cylinder	1[d]	1[c]	
Totals	3	4	0

Notes: a: one is a small figurine base in chalk, the other a large foot (51 x 44 x 15 mm) made in stone.
b: male gentalia notable, probably a bull.
c: plaster
d: "hollow, as if formed around a stick"

Table 8. Jewelry from 'Ain Ghazal 1984

	Central		*South*	
Beads	*A*	*B*	*A*	*B*
Bone	90[a]	—	—	—
Greenstone	—	1	—	—
Clay	1	1	—	—
Shell	1	—	2	—
Limestone	—	—	1	—
Pendants				
Fossil sea urchin	2	—	—	—
Shell	1	—	2	—
Mother-of-pearl	—	—	1	—
Limestone annulars	2	9	47	7
Chalk	—	—	1	1
Bone	—	1	—	—
Rings				
Stone	1	—	—	—
Shell	—	—	1	—
Bone	—	—	4	—
Button				
Mother-of-pearl	—	—	1[b]	—
Indeterminate jewelry				
Greenstone fragment	1	—	2	—
Carnelian fragment	—	—	2	—
Azurite (?) fragment	—	—	1	—
"Worked shell"	—	—	3[c]	—

Notes. A: in situ
B: ex situ
a: all are from a single burial (Sq. 3083/3283)
b: two holes
c: small "buttons" without holes?

Table 9: Other small finds from 'Ain Ghazal 1984.

Object	*Central*		*South*	
	A	*B*	*A*	*B*
Clay discs/spindle whorls	—	—	3	—
Obsidian bladelet fragments	1	—	4	—
Cowrie shell	1[a]	—	—	—
Cockle shell	4[b]	—	—	—
Unidentified shells	5[c]	3	12[d]	—
Fossil shells	4	—	5	—
Mace heads	—	1	1	—
Stone palette	1	—	—	—
Incised stone	1[e]	—	1	—
Perforated stone	3	1	10[f]	—
Stone sphere	—	—	2	—
"Worked shale"	—	—	1	—
Marble (?) bowl rim	—	—	1	—
Iron spear point	—	—	1[g]	—
Red ochre rubber	1	—	—	—
Red ochre fragments	1	—	7	—

Notes. A: in situ
B: ex situ
a: worked
b: all perforated at hinge
c: one incised
d: one filled with plaster
e: very fine parallel lines with intricate cross-hatching
f: weights?
g: Layer 1, probably Islamic.

Table 10. White ware and ceramics from Ain Ghazal 1984.

	Central		*South*	
White ware	*A*	*B*	*A*	*B*
Bowl body fragments	2	2	1	—
Bowl base	1	—	—	—
Rim fragments	—	1	—	—
Miniature platter	1[a]	—	—	—
"Worked" chalk fragments	2	—	2[b]	2
Pottery[c]				
Body sherds, unfired	1[d]	—	—	—
Body sherds, fired	—	2[e]	—	—
Rim sherds, fired	2	—	—	—

Notes. A: in situ
B: ex situ
a: with small cylindrical handle
b: one fragment painted red
c: the rich PNA sample from Layer 2, South Field, not included in this table.
d: 28 mm thick
e: probably modern

Table 11. Small finds from other areas of 'Ain Ghazal 1984.

East Field Excavations *Object*	*in situ*	*ex situ*
Bone awl	1	—
Indeterminate bone tool	1	—
Stone pendant fragment	1	1
Chalk pendant fragment	1	—
Carnelian fragment	1	—
Burnishing stone	1	—
Fossil shark tooth	—	1
Far Northwest Section		
Potsherds	X[a]	—
General Surface		
Stone pendant fragment	—	1

Notes. X: more than ten
a: from a large clay-pottery-lined storage feature, date uncertain.

Table 12. List of plant species identified in samples from 'Ain Ghazal 1984

Genus-species	*Common name*
Vicia faba	horsebean
Vicia sp.	vetch
Lens culinaris	lentil
Pisum sativum	fieldpea
Hordeum distichum	two-row barley
Hordeum vulgare/distichum	—
Triticum monococcum	einkorn wheat
Triticum dicoccum	emmer wheat
Triticum aestivum/durum	bread wheat
Pistacia sp.	pistachio
Ficus sp.	fig.
Amygdalus	almond
Papillionaceae sp.	
Meliotus sp.	
Medicago sp.	
Medicago radiata	
Astragalus sp.	
cf. Cucurbitaceae	
Chenopodium sp.	
Helianthomum sp.	
Lithospermum sp.	
Graminaceae indet.	grass
Lolium sp.	
Setaria sp.	
Galium sp.	
Fumaria dentiflora	poppy
Malva sp.	mallow

Bibliography

P. Akkermans, J. Boerma, A. Clason, S. Hill, E. Lohof, C. Meiklejohn, M. le Miere, G. Molgat, J. Roodenbergm, W. Waterbolkvan Rooyen, and W. van Zeist, Bouqras Revisited: Preliminary Report on a Project in Eastern Syria, *Proceedings of the Prehistoric Society,* 49 (1983) p. 335-372.

C.-M. Bennett, Soundings at Dhra', Jordan, *Levant,* 12 (1980), p. 30-39.

E. Gillet, and C. Gillet, Jebel Abu Thawab, Jordan, *Levant,* 15 (1983) p. 187-191.

K. Kenyon, *The Archaeology of the Holy Land,* London, 1979.

D. Kirkbride, Early Byblos and Beqa'a, *Mélanges de l'Université Saint Joseph,* 45 (1969) p. 45-60.

The Neolithic in Wadi Rumm: 'Ain Abu Nekheileh, p. 1-10 in R. Moorey and P. Parr (eds.), *Archaeology in the Levant,* Warminster, 1978.

M. Lechevallier, Abou Ghosh et Beisamoun, *MTJ,* 2, Paris, 1978.

J. Mellaart, *Earliest Civilizations of the Near East,* London, 1965.

G. Rollefson, Ritual and Ceremony at Neolithic 'Ain Ghazal (Jordan), *Paleorient,* 9:2 (1983) p. 29-38.

G. Rollefson, E. Banning, B. Byrd, Z. Kafafi, I. Kohler-Rollefson, D. Petocz, S. Rolston and L. Villiers, Excavations at the PPNB Village of 'Ain Ghazal (Jordan) 1982, *Mitteilungen der Deutschen Orient Gesellschaft,* 116 (1984) (in press).

and B. Frohlich, A PPNB Burin Site on Jabal Uweinid, Eastern Jordan, *ADAJ,* XXVI (1982) p. 189-198.

and M. Muheisen, Chipped Stone Artefacts from a Specialized PPNB Camp Near Kharaneh Castle, Eastern Jordan, *ADAJ,* n.d.

and A. Simmons, The 1983 Season at 'Ain Ghazal: Preliminary Report, *ADAJ,* (in press).

A. Simmons, M. Donaldson, W. Gillespie, Z. Kafafi, I. Kohler-Rollefson, E. McAdam, S. Rolston and K. Tubb, Excavations at the PPNB Village of 'Ain Ghazal (Jordan) 1983, *Mitteilungen der Deutschen Orient Gesellschaft,* (submitted).

and E. Suleiman, Survey of Exposed Neolithic Structures at 'Ain Ghazal, *ADAJ,* XXVII (1983), p. 471-480.

M. Stekelis, *The Yarmoukian Culture of the Neolithic Period,* Jerusalem, 1972.

J. Waechter and V. Seton-Williams, The Excavations at Wadi Dhobai 1937-1938 and the Dhobaian Industry, *Journal of the Palestine Oriental Society,* 18 (1938), p. 172-186.

J. Weinstein, Radiocarbon Dating in the Southern Levant, *Radiocarbon,* 26:3 (1984), p. 297-366.

FIRST SEASON OF EXCAVATIONS AT JEBEL ABU THAWWAB (ER-RUMMAN), 1984 (PRELIMINARY REPORT)

by
Zeidan Kafafi

Introduction

Yarmouk University sponsored the first season of excavations which took place at Jebel Abu Thawwab between May 26 and June 22, 1984, under the supervision of the writer. Messrs. Nabil Qadi and Fuad Hurani served as area supervisors. Mr. Fayez Tarawneh acted as surveyor and draftsman. Most of the thirteen workers were hired from the village of el-Mastaba *ca.* 2 km. north-east of the site.

The continuous support of Prof. Adnan Badran, the President of Yarmouk University and Prof. Moawiyah Ibrahim, the Dean of the Faculty of Arts, Humanities and Social Sciences, and of Prof. Adnan Nayfeh, the Dean of Scientific Research, made a great contribution to the success of the expedition. Contributions from His Excellency Ra'f Najem, the Minister of Public Works, were a great help to our dig. Many thanks are also due to Dr. Adnan Hadidi, Director General of the Department of Antiquities, for his assistance and encouragement. The dig also benefitted from visits by several colleagues from Yarmouk University, the University of Jordan and the Department of Antiquities.

Site Location

Jebel Abu Thawwab is located *ca.* 2 km. ENE of the village er-Rumman, *ca.* 14 km. to the north of the town of Sweileh, and *ca.* 20 km. south of Jerash (Fig. 1). More precisely, Jebel Abu Thawwab is found at map coordinates between E-230,000 and 231,000 and N-174,732, and 174,750 at 550.00 m. above sea level. Moreover, this site is situated between the contour lines 480 and 493, on the west slope of Jebel Abu Thawwab, overlooking Wadi er-Rumman which empties into the Zerqa River (Pl. VI: 1). The present Amman-Jerash main road divides the site into two parts. The land of the site itself is the property of the people of er-Rumman village.

Geologically speaking, the site is situated on a river terrace (Pl. VI:2), as identified by Dr. Hakam Mustafa.[1] The main water source of the area is the perennial Wadi er-Rumman which flows into Ain Ras el-Ma springs. Other springs such as 'Ain Um Karam, 'Ain Um Rabi to the north of the site and 'Ain el-Maiyita to the west may also have served as water sources for the area. Now, the area has been planted with various kinds of trees such as olives and figs, in addition to wild lavender trees. Also, crops and vegetables are still grown within the area of the site.

The size of the site is approximately 200.00 m. east-west and 300.00 m. north-south, judging from a surface survey that has been carried out. The side slopes gradually to the southwest towards Wadi er-Rumman (Pl. VI:1:). On both sides of this wadi, natural caves and shelters are recognizable. Unfortunately, the dig team did not have time to inspect these caves this season.

Objectives

The plans for excavation were developed when the writer and Dr. Robert Gordon, Institute of Archaeology and Anthropology of Yarmouk University, visited the site in the winter of 1983. This

[1] Dr. H. Mustafa of the Department of Geology at Yarmouk University visited the site and will be preparing a report on the geological setting of the area.

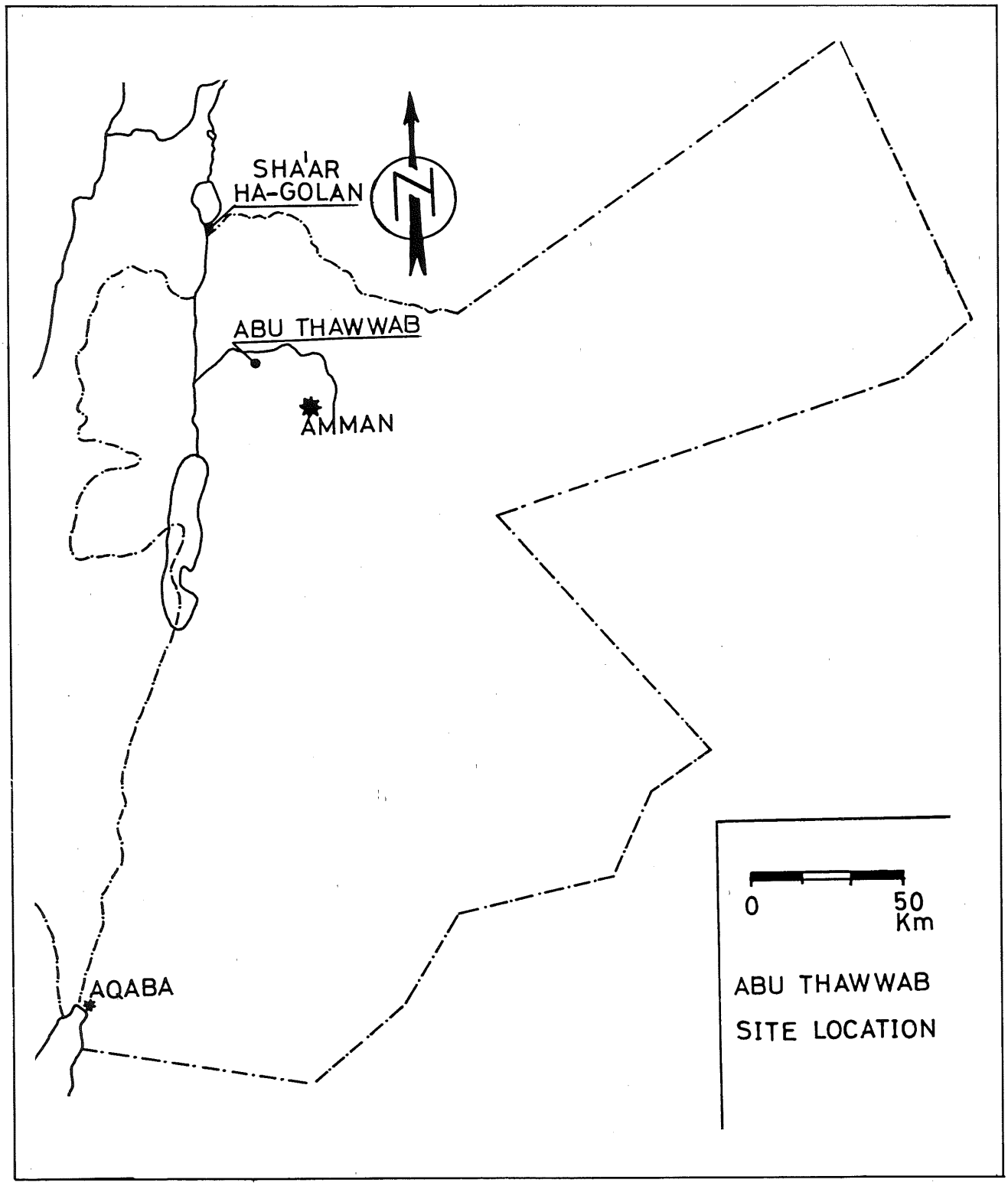

Fig. 1

visit resulted after reading a note published by Mr. and Mrs. Elizabeth and Colin Gilet who first found the site and published Yarmukian and Early Bronze Age pottery sherds collected there.[2]

During several visits to the site, surface pottery sherds and flint tools were collected and dated to the Late Neolithic (Yarmukian), Early Bronze, Roman and Byzantine periods. Since it was announced that the site was being threatened by demolition due to the widening of the Amman-Jerash main road, and due to the fact that no Yarmukian sites have been excavated on the East Bank of Jordan, we decided to undertake a salvage excavation.

[2] Elizabeth and Colin Gilet, Jebel Abu-Thawwab, *Levant*, XV (1983), p. 187-191.

This may develop into a systematic long-term project in the end; but, the basic objective of the 1984 excavation was to check whether the undisturbed remains of the pottery Neolithic period could be found in stratigraphic context on this site.

Method of Excavation

A contour map was made and the site was divided into quadrants: A, B, C, and D (clockwise, SE to NE). Since the area located on both sides of the cut of the main road (Areas A, D) is the most threatened one, we concentrated our efforts there. Three squares A III 5, A III 6, and D III 4, each measuring 5.00 m. x 5.00 m., were opened at the beginning of the work. The first mentioned two squares are located on the road-cut on the east side of the road; the last one is on the west cut. These squares were put there after architectural remains in the cut of the road were recognized. Four trial trenches were opened, The first one was AIII 4 and the fourth was as AIDI 10. The first three were put in to follow a metre-thick wall which appeared after the trimming operations of the east cut of the road. Also, another square, D III 5, was laid out north of D III 4 to follow walls uncovered in that area (Fig. 2).

For the registration operation, a *locus sheet* was typed including information about the progress of excavation, locus description, location of the locus in the square, under locus, over locus, locus dimensions, top and lower levels, collected pottery sherds, excavated objects and interpretation of the locus.

Daily top-plans, elevations of the excavated walls, main deposits, drawings of baulks and subsidiary baulks were also made.

Results of the Excavations

The general stratigraphic aim was virtually achieved for the excavated area by opening the above-mentioned squares and probe trenches. By the end of the season, virgin soil had been reached in all squares. This achievement enabled us to work out a correlation of all excavated loci. Two main occupational phases were identified, the first and earliest dates to the *Late Neolithic period (Yarmukian Culture).* The second phase is the *Early Bronze Age*

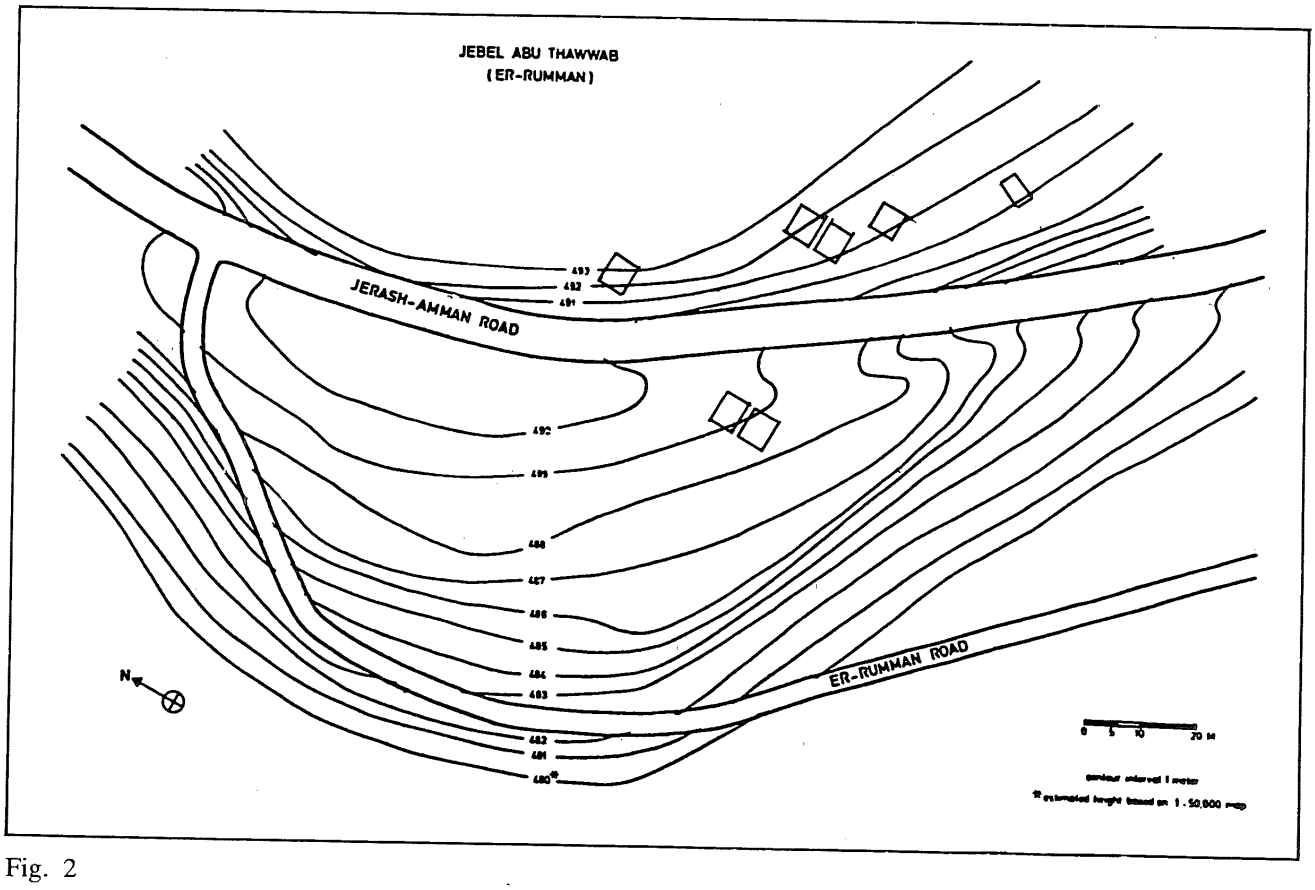

Fig. 2

I. In some of the trenches, these two phases are separated from each other by a mixed fill, consisting mostly of small sized stones. This deposit was first excavated in Area A, in Squares III 5 (loc. 2) and III 6 (loc.2), where it is about 0.60 m. thick (Pls. VII: 1, 2). Late Neolithic 1 (Yarmukian) and Early Bronze Age I pottery sherds were found in this fill. The same stoney layer was found in Area D. No occupational surfaces or structures were found in this deposit. The EB I wall in A III 5 (loc. 3) was built over it. The same fill was removed from the area under Wall 7 in Area IV 4 (cf. below).

To describe the results of this first season of excavation, we will start from the earliest occupation evidence on the site and proceed to the most recent.

Phase II: (Late Neolithic 1)

The earliest stratum of occupation which was attested in all excavated trenches on the site, dates back to the *Yarmukian Culture (ca.* 6000-5000 B.C.). The excavated architectural remains associated with this phase were stone walls, not yet interpreted as buildings. Any connection between these walls was destroyed during the construction of the Amman-Jerash main road in the 1950's. The largest wall which might be related to this phase is that one found in A III 4 (locus 7). It extends 15.00 m. in a north-south direction. Each course has two rows of boulders with a fill of small stones in between, three courses are still preserved (Fig. 3), Pl. VIII: 1). This was founded directly on virgin soil. The pottery found in the associated loci is Yarmukian. The function of it is still unclear; only further excavation will clarify this. This wall (loc. 7) was built against an East-West wall (loc. 6). These two walls are very similar in construction and material; also, they were built on the same elevation (Pl. VIII: 2).

Immediately east of the junction of Walls 6 and 7, a fragmentary wall (loc. 15) consisting of one row of stones was found. This wall is running parallel to Loc. 7 but at a lower level and runs under wall 6. The pottery sherds excavated in the foundation trench (loc. 16) of wall 15 points to a Yarmukian Period date for the wall.

In Area D and in Square III 5 (Loc. 9a), another wall consisting of one course of small and medium sized unhewn stones was excavated. This wall runs NW-SE and was also laid on virgin soil. It should be noted here that this wall was reused in the Early Bronze Age I by adding courses of boulders to it (Fig. 4, Pl. IX: 1). We faced the same problem here we had previously encountered, that most of it had been cut by the road, and no more information could be reported about it.

In addition to the architectural remains, mentioned above *storage pits* dated to this phase were also excavated. The first one of these pits was found in Area D Square 10. This circular pit was dug into the virgin soil and measures 1.00 m. in diameter and about one and a half metres in depth. The inner sides of it were lined with medium and large boulders.

Another, smaller pit, similar to the first one in shape and diameter, was excavated in D III 5 (loc. 15). A large quantity of Yarmukian pottery sherds was found in both pits.

The excavated Late Neolithic 1 strata produced a large number of *Yarmukian pottery sherds,* though no intact pottery objects were found. These sherds bear the same characteristics as those found at Sha'ar ha-Golan, Tuleilat Batashi, and at Munhatta 2B in Palestine, and at Byblos in Lebanon. Most of the Yarmukian sherds were decorated with a herringbone design, red slipped (2.5 YR 4/6), red painted (2.5 YR 4/6), handmade and badly fired. Though this pottery collection needs more detailed study, the recognizable types consist mostly of jars (hole-mouth and globular), simple bowls and cups (Figs. 5, 6). A detailed report about the Yarmukian and EB I pottery from the first season of excavations at Jebel Abu Thawwab will be published in the *Zeitschrift des Deutschen-Palastina Vereins.*

Yarmukian *flint tools* were also found at the site. The tools encountered were mostly made of flakes and consist of blades and deeply denticulated sickle-blades (Fig. 7). Some of them still have a high sheen

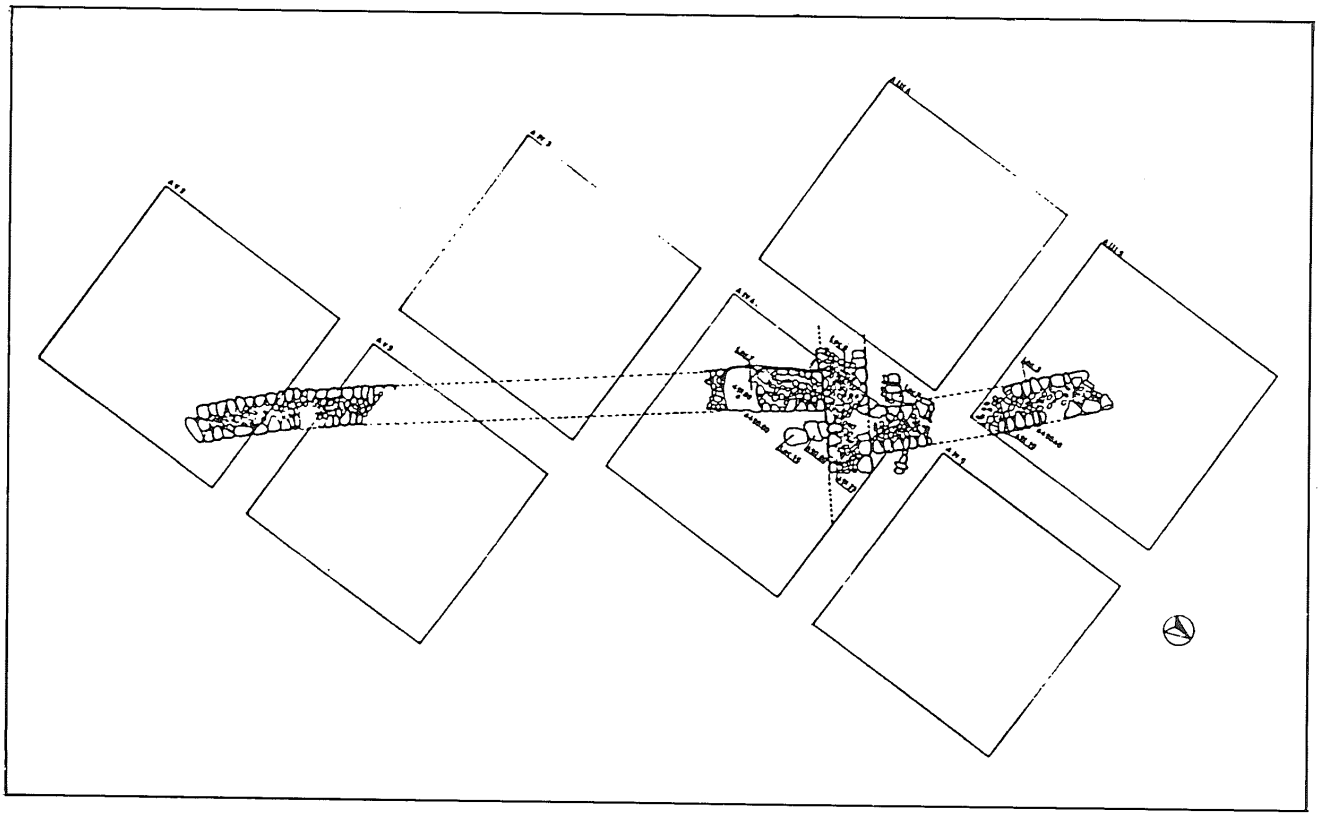

Fig. 3: Yarmoukian and Early Bronze Structures Found in Area A

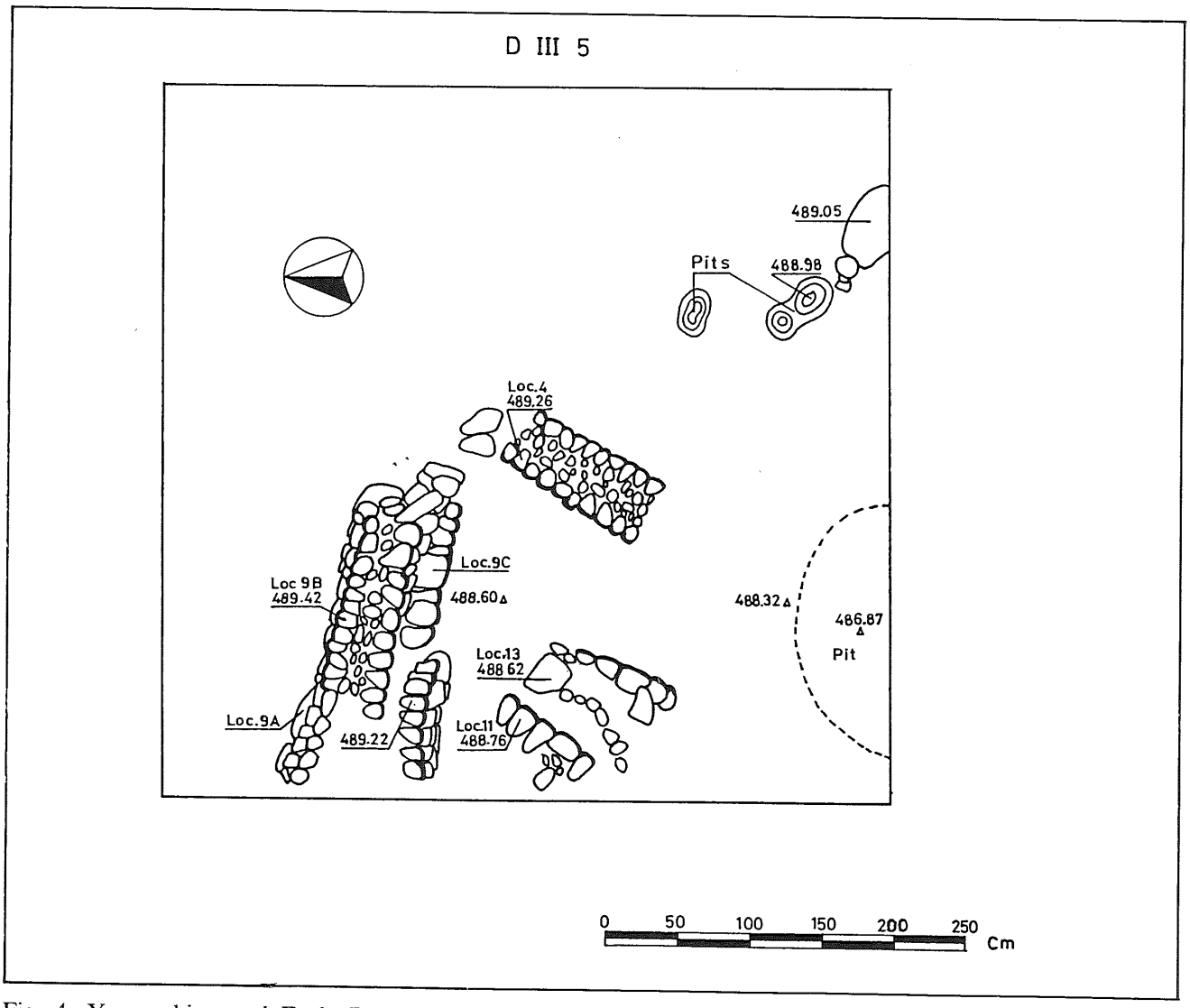

Fig. 4: Yarmoukian and Early Bronze Structures

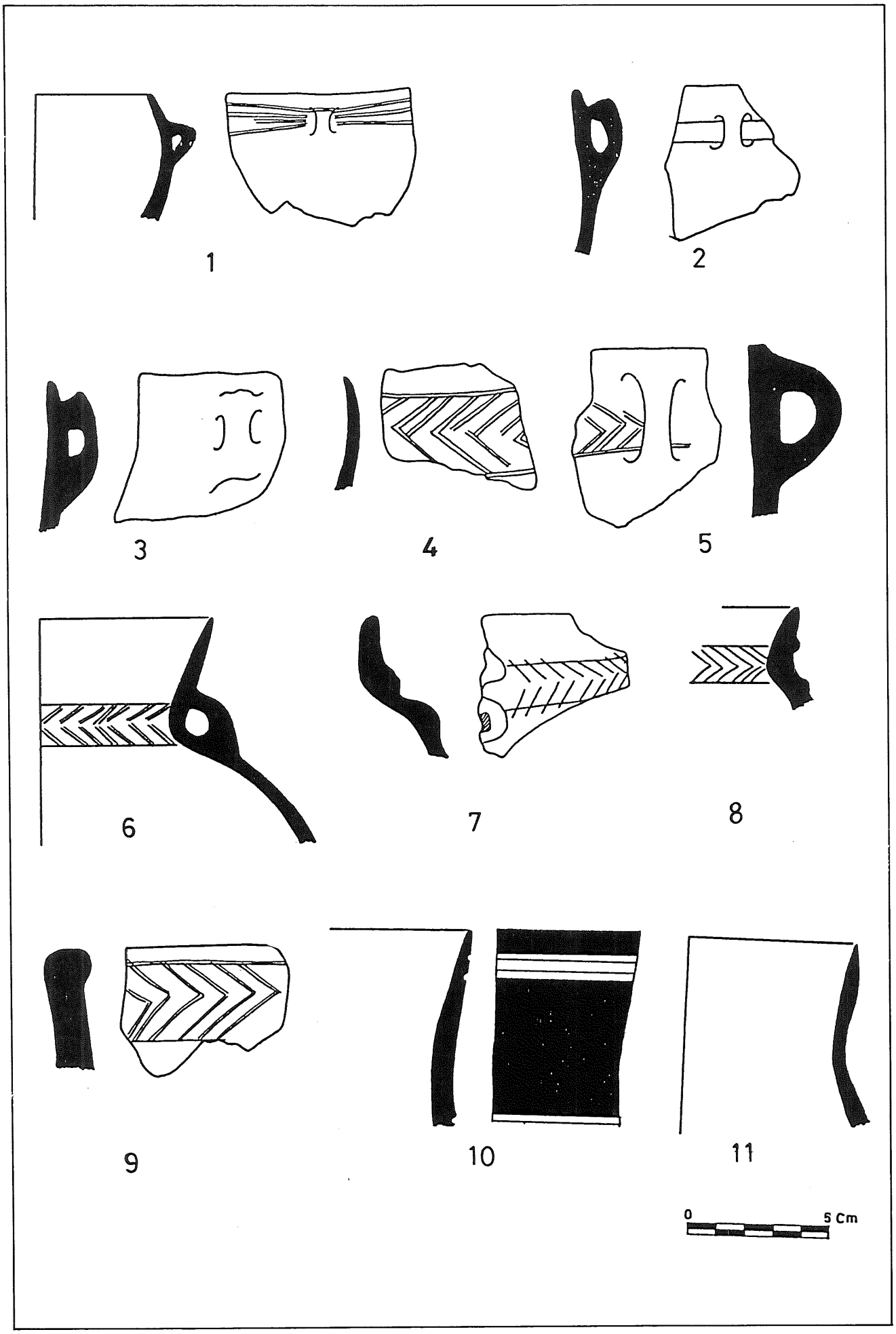

Fig. 5: Yarmoukian Pottery Sherds

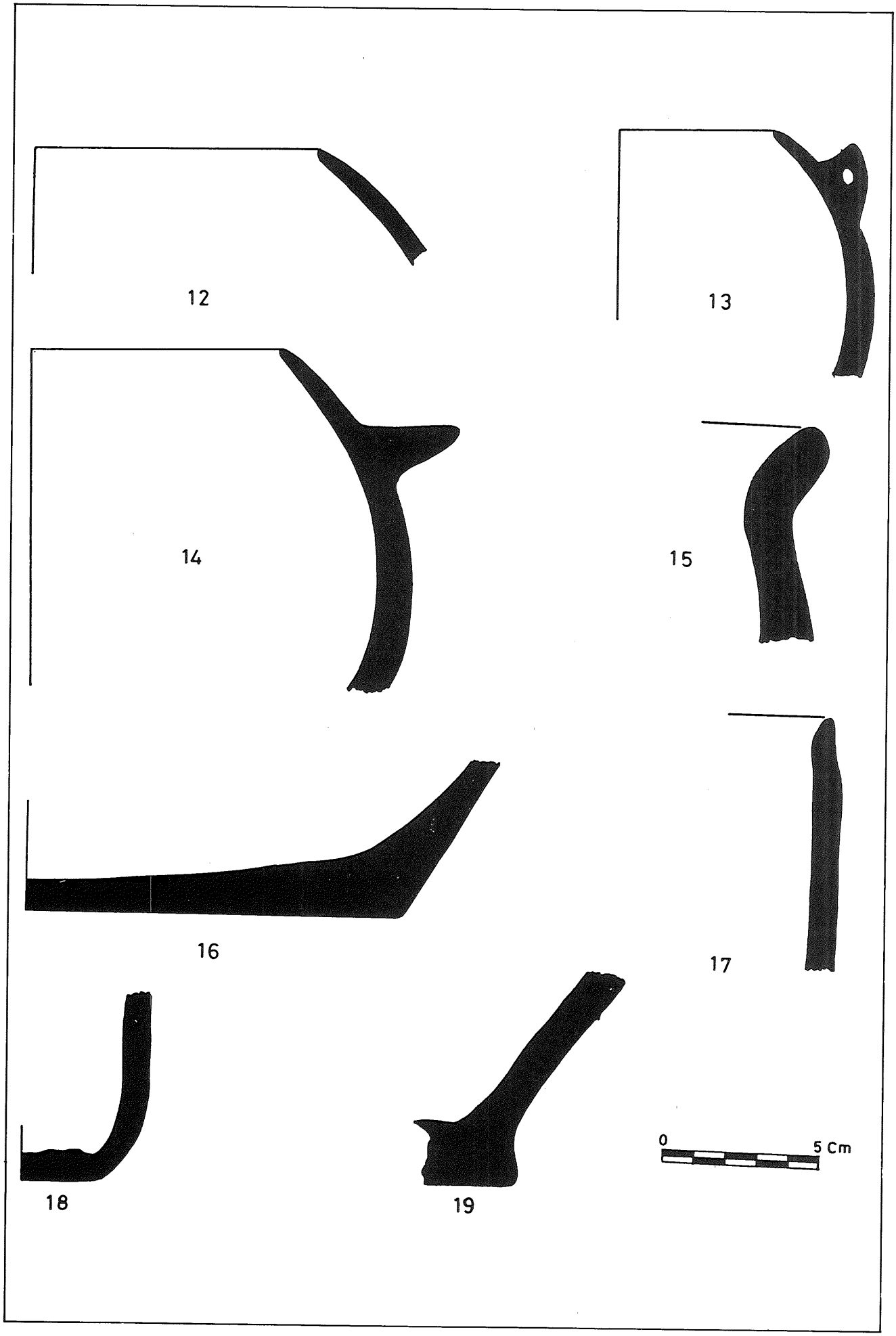

Fig. 6: Yarmoukian Pottery Sherds

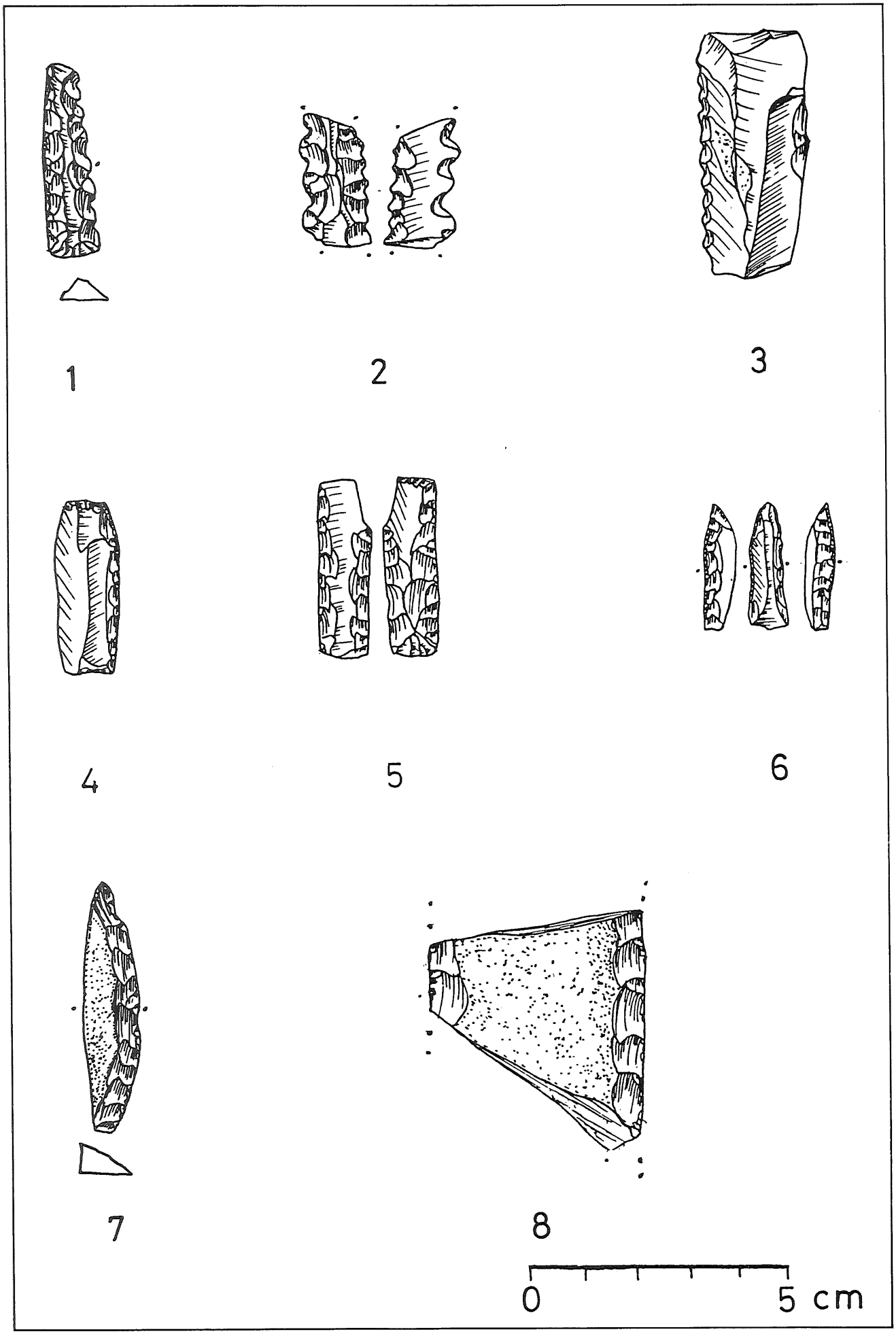

Fig. 7: Flint Tools

(gloss). Similar tools were also found at Sha'ar ha-Golan and were related to the Yarmukian culture.[3]

None of the pebble figurines which are considered to be typically Yarmukian (as at Sha'ar ha-Golan) were found at our site this season; but, a number of ground stone artefacts were found.

Botanical samples were collected at the site and analyzed by Mr. Reinder Neef, from the Biologisch-Archaeologisch Instituut in Groningen, Holland, who identified *Triticum monococcum* (einkorn) seeds from Yarmukian levels.

Phase I: (Early Bronze I *ca.* 3200-3000 B.C.)

Excavations on both the east and west sides of the road produced archaeological remains which could be dated to the Early Bronze Age I*(ca.* 3200-3000 B.C.). These were excavated in the top strata of the site and consisted mainly of architectural remains, pottery sherds, and flints.

Early Bronze I architecture was encountered in both excavated areas A and D. In Area A, Square III 5, a wall was built of two rows of medium sized stone with small stones in between. This wall is approximately 1.00 m. wide, the excavated segment is 2.25 m. long and 0.40 m. high. It runs NW-SE and abuts another wall running E-W, one metre wide, which dates to the same period and was found in A III 4. This wall was also built of medium sized boulders. The excavated portion of the wall is about 2.20 m. in length. The western part of the area where the two walls were found was already bulldozed and parts of the structure were missing. Therefore, it is still difficult for us to find out the function of this structure (Fig. 8).

Typical EB I structures were found in Area D, Squares III 4 and III 5. In Square III 4, a room represented by three walls built of small and medium sized boulders were excavated. The eastern part of this structure was cut in the road construction. The remains of the northern wall (loc. 3) measures 1.50 m. long, 0.75 m. wide and stands to a height of half a metre. The excavated part of the south wall of this room measures 1.75 m. long, 0.70 m. wide and 0.25 m. in height. Locus 12, which forms the west wall of the room, was also built of small sized boulders. It measures 2.10 m. long, 0.60 m. wide and 0.50 m. high. This room has a plastered floor in which two small holes were recognized. Such holes were found at 'Arad in Palestine and were identified as "cup holes".[4] In one of them a large pottery jar was found, which has ledge handles and a flat base. The entrance to this room is located in its southern wall, which is the longer side of the room. This entrance consists of two flat-stone steps leading to the inside of the room.

In the same square (D III 4), other structural remains were found. These consisted of: a wall (loc. 21) going N-S and forming a corner with Loc. 6, the south wall of the room mentioned above; benches built against the inner faces of these two walls (Pl. IX: 2). These benches were built of small boulders. Belonging to this structure is a plastered floor (loc. 24). Such buildings were also excavated at 'Arad in Palestine and dated to the early Bronze Age I period.[5]

Fragmentary walls (loci 4, 9b and 9c) related to the EB I period were also encountered in Square III 5 (Pl. IX: 1). These walls are missing large parts as a result of the building of the Amman-Jerash main road. The first one (loc. 4) was built of two rows of small sized stones, with egg-sized stones in between. This wall runs N-S and measures *ca.* 1.00 m. long, 0.45 m. wide; the only preserved course is 0.12 m. high. It could be that this wall joined wall 9b at the NE part before it was cut by the opening operations for the road. Wall 9b was also built of small and medium sized boulders. This EB I wall was built over the Late Neolithic wall 9a, and it could be a re-use of it. It runs E-W and measures 2.70

[3] M. Stekelis, A Neolithic Industry: the Yarmukian of Palestine, *IEJ,* 1 (1950-51) p. 7-27.

[4] R. Amiran, *et. al., Early Arad, the Chalcolithic Settlement and Early Bronze City, I. First-Fifth Seasons of Excavations, 1962-1966,* Jerusalem, 1978, Pl. 143:3.

[5] *Ibid.*

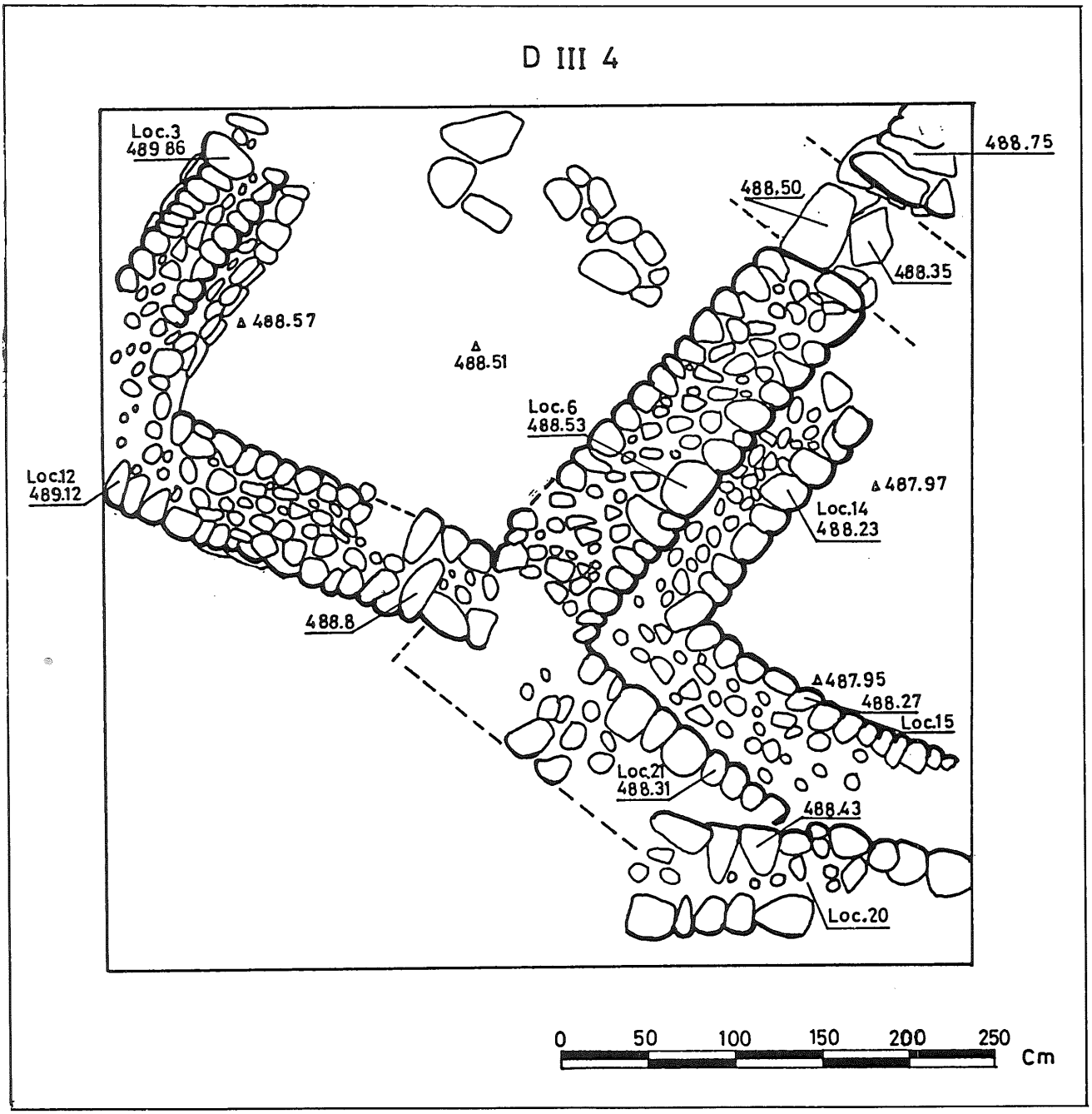

Fig. 8: Early Bronze Age Structures

m. long, 0.85 m. wide and 0.75 m. high. Another wall (9c) was added later at the south face of wall 9b. This was also built of medium sized stones. It should be noted here that both walls 9b and 9c are related to the same period (EB I), while the wall below these (9a) is dated to the Late Neolithic period. This dating is based on the pottery excavated during the removal of the walls. A cut through the three walls showed that they were built on three different levels (Fig. 4).

In addition to these walls, plastered pits similar to those found in Square D III 4 were found. These pits were lined with pottery sherds. These, too, may have been "cup-holes" (Pl. IX: 3).

Although we did not find intact pot tery objects of the *Early Bronze I* this season, a large number of sherds related to this period were excavated. The types recognized within this assemblage of pottery sherds consist of jars, hole-mouth jars, and bowls. Most of the collected sherds are painted with red paint in criss-cross lines and bands. Also, grey burnished and red slipped wares were found. A detailed report about the pottery repertoire from Jebel Abu Thawwab will be published in the *ZDPV*.

Flint tools such as Canaanite blades and basalt grinding stones dated to the

Early Bronze Age I were also excavated at the site.

Conclusion

As a result of our first season of excavation at the site of Abu Thawwab, two occupational phases have been recognized at the site. The earliest one belongs to the Late Neolithic 1 (Yarmukian Culture) dated to *ca.* 6000-5000 B.C.; the latter is of the Early Bronze Age I *(ca.* 3200-3000 B.C.). A layer of small stones about 0.60 m. in thickness separates the two phases from each other and no occupational remains were excavated in this layer, though Yarmukian and EB I pottery sherds were found in it. Yarmukian sherds similar to those found at our site were excavated at the PPNB site, 'Ain Ghazal, near Amman.[6] It has been reported as well that Yarmukian pottery sherds were found at Sleihi, a site about 6 km. to the west of Abu Thawwab.[7]

Finally, it is hoped that more intensive work will be done at Jebel Abu Thawwab (er-Rumman).

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[6] G. Rollefson, personal communication.

[7] D. Kirkbride, Short Note on Some Hitherto Unrecorded Prehistoric Sites in Transjordan, *PEQ,* 91 (1959) p. 52-54.

TELL ESH-SHUNA NORTH 1984: A PRELIMINARY REPORT

by
Carrie Gustavson-Gaube

Introduction

Under the sponsorship of Yarmouk University, the University of Tübingen and the Department of Antiquities of Jordan,[1] salvage excavations were conducted at Tell esh-Shuna North,[2] Jordan, between March 4th and April 23rd, 1984.[3] Located in the northern Jordan Valley at the junction of the main road descending from the Irbid plain down to the north-south valley road, the locational importance of the site's prehistory is reflected in its rapid growth today. As often occurs, the modern growth of Tell esh-Shuna North occurs at the expense of the ancient mound. In the 1960-1961 publications of the 1953 archaeological probe at the site,[4] the size of the *tell* was reported to be approximately one kilometre long with a maximum height of ten metres. Today, though the sherd scatter extends throughout the town, only several small portions of the mound are preserved and/or offer a potential for excavation.

The largest of the preserved segments of Tell esh-Shuna North is located in the middle of the bus stop, under the shadow of the mosque. Even this area, measuring only 45 m. x 50 m. north-south with a maximum preserved height of six metres above the level of the adjacent asphalt pavement, is only available for excavation due to the destruction of the overlying houses in 1967; the accompanying destruction debris and accumulated garbage deposit themselves accounting for up to one and a half metres of the mound's preserved height. Recent remodelling of the western and southern perimeter of this area by a series of bulldozer cuts have resulted in a step-like cut into the mound, offering an easy strategy for salvage excavation. Initially, three 5.00 m. x 5.00 m. squares were opened on an east-west line, straddling the western cut. The easternmost of the squares, designated EIV on the plan (Fig. 1), was abandoned when it was determined that a large pit of apparent Mamlūk date had destroyed most of the later Early Bronze I to possible Early Bronze II occupational deposits in the area. A fourth square to the west (designated EI), projecting slightly into the parking lot, was then opened in order to increase the exposure of the earlier part of the obtained sequence. In total, a maximum of seventy-five square metres were excavated to a maximum depth of four metres (the overlying "Hashemite" deposits excluded), revealing a continuous sequence dating from the late Chalcolithic

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[1] I would especially like to thank Dr. M. Ibrahim, Dr. W. Röllig, Dr. A. Hadidi and Ms. Maha Jeyousi for their generous support and encouragement.

[2] Various spellings have already appeared in the literature: Tell esh-Shuna, esh-Shunah & esh-Shuneh. The choice of Tell esh-Shuna (North) is based on the name given to this site after its initial identification during the archaeological survey of 1953. J. Mellaart, "Preliminary report of the Archaeological Survey in the Yarmouk and Jordan Valley," *ADAJ*, VI & VII (1962) p. 126-157 (site 15).

[3] Our team comprised the author, Mr. Robert A. Erskine and Mr. Hekmet Ta'ani. I would also like to take this opportunity to thank the people of Shuna North who accepted our hole in the middle of their bus stop with gentle humor, the municipality for their support and occasional front-end loader, and Hanbo, a Korean construction company for the loan of their place-loader which back-filled, in half an hour, the hole we spent seven weeks creating. Finally, I would like to give special thanks to our workmen. Without their enthusiasm, questions, and unexpected interpretations, the excavations would not have been half so much fun.

[4] H. de Contenson, "Three Soundings in the Jordan Valley," *ADAJ*, IV-V (1960) p. 12-98, in particular p. 12-31, figures 1-18; — "Remarques sur le Chalcolithique Récent de Tell esh Shuna," *RB*, 68 (1961) p. 546-556; — "La Chronologie Relative du Niveau le plus Ancien de Tell esh Shuna (Jordanie)," *MUSJ*, 37, (1960-1961) p. 57-75.

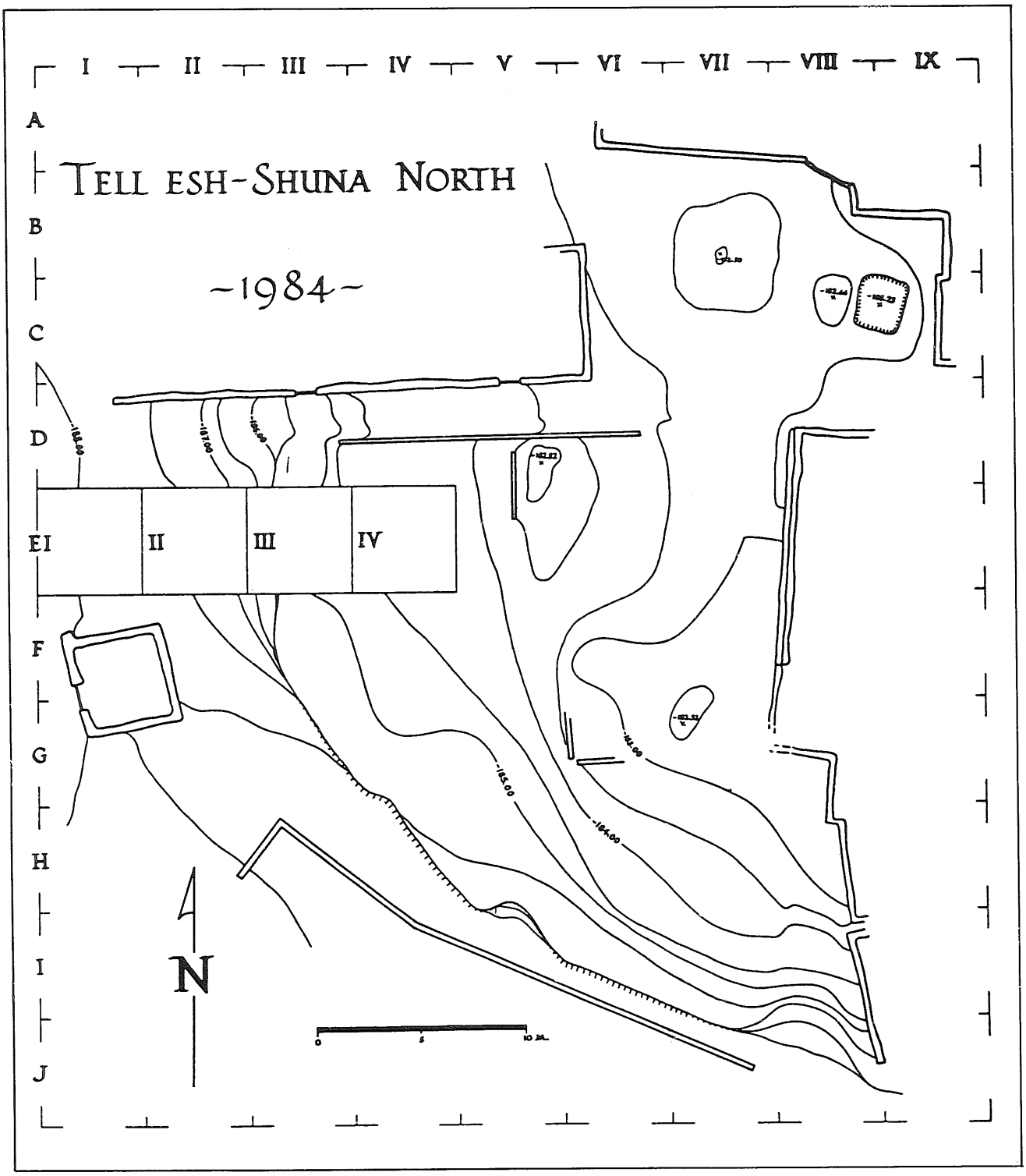


Fig. 1

through the Early Bronze I. Towards the end of the season, the size of the excavated area was reduced to fifty square metres, however, virgin soil was not reached.

1984 Excavations

Though investigated in the early 1950's, the decision to probe deeper into Tell esh-Shuna North was based on the need for a well-stratified sequence spanning the late Chalcolithic through Early bronze I in the northern Jordan Valley. During the 1984 season, seventy-three strata were excavated, forming a compact occupational sequence of alternating partially-exposed rooms and associated floors, work surfaces, pits, fills and garbage or ash lenses (Figs. 2-5 and Appendix A: Locus Descriptions).

The lowest excavated strata of squares EI and EII revealed several partially-

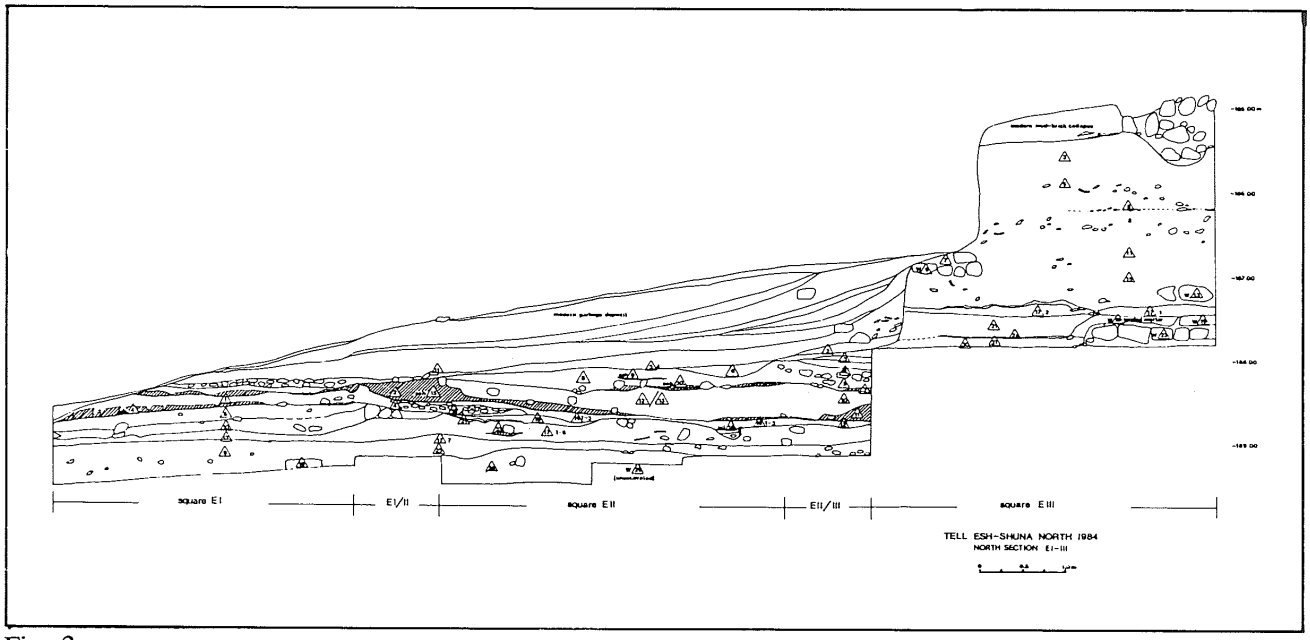


Fig. 2

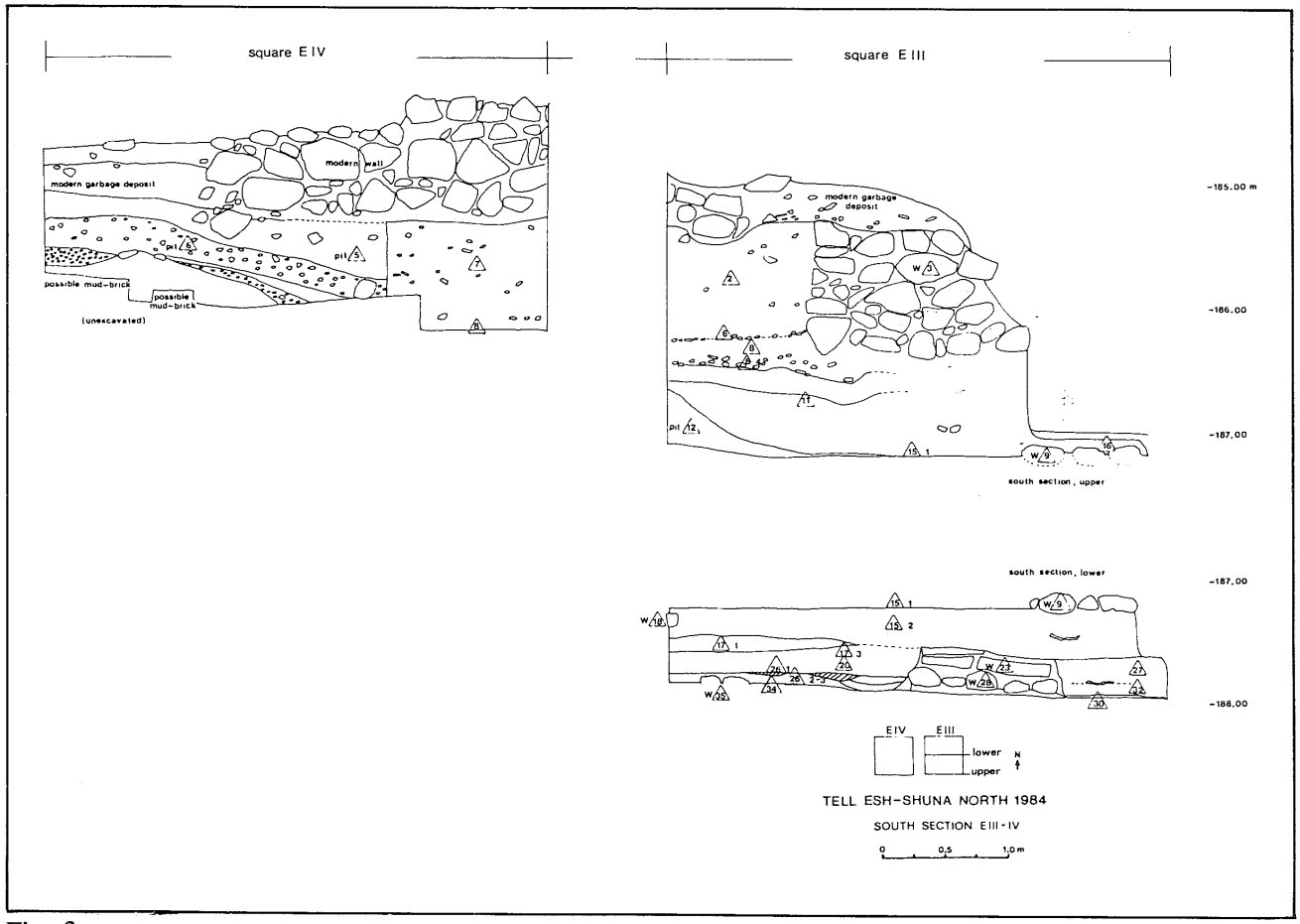


Fig. 3

exposed rooms enclosed by mud-brick walls with white-plastered interior surfaces.[5] In Square EII, building activity then ceased and the area was used for activities involving a series of small to medium sized clay-lined pits with associated hard earth or cobbled surfaces.[6] Contemporary with these activities, square EI to the west revealed a series of fragmentary cobbled pavements with a stone-lined fire ring.[7] Building activity was again resumed as represented by a rapid succession of thick beaten-earth floors with associated stone wall foundations of partially-

[5] Loci EI W 18, EII W 29 & EII W 30
[6] Loci EI 27 through 23
[7] Loci EI 16 through 12

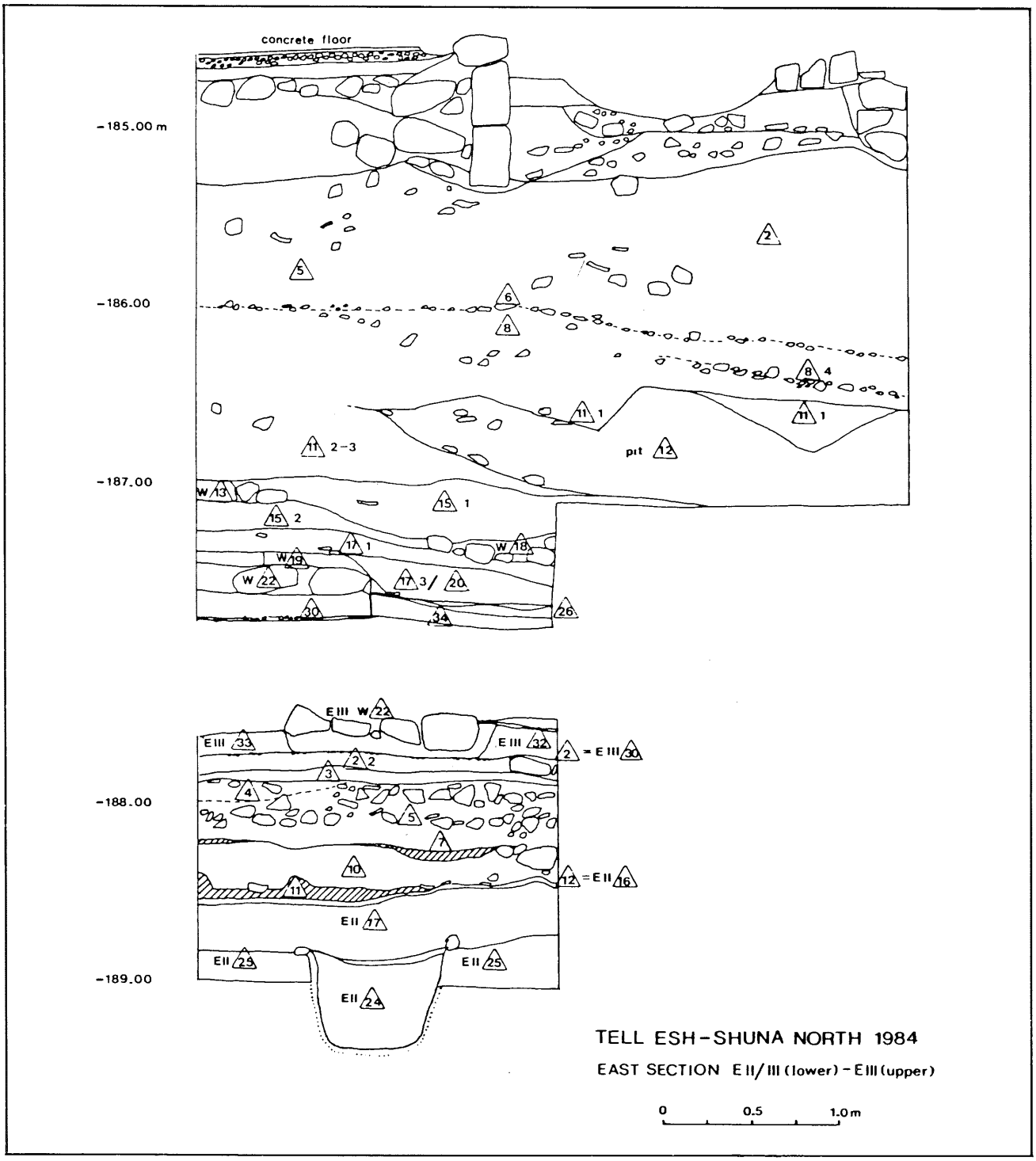


Fig. 4

exposed, rectilinear rooms (Fig. 6-lower).[8] The area west of these buildings continued to belong to outdoor activities of which cobbled pavement fragments and a large ash lens remain.[9]

Concomitant with the introduction of the grey-burnished "Esdraelon" wares, the buildings of square EII fell into disrepair with the northern part of the exposure becoming an apparent refuse dump characterized by a thick ash lens, slightly later cut into by a large pit.[10] The area represented by squares EI and EII retain the function of a "vacant lot" with work and building activity shifting slightly to the east.[11]

The beginning of the eastern sequence, contemporary with the latter fill

[8] Loci EI W 7, 11; EII W1 - W4, 16.1-3, 19, 20, 21, 22; EII/III 12

[9] Loci EI/II 4; EII 16.4; EI 10 & 4

[10] Loci EII 15, 13 & 12; EII/III 10 & 11

[11] Loci EII 10.1-2 & 8; EII/III 7 & 8

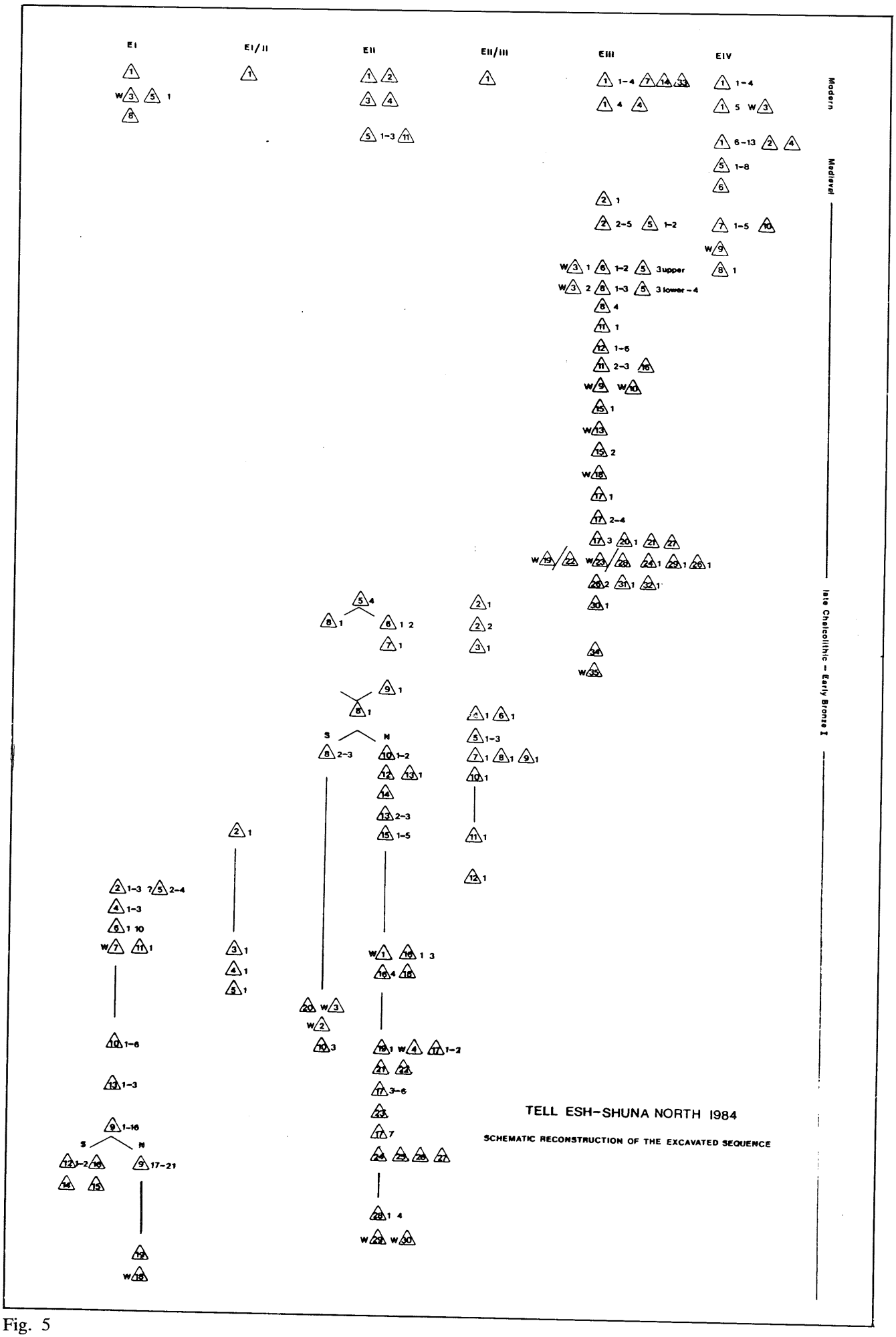
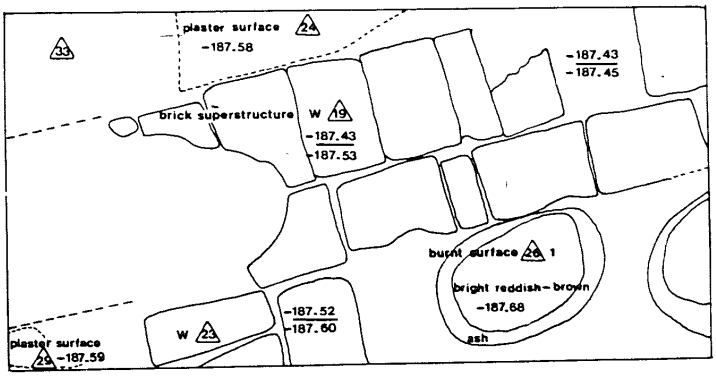
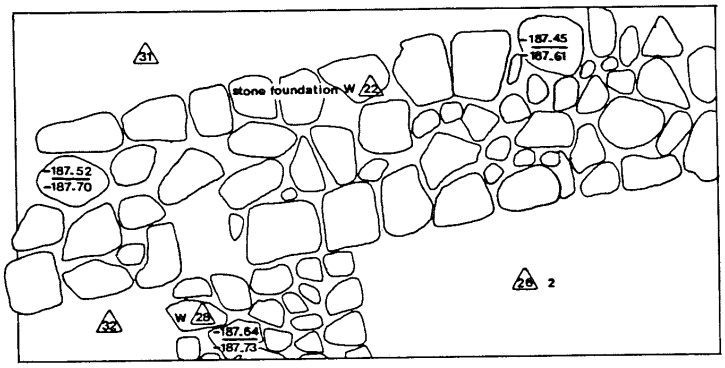

EI
EI/II
EII
EII/III
EIII
EIV
Modern
Medieval
late Chalcolithic – Early Bronze I
TELL ESH-SHUNA NORTH 1984
SCHEMATIC RECONSTRUCTION OF THE EXCAVATED SEQUENCE

Fig. 5

SQUARE E III: WALLS 19 & 23 WITH ASSOCIATED SURFACES 24, 26 1 & 29



E III: UNDERLYING FOUNDATIONS WITH ASSOCIATED FILLS 26 2 31 & 32



SQUARE E II: WALLS 1-4 WITH ASSOCIATED SURFACES 16, 19 & 20

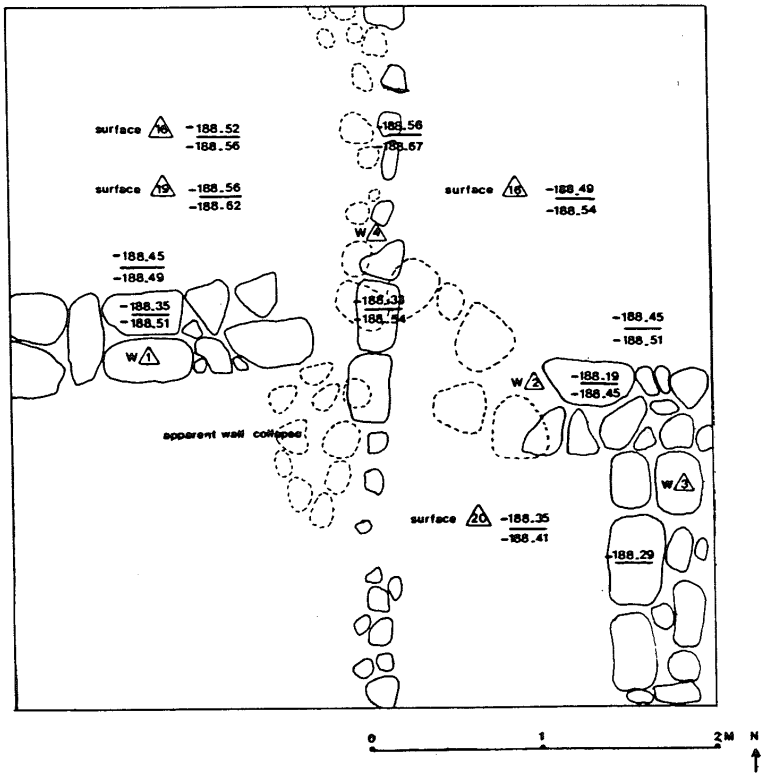


Fig. 6

accumulations of square EII, is characterized by a series of cobbled pavements with a small stone-lined pit revealed in the EII/III baulk excavations.[12] Slightly later in the sequence, a plastered-surface laid on a sand and gravel foundation appears to cover the entire area of squares EIII, EII/III and EII.[13] Though forming a major stratigraphic link between the upper eastern sequence and the lower sequence to the west, this surface is only preserved in its uncontaminated state in the small exposure of EIII. Overlying this surface and concomitant with the appearance of the Early Bronze I "band-slipped" wares are the remains of what must have been a rather substantial, multi-room building (Fig. 6-upper).[14] This building, partially exposed in square EIII, was constructed of large bricks laid on stone foundations, the walls 1.20 m. in width, with associated white-plastered floors. The domestic character of this building is suggested by two oval hearths (or possibly very poorly preserved remains of ovens) on a contemporary, outdoor burned surface.[15] With the abandonment of this building, the area continued to retain its apparent residential function — the archaeological remains characterized by a series of fragmentary stone wall foundations.[16] Throughout this sequence, however the associated floors have not been preserved.

All building activity then shifts away from the area represented by square EIII, the remaining distinctive feature being that of a large pit or dump filled with domestic refuse and a surprisingly large number of flint points.[17] Still within the Early Bronze I horizon, a chipped stone surface associated with a large basalt wall top the preserved early Shuna North sequence.[18] The purpose of this large wall remains enigmatic, situated as it is well within the determinable perimeter of the Early Bronze I occupation at the site.

At the end of the excavations, a survey of the entire town of Shuna North was conducted in order to estimate the extent of the late Chalcolithic through Mamlūk occupations at the site. Late Chalcolithic-Early Bronze I material was collected in most find spots, however, the grey-burnished "Esdraelon" wares and the characteristic Early Bronze I "band-slipped" wares were rare.

In terms of its artefact repertoire, the Shuna North ceramic assemblage is striking in the persistent use of established pottery-making traditions throughout the excavated sequence, independent of what the archaeologist may wish to call Chalcolithic or Early Bronze I. On the basis of known chronological indicators, the Shuna North sequence is distinguished by the introduction and subsequent discontinuation into its ongoing tradition of two distinct ware types. The grey-burnished "Esdraelon" wares appear approximately one-third of the way through the excavated sequence.[19] The "band-slipped" wares are introduced slightly later, definitely becoming an acceptable part of the ceramic repertoire in the upper third of the sequence.[20]

The basic ceramic assemblage is characterized by a very coarse-tempered plain or red-slipped ware.[21] In general, the fabric is rather soft and crumbly; the fabric colour produced is represented by a rather homogeneous range of very pale brown, pink to reddish-yellow.[22] Though apparent-

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[12] Loci EII/III 5 & 6

[13] Loci EIII 30; EII/III 2 & EII 5.4

[14] Loci EIII W 19/W 22, W 23/W 28, 24 & 29

[15] Locus EIII 26.1

[16] Loci EIII W 18, W13, W 9 & W 10

[17] Locus EIII 12.1-6

[18] Loci EIII 6 & W 3

[19] Loci EI/II 2.1; EII 15.3 & 5, 13.1-3, 12.1; EII/III 5.2-3 with isolated sherds appearing in later contexts (EIII 34.1, 30.1, 26.2 & 17.1, 3-4)

[20] Loci EII 13.1-3; EIII 17.2, 12.1,2, 4 & 6 & 6.2

[21] Selected loci used for the preliminary analysis are: floors and pavements: EI 10, EI 12, EI 13, EII 16, EII 19, EII 20, EII 25, EII/III 5, EII/III 12, EIII 6, EIII 30 & EIII 34; well-sealed ash lenses and pits: EI/II 2, EII 12, EII 13, EII 15, EII 24 & EIII 12; fill strata which may serve as terminus ante quem for preceding strata bare of sherdage: EI 9, EII 17 & EIII 17; and the fill stratum representing our lowest excavated level: EII 28.

[22] Munsell colour range: 10YR 8/3-8/4, 7/3-7/4; 7.5YR 8/4-7/4, 7/6-6/6. The surface colour is often slightly lighter (though still within the same colour range); pink to reddish-yellow fabrics are rare: 5YR 7/4-7/6.

ly relatively low-fired, a good oxidation atmosphere was maintained-reduced surfaces and grey-coring (with the exception of the very thick walled vessels) are rare. The tempering shows a wide variation in both grit type and size, however the potter was consistent in both the coarseness and heavy concentrations of the temper he or she added. The use of red slip in decorating the pottery maintained its popularity throughout, though the potters were rarely able to produce a slip which adhered well to the vessel surface. In general, the slips are relatively thin and very fugative, ranging in colour from light red to red.[23] Thick fugitive slips and well-adhering thin slips or possible "wash"[24] were also elements of the potter's repertoire, however they were rarely produced. Red slip was used in decorating most of the major form categories, perhaps in an attempt to compensate for the coarseness of the ware. A similar red engobe was used on the red-slipped finer-tempered wares, the red-painted and "band-slipped" wares.

A rope-like band on the vessel rim, neck or body remained the preferred decorative scheme throughout. Although several of the techniques involved in producing this decorative effect varied with specific techniques being more popular during the earlier or latter part of the excavated sequence, the intended effect is retained.[25]

The application of simple red-painted designs, though much less popular than the use of a red slip in the decoration of the vessel surface, is also an element of the Shuna North ceramic assemblage which appears throughout the sequence. Again, several of the painting schemes are restricted to the lower or upper part of the sequence, for example, horizontal parallel bands are restricted to the lower strata,[26] vertical parallel bands to the upper[27] and parallel bands of indeterminate orientation to the middle and upper strata.[28] On the other hand, painted decoration of irregular design which include large swaths of colour, dribbles, a splatter effect and designs similar to those of a child's first attempt to paint appear throughout.[29] Minor decorative techniques include simple incised pat-

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[23] Munsell colour range: 10R 6/6-6/8, 5/6-5/8 & 2.5YR 6/6-6/8, 5/6-5/8. A slightly darker red was also produced, though rare: 10R 4/6 & 2.5YR 4/6.

[24] Particularly on vessel types 36, 43 & 58.

[25] Rope-like decoration techniques:
a simple applied horizontal band
(type 83 given below in Appendix B)
b horizontal band applied to the vessel body with an impressed or pinched rope-like decoration (cf. types 20b & 22)
EI 9.17 & 20
EI/II 2.1
EII 12.1, 13.2, 16.2, 17.2, 5 & 7, 20.1, 25.1 & 28.2-4
EII/III 5.2
EIII 6.1, 12.1-2 & 4, 17.3-4 & 26.2
c parallel oblique or vertical impressions on a slightly raised band (cf. types 32 & 79c)
EI 9.21
EI/II 2.1
EII 12.1, 13.1 & 3, 16.2 & 17.2
EII/III 5.2
EIII 12.1-2 & 5
d parallel oblique impressions into the sherd body creating a rope-like effect (cf. types 21a & 79d)
EI/II 2.1
EII 12.1, 15.2 & 16.2
EII/III 5.1-2
EIII 6.1, 26.2 & 30.1
e slightly raised band with parallel vertical to slightly oblique, closely-spaced incisions (cf. type 84)
EI 9.7
EII 15.2 & 16.2-3
EII/III 5.2
EIII 12.1 & 4
f small pieces of clay applied to the vessel body creating a rope-like design (not illus.)
EII 12.1& 13.1 & 3
EII/III 5.2
EIII 12.4
g thickened rim with impressed rope-like decoration along bottom edge (cf. type 86)

[26] Red-painted design (a), see type 91 in Appendix B.

[27] Red-painted design (b), cf. type 81; distribution:
EII 12.1 & EII 13.3

[28] Red-painted design (c), see type 90

[29] Red-painted design (d), splatter effect, cf. types 25 & 82a; distribution:
EI 17.1
EII 13.3, 16.2 & 17.2 & 7
EIII 12.1 & 6
Red-painted design (e), irregular designs, cf. types 27-28, 79b & 82b-d; distribution:
EI 9.8, 11, 13-16, 18-20, 10.2 & 4, 12.1, 13.2 & 17.2
EII 13.3, 17.6-7, 24.1, 25.1 & 28.2 & 4
EII/III 5.2
EIII 12.4 & 17.4

terns along a horizontal line around the vessel body (Appendix B, types 87 & 88) or a horizontal band of simple punctate decoration on the shoulder of the vessel (Appendix B, fig. 13, type 55c).[30]

The repertoire of forms of the late Chalcolithic-Early Bronze I coarse wares and their distribution within the Shuna North sequence is presented below in Appendix B, Figs 7-15, types 10-69. It is a relatively simple assemblage comprising flared and hemispherical bowls, small wide-mouth pots, a relatively wide variety of holemouth vessels, wide-mouth pots with short flared collars and simple jars. In its simplicity, it forms a rather homogeneous assemblage which, though undergoing continual modification, does not yield to an abrupt change.

This combination of continuity and gradual change is clearly demonstrated in the following chart:

	Group A:			*Group B:*			*Group C:*		
type	11	13	14						
	28	44	47						
	51	57	58						
	64	65	66						
	67	69	80						
	91								
				8	22	25			
				26	27	34			
				37	42	43			
				52	60	70			
				71	72	74			
				75	81	82			
				92					
	17	30	39	17	30	39			
	63	86		63	86				
	2	7	10	2	7	10	2	7	10
	12	15	20	12	15	20	12	15	20
	21	24	33	21	24	33	21	24	33
	35	38	53	35	38	53	35	38	53
	55	59	61	55	59	61	55	59	61
	62	68	79	62	68	79	62	68	79
	84	88	89	84	88	89	84	88	89
				9	31	41	9	31	41
				54	59	73	54	59	73
	85	90		85	90				
				1	3	6			
				6	16	18			
				19	23	29			
				32	36	40			
				45	46	48			
				49	50	56			
				76	77	78			
				83	87				

All recognizable pottery types (both form and decorative techniques) are grouped according to their appearance prior to the introduction of the grey-burnished "Esdraelon" wares (Group A),[31] concomitant with the presence of the grey-burnished "Esdraelon" wares (Group B),[32] and concomitant with the decline of the grey-burnished wares and the introduction of the "band-slipped" wares (Group C).[33] Twenty-three percent of the ceramic types continue throughout the excavated sequence. Twenty-seven percent of the ceramic types were introduced at a point roughly contemporary with the presence of the grey-burnished "Esdraelon" wares; perhaps a little outside competition stimulated the local market. Ten percent of these new types continue to be reproduced during the latter part of the sequence and 25% of the types appear to be restricted to this phase.

Three other ware categories complete the Shuna North ceramic assemblage: the finer, sand-tempered wares, the coarse chaff-tempered wares and the fine sand-tempered grey- or reddish-yellow burnished "Esdraelon" wares.

The red-slipped and plain sand-tempered wares appear to be nothing more than a slightly finer version of the basic coarse ware tradition. The fabric softness and colour, the use of a well-oxidized firing atmosphere, the colour range and type of slip used in their decoration and their continued production and use throughout the excavated sequence essentially parallels that of the coarse ware.[34] On the other

[30] Distribution on the basis of body sherds: EII 17.2 & 7 & EIII 12.1.

[31] Group A: EI 9, 10, 12 & 13; EII 16-20, 24-25 & 28

[32] Group B: EI/II 2; EII 12-13, 15 & EII/III 11

[33] Group C: EII/III 5, EIII 6, 12, 17, 26, 30 & 34

[34] Distribution: EI 9.16-17 & 19; EII 12.1, 13.1-3, 15.3 & 5, 16.1-2, 17.2, 19.1; EII/III 5.3; EIII 6.1-2, 12.1-6, 17.1-4 & 26.2.

hand, the combined application of a burnished red slip on the vessel surface, though rare, did form a definite part of the potter's repertoire in respect to his or her finer wares.[35] The limited number of forms preserved in the Shuna North sequence are presented in Appendix B, Fig. 1, types 1-9. Again, with the exception of the high-collared pot series (types 8-9) and the absence of holemouth vessels, the finer wares are simply a diminutive version of their coarse ware counterparts.[36]

Unusual in the general ceramic assemblage is a group of plain, very crudely manufactured chaff-tempered vessels (see Appendix B. Fig. 15, types 76-78). These small dishes and rectilinear vessles (type 76a-b) appear only in the large pit of EIII locus 12. Also found in this pit were many small fragments of eroded copper and slag and it may be that these vessels were used by craftsmen working in small-scale metallurgy.

The fine sand-tempered grey-burnished "Esdraelon" wares and associated very pale brown to reddish-yellow burnished wares[37] are rare at Shuna North (see Appendix B, Fig. 15, types 70-75). Their importance lies in their stratified position within the excavated sequence as they add little to what is already known concerning the general "Esdraelon" ware assemblage.

In contrast to the pottery, the non-ceramic artefact inventory at Shuna North is marked for its paucity. Small finds are restricted to several bone awls, simple stone rings and beads. Figurines of any kind are absent in the collected sample. Ground stone utensils and vessels are scarce and in a very fragmentary state of preservation.

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Appendix A: Locus Descriptions (all elevations are given at metres below sea level)

Collection Unit *Depth* *Description*

EI 1.1-3 — 188.47 m.
— 188.76

Continuation of the modern deposit in northern half of the square, beneath the front-end loader clearance. Collection units 1.1-3 include remains of the ash lens contemporary with that of EII 15; however, the material was so disturbed that the collection units were included in the locus 1 series.

1.1 — 188.53 m.
— 188.57

Exposure: 2.60 m² in NW quadrant.

1.2 — 188.65 m.
— 188.76

Exposure: 0.30 m² along NW edge of square.

1.3 — 188.47 m.
— 188.58

Exposure: 2.60 m² in NE quadrant.

EI 2.1-3 — 188.58 m.
— 188.88

Probe, 2.00 m. x 1.00 m. NS, in west-central portion of the square, north of modern W 3, yielding a dark brown soil layer preceding locus series 1 (though in part parallel in elevation), succeeding locus series 6, and in part contemporary with and succeeding ash lens 4 to the N & E.

EI W 3 — 188.07 m.
— 188.86

[35] Red-slipped and burnished wares (pre-dominantly small loop handle fragments and body sherds) appear in loci EI 9.17 & 19; EII 16.1, 17.2, 28.2; EII/III 5.3; EIII 12.5, 17.1 & 26.2.

[36] Eg., compare sand-tempered ware type 2a with coarse ware type 10, 2b with 13, 3 with 19, 7 with 54a, 5 with 27, 6a with 45 and 6c with 64. It should be noted; however, that these thin-walled vessels were very fragile and poorly preserved, thus reducing the excavated sample still further. Forms not illustrated include a number of small, loop handle fragments (EII 15.3; EIII 12.1-4 & 6 & 6.2) and a miniature straight spout (4.8 cm. preserved length x 0.7 cm. diameter at the mouth) from EIII 17.1.

[37] Munsell colour range: 10YR 8/4-7/4 & 7.5YR 8/6-7/6-6/6, fabric colour white to very pale brown (10YR 8/2-8/3).

Stone wall foundation and lower portion of super-structure, 0.50 m. x 3.75 m. wide with wall plaster of "Hashemite" date, laid diagonally to the perimeter of the square along a WSW/ENE axis. An associated concrete floor (locus 5.1) lies to the south; evidence of a southern cross wall can be seen in the northern baulk. This house is roughly contemporary to that exposed on the upper mound in squares EIV and EIII.

W 3.1 — 188.41 m.
— 188.86

Foundation trench to W 3 along its northern side; exposure: 0.90 m.²

W 3.2 — 188.07 m.
— 188.86

Wall removal.

EI 4.1-3 — 188.57 m.
— 188.68

Black ash lens immediately below locus series 1.1 & 3 and directly above locus series 6. In part contemporary with locus 2.3 to the south; exposure: 2.80 m.²

EI 5.1 — 188.57/67 m.

Concrete floor associated with W 3, sloping slightly from east to west; exposure: 5.50m.²

5.2 — *ca.* 188.63 m.
— 188.76

Soil unit beneath concrete floor 5.1; exposure: 5.50m.²

5.3 — *ca.* 188.69 m.
— 188.81

Continuation of collection unit 5.2; exposure: 5.50 m.²

5.4 — *ca.* 188.75 m.
— 188.90

Continuation of the locus 5 series, but including material directly below W 3 (i.e., the southern half of the square), ending at locus 6 and cut into the southeast by pit 8; exposure: 6.25 m.²

EI 6.1-13 — 188.58 m.
— 189.04

Fill accumulation layer characterized by a dark brown soil matrix which appears throughout the square. Locus series 6 lies above locus series 10 and is succeeded by locus series 4 and 5.

6.1-2 — 188.58 m.
— 188.78

Dark brown soil layer exposed in northern half of square, beneath ash layer 4 and adjacent to W 7 along the E baulk; exposure: 6.40 m.²

6.3-4 — 188.90 m.
— 189.03

Dark brown soil layer in SW quadrant, related to 6.9 in the north, below locus 5.4; exposure: 3.00 m.²

6.5-6 — 188.78 m.
— 189.04

Dark brown soil layer in SE quadrant related to 6.1-4, below locus 5.4 and above collection unit 6.10. Cut into in the SE corner by pit 8; exposure: 4.00 m.²

6.7-9 — 188.78 m.
— 189.00

Continuation of the overlying 6.1 in NW quadrant, lying directly above surface 10; exposure: 4.00m²

6.10 — 188.94 m.
— 189.04

Continuation of 6.5-6 in SW quadrant to surface 10; exposure 4.00 m.²

6.11-12 — 188.59 m.
— 188.75

Dark brown soil layer in NE quadrant, N & W of cobbled surface fragment 11.1, succeeding collection unit 6.2; exposure: 3.50 m.²

6.13 — 188.75/85 m.
— 188.92

Continuation of dark brown soil layer in NE quadrant with an additional heavy concentration of rubble. This soil unit lies directly above surface 10; exposure: 3.50 m.²

EI W 7 — 188.18 m.
— 188.60

Stone wall foundations in E baulk, cut to the S by modern W 3, associated with cobbled surface 11.1 to the W. EI W 7 appears to be contemporary with wall EII W 1 (laid on an E/W axis) and its associated surface EII 16. Both wall foundations, EI W 7 & EII W 1 were still standing when ash lens EII 15 was created. W 7 is overlaid by the modern garbage accumulation and contaminated fill of collection series 1 and lies above locus series 6 (not excavated).

EI 8.1-2 — 188.72 m.
— 189.02

Pit in SE corner of the square, beneath the concrete floor of 5.1, comprising a series of alternating dark and light ashy lenses mixed with stone. This pit cuts into locus series 5.2-4, 6, 9, 10 and 13; exposure: 1.10 m.^{2}

EI 9.1-21 — 189.03 m.
— 189.27

Dark ashy soil fill layer exposed over entire square, underlying cobbled surface 13 and overlying the cobble installation of locus series 12 with associated surface 15 and locus 16.

9.1 — 189.03 m.
— 189.08

Dark ashy soil layer in SW quadrant, underlying collection unit 6.4 and overlying collection unit 9.3; exposure: 3.00 m^2.

9.2

(designation changed).

9.3-5 — 189.04/13 m.
— 189.25

Probe into dark ashy soil layer underlying soil unit 9.1 in SW quadrant; the upper surface sloping slightly from east to west. Within the ashy soil are light brown clayey patches. Along the W baulk is a small exposure of white clayish material possible from a small pit; exposure: 2.00 m^2.

9.6 — 189.08 m.
— 189.16

Expansion of 9.3-5 probe to the north; exposure: 1.75 m^2.

9.7 — 189.05 m.
— 189.12

Continuation of the dark ashy layer in SE quadrant to cobbled area designated 16; exposure: 3.50 m^2.

9.8 — 189.04 m.
— 189.12

Continuation of dark ashy layer in NE quadrant, below cobbled surface 13.2, above collection unit 9.16; exposure: 3.50 m^2.

9.9-12 — 189.18 m.
— 189.21/27

Dark ashy layer above locus 12 in SW quadrant, beneath collection units 9.3-5 and above locus 12; exposure: 3.90 m^2.

9.13 — *ca.* 189.13 m.
ca. — 189.24

Cleaning dark ashy layer above locus 15, underlying collection unit 9.7; exposure: 1.50 m.^{2}. The material is possibly contaminated due to heavy rains.

9.14-15 — *ca.* 189.13 m.
— 189.31

Dark ashy layer in NW corner of the square below locus 13.3. Possible pot burial of secondary deposition in 9.15 fill (designated locus 17); exposure: 1.75 m.^{2}.

9.16 — 189.09/12 m.
— 189.13/16

Dark ashy layer in NE quadrant, continuation of collection unit 9.14 to the W and collection units 9.7/13 to the S, impart overlying locus 15 to the S; exposure: 4.40 m.^{2}

9.17-18 — 189.31 m.
— 189.41/41

Continuation of dark ashy layer in NW corner of the square below collection unit 9.15 and above the preserved top of wall W 18. The soil layer in this area slopes slightly

at the base from E to W; exposure: 1.75 m.²

9.19 — 189.16 m.
— 189.30

Continuation of dark ashy layer E of collection units 9.14-15, in part below collection unit 9.16 and continuing downward on both sides of a possible drain (designated locus 19); exposure: 1.75 m.²

9.20-21 — 189.26 m.
— 189.52

One metre square probe S of collection unit 9.18 along the W baulk exposing the continuation of the dark ashy soil into a depth parallel to the upper preserved portion of W 18. Collection unit 19.21 is the lowest elevation reached in square EI.

EI 10.1-6 *ca.*— 188.91 m.
— 189.10

Fragmentary cobbled surface exposed throughout the square, preceding the fill accumulation of locus series 6, laid on the intervening medium brown fill above cobbled surface 13.

10.1 — 188.92 m.
— 188.99

Small patch of stone rubble lying upon the cobbled surface, collected separately; exposure: 0.25 m.²

10.2 — 188.99 m.
— 189.10

Removal of cobbled surface in NW quadrant; exposure: 3.50 m.²

10.3 — 188.93 m.
— 189.13

Removal of possibly reconstructable vessel from cobbled surface; exposure: 0.30 m.²

10.4 — 188.89 m.
— 189.04

Removal of cobbled surface in NE quadrant; exposure: 3.50 m.²

10.5 — 188.81 m.
— 188.99

Removal of stone rubble in SE corner of the square, lying upon surface 10 (similar to collection unit 10.1); exposure: 0.25 m.²

10.6 — 188.90 m.
— 189.05

Removal of cobbled surface in SE quadrant, which, towards the E baulk, directly overlies a preceding cobbled surface (designated locus 13); exposure: 1.75 m.²

EI 11.1 — 189.59 m.
— 189.67

Fragmentary small stone and pebble surface associated with W 7 (lying directly against the lower portion of the wall), lying above collection unit 6.11, roughly parallel in elevation to collection unit 6.2 to the W and below the possible rock fall of W 7 found within the contaminated locus series 1; exposure: 0.50 m.²

EI 12.1-2 — 189.09/24 m.

Cobble "installation" in SW quadrant comprising an apparent fire ring (a roughly circular, pebble-lined depression filled with ash), an associated though fragmentary cobbled pavement and a burnt earth surface (designated locus 15) to the W. This "installation" underlies the ashy fill accumulation of locus series 9. Due to the heavy rains at the end of the season, locus 12 was not excavated. A small one metre square probe (collection units 12.1-2, reaching a depth of −189.42 m.) along the W baulk and extending into the fire pit was done in order to determine the relationship between locus 12 and 14 which lies both to the W and extends directly under the fire ring (see below).

EI 13.1-3 *ca.*— 189.01 m.
ca.— 189.15

Fragmentary hard-packed cobbled pavement extending throughout the square. Similar to the succeeding cobbled pavement of locus 10, pavement 13 may represent a separate phase of the same activity. Locus 13 was laid on the fill accumulation of locus series 9 and to the E is *ca.* 0.15 m. beneath pavement 10, to the W only 0.05 m.

13.1 — 189.01 m.
— 189.07

Removal of cobble pavement in SE quadrant; exposure: 3.50 m.²

13.2 — 188.96 m.
— 189.07

Removal of cobble pavement in the NE quadrant; exposure: 3.50 m.²

13.3 — 189.07 m.
— 189.15

Removal of cobble pavement in the NW quadrant; exposure: 3.50 m.²

EI 14 *ca.*— 189.10 m.
ca.— 189.25

A small lens of white clayey material along the southern portion of the W baulk exposed at the base of the locus series 9/ and in the 12.1-2 probe. This white lens lies to the west of the 12 fire ring and extends directly under the pebble-lined depression, thinning out around its perimeter. It appears that this material served as a kind of lining for the pit, however interpretation must be kept at a minimum until this area is completely excavated.

EI 15.1-2 *ca.*— 189.14/24 m.

Layer of burnt, bricky-orange earth; preserved in irregular outline, extending N & E of "installation" 12 and W of the locus 16 cobbles. It appears that many of the cobbles of locus 12 and 16 are embedded into the preserved perimeter of 15, suggesting that 15 itself is slightly earlier, perhaps contemporary with locus 14, though continues in use alongside the 12 fire pit. As with the related loci, 15 is in part succeeded by the ashy fill accumulation of locus series 9, and to the N, contemporary with the earlier deposits of 9.17-18 & 20-21.

15.1 — 189.14/24 m.

Exposure of surface 15 in the centre of the square; exposure: *ca.* 2.00 m.²

15.2 — 189.13 m.
— 189.26

Probe, 1 square metre, into locus 15 and locus series 9.20-21 along the central portion of the W baulk.

EI 16 — 189.09 m.

Exposure of small stone and pebble pavement(?) of irregular outline at the base of locus 9.7, in part embedded into the western perimeter of burnt area 15 (not excavated).

EI 17.1-2 — 189.28 m.
— 189.40

Possible infant pot burial (small skull fragments found in broken pottery vessel of very fragmentary preservation) of secondary deposition, lying in the ashy fill accumulation of locus 9.15. Collection unit 17.1 represents the material lying in the vessel; 17.2 the vessel and bone fragments themselves.

EI W 18 — 189.41/49 m.

Exposure of the preserved top of a mud-brick wall fragment, laid on an approximate E/W axis, near the N baulk, beneath collection unit 9.18. A possible cross-wall appears *ca.* one metre in from the E baulk. Due to the heavy rains at the end of the season, it was virtually impossible to articulate the bricks, thus the wall(s) and possible associated floors were not excavated.

EI 19 — 189.24 m.
— 189.30

A distinct band, *ca.* 0.50 m. in width x 1.00 m. exposed length N/S, of small pebbles embedded in bricky-orange soil exposed at the base of collection unit 9.19; possible drain(?).

EI/II 1.1-3 — 187.47 m.
— 188.23/31

Modern deposit comparable to EI 1 & EII 1, EII 2 & EII 11; exposure: 0.75 m.²

EI/II 2.1 — 188.23/31 m.
— 188.38

Dark ash deposit comparable to EII 15; exposure: 0.75 m.²

EI/II 3.1 — 188.32 m.
— 188.39

Light ash layer mixed with hard brown soil at base of succeeding ash lens, comparable to EII 16; exposure: 0.75 m.²

EI/II 4.1 — 188.37 m.
— 188.39

Cobbled pavement fragment west of EI W 7, extending into square EII between EII surfaces 16 and 19. Contemporary with soil unit EI 2 to the west; exposure: 0.40 m.²

EI/II 5.1 — 188.39 m.

Pebble surface fragment W of EI W 7, corresponding with locus series EI 6; exposure: 0.40 m.²
Material from the EI/II baulk excavations below – 188.40 m. corresponding to EI 10 and 13/ EII 17.3,5-6 and EI 9 /EII 17.7 & 25 was not collected due to time restrictions on efforts to clarify the relationship between the stratigraphy revealed in squares EI & EII.

EII 1.1 — 186.70 m.
— 187.10

Probe, 1 square metre, in NE corner revealing topsoil consisting of loose dirt and plastic "artefact" accumulation.

EII 2.1-3 — 186.70 m. E
— 187.30

— 187.10 m. W
— 187.60

Removal of topsoil, loose dirt and plastic "artefact" accumulation from entire square, the collection unit sloping downwards from E to W; exposure: 16.00 m.²

EII 3 — *ca.* 186.90 m. E
— 187.30

ca. — 187.30 m. W
— 187.60

Scatter of large fallen stones (no identifiable architectural pattern) on hard earth surface at base of collection unit 2.3; exposure: *ca.* 16.00 m.²

EII 4.1 — 187.10 m. E
— 187.30 m.

— 187.60 m. W
— 187.77

Simple drainage gully cut into the hard surface of locus 3, bisecting the square on an E/W line, slightly irregular in form, 0.20 m. to 0.50 m. in width and averaging *ca.* 0.20 m. in depth. Filled with the top-soil of collection unit 2.3 and associated with surface 3.

EII 5.1-3 — 187.35 m. E
— 187.60

— 187.60 m. W
— 188.00

Contaminated fill accumulation (loose dirt and plastic) above surface 5.4, beneath surface 3 and its associated drain (designated locus 4) and sloping from E to W: exposure: 16.00 m.²

5.4 — 187.60 m. E
— 187.62

— 188.00 m. W
— 188.02

Thin surface, 0.01 - 0.02 m. thick, of fine yellowish sand and gravel, exposed throughout the square though cut in patches to the W. This surface, though contaminated by modern activities, is nonetheless the western continuation of EII/III 2.1 and the uncontaminated exposure of surface EIII 30. Surface 5.4 overlies collection units 6 & 8.1; exposure: *ca.* 16.00 m.²

EII 6.1-2 — 187.75 m.
ca. — 188.10

Small lens of hard brown soil mixed with gravel, varying in thickness (maximum 0.13 m.), sloping slightly downwards from E to W and restricted to the NE corner of the square. This lens lies directly beneath surface 5.4 and overlies soil unit 7, extending in part into 8.1; exposure: *ca.* 5.50 m.²

EII 7..1 — 187.90 m.
— 187.95

Small lens of hard, reddish-brown clayey soil directly underlying, though more restricted in extent, soil unit 6 in the NE corner of the square. This lens apparently cuts into soil unit 8.1 and extends to the E

(designated EII/EIII 3.1 and EIII 34); exposure: 1.30 m.^{2}.

EII 8.1-3 — 188.00 m.
— 188.35

Fill accumulation characterized by a hard, yellowish-brown soil extending throughout EII though of much thicker deposition in the southern half of the square.

8.1 — 188.00 m.
— 188.13

Hard, yellowish-brown soil unit directly below surface 5.4 and cut into the north by soil lenses 6 & 7. This soil unit is disturbed in the NW corner by a rubble layer (designated locus 11) and, unfortunately, is contaminated by intrusive modern material associated with the cuts through surface 5.4, again in the NW corner; exposure: 16.00 m.^{2}.

8.2-3 — 188.07 m.
— 188.35

Hard, yellowish-brown soil layer in S half of the square, S of walls W 1 & W 2, overlying surface 20 to the E and locus 10.3 to the W; exposure: 4.10 m.^{2}.

EII 9.1 — 188.12 m.
— 188.13/14

Thin ash scatter at the base of soil unit 8.1, overlying locus series 10.1-2, located near the E balk in the central area of the square; exposure: 1.50 m.^{2}.

EII 10.1-2 — 188.13/25 m.
— 188.18/28

Thin patchy layer of dark brown ashy soil at the base of locus 8.1, sealing the preceding soil unit 12 in the N half of the square. Unit 10.1 represents the material collected from the NE quadrant (exposure: 4.50 m.^{2}). 10.2 from the NW (exposure: 4.00 m.^{2}).

EII 10.3 — 188.41 m.
— 188.55

Disassociated from collection units 10.1-2, 10.3 represents a rather non-distinct, compact brown soil layer beneath surface 20 in the SE quadrant of the square and apparent fill strata 8.3 in the SW quadrant; exposure: 7.50 m.^{2}.

EII 11.1 — *ca.* 188.00 m.
— 188.15

Pebble and stone scatter in NW corner of the square, extending to the W in the EI/II baulk (designated EI/II 1.3) and disrupting surface 5.4; exposure: 0.70 m.^{2}.

EII 12.1 — 188.20 m.
— 188.27

Silty light brown soil layer extending over the northern half of the square, cutting into the preceding ash lens 15 and sealed by soil unit 10.1-2. Locus 12.1 is the upper portion of a thick lens, the continued excavation of which was labelled 13.1-3; exposure: 7.25 m.^{2}.

EII 13.1-2 — 188.27 m.
— 188.54

Probe, 1.00 x 2.00 m. along the northern half of the east baulk, into the silty layer first identified as 12.

13.3 — *ca.* 188.27 m.
— 188.50

Complete clearance of the light brown silty soil layer in the northern half of the square which takes this soil layer (identified as 12/13) down to its complete depth. Collection unit 13.3 is simply the western extension (to the W baulk) of probe 13.1-2; exposure: 5.25 m.^{2}

EII 14.1 — 188.27 m.
— 188.33

Small stone scatter in NE corner of the square between collection units 13.1 and 13.2; exposure: 0.60 m.^{2}

EII 15.1-5 — *ca.* 188.35 m.
ca. — 188.45

Large dark ash lens extending throughout the entire northern half of the square, blocked in its southern extension by wall stubs W 1 & W 2. This lens was later cut into by the combined loci 12/13 pit, thus the preserved thickness, though averaging *ca.* 0.07 m., varies from 0.17/0.21 m. in its eastern and western extensions (respectively), thinning out to a very thin line in patches. Locus 15 lies directly on top of surface 16; exposure: 7.50 m.^{2} (15.1: 2.00

m.², 15.2: 6.00 m.², 15.3: *ca.* 1.00 m² along the west baulk and 15.4-5 represent the material collected from sieving).

EII W 1 — 188.35 m. / — 188.51

Stone wall foundations (1.75 m. exposed length x 0.60 m. width) laid on an approximate E/W line, constructed of large unhewn stone, mud-mortar, single course preserved. This wall fragment is associated with surface 16 to the N and is laid directly upon surface 19.

EII W 2 — 188.19 m. / — 188.45

Stone wall foundations (1.00 m. exposed length x 0.50 m. width) laid on an E/W line, constructed of a double row of mixed small to large unhewn stone, mud-mortar, single course preserved. Surface 20 was laid directly beneath the S half of W 2; surface 16, underlying surface 20, lies directly beneath the N half of the wall. W 2 forms an E/W cross wall to N/S W 3.

EII W 3 — 188.29 m.

Stone wall foundations (1.50 m. exposed length x 0.50/0.60 m. width) laid on an N/S line, intersecting W 2 to the N. W 3, constructed of a double row of mixed small and large unhewn stone with mud-mortar, lies directly upon surface 16. Surface 20 abuts W 3 along its western face.

EIII W 4 — 188.56 m. / — 188.67

Possible, poorly preserved or intentionally destroyed wall foundations (represented by an irregular alignment of stones) of an E/W wall, possibly bisecting the square, however definitely functioning as the E limit of surface 19 in the northern half of the square.

EII 16.1-3 — *ca.* — 188.44 m. / *ca.* — 188.56

Hard beaten-earth surface, varying in thickness from *ca.* 0.05 to 0.11 m., abutting the N face of W 1 and extending over the entire northern half of the square. At — 188.44 m. surface 16 goes under walls W 2 & W 3, however, it is cut and subsequently replaced by surface 20 in the SE quadrant of the square. In the NW quadrant, surface 16 directly overlies surface 19. In the NE, it seals the preceding fill accumulation of locus 17; exposure: *ca.* 8.00 m.²

EII 17.1-6 — 188.55 m. / — 188.87

Thick, densly-packed mottled brown soil layer extending throughout the northern half of the square.This soil layer precedes the construction of surface 19 & 16 and succeeds the fill accumulation of 17.7. In comparison with EI, this fill accumulated between the laying down of cobbled pavements EI 10 & EI 13.

17.1-2 — 188.55 m. / — 188.72

Hard, mottled light brown soil layer in NE quadrant (EII/III baulk included); exposure: 5.50m²

17.3 — 188.62 m. / — 188.72

Extension of 17.1-2 to the W, beneath surface 19; exposure: 3.00 m.²

17.4 — 188.72 m. / — 188.87

Lower portion of 17 soil layer in NE quadrant, below 17.1-2, succeeding 17.7; exposure: 4.00 m.²

17.5-6 — 188.72 m. / — 188.87

Lower portion of 17 soil layer in NW quadrant, below 17.3 and succeeding 17.7; exposure: 6.00 m.²

EII 17.7 — 188.87 m. / — 188.98

Mottled, dark reddish-brown and dark grey, coarse-textured soil layer extending throughout the entire northern half of the square (EII/III baulk included), preceding soil layer 17.1-6 and contemporary with locus 25 to the E. EI 17.7 is equivalent to locus EI 9 to the west; exposure: 10.00 m.²

EII 18 — 188.56 m. / — 188.82

Two small clay-lined, oval pits (0.40 x 0.33

m., 0.26 m. in depth and 0.30 x 0.23 m., 0.14 m. in depth), dug into the upper surface of 17.1-6 and sealed by the laying down of surface 16.

EII 19.1 — 188.56 m. / — 188.62

Hard beaten-earth floor exposed in NW quadrant, stopping at the N/S line of stones in the centre of the exposure (designated W 4, possibly a wall which was dismantled when surface 16 was laid down), and continuing under W 1 at the S perimeter of the exposure (EII excavations are now restricted to the northern half of the square only); exposure: 3.00 m.^{2}

EII 20.1 — 188.35 m. / — 188.41

Hard beaten-earth floor exposed in SE quadrant, continuing halfway under E/W W 2 and abutting N/S wall W 3. Beneath W 2, surface 20 directly overlies surface 16 to the N, thus when the newer surface 20 was laid down in the area defined by walls W 2 & W 3, surface 16 was either heavily eroded or intentionally removed. Surface 20 is destroyed by rockfall along its W perimeter, thus its intended western extention can not be determined.

EII 21 — 188.62 m. / — 188.65

Very thin patches of a heavily eroded, white sandy material (possibly the remains of a heavily eroded surface) exposed in the NW corner of the square, directly under surface 19; exposure 0.40 m.^{2}

EII 22 — 188.63 m. / — 188.66

Small stone scatter, burnt, immediately E of locus 21, directly under surface 19 and penetrating slightly into locus 17.3; exposure: 0.20m.^{2}

EII 23 — 188.85 m. / — 188.92

Two shallow ash lenses, flecked with charcoal, in NW corner of the exposure, within the 17.6 fill context; exposure: 0.15 m.^{2}

EII 24.1 — 188.87 m. / — 189.35

Large oval pit (0.70 x 0.50 m., 0.48 m. in depth) lined with light brown to yellowish clay (0.03 m. thick); the opening ringed with pebbles. This pit is partially exposed along the E baulk and associated with pavement 25.

EII 25.1 — 188.89 m. / — 189.04

Patchy, cobbled pavement in central and eastern area of the exposure, petering out to the W. This pavement is laid upon the upper surface of locus 28 and succeeded by soil layer 17.7. Associated with this pavement are pits 24, 26 & 27; exposure: 6.50 m.^{2}

EII 26.1 — 188.95 m. / — 189.09

Small circular ash pit (0.40 m. in diameter, 0.14 m. in depth) associated with pavement 25.

EII 27.1 — 188.98 m. / — 189.14

Small circular pit (0.36 m. in diameter, 0.16 m., in depth) lined with hard clay and pebbles and associated with pavement 25.

EII 28.1-4 *ca.* — 189.00 m. / — 189.33

Mottled reddish-brown and grey, densely-packed soil layer with a heavy concentration of gravel. This soil layer lies beneath pavement 25 and succeeds the building represented by walls W 29 & W 30.

28.1-2 — 189.00 m. / — 189.16

Above preserved top of walls W 29 & W 30; exposure: 6.00 m.^{2}

28.3-4 — 189.16 m. / — 189.33

W of the exposed portion of W 29; exposure: 3.00 m.^{2} (lowest excavated depth reached in EII).

EII W 29 — 189.10 m.

Exposed preserved top of a mud-brick wall, *ca.* 0.50 m. in width x 2.00 m. exposed length N/S, white-plastered on its western face.

EII W 30 — 189.10 m.

Exposed preserved top of possible E/W cross wall to W 29, white-plastered on northern face. Due to the heavy rains at the end of the season, articulation of the bricks was difficult, thus both walls (W 29 & W 30) and possible associated floors were not excavated.

EII/III 1.1 — 186.56 m. / 187.74

Dark brown topsoil with plastic "artefact" assemblage, removed as a single unit (comparable to EII 2-5); exposure: 2.20 m.^{2}. (N.B. Only the northern half of the EII/III baulk was excavated.)

EII/III 2.1 — 187.70 m. / 187.72

Thin surface of fine yellowish sand and gravel (equivalent to EII 5.4 & EIII 30); exposure: 2.20 m.^{2}

EII/III 2.2 — 187.72 m. / 187.87

Thin layer of hard brown soil (equivalent to EII 6); exposure: 2.20 m.^{2}

EII/III 3.1 — 187.87 m. / 187.94

Thin layer of hard, reddish-brown clayey soil (equivalent to EII 7 & EIII 34); exposure: 2.20 m.^{2}

EII/III 4.1 — 187.94 m. / 188.06

Dark brown soil layer with heavy concentration of gravel, within EII 8.1 elevation range; exposure: *ca.* 1.00 m.^{2}

EII/III 5.1-2 — 188.06 m. / 188.16

Series of apparently 2 cobbled pavement fragments laid one upon the other in quick succession. No equivalent appears in square EII, however these pavements are within the elevation range of EII 8.1 fill accumulation; exposure: 2.20 m.^{2}

EII/III 5.3 — 188.16 m. / 188.20

Thin layer of brown soil with very light concentration of pebbles, beneath the 5.1-2 pavements and succeeding ash lens 7; exposure: 2.20 m.^{2}

EII/III 6.1 — 187.95 m. / 188.08

Circular to oval, stone-lined pit (0.41 x 0.23 m. exposed N/S, 0.13 m. in depth), partially exposed along the S baulk, associated with locus 4, filled with reddish-brown clayey soil characteristic of locus 3 and cutting through locus 5.

EII/III 7.1 — 188.18 m. / 188.28

Dark brown to grey ashy soil, charcoal-flecked (equivalent to EII 10.1-2); exposure: 2.20 m.^{2}

EII/III 8.1 — 188.27 m. / 188.28

Thin scatter of dark ash at base of locus 7; exposure: 0.50 m.^{2}

EII/III 9.1 — 188.29 m. / 188.31

Thin ash lens in NE corner of the exposure, S of locus 8, at base of locus 7, 0.27 m. in diameter.

EII/III 10.1 — 188.31 m. / 188.42

Light brown silty soil layer (equivalent to EII 12/13); exposure: 2.20 m.^{2}

EII/III 11.1 — 188.42 m. / 188.48

Dark ash lens beneath locus 10 (equivalent to EII 15); exposure: 2.20 m.^{2}

EII/III 12.1 — 188.48 m. / 188.56

Hard beaten-earth surface (equivalent to EII 15); exposure: 2.20 m.^{2}
With the appearance of surface EII/III 12 (=EII 16), the EII/III baulk excavations become incorporated into the general excavation of square EII.

EIII 1.1-3 — 184.88/96 m. / 185.45

Contaminated fill accumulation fronting the western enclosure wall of the "Hashe-

mite" complex, immediately below the "topsoil" which was scraped off (material not saved, most of which was plastic bags of rotting tomatoes) and overlying locus 2; exposure: 7.00 m.^{2}

EIII 1.4 — 185.35 m. / — 185.55

Sand and gravel drainage area fronting the gutter of the "Hashemite" complex, within locus 1.2-3 context and intruding into locus 2.1; exposure: 0.50 m.^{2}

EIII 2.1 — 185.45 m. / — 185.55

Contaminated fill accumulation between the top of wall W 3 and the western enclosure wall of the "Hashemite" complex, exposure covering entire EIII East, preceding locus 1.3 and succeeding locus 2.2; exposure: *ca.* 5.00 m.^{2}

2.2-5 — 185.55 m. / — 186.00/25

Back fill (excavated in *ca.* 0.10 m. units) to wall W 3, characterized by a mottled grey-brown soil matrix, white-flecked, cut in the E by the western enclosing wall of the "Hashemite" complex and locus 4, preceding locus 2.1, succeeding surface 6 and corresponding wall W 3. Northern probe trench loci 5.1 & 5.2 are related to loci 2.4 & 2.5 respectively (also equivalent to EIV 7 & 10); exposure: 8.00 m.^{2}

EIII W 3 — 185.32/39 m. / — 186.23/35

Large basalt wall fragment bisection EIII on a NNW/SSE line, maximum preserved width 1.88 m. (western face destroyed by recent bulldozing activity). The wall was constructed of predominantly large basalt stones (with a small proportion of limestone), small stone spacers in an irregular pattern and hard mud-mortar. W 3 is contemporary with surface 6, precedes loci 2.5/5.2 and succeeds the fill accumulation of 8.1-2/5.4.

W 3.1 — 185.32/39 m. / — 186.23/35

Dismantling wall.

W 3.2 — 186.23/35 m. / — 186.42

Soil unit immediately below wall W 3, sloping slightly downward NW/SE. No foundation trench identified, material comparable to locus 8.2, preceding the construction of the wall, and overlies locus 11.1.

EIII 4.1 — 185.49 m. / — 185.59

Shallow foundation trench of western enclosure wall of the "Hashemite" complex, intrusive into locus 2.1; exposure: 3.00 m.^{2}

EIII 5.1-4 — 185.77 m. / — 186.22

Probe trench along N baulk 2.70 m. x 1.00 m. N/S, excavated in approximate 0.10 m. units.

5.1 — 185.77 m. / — 185.88

Indistinct brown soil matrix, white-flecked, (equivalent to locus 2.4) similar to the over-and underlying soil units of loci 2.3 & 5.2.

5.2 — 185.88 m. / — 186.00

Comparable to overlying soil unit 5.1 (equivalent to locus 2.5 to the S). At the base of this collection unit are patches of chipped-stone pavement (designated 6.1).

5.3 — 186.00 m. / — 186.10

Basic continuation of the rather indistinct brown fill accumulation of 5.4 beneath the chipped-stone pavement (equivalent to locus 8.1 to the S).

5.4 — 186.10 m. / — 186.22

Indistinct brown, compact soil matrix, white-flecked, parallel to the lowest course of W3, immediately preceding the laying down of pavement 6 (equivalent to locus 8.1 to the S).

EIII 6.1-2 — 186.00 m. N. / — 186.05

— 186.23 m. S. / — 186.25

Pavement constructed of chipped and

broken limestone, ranging in size from small flakes (predominant) to larger sharp-edged pieced ranging from 0.10-0.15 m. in length; maximum thickness of pavement 0.05 m. Surface 6 was laid directly against the lower course of wall W 3, thus succeeds the construction of the wall by only a short period of time. This surface rests on the upper surface of locus 8.1/5.3 and is succeeded by the apparent back-fill of locus series 2 (EIII 6 is equivalent to EIV 8); exposure: 6.00 m.^{2}

6.1 — 186.00/23 m.

Material directly on the surface.

6.2 — 186.00 m. S
— 186.05
— 186.23 m. N
— 186.25

Material from dismantling the surface.

EIII 7.1 — *ca.* — 186.65 m.
— 186.76/95

Surface cleaning of modern debris from EIII West, lower mound surface, the base of the cleaning operation resulting in a surface which slopes from N to S (equivalent to locus 14 to the N); exposure: *ca.* 6.00 m.^{2}

EIII 8.1 — 186.06/23 m.
— 186.20

Indistinct, compact brown soil matrix level with the lowest course of wall W 3, and an apparent simple continuation of the preceding fill accumulation of loci 8.2-3 (equivalent to locus 5.4 of the northern test probe). This collection unit does not extend to the S baulk due to the downward slope of the overlying surface 6; exposure: 6.00 m.^{2}

8.2-3 — 186.20 m.
— 186.48

Excavated in approximate 0.10 m. units, these collection units represent a fill accumulation characterized by brown, compact soil, collection unit 8.2 is roughly equivalent to W 3.2 to the W; exposure: 10.00 m.^{2} Wall W 3 appears to have been constructed directly on the top of soil unit 8.2/W 3.2, pavement 6 on soil unit 8.1. Surface 6 lies directly against wall W 3 and is thus, in part, contemporary with it. Since the relative elevation of surface 6 is higher than the base of wall W 3, the creation of the "fill" locus 8.1 would appear to have been intentional, however the soil matrix of locus 8.1 does not visibly differ from the preceding collection units 8.2-3 which would argue against an independent depositional history.

EIII 8.4 — 186.40 m.
— 186.48

A fragmentary pebble surface, preserved only in the SE corner of the square, *ca.* 1.50 x 1.25 m. N/S, appears at the base of locus 8.3 and was laid upon the upper surface of locus 11.1.

EIII W 9 — 186.76 m. S
— 186.86/99
— 187.10 m. N

Stone wall foundations, laid N/S, constructed of 3 parallel rows of unhewn stone, mud-mortar (0.90 m. x 4.40 m. exposed N/S), single course preserved sloping downward from N to S. Superstructure and corresponding floor(s) not preserved. Wall W 9 was constructed on the upper surface of soil unit 15.1, soil unit 11.3 lies at a parallel elevation to the E, the area to the W was destroyed by recent bulldozing activity.

EIII W 10 — 186.78 m.
— 186.92

Stone wall foundation fragment, laid E/W, constructionally bound to N/S wall W 9; single course preserved, mud-mortar. In the corner formed by walls W 9 & W 10 is a small, yellowish-brown clayey patch, possibly representing the remains of a corresponding surface, however the very poor state of preservation precludes any certain functional identification. Similar to W 9, though at a slightly higher foundation level W 10 was constructed directly upon the upper surface of soil unit 15.1 with soil unit 11.3 lying at a parallel elevation.

EIII 11.1-3 — 186.42/48 m.
— 186.96/99

Excavated in *ca.* 0.20 m. units (as opposed to the even more frustrating 0.10 m. units of the preceding *ca.* 1.50 m. of fill), locus 11 is a thick soil layer characterized by a compact and hard brown soil, lightly flecked with white limestone and charcoal. The locus 11 series extends from the base of wall fragments W 9 & W 10 to the base of soil unit 8.3. To the W, soil units 11.2-3 are cut by pit 12; exposure: 11.00 m.^{2}

11.1 — 186.42/46 m.
— 186.64

"Fill" accumulation exposed over entire EIII East.

11.2 — 186.64 m.
— 18.84

"Fill" accumulation from top of wall fragments W 9 & W 10 to the succeeding soil unit of 11.1, cut in the W by pit 12.

11. 3 — 186.84 m.
— 186.99

"Fill" accumulation, *ca.* parallel in elevation to wall fragments W 9 & W 10, similar to the overlying, nondescript brown soil of 11.2. No floor(s)/surface(s) were found in this collection unit in association with the walls.

EIII 12.1-6 — 186.59 m.
— 187.17

Large pit of irregular contour covering the SE area of EIII, measuring in partial exposure 1.75 m. x 3.00 m. N/S, and characterized by a loose, mottled dark grey and brown soil matrix heavily flecked with charcoal and yielding a large quantity of bone, sherds and flint points. The upper surface of the pit was cut into twice along its eastern exposure (clear in section), the SE cut refilled or eventually filled with a compact, hard brown soil; the NE cut by soil unit 11.1. This pit also appears to have been cut or dug into along its SW perimeter. Pit 12 precedes the fill accumulation of soil unit 11.1, in turn cutting into preceding loci 11.2-3 & 15.1 (and possibly continuing), and is later in the depositional sequence of Shuna North than the architecture represented by wall fragments W 9 & W 10.

12.1 — 186.59/62 m.
— 186.76

Northern area of pit; exposure: 1.90 m.^{2}

12.2 — 186.59/62 m.
— 186.95

N & NW area of pit; exposure: 1.90 m.^{2}

12.3 — 186.75 m.
— 186.83

SE area of pit; exposure: 0.75 m.^{2}

12.4 — 186.70 m.
— 186.86

Central and S area of pit; exposure: 2.80 m.^{2}

12.5 — 186.86 m.
— 187.03/12

Central area of pit; exposure: 2.25 m^2

12.6 — 187.12 m.
187.17

S area of pit; exposure: 1.00 m.^{2}.

EIII W 13 — 186.90 m.
— 187.10

Stone wall foundation fragment, lying NNW/SSE, exposed in NE corner of the square, constructed of a parallel row of unhewn stone, hard mud-mortar (0.65 m. x 1.00 m. exposed NNW/SSE). Superstructure and possible corresponding floor(s) not preserved. This wall was constructed directly on the upper surface of soil unit 15.2, lies at a parallel elevation to soil unit 15.1 and is succeeded by fill accumulation 11.3.

EIII 14.1 — 186.98 m.
— 187.03

Scraping of EIII West lower mound surface, modern contamination (roughly comparable to locus 7 to the N though at a lower elevation), above locus 16; exposure: 1.65 m.^{2}

EIII 15.1 — 186.96 m.
— 187.10

Fill accumulation parallel to wall fragment W 13, characterized by a brown to yellowish-brown soil with a slightly sandy texture, relatively free from white limes-

tone or charcoal flecks. This soil unit succeeds 15.2 and associated wall fragment W 18, is cut in the W by pit 12 and precedes soil unit 11.3; exposure: 12.00 m.^{2}

15.2 — 187.10 m. / 187.29

Beginning with locus 15.2 and the underlying locus sequence 17-35, excavation in EIII is restricted to the northern half of the square (4.00 m. x 2.00 m. N/S). Locus 15.2 is of a similar sandy brown soil, though slightly harder packed than the succeeding soil unit of 15.1 and lies at a parallel elevation to wall fragment W 18. Both locus 15.2 and W 18 lie upon the upper surface of locus 17; exposure: 8.00 m.^{2}

EIII 16.1 — 186.99 m. / 187.13

Soil unit above the S end of wall W 9, comparable to the soil unit 11.3 though the soil is much more compact and hard (possibly due to the weathering processes occuring after the bulldozer cut which created the lower mound surface), however collected separately due to possible contamination from the overlying lower mound surface; exposure: 1.00 m.^{2}

EIII 17.1-4 — 187.29 m. / 187.48

Locus series 17 is characterized by varied fill accumulations and possible erosion deposits overlying the brick superstructure of W 19/W 22 & W 23/W 28; exposure: 8.00 m.^{2}

17.1 — 187.29 m. / 187.40/43

Hard, compact mottled greyish-brown soil layer flecked with charcoal, overlying the eastern half of W 19/W22, preceding fill accumulation 15.2; exposure: 3.20 m.^{2}

17.2 — 187.30 m. / 187.40/43

Clayey grey to reddish-brown soil layer overlying the northwestern portion of W 19 and room fill 21. A long patch of what appears to be disintegrated, light beige sandstone in the N area of the 17.2 exposure separates this soil unit from the succeeding fill accumulation of 15.2. The similarity of composition between this soil unit and the reddish-brown mortar used in the construction of W 19 strongly suggests that this soil unit represents a layer of mortar, eroded after the destruction or dismantling of W 19 to its preserved level. A thin layer of similar "mortar", extending to the S over W 19 and under soil unit 17.4 further strengthens this interpretation; exposure: 1.20 m.^{2}

17.3 — 187.41 m. / 187.48

Compact mottled grey-brown soil flecked with white limestone and charcoal, lying at a parallel elevation to W 19 along its southeastern face, continues the fill accumulation of the underlying locus 20, below the S portion of collection unit 17.1; exposure: 1.75 m.^{2}

17.4 — 187.30 m. / 187.43

Sandy light brown mottled soil unit overlying the SW portion of W 19 & W 23 as well as the fill deposit above room 29 (designated locus 27). This soil matrix is similar in composition to the bricks of walls W 19/W 23 and appears to represent a brick erosion layer, underlying locus 15.2; exposure: 2.75 m.^{2}

EIII W 18 — 187.25 m. / 187.35

Possible stone wall foundation along the E baulk of which only a single row of unhewn stone with hard mud-packing is exposed. This row of stones lies directly on the upper surface of soil unit 17.1 and is parallel in elevation with soil unit 15.2. Though similar in alignment, the construction of W 18 is definitely earlier than that of W 13 which lies on the upper surface of locus 15.2.

EIII W 19 — 187.43 m. / 187.53

Superstructure to stone wall foundation W 22 (1.20 x 3.25 m. exposed) laid along a roughly WSW/ENE axis, constructed of "sandy brick" or possibly sandstone slabs

(sandstone-like in composition, brick in form with a slightly clayey texture, now heavily eroded). The composition of the bricks varies from a yellowish-brown sandy-textured material flecked with grey to a greenish-grey clay with a sandy-texture. Several of the bricks have been completely eroded leaving only the negative impression in the reddish-brown clayey mortar. Brick size also varies from 0.42 x 0.62 x 0.10 m. or its half, 0.17 x 0.62 m. (original width not preserved) of the northern row to 0.50 x 0.50 x *ca.* 0.10 m. (though the S edge of these seems to be slightly eroded) or 0.17 x 0.30 m. (preserved length) of the southern row. This brick superstructure is cut and destroyed in the W with the intrusion of a large basalt stone.

EIII 20.1-3 — 187.48 m. / — 187.69

Fill accumulation S of wall W 19/W 22 and E of wall W 23/W 28; above burnt layer 26 and preceding locus 17.3; exposure: 1.75 m.^{2}

20.1 — 187.48 m. / — 187.55

Lightly flecked, mottled brown soil similar to the preceding locus 20.2 and the succeeding though slightly more compact soil of collection unit 17.3, roughly parallel in elevation to the lower portion of W 19.

20.2 — 187.55 m. / — 187.62/65

Mottled brown soil with loose texture, heavily flecked with white as well as many small patches of white plaster (similar in composition to floors 24 & 29). This collection unit terminated with the appearance of a small ash lens, designated locus 25).

20.3 — 187.62/65 m. / — 187.69

Mottled brown soil with loose texture, overall lightly flecked with white with a heavy concentration of white flecks in the SW corner. "Bricky" collapse, i.e., lumps of greenish-grey sandy material similar to some of the bricks of W 19 & W 23, was also found in the SW corner near the latter wall.

EIII 21.1-2 — 187.40 m. / — 187.68

Fill accumulation N of W 19/W 22, below 17.4 and deposited after surface 24 fell into disuse. This area is cut in the west by modern bulldozer activity; exposure: 0.50 m.^{2}

21.1 — 187.40 m. / — 187.48

Compact brown to slightly reddish-brown soil, *ca.* parallel in elevation to W 19.

21.2 — 187.48 m. / — 187.68

Compact brown to slightly reddish-brown soil, *ca.* parallel in elevation to the upper half of stone wall foundations W 22, lying directly upon plaster surface 24.

EIII W 22 — 187.43 m. E / — 187.59

— 187.55 m. W / — 187.74

Single course stone wall foundations of superstructure W 19, 1.20 m x 4.25 m. exposed length, constructed of unhewn stone in irregular layout, generally with larger facing stones, hard mud-mortar and mud-plastered. The wall was laid upon a shallow, hard earth packing and slopes slightly downward from ENE to WSW.

W 22.1 — 187.43 m. / — 187.74

(maximum dimensions) Dismantling wall.

W 22.2 — 187.59/74 m. / — 187.77

Shallow, hard earth packing directly below W 22, cut into fill layer of collection units 26.2, 31 & 32; exposure: 5.10 m.^{2}

EIII W 23 — 187.43 m. / — 187.60/64

"Brick" superstructure, 2 courses partially preserved, of NNW/SSE wall, 1.25 x 0.60 m. exposed length, perpendicular to W 19/W 22 and enclosing floor 29 to the W and area 26 to the E. This wall lies directly

below locus 17.4 and was built upon stone wall foundations (designated W 28). The bricks are similar to the yellowish-brown or reddish-brown sand and the sandy-textured greenish-grey clayey bricks of W 19, however they differ slightly in form and dimension. Two courses are preserved, the poorly preserved upper course yielding only a single row of two bricks, one trapezoidal in form (0.67 x 0.25 m. exposed length and 17/*ca.* 0.32 m. x 0.60 m. preserved/ *ca* 0.75 m. expected length, original thickness of brick not preserved) and the lower course comprising a double row of bricks, again including the trapezoidal form (0.42 x 0.50 m.exposed/ 0.62 m. expected x 0.10 m. and 0.22/0.30 x 0.72 x 0.10 m.). The lower course of bricks lies roughly parallel in elevation to the upper part of the stone wall foundations of cross wall W 19/W 22. Again similar in construction to W 19, a reddish-brown clayey mortar mixed with small pebbles was used between the bricks and as a wall plaster.

W 23.1 — 187.43 m. / — 187.51

Dismantling upper course.

W 23.2 — 187.51 m. / — 187.60/64

Dismantling lower course.

EIII 24 — 187.68 m. / — 187.59/60

Thin, heavily eroded white plaster floor of room N of wall W 19/W 22, destroyed to the W, only *ca.* 0.20 m.^{2} exposed. The white plaster floor was laid against the mud-plastered stone foundations (W 22), at an elevation slightly lower than the brick superstructure (W 19). Unfortunately, no evidence is preserved indicating whether or not the inhabitants used a white plaster on the walls as well. Surface 24 lies on the upper surface of soil unit 31 and is succeeded by fill accumulation 21.

EIII 25 — 187.65 m. / — 187.67

Small, thin ash lens in NE corner of area defined by locus 20, *ca.* 0.35 m. in diameter and lying directly on the upper surface of collection unit 20.3.

EIII 26.1 — 187.69 m. / — 187.70/74

Burnt layer preceding fill 20/17.3, succeeding collection unit 26.2 and lying against the S face of W 22. This thin layer is characterized by 2 large, roughly oval patches, *ca.* 1.00 m. maximum length, of bright, bricky-orange colour, each surrounded by a greyish weak red ash ring, set within a varied soil layer composed of a sandy-textured, dark weak red to purplish-grey, black-flecked soil in the SE and a more compact brownish, black- and white-flecked soil in the SW; exposure: 1.40 m.^{2}

26.2 — 187.70/74 m. / — 187.78/82

Varied soil characterized by grey to weak red ash and dark reddish-brown sandy-textured patches interspersed and often partially overlaping within a crumbly, mottled brown to reddish-brown soil matrix. Several of the small ash patches cut into the preceding locus 34.

EIII 27.1-2 — 187.51 m. / — 187.69

Fill accumulation characterized by a compact, indistinct brown soil layer, lightly flecked with white. Locus 27 is enclosed by W 19/W 22 to the N, W 23/W 28 to the E and the bulldozer cut to the W. Pail numbers indicate collection on two different days; exposure: 0.30 m.^{2}

EIII W 28 — 187.60/64 m. / — 187.73

Stone wall foundations of superstructure W 23, laid NNW/SSE, constructed of relatively small unhewn stones in an irregular pattern (1.25 x 0.60 m. exposed length), single course preserved.

W 28.1 — 187.60/64 m. / — 187.73

Dismantling wall.

W 28.2 — 187.73 m. / — 187.67

Compact, indistinct brown soil beneath the

stone foundations. Whether or not the surface between the foundations was initially prepared in anyway is unclear; exposure: 0.75 m.²

EIII 29.1 — 187.69 m.
— 197.70

Heavily eroded, thin white plaster floor, similar to that of locus 24 to the N, of a room enclosed by W 19/W 22 to the N and W 23/W 28 to the E; exposure: 0.10 m.²

EIII 30.1 — 187.68/74 m.
— 187.70/76

Poorly preserved, thin greenish-white plastered surface laid on a thin sand and gravel foundation, broken in the SE by locus 26.2. This surface, directly overlying surface 34, precedes soil layer W 22.2/W 28.2, 31, 32 and 26.2. the stratigraphic connection of E III 30 with EII/III 2 and EII 5.4 is clear in section though the western extension of this surface has been contaminated by modern activity; exposure: 6.60 m² (though fragmentary).

EIII 31.1 — 187.58 m.
— 187.68

Fill accumulation characterized by a light brown, white-flecked soil layer mixed with gravel, beneath floor 24, above surface 30 and destroyed in the W by the bulldozing activity; exposure: 0.40 m.²

EIII 32.1 — 187.59 m.
— 187.73

Reddish-brown, white-flecked soil layer below floor 29, above surface 30 in SW corner of the exposure; exposure: 0.40 m.²

EIII 33.1 — 187.58 m.
— 187.71

Modern contamination (plastic bags and rubber shoes) due to bulldozer activity, destroying the western area of locus 31; exposure: 0.20 m.²

EIII 34.1 — 187.78/82 m.

Top exposure of a concentration of hard, clayey patches heavily pitted by overlying locus 26.2, overlaid along its N perimeter by surface 30 (possibly equivalent to EII/III 3 and EII 7, not excavated); exposure: 2.70 m.²

EIII W 35 — 187.64 m.

Possible (though doubtful) stone wall foundations (represented by 2 stones only in the SE corner of the exposure), protruding into locus 34 (not excavated).

The locus descriptions for square EIV are not included here as they bear little on the discussion of the late Chalcolithic-Early Bronze I of Tell esh-Shuna North.

Appendix B: Catalogue of Ceramic Types

Type:	*Locus:*	*Ware:*	*Surface treatment:*	*Alternate Surface treatments:*	*Other Occurences:*
Fig. 7:					
1	EIII 12.6	sand-tempered	plain, wet-smoothed smoke-blackened		
2a	EII 13.3	sand-tempered	fugitive red slip ext./int.		EI 6.9 EII 17.7
2b	EII 12.1	sand-tempered	fugitive red slip ext./int.		EII 15.3 EIII 26.2 EIII 17.1 & 4 EIII 6.1
3	EIII 17.4	sand-tempered	fugitive red slip ext./int.		
4	EII/III 5.3	sand-tempered	fugitive red slip ext./int.		
5	EIII 17.1	sand-tempered	fugitive red slip ext./int.		
6a	EIII 12.4	sand-tempered	fugitive red slip ext./int. rim		
6b	EIII 21.1	sand-tempered	fugitive red slip ext./int. rim		
6c	EIII 12.2	sand-tempered	fugitive red slip ext./int. rim.		
7a	EII 16.1	sand-tempered	red-slipped & polished ext./int. rim		
7b	EIII 12.1	sand-tempered	fugitive red slip ext./int. rim		
8	EII 15.3	sand-tempered	fugitive red slip ext./int. rim		
9a	EIII 12.4	sand-tempered	fugitive red slip ext./int. rim		
9b	EII 13.2	sand-tempered	plain, wet-smoothed		
10a	EII 13.2	coarse-tempered	fugitive reddish-yellow slip ext./int.		EI 9.7 EII 19.1
10b	EII 12.1	coarse-tempered	fugitive red slip ext./int, unusual white paste (10YR 8/1)		EII 16.1 EII 15.5 EII 13.2 EII 12.1 EIII 17.1 & 3 EIII 12.1 & 4
11	EII 28.2	coarse-tempered	wet-smoothed, red painted (series a)		
12	EIII 21.1	coarse-tempered	Pink- to reddish-yellow slip ext./int.	fugitive red slip & reddish-yellow slip	EI 9.13 EIII 12.1 & 4
13	EI 9.7	coarse-tempered	fugitive red-slip ext./int.	plain	EI 6.10 EI 9.7, 11, 19 & 21 EII 17.7
Fig. 8					
14a	EII 28.2	coarse-tempered	fugitive red slip(?) ext./red painted (series a) int.	fugitive red slip	EI 9.16
14 b	EII 28.2	coarse-tempered	fugitive red slip ext./int.		
15	EIII 12.4	coarse-tempered	plain	red slip	EII 18.2 EII 15.3
16	EIII 17.2	coarse-tempered	very pale brown fugitive slip ext. incised decoration (series a) on rim		
17	EI 9.18	coarse-tempered	reduced red slip ext./int.	red slip	EI 9.17 EII 13.3

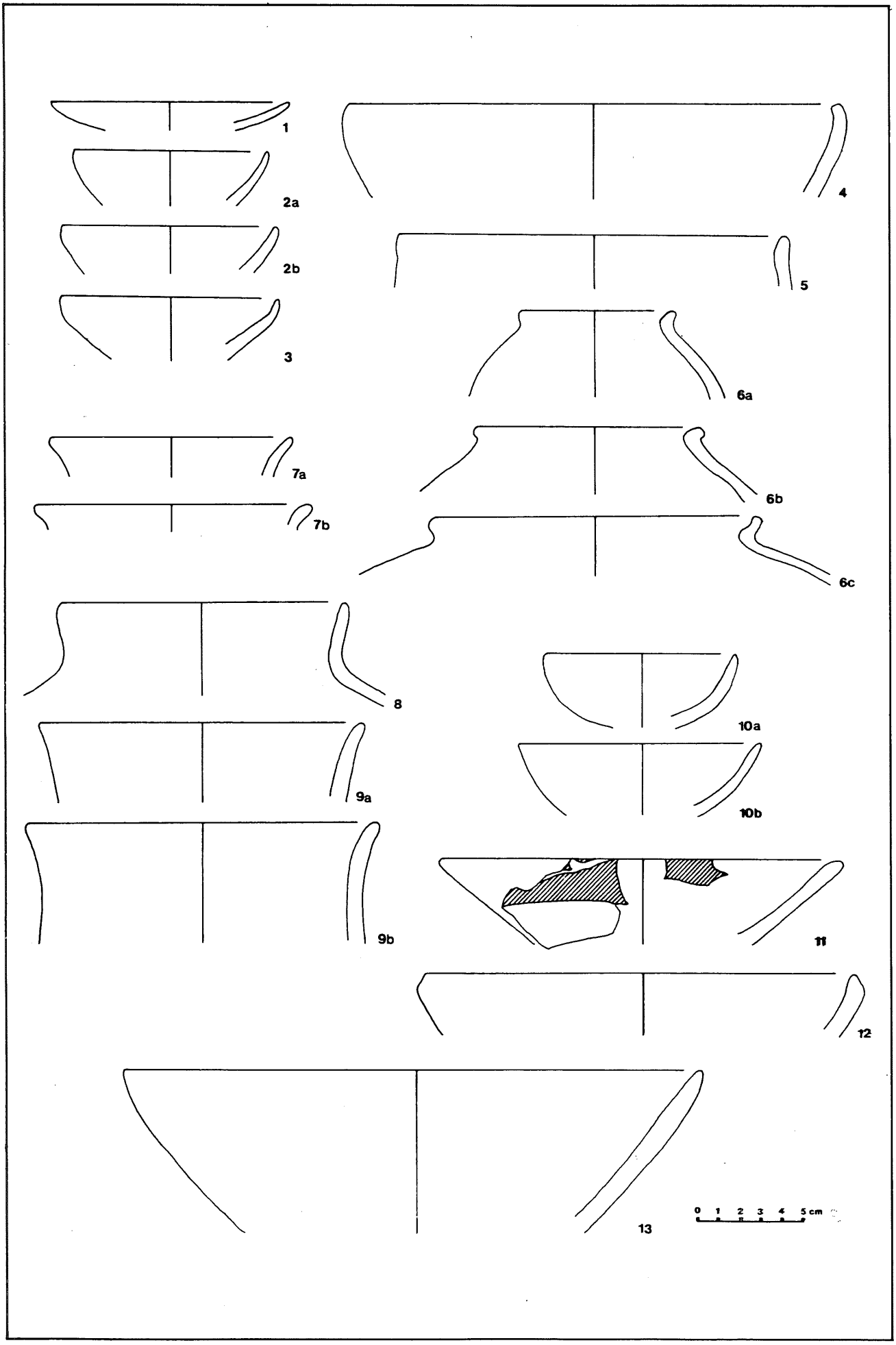

Fig. 7

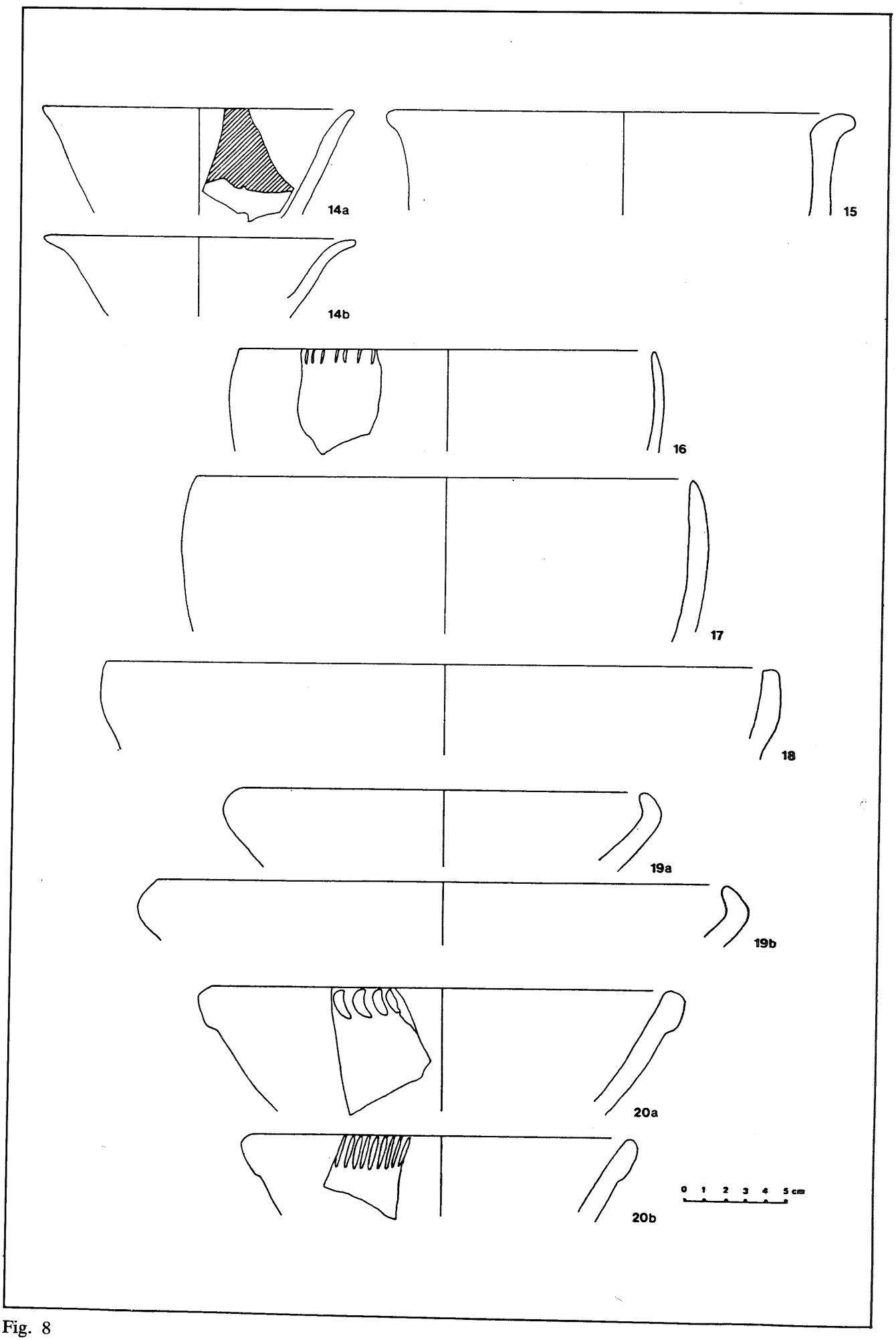

Fig. 8

18	EII/III 5.3	coarse-tempered	fugitive red slip ext./int. rim		
19a	EIII 12.2	coarse-tempered	reduced slip ext./int. rim	red slip	EIII 12.1, 4 & 5
19b	EIII 12.2	coarse-tempered	reduced red slip & burnish ext./int.		
20a	EII 16.3	coarse-tempered	Plain, rope decoration (series e) on rim	plain, rope decoration series b, d&e	EII 16.2 EII 12.1
20b	EIII 12.4	coarse-tempered	fugitive red slip ext./int. rope decoration (series b) on rim		
Fig. 9					
21a	EII 15.2	coarse-tempered	plain, rope decoration (series d) on rim	predominantly plain, rope decoration (series d&e) on rim 1 ex. red slip	EI 9.7 EI/II 2.1 EII 16.2 EII/III 5.2 EIII 26.2 EIII 12.3
21b	EII/III 11.1	coarse-tempered	fugitive red slip ext./int. rim, rope decoration (series e) on rim		
22	EII 17.7	coarse-tempered	plain, rope decoration (series b) below rim	red slip with rope decoration series b	EII 20.1 EII 17.2
23	EIII 17.4	coarse-tempered	fugitive red slip ext.		
24a	EI 10.3	coarse-tempered	red-painted (series a) ext.	red slip, plain or red painted series a.	EI 10.2 EI 9.13, 15 & 20
24b	EII 28.3	coarse-tempered	red slip (heavily eroded) ext./red painted (series a) int.		EII 28.2 EII 25.1 EII 17.3
24c	EIII 12.1	coarse-tempered	fugitive red painted (series b?) ext.		
24d	EII 28.3	coarse-tempered	fugitive red painted (series a) ext.		
25	EII 13.3	coarse-tempered	red painted (series d) ext., crude manufacture, stance approximate		
26	EII 15.2	coarse-tempered	plain, rope decoration (series e) below rim	plain with rope decoration series e below rim	EII 21.1
Fig. 10:					
27	EII 13.3	coarse-tempered	wet-smoothed, red painted (series e) ext.		
28	EII 28.3	coarse-tempered	wet-smoothed, red painted (series e) ext.		
29	EIII 12.4	coarse-tempered	fugitive red to reduced slip ext./int. rim, rope decoration (series e) on rim		
30	EII 21.1	coarse-tempered	light brown slip ext./ int. rim, incised decoration (series b) below rim.	light reddish-brown slip ext.	EII 16.2
31	EIII 12.1	coarse-tempered	fugitive red slip ext.	red slip & plain	EII 15.2 EII 13.2
32	EIII 12.2	coarse-tempered	thick fugitive red slip ext., rope decoration (series c) on rim		
33a	EII 28.2	coarse-tempered	plain		EI 10.3 EII 17.5&7
33b	EII 28.2	coarse-tempered	plain		EII 13.2 EIII 17.4
34	EII 13.3	coarse-tempered	plain		EII 19.1

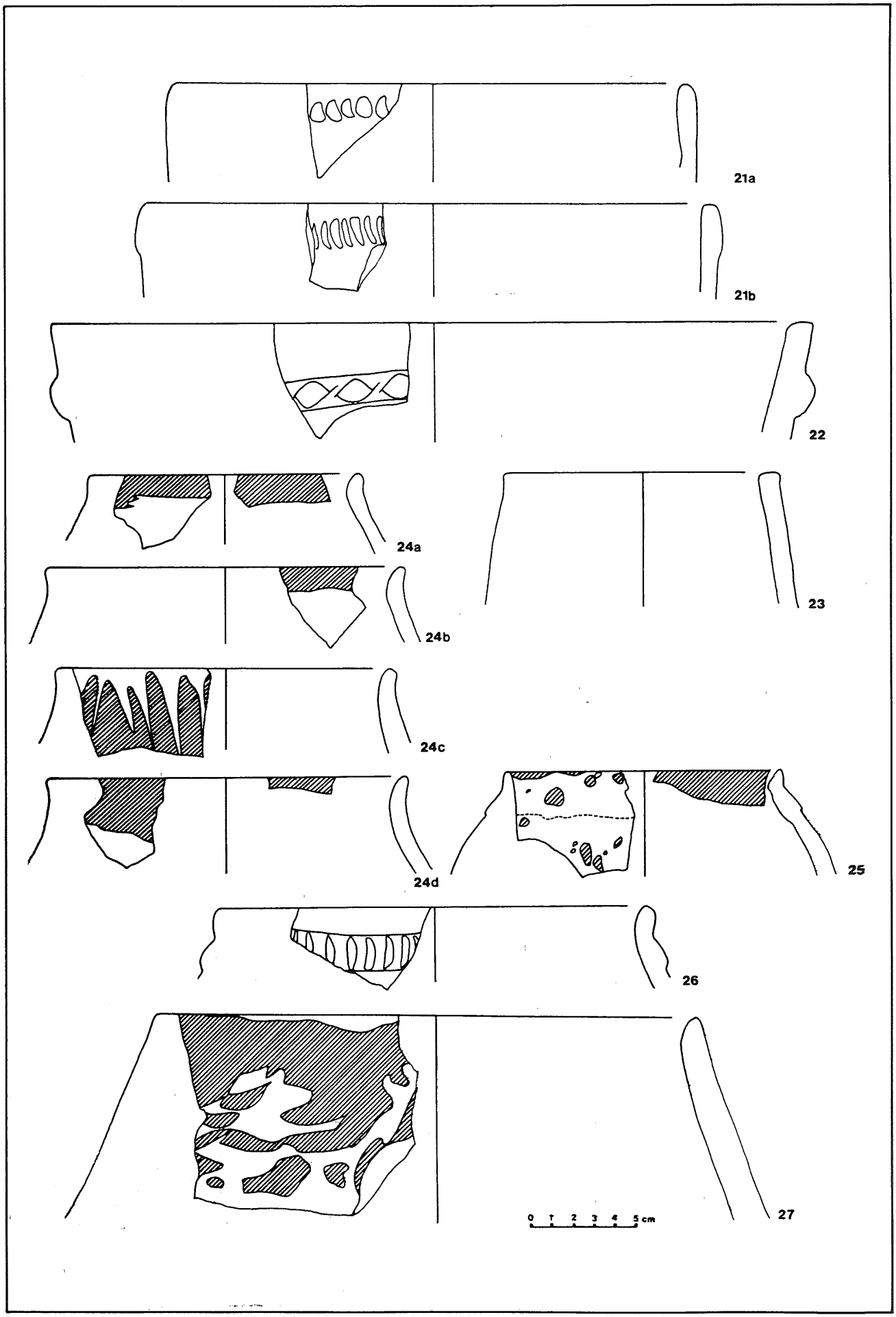

Fig. 9

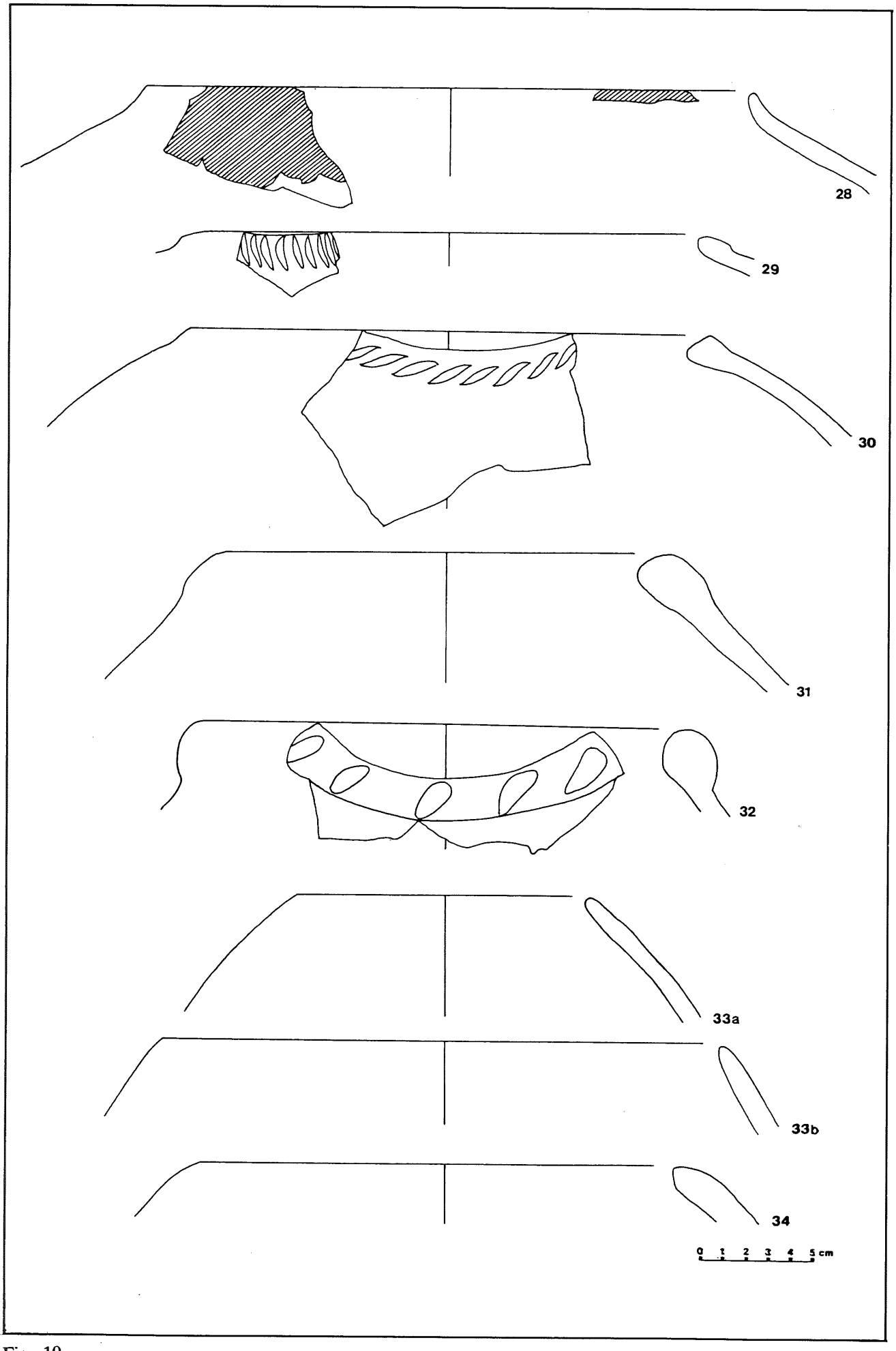

Fig. 10

Fig. 11					
35a	EIII 12.4	coarse-tempered	plain		EII 15.3
35b	EIII 12.4	coarse-tempered	plain		EII 13.3 EIII 12.1-2
36	EIII 12.2	coarse-tempered	fugitive red slip ext.		EIII 12.4
37	EII 12.1	coarse-tempered	red slip ext., incised decoration (series b) on shoulder	without incised decoration	EII 15.5 EII 13.1
38	EI 9.16	coarse-tempered	red slip ext./int. rim		EIII 17.1
39	EII 15.3	coarse-tempered	plain		EIII 6.2
40	EIII 12.4	coarse-tempered	plain		EII/III 5.2 EIII 6.2
Fig. 12					
41	EIII 17.1	coarse-tempered	red slip ext./int.		
42	EII 12.1	coarse-tempered	red slip ext./int. rim		
43	EII 13.2/3	coarse-tempered	red slip ext./int. rim rope decoration (series g) on rim		EII 12.1 EII 13.1-3
44	EI 9.19	coarse-tempered	plain		EII 17.3
45	EIII 12.1	coarse-tempered	fugitive red slip ext.		
46a	EIII 12.2	coarse-tempered	fugitive red slip ext.		
46b	EIII 17.2	coarse-tempered	fugitive red slip ext.		
47	EII17.2	coarse-tempered	plain		
48	EIII 12.2	coarse-tempered	fugitive red slip ext./int. rim		
49	EIII 12.4	coarse-tempered	fugitive red slip ext.	1 ex. possibly band-slipped, surface heavily eroded	EIII 12.1-2&4
Fig. 13					
50	EIII 12.1	coarse-tempered	slightly reduced fugitive red slip ext.		
51	EII 17.5	coarse-tempered	red slip ext.		
52	EI/II 2.1	coarse-tempered	heavily eroded, unclear		
53	EI 9.13	coarse-tempered	fugitive red slip ext./int. collar	predominantly red slip ext./int. plain	EI 13.1 EI 9.3 & 16 EII 17.2 EII 16.1-2 EII 13.3 EIII 26.2 EIII 17.1&4 EIII 12.2&4
54a	EIII 26.2	coarse-tempered	red slip ext./int. rim	reduced red slip ext.	EIII 12.2
54b	EII 13.1	coarse-tempered	red slip ext./int. rim		
55a	EI 10.3	coarse-tempered	light red to reddish-yellow slip ext./int. collar	fugitive red slip and plain	EI 13.1 EI 10.3 EI 9.4 EI 6.9-10
55b	EI 9.4	coarse-tempered	plain		EII 28.2
55c	EII 17.2	coarse-tempered	fugitive red slip ext./int. rim, simple punctate decoration on shoulder		EII 25.1 EII 24.1 EII 17.2&7 EII 15.3 EII 13.1-2 EIII 17.1 EIII 12.1
Fig. 14					
56	EIII 6.1	coarse-tempered	fugitive red slip ext./int. rim, grooved rim		
57	EII 25.1	coarse-tempered	plain		
58a	EI 9.18	coarse-tempered	red-slip & burnish ext./int. rim		
58b	EII 28.2	coarse-tempered	light red painted ext. (series a)		

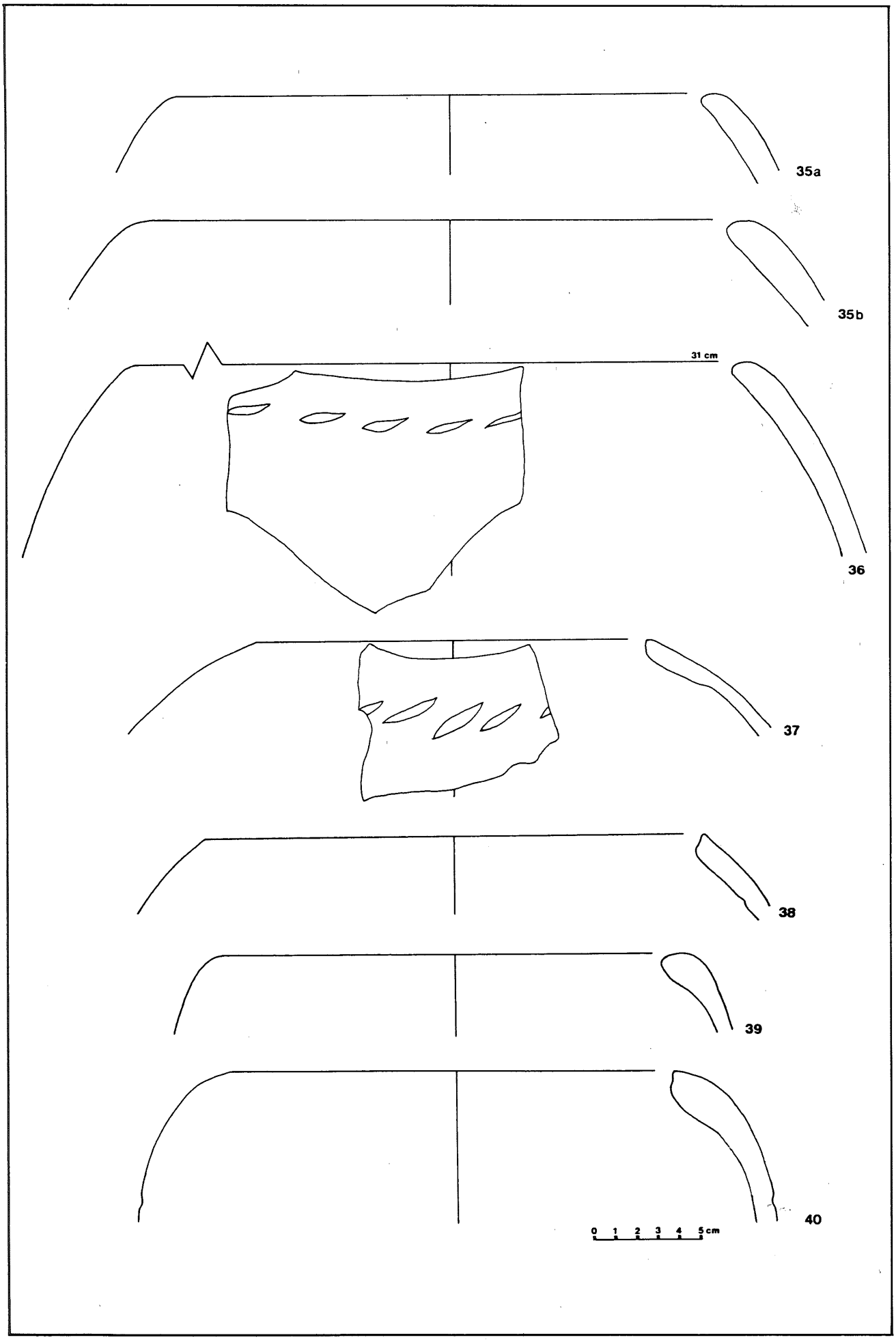

Fig. 11

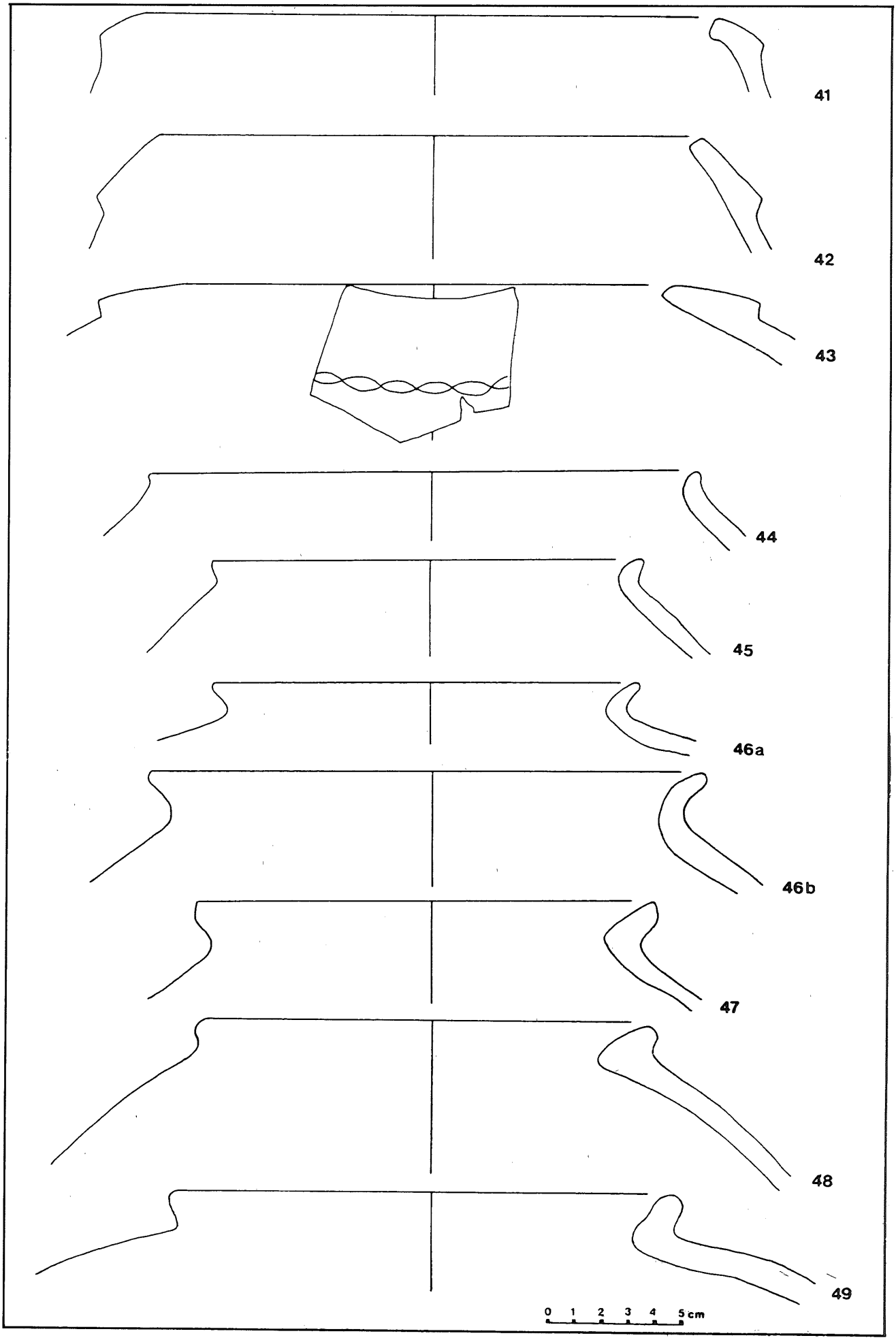

Fig. 12

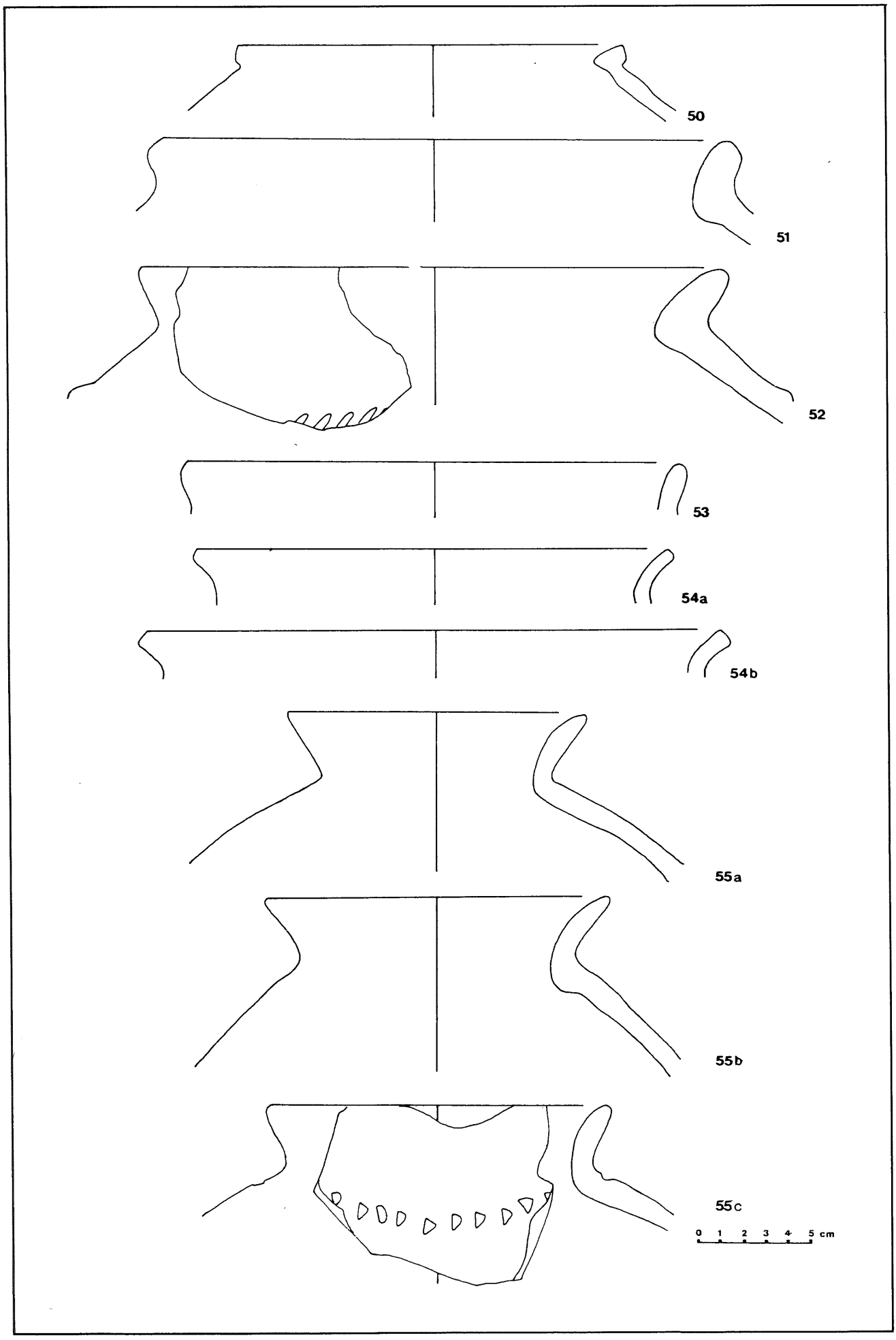

Fig. 13

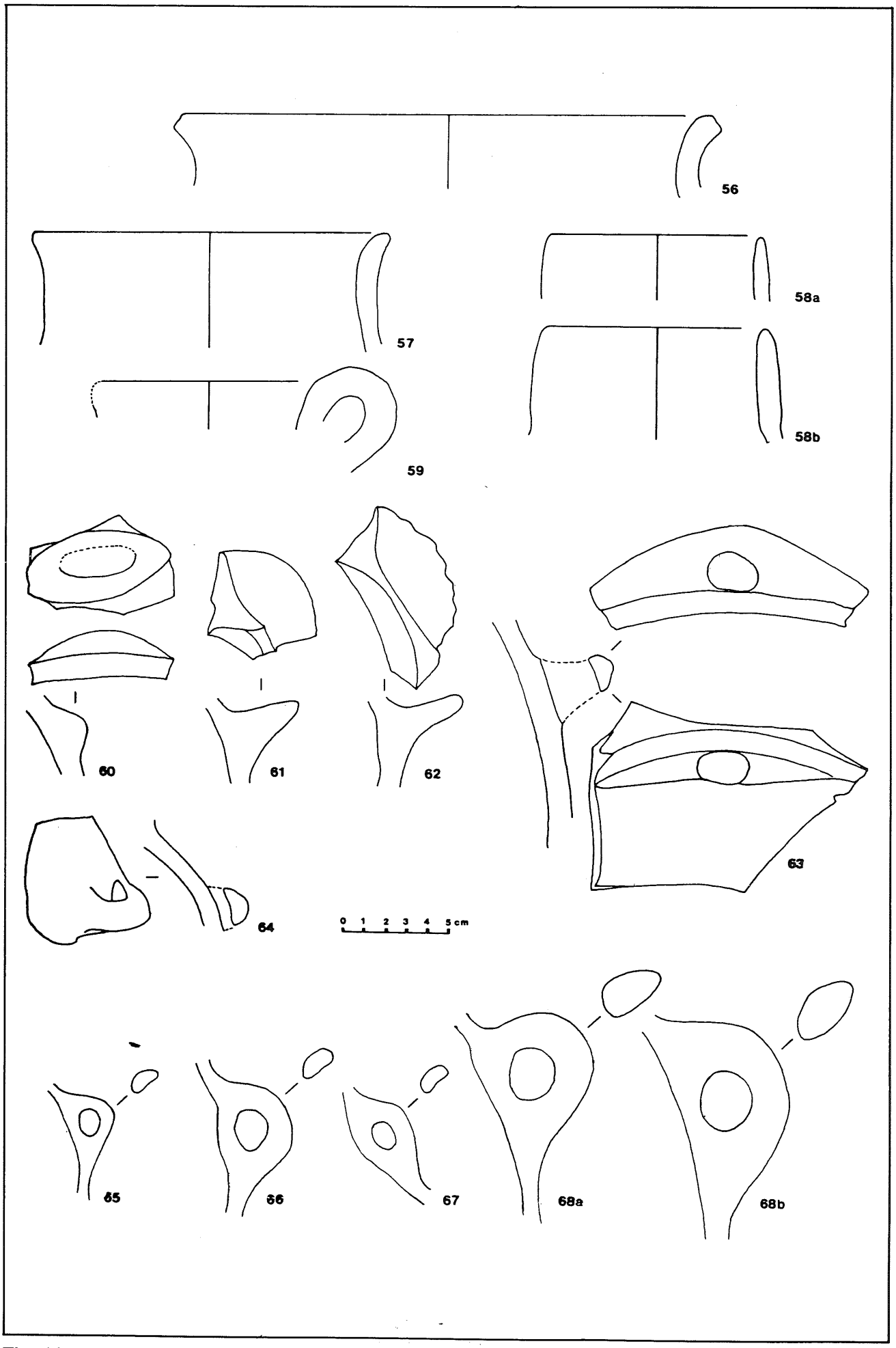

Fig. 14

59a	EIII 6.2	coarse-tempered	plain (stance approximate)		EII 13.3
59b	(not illus.) Small loop handle frag-ments	coarse-tempered	fugitive red slip & plain		EI 9.4 EII 15.3 EII 13.2-3 EIII 12.4
60	EII 17.7	coarse-tempered	plain		EII 17.2&6
61	EIII 12.2	coarse-tempered	fugitive red slip ext.		EII 17.2 EII 15.3
62	EII/III 5.2	coarse-tempered	fugitive red slip ext.		EII 17.2 EIII 6.2
63	EI 10.3	coarse-tempered	fugitive red slip ext.	predominantly red slip, also plain	EI 10.1 EI 9.1,4&7 EII 28.2 EII 17.2,5&7 EIII 17.1(?) EIII 12.4
64	EII 28.2	coarse-tempered	fugitive red slip ext.		
65	EI 9.17	coarse-tempered	red slip ext., unusual light red to reddish-yellow core (10R 6/6, 5YR 7/4-6/4)		EI 9.14
66	EII 28.2	coarse-tempered	red painted (series f) ext.	fugitive red slip ext.	EI 9.15&16
67	EII 25.1	coarse-tempered	fugitive red slip ext.		
68a	EII 28.2	coarse-tempered	fugitive red slip ext.	plain	EI 13.12 EI 9.11,13,14, 16&21
68b	EII 28.2	coarse-tempered	fugitive red slip ext.		EII 28.4 EII 25.1 EII 17.2,6-7 EII 16.3 EII 15.3 EIII 6.2
Fig. 15					
69	EII 17.2	coarse-tempered	fugitive very pale brown slip ext., rope decoration (series c) on lower body		
70	EII 15.3	fine-tempered grey	dark grey burnish (heavily eroded)		
71	EII 13.1	fine-tempered grey	heavily eroded, burnish(?)	dark grey burnish	(same loci)
72a	EII 12.1	fine-tempered grey	dark grey to reddish-brown (2.5YR 4/4) burnish ext./int. collar	dark grey to grey burnish	EII 13.1 EII 12.2 EII/III 5.2 EIII 17.1&4
72b	EII 13.2	fine-tempered grey	very dark grey burnish ext./int. collar		
73	EII 12.1	fine-tempered very pale brown	very pale brown to reddish-yellow burnish ext./int. collar		EII 15.5 EIII 26.2
74	EII 13.3	fine-tempered very pale brown	reddish-yellow burnish ext./int. collar		
75a	EII 13.1	fine-tempered grey	black burnish ext.	grey to dark grey & black burnish ext. or ext./int.	EII 13.2-3 EIII 34.1 EIII 17.4
75b	EII 13.1	fine-tempered grey	black burnish ext./int.		
75c	EII/III 5.3	fine-tempered grey	black surfaced burnish possibly eroded		

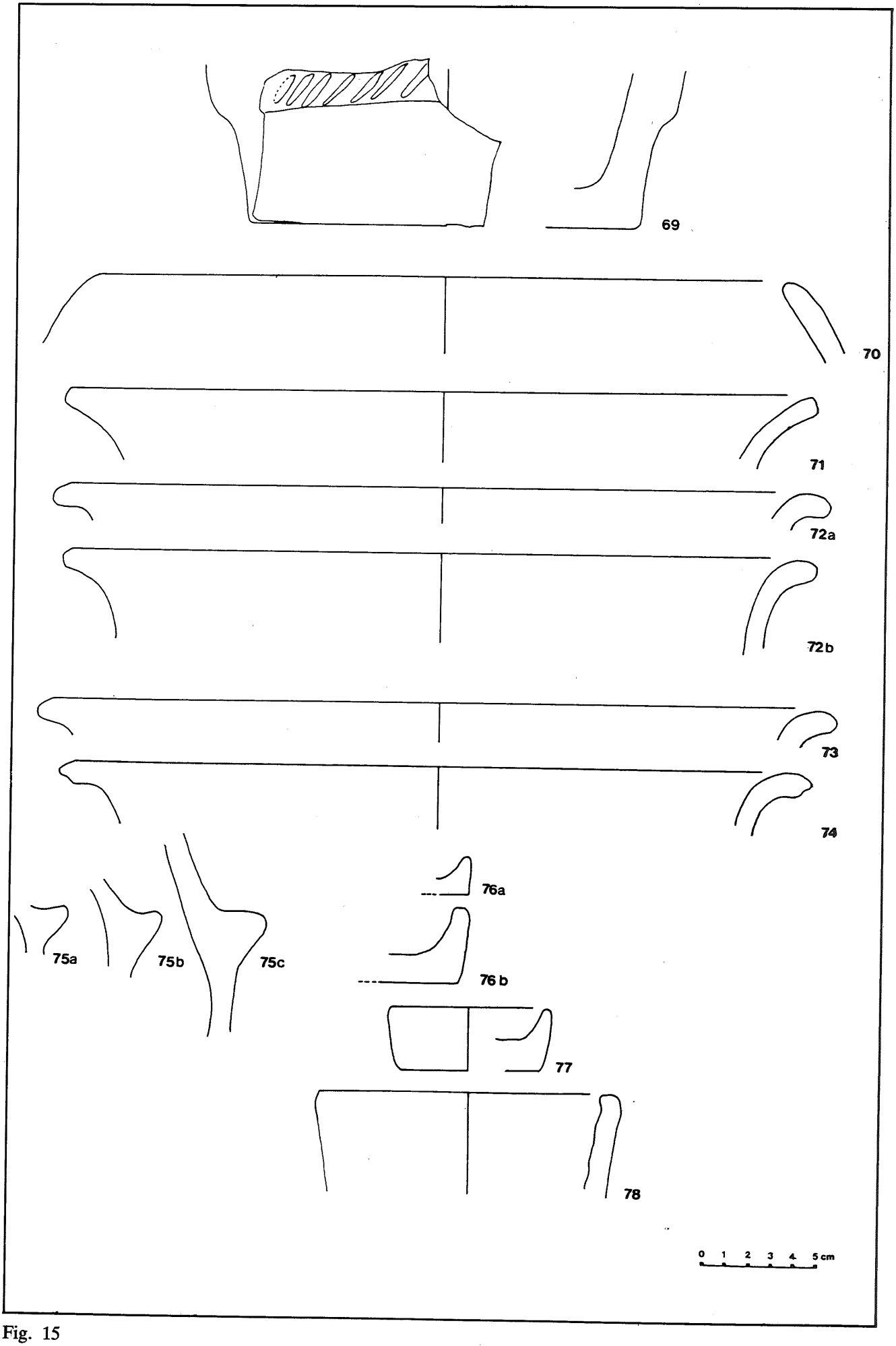

Fig. 15

76a	EIII 12.2	coarse chaff-tempered	plain
76b	EIII 12.2	coarse chaff-tempered	plain
77	EIII 12.2	coarse chaff-tempered	plain
78	EIII 12.4	coarse chaff-tempered	plain

Fig. 16

79a	EI 9.20	coarse-tempered	fugitive red slip ext./ both int. surfaces rope decoration (series b)
79b	EII/III 5.2	coarse-tempered	red paint (series e) & rope decoration (series b)
79c	EII 13.3	coarse-tempered	red slip & rope decoration (series c) ext.
79d	EIII 26.2	coarse-tempered	fugitive red slip & rope decoration (series d) ext.
80	EIII 17.2	coarse-tempered	plain with irregular incised design on shoulder
81	EII 13.3	coarse-tempered	red-painted (series b) ext. red slip on base
82a	EII 16.2	coarse-tempered	red paint ext./int (series c & d) respectively
82b	EI 10.2	coarse-tempered	red paint (series e) ext.
82c	EI 10.4	coarse-tempered	red paint (series e) ext.
82d	EII 28.2	coarse-tempered	red paint (series e) ext.

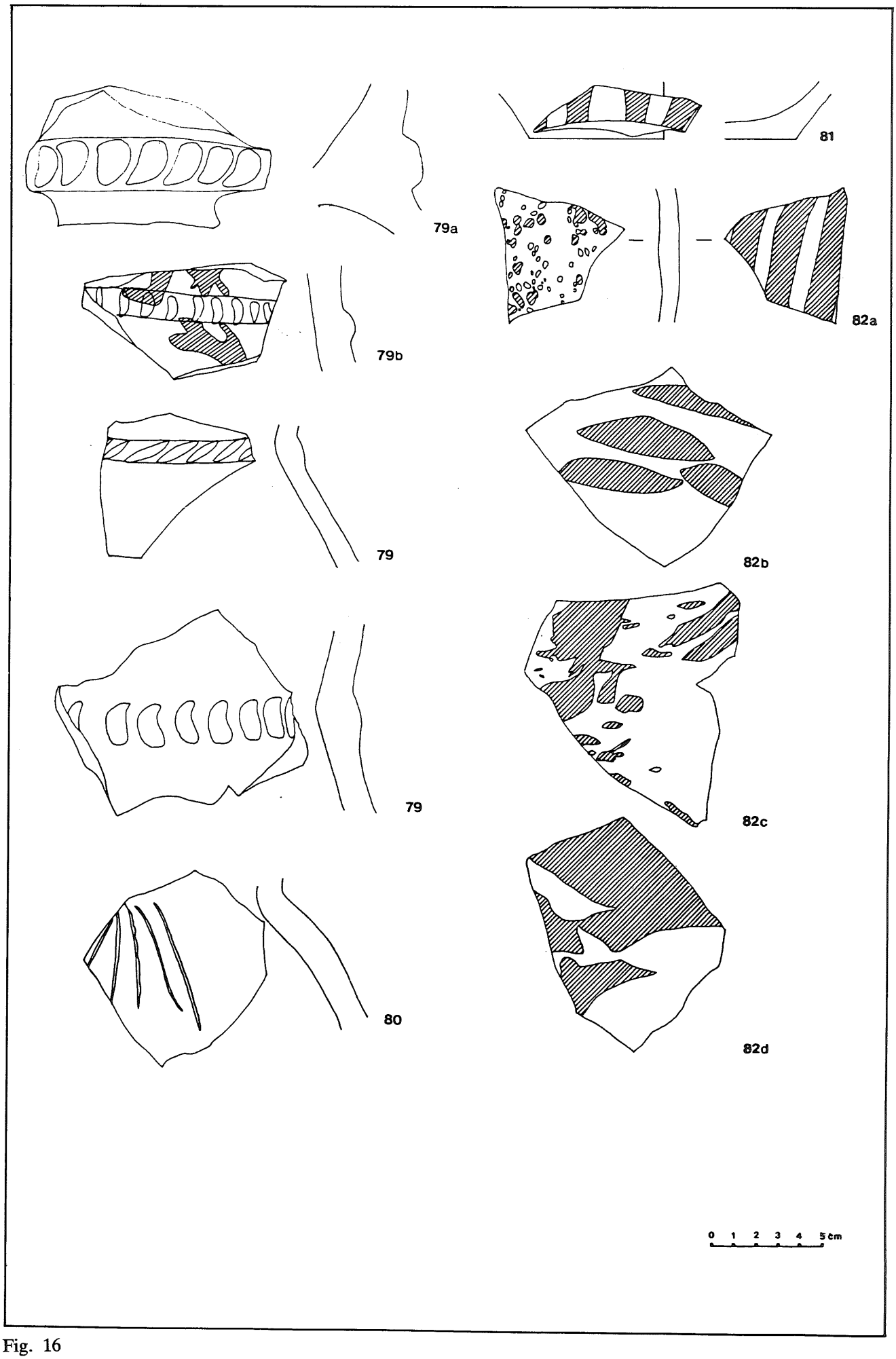

Fig. 16

Ceramic types (both form and decoration) not specifically illustrated:

83	Applied horizontal band on the vessel body (rope-like decoration a in the text, not illustrated)	EIII 12.1
84	Closely spaced, parallel vertical to slightly oblique lines on a slightly raised band on or near the vessel rim (rope-like decoration e in the text, see types 20a, 21b & 26)	EI 9.7 EII 16.2-3 EII 15.2 EI/II 2.1 EII/III 5.1 EIII 12.1&4
85	Small pieces of clay applied to the vessel body creating a rope-like decoration (rope-like decoration f in text, not illustrated)	EII 13.1 & 3 EII 12.1 EII/III 5.2 EIII 12.4
86	Holemouth vessel with thickened rim, impressed rope-like decoration along the bottom rim (rope-like decoration g in text, see type 43)	EII 16.1 EII 13.1-3 EII 12.1
87	Horizontal band of short parallel incisions on vessel body (incised decoration a in text, see type 16)	EIII 17.2 EII 12.6
88	Horizontal band of parallel oblique incisions on the vessel body (incised decoration b in text, see types 30 & 37)	EI 31.1 EII 12.1 EIII 12.2&4
89	Horizontal band of simple punctate decoration on vessel shoulder (see type 55c)	EII 17.2 & 4 EIII 12.1
90	Red painted parallel bands of undeterminable orientation (painted design c in text, see type 82 a)	EII 17.3 EII 16.1-2 EII 15.2 EII 13.1 & 3 EIII 12.4
91	Red painted horizontal band or bands (painted design a in text, see types 11, 14a, 24a, b&d & 58b)	EI 9.13, 16-17 EII 28.2
92	Red painted decoration of undeterminable design, however, in all cases, the paint terminates along a straight line, possibly indicating a broad band of colour (not illustrated)	EI 13.1 EI 9.14-15, 17-19 EII 28.2-4 EII 25.1 EII 20.1 EII 17.6-7 EII 16.1 EIII 17.4
93	Band-slipped decoration (no preserved vessel form, not illustrated)	EII 13.1-3 EIII 17.2 EIII 12, 1, 2, 4 & 6 EIII 17.2

Appendix C: Tell esh-Shuna North, 1984: A Preliminary Report on the Chipped Stone

A total of 979 flints were recovered from the four five-metre squares which were excavated. Of these, 243 or 24.8% were tools. All tools were sorted into ten typological catagories and bagged separately. Those tools from the loci used in this preliminary analysis[1] were then given a more complete typological sorting. The type and distribution of flints from selected loci in squares EI-III are as follows:

Square EI:

Locus	*9*	*10*	*13*	*Total*
Blade	34	10	6	50
Bladelet	0	1	0	1
Flake	83	12	5	100
Paleolithic	0	1	0	1
Microflake	3	0	0	3
Other	1	0	0	1
Debris	10	1	0	11
Core	3	0	1	4
Total	134	25	12	171
Tools	17	9	3	29
Arrowhead	1	1	0	2
Sickle	1	0	0	1
Simple Burin	1	0	1	2
Angle Burin	0	0	1	1
Burin on Break	0	1	0	1
End Scraper	1	0	1	2
Side Scraper	0	1	0	1
Notch	0	1	0	1
Awl Borer	1	0	0	1
Drill	1	0	0	1
Wedge	0	0	0	0
Knife	0	1	0	1
Retouched blade	4	2	0	6
Retouched Flake	3	0	0	3
Other	1	0	0	1
Utilized Blade	1	0	0	1
Utilized Flake	2	2	0	4

Square EII:

Locus	*15*	*17*	*24*	*25*	*28*	*Total*
Blade	4	34	1	11	26	76
Bladelet	0	0	0	2	0	2
Flake	2	46	0	5	11	64
Core Trim	0	2	0	0	1	3

[1] Of the "prime" loci chosen for preliminary analysis, the following contained tools: the cobbled pavements and chipped stone surfaces of EI 10, 13, EII 25 & EIII 6, pits EII 24 & EIII 12, ash lens EII 15 and sealed fill layers EI 9, EII 17, 28 & EIII 17.

Burin Spawll	0	0	0	0	1	1
Microflake	0	0	0	2	0	2
Debris	1	11	0	1	1	14
Total	7	93	1	21	40	162
Tools	2	8	1	2	5	18
Sickle	0	1	0	1	2	4
Double Burin	0	0	0	0	1	1
End Scraper	0	0	0	1	0	1
Steep Scraper	0	1	0	0	0	1
Notch	1	0	0	0	0	1
Backed Blade	0	0	1	0	0	1
Retouched Blade	1	3	0	0	0	4
Retouched Flake	0	0	0	0	1	1
Other	0	1	0	0	1	2
Indeterminate	0	2	0	0	0	2

Square EIII:

Locus	*6*	*12*	*17*	*Total*
Blade	2	100	13	115
Bladelet	0	6	0	6
Flake	2	27	11	40
Core Trim	0	0	1	1
Burin Spawll	0	1	0	1
Microflake	0	2	0	2
Other	0	1	1	2
Debris	2	10	2	14
Total	6	147	28	181
Tools	4	69	3	76
Arrowhead	1	55	0	56
End Scraper	0	1	0	1
Cortical Scraper	0	1	0	1
Notch	0	1	0	1
Wedge	0	1	0	1
Retouched Blade	0	3	0	3
Retouched Flake	1	0	0	1
Other	0	1	1	2
Utilized Flake	0	0	1	1
Indeterminate	2	6	1	9

The nature of the excavation[2] and the limited exposure in this initial season make it impossible to formulate any specific inferences about cultural activities at Shu-

[2] This was a salvage project with the aim of achieving an overall stratified sequence. Sifting was employed only in special circumstances (beaten earth floors, ash lenses and pits) and was not used to collect debitage. It is thus impossible to determine to what extent the site was used for the production of the flint implements recovered. Therefore, the totals listed in the tables given above may reflect this variability more than they reflect actual numbers of flints in a particular locus.

na North in relation to the flint assemblage. The excavations have none the less shown that there was a thriving flint industry associated with the site.

Of special interest are the two loci in square EIII which yielded large concentration of small flint projectile points: locus 12 yielded 55 retouched points representing 91% of its tools. All of the points were of similar construction, being produced on convergent blades with abrupt unifacial retouch on at least one margin. Often there was slight retouch on the proximal margins suggesting that the points were dulled or shaped for hafting. The average size of the points in locus 12 was 35.7 mm. in length, 14.2 mm. in width and 4.2 mm. in thickness. The points from locus 15 (which yielded a second concentration of this tool type) show a slightly smaller average: 32.2 mm. 13.0 mm. and 4.2 mm. respectively. Points from all other loci had averages of 38.4 mm., 12.2 mm., and 4.4 mm., respectively. Distribution patterns according to length/width, length/thickness and width/thickness are given in Figure 17.

The concentration of points from the locus 15 fill layer may represent disturbed caches, especially as they were found in restricted areas within the general fill context. The concentration of points in the 12 pit may represent the refuse of a neighboring butchering site or possible manufacturing locale, but without the associated debitage and a thorough examination of associated animal bones we can only speculate.

With regard to the other tool types, retouched blades are the only other tool category represented in a significant proportion, constituting 20.7% of the tools in square EI, 22.2% in EII and only 3.9% in EIII.

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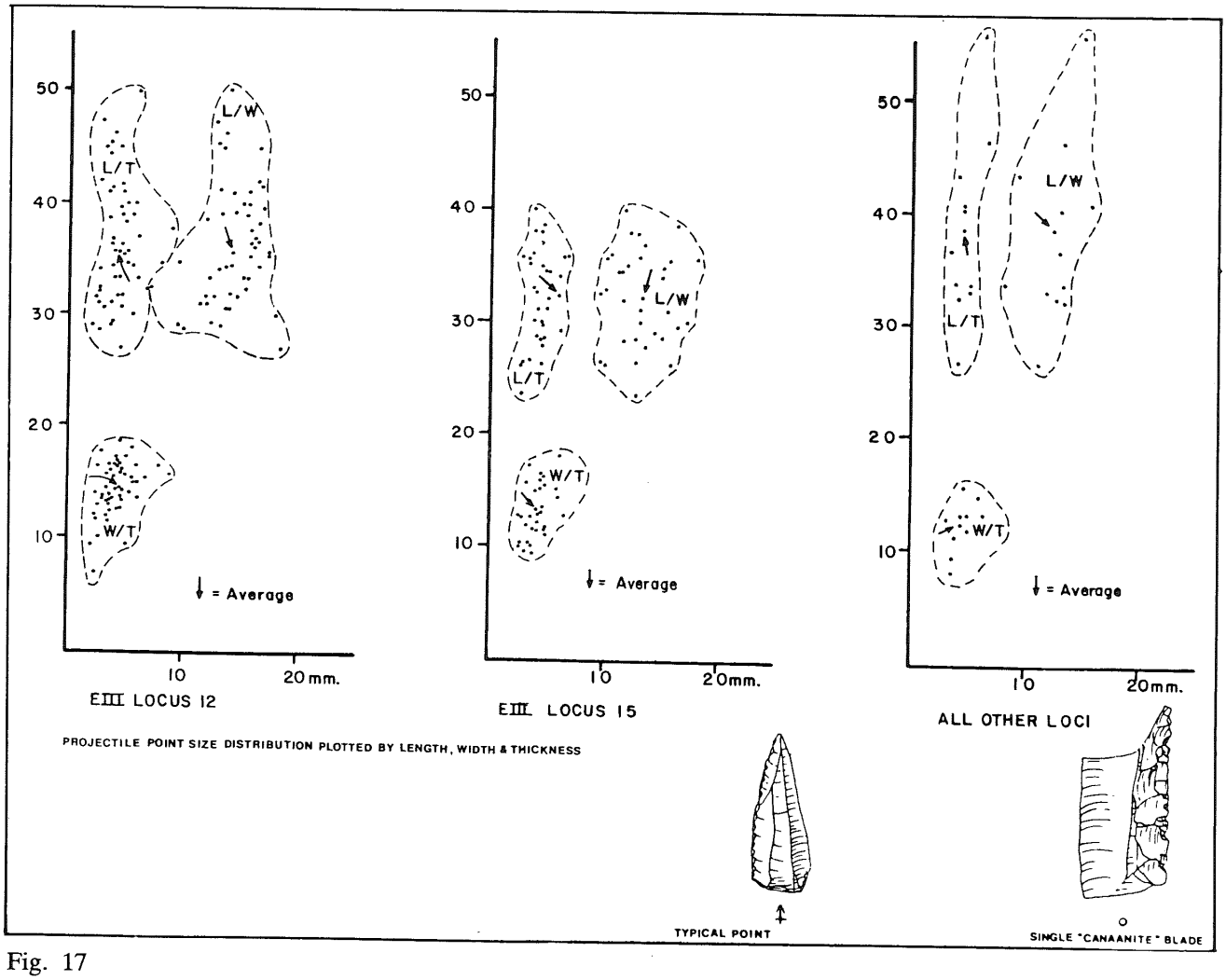

Fig. 17

INVESTIGATIONS INTO THE STONE AGE OF THE PETRA AREA (EARLY HOLOCENE RESEARCH) A PRELIMINARY REPORT ON THE 1984 CAMPAIGNS

by
Hans Georg Gebel
and
Johannes Matthias Starck

Acknowledgements and Progress of Field Research

Two campaigns were carried out during spring and autumn 1984. While the spring season concentrated on completing information on the present vegetation cover and on a survey between Wadi Musa and Tayiba, objectives of the autumn season were to enlarge our basic supply of palaeoenvironmentally relevant samples from Early Holocene sites and to achieve further information on occupations during the Late Epipalaeolithic to the Late Pre-Pottery Neolithic B in the area. During the autumn season geological surveys were also conducted in order to localize flint resources.

We are deeply indebted to the Department of Antiquities, Amman and its Director-General, Dr. Adnan Hadidi, who supported our research with his advice and generous help.[1]

Differing from the spring campaign (J.M. Starck, H.G. Gebel), the investigations in the autumn season[2] concentrated on surveying the areas of al-Thugra/Naqb ar-Ruba'i, Wadi Sleisel/ Jabal Abu Suwwana, and Jabal Sumr at- Ṭayiba, with soundings in Thugra 1, Ba'ja 1 and Basṭa 1. The geological prospections[3] concerned the potential flint resource areas of c2 and c3 formations above 'Ain Braq /'Ain Ammoun/ 'Ain M'allaq south of Wadi Musa; c5-2 formations near jabal Abu Suwwana and Wadi Jurf Ibn Bakhit; and outcrops in the 'Ain Dhawi area (Fig. 2).

Many of the geomorphological processes and features causing the preservation and embedding of the Early Holocene sites are still imperfectly understood. The experience from previous field work showed that the difficult and incalculable relief of the Petra area, despite aerial photographs and good maps, meant that site location by systematic surveying was less successful than through repeated surveying in a geographically well-defined area around a camp near a tested site. On the other hand, the concentration on such areas led to a more intensive investigation of different ecologically and topographically restricted environments. This not only enabled us to use results from well-investigated regions

[1] The expedition also thankfully acknowledges the aid and support of Suleiman Farajat and Inyazi Shaba'an, who were appointed as representatives by the Department of Antiquities. Parts of the equipment and accommodation in Nazzal Camp, Petra were provided by the Department.

Excepting the geological survey, the projects were financed by the Special Research Division 19 (Tuebingen Atlas of the Middle East) through the Deutsche Forschungsgemeinschaft. The expedition expresses its sincere gratitude to the chairman of the Tuebingen Atlas, Prof. Dr. W. Roellig, for his support.

The artefact drawings were done by I. Raidt; the English of the manuscript was corrected by C. Gustavson-Gaube (Tell esh-Shuna excavation).

[2] Permanent members of the team were H.G. Gebel (Prehistorian; Director), J.M. Starck (Biologist; prehistory), B. Khoury and A. Mueller (prehistory). Finally, we thank our friends in Amman and in the Petra-area, especially Abdullah Ruweiri, Harun, Saba'a and Suleiman, who assisted in carrying out the soundings of Ba'ja 1 and Thugra 1.

[3] These surveys were made possible through the collaboration with the Director of the Department of Geology and Mineralogy of Amman University, Prof. Dr. H. Khoury. We should like to thank his infield collaborators, Dr. S. F. Helmdach and W. Zacher as well as Muhammad Salameh Husein and Amer Mare'e (graduate students) and Muhammad Muhtar (doctorate candidate).

to help describe similar but less known ones, but also permitted the characterization of different eco-geographic units. The following units were defined in 1984:

1. Steep slopes of the western limestone plateau (Eastern Arabian Plateau) with lines of springs/ springlets in its middle and upper parts (1300-1500 m.) and adjacent agriculturally used tali to the west (area chosen for investigation: along road between Wadi Musa and Ṭayiba).
2. Sandstone areas with subdued relief (950-1100 m in the north and ca. 800 m in the south), partly with playa-fillings, smaller and larger fields (areas chosen for investigation: al-Thugra region to the escarpment of Naqb ar-Ruba'i; Sabra and ad-Daman area revisited in Spring 1984).
3. Sandstone areas with dissected relief (600-1000 m.), with large agriculturally used plains in the upper parts of the drainage systems and steep-sided formations of weathered rock in the lower parts of the drainage systems (areas chosen for investigation: Wadi Sleisel, Wadi Baida, Jabal Qarun, and Wadi Jurf Ibn Bakhit).
4. Upper alluvial fans and outlets (250-650 m.) of major drainages into Wadi'Araba (area chosen for investigation: Wadi Khiara, Wadi Abu Khusheiba, Seil Wadi Musa, and Jabal Sumr at Tayiba).

The methods of field work on the sites remained comparable to those used in 1983. In order to achieve palaeoenvironmentally relevant samples, soundings and section cleanings were once again carried out in dumping areas of sites (Ba'ja 1 and Baṣṭa 1). Furthermore, systematic (Sunkh 1, Ba'ja 1) and non-systematic (Sunkh 1, Thugra 1, Wadi Sleisel 1, Ba'ja 1, 'Ain Tayiba, Abu Barqa, and Basta 1) surface collections were carried out, the latter being undertaken only on deflated/ eroded sites or parts of such sites.[4] Systematic surface collections were based on units of 32 square metre in the sites' grid system, collections being taken by each square meter in order to obtain control samples for the chipped industries deriving from the soundings.

From the *in situ* cultural layers of Ba'ja 1 and Baṣṭa 1 and the assorted and redeposited layers of Thugra 1, 10 cm. layers were arbitrarily excavated. Every object, bit of charcoal, etc. was sorted out by means of 4 mm. sieves and from the 4-1 mm. residue, 3 1 per 100 1 (1 square metre) were taken as a sample. All sediments removed were sifted and samples were taken for each layer from the sections. These soundings are archaeologically controlled sampling programs characteristic of a palaeoenvironmental survey and can not be considered as excavations in the general sense.

For each of the Late Epipalaeolithic and Early Neolithic sites, a locational analysis was carried out in which the data available in the field were collected and aspects such as site setting, possible network of territorial connections, distribution and accessibility of all biotic (present-day) and abiotic resources and catchment areas were described.

After preliminary differentiation of the major geo-botanical units of the area in 1983, a quantitative analysis of plant cover was undertaken according to the reconsidered geo-botanical units. This resulted in a detailed description of plant communities which characterize these units.

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[4] Collections were also undertaken at the following Pre-Epipalaeolithic and undatable sites:
— Thugra 2: flint artefacts, animal bones and teeth embedded into calitreras; undatable (c. 980 m, .56.7 N/.33-4 E)
— Sunkh 2: Playa-section with alternating layers of water-deposited gravels and sand; 4 layers contain Middle-Palaeolithic artefacts and bone splinters; systematically sampled (c. 970 m, .56-7 N/.33-4 E)
— Ra's as-Suleiman 1 and 2: Surface scatters of undatable flake industries, possibly containing also Middle Palaeolithic materials (c.960-1020 m, .55-7 N/.33-4 E)
— Naqb ar-Ruba'i: large surface scatters of Middle Palaeolithic artefacts (1000-1100 m, .55-7 N/.30-1 E)
— Jabal Abu Suwwana West: flaking grounds with undatable flake industries (c. 650 m, .62-3 N/.30-2 E)
The grid references in this article refer to the maps Jordan 1:50.000 Series K737.

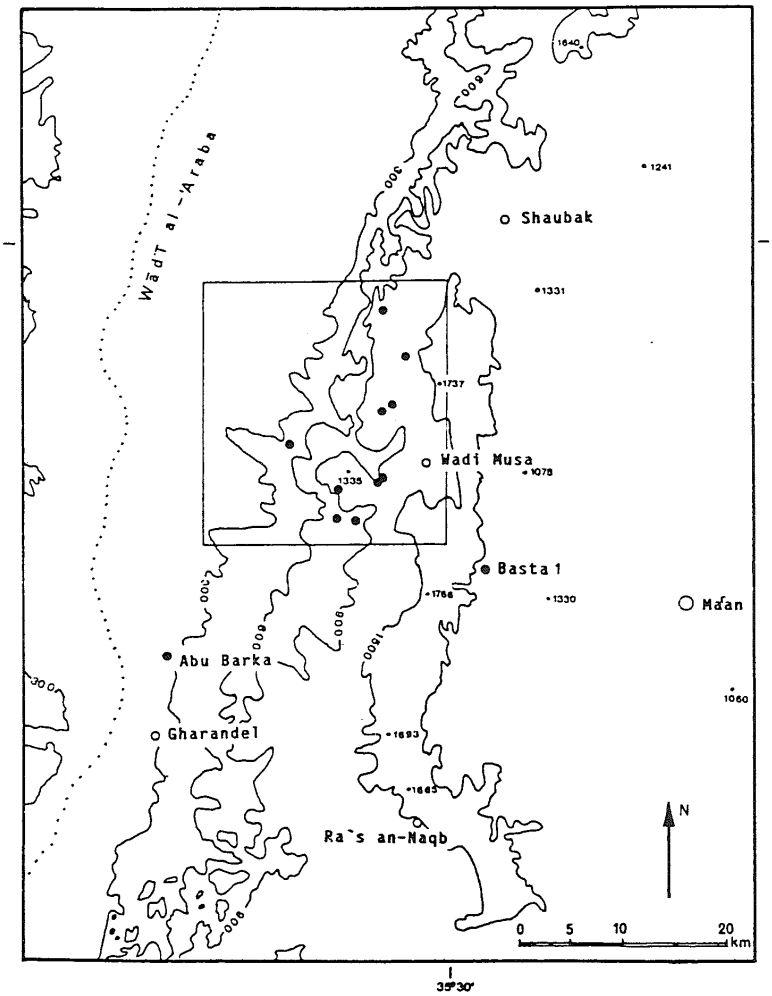

Fig. 1: (left) Area of investigation in Southern Jordan

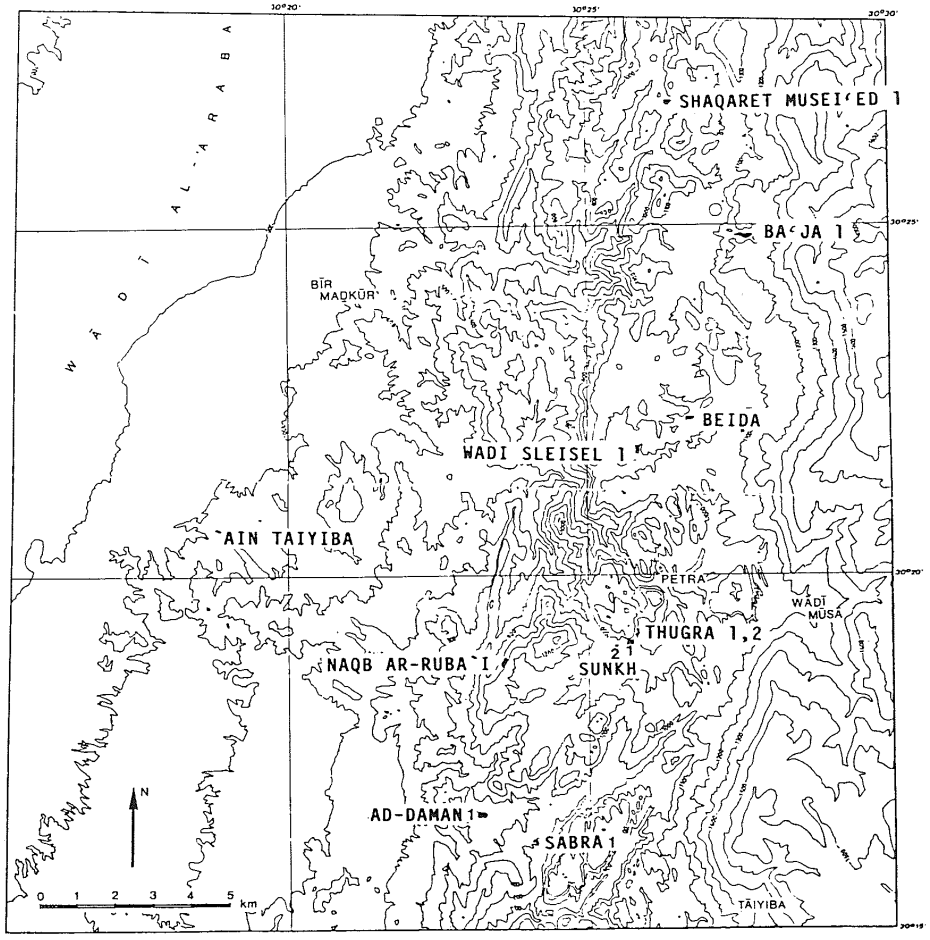

Fig. 2: (right) Survey area with location of sites mentioned.

It was attempted to collect a complete herbarium for the areas between 400-1500 m.[5]

Notes on the Objectives of the Project

The aim of this research is the attempt to reconstruct the environmental conditions for the periods of early settlement and sedentarization in the Petra area (Late Natufian - Late PPNB, end of 10th - end of 7th Mill. B.C.), to receive insights into the settlement history during this time, and to understand patterns of interaction between man and his natural resources. According to these main objectives, work was concentrated on the following aspects:

Evidence of different environmental conditions than are present today based on various palaeoenvironmental resources (faunal, botanical, malacological, palynological, geomorphological, etc.);

Spatial distribution of abiotic and reconstructable biotic resources (possible woods, agricultural land, gazelle habitats, etc.; flint, building materials, minerals for ornaments, etc.);

Descriptions and comparisons of site settings and their catchment areas (locational and territorial analysis);

Network of possible territorial connections, accessibility of mineral resources;

Comparative analysis of flint technology and raw material exploitation (PPNB sites); and

Aspects of possible evidence for transhumance and seasonality of sites, insights into the PPNB settlement pattern, and materials of long-distance exchange.

Another objective of the project is to contribute to the discussion on the improvement of field and evaluation methods of palaeoenvironmental surveys for the Early Holocene of the Southern Levant.[6] With the data collected concerning the hydrology, climate, actual and potential vegetation cover, geomorphology and geology of the region, one may use the analysis of the palaeoenvironmental and archaeological samples to achieve a reconstruction of the Early Holocene environment and thus gain insights into its human exploitation.[7]

Topographical, hydrological and climatological aspects

In order to understand the following chapter on the recent vegetation cover, certain abiotic factors must be described. Basically, the area considered can be divided into three main zones which roughly

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[5] I would like to express my thanks to Dr. H. Kuerschner and prof. Dr. W. Frey of the Institut fuer Systematische Botanik und Pflanzengeographie, Free University of Berlin, who helped me to identify many of species mentioned in Fig. 4 (J.M. St.).

[6] The investigation also is an attempt to illustrate the relationship between the "theoretical input" and the "output" of modified questions and methods influencing further research. One should be well aware of the fact that such a multidisciplinary approach enables us to describe properly the limits of this research design. The basic problem is that we cannot consider our samples as representative, or rather, we sometimes do not know what they represent. This results in the methodological problem of how to ensure that the use or combination of information will not lead to misinterpretations. This is especially the case with contradictory information on the past environment from different palaeoenvironmental sources (bones, charcoals, etc.). Basic problems such as the selective preservation of pollen will not be solved and yet others require basic research, e.g., the land snails of Sabra 1 as a possible nutritional resource.

[7] The following specialists are involved: F. Frey/C. Jagiella, Free University of Berlin (charcoals); A. Hauptmann, German Mining Museum Bochum (mineralogy); H. Khoury/F. Helmdach, University of Amman (flint resources); H. J. Pachur, Free University of Berlin (geomorphology, sediments); T. Petney, Rhodos University, South Africa (land snails); D. Reese, New York (marine molluscs); O. Roehrer-Ertl, Muenchen (human remains); D. Schyle, University of Tuebingen (Sabra 1: Natufian chipped stone industry); J.M. Starck, University of Giessen (recent vegetation cover, small finds); H.P. Uerpmann/W. Soeffner, University of Tuebingen (faunal remains); W. van Zeist/R. Neef, University of Groningen (seeds, pollen).

follow the isolines of precipitation, temperature and evaporation, and the stepped succession of the geological formations.

The steep slope of the westernmost part of the Arabian Plateau (Unit 1, see above) and parts of the adjacent, eastern sandstone areas (Unit 2) receive the same amount of rainfall (Fig. 3). From the upper limestone horizons of the steep slope, numerous perennial and periodical springs emerge. The immediate vicinity of the springs is given over to irrigated tree plantations, vineyards and wheat stands. Large terraced rain-fed fields are found some distance away in trough-shaped "run-offs" and on crests in the lower and flatter parts of the steep slope. Whether these fields lie fallow or not depends on such aspects as physiographic setting and distance from the spring horizons, position in terraced trough or on a crest, matrix of the soil and, above all, on the amount of winter rainfall during the year.

Due to the water/ moisture storage capacity of the sandstone formations of Units 2 and 3, these regions show a rich pattern of ecologically distinct habitats. Swampy summer environments in gorge-like situations (with hydrophytic vegetation) contrast with dry desert conditions on playa fillings (with xerophytic vegetation) and make up the extremes of habitats found. In contrast to Unit 1, rainfall is less determining than the microtopographical circumstances with respect to the nature of Unit 2 and Unit 3 habitats. The main natural habitats observed are:

— sandstone clefts with no or minor sediment fillings
— moving substratum of rock fans
— large shady gorges (Siqs) with moderate climate
— wadi flats and low wadi terraces
— extremely dry playa fillings with incrusted surfaces and high discharge ratios and
— intermittent wadi flows and perennial or periodical springs.

The outlet of drainages into Wadi 'Araba and the upper parts of the alluvial fans and gravel flats of Unit 4 receive 0-150 mm. rainfall in dry years and 150-200 mm. in wet years. The morphology, ecology and climate of this area already resemble the very hot arid conditions of Wadi 'Araba and therefore cannot be compared with the units discussed above. In addition to the periodical water flows gushing into Wadi 'Araba, the alluvial fans with their high water table are the striking hydrogeographical features here. A distinct topographical phenomenon at the mouth of wadis draining into Wadi 'Araba are low wadi terraces resting on the alluvial fans. As they are not dated yet, they remain a problem for localizing Early Holocene sites.

Present-day vegetation cover (Fig. 3 and 4)

The components of the recent vegetation cover around Petra basically result from its setting in an area in which the Mediterranean, Saharo-Arabian, Irano-Turanian and Sudanian floral regions intrude upon each other. In addition, the Petra area offers so many types of different habitats (see above) that elements of all the four regions could be recognized here, causing the impressive diversity of species (Fig. 4). Classified according to formation the following main plant communities and their characterizing elements are described: Xero-mediterranean forests -1-, Artemisia steppes -2-, vegetation of rocky sandstone areas -3-, vegetation of playa fillings -4-, vegetation of desert wadis -5-, hydrophytic vegetation -6-.

1. On the limestone ridges north of Wadi Musa, from a height of 1200 m. upwards, the Mediterranean floral element becomes dominant. On the road between Wadi Musa, al-Hīsha (1500 m.) and Shaubak, open forests of oak (Quercus calliprinos) and pistachio (Pistacia atlantica) characterize the landscape. Quercus calliprinos, typical for the eastern Mediterranean oak forests, reaches its easternmost extension near Wadi Musa. The undergrowth of these forests also includes Irano-Turanian herbs, unusual for a Mediterranean pistachio -oak forest. The association of Quercus calliprinos - Pistacia atlantica in the area investigated belongs to the plant-sociological class of Quercetea

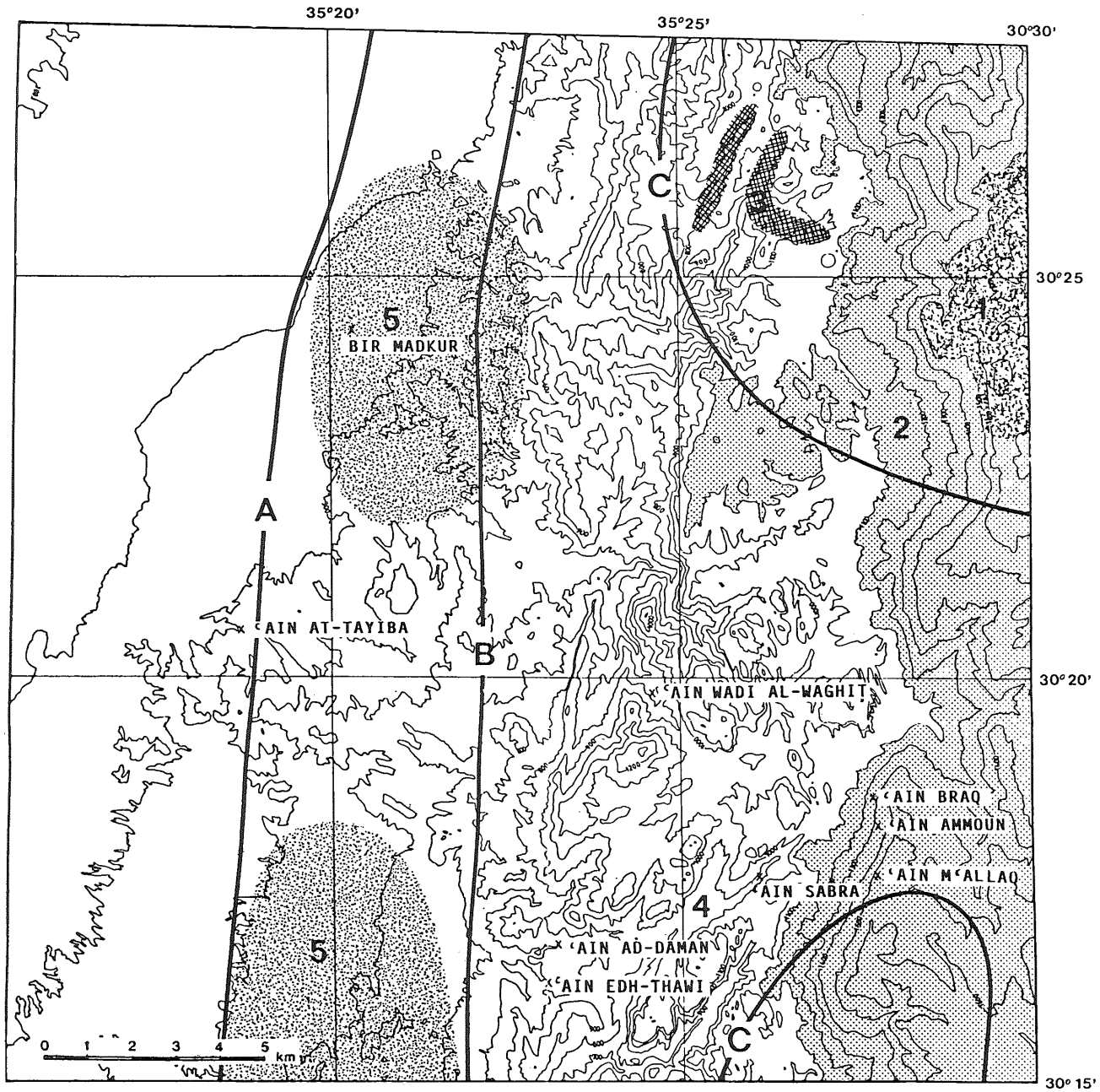

Fig. 3: Topography and ecological information on the survey area

A 100/150 mm. isohyetes (dry/wet years)
B 150/200 mm. isohyetes (dry/wet years)
C 200/300 mm. isohyetes (dry/wet years)
(A-C after: German Agency for Technical Cooperation 1977)
1 Xero-mediterranean forests
2 Steppes of Artemisia herba-alba.
3 Vegetation of rocky sandstone areas
4 Vegetation on playa surfaces
5 Vegetation of desert Wadis
* springs mentioned in the text

ACANTHACEAE
Blepharis ciliaris (L.)B.L.BURTT

ADIANTACEAE
Adiantum capillus-veneris L.

ANACARDACEAE
Pistacia atlantica DESF.
Pistacia khinjuk

APIACEAE
Chaetosciandium trichospermum (L.)BOISS.
Eryngium creticum LAM.
Scandix stellata BANKS et SOL.

APOCYNACEAE
Nerium oleander L.

ARACEAE
Arum L.cf.orientale M.B.

ASCLEPIADACEAE
Caralluma aaronis
Caralluma europaea (GUSS.)N.E.BROW
Caralluma plicatiloba LAVRANOS
Periploca aphylla BOISS.

ASTERACEAE
Achillea santolina L.
Anthemis melampodinae DEL.
Anthemis nabateae
Anthemis tenuicarpa
Anvillea garcinii (BURM.fil.)DC.
Artemisia herba-alba ASSO
Asteriscus graveolens (FORSSK.)LESS.
Asteriscus pygmaeus (DC.)COSS.& DUR.
Atractylis carduus (FORSSK.)C.CHRIST
A.car.var.glabrescens (BOISS.)FEINBR.
Centaurea aryngioides LAM.
Centaurea pallescens DEL.
Chardinia orientalis (L.)O.KUNTZE
Cousinia dayi POST
Echinops glaberrimus EIG.
Filago palestina (BOISS.)CHRTEK & HOLUB
Ifloga spicata (FORSSK.)SCH.BIP.
Inula viscosa (L.)AIT.
Iphiona mucronata ASCHERS.& SCHWEINF.
Jasonia iphionoides (BOISS.et BL.)BOTSCH
Jasonia montana (VAHL) BOTSCH
Notobasis syriaca (L.) CASS.
Senecio glaucus L.

BORAGINACEAE
Alkanna strigosa BOISS.et HOHEN.
Anchusa milleri WILLD.
Anchusa ovata LEHM.
Anchusa strigosa BANKS & SOL.
Echiochilon fruticosum DESF.
Paracaryum rugulosum (DC.)BOISS.

BRASSICACEAE
Diplotaxis harra (FORSSK.)BOISS.
Erucaria boveana COSS.
Erucaria hispanica (L.)DRUCE.
Erysimum crassipes FISCH et MAY
Farsetia aegyptiaca TURRA
Matthiola aspera BOISS.
Moricandia nitens (VIV.)DUR.et BARR.
Raphanus raphanistrum L.
Sisymbrium officinale (L.)SCOP.
Zilla spinosa (L.)PRANTL.

CAESALPINIACEAE
Ceratonia siliqua L.

CAPPARACEAE
Capparis spinosa L.

CAPRIFOLIACEAE
Lonicera etrusca SANTI

CARYOPHYLLACEAE
Dianthus strictus BANKS.et SOL.
Gymnocarpus decandrum FORSSK.
Telephium sphaerospermum BOISS.

CHENOPODIACEAE
Anabasis articulata (FORSSK.)MOQ.
Atriplex halimus L.
Halogeton alopecuroides (DEL.)MOQ.
Hammada salicornia (MOQ.)ILJIN
Noea mucronata ASCHERS.et SCHWEINF.
Salsola volkensii SCHWEINF.et ASCHERS.
Suaeda aegyptica (HASSELQ.)ZOH.

CICHORIACEAE
Crepis hierosolymitana BOISS.
Hedypnois rhagadioloides (L.)F.W.SCHMITT
Launaea mucronata FORSSK.
Launaea nudicaulis (L.)HOOK.fil.
Picris damascena BOISS.et GAILL.
Reichardia tingitana (L.)ROTH.
Rhagadiolus stellatus (L.)GAERTN.
Sonchus maritimus L.

CISTACEAE
Helianthemum sancti-antonii SCHWEINF.
Helianthemum vesicarium BOISS.

CUCURBITACEAE
Bryonia cretica L. forma cretica
Citrullus colocynthis (L.)SCHRAD.

CUPRESSACEAE
Juniperus phoenicea L.

DIPSACACEAE
Scabiosa porphyroneura BLAKELOCK

EPHEDRACEAE
Ephedra alte C.A.MAY.

EQUISETACEAE
Equisetum ramoissimum DESF.

EUPHORBIACEAE
Euphorbia L.spec.

FABACEAE
Alhagi maureorum MEDIK.
Anagyris foetida L.
Astragalus bethlehemiticus BOISS.
Astragalus spinosus (FORSSK.)MUSCHL.
Astragalus tribuloides DEL.
Colutea istria MILL.
Hippocrepis unisiliquosa L.
Medicago laciniata (L.)MILL.
Onobrychis crista-galli (L.)LAM.
Onobrychis MILL.cf.koschyana FENZL
Ononis natrix L.
Ononis vaginalis VAHL
Psoralia flaccida NAB.
Retama raetam (FORSSK.)WEBB

FAGACEAE
Quercus calliprinos WEBB.

GENTIANACEAE
Centaurium spicatum L.

GERANIACEAE
Erodium guttatum (DESF.)WILLD
Erodium laciniatum (CAV.)WILLD.
Geranium rotundifolium L.

GLOBULARIACEAE
Globularia arabica JAUB.et SPACH.

JUNCACEAE
Juncus bufonis L.
Juncus rigidus C.A.MAY

LAMIACEAE
Ajuga chia SCHREB.
Micromeria BENTH.spec.
Phlomis platystegia POST
Teucrium polium L.

LILIACEAE
Asparagus L.spec.
Colchicum L.spec.
Ornithogalum L.spec.
Urginea maritima (L.)BAKER

LORANTHACEAE
Loranthus acaciae ZUCC.

MALVACEAE
Malva sylvestris L.

MIMOSACEAE
Acacia cyanophylla LINDLEY
Acacia tortilis
Acacia radianna SAVI.

MORACEAE
Ficus carica L.

NEURADACEAE
Neurada procumbens L.

OLEACEAE
Olea europea L.

PAPAVERACEAE
Papaver argemone L.
Papaver syriacum BOISS.et BL.
Roemeria hybrida (L.)DC.

PINACEAE
Pinus halepensis MILL.

PLANTAGINACEAE
Plantago afra L.
Plantago coronopus L.
Plantago ovata FORSSK.

PLUMBAGINACEAE
Limonium pruinosum (L.)O.KUNTZE

POACEAE
Avena ludoviciana DUR.
Avena wiestii STEUD.
Boissiera squarrosa BANKS.et SOL.
Bromus danthoniae TRIN.
Bromus fasciculatus C.PRESL
Bromus pulchellus
Cynodon dactylon (L.)PERS.
Heteranthelium piliferum HOCHST.
Hordeum geniculatum ALL.
Lophochloa hispida (SAVI)TACKH.
Melica jaquemontii DECNE ex JAQUEM.
Oryzopsis holciformis (M.B.)HACK.
Oryzopsis miliacea (L.)BENTH.et HOOK.
Panicum turgidum FORSSK.
Phragmites australis (CAV.)TRIN.
Polypogon monospeliensis (L.)DESF.
Stipagrostis ciliata (DESF.)De WINTER
Trachyina disticha (L.)LINK

POLYGONACEAE
Polygonum equisetiforme SIBTH.et SM.
Rumex cyprius MURB.

PRIMULACEAE
Anagallis arvensis L.

PUNICACEAE
Punica granatum L.

RESEDACEAE
Caylusea hexagyna (FORSSK.)GREEN
Ochradenus baccatus DEL.

RHAMNACEAE
Rhamnus dispermus EHRENB. ex BOISS.

ROSACEAE
Crataegus L.cf.aronia (L.)BOSC.ex DC.
Rosa L.cf.prunus

RUBIACEAE
Galium aparine L
Galium canum REQ.in DC.
Galium L.cf.murale (L.)ALL.

SALICACEAE
Populus euphratica OLIV.

SCROPHULARIACEAE
Kickxia acerbiana (BOISS.)TACKH.& BOULOS
Linaria haelava (FORSSK.)DEL.
Scrophularia hierochuntia BOISS.
Scrophularia nabataeorum EIG.
Verbascum fruticulosum POST
Veronica anagallis-aquatica L.

SOLANACEAE
Hyoscamus aureus L.
Lycium europaeum L.
Solanum sinaicum BOISS.

TAMARICACEAE
Reaumuria hirtella JAUB et SP.
Tamarix L.spec.

THYMELEACEAE
Daphne linearifolia HART
Thymelea hirsuta L.

URTICACEAE
Parietaria alsinifolia DEL.
Urtica pilulifera L.

VITACEAE
Vitis vinifera (cult.)

ZYGOPHYLLACEAE
Fagonia glutinosa DEL.
Fagonia mollis DEL.var.mollis DEL.
Peganum harmala L.
Zygophyllum dumosum BOISS.

Fig. 4: List of plants collected in the Petra area

calliprini and the order of Crataegion aroniae.

Juniperus phoenicea - Pistacia atlantica associations follow the oak at heights between 1400-1200 m. Like the oak, the juniper is an Eu-Mediterranean species, usually confined to the lower altitudes of the coast. However, here it appears together with plants typical of the Irano-Turanian steppe (Artemisia herba-alba vegetation). Artemisia vegetation extends further down to 1000 m. thus entering Unit 2 areas.

2. The Artemisia vegetation mentioned above, derives from the plateau where it forms the dominating type of plant cover. These steppe associations belong to the class of the Artemisetea herbae-albae mesopotamicae and are accompanied by the co-dominates Noea mucronata and Astragalus spinosus. We also identified them in Unit 1. They can also be found in the eastern parts of Unit 2 above 1000 m. (e.g., the upper Wadi Baida drainage system), where intrusive Saharo-Arabian elements (e.g., Anabasis articulata, Fagonia mollis) also occur.
3. The weathering of the steep-sided sandstone ridges of Unit 2 and 3 produces great amounts of erosional debris which build up tali fans. These shifting debris substrates are one of the most common habitats for the plant communities described below. Other habitats are clefts which are protected against heavy evaporation and can store water in the fine sediments. As in the larger, steep-sided Siqs, the shady conditions are responsible for less extreme temperature shifts.

   The tali fans are covered by Varthemia montana, Ajuga chia, Echinops glaberrimus and Ononis vaginalis, etc. In larger clefts, Pistacia khinjuk and Juniperus phoenicea can be detected, while small clefts are mostly occupied by Capparis spinosa. Broad Siqs like Siq Umm al-Hiran are often wooded with Pistacia atlantica, oak and juniper.

   Due to their accessibility and the herbaceous plant cover the tali fans are highly frequented as pastures, and have thus developed less differentiated communities. As a result of overgrazing, Urginea maritima migrates on to these tali, often founding monotypic communities.
4. The lower lying southern parts of Unit 2 with their vast playa fillings show the typical hot desert vegetation of the Saharo-Arabian region. Dominated by Anabasis articulata, Gymnocarpos decandrum and Fagonia mollis, this association can be classified as Anabasetum articulatum typicum. This community usually populates hammadas and other stony substrates with rainfall values below 100 mm. The reason why it appears near Sabra, ad-Daman and other parts of Unit 2 (c. 200 mm.) might be explained through the surface crust of playa, which causes rapid drainage. Where ploughing activities have been undertaken on playa surfaces, rain-fed agriculture can be carried out in wet years.
5. The vegetation of desert wadis cannot be confined to one geo-botanical unit. Depending on the season and whether the year is wet or dry, any type of surface water may appear. The typical vegetation of broad, gravel-covered wadi bottoms (e.g. Wadi Thawi) is Retama raetam and Zilla spinosa. The Retamo - Tamaricetea fluviatilia class is common for all wadis in Palestine. The number of associated species varies annually. In Wadi Dhawi, Ochradenus baccatus and some sparsely scattered Acacia tortilis show the changes of the diffuse vegetation which is influenced here by Sudanian elements from Wadi 'Araba.

   The vegetation of minor drainages, runnels and rillets is usually the same as the surrounding area (e.g., playa rillets), but Retama raetam and Thymelea hirsuta may differentiate these.
6. While the natural vegetation of the spring horizons of Unit 1 and the waterholes of Unit 4 (Bir and 'Ain Tayiba, Bir Madhkur) was destroyed by cultivation, the springs in the remote sandstone areas (Wadi Sabra, 'Ain Dha-

wi, and 'Ain ad-Daman) still reflect an almost undisturbed hydrophytic vegetation. Here Nerium oleander, Phragmites Communis and Tamarix spec. prevail. Co-dominates are Juncus gerardii, Inula viscosa and Polygonum equisetiforme. The dense stands of Nerium oleander and Phragmites communis,. as well as Populus euphratica trees in 'Ain Dhawi, show the interference in plant communities of the Phragmitetea and the Populetea.

Physiographic setting and description of sites[8]

The following describes seven of the Late Epipalaeolithic and late PPNB sites investigated in 1984.

Ba'ja 1 (c. 1120-1160 m; 67-8 N/ .36-7 E): This site is a large, Late PPNB village with terraced houses in a rather odd physiographic setting today.[9] It can only be reached through a Siq, which is sometimes as narrow as two metres. The Siq is blocked by fallen rocks at several spots, so that the site can only be reached today by mountaineering across the almost vertical blockings, which may reach heights of 6 m. Leaving the upper part of the deeply incised Siq, one reaches an intramontane terrace on which the settlement is situated. The settlement extends approximately 10.000 square metres[10] thus occupying the entire terrace. Characteristic of the major terrace is its amphitheatre-like form where a complicated system of curvilinear retaining walls created the plots for the terraced housing. The walls are sometimes built from limestone which is not available locally, where the dominant material is tabular sandstone. Some of the walls are curvilinear, but rectangular houses seem to be the common type. In the flat upper part of the settlement humic soil between the walls may indicate gardens and/ or enclosures [11] Although the site today is only accessible through the Siq, high erosion rates may well have destroyed an eastern access. Primitive wooden constructions to cross the Siq might also be expected[11] No water resources are in the immediate vicinity of the site today. Apart from numerous large water pools in the depressions of the Siq, fed today from the sandstone and gravel beds until April and even May in wet years. in the dry season water must have been obtained from spring horizons of the eastern limestone ridge. If the oak-wooded Siq would not be blocked today, the protected setting of the site could be reached from the Siqs' entrance in only 10 minutes. The nearest farming catchment area, the plain of Wadi al-Jabu/ Umm al-Alda (c. 3 square kilometres) is situated near this entrance.

Thugra 1 (980-1000 m; .56-7 N/.33-44 E): The site overlooks the eastern part of the Wadi al-Waghiṭ drainage system and is a slope resting against the steep-sided southeastern edge of the al-Barra sandstone massif. Nearby, a smaller talus cone emerges from a run-off. The slope stratigraphy was built up by waterlaid fine gravel and sand with possible eolian components. Artefacts of an unidentified Late Epipalaeolithic are concentrated in certain layers only and must derive from a fluvially-eroded site. Bits of charcoal associated with the findings suggest that the material was not transported far. The slope area is covered by large sandstone blocks with calcicrusts. This proves that the blocks were covered with fine-grained material, indicating that slope sediments had been at least one metre higher than today, a situation most likely earlier than the embedded Epipalaeolithic finds and the surface scatters of Post-PPNB artefacts ("Shepherd-Neolithic"?).

Sunkh 1 (960-980 m; .56-7 N./33-44 E): The artefact concentrations of this late

[8] The spelling of sites and localities in this report follow the map Jordan 1:50.000. the correct transliteration of site names can be seen from Figures 2 and 3.

[9] Ba'ja 1 was originally found by M. Lindner, Naturhistorische Gesellschaft Nuernberg, who drew our attention to it. We warmly acknowledge Dr. Lindners helpful information concerning other localities as well.

[10] Baida's preserved size is approximately 6000-7000 square metres

[11] H.J. Pachur, Geomorphologisches Laboratorium der Freien Universitaet Berlin, personal communication.

Natufian site (c. 12.000 square metres) are found in and on the sandy topsoil of a gentle slope at the southwestern foot of the al-Barra massif. In the lower parts of the site, the sandstone bedrock has been exposed. In the central part, with its most dense artefact distributions, the former surface has been reduced by water and wind. No in situ cultural layers were found. Associations of artefact groups indicate a certain preservation of spatial distribution. The site overlooks the upper Wadi al-Waghit drainage system which created the spur-like setting of the site's lower parts through minor dissections. As in the case of Thugra 1, the next permanent spring is found in Wadi al-Waghiṭ.

Wadi Sleisel 1 (1000-1040 m; .61-2 N/.33-4 E): Artefact concentrations of an unidentified Late Epipalaeolithic and Middle Palaeolithic were found on shallow erosional debris or on the exposed sandstone bedrock of a northern slope of Wadi Sleisel. No anthropogenic sediments could be traced. Again calcicrusts give evidence of the denudation of slope sediments.

'Ain Tayiba (300 m; .59-60 N/.22-3 E): The site was found during a survey for the re-localization of Bir at-Tayiba.[12] Few, widely dispersed artefacts of a late PPNB type were distributed on the gentle slope south of the spring. All of the scatters were collected. Sediments were almost completely eroded from the limestone bedrock. No structures or cultural layers were encountered, also no pottery.

Abu Barqa (c. 300 m; .33-4 N/.71-2 E): South of the Wadi Abu Barqa outlet into Wadi 'Araba, at a spot noteworthy for a huge dune blown against the westernmost sandstone ridges, the surface site of Abu Barqa was found on an alluvial fan.[13] In front (west) of the dune there is an area of c. 20.000 square metres, covered with thousands of blades. Part of this blade-yielding surface has probably been covered by the dune which has disarranged the spatial distribution of artefacts by moving across the alluvial fan. Parts of the find area are deflated, showing stone pavements. It was not checked whether the site is in the neighbourhood of a flint resource.

Basta 1 (1400 m; .34-5 N/.74-5 E): The late PPNB village of Basta 1 is situated next to a major spring on the western part of the plateau, characterized by vast, treeless fields. The topographic setting and the exact dimensions of the site are difficult to investigate, as the modern village and its historical predecessors almost completely cover the Neolithic site. At many places in the present-day village building activities have cut into the Neolithic layers. These suggest an areal extent larger than Ba'ja 1. The layers investigated are on the northern slope above the well-watered spring area. It was not possible to estimate the depths of the cultural layers here. It also remained unclear whether a Pottery Neolithic settlement was situated on the same slope further down.

Soundings and section investigations

Soundings were done in Ba'ja 1 (SI) and Thugra 1 (SI and SII), existing sections were cut back in Ba'ja 1 (SII and SIII) and in Basta 1 (SI).

In Ba'ja 1, sampling activities were concentrated on the sloping rubbish layers of the westernmost edge of the settlement (Fig. 6). Three square metres were excavated in arbitrary layers along a smaller cut which created a control section. The depth of each square varies, according to the contour of slope surface, between 1.0 and 0.2 m. Between the topsoil (A) and the weathered surface of bedrock (E) three light to dark grey cultural layers succeed each other (B-D). While B consists of highly consolidated dusty/ashy material with larger stones (c. 15 cm.), heavily-sintered flints and bones,[14] C shows a lesser degree of consolidation. Precipitated

[12] D. Kirkbride's description of this site's setting (Kirkbride 1966) contradicts the situation at Bir aṭ-Ṭayiba, but can well be identified with the setting of 'Ain Ṭayiba.

[13] We thank Amiereh Belal, Technische Universitaet Braunschweig, who found the site and helped us during the surface collection.

[14] Among the animal bones recovered, a fairly large number are jaws from the Syrian hyrax (H.P. Uerpmann, personal communication).

lime cemented the fine gravels and limestones of lens F. The dark sandy material of D is less compact, indeed almost loose, with a higher content of charcoal. Artefacts and animal bones are considerably incrusted here too. Artefacts and sediments of D are cemented into the weathered surface of bedrock (E).

SII and SIII are section cleanings in the housing area of Ba'ja. SIII seems to be the filled and levelled inner part of a room (consolidated layers of fine grained sediment with charcoals). A wall of a later structure crosses these fillings. SII is a succession of four stony layers, containing red-stained plaster particles and fallen stones. It is most likely a section through the debris of a ruined house partly eroded by the steep slope. SII and SIII indicate a building layer of more than one metre depth.

Two soundings were cut into the slope sediments of Thugra 1. While the layers of SII in the middle part of the slope reached bedrock after 40 to 60 cm. and consisted of less consolidated sand and erosional sandstone debris, the stratigraphy of SI differs significantly. SI (3 square metres) touched the steep-sided edge of the al-Barra massif and reached a depth of 1.1m. to 1.8m. *In situ* Epipalaeolithic cultural layers expected underneath the hillwash were not encountered here. The section shows phases of higher sedimentation rates and less surface water. Underneath the debris and roots of the topsoil, alluvial depositions are interrupted by lens-shaped embeddings of the fine gravel, probably formed through eolian influence. Especially the lenses are consolidated by calcium carbonates. This succession remained the same throughout the sequence investigated.[11]

A section, establihed by a bulldozer cut through a late Aceramic Neolithic rubbish area, was cut back for 30 to 50 cm. in Basṭa 1 (Fig. 5). Except for the topsoil, Layer F (blackish, very loose fine grained sediment), and G (almost merely ashes) Layers and Lenses B-E and H consist of similar dusty and sandy sediments. These layers differ only in their degree of (partial) consolidation by carbonates, proportions of plaster, distribution and size of stones. The layers give the impression of a rather mixed accumulation of building debris, artefacts and kitchen refuse. A human skull was found in the lower part of Layer B.[15]

Late Epipalaeolithic industries

The only properly datable site of this period found in 1984 is the late Natufian site of Sunkh 1.

The deposits of Sounding I in Thugra 1[16] obviously were built up by eroded layers of an Epipalaeolithic site, but unfortunately did not contain any diagnostic implements. Only the cores from the sounding and surface show similarities with those from Sunkh 1. The surface find of a Helwan-lunate might be another indicator. A deposition of eroded Sunkh 1 layers in Thugra 1 can be excluded topographically. Wadi Sleisel is the third site of an unidentified Late Epipalaeolithic.

Among the geometric microliths of Sunkh, rectangles and lunates with normal abrupt retouch dominate the Helwan-segments and triangles. Lunates may be as small as 11.5 mm. Among the numerous non-geometric tools, all kinds of steep-retouched bladelets and flakelets appear, often with notches, rows of notches or denticulations. Micro-piercers on bladelets and flakelets seem to be common. The most frequent tools among the larger implements are also steep-retouched; some of these flakes and blades show reverse retouching. Notched pieces and blades with almost square sections resulting from steep retouches along both edges occur often. The second common class of tools

[15] The skull is from that of a roughly 8 years old boy with an anomalous denture. He was struck dead by two knocks resulting from different instruments. The body or rather the head decomposed before deposited into Layer B (O. Roehrer-Ertl, Zoologische Staatssammlung Muenchen, personal communication).

[16] M. Lindner, Nuernberg drew our attention to this site, which he named al-Barra.

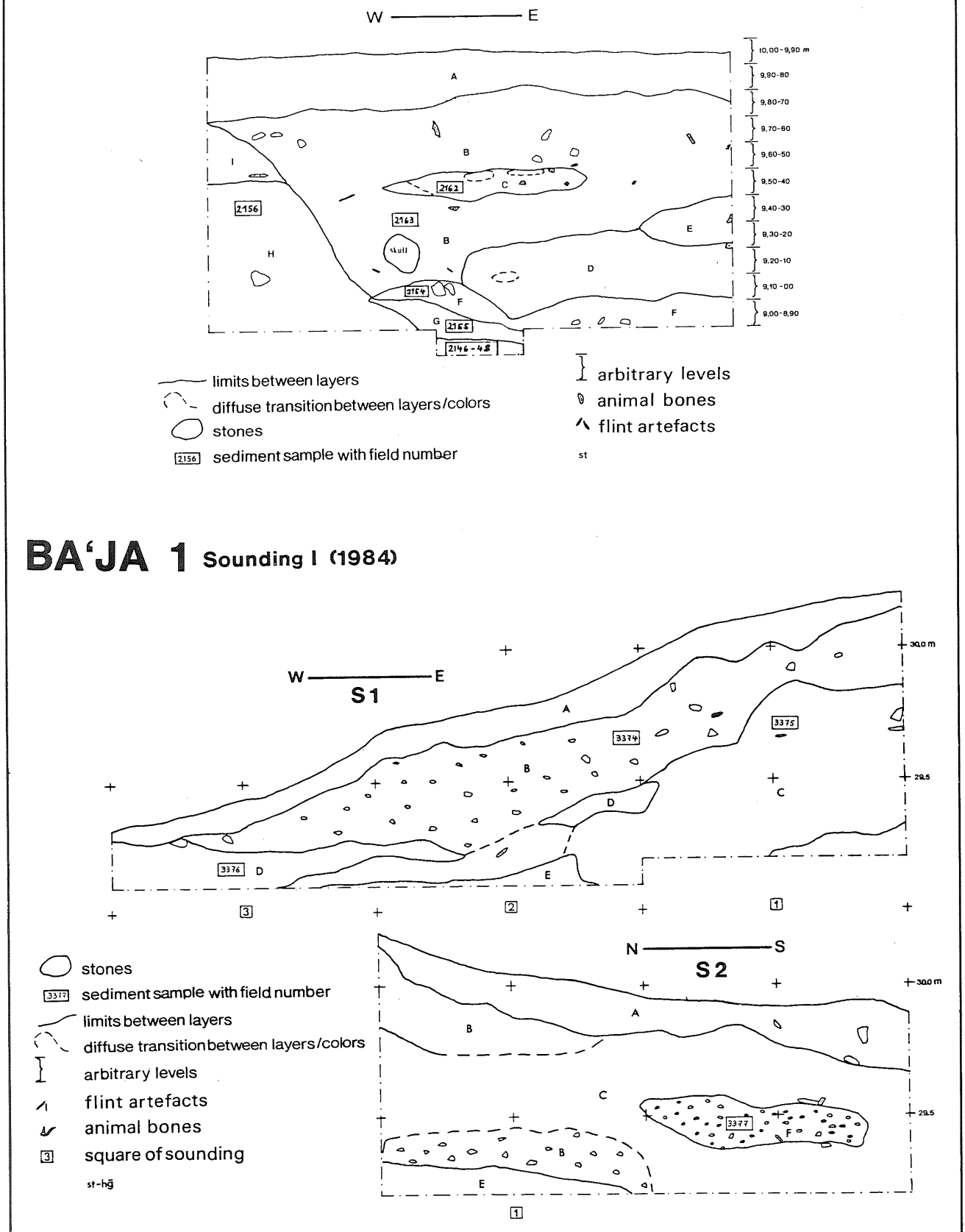

Fig. 5: (top) Basṭa 1: Section drawing of Section 1

Fig. 6: (bottom) Ba'ja 1: Section drawings of Sounding 1

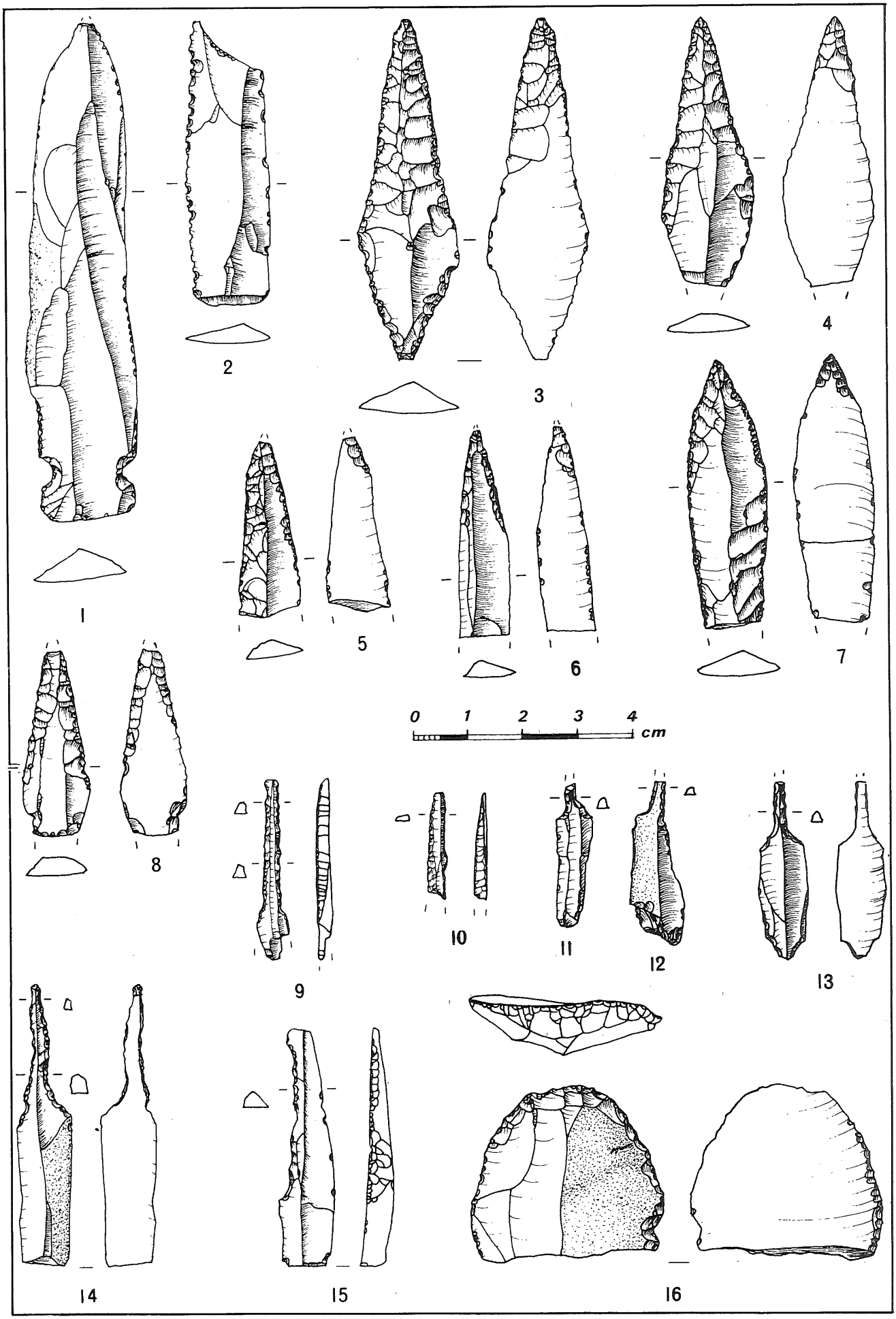

Fig. 7: Basța 1: 1 flint knife with notches; 2 denticulated blade; 3-8 fragments of arrowheads; 9-14 borers; 15 unfinished borer; 16 scraper

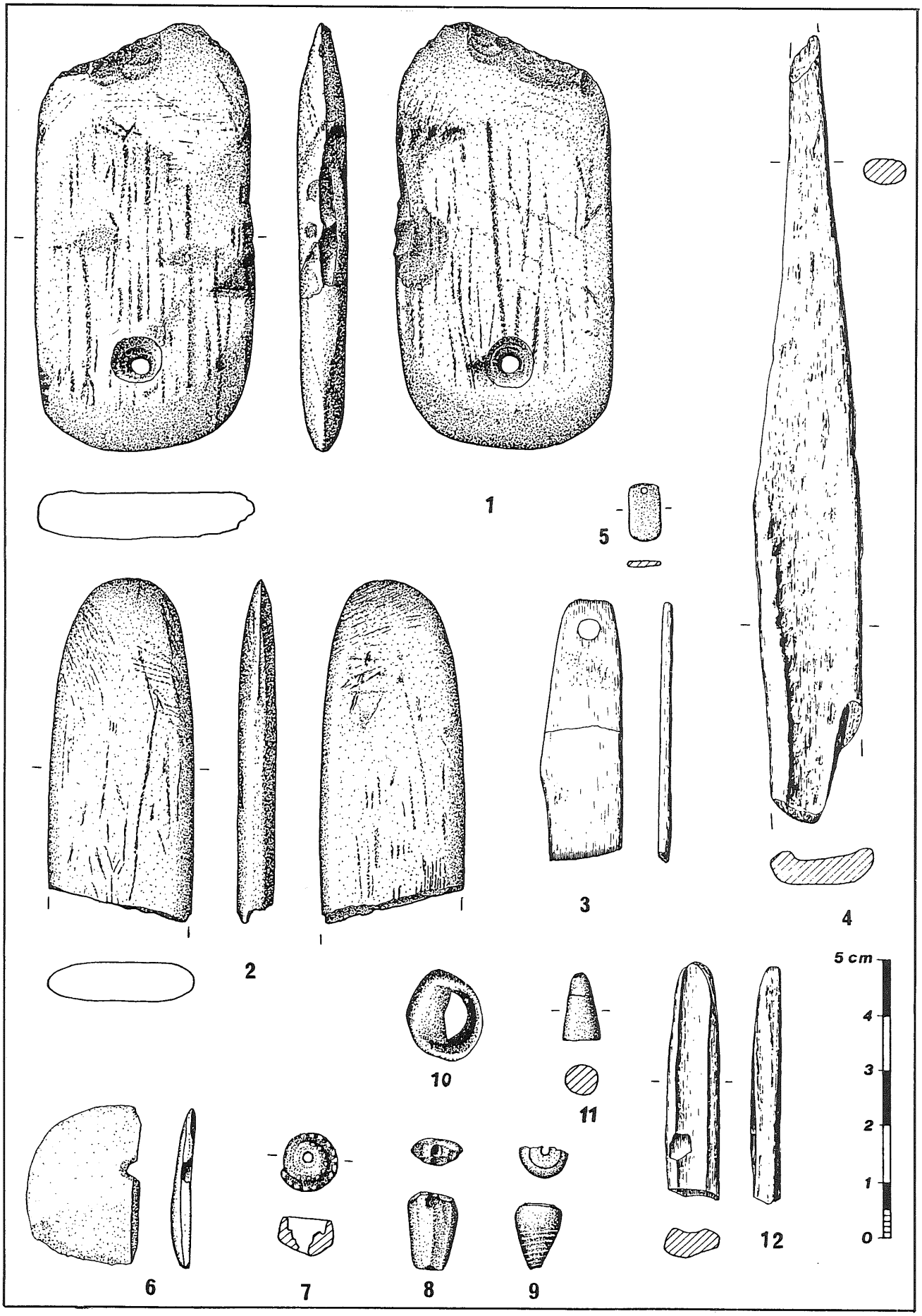

Fig. 8: Basța 1: 1-2 sandstone artefacts (wet stones, palettes); 3 bone pendant; 4 fragment of a pointed bone tool; 5 pendant of malachite; 6 mother-of-pearl ornament; 7 bead of marine mollusc; 8 unfinished bead of malachite; 9-10 fragments of marine mollusc beads; 11 object of unknown function; 12 polished bone implement.

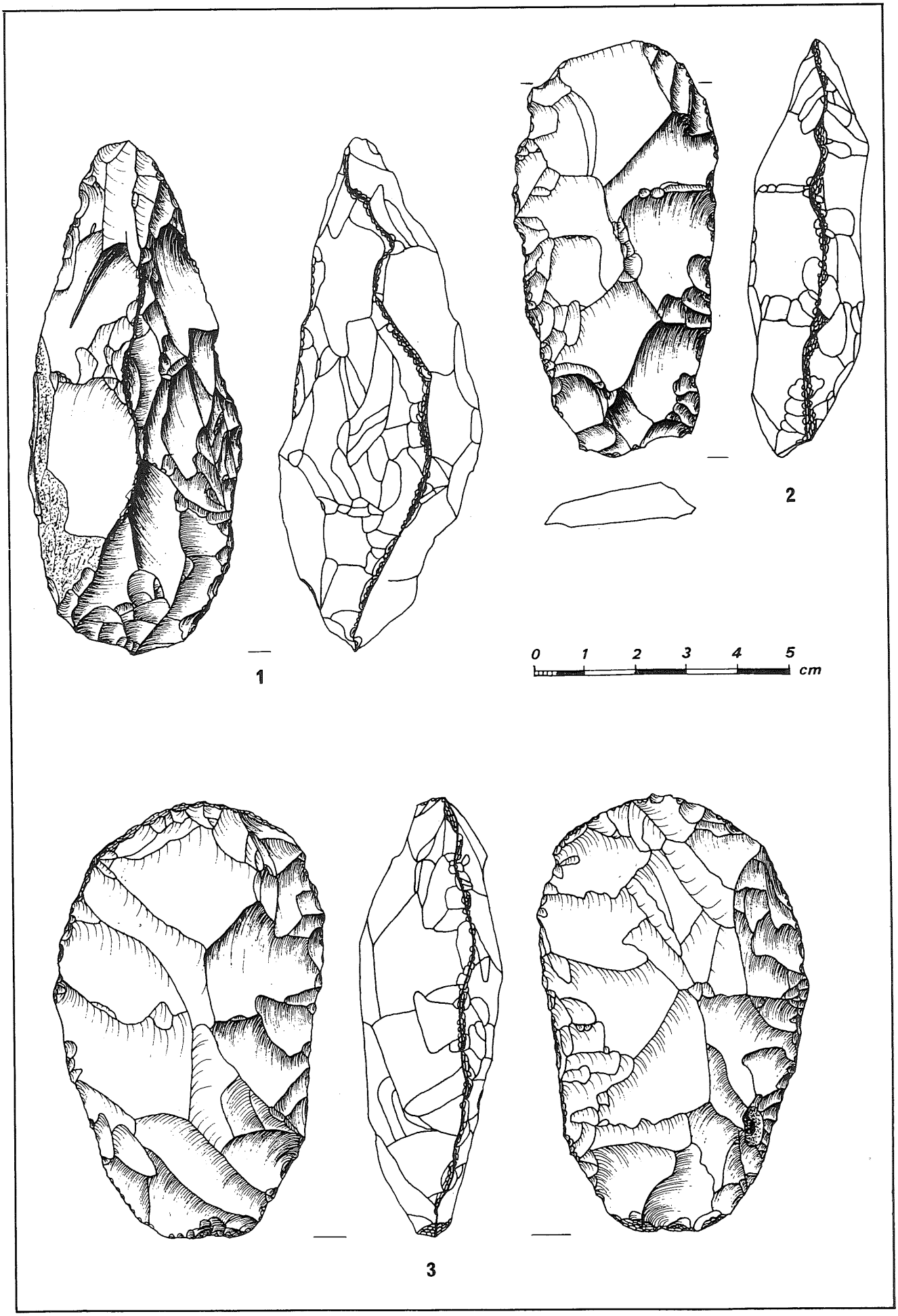

Fig. 9: Basța 1: 1 pick-like instrument; 2 celt
Ba'ja 1: 3 celt

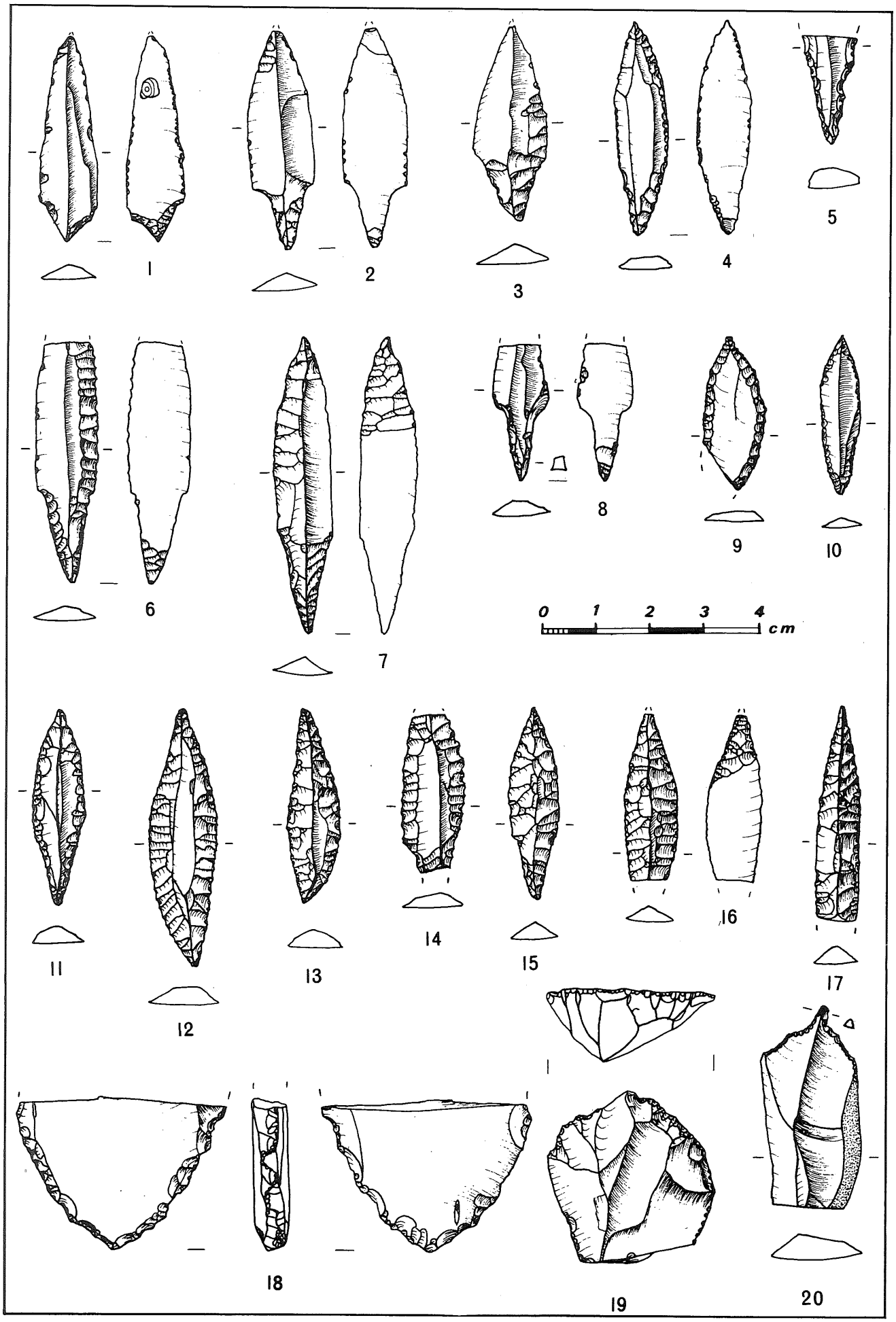

Fig. 10: Ba'ja 1: 1-17 fragments of arrowheads; 18 fragment of debris with S-like working edge; 19 fragment of a core tablet used as scraper; 20 borer

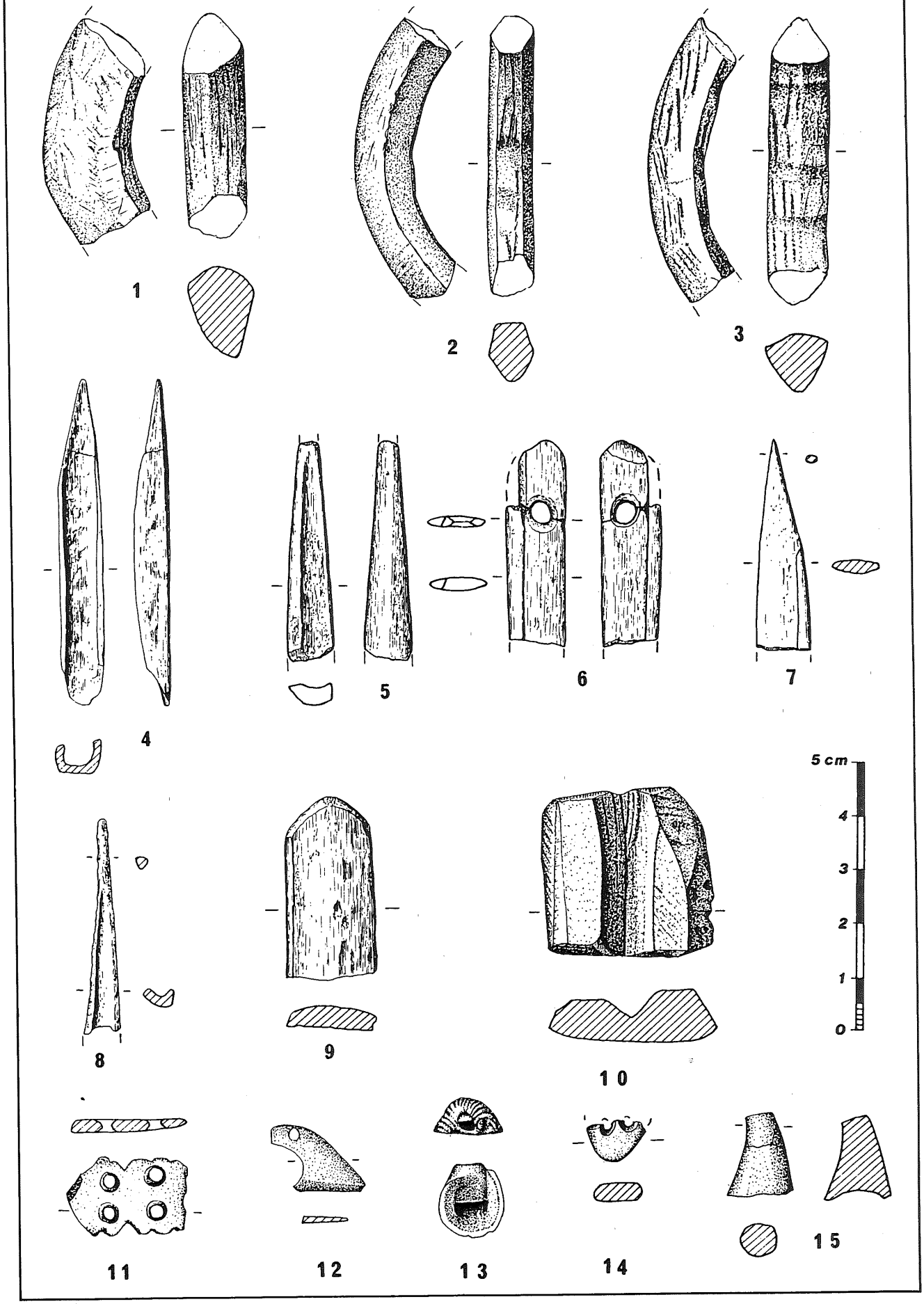

Fig. 11: Ba'ja 1: 1-3 fragments of sandstone rings; 4-9 fragments of various bone tools-ornaments; 10 "grooved stone"; 11-12 mother-of-pearl ornaments; 13 bead of a marine mollusc; 14 fragment of a terracotta figurine.

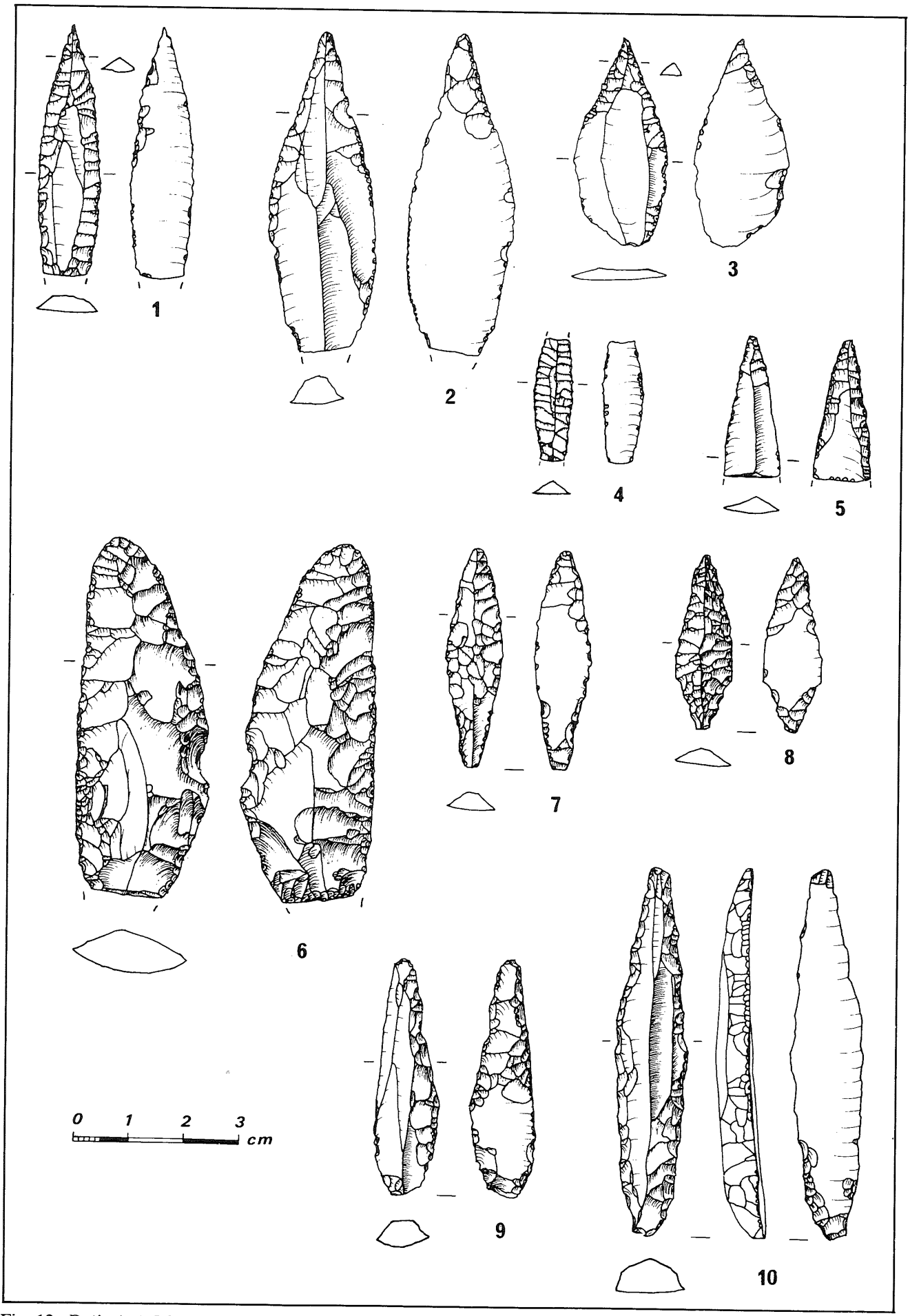

Fig. 12: Ba'ja 1: 1-5 fragments of arrowheads from surface collections Abu Barqa: 6 bifacially worked "knife", bearing desert varnish; 7-8 arrrowheads.
'Ain Tayiba: 9 arrowhead; 10 blade with steep retouches along edges.

are endscrapers made on cores, core fragments, flakes, and blades, which form a rather heterogeneous group. The working edges tend to be convex, although almost straight ones appear as well. Obviously many of the given-up bladelet/blade cores with angles under 80° between the striking platform and the core surface were reused as scrapers after shaping the former edge of core. Sometimes such pieces are difficult to separate from cores. End-of-blade scrapers made on thinner blades often show semi-steep retouches. Thick, broken blades and flakes with trapezoid and triangular sections and primary core tablets were prefered for most of the scrapers. Obverse edge retouches on endscrapers are well-represented. Fig. 13 shows a selection of the core types attested. In addition, several cores with opposed striking platforms were found, which also show the common tendency of cores towards acute angles between platform and core surface. The characteristic feature of hinges in the waste material is also well-attested with the cores.

The Thugra 1-industry (or possibly industries) from Sounding 1 and the non-systematic surface collection do not seem to differ from the Sunkh material. Only the heavy-duty tools typical for a late PPN, the irregular flake cores, and blades with striking angles around 90° from the surface suggest another occupation after the Epipalaeolithic. In contrast to the undamaged edges of artefacts from the sounding, the surface material bears modern retouch. Bullet-shaped bladelet cores and other micro-cores were found together with bipolar blade cores and blade cores with one platform. Again, most of them show the acute angle. The amorphous flake cores mentioned above do not occur in the sounding, as they do not on Sunkh as well. Thick blades and flakes for producing the endscrapers are well attested. Backed bladelets/ blades are rare from both the surface and the sounding and only one Helwan-lunate was found on the surface.

The surface collection from Wadi Sleisel provided only a limited number of artefacts. Bladelet core seem to be rare. Again, the acute angle between striking platform and blade core surface is apparent and the endscraper on thick blades is the most common tool. Only one lunate with normal abrupt retouch and several backed bladelets were found.

Up until now, three relative-chronologically easily datable Natufian sites are known (Baida, Sabra 1, Sunkh 1) from the Petra area. Thugra 1 and Wadi Sleisel may also belong to this Late Epipalaeolithic context. The status of chronological discussion (Fig. 14) recognizes the absence/ presence of bifacially retouched lunates (Helwan-segments) as the major feature to distinguish between an Early and a Late Natufian (Bar-Yosef 1981b, 1983; Henry 1981). A statistically-based comparative analysis of Natufian technologies has not yet been published and Natufian sites from Eastern Jordan are rare and inadequately published (see Gebel 1984, 1985). By using the dating features approved by current research, we know for the Petra area two (Baida, Sabra 1), possibly three (Thugra 1) Early Natufian sites. In contrast, only one secure Late Natufian-related site (Sunkh 1) can be mentioned. Sunkh 1 and the Natufian layers of Sabra 1 yield Helwan-lunates and lunates with bipolar/ abrupt retouch. Provided that we do not have a disturbed Late Natufian in Sabra too, we can expect both sites to range between the older and later Natufian.[17]

Late Aceramic Neolithic industries

The four late PPNB industries sampled in 1984 show some interesting features not attested with the slightly earlier industries of ad-Daman 1, Shaqarat Musei'ed and Baida.

The blade-industry of Baṣta 1 contains a high number of large thick blades with triangular sections. It seems, that they prefered greyish tabular flint, which can be found in all aceramic assemblages of the area and is the dominating raw material in the Abu Barqa collection. In general they

[17] Isolated lunates with normal abrupt retouch occur in Khiamian layers of Sabra as well.

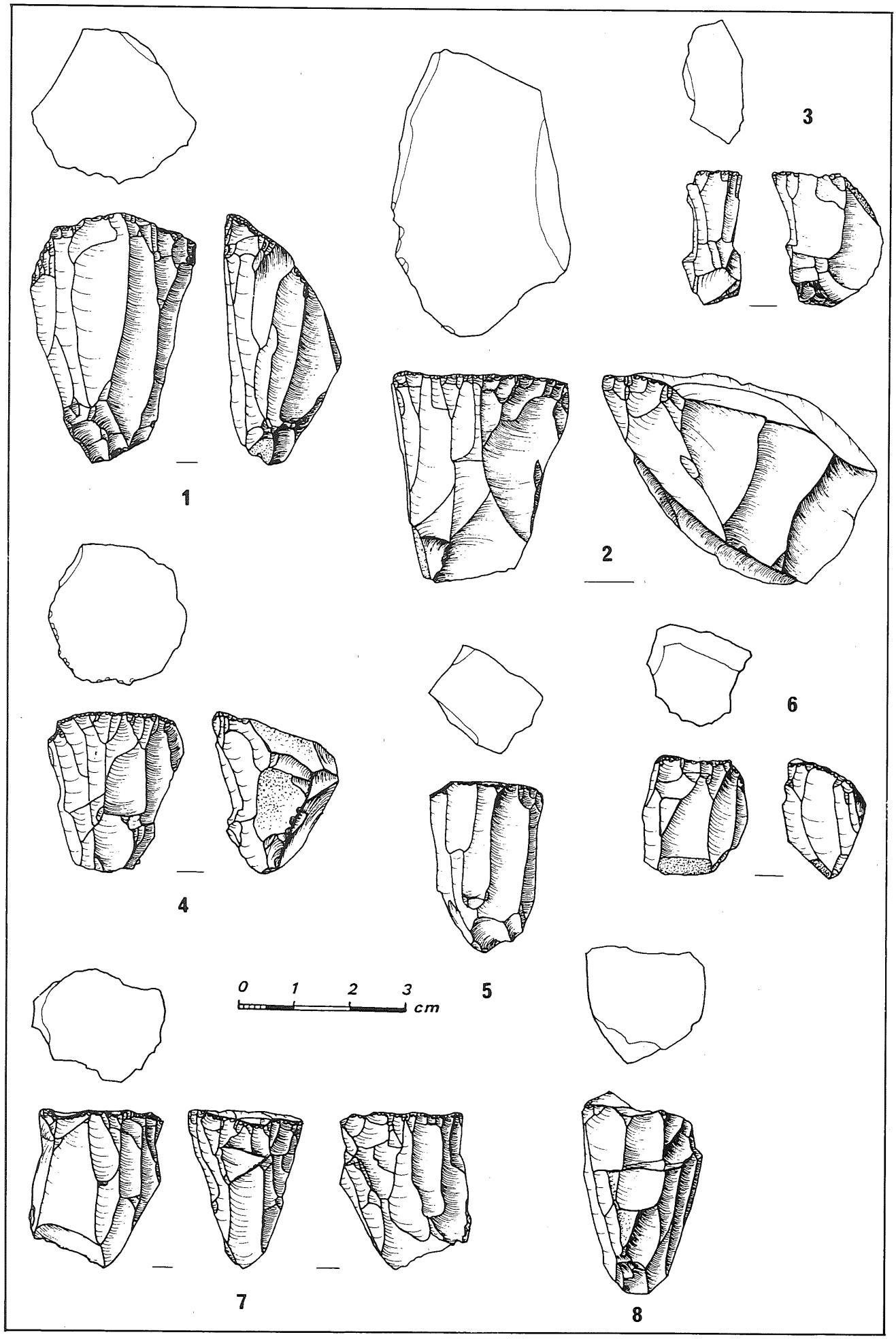

Fig. 13: Sunkh 1: 1-8 cores (surface finds)

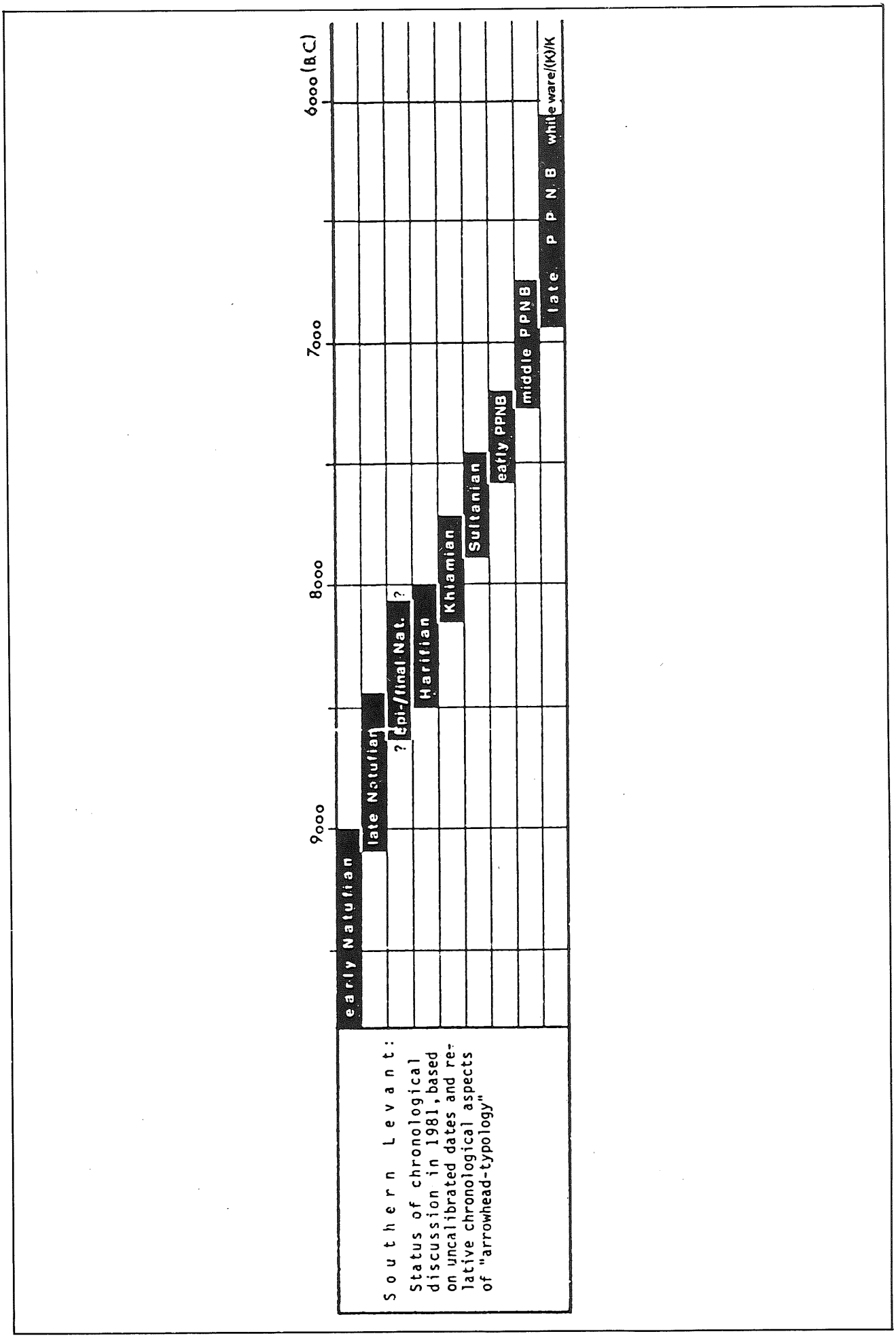

Fig. 14: Current status of chronological discussion (from: Gebel 1984)

were manufactured by a punch. Their sizes range between 7 and 12 cm. Both intentional and use retouches can be observed. The types of retouches, their position and the length of retouched parts of edges do not show a distinct pattern. This group of implements is also well represented in Baida (Mortensen 1970: type E2), where they provisionally are classified as "knifes". No cores of these blades were found, and large secondary crest blades are attested. Among the diagnostic tools, Byblos-like arrowheads (Fig. 7.3-4) and "bead drills" (Fig. 7.9-15; Mortensen 1970: type B7) are common. No Amuq-type arrowheads or arrowheads with overall bifacially pressure-flaking were observed. Denticulated blades are rare as is sickle gloss. Many heavy duty tools were found, among which picks and celts (Fig. 9.1-2) dominate. Quartzite was used quite often as raw material; the arrowhead of Fig. 7.3 is made of a reddish-pinkish quality of quartzite.

The most frequent tool found in Baṣṭa 1 are arrowheads, which can be classified into at least 8 types (Fig. 10; 12.1-5), among which Amuq-like arrowheads can be distinguished. Another striking type is that of Fig. 10.12-13, which has a tendency of non-symmetrical S-curved edges. Notched arrowheads are missing as they are in Basta 1. Only one piece was found in the lower parts of SI with a retouched base and retouches along the edges. It does not fit into the group Mortensen type A1. Also it is quite small and it would not be unexpected in a Khiamian context. Except for a foliate of a type like Rhotert 1938: 143.2 from the surface, no bifacially overall pressure-flaked implements were found. As with Basta, numerous celts (Fig. 9.3), picks, adzes, etc. were found on the surface. A striking number of cores reused as hammering stones is attested. All types of cores known from Baida are represented in Baṣṭa. Quite strange is the surface evidence of a few cores like Fig. 13.1. Again the use of quartzite is attested by many scattered on the surface.

The diagnostic pieces of Abu Barqa are illustrated in Fig. 12.6-8. The bifacially pressure-flaked knife Fig. 12.6 is the only desert varnish bearing piece encountered in the Petra area. The type of desert varnish is different from that on some of the large blades accompanying this find. It is presumed that this piece was brought here from desert surroundings, e.g., the arid flanks of the Arabian Plateau. From here similar material is known (Kilwa 19/ Jabal Tubaiq, Rhotert 1938).[18] The thousands of blades scattered on the surface show different patination. Not all are retouched. The first impression of the site is that it is a blade manufacturing site. All size classes are represented, although that of 7-13 cm. dominates. The number of cores is small compared with the amount of blades. Cores with dimensions like the large thick blades with triangular sections are missing. Similar to Basta, the tabular greyish flint is the prefered raw material and the retouched material shows different types of retouches, position of working edges, etc...

Also the few artefacts from the surface site of 'Ain Ṭayiba have a rather high proportion of large blades. The steep retouched blade Fig. 12.10 might be a projectile point. Except for the arrowhead Fig. 12.9 only a scraper and a few retouched blades were encountered.

New evidence (Kafafi 1982, Rollefson 1984, Rollefson et. al. 1984, Rollefson/ Kafafi 1984, Taute 1981), well-dated arrowheads types from other Levantine sites, and the arrowhead sequence of Baida (Mortensen 1970) support a potential date of terminal PPNB for the industries described above. Even an early 6th millennium for 'Ain Tayiba and Abu Barqa cannot be excluded. For the time being, it appears less important to collect more assemblages from permanent PPNB sites than to describe their primary production technologically and statistically. The industries of non-permanent sites of the latest PPNB should be found and compared with the results from the village inventories.

[18] The author's work on surface sites in Abu Dhabi and Oman (H.G.G.) revealed the same type of implements with desert varnish.

This approach would help to identify the Post-PPNB occupations in the area.

Small Finds

Assemblages of ornaments, ground and polished stone utensils and bone implements were found in comparatively large quantities in the Late PPNB rubbish layers of Ba'ja 1 and Basta 1.

An outstanding group of artefacts are the sandstone rings of Ba'ja (Fig. 11.1-3). Carved out of locally available tabular sandstone,[19] their interior diameter ranges from 40 to 72 mm., their exterior diameter from 50 to 90 mm. The cross-sections also vary considerably in shape, not only from specimen to specimen, but also from fragment to fragment. In many cases a tendency towards an obtuse angle for the inside and a rounded shape for the exterior face was observed. One limestone specimen was grooved around its outer face. These roughly round rings show technologically interesting features and allow the reconstruction of their production technique[20]. The high concentration of fragmented pieces in the sounding indicates common use and mass-production. These ornaments are usually considered to be bracelets, worn on the wrists and ankles, but other functions, e.g., their use as pendants worn beneath the throat[21] cannot be excluded. Evidence from 'Ain Ghazal suggests that this type of artefact belongs to the very late PPNB and Early Pottery Neolithic[22].

Similar to Basta, the Ba'ja small finds are within the range of PPNB small find inventories already known. The rich bone industry of Ba'ja (Fig. 11.4-8) comprises many types of pointed implements and pendants. The use of carved and perforated mother-of-pearl objects must have been quite common (Fig. 11.11-12), and were presumedly sew-on ornaments or toggle loops. The clay object (Fig. 11.15) may represent a figurine fragment (animal horn?). No stone vessels were found in the sounding, section cleanings or on the surface of Ba'ja. The ground stone industry also seems to have been limited to one certain type of grinding slab and mano-pestles are rare and no mortars of the Baida/Shaqarat Musei'ed-type occur.

Except for the two sandstone palettes, all objects illustrated in Fig. 8 were derived from the section investigation of Basta 1. Not illustrated but noteworthy of mention is a fragment of a small bone hook. Again several marine molluscs ornaments prove the existence of an exchange network with the Red and Mediterranean Sea. A token-like object of unidentified material (Fig. 8.11) remained the only one of its kind so far found on the sites we investigated. Among the "surface finds" in front of the bulldozed section, a large number of heavy duty ground stone tools were found. Like the Ba'ja grinding slabs, those from Basta are oval to lens-shaped, often with butt ends. The working platform is slightly curved longitudinally and the bottom is rounded or has an obtuse angle in its transversal section. The manos tend to be ashlar-shaped. Mortars do not occur and pestles are rare. Digging stick weight-like stone rings with biconical central perforations (compare Lechevallier 1978: Fig. 105.12) are well-represented. A limestone vessel with a diameter of c. 35 cm. was found along with a limestone plate (com-

[19] The fine-grained raw material containing iron-oxide must derive from the Lower or Upper Cambrium (Mohammad Abu Safat, Universitaet Erlangen, personal communication).

[20] J. M. Starck, in preparation.

[21] G.O. Rollefson, personal communication. Drilled pieces may also attest their re-use as evidence from Jarmo suggests (Moholy-Nagy 1983: 296). Apart from 'Ain Ghazal (Rollefson et. al. 1984: Fig. 6; Rollefson 1984: Fig. 3) this unique type of ornament is known from PNA-contexts of Jericho (Kenyon and Holland 1982: 557, 559, Fig. 226).

[22] In 'Ain Ghazal, these rings are mostly made of limestone and appear in the late PPNB, the final PPN and the Yarmoukian layers. It is the impression of the excavator that they are concentrated in the final PPN layers, which significantly differs from the preceeding PPNB in terms of lithic technology and typology, domestic animals, burial practices, etc. (G. O. Rollefson, personal communication). The fact that these artefacts apparently do not appear in Baida, Beisamoun, Abu Gosh and other PPNB sites may indicate that they are an Early Pottery Neolithic-related element.

pare Lechevallier 1978: Fig. 32.12, 19; 104.13).

Preliminary Conclusions and Summary

While the spring campaign completed work on the collection and recording of the recent vegetation cover, the autumn season concentrated on enlarging our palaeoenvironmental sampling basis. Relevant samples were taken from soundings in Ba'ja 1 and Basta 1. In addition, samples from the main flint/chert resources were collected in order to classify resource areas and exploitation with the lithic findings.

Four eco-geographic units are distinguished and characterized by their plant communities. Basic information is given on the xero-mediterranean forests, Artemisia steppes, vegetation of rocky sandstone areas, vegetation of playa surfaces and desert wadis, and hydrophytic vegetation. The sites investigated in 1984 are described by their physiographic setting, outward appearance, sampling and sounding methods, section investigations, and findings - three Epipalaeolithic sites (Sunkh 1: Late Natufian; Thugra 1 and Wadi Sleisel: unidentified Natufian) and four terminal PPNB sites (Basṭa 1, Ba'ja 1, Abu Barqa, 'Ain Ṭayiba).

As the analysis on the palaeoenvironmental samples is not yet completed only general conclusions can be drawn for the 10th to 7th millennium occupations investigated in 1983 and 1984. After the excavations of Baida were finished, several new Late Epipalaeolithic and Late PPNB sites were located. While both periods are rather well-attested in the Petra region, only Sabra 1, strikingly enough for a period of more humid conditions, is known for the Early Aceramic. Sultanian and Early PPNB sites were not encountered up to now. Possibly the occupational history of the area is reflected in the Baida stratigraphy: after the Early Natufian of the 10th millennium (Fig. 14) a dune developed on which the Middle/Late PPNB settlement of the 7th millennium rests.

For the Natufian, the Petra area still lacks a true Late Natufian site. The three secure sites are Early Natufian or Early Natufian-related. (Sunkh 1, Sabra 1, Baida). This would coincide with rather secure evidence for a moist 10th millennium and the onset of a drier phase from 9000 for the Southern Levant (Bintcliff 1982). None of the Natufian sites seem to have stone architecture.

The climate in the earliest Holocene (from 8300 onwards) again turned wetter and possibly was even moister than today. Up until now this has not reflected in the settlement history of the Petra vicinity. The Khiamian Sabra 1 seems to be a camp site without solid installations.

The most extensive occupation in terms of pressure on biotic resources is evidenced for the period of increasing arid conditions during the second half of the 7th millennium (Fig. 14). Large Middle and Late PPNB villages appear then disappear with the end of the 7th millennium. Shaqarat Musei'ed, ad-Daman and Baida may well flourish at the same time. The results from the surveys also give evidence for the "Hiatus Palestinienne" in the Petra area. Further research should concentrate on this period, which was possibly already met in 'Ain Ṭayiba and Abu Barqa.

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Bibliography

O. Bar-Yosef, The "Pre-Pottery Neolithic" period in the Southern Levant, p. 555-569 in J. Cauvin, P. Sanlaville, eds., *Préhistoire du Levant,* C.N.R.S., Paris, 1981.
The Epipalaeolithic complexes in the southern Levant, p. 389-408, in J. Cauvin, P. Sanlaville, *Préhistoire du Levant,* eds., C.N.R.S., Paris, 1981.

J. Bintcliff, Palaeoclimatic modelling of environmental changes in the east Mediterranean region since the last glaciation, p. 485-527, in J. Bintcliff, W. van Zeist, eds., *Palaeoclimates, palaeoenvironments and human communities in the eastern Medeterranean region in later prehistory,* BAR International Series, 133. 1, 1982.

H.G. Gebel, Sabra 1 und die Wadi-Systeme um Petra, Wadi Musa, *Archiv für Orientforschung,* 29-30 (1983-84) p. 282-284
Das Akeramische Neolithikum Vorderasiens, *Beihefte zum Tuebinger Atlas des Vorderen Orients* B 52, Wiesbaden, 1984 (tabular presentation of data for sites of 10th-7th Millennium BC in English).

H.M. Hecker, *The faunal analysis of the primary food animals from the Pre-Pottery Neolithic Beidha,* Ph.D. Dissertation, Columbia University. Ann Arbor, Michigan, University Microfilms, 1975.

D.O. Henry, An analysis of settlement patterns and adaptive strategies of the Natufian, p. 421-432, in J. Cauvin, P. Sanlaville, *Préhistoire du Levant,* C.N.R.S., Paris, 1981.

Z. Kafafi, *The Neolithic of Jordan* (East Bank), Ph.D. Dissertation, Free University of Berlin, 1982.

K.M. Kenyon, T.A. Holland, *Excavations at Jericho IV,* 1982.

D. Kirkbride, Five seasons at the Pre-Pottery Neolithic village of Beidha in Jordan, *PEQ,* 98 (1966) p. 8-61.

M. Lechevallier, *Abou Gosh et Beisamoun,* Mémoires et traveaux du Centre de Recherches Préhistoriques Française de Jérusalem 2, Paris, 1978.

H. Moholy-Nagy, Jarmo artefacts of pecked and ground stone and of shell, in L.S. Braidwood, R.J. Braidwood, B. Howe, C. Reed, P.J. Watson, eds., *Prehistoric archaeology along the Zagros flanks,* OIP, 105 (1984) p. 289-346.

P. Mortensen, A preliminary study of the chipped stone industry from Beidha, *Acta Archaeologica,* 41 (1970) p. 1-54.

W. Taute, Mesad Mazzal, ein neolithischer Siedlungsplatz des präkeramischen Neolithikums südlich des Toten Meeres, p. 236-256, in W. Frey, H.P. Uerpmann, eds., *Beiträge zur Umweltgeschichte des Vorderen Orients, Beihefte zum Tuebinger Atlas des Vorderen Orients A 8,* Wiesbaden, 1981.

H. Rhotert, Transjordanien. *Vorgeschichtliche Forschungen, Vorgeschichtliche Forschungen in Kleinasien und Nordafrika 1,* Stuttgart, 1938.

G. Rollefson, E. Banning, B. Byrd, Z. Kafafi, I. Köhler, D. Petocz, S. Rolston, L. Villiers, The Pre-Pottery Neolithic village of 'Ain Ghazal (Jordan). Preliminary report of the 1982 excavation season, *Mitteilungen der Deutschen Orientgesellschaft,* 116 (1984) p. 139-183.
'Ain Ghazal. An early Neolithic Community in highland Jordan, near Amman, *BASOR,* 255, (1984) p. 3-14.

G. Rollefson, Z. Kafafi, Khirbet Hammam. A PPNB village in the Wadi el-Hasa, southern Jordan, *BASOR,* in press.

M. Zohary, *Geobotanical foundations of the Middle East,* Stuttgart, 1973.

F. Bender, *Geological Map of Jordan* 1:100.000. Gharandal, Bundesanstalt für Bodenforschung, Hannover, 1974.

Hashemite Kingdom of Jordan, Natural Resources Authority and Federal Republic of Germany, German Agency for Technical Cooperation, *National Water Master Plan of Jordan,* 1-8 (1977).

Jordan National Geographic Centre, *National Atlas of Jordan, I, Climate and Agroclimatology,* Amman, 1984.

EXCAVATIONS IN THE EARLY BRONZE AGE CEMETERY OF TIWAL ESH-SHARQI A PRELIMINARY REPORT

by
Jonathan N. Tubb

Introduction

The site of Tell Umm Hammad esh-Sharqiya in the Jordan Valley was first systematically excavated in 1982 by Dr. Svend Helms on behalf of the British Institute in Amman for Archaeology and History (BIAAH).[1] During the course of his season, as a result of bulldozing activities in preparation for road construction, a number of tombs were exposed in the area to the south of the site, known locally as Tiwal esh-Sharqi. Subsequent investigations by Dr. Helms and later the Department of Antiquities revealed the presence here of an extensive cemetery of EBIV date.[2] Following this preliminary work, which resulted in the clearance of several tombs, a permit was granted to the writer to conduct excavations in the cemetery, now defined by the name Tiwal esh-Sharqi.

Seven weeks of excavations were conducted from March 14th-May 1st, 1984, under the direction of the writer. Geological and geomorphological studies of the physical background of the cemetery area were undertaken by Mr. P.G. Dorrell (Institute of Archaeology, London) who was also responsible for the photography and assisted with the excavations. Human skeletal material was studied *in situ* by Miss J. Henderson (Department of the Environment, London) whose full analysis will be presented in the final report. The cemetery area was surveyed and mapped by Mrs. B. Pritzkat (University of California at Los Angeles) and a preliminary working version of the plan is included in this report (Fig. 1). On-site conservation and limited restoration was undertaken by Miss M. Wright (Institute of Archaeology, London). All of the objects were drawn and the tombs planned by Miss S. Thorpe (BIAAH), who also served as field supervisor. Two further field supervisors were Dr. R. Chapman (Palestine Exploration Fund) and Miss A. Betts (Institute of Archaeology, London). The expedition staff was complemented by Mr. Ibrahim Haj Hassan, representative of the Department of Antiquities, who worked as field supervisor and whose presence ensured the continued smooth-running of the season. Our thanks are due to the Department of Antiquities of Jordan and most especially to the Director, Dr. Adnan Hadidi for all his help and enthusiastic support.

The 1984 season was sponsored jointly by the British Museum and the British Institute in Amman for Archaeology and History and funding was generously provided by the British Museum. The expedition staff was comfortably housed at Deir 'Alla, and thanks are due to Mr. Mohammad Jamra of the Department of Antiquities for his help in arranging this accommodation.

Results of the 1984 Season

Tiwal esh-Sharqi is situated about 7 km. south-west of Deir 'Alla at grid reference 205172 and extends for at least 1.5 km. along the north-west bank of the river Zarqa (Pl. X). The full extent of the cemetery has not yet been established. To the east of the modern road which cuts the site in a roughly north-south division (Fig. 1), the northern extent is defined by the limit of the occupation site Tell Umm

[1] S.W. Helms, Excavations at Tell Umm Hamad esh-Sharqiya in the Jordan Valley 1982, *Levant*, 16 (1984) p. 35-54.

[2] S.W. Helms, The EBIV (EB-MB) cemetery at Tiwal esh-Sharqi in the Jordan Valley, *ADAJ*, XXVII, (1983) p. 55-86.

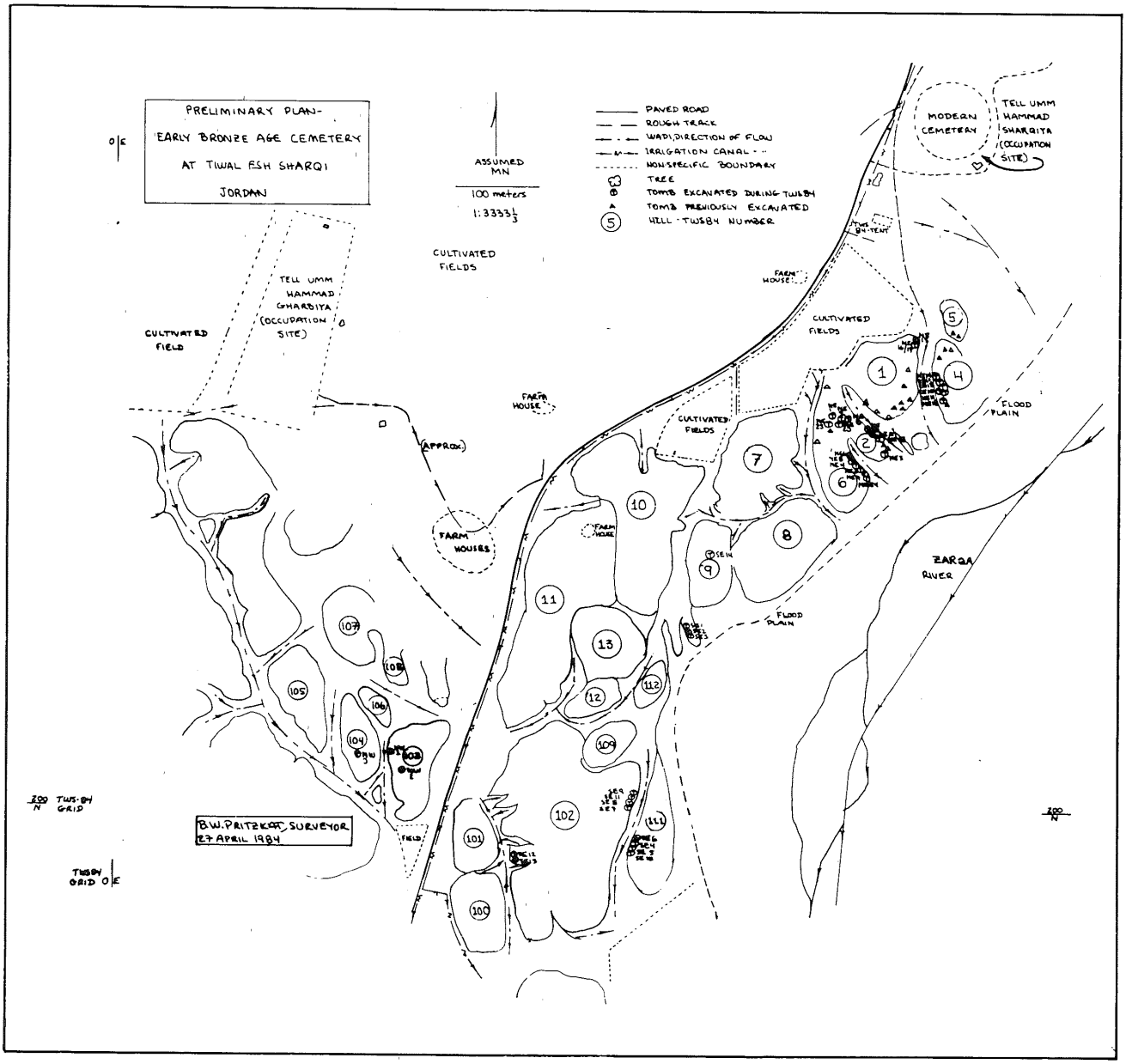


Fig. 1

Hammad esh-Sharqiya, and the southern by the cultivated fields beyond hills 100, 102 and 111. West of the road it seems likely that beyond the area of cultivation the cemetery curves around the occupation site of Tell Umm Hammad el-Gharbiya to the west and extends to the south for some considerable distance. The following is a preliminary report of the geological background of the site by P.G. Dorrell: a more detailed contribution will appear in the final report.

The bedrock underlying the site is the Lisan Marls, a series of bedded evaporites, now much cracked and faulted through contraction, slumping and earth tremors. The surface of the marl appears to have been linearly eroded in great antiquity and then covered and the erosion channels infilled by a thick deposit of silts and gravels, perhaps marking an early and more northerly course of the Zarqa. This alluvium, and the underlying marl, are now being aggressively eroded by wadis running in a south-westerly pattern to the modern Zarqa. In the older and wider re-excavated wadis, tombs appear to be aligned with their shafts on the downslopes of the wadi side and their chambers cut into the inter-wadi ridges (with the exception of the two built graves, chambers were always cut into the marl and not just into the alluvium) while tombs exposed in the steeper and newer wadis seem to be sited randomly. This suggests that in

EBIV times the morphology of the site followed the same general pattern as at present, although not so deeply cut.

Ground-water which percolates through the strata emerges at seepage lines and small springs above clay-bands within the marl, but its salinity is such that drinking water for man and stock must always have been taken from the river itself. This salinity, however, is not so great as to inhibit the growth of vegetation upon the marl surface.

There is an aggradation terrace some 5 metres above the present river level, at present being laterally eroded by the stream. This terrace cannot be dated at the site, but if it was formed in the same way as similar terraces elsewhere in the Levant, probably post-dates the EBIV occupation.

Since the area of the cemetery is extremely large, and to an extent indeterminate on the west, it was decided to concentrate solely on the area between the Zarqa river and the modern road (Fig. 1). Two excavation areas were here defined: North-east (NE) extending from Tell Umm Hammad esh-Sharqiya in the north to the *wadi* running approximately east-west along the southern slopes of hills 6 and 7 and the northern slope of hill 10 as far as the road. The area south, as far as the cultivated fields, was defined as South-east (SE). Tombs in each sector were numbered sequentially from one.

Altogether thirty-eight tombs were investigated, of which twenty-five produced dateable finds. Some tombs produced skeletal data only and others were left unexcavated beyond the definition of their shafts and entrances for reasons of safety: four others (NE9, NE14, SE12 and SE13) had to be abandoned after partial excavation for the same reason. The normal type of tomb encountered (see however NE8 and SE14 below) was a shaft tomb, a vertical shaft giving access to a chamber through a small entrance (Pl. XI: 1). In many cases only the eroded chamber was preserved, taking the form of a "scoop" in the side of the hill (Pl. XI: 2), but where the shaft was preserved, the normal form was seen to be rectangular or sub-rectangular in cross-section: only in the case of NE4 was the shaft roughly circular. The entrance into the chambers were arched and generally small, ranging from 0.50 m. to 1.10 m. in height, 0.40 m. to 1.00 m. in width. Blockings, where found intact consisted of large stones packed with hard brown clay, or in some instances, mud-brick. The chamber of NE9 was closed by means of a single large stone. Chambers tended to be rather irregular, but most commonly sub-circular or oval. NE22, which was the only tomb of the EBI period found, had a rather well-cut rectangular chamber.

With the single exception of NE4, in every case examined, the roof of the chamber had collapsed, filling the space inside with marl blocks and decayed marl rubble (see also the qualification regarding SE2 below). The deposits were largely or partially protected by a layer of natural silting laid before the collapse of the roof. The disposition of the bones (see below) and frequently also the pottery indicated that water had seeped into the chambers causing considerable disturbance. This resulted in some cases in the pottery vessels being lifted clear of the floor, having risen with the gradually elevating silt layer. The most extreme instance of this was in SE2 where the loop-handled amphoriskos (SE2:1) was found some 1.50 m. above the floor surface, still bearing in its mouth a perforated cup (funnel) (SE2: 2).

In terms of construction method, the tomb-builders were seeking the level of hard white marl into which they could cut chambers with some assurance that the roofs would remain secure. For tombs which were located on the side-slopes of existing *awdiyah,* this was a relatively straightforward process: the marl level could be, and still can be, seen outcropping. In such cases, the shaft could be sunk directly and the chamber constructed (see for example NE10). In all cases advantage was taken of the morphology by cutting the shaft on the downslope and then excavating the chamber beneath the inter-wadi

ridge. Some tombs possibly did not have a true vertical shaft, but rather the chamber was entered from the hillside horizontally by means of what is, in effect, a rectangular antechamber (see here NE16/17).

Where tombs were to be cut from a level surface (as for example NE9, NE20 and NE25), an irregular sounding was first made to locate the level of hard marl and then the shaft was sunk vertically from that level (see NE9 and NE20). The eventual collapse of the chambers of such tombs may have contributed, in itself, to the formation of more recent gullies. Certainly, tombs SE1, SE2 and SE3 could never have been located on an existing slope, as they are now disposed, since their chambers are cut in both directions and that of SE3 has been lost altogether.

Some of the very small juvenile burials such as NE6, NE11, NE12 and NE13 may not have had shafts at all, but simply blocked entrances directly on the hill sides. Subsequent erosion has, however, rendered this impossible to demonstrate.

Some of the deeper shafts were provided with foot-holds allowing easier access to their bases. Tool–marks were observed in the shafts and chambers of a number of tombs. Where they were best-preserved, as in the shaft of SE3, they showed as straight furrows up to 0.30 m. in length and 0.02-0.03 wide, semi-circular in section and running almost vertically. Since any pick-like tool could hardly have been driven into the marl for these distances. presumably the tools used were spikes or rods hammered down into the rock and then used as levers to rise away blocks or fragments of marl. Within the chambers the marks ran obliquely and some at least were slightly curved and shorter, suggesting the use of picks.

Re-use of tomb chambers was observed in four cases. SE12 and SE13, two adjacent tombs both showed the same feature: the shafts had been partly re-excavated leaving a deposit of very fine soft soil, and the blocking of the chambers had been disturbed. Directly behind the entrance of SE12 a lamp was found (SE12:1) resting on the floor and which can be assumed to belong to the second usage of the tomb. Although excavation of this tomb was not completed, a second lamp (SE12: 2) was found some 1.00 m. further into the chamber, lying about 0.20 m. above the floor on top of the layer of silting with which it had been carried up. It seems clear that this lamp was associated with the first period of usage of the tomb. SE13 had a similar re-cut shaft and disturbance of the blocking stones, but excavation was discontinued before the chamber could be cleared.

NE16 and NE17 are in effect two chambers of a bi-lobate tomb, access into which was gained by a common entrance. The more northerly chamber, NE17 had been re-used: a four-spouted lamp (NE17: 3) was found directly on the floor surface, extremely badly crushed - probably as a result of the deposition of the later interment, NE17 Upper, which lay some 0.23 m. above the floor on a surface of stamped silting. Three objects, a copper pin (NE17:1), a single carnelian bead (NE17:2) and a loop-handled amphoriskos (NE17:4) belong to this later deposit.

Perhaps the most interesting case of chamber re-use is that of SE2. Here, the original chamber was entered by a well-constructed doorway on the west, an irregularity having been made good by the use of evenly coursed mud-bricks (Pl. XII: 1). A second shaft was found high up on the slope which gave access to the back of the chamber by means of another entrance, found on excavation to be still completely sealed. The original stone blocking of the west entrance had been removed and the stones placed in a semicircle around the south and west sides of the chamber (Pl. XII: 2). These seem to have formed the foundation for a dense, crushed marl cement which was used to reduce the size of the chamber internally and to seal off the west entrance completely. This cement fill had sealed in position on the floor behind one of the "foundation" stones a necklace of reddish stone beads (SE2: 3) which represents the sole remains of the first usage of the tomb. The loop-handled amphoriskos (SE2: 1) with funnel (SE2: 2) and the four-spouted lamp (SE2: 4) all came from within the area bounded by the

marl cement and must be assumed to be grave-goods associated with the second period of use.

Perhaps the most significant discovery of the 1984 season were the two stone-built graves, NE8 (Pl. XIII: 1) and SE14 (Pl. XIII: 2). In both cases they consisted of a sub-rectangular pit, lined on all four sides with four courses of stones, and capped by three large limestone slabs. SE14 was unfortunately robbed before it could be fully excavated and the grave deposit was completely destroyed. Only a few fragments of bone remained, but sufficient to indicate that the body had been interred with head towards the west end. The spoil heaps left by the robbers were carefully sieved and this operation provided the vital dating information, for, broken into five pieces was found a complete riveted dagger (SE14: 1) typical of EBIV. Such a weapon was also found in NE8, a slightly smaller grave but constructed in exactly the same manner. Here, two skeletons were found with their skulls towards the wider south end. At this end of the grave was found, in addition to the dagger (NE8: 1), a loop-handled amphoriskos characteristic of EBIVB.

This type of stone-built grave, characterized by a general uniformity of constructional method, has been found at a number of sites in Palestine and Syria, but is most usually associated with the following MBIIA period. Well-known examples are from Baghouz on the Euphrates,[2A] Tell et-Tin in the Lake of Homs,[3] Yabrud in south-central Syria[4] and Ras al-'Ain in Palestine.[5] In all cases, the grave-goods are purely local to the area, but tend to be richer in nature suggesting perhaps that these graves were those of a social élite (but not necessarily a warrior class as proposed in Oren.[6])Only at Yabrud is there evidence that the stone-built graves were first used in EBIV: two painted "teapots" were found in one of the graves,[7] dating to late in EBIVC.

At Tiwal esh-Sharqi two points are relevant. Firstly, the dating of the material, certainly from NE8, and most probably from SE14, is clearly within EBIVB, contemporary with the shaft tombs. Secondly, the grave-goods are in no way remarkable. Compared with some of the larger shaft tomb deposits such as NE10A or SE1 they are distinctly poor. Since the concept of the stone-built grave marks such a radical departure from the normal tradition of shaft and chamber tomb, the suggestion must be made that these graves were introduced from outside. The evidence points, however, to only a peaceful settlement of a small number of people who became integrated into the local society, used the local artefacts of the area and yet adhered to a traditional form of burial. On the evidence of the finds, there is no reason to support that they had attained in this period any elevated level of social status.

One further tomb is worthy of special note. NE22 was the only tomb excavated which produced a deposit dating to a period other than EBIV. This tomb, as mentioned above, had a well-cut rectangular chamber rather than the usual sub-circular or oval form (Pl. XIV: 1). The remains of three skeletons were found, one of which held in its right hand a high loop-handled juglet, red-slipped and burnished, typical of EBI (NE22: 6). Another similar juglet was found elsewhere in the deposit (NE22: 5) and also a fragmentary ledge-handled vessel also showing the same surface treatment. However, the most remarkable find was a series of large conical alabaster beads, fifteen in all, lying in a position close to the pelvis of one of the skeletons, suggesting perhaps their use as a belt rather than a necklace (NE22: 1,2,4,7-18).

[2A] R. DuMesnil du Buisson, *Baghouz, L'ancienne Corsôtê--Le tell archaique et la nécropole de l'âge du bronze*, Leiden, 1948.

[3] J.-E. Gautier, Note sur les fouilles enterprises dans la haute vallée de l'Oronte, *Comptes rendus de l'académie des inscriptions et belles lettres*, 23, 4th séries, 1895, p. 441-464.

[4] A.A. Assaf, Der Friedhof von Yabrud, *Annales archéologiques arabes Syriennes*, 17 (1967) p. 55-68.

[5] J. Ory, Excavations at Ras el 'Ain II, *QDAP*, 6 (1937) p. 99-120.

[6] E.D. Oren, A Middle Bronze Age I Warrior Tomb at Beth Shan, *ZDPV*, 87 (1971) p. 111-139.

[7] Assaf, *ibid.*, pl. 3, p. 23-24.

A full report of the skeletal material by Miss J. Henderson will appear in the final report. The following is a preliminary statement.

> The skeletal remains from the cemetery were examined for information concerning the demography, anthropology and pathology of the population sample. Unfortunately the bones were found to be very poorly preserved in all cases and observations were necessarily restricted. In effect this means that whilst demographic data are available for analysis (sex, age and stature), discussion of the anthropology and pathology is not possible.
>
> In all, 34 tombs produced human skeletal remains, yielding a minimum number of 45 individuals. The difference in the above two figures may be accounted for by the presence of multiple burials. Thus, 25 tombs had single burials, 7 contained a minimum of two and 2 a minimum of three individuals.

All bone remains were as far as possible recorded and will appear on the final published plans. A certain degree of articulation was observed, but the high level of subsequent disturbance in all cases renders it impossible to pronounce on the burial practice: the evidence is completely ambiguous, suggesting either secondary burial or grossly disturbed primary.

The Tombs and their Contents

In the catalogue which follows, the number on the left, prefixed "R" is the sequential registration number. The bracketed figure on the right is the tomb designation followed by the plotted object number which corresponds to its position on the respective tomb plan.

NE1 Not a tomb: possibly circular sink-hole
No finds

NE2 Small eroded oval chamber. North slope hill 6 (Pl. XI: 2)
Single Juvenile, 12-15 years
R1 Ledge-handled store jar (NE2:1)
R2 Cup (NE2: 2)

NE3 Very eroded remains of chamber. East slope hill 2
Single adult, possibly female
No finds

NE4 Shaft tomb: circular shaft, oval chamber. North slope hill 6
Single adult, female
R45 Stone bead (NE4: 1)

NE5 Small shaft tomb: rectangular shaft, oval chamber
North slope hill 6
Single juvenile, 2-3 years
No finds

NE6 Small, very eroded chamber, probably oval. East slope hill 6
Single juvenile, 6 months-1 year
No finds

NE7 Shaft tomb: rectangular shaft, oval chamber. North slope hill 6
Skeleton A: Adult, female
Skeleton B: Adult, possibly female
No finds

NE8 Stone built grave. Surface hill 2. See discussion above (Pl. XIII: 1)
Skeleton A: Adult, male, stature estimated at 1.70 m.±.0879
Skeleton B: Male, 25-35 years.
R17 Copper riveted dagger (NE8: 1)
R22 Loope handled amphoriskos (NE8: 2)
R34 4 Copper rivets (NE8: 3)
R48 Stone bead (NE8: 4)
R33 2 Copper rivets (NE8:5)
R49 26 Beads of various materials (NE8:6)

NE9 Shaft tomb: sub-rectangular shaft, chamber probably circular Surface hill 2. Chamber only partially excavated owing to instability of roof. (pl. XI: 1).
Remains recognisable as adult only
R44 Stone bead (NE9: 1)
R51 Cup fragment (NE9:2) - from shaft

NE10A Shaft tomb with side chamber (NE10B below): rectangular shaft, narrow, ovoid chamber.

West slope hill 4
Skeleton A: Male, 20-25 years
Skeleton B: Juvenile, 5-10 years
R6 Four-spouted lamp (NE10A: 1)
R9 Four-spouted lamp (NE10A:2)
R16 Loop-handled amphoriskos (NE10A:3)
R8 Ledge-handled storejar (NE10A:4)
R26 Loop-handled amphoriskos (NE10A:5)
R27 Bowl (NE10A:6)
R31 Round-based storejar (NE10A: 7)
R7 Bowl (NE10A:8)
R5 Mug-amphoriskos (NE10A:9)
R11 Funnel (NE10A: 10)

NE10B Small oval chamber off south side of NE10A shaft
Single juvenile, 5-10 years
R4 Loop-handled amphoriskos (NE10B:1)

NE11 Eroded, irregular chamber. West slope hill 4
Single juvenile, 5-10 years
R46 Stone pendant (NE11:1)
R10 Stone bead (NE11:2)

NE12 Small eroded chamber, roughly oval. West slope hill 4.
Single juvenile, 3-5 years.
R13 Necklace - beads and spacers of various materials (NE12:1)

NE13 Small eroded chamber, semicircular. West slope hill 4
Remains identifiable as "human" only.
No finds

NE14 Shaft tomb: rectangular shaft, chamber probably similar to NE10A. West slope hill 4. Excavation of chamber discontinued owing to instability of roof.
No bone remains
No finds.

NE15 Shaft tomb with side chamber (NE15A below): rectangular shaft, large circular chamber. East slope hill 1
Skeleton A: Female, 25-35 years
Skeleton B: Juvenile, 5-10 years
R30 Funnel (NE15: 1)
R42 8 Fragments of copper sheet (NE15: 2)
R18 Four-spouted lamp (NE15: 3)
R19 Four-spouted lamp (NE15:4)
R35 2 Copper rivets and ? pinhead (NE15:5)
R24 Four-spouted lamp (NE15:6)
R43 Small copper blade (NE15:7)
R29 Funnel (NE15:8)

NE15A Small oval side chamber off north side of NE15 shaft
No bone remains
No finds

NE16/17 Bilobate tomb with single entrance: probably horizontal access without true shaft. North chamber, NE17, small and roughly circular. South chamber, NE16, larger and ovoid.
East slope hill 1

NE16 Single adult
R28 Loop-handled amphoriskos (NE16:1)
R38 Loop-handled amphoriskos (NE16:2)
R37 Four-spouted lamp (NE16:3)
R40 Funnel (NE16:4)
R52 Bowl (NE16:5)
R36 Cup (NE16:6)
R39 Loop-handled amphoriskos (NE16:7)

NE17 Lower No bone remains
R23 Four-spouted lamp (NE17:3)

NE17 Upper Single adult, possibly female
R41 Copper pin (NE17:1)
R47 Carnelian bead (NE17:2)
R15 Loop-handled amphoriskos (NE17: 4)

NE18 Shaft tomb: completely collapsed. Unexcavated. West slope hill 4
No bone remains.
No finds

NE19 Number not allocated

NE20 Shaft tomb: rectangular shaft

with high side ledges, large circular chamber. Surface hill 2. This chamber lies directly above that of NE25 and part of the floor had collapsed into that tomb.
Remains identifiable as "human" only.
R21 Cup (NE20:1)
R54 Loop-handled amphoriskos (NE20:2)
R53 Four-spouted lamp (NE20: 3)

NE21 Small, very eroded chamber only half of which survives: probably circular.
North slope hill 2
Single juvenile, 1-2 years.
R3 Loop-handled amphoriskos (NE21:1)

NE22 (EBI group) Shaft tomb: rectangular shaft, much eroded, rectangular chamber. North slope hill 2 (Pl. XIV: 1).
Skeleton A: Male, 25-30 years, stature estimated at 1.72 m. ±.0879
Skeleton B: Adult, female
Skeleton C: Juvenile, 10-15 years
R12 15 large, conical alabaster beads (NE22:1,2,4,7-18)
R32 Ledge-handled vessel fragment (NE22:3)
R25 Loop-handled juglet (NE22:5)
R20 Loop-handled juglet (NE22:6)

NE23 Small shaft tomb: rectangular shaft with side "wings", ovoid chamber.
North slope hill 2
Single juvenile, 5 years or under
R14 Cup (NE23:1)

NE24 Eroded chamber, roughly circular. North slope hill 6
Remains recognisable as "adult" only
No finds

NE25 Shaft tomb: shaft unexcavated, chamber irregularly circular. Surface hill 2. This chamber lies directly below that of NE20 Remains recognisable as "adult" only
R72 Copper riveted dagger (NE25:1)
R92 2 Copper rivets (NE25:2-3)
R79 Stone digging-stick weight (NE25:3)

SE1 Shaft tomb: sub-rectangular shaft, large circular chamber, lamp niche in north wall. West slope hill 9. It was discovered that the cutting of the lamp niche had broken into the chamber of an adjacent tomb, described below as SE1A. Having removed the lamp, SE1: 7, which clearly belongs to the deposit of SE1, three other finds were made, and it now seems certain that these belong to the deposit of SE1A (hence the equivalent numberings below). (Fig. 2).
Skeleton A: Adult, possibly female
Skeleton B: Adult, possibly male
R78 Ledge-handled storejar (SE1:1)
R69 Ledge-handled storejar (SE1:2)
R68 Cup (SE1: 3)
R76 Loop-handled amphoriskos (SE1: 4)
R77 Cup (SE1: 5)
R73 Copper riveted dagger (SE1: 6)
R70 Side-spouted lamp (SE1: 7)
R59 Four-spouted lamp (SE1: 8)
R60 Four-spouted lamp (SE1:11)
R71 Copper javelin (SE1:12)
R75 2 Carnelian beads (SE1: 13)
R93 Copper awl (SE1: 14)
R82 Ledge-handled storejar (SE1:15)

SEIA Shaft tomb: shaft unlocated, chamber largely unexcavated. This chamber was only discovered as a result of the excavation of the lamp niche in SE1 which cuts into it. Only very limited investigation of the SE1A cham-

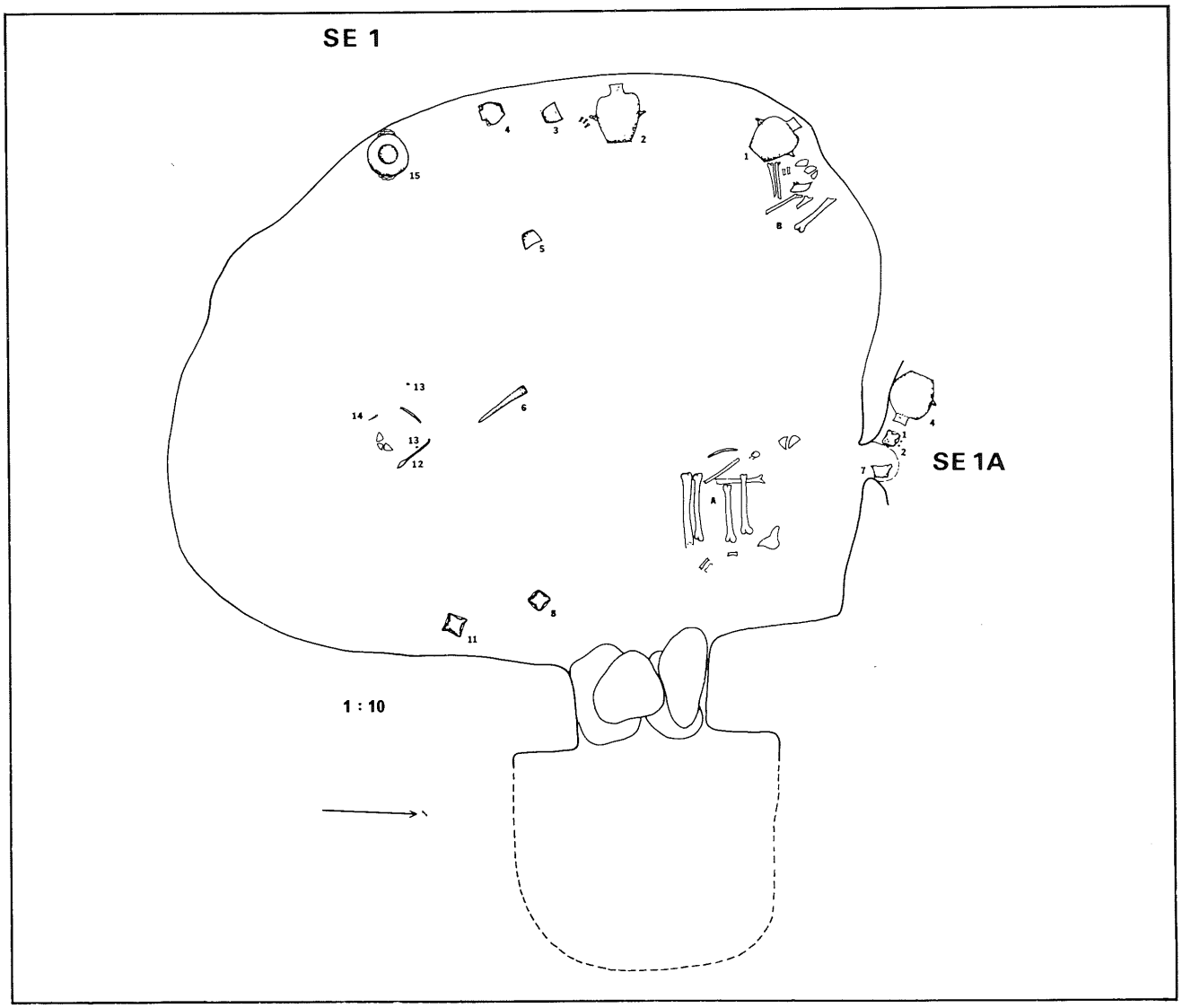


Fig. 2: Plan of Tomb SE1 showing lamp niche cut into chamber of adjacent tomb (SE1a).

ber was possible.
Remains identifiable as "human" only
R80 5 Carnelian beads (SE1A:2)=(SE1:9)
R67 Four-spouted lamp (SE1A:3)=(SE1:10)
R85 Ledge-handled storejar (SE1A:4)

SE2 Shaft tomb. Two phases of use. First phase - rectangular shaft on west, irregularly oval chamber. Second phase - rectangular shaft on east (not excavated), same chamber but contracted into sub-circular form (see discussion above). West slope hill 9 (Pls. XII: 1, 2; XIV: 2).
Remains identifiable as "human" only (phase 2)

Ph.1 R74 Necklace of red translucent stone beads (NE2:3)
R62 Loop-handled amphoriskos (SE2:1)
R63 Funnel (SE2:2)
R87 Four-spouted lamp (SE2: 4)

SE3 Shaft tomb: shaft only preserved, chamber on west lost through erosion, very large, well-cut rectangular doorway. West slope hill 9
No bone remains
No finds

SE4 shaft tomb: shaft largely eroded but probably rectangular, large ovoid chamber. West slope hill 111
Skeleton A: Adult, male, 25-35 years
Skeleton B: Adult, possibly female, 25-35 years
Skeleton C: Adult.
R50 Loop-handled amphoris-

kos (SE4:1)
R83 Ledge-handled storejar (SE4:2)
R55 Four-spouted lamp (SE4:3)
R56 Cup (SE4:4)
R57 Loop-handled amphoriskos (SE4:5)
R58 Loop-handled amphoriskos (SE4:6)
R94 Cup (SE4:7)
R61 Loop-handled amphoriskos (SE4:8)
R64 Cup (SE4:9)
R66 Four-spouted lamp (SE4:10)
R65 Four-spouted lamp (SE4:11)

SE5 Very eroded chamber, only about one third of which is preserved. West slope hill 111. SE5 cuts into west wall of SE10 chamber.
Skeleton A: Adult, 25-35 years.
Skeleton B: "Juvenile"
No finds

SE6 Shaft tomb: completely eroded down to floor level, leaving only three blocking stones on the present surface. Chamber probably sub-rectangular.
West slope hill 111
No bone remains
No finds

SE7 Shaft tomb: shaft largely lost through erosion but probably rectangular, chamber irregularly sub-rectangular. East slope hill 102. The copper point (SE7:1) was found sticking into the west wall of the chamber.
Remains identifiable as "adult" only
R91 Copper point (SE7:1)
R84 Four-spouted lamp (SE7:2)

SE8 Shaft tomb: rectangular shaft, roughly circular chamber. East slope hill 102. The northern end of the chamber is cut very slightly by the shaft of SE11, producing a small "window"
Remains identifiable as "adult" only
R90 Ledge-handled storejar (SE8:1)

SE9 Shaft tomb: shaft lost through erosion but probably rectangular, oval chamber. East slope hill 102. The east side of the chamber is cut by the shaft of SE11
No bone remains
R88 Side-spouted lamp (SE9:1)

SE10 Shaft tomb: shaft largely lost through erosion, but probably rectangular; oval chamber. West slope hill 111. The west side of the chamber is cut by SE5.
Remains identifiable as "adult" only
R81 Four-spouted lamp (SE10:1)

SE11 Shaft tomb: rectangular shaft with ledges, chamber not excavated. East slope hill 102. This shaft cuts the chambers of SE8 and SE9.
No bone remains
No finds

SE12 Shaft tomb: rectangular shaft, chamber probably circular. West slope hill 102. Excavation of chamber discontinued after severe roof collapse. Shaft re-cut for second (phase 2) usage of the chamber (see above).
No bone remains
ph.1 R89 Four-spouted lamp (SE12:2)
ph.2 R86 Four spouted lamp (SE12:1)

SE13 Shaft tomb: rectangular shaft, chamber not excavated. West slope hill 102. Shaft shows similar re-cutting to SE12.
No bone remains
No finds

SE14 Stone-built grave. Surface hill 9. This grave was robbed and damaged before excavation could be completed. Three objects were recovered from the spoil heaps left by the looters, but their numbering does not in this case represent plotted position. See also the discussion of this grave

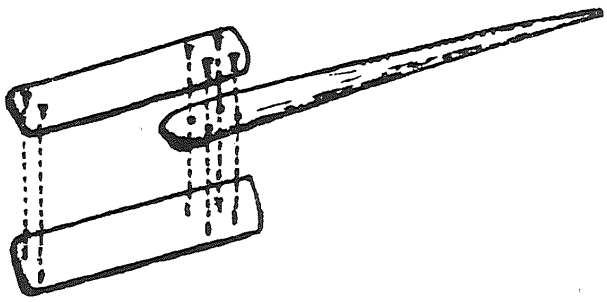
above. (Pl. XIII:2).
Single adult, 25-35 years.
R97 Copper riveted dagger (SE14:1)
R95 Stone bead (SE14:2)
R96 Shell - used as pendant (SE14:3)

Some Observations on the Finds

More will be said about the finds generally in the final section in connection with the dating of the cemetery. Here, it would seem appropriate to single out a few items for individual discussion.

In three tombs, NE10A, NE16 and SE2, loop-handled amphoriskoi were found with funnels (perforated cups) resting in their mouths (Pl. XIV: 2 - from tomb SE2). These funnels have been termed "leben cups" by Dever, who suggested that they contained the fermenting agent and were suspended by means of strings inside a jar of milk.[8] That they were used in the process of making leben seems highly likely, but some qualification can now be added as to the method of their use. In the case of SE2, when the funnel was removed from the mouth of the amphoriskos, traces of a fibrous material were observed at their junction. This strongly suggests that the funnel had been placed over a piece of cloth which rested in the mouth of the amphoriskos, thus permitting a steady dripping of the fermenting agent into the milk below.

Four copper daggers were found during the course of the excavations, each with four rivet holes and rivets still in place. The example from SE14 (SE14:1) was found out of context (see above), but the remaining three (NE8:1, NE25:1 and SE1:6) were found in position on their respective tomb floors. All three showed an interesting feature. About 0.15-0.20 m. away from the riveted end was found, in each case, a pair of additional rivets. This suggests that the hilt was attached in two sections, sandwiching the end of the blade and held together at the distal end by means of the two extra rivets.



A similar method might have been applied to the small blade from NE15 (NE15:7) which had no provision for rivets. Here it is likely that the blade was placed between two pieces of wood, secured at two points by the rivets (NE15:5) found in close proximity.

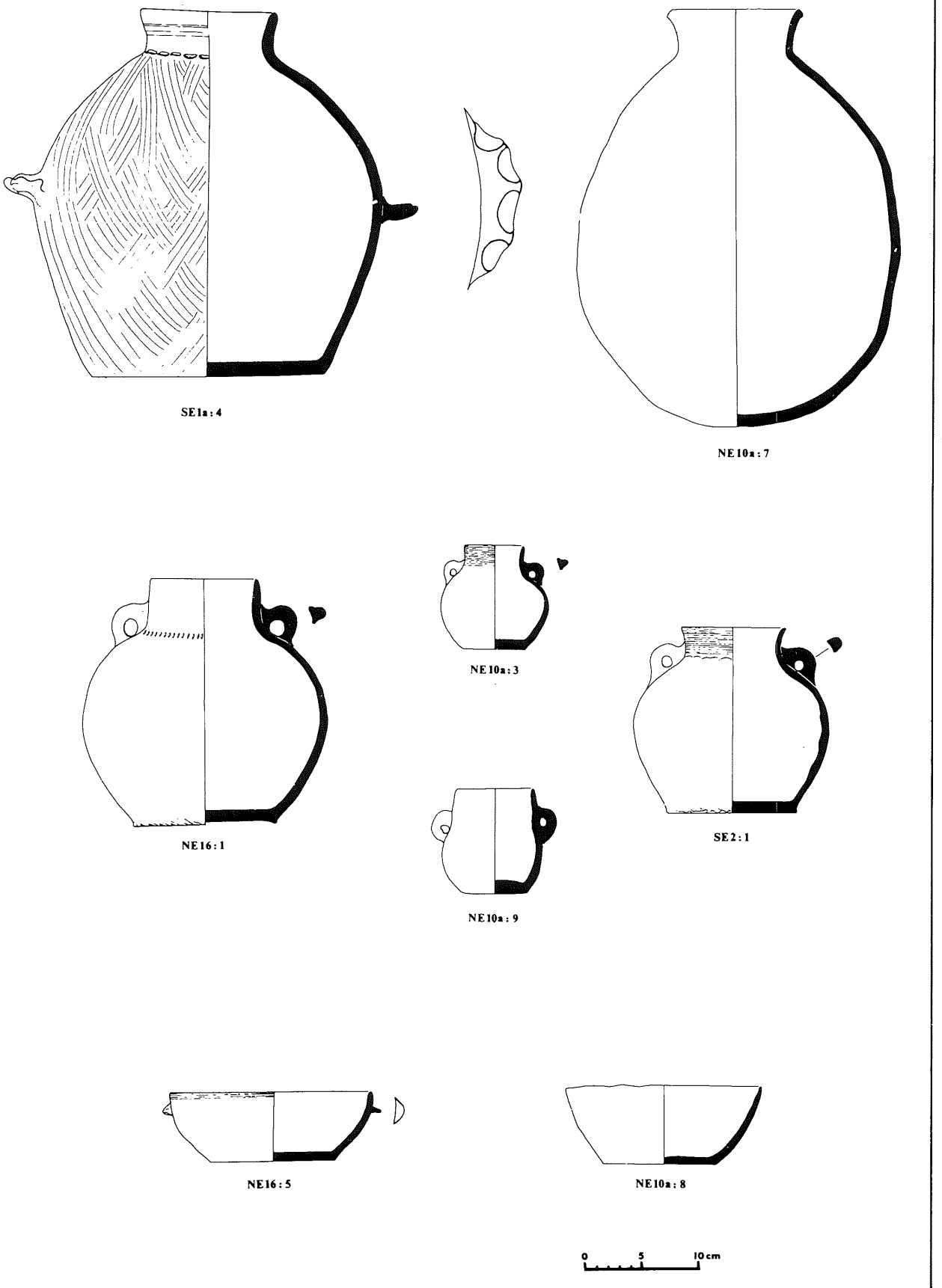
One further type of object encountered during the excavations deserves special mention on account of its peculiarity. Two examples of a most unusual lamp, termed here "side-spouted", were found in different deposits, one (SE1:7) in the lamp niche of SE1, and the other (SE9:1) in the chamber of SE9. This lamp has a perfectly usual four-spouted saucer on top, but it is set on a high base, an internal chamber in which connects with a spout of approximately square cross-section, positioned on the side of the vessel. In both cases the lamp part had clearly been used as such as evidenced by the quite extensive blackening of the spouts. No such blackening was found on the side spouts and the function of these with their connecting chambers remains obscure. Perhaps an aromatic substance was placed in the chamber, giving off a fragrant scent which issued from the side spout as the lamp on top became hot.

The Date of the Cemetery and Conclusions

A detailed analysis of the pottery will not be attempted here: instead it will suffice to make a few preliminary remarks.

Generally the pottery of Tiwal esh-Sharqi is technically well-made. The clay is well prepared, uniformly tempered with small-medium sand, ceramic and lime and is evenly fired. Many of the vessels are provided with a cream wash, tending in some cases towards a slip. There seems

[8] W.G. Dever, The EBIV-MBI Horizon in Transjordan and Southern Palestine, *BASOR*, 210 (1973) p. 53, n. 3.



Figs. 3 : Representative selection of pottery from the EBIV tombs.

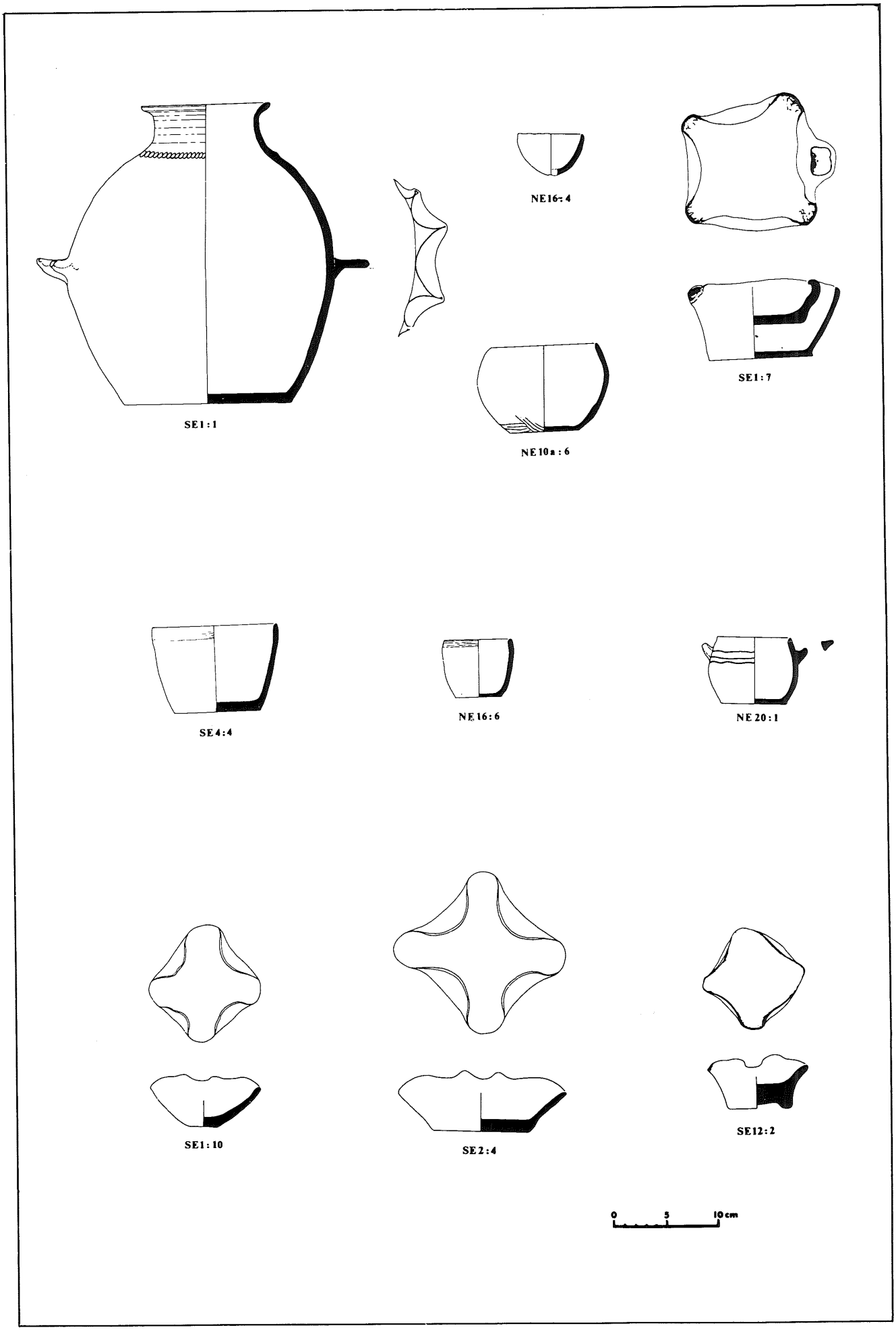


Fig. 4: Representative selection of pottery from the EBIV tombs.

little reason to doubt that the pottery was made locally.

As far as dating is concerned, given the reservations previously expressed by the writer[9] concerning the over-rigidity of Dever's scheme for subdividing the EB IV period into chronologically orientated regional groups or "families",[10] it is at least clear that the entire EB IV assemblage of Tiwal esh-Sharqi falls well within what is defined in his terms as EB IVB. All of the storejars have well-defined envelope-folded ledge handles which show no tendency towards becoming vestigial. Band-combing, a characteristic feature of amphoriskoi, storejars, teapots and cups of EB IVC, is absent, and none of the lamps, whether flat or round based shows the sharply pinched spouts and concavity of body wall typical of the latest in the series. There is some typological variation within the series of amphoriskoi (compare for example NE8:2, NE16:1 and NE20:2) but all have the generally straight neck, often with slightly inturned rim, characteristic of EB IVB: again, completely absent are the flaring necked varieties found in EB IVC deposits.

There is equally no evidence to suggest that the cemetery of Tiwal esh-Sharqi was used in EB IVA. But here a reservation must be expressed, for certainly in the writer's view it has yet to be demonstrated that this phase, represented by Dever's family TR and confined to more southerly parts of Transjordan, has indeed chronological rather than purely regional significance. In any event, it would seem likely that the cemetery of Tiwal esh-Sharqi was in use for a relatively short period between about 2250 and 2100 BC in absolute terms.

In regional terms, the material from Tiwal esh-Sharqi finds its closest parallels to the north, in the area defined by Dever's family NC. Here, similar ledge-handled jars and amphoriskoi with body combing and impressed and moulded neck ornament are found, as also is the same wide variety of lamp types.[11] It should be noted, however that the painted wares and single strap-handled jug forms which characterize these more northerly assemblages are all but absent from Tiwal esh-Sharqi. To the south and west there are also clear ceramic relations, especially in the forms of the loop-handled amphoriskoi and small ledge-handled jars.[12] Absent from Tiwal esh-Sharqi, however, are the ubiquitous handleless jars of these regions.

It may fairly be said, therefore, that the material from Tiwal esh-Sharqi is distinctive in its own right. Although elements of surrounding traditions are not surprisingly present, features such as the simple and delicate cups and bowls, the relatively high proportion of funnels and, of course, the unique side-spouted lamps argue for an individual and local tradition (not, it is to be hoped another new "family"), the parametres of which may be established by further research at neighbouring sites.

Jonathan N. Tubb

Appendix A.

Conservation: Preliminary report Tiwal esh-Sharqi, 1984 by Margot M. Wright

The two major categories of material excavated from the site which required conservation were ceramic and copper alloy artefacts. Beads composed of stone, shell, alabaster or bone/teeth constituted a relatively minor category.

Ceramic Vessels

At first appearance, the fabric of the vessel seemed to be quite robust but, in fact, upon closer examination, the fabric proved to be rather soft and friable,

[9] J.N. Tubb, The MBIIA Period in Palestine: Its Relationship with Syria and its Origin, *Levant,* 15 (1983) p. 56.

[10] This was most recently proposed in: W.G. Dever, New Vistas on the EBIV ("MBI") Horizon in Syria-Palestine, *BASOR,* 237 (1980) p. 35-64.

[11] See especially: E.D. Oren, *The Northern Cemetery of Beth Shan,* Leiden, 1973, figs. 18-24; G.L. Harding, An Early Bronze Cave at el-Husn, *PEF Annual,* 6 (1953) figs. 2-3.

[12] K.M. Kenyon, *Excavations at Jericho, Vol. I: The Tombs Excavated in 1952-4,* London, 1960, p. 180-262; P.W. Lapp, *The Dhahr Mirzabaneh Tomb: Three Intermediate Bronze Age Cemeteries in Jordan, AASOR,* 1966.

especially when the pottery contained many small inclusions as temper or when, as in some cases, it seemed to be made from a clay which, when fired, had the appearance of a fine red-orange fabric.

A standard form of conservation technique was adopted to treat the majority of the ceramics, both whole vessels and sherds.

1. Whole vessels were excavated and the fill examined.
2. The outer surface was cleaned gently by means of a variety of tools e.g. dental picks, stencil cutters, cocktail sticks. The clay marl which adhered to the surface of the vessel was removed with extreme caution so as not to cause damage to the vessel. In some cases, because of the softness of the object, cleaning was terminated and the ingrained dirt left *in situ.*
3. Some vessels were found to have large crystals adhering to both inner and outer surfaces. These insoluble salt crystals tended to disfigure the artefacts and therefore, when possible, they were removed from the surface (outer) of the object by scalpel blade or, when the crystals were large and hard, they were ground down by minidrill using a variety of metal bits. Often, the crystals were left *in situ* if their removal was considered to be damaging to the vessel. The crystals adhering to the interior surface of the vessel were not subjected to any such treatment.
4. The outer surface of the vessel or sherd was cleaned further by brushing the surface with tap water which, in the area where the conservation laboratory was established, appeared to be of good quality. Clay or marl adhering to the interior of the artefact was rinsed off when possible but often, the fine silt proved to be too difficult to remove and hence was left so as not to harm the fabric of the vessel.
5. The object was immersed in tap water for a period of about one hour to allow the fabric to become fully saturated with water and thus to prevent the body of the vessel from being affected by the dilute solution of acid which, in some cases, was used to remove carbonates from the surfaces (outer). The carbonates (insoluble salts) were removed by dripping 5-10% nitric acid from a Pasteur pipette onto the body of the object where they could be seen to have formed hard white deposits. The carbonates reacted with the acid causing effervescence and forming nitrates, soluble in water.
6. The ceramic was immersed in tap water for a period of four days to remove the soluble salts from the fabric. During this time, the water was changed at least twice per day and at all times care was taken to ensure that the object was submerged fully in the water to prevent areas appearing above the surface of the water from which evaporation could occur and thus result in efflorescence and damage to the object. Certain artefacts were considered to be too delicate to be treated with acid and hence they were subjected to a short period of soaking. The four day period of immersion in tap water was judged to be sufficient to remove the majority of soluble salts present and ideally, under laboratory conditions, the final soaking would have been in distilled water, and the level of salts present in the distilled water after soaking monitored by conductivity meter to decide whether the treatment should be continued or terminated.
7. The object was removed from the tap water and allowed to dry in the shade.
8. When the sherds or vessel had dried completely, usually after two or three days, the fabric was inspected to discover whether it was strong or weak. Some objects had to be consolidated because they were in a highly weakened state by immersing them in a solution of 10% Paraloid B-72 (ethyl acrylate-methyl methacrylate copolymer manufactured by Rohm & Haas) in toluene. Ideally the artefact would be immersed in the consolidating solution and subjected to vacuum to ensure penetration of the copolymer

but, due to lack of facilities, the object was immersed for a period of approximately 20 hours. The object was removed from the solution and the solvent allowed to evaporate slowly: toluene was selected as the solvent in which the consolidant was dissolved as it evaporates more slowly than acetone and therefore is less likely to cause the consolidant to migrate to the surface of the vessel or sherds.

9. Broken vessels were reconstructed and the sherds held in position with masking tape so that, when joined, they could be put together efficiently, without causing damage to the edges, and to prevent any sherds from being "locked out".
10. The sherds were joined with H.M.G. (cellulose nitrate adhesive). This adhesive is soluble in acetone or toluene and therefore the joins may be taken down at any point in the future.
11. When necessary, to give the reconstructed vessel strength or to enhance its appearance, gaps were filled with dental plaster, and in some vessels, small sherds were floated in. The dental plaster was ground down to form a smooth surface with various grades of abrasive films and the surface was painted with powder colours in Rowney Cryla Matt Medium Number 2 or with Cryla Acrylic Colours in water.

Copper Alloy Artefacts

1. Smaller objects such as rivets, points and blades were cleaned mechanically by mini-drill and scalpel blade under a binocular microscope.
2. Each object was degreased by immersion in acetone for 30-60 seconds.
3. The object was immersed in 3% benzotriazole in ethanol and subjected to vacuum for a period of approximately 12 hours, after which the vacuum was released and the object allowed to remain in the solution for a further 12 hours to try to obtain a stable state in which corrosion was inhibited.
4. Excess benzotriazole was removed by rinsing the object with ethanol, after which the solvent was allowed to evaporate.
5. The object was protected by the application of two coats of Incralac* (a solution of 20% in toluene), the first coat being allowed to dry before the application of the second.

Larger objects, such as daggers and javelins, were wrapped in acid-free tissue and packed with Silica Gel in an air-tight box to reduce relative humidity (RH) and hence reduce corrosion. Most of the objects appeared to be relatively stable but this was belied by the fact that when part of a dagger was mechanically cleaned, overnight the green corrosion products, indicative of active bronze disease, were observed to have developed. This observation is rather disturbing and emphasizes the point that copper alloy objects should be stored under controlled environmental conditions i.e. RH less than 45% immediately after excavation and that they should be treated to try to obtain stabilisation by trained conservators, after which they should be maintained in a stable environment with low RH. 'methyl methacrylate copolymer (Paraloid B-44), toluene, ethanol or butyl acrylate, benzotriazole, epoxidised soya bean oil.

Beads

All of the beads were cleaned by swabbing gently with cotton wool dampened with ethanol.

The beads excavated from Tomb NE 8: 6 which appeared to have been manufactured from the roots and lower parts of teeth were in a very poor state of preservation which necessitated immediate consolidation with 10% Paraloid B-72 in acetone so that they did not disintegrate; fragments were joined with H.M.G.

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PRELIMINARY REPORT ON THE 1985 SEASON OF EXCAVATIONS AT TELL ES-SA'IDIYEH, JORDAN

by
Jonathan N. Tubb

Introduction

The imposing double mound of Tell es-Sa'idiyeh lies in the central Jordan Valley, 1.8 km. east of the Jordan river, on the south side of the Wadi Kufrinjeh. The two elements of the site comprise an upper *tell* to the east, rising to a height of some 40.00 m. above present ground level and covering an area of about 10,350 sq. m. at its summit, and a low, bench-like mound to the west, measuring approximately 90.00 x 40.00 m. and about 20.00 m. lower than the upper tell (Pl. XV).

In 1943, the site was visited by Nelson Glueck during his survey of Eastern Palestine: his surface collections indicated a long history of occupation from EBI-II through to the Iron II period, with extensions into the Roman and Byzantine periods.[1] To the west of the bench mound and separated from it by a gap of about 40.00 m., Glueck identified an additional site with sherds not only of EBI and II but also of the Chalcolithic period.[2] It was this very low mound, described as "Tell es-Sa'idiyeh el-Taḥta", which was investigated in 1953 by H. de Contenson. In a number of small soundings a very thin occupation deposit was found, associated with pottery of the Middle Chalcolithic period.[3]

In 1964, systematic excavations were begun at Tell es-Sa'idiyeh by a University of Pennsylvania expedition under the directorship of J.B. Pritchard. Since 1980 the cemetery area has been published and recently, the excavations on the *tell* appeared.[5]

A number of areas were investigated both on the upper and lower tells during four consecutive seasons. On the north-west side of the upper mound, a large area (1375 sq. m.) produced a sequence of Iron II strata dating between the tenth and eighth centuries B.C. Below a stratum of eroded walls and large circular grain pits (stratum I), remains of a well-planned building complex were excavated, consisting of a series of regular two-roomed houses or workshops leading off two parallel north-south orientated streets. Functional specialization was indicated by areas devoted to bread production and weaving. Regular planning also characterized the two underlying strata: again, streets and passageways gave access to carefully laid out rectangular buildings constructed of mud-brick on stone foundations. The lowermost stratum (IV) excavated by Pritchard is said to have been built over a destruction level.

On the highest part of the upper tell, the so-called "acropolis", a monumental building, described as a palace, was excavated. Consisting of seven rooms set around an open paved court, the building formed a square in plan and was constructed of massive mud-brick walls on stone foundations. On one of the floors of the palace was found an inscribed incense altar bearing the name *y-k-n-u*, and this object and the building have been dated to

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[1] N. Glueck, *Explorations in Eastern Palestine IV, AASOR*, 25-28, New Haven, 1951, p. 290-295.

[2] *Ibid.*, p. 293.

[3] H. de Contenson, Three Soundings in the Jordan Valley, *ADAJ*, (1960) p. 49-56.

[4] J.B. Pritchard, *The Cemetery at Tell es-Sa'idiyeh Jordan*, University Monograph 41, Philadelphia, 1980.

[5] J.B. Pritchard: *Tell Es-Sa'idiyeh Excavations on the Tell*, 1964-1966, The University Museum, University of Pennsylvania, 1985.

the four century B.C.

One of the most impressive finds of the Pennsylvania expedition was a staircase leading from the foot of the mound to the Iron Age city. The stone-built structure had, along its centre, a mud-brick wall which, according to the excavator provided support for a roof of wooden beams, producing in effect a concealed passageway giving access to the spring at the base of the tell. This construction was dated by Pritchard to the Iron I period, between 1200 and 900 B.C.

On the low mound Pritchard opened an area on the north side, hoping to expose part of the Early Bronze Age settlement, the presence of which seemed to be assured by the dense concentration of EBII-III sherds. Instead, however, almost immediately below the surface, a cemetery of the Late Bronze-Iron I transitional period was revealed. During the course of a six-week season forty-five graves were excavated, many very eroded and poor, but some quite extraordinarily rich. One in particular, Tomb 101, produced, in addition to a fine corpus of pottery vessels, a bronze wine set and tripod stand, ivory cosmetic containers and a rich assemblage of items of personal adornment including many of gold and electrum.

The Pennsylvania expedition ceased operations in 1967 due to the war of that year and excavations were not subsequently resumed. In 1985, with the encouragement of the Jordanian Department of Antiquities and Professor Pritchard, the writer applied for and was granted a permit to resume excavations at Tell es-Sa'idiyeh, now on behalf of the British Museum. Between April and mid-May a preliminary six-week season was held, sponsored and funded by the British Museum, with further sponsorship provided by the British Institute in Amman for Archaeology and History and Alia, the Royal Jordanian Airline.

The staff of the 1985 season consisted of the writer (British Museum) — director, Peter Dorrell (Institute of Archaeology, London) — associate director, Barbara Pritzkat (U.C.L.A.) — surveyor, Janet Henderson (Institute of Archaeology, London) — human osteologist, Alan Hills (British Museum) — photographer, Sherif Omar (British Museum) — conservator, Constantine Politis (Institute of Archaeology, London), Karen Bradley (Oriental Institute, Chicago), Derek Kennet (Institute of Archaeology, London) and Debra Chase (Harvard) — area supervisors. The expedition was joined for a short time by Robert and Janie Miller (A.U.B.) who initiated the excavations in area DD, and by Gillian Bentley (Oriental Institute, Chicago) who undertook the supervision of the trial trench, area CC. Bedri Hassan al-Madi was technical services advisor and camp manager and Sheikh sadiq, a veteran of Jericho, served as foreman. The staff was completed by Sa'ad al-Hadidi, representative of the Jordanian Department of Antiquities, who assisted with the supervision of area AA.

Thanks are due to the Department of Antiquities of Jordan and in particular to its Director-General, Dr. Adnan Hadidi for all his help, kindness and enthusiastic support for the project. Finally, a special debt of gratitude is owed to Professor James Pritchard, not only for all his advice, but also for making available much of his yet un-published material: the contour plan (Fig. 1) is re-drawn from his original.

Results of the 1985 Season

Three main areas were begun in 1985; area AA on the upper tell and areas BB and DD on the low mound. Area CC, also on the low mound, was a trial probe, the excavation of which will probably not be continued in subsequent seasons. Figure 1, which is adapted from Pritchard's contour survey plan, shows the 1985 areas in relations to those of the Pennsylvania expedition.

Area AA

Situated in the south-east corner of Pritchard's main trench on the north-west side of the upper tell, this area is intended to continue the sequence of occupation levels below the base of the Pennsylvania excavations.

Area AA currently defines an area

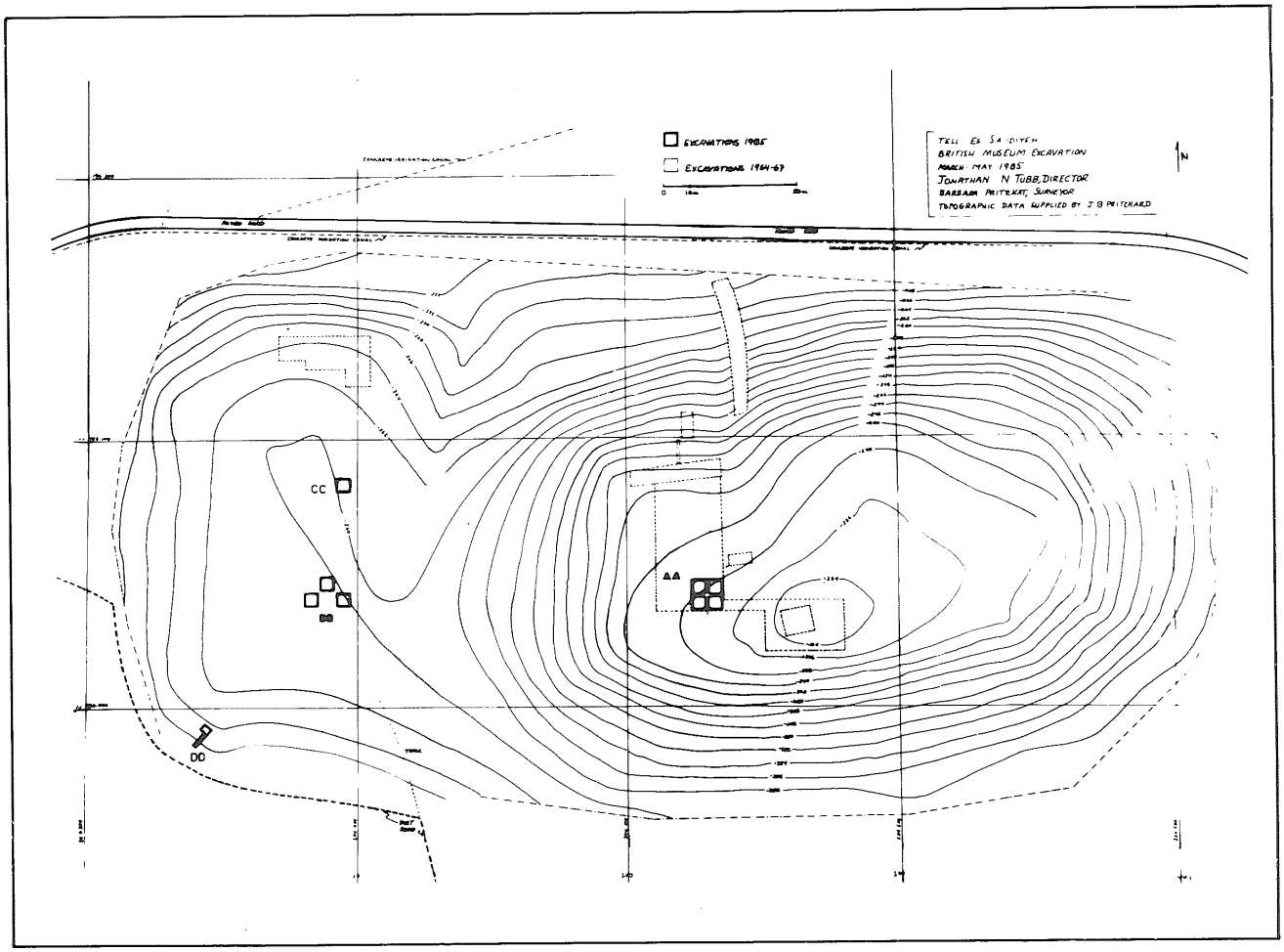

Fig. 1 Contour plan of the site showing the 1985 areas in relation to those of the Pennsylvania expedition.

11.00 m. x 11.00 m. divided into four, five metre squares with one metre cross-baulks and orientated on Pritchard's grid. Considerable erosion of the south-east corner of Pritchard's trench necessitated the cutting back of his south and east sections by one metre. This allowed the opportunity to excavate and study the upper (otherwise removed) stratigraphy in two narrow strips along the south and east baulks and hence to provide a correlation overlap between the old and new excavations.

Detailed discussion of the complex stratigraphy of area AA must await analysis of the ceramics and only a few preliminary remarks can be made at this stage. Excavation of the one metre wide "shelf" on the east side of AA produced, of course, little in terms of architecture, but did provide a detailed stratigraphic record of the layers otherwise removed by the previous excavations. In very general terms, the sequence of four strata outlined by Pritchard could be verified, but with a certain degree of necessary sub-division and refinement.

Beneath an extremely eroded and weathered layer in which no features could be isolated or distinguished, remains of a substantial building were uncovered. Part of a wall, well-constructed of large well-formed mud-bricks on stone foundations, was found together with its associated surface of mud-brick paving. This construction corresponds almost certainly with Pritchard's stratum II. Beneath this, and under a layer of rubbly fill which may be interpreted as a levelling up, were found walls of a much poorer nature, associated with a series of occupation levels consisting largely of beaten earth surfaces covered with ashy deposits. A *tannur* was found associated with one of these surfaces and the overall impression gained is one of an area of industrial rather than domestic utilization. This building phase, which can be equated with Pritchard's stratum III, is in fact composed of two distinct sub-phases: most of the walls show a clear rebuild, and correspondingly, the occupation surfaces fall into two discrete bands with a layer of soft fill separating them.

The isolation of Pritchard's lowest excavated phase, stratum IV, proved to be extremely difficult. It involved not only the excavation of the one metre strip on the east, but also the complete clearance of the remainders of the squares, removing all of the section collapse, silting and rubbish that had accumulated in the base of Pritchard's excavation during the past eighteen years. When the area had been cleared, it became apparent that the surviving plan, consisting of streets and alleyways with rather poorly constructed, narrow walled rooms leading off, did not represent one single coherent phase, but rather was an amalgamation of several interrelated and overlapping sub-phases. All were based on the same general plan, but differed in detail, suggesting an area that had been continuously used with the consequent processes of rebuilding, repair and modification. Since Pritchard's excavation had ceased generally at the point of isolation of the latest sub-phase, it was possible to continue the excavation of his stratum IV, adding more details and separating out, where possible, the individual sub-phases. Again, this area seems to have been given over to specialized industrial usage rather than domestic occupation. Changes in the usage of various rooms in the different sub-phases could be observed: a room that in the lowest sub-phase had contained four bread ovens had been re-floored with stones to cover them completely and afterwards was associated with weaving, to judge from the large number of loom weights found there. One room of the lowest sub-phase contained a curious installation consisting of a stone-lined depression with a number of grinding stone fragments at the bottom. The pottery from this feature was intensely stained green and an almost rust red and it is possible that the installation was associated with dye preparation (Pl. XVI).

Pritchard had indicated that stratum IV was built on a destruction level and certainly removal of the lowest sub-phase of his stratum IV revealed a layer of intensely burnt material, black and chocolate brown with lenses of yellow, white, blue and even pink ash. This layer extended over all four squares of AA, cut through in only one place by a deep pit associated with stratum III.

This ash deposit was shown on excavation to be approximately 0.40 m. deep and, despite its vivid multicoloured appearance, was composed of fine material with few inclusions and very little pottery. It rested on an irregular sloping surface or reddish orange natural silt, homogeneous in texture and again, with no inclusions and virtually no pottery.

Excavation of the silt layer has not yet been completed, but it extends in depth at least 0.30 m. A mud-brick wall has begun to be exposed in AA 100 within the silt layer, its top just in contact with the overlying ash. Its alignment is different from those of stratum IV and it has the appearance of having been much weathered and eroded.

Although little can be said as yet about the nature of the deposits below Pritchard's stratum IV, it is at least clear that the level upon which it was founded was not one of the destruction, not, that is, in the conventional sense. Rather, it would seem that this area of the site had been abandoned for some period of time, during which natural silting occurred, largely covering whatever structures had existed previously. The ash deposit can only be explained in terms of burning off vegetation and rubbish in preparation for the construction of the buildings of stratum IV.

Excavations on the Low Mound

The low mound, as noted by both Glueck[6] and Pritchard,[7] has a dense surface concentration of EBII-III sherds, perhaps indicating the presence here of an extensive Early Bronze Age settlement. It was this consideration which led Pritchard to excavate an area on the north side of this mound. His finding here of a cemetery of the LBII-Iron I transitional period explains the occurrence of sherds of this period

[6] Glueck, *ibid.*, p. 292.

[7] Pritchard, *ibid.*, The Cemetery, p. 1.

amongst the surface materials of the low mound. Further, he demonstrated that the graves had been cut directly into Early Bronze Age occupation remains, in many cases with the utilization and adaptation of standing walls. Certainly, in the area exposed by Pritchard, there seems to have been no occupation between EBIII and the establishment of the cemetery towards the end of LBII.

An examination of the surface materials of the low mound this season suggested that the same periodization was true for the whole of the site; EBII-III and LBII-Iron I only. On the east side, at the foot of the high tell, a few Iron II sherds were found, but these must be presumed to have been washed down the slope. Late Roman-Byzantine sherds, dating probably to the mid-6th century AD were encountered only in the area of the large stone-built building remains on the north side of the mound described by Glueck.[8] Contrary to Glueck, it seems unlikely that the exposed stones are in fact foundational, particularly in view of the large number of similar massive stones which are concentrated in the immediate vicinity. A limited sounding next season will test this view and will also attempt to recover a complete plan of this interesting building.

The proportion of LBII-Iron I sherds to those of the Early Bronze Age was found to vary across the low mound; highest on the north side, low towards the centre and on the south and negligable on the west. Based on this observation, three areas were opened; BB on the south side, CC near to the centre (south of Pritchard's excavation and the Roman/Byzantine building) and DD on the extreme south-west slope.

Area BB

BB, located on the southern side of the low mound, was initiated as an area 17.00 m. x 11.00 m., divided into six 5.00 m. squares with 1.00 m. cross-baulks. The intention here was to establish the basis of an open area excavation in which to expose and investigate the Early Bronze Age settlement.

Once again, the unreliability of surface indications was brilliantly demonstrated, for not only were graves uncovered immediately below topsoil, but also their concentration was vastly greater than in the area examined by Pritchard, with much inter-grave cutting and associated disturbance. The complexity of the cemetery in this area meant that only two of the six squares (200 and 400) could be excavated and these two alone produced 40 burials. By the end of the 1985 season these two squares had still not been cleared of burials: in the deepest part of square 400, which had attained a depth of over 2.00 m. below ground surface, further burials were still being encountered.

As Pritchard had found during his excavation,[9] it proved impossible in the majority of cases to establish the exact level from which the graves had been cut, and in many cases, particularly the simple pit burials, the edges of the grave-cuts could not be accurately determined.

The continued, heavy re-use of this part of the cemetery with the consequent inter-cutting of graves allows several linked sequences to be defined, with the possibility of establishing an internal chronological phasing. Unfortunately, the paucity of grave-goods in most of the burials renders this treatment of only limited value.

There was considerable variation in both the type of grave and in the burial practice. Mostly,the graves consisted of simple, roughly oval pits. In some cases, rather irregularly vertically placed mud-bricks were used to line the pits, sometimes in conjunction with field stones (or perhaps stones taken from Early Bronze Age structures). There is no evidence to suggest that these pit or lined pit graves had been covered, but in a few instances the body itself had been partly covered with large sherds from store-jars. Stones, frequently found above the skull, are presumed to have served as grave markers (apparently without much effect!).

A few of the graves were more neatly constructed with well-cut rectangular pits,

[8] Glueck, *ibid.*, p. 292.

lined with regularly placed mud-bricks. In these cases, enough mud-brick was found in the grave fill to suggest that they had originally been covered over. This was certainly true for the two brick-built graves (24 and 32) in square 200 which still had remains of mud-brick slabs in position over the deposits. These two graves were set so deliberately next to each-other and were both constructed of large horizontally laid mud-brick slabs, four to five courses high, that it seems likely that they were built to stand, at least in part, above the ground surface.

In addition, there were a number of infant jar burials which had been set into simple pits. In every case, the jar had been broken at the shoulder in order that the burial might be inserted.

The skeletal remains were, on the whole, reasonably well preserved, especially in the deeper lying burials, but there was a considerable degree of disturbance as a result of secondary and frequently multiple intrusion. However, enough evidence was preserved to indicate that the majority of the graves contained the remains of single articulated skeletons. The orientation, where discernable, was east-west or west-east in all but one case which was north-south. Normally the body lay extended on its back, but in three graves the deceased had been placed on its side, facing south.

A few of the graves which were otherwise undisturbed by later intrusion contained disarticulated remains which might imply a secondary practice. It is conceivable, however, that they are secondary in the sense that they represent reburials of skeletons disturbed by the cutting of later graves. This would help explain the rather extraordinary collection of human remains found in both of the large brick-built graves, 24 and 32, which each contained in addition to a single articulated skeleton, a number of additional bones and two and four extra skulls respectively.

Human skeletal remains were recorded by Miss Henderson in the field, and the majority were subsequently lifted and removed for further analysis. Her detailed report will be presented in a later publication.

With a few exceptions, the graves excavated in 1985 were not especially rich. Many contained no associated finds, and others just a few beads or a single pottery vessel. It is interesting to observe that the commonest funerary vessel was an imitation Mycenaean pyxis: altogether eight examples were found.

A fine collection of objects was associated with grave 27, the burial of a young girl aged about 5 years old. She had a bronze anklet on each leg and on each wrist a bracelet, one of small white paste beads and the other of carnelian and silver beads. Around her neck was a necklace, again of carnelian and silver beads but here interspersed with larger black stone beads. Close to her shoulder was found a bronze fibula which when cleaned revealed a silver drop earring adhering to it. Above the skull was a bronze clasp which was probably some type of hair ornament. In addition were found silver and steatite finger rings, a bronze weaving spindle, a finely engraved stamp seal and a zoomorphic pot (Pl. XVII).

Perhaps the most attractive find from the cemetery, however, was a beautifully preserved three-piece bronze wine set comprising bowl, strainer and juglet (Pls. XVIII; XIX). This was found in grave 32, one of the brick-built graves referred to above in connection with the skeletal remains. It is interesting to note, that in addition to the four extra human skulls found with the articulated skeleton, bones of a large animal, possibly a cow, were also included in this deposit.

A detailed discussion of the dating of the graves excavated in 1985 must obviously await a full analysis of the finds. In general terms, however, there is nothing to suggest that they differ chronologically from those excavated by Pritchard on the north side of the site, and a dating within the transition from LBII to Iron I (13th-12th centuries B.C.) would seem appropriate.

The following is purely a working inventory of the graves excavated or examined in 1985 and is not intended as a

final statement.

1. BB 400 Brick lined pit, burial covered by store jar sherds. Single articulated, feet missing. W-E. *Finds* T1:1 Shell bead, T1:2 store jar (from covering sherds)
2. BB 200 Brick lined pit (using part of N wall of T32). Single articulated W-E. *Finds* T2:1 Jar, T2:3 Bowl, T2:4 Carnelian bead, T2:5 Faceted bead. (Note: T2:2 re-assigned to T40).
3. BB 400 Pit, burial covered by store jar sherds. Single articulated. W-E. *Finds* T3:1 Jar. The store jar covering sherds are from several vessels and no complete profiles were reconstructable.
4. BB 400 Pit? Very eroded. Few store jar sherds (no profile possible) and scatter of bone fragments.
5. BB 200 Very eroded and disturbed burial consisting of a fragmentary storejar and skull fragments only.
6. BB 400 Pit. Single articulated adult with No. of associated infant bones. E-W.
7. BB 400 Pit. covered by number of stones. Only partially excavated (in baulk). *Finds* T7:1 juglet.
8. BB 400 Pit? Broken skull and poorly preserved associated bones extending into W baulk. Probably single articulated, E-W.
9. BB 200 Pit, partly stone lined. Disarticulated. *Finds* T9:1 pyxis, T9:2 stamp seal (found inside pyxis).
10. CC 100 Not excavated - store jar and bone appearing in E baulk.
11. CC 100 Pit? Very eroded and disturbed by ploughing. Few store jar sherds (no profiles) and scatter of bone fragments.
12. BB 400 Scatter of bone fragments only - may not be a grave.
13. BB 200 Type of grave not clear - appears to have been placed on top of mud-brick slab associated with T24. Disarticulated. *Finds* T13:1 grinding stone, T13:2 Carnelian bead.
14. CC 100 Pit. Single articulated. E-W. No associated finds.
15. BB 400 Pit, covered by number of stones. Disturbed by T16. Collection of long bones only. *Finds* T15:1 unfinished limestone bead, T15:2 twisted bronze wire.
16. BB 400 Pit, partially stone lined. Single articulated with arms folded. E-W. No associated finds.
17. BB 200 Very eroded and disturbed collection of store jar sherds and bone fragments. *Finds* T17:1 Alabaster jar.
18. BB 200 Pit. Single articulated. N-S. *Finds* T18:1 Jug, T18:2 painted shoulder fragments of jar (thought to be in primary association despite incomplete nature).
19. BB 200 Pit? Very eroded and disturbed collection of store jar sherds (no profiles) and bones.
20. BB 400 Jar burial - store jar broken off at shoulder and provided with "lid" sherd. Infant burial. *Finds* T20:1 Store jar (container for burial).
21. BB 400 Pit, stone lined. Largely destroyed by later grave cutting. Only two disintegrated long bones surviving.
22. BB 400 Pit, covered by stones. Not excavated.
23. CC 100 Pit. Articulated adult with child. W-E (adult), E-W (child). *Finds* T23:1 3 white paste beads.
24. BB 200 Brick-built. Single articulated adult plus skulls and a few bones from 2 others. W-E (articulated burial). *Finds* T24:1 Alabaster stopper, T24:2 Frit bead, T24:3 Carnelian bead, T24:4 Carnelian bead, T24:5 Carnelian bead, T24:6 Bone bead, T24:7 Carnelian bead, T24:8 Iron dagger, T24:9 Pyxis, T24:10 Pyxis, T24:11 Store jar, T24:12 calcite spindle whorl, T24:13 Carnelian bead.
25. BB 400 This seems to be a pit or trench rather than a grave. It disturbs T31 which underlies it. The bones, especially the skull and jaw probably belong to T31. *Finds* T25:1 Pyxis (probably derived from T31), T25:2 small store jar (incomplete).
26. BB 400 Pit, stones over skull. Single articulated on side. E-W facing S. *Finds* T26:1 bronze earring.
27. BB 400 Pit. Single articulated girl, aged about 5-6. E-W facing S. White traces from garment observed over

and around bones. *Finds* T27:1 Bronze anklet, T27:2 bronze anklet, T27:3 bracelet of small white beads, T27:4 silver finger ring, T27:5 bronze hair clasp, T27:6 steatite ring, T27:7 Stamp seal, T27:8 necklace of silver, carnelian and stone beads, T27:9 bracelet of silver and carnelian beads, T27:10 bronze weaving spindle. T27:11 bronze fibula, T27:12 silver earring, T27:13 zoomorphic pottery vessel.

28. BB 200 Pit. Disarticulated jumble - 4 skulls and several bones. *Finds* T28:1 pyxis, T28:2 carnelian bead, T28:3 calcite jar.
29. BB 400 Jar burial - store jar broken at shoulder. Set into and disturbing T25/31. Infant bones inside jar. *Finds* T29:1 store jar (container for burial).
30. BB 400 Pit, possibly covered by stones. Single articulated child (feet and lower legs to knee caps only - cut by T37). W-E. *Finds* T30:1 pyxis, T30:2 pyxis, T30:3 jug.
31. BB 400 Brick lined and covered pit. Below and disturbed by T25. Single articulated adult missing skull (probably to be found in T25). W-E. *Finds* T31:1 clay ball. The pyxis, T25:1, should probably be associated with this burial.
32. BB 200 Brick-built. Single articulated adult plus disarticulated bones and skulls from 4 other individuals. W-E (articulated burial). Deposit also contained bones of large animal, possibly a cow. *Finds* Bronze wine set: T32:1 bowl, T32:2 strainer, T32:3 juglet.
33. BB 400 Pit. Single articulated adult. W-E. Possibly associated with child burial T33A which directly overlies it. *Finds* T33:1 jar, T33:2 Stamp seal, T33:3 carnelian bead, T33:4 paste bead, T33:7 bronze loop, T33:8 inscribed plaque.

33A. BB 400 Articulated child burial, possibly associated with T33 above. SW-NE. *Finds* T33A:5 bronze and iron bracelet, T33A:6 4 bronze earrings. T33A:9 necklace of mixed beads, T33A:10 scatter of small beads.

34. BB 400 Brick lined and covered pit. Single articulated adult. W-E. Not completely excavated.
35. BB 400 Jar burial? Not excavated.
36. BB 400 Brick lined and covered pit. Single articulated adult on side. W-E, facing S. *Finds* T36:1 pyxis.
37. BB 400 Pit? Very disturbed by T26. Portions of legs and pelvis only. E-W?
38. Mistake in numbering = T35.
39. BB 200 very disturbed jar burial (?) below T32 (running under wall) Not excavated.
40. BB 200 Jar burial - very eroded and no profile possible for jar itself. Infant bones inside remains of jar. *Finds* T40:1 Iron bracelet, T40:2 Iron bracelet, T40:3 Iron bracelet, T40:4 Bronze earring, T40:5 Necklace of 36 assorted stone and shell beads.

Early Bronze Age Occupation in BB

Only one small "pinnacle" of undisturbed Early Bronze Age occupation could be isolated on the north-east side of 400, measuring approximately 2.20 m. by 0.50 m. and defined as locus 450. The upper stratum (450.1) consisted of burnt mudbrick debris mixed with ash, and below this and sealed by it was a dense black ashy layer (450.2) containing a heavy concentration of burnt and crushed pottery. 450.2 rests on a surface of greenish clay, possibly a floor. On the basis of a preliminary examination of the pottery from this deposit which included a number of complete profiles of platter bowls and jars a date in the latter part of EBII or early in EBIII would be indicated.

Area CC

Looking down at the surface of the low mound from the upper tell in the early morning light, a number of dark, roughly oval patches could be seen, especially on the north side. These has obviously resulted from differential drainage and drying and the suggestion was made that they might be signalling the presence of graves. In such an event, the recording of these patches would provide a very rough but rapid method of plotting the extent of the cemetery.

In order to test this theory, a single 5

m. by 5 m. square, defined as area CC, was laid out immediately over one of the dark soil patches in approximately the centre of the low mound, just to the south of the Roman/Byzantine building.

Removal of the topsoil revealed a very disturbed layer containing many stones, LBII-Iron I sherds (mostly from store jars) and fragments of human bone, mixed with sherds of the Early Bronze Age. the disturbance, which had obviously destroyed a number of graves, had been caused by ploughing, the furrows clearly visible as channels running east-west, approximately 0.10 m. deep and 0.40-0.60 m. apart. Below the ploughed level, a stone wall, running roughly north-south was revealed on the west side of the square, close to the baulk. Composed of rather irregularly laid field stones, varying in size from 0.10-0.30 m., this wall was about 0.65 m. wide. It joins the western baulk at either end but curves away from it slightly in the middle implying that it represents the outside wall of a building which extends to the west. East of this wall (wall a), eroded but undisturbed graves were encountered below the ploughed level, similar in nature to those of area BB. Since it was never the intention to open an extensive area at this location, and since the excavation of BB was already demonstrating the lack of correlation between differential surface soil indications and the presence or absence of graves, operations in area CC were brought to a close. The defined burials were excavated or recorded and the human remains were removed for further study. These graves appear in the inventory above, together with those from BB. It is planned to re-open CC at a later stage, extending the area westwards in order to investigate the building associated with wall a.

Area DD

Begun as a small scale operation to investigate a stone-built structure eroding from the south-west slope of the low mound, an original 1.50 m. wide slit trench running north-east - south-west and called DD, was extended later in the season with the addition of a 3.00 m. by 2.00 m. trench at the north-east end. (Fig. 2).

Immediately below topsoil (DD 100+) was found a layer of greenish, washed and eroded mud-brick detritis (101.1) extending over most of the trench. The stone structure visible before excavation proved to be a wall (wall a) running north-south with a short eastward return at its northern end. It is only preserved as one course and is almost certainly foundational. It is 0.95 m. wide, constructed of large flat stones.

East of wall a and below the level of washed mud-brick detritis was a 0.30 m. thick destruction level (102.1) composed of lumps of burnt orange mud-brick, large pieces of charcoal and dense ashy pockets. It rested upon a blackened floor surface with occasional patches of white plaster (102.2). To the north, this floor runs up to a mud-brick wall (wall c) of which three courses are preserved. The bricks are of size 0.40 x 0.22 x 0.14 m. and the wall is constructed of two parallel rows of bricks, being therefore, only 0.45-0.50 m. wide. Along part of the southern face of this wall was found a mud-brick structure, possibly a bench, upon which rested an incised, decorated bone tube.

To the west, the extent of the floor is unknown due to erosion of the mound at this point, but it appears to run up to a curious installation made of three large mud-bricks, set vertically to form a type of box. This mud-brick feature (called initially wall b) abutts the north-east corner of wall a, but the relationship between the two is not clear. Neither is that between the floor surface and the presumed inner face (east) of wall a, this relationship again having been lost through erosion. It is possible that the mud-brick "box" is associated with an entranceway into the building, and further excavation to the north-west, where erosion has been less, may help to clarify the architecture on this side of the building. Certainly, expansion of this area to the un-eroded north-east should yield the rest of the plan of the building.

Lying directly on the floor surface was a heavy deposit of pottery, much of it burnt and crushed, representing several com-

plete vessels. Also found were grinding stones and clusters of bivalve shells. Some of the pottery was leaning up against the mud-brick "box", confirming its association with the floor surface. (Pl. XX).

A preliminary examination of the pottery from the burnt floor surface in DD, which includes red plain and pattern-burnished platters, holemouth and loop-handled painted jars and Abydos juglets, suggests a date for the building in the EBII period.

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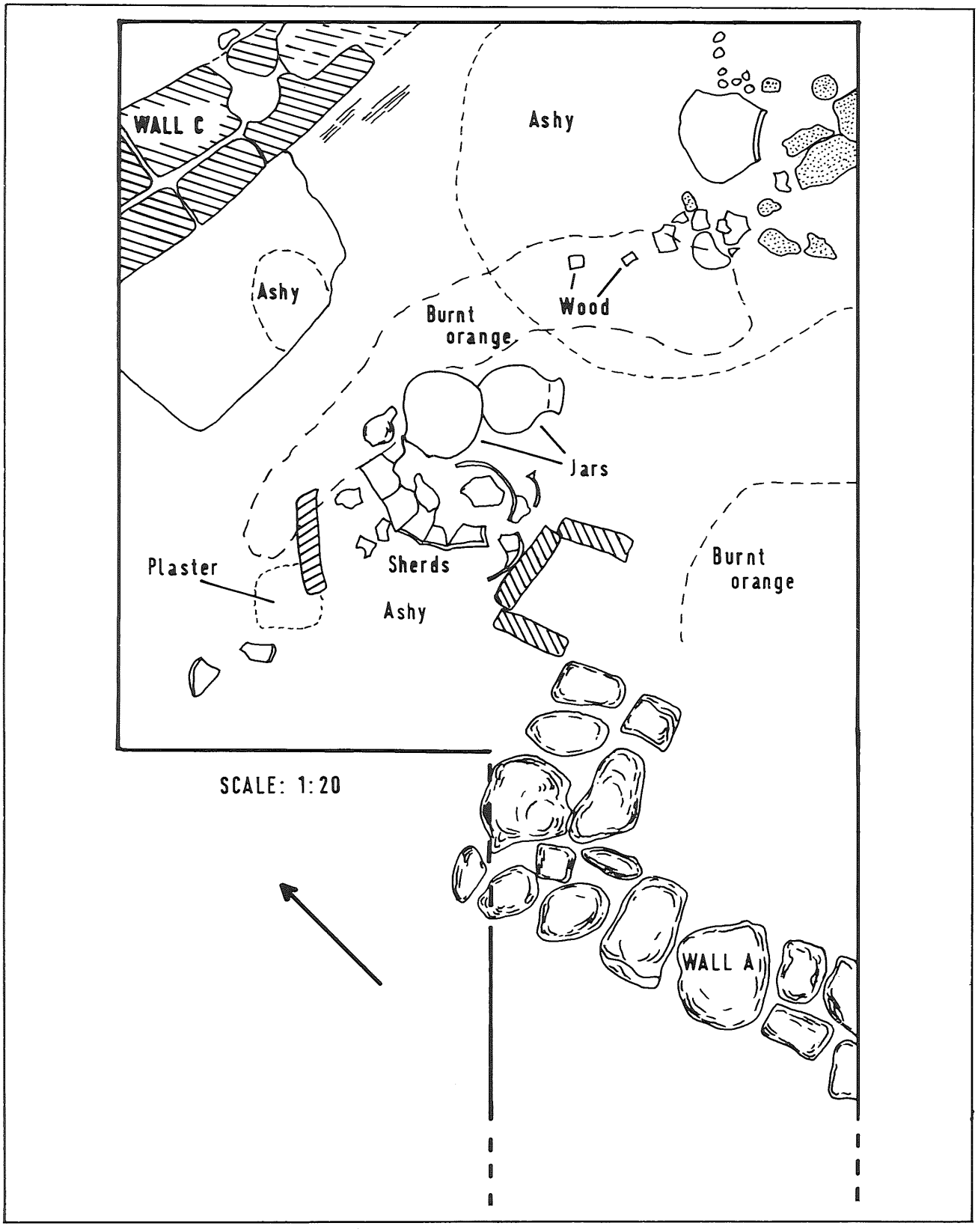

Fig. 2 Plan of Area DD

CHIPPED STONE ARTIFACTS FROM A SPECIALIZED NEOLITHIC CAMP NEAR KHARANEH CASTLE, EASTERN JORDAN

by
Mujahed Muḥeisen and Gary O. Rollefson

Introduction

The dense and extensive lithic scatter designated Kh-A15 was located in the course of a regional survey of the Kharaneh region of the eastern deserts of Jordan.[1] Intended as a program to investigate the area as a prelude to a campaign of excavations at the enormously rich "Kharaneh Flint Site"[2] mentioned by Harding,[3] the survey discovered a wealth of prehistoric sites ranging from Lower Paleolithic to Neolithic and later times, attesting to a long history of the exploitation of an area of Jordan now characterized by a bleak, barren, and romantically forbidding landscape. One of many sites of its kind found during the survey, Site Kh-A15 was notable in terms of its size, artifact density, and especially the remarkable character of its implement typology. The heavy emphasis on the production of burins at Kh-A15, both in relative and absolute quantities, marks it as a splendid example of a special activity focus called a "burin site",[4] attributed to the preceramic Neolithic period of the arid regions of the eastern Levant[5] and northwestern Saudi Arabia. The increasing number of known burin sites, usually of small size, in the eastern deserts of Jordan[6] and the enigmatic nature of the focus on the production of specific chipped stone tools in this geographically restricted region led the authors to return to Kh-A15 to collect a larger sample of artifacts in order to investigate more fully the cultural implications of burin sites.

Site Setting and Description

Kh-A15 is situated on a level *hamad* plateau between the major east-flowing Wadi Kharaneh and Wadi Janab, approximately 420 m northeast of the early Islamic caravanserai of Qasr Kharaneh. The immediate region is virtually barren of any plantlife, although during and shortly after the December-March rainy season low scrub vegetation can be seen sparsely dotting the shallow basins and drainages and the major wadi margins. Modern rainfall, a strictly winter season phenomenon, provides less than 100 mm of precipitation annually, although winter and spring humidity is sometimes enhanced by periodic dense fog shrouds. Despite the denuded character of the landscape, personal observations in 1980 and 1981 showed that both foxes and raptorial birds find the rodent population of the region sufficiently abundant to sustain their presence, and older local informants and the general folklore of the area speak of former times when gazelle and other desert-adapted grazers and browsers were numerous.

During the survey in 1980,[7] Kh-A15 was noted to cover an elliptical area of some 70 x 50 m, although outside a central area about 30 m in diameter artifact

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[1] Muḥeisen, M., n.d., Survey of the Kharaneh Region. Unpublished preliminary report on file, Registration Centre, Department of Antiquities, Amman, Jordan.

[2] Muḥeisen, M., 1983, *La Prehistoire en Jordanie, Recherches sur l'epipaleolithique.* Ph.D. thesis, Université de Bordeaux I.

[3] Harding, G. L., 1967, *The Antiquities of Jordan.* Amman: Jordan Distribution Agency.

[4] Betts, A., 1982, Prehistoric Sites at Qa'a Mejalla, Eastern Jordan. *Levant 14: 1-34.*

[5] *Copeland, L. in A. Garrard and N. Price, 1977, A Survey of Prehistoric Sites in the Azraq Basin, Eastern Jordan. Paleorient* 3: 109-126.

[6] Betts, A., 1982 (see note 4); Rollefson, G. and Fröhlich, B., 1982, A PPNB Burin Site on Jabal 'Uweinid, Eastern Jordan. *ADAJ* 26: 189-198.

[7] (See note 1).

density dropped perceptibly. It was remarked then that the central concentration of artifacts in fact constituted a "mini-tell", rising barely some 15-20 cm. higher than the surrounding level terrain.

A one-square-meter sounding was sunk into the center of the densest portion of the site, with the following general stratigraphic sequence:

Layer 0: Surface scatter of adjacent worked flints with little or no sediment between the artifacts.

Layer 1: Below the surface flints, a dense, compact layer of worked flints continued to a depth of 5-10 cm.

Layer 2: The Layer 0-1 complex rested on a fine, loose, red silty/sandy soil varying in thickness from 5-10 cm.

Layer 3: Compacted red silty/sandy soil with calcareous concretions, natural tabular flint outcrops and limestones fragments, about 45 cm. thick.

Layer 4: A friable horizon of parent limestone material at least 20 cm. thick. (No deeper sounding was made).

Notably, Layers 2-4 were completely sterile of cultural material, and the compact nature of the artifacts on the surface and in Layer 1 indicated that wind and water deflation had collapsed discrete episodes of a sequence of essentially homogeneous cultural deposits at the site.

The Artifact Sample from Kh-A15

Although a small collection of artifacts was recovered from Kh-A15 during the 1980 survey, the specimens represented a highly selected and probably biased sample of the site's inventory. It was decided that since the central 30 m. area of the site represented the most intensive use of the area, a complete collection of the Layer 0-1 complex from a unit 12 x 12 m. would provide a reasonably sound sample for an analysis of the focus of site activities. It became apparent during the collection process, however, that time for both the artifact recovery in the field and for research of the rapidly accumulating artifact counts was going to be unmanageable. Therefore, only the southwestern half of the 12-m square was completely collected, and as it turned out, even this large sample was beyond the capacities of the authors to analyze completely.

In the SW half (NW corner to SE corner) of the 12-m collection square, 4,315 artifacts were collected. This collection area represented approximately 5% of the entire site area, indicating that roughly 80,000 artifacts remain at Kh-A15. Additional comments on the distribution of artifacts will be discussed below.

Artifact Analysis: Typology and Technology

Due to the time constraints imposed on the authors, even the restricted sample of 4,315 chipped stone artifacts was much too large to analyze completely. As a result, only 1,192 artifacts were subjected to intensive analysis, although the remaining part of the collection is available for later research.

The artifacts in the analyzed sample were analyzed according to technological and typological aspects that are of great value for intersite comparisons. The analyses include modified typological classifications of broad applicability,[8] technological facets relating to methods of production,[9] and to several aspects of artifact description that have not yet been used widely outside of the present study.

It is suggested here that a standard description of burin sites include at least

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[8] de Sonneville-Bordes, D. and Perrot, J., 1954-1957. Lexique typologique du paleolithique superieur. *BSPF* 51: 327-355; 52: 76-79; 53: 408-412; 54: 547-559.

[9] Rollefson, G., 1980, The Paleolithic Industries of 'Ain el-Assad (Lion's Spring), Near Azraq, Eastern Jordan. *ADAJ* 24: 129-144; Rollefson, G. and Frohlich, B., 1982 (see note 6); Rollefson G., Kaechele, Z., and Kaechele, J., 1982, A Burin Site in the Umm Utheina District, Jabal Amman, *ADAJ* 26: 243-247.

the following data: 1) artifact classes; 2) core typology; 3) tool typology; and 4) technological features as are elaborated below. With this basic standard of description, intersite comparisons can be facilitated considerably, and the system suggested here is very adaptable for expansion if future research deems this to be appropriate.

Typology

Only 18 cores or core fragments were found among the collection from Kh-A15, amounting to 1.5% of the analyzed sample. This low relative frequency conforms roughly with the figure from the burin site described from Jebel 'Uweinid[10] and with the classes from the large permanent settlement of 'Ain Ghazal[11]. What is remarkable, however, is the composition of the core types in this small collection.

Table 1. Core types in the lithics collection from Site Kh-A15.

Type	*n*	*%*
Discoidal flake core	1	7.1
Single-face flake core	4	28.6
Single platform flake core	2	14.3
Prismatic blade core	3	21.4
Bidirectional prismatic blade core	1	7.1
Bladelet core	1	7.1
Core on thick flake	1	7.1
Diverse	1	7.1
Subtotal	14	99.8
Core fragments (Indeterminate)	4	(22.8)
Rejected core	1	(5.6)
Total	18	

The core types listed in Table 1 have been defined elsewhere[12], and due to limitations of space they will not be repeated here. Of note among the cores is the relatively high representation of flake cores which contrasts starkly with the proportions of flakes and blades in the sample (see Table 3). Combined with the low percentage of cores in the sample, this situation suggests that the core reduction sequence in the production of debitage and tools is not well-represented in the sampling area, and that the primary locus of tool production took place elsewhere at Kh-A15 or even off the site. This interpretation is supported by other facets of lithic technology discussed in more detail below. It is also notable that among the blade cores (n=4), only one is bidirectional; this is a departure from the case characteristic of Early Neolithic lithic traditions[13].

Table 2. Tool types in the analyzed sample from Site Kh-A15.

Type	*n*	*%*
Atypical endscraper	1	0.2
Endscraper on retouched element	1	0.2
Endscraper on flake	1	0.2
Burin-truncation	8	1.4
Burin-perçoir	1	0.2
Canted dihedral burin	1	0.2
Angle burin on break	8	1.4
Burin on straight truncation	24	4.2
Burin on oblique truncation	29	5.1
Burin on concave truncation	240	42.1
Burin on convex truncation	32	5.6
Multiple burins on truncation	55	9.6
Transverse burin	1	0.2
Angle burin	4	0.7
Indeterminate burin	99	17.4
Straight truncation	3	0.5
Oblique truncation	4	0.7
Concave truncation	20	3.5
Convex truncation	9	1.6
Double truncation	3	0.5
Indeterminate truncation	2	0.4
End-notched blade	6	1.0
Lateral notch	10	1.8
Denticulate	1	0.2
Wedge	5	0.9
Other	2	0.4
Subtotal	570	100.2
Miscellaneous retouch	19	(3.2)
Unclassifiable	3	(0.5)
Total	592	

[10] Rollefson, G. and Fröhlich, B., 1982. See note 6.

[11] Rollefson, G. and Simmons, A., 1985, The Early Neolithic Village of 'Ain Ghazal, Jordan: Preliminary Report on the 1983 Season. *BASOR Supl.* 23: 35-52.

[12] Rollefson, G., 1981, The Late Acheulian Site at Fjaje, Wadi el-Bustan, Southern Jordan. *Paleorient* 7 (1): 5-21.

[13] Moore, A., 1973, The Late Neolithic in Palestine. *Levant* 5: 36-68.

The most remarkable feature of Kh-A15 is revealed in the tool inventory (Table 2). More than seven-eighths of the classifiable shaped tools are burins of various sorts, with burins struck from concave platforms dominating this class of implements (Figs. 1 and 2). It should be mentioned that of "burins on concave truncations", 117 of them (48.8%) conform strictly to the definition, although the other 123 are actually struck from nibbled end-notches (51.2%). Within the type "multiple burins on truncations", 24 of the 55 specimens (43.6%) have one or more nibbled-notch platforms.

While other tool types are in the distinct minority, truncations represent the bulk of the non-burin tools. One wonders whether this class of implements might not actually represent a preliminary but, for unknown reasons, unfinished stage in burin production. Of the 47 pieces with truncations, for example, 27 are either concave or end-notched (57.4%), a relative frequency quite close to the overall burin configuration.

Technology

Technological features relating to the manufacture of the flakes and blades in the analyzed sample from Kh-A15 are presented in Tables 3-5. Once again, most of the terms have been defined elsewhere[14], and they will not be restated here except where amplification is necessary.

Table 3. Techniques and forms represented among the analyzed sample from Site Kh-A15.

Technique	*n*	*%*
Normal flake	59	5.1
High-angle flake	41	3.5
Normal blade	861	73.8
Indeterminate blade	193	16.5
Punch blade	1	0.1
Other	12	1.0
Total	1167	100.0
Blade Directionality		
Unidirectional	888	96.3
Bidirectional	34	3.7
Subtotal	922	100.0
Not Applicable	183	(15.7)
Indeterminate	62	(6.3)
Total	1167	
Form		
Normal flake	188	18.2
Angular flake	65	6.3
Point	2	0.2
1st order blade	290	28.0
2nd order blade	460	44.5
Overshot	28	2.7
Other	1	0.1
Subtotal	1034	100.0
Debris	133	(11.4)
Total	1167	

In terms of flaking techniques, Table 3 reveals that blade production was by far the principal focus of the flintknappers at the site, a surprising disparity in view of the core types (Table 1). It is notable that the "punch blade" technique is negligible at Kh-A15, quite distinct from the case at 'Ain Ghazal[15]. Furthermore, the single punch-blade from Kh-A15 stands apart from the rest of the sample: it is very short, thin and non-cortical, in stark contrast with the other tools.

The external ("dorsal surface") features of the artifacts provide an important source for reconstructing manufacturing techniques. Exterior parallel ridges and parallel negative ripples indicate blade technique, for example. But intent and result are not always congruent, so it is not surprising to see in Table 3 that the predominant incidence of blade technique did not produce a predictably equal number of blades. Accidental "misfires" that resulted in overshot pieces or flakes with non-blade attributes often occurred (a difference significant at beyond the .0000 level in a Chi-Square test). Although ex-

[14] See Note 9.

[15] Rollefson, G. and Abu Ghanimeh, Kh., 1983, Technological Analysis of Blades and Flakes from 'Ain Ghazal. *ADAJ* 27: 461-469.

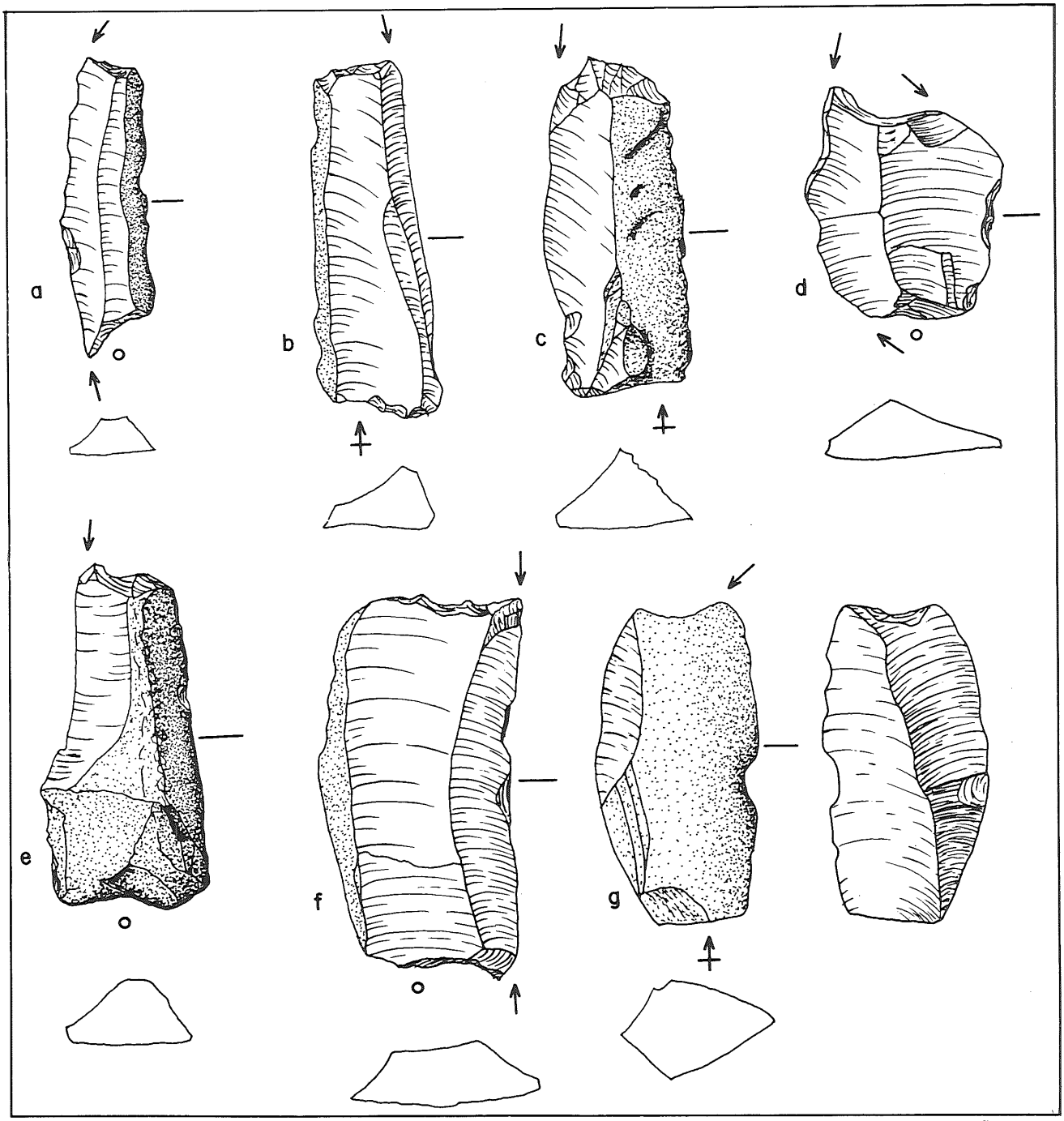

Fig. 1. Burins from Site Kh-A15. a, d-g: on concave truncations (nibbled notches); b: on oblique truncation; c: on convex truncation. (Drawing: R. Erskine)

perimental testing is necessary for confirmation, one might suspect that this variation in design and result is due to the use of hard-hammer technique for blade production, possibly tempered towards a positive result through the use of tabular flint resources in the area of the site.

The exterior surfaces of blades and flakes reveal another aspect of lithic technology: the direction of previous blows to the core before the removal of the artifact in question. Due to the absolutely small number of cores in the sample from Kh-A15, all artifacts bearing evidence of blade technique--including mistakes that resulted in flakes or overshot pieces--were examined to determine if unidirectional or bidirectional blade removal characterized the core from which the artifacts came. The evidence in Table 3 reveals that the overwhelming method of blade removal was unidirectional, supporting the limited core typological data, which emphasizes a major departure from Early Neolithic traditions noted by Moore[16].

[16] See Note 13.

Table 4. Technological data relating to striking platforms among the analyzed sample of artifacts from site Kh-A15.

	n	%
Platform Type		
Single facet	355	88.1
Dihedral	36	8.9
Multiple facet	10	2.5
Punch	2	0.5
Subtotal	403	100.0
Missing	764	(65.5)
Total	1167	
Platform Reduction		
None	336	81.4
Light	50	12.1
Moderate	20	4.8
Heavy	7	1.7
Total	413	100.0
Platform Cortex		
None	267	65.6
Partial	28	6.9
Cortical	112	27.5
Total	407	100.0
Platform Attitude		
Low angle	72	17.3
High angle	344	82.7
Total	416	100.0

Other facets of lithic technology are presented in Table 4. Regarding the kinds of striking platforms on blades and flakes, it is clear that platform preparation was minimal: more than seven-eighths of the platforms were single facets, including 112 which were covered with cortex. The remaining platform types are so few in number and sporadic that they appear to be less the results of intent on the part of the flint workers than they are possibly accidental. The average platform dimensions are: for blades, 18.4 mm wide (n=199) and 10.1 mm thick (n=218); for flakes, 19.1 mm wide (n=43) and 11.1 mm thick (n=43).

"Platform reduction" is a technological feature that refers to the final preparation of the core edge just prior to striking off the blade or flake. The degree of platform reduction is evidenced on the basal exterior surface of the artifact by the numbers of small chips that were removed to regularize or emphasize that particular portion of the core platform. "Light" reduction is shown by one to three small negative flake scars; "moderate" by four to six scars; and "heavy" by six or more scars. (Punch technique, for example, is almost invariably associated with heavy platform reduction). As Table 4 shows, platform reduction was not characteristic of the technology employed by the occupants of Kh-A15. In this respect the collection is similar to the burin site on Jebel 'Uweinid[17] but radically different from 'Ain Ghazal[18].

The angle formed between the surface of the platform and the interior surface of the flake or blade was also monitored in the analysis of the Kh-A15 sample. For the purposes of this study, angles greater than 110^0 were considered "high angle", while lesser angles were termed "low angle". The predominance of the larger angles at Kh-A15 is matched by data from other burin sites[19], although no comparative information is yet available from settled village sites such as 'Ain Ghazal.

Table 5. Technological data relating to artifact surfaces in the analyzed sample from Site Kh-A15.

	n	%
Patina		
Desert Varnish	1137	95.4
No desert varnish	53	4.5
Indeterminate	2	0.2
Total	1192	100.0
Cortex		
No cortex	283	26.6
Mostly non-cortical	620	58.3
Mostly cortical	161	15.1

[17] Röllefson, G., and Frohlich, B., 1982. See Note 6.

[18] See Note 15.

[19] See Notes 6 and 9.

Cortical	0	0.0
Total	1064	100.0

Natural Backing

	Blades			*Flakes*	
	n	%	X^2	*n*	%
Yes	364	48.5	.001	79	31.2
No	386	51.5		174	68.8
Total	750	100.0		253	100.0

Other features of artifact surfaces provide some information concerning lithic technology and, to a lesser extent, relative dating. In the latter regard, for example, Table 5 presents the incidence of "desert varnish" patina. Clearly, the bulk of the collection is similar in the presence of this distinctive feature, suggesting a general contemporaneity of deposition and exposure to patinating elements. Even so, a small group does not bear this dark brown, glossy patina; among the pieces in this group are the thin burin on a punch blade and two bifaces of Lower Paleolithic age. The formation of desert varnish remains an enigmatic process, however, and the use of this aspect of artifact alteration as a means of relative dating is a tenuous procedure.

The amount of surface cortex on the artifacts relates to methods of artifact production and, at least in the case of Kh-A15, particular designs of tool manufacture. It was remarked earlier that there is a great disparity between the core types in the sample (half involved with flake production) and the observed techniques and forms (90% blade technique, 72% blade forms). The cortex data in Table 5 add a dimension in the interpretation of the sequence of tool manufacure at Kh-A15. Even including the debris in the analyzed sample, no artifact was completely cortical, indicating that flint sources were tested for quality off-site, with primary preparation of cores carried out somewhere beyond the confines of the sampling area. Even mostly cortical flakes and blades (with cortex covering more than 50% of the surface) account for a very small proportion of the analyzed sample, another factor that suggests prepared cores were carried onto the site.

The "mostly non-cortical" category refers to blades and flakes with cortex on less than 50% of the exterior surfaces. Within this category, the cortex was often restricted to one or both steep lateral edges, forming a natural "backing" that evidently served to facilitate the use of the tools. Among the blades, for example, nearly one-half were naturally backed, affording an easily managed, hand-held tool (usually a burin).

It might be mentioned here that of all the tools in the Kh-A15 sample, 12% were on flakes (although flakes made up 27% of the total artifact inventory); blades were the source of just under 90% of the tools (versus less than three-fourths of the total number of artifacts). There is a strong contrast in the incidence of naturally backed flakes and naturally backed blades (Table 5), a difference significant beyond the .001 level in Chi-Square tests. In other words, if tools were made on blades, it was more likely that the tools would be naturally backed than if they were made on flakes.

In summary, one can make the following conclusions about the nature of the occupation at Kh-A15:

1) The relatively high tool: debitage ratio and the intense focus on the production of one tool class indicate that Kh-A15 was the locus of repeated visits of short duration to accomplish a limited range of activities.
2) The original testing of flint resources and initial preparation of cores took place outside the sampling area.
3) Nearly all the artifacts from Kh-A15 are generally contemporaneous, at least in broad cultural terms.
4) The presence of cortex on one or more lateral edges was a design incorporated into the tool manufacturing process.
5) Blade techniques using a hammerstone were dominant at Kh-A15, and single-platform prismatic cores were the resources used, despite the evidence of the core types in the analyzed sample.

Concluding Remarks

Burin sites like Kh-A15 appear to share to a high degree several techno-

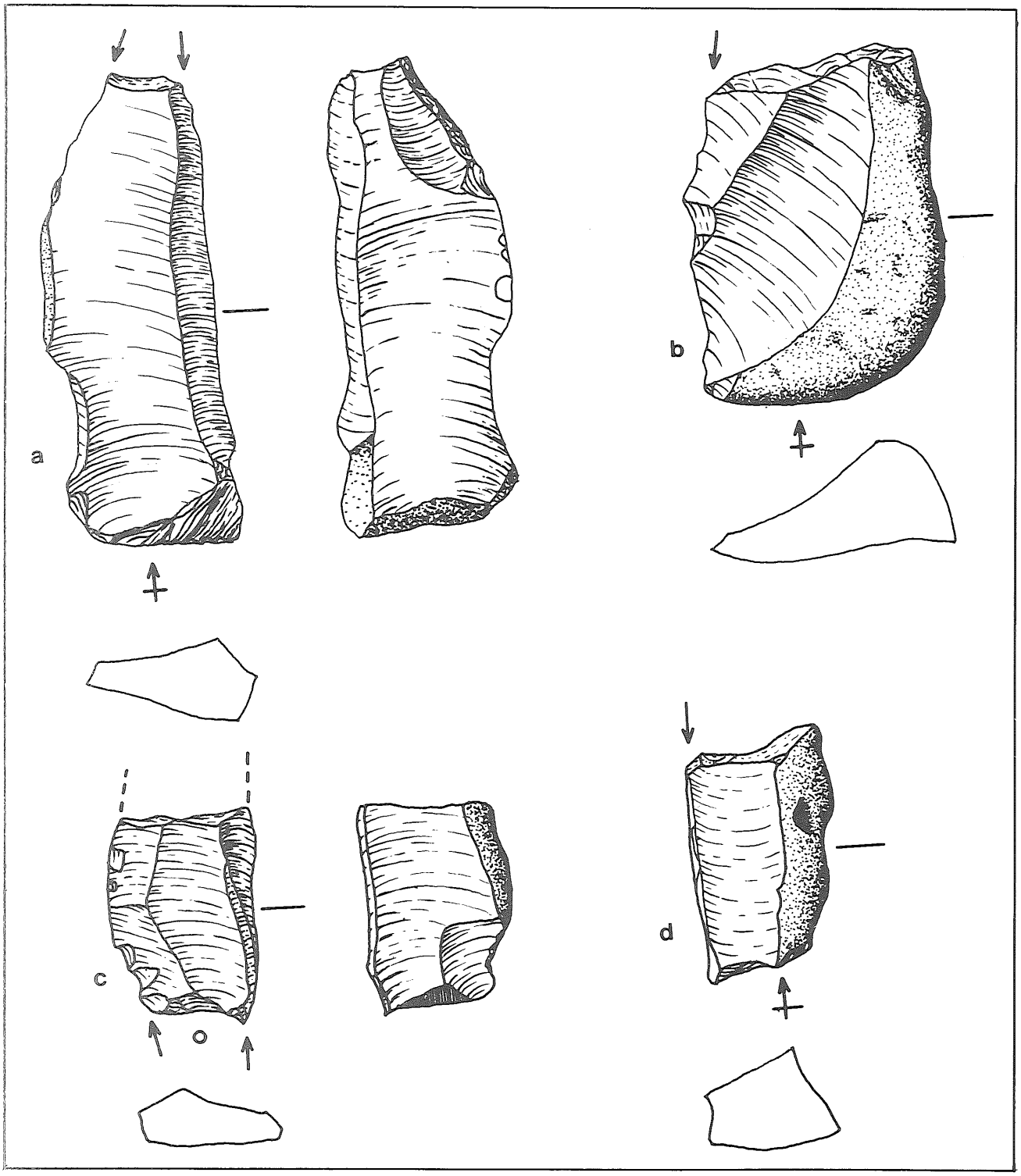

Fig. 2. Burins from Site Kh-A15. a,d: on concave truncations (nibbled notches); b: on oblique truncation; c: multiple burin on concave truncation. (Drawing: R. Erskine).

typological aspects that set them apart from other archaeological phenomena in the Near East. These sites represent a very specialized concentration of activity, one that focused on some as yet unexplained part of a subsistence system that entailed periodic returns to the same location, perhaps to "harvest" a seasonally available resource. Until burin sites are found which have not suffered the degree of deflation witnessed up to now in the eastern and southern deserts of Jordan, the nature of the economic activity that required such a restricted expression of stone tool manufacture will remain speculative.

It must be acknolwedged that the ascription of the burin sites to the Pre-Pottery Neolithic B period on the basis of the burin styles is a very tenuous conclusion. Although burin types conform well in this respect to the Wadi Dhobai evidence, the projectile points from the Dhobaian

industry[20] are not particularly diagnostic of PPNB times, and the industry may belong instead to a later period of Neolithic development. This contention is supported in part by recent excavations at 'Ain Ghazal[21], where tanged projectile points have been found in Yarmoukian contexts, together with a burin assemblage that is characterized by an emphasis on burins on truncations[22]. By contrast, the burins from late PPNB levels at 'Ain Ghazal are predominantly transverse types[23], only one of which was found at Kh-A15.

Recent research has brought to light this curious cultural adaptation, but to date the results of the research have fallen far short of proposing any solid explanations for this unparalleled manifestation. As the problems come into sharper focus, however, it can be hoped that additional exploration and analysis can begin to resolve the present enigmas represented by burin sites.

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[20] Waechter, J. and Seton-Williams, V., 1938, The Excavations at Wadi Dhobai 1937-1938 and the Dhobaian Industry. *JPOS* 18: 172-186.

[21] Betts, pers. comm., has obtained a mid-6th millenium C-14 date for an eastern desert site with many burins on concave truncations, which lends support to a period later than PPNB.

[22] Rollefson, G. and Simmons, A., in press, The 1984 Season at Neolithic 'Ain Ghazal: Preliminary Report. *ADAJ* 29.

[23] Rollefson, G., 1984, 'Ain Ghazal: An Early Neolithic Community in Highland Jordan, Near Amman. *BASOR* 255: 3-14; Rollefson, G. and Simmons, A., 1985 (see Note 11); Rollefson, G. and Simmons, n.d. (see Note 22).

Bibliography

Betts, A.
1982 Prehistoric Sites at Qa'a Mejalla, Eastern Jordan, *Levant* 14: 1-34.

Garrard, A. and Price, N.
1977 A Survey of Prehistoric Sites in the Azraq Basin, Eastern Jordan. *Paleorient 3:* 109-126.

Harding, G.
1967 *The Antiquities of Jordan.* Amman: Jordan Distribution Agency.

Moore, A.
1973 The Late Neolithic in Palestine. *Levant 5:* 36-68.

Muheisen, M.
1983 *La Préhistoire en Jordanie, Recherches sur l'épipaleolithique.* Doctoral thesis, Universite de Bordeaux I.
n.d. Survey of the Kharaneh Region. Unpublished preliminary report on file, Registration Centre, Department of Antiquities, Amman. (in Arabic).

Rollefson, G.
1980 The Paleolithic Industries of 'Ain el-Assad (Lion's Spring), Eastern Jordan. *Annual of the Department of Antiquities of Jordan 24:* 129-144.
1981 The Late Acheulian Site of Fjaje, Wadi el-Bustan, Southern Jordan. *Paleorient* 7 (1): 5-21.
1984 'Ain Ghazal: An Early Neolithic Community in Highland Jordan, Near Amman. *Bulletin of the American Schools of Oriental Research* 255: 3-14.

Rollefson, G. and Abu Ghuneima, Kh.
1983 Technological Analysis of Blades and Flakes from 'Ain Ghazal. *Annual of the Department of Antiquities of Jordan* 27: 461-469.

Rollefson, G. and Frohlich, B.
1982 A PPNB Burin Site on Jabal Uweinid, Eastern Jordan. *Annual of the Department of Antiquities of Jordan* 26: 189-198.

Rollefson, G., Kaechele, Z., and Kaechele, J.
1982 A Burin Site in the Umm Utheina District, Jabal Amman. *Annual of the Department of Antiquities of Jordan* 26: 243-247.

Rollefson, G. and Simmons, A.
1985 The Early Neolithic Village of 'Ain Ghazal, Jordan: Preliminary Report on the 1983 Season. Bulletin of the American Schools of Oriental Research Supplement 23: 35-52.
n.d. The 1984 Season at Neolithic 'Ain Ghazal: Preliminary Report. *Annual of the Department of Antiquities of Jordan* 29 (in press).

de Sonneville-Bordes, D. and Perrot, J.
1954-1957 Lexique typologique du paléolithique supérieur. *Bulletin de la Societé prehistorique Française* 51: 327-355; 52: 76-79; 53: 408-412; 54: 547-559.

Waechter, J. and Seton-Williams, V.
1938 The Excavations at Wadi Dhobai 1937-1938 and the Dhobaian Industry. *Journal of the Palestine Oriental Society* 18: 172-186.

EXCAVATIONS AT TELL IRBID AND BEIT RAS, 1985

by
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Introduction

During March through May, 1985, archaeological fieldwork was conducted at Tell Irbid and Beit Ras.[1] The work was a Joint Project of: The Department of Antiquities of the Hashemite Kingdom of Jordan, Yarmouk University--Institute of Archaeology and Anthropology, and the Irbid/Beit Ras Project.[2] The work carried out at the sites was in the nature of salvage and rescue archaeological work. The information provided here is a preliminary report; subsequent reports will contain more detailed information.

Tell Irbid, the centre of the modern city of Irbid, and Beit Ras are located in northwestern Jordan, a rapidly developing region. The importance of the two sites in antiquity has long been recognized, particularly by S. Merrill, G. Schumacher, N. Glueck and G. L. Harding.[3] Schumacher and Merrill left detailed records and plans of the two sites as they were in the last quarter of the nineteenth century; Glueck and Harding, along with other archaeologists of the pre-World War II period, noted the importance of the sites, but hesitated to do in-depth research at them.

In the summer of 1984, the Municipality of Irbid, because of the need for a larger business district, began the removal of portions of Tell Irbid. Preliminary salvage work, that is archaeological work conducted as a site is being removed, was carried out by the Department of Antiquities and the Irbid/Beit Ras Project. Recognizing the significance of the tell, the Municipality aided in all aspects of the salvage work.[4]

After it became clear that the northwest escarpment of the *tell* would be removed, the Joint Project was formed in order to gain as much archaeological information as possible. Thanks to the foresight of the Municipality and the Department of Antiquities a portion of this section will remain for further archaeological work; and, a section of the city wall, dating from ca. 1300-1200 B.C., will remain for future generations of Jordanians to appreciate.

The archaeological work conducted at Beit Ras was in the nature of rescue archaeological work; that is, archaeology carried out prior to the development of an area where there may be development within the foreseeable future. The objective here was to investigate the archaeological importance of a known historically significant site presently occupied and being developed.

Results of the Excavations

Tell Irbid

Tell Irbid, viewed from the west, north and east, is an obvious part of the landscape of the Irbid plateau; from the south, the view is almost totally obscured by the extensive building activities of the

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[1] Mr. Nabil Qadi, Yarmouk University, Institute of Archaeology and Anthropology, supervised part of the excavations at both Tell Irbid and Beit Ras and was an invaluable part of the team. Dr. Mahmoud Hussein, Yarmouk University, participated in part of the excavations at Tell Irbid.

[2] See: McQuitty and Lenzen, March, 1983, Illustrated London News; and, Lenzen and McQuitty, *ADAJ*, XXVII, p. 635.

[3] Nelson Glueck, *Explorations in Eastern Palestine IV, AASOR*, New Haven, 1951; Gottlieb Schumacher, *Northern 'Ajlun, Within the Decapolis*, London, 1890; Selah Merrill, *East of the Jordan*, London, 1881; and G.L. Harding, Notebooks, Department of Antiquities, Registration Centre, Amman, Jordan.

[4] The Mayor, Dr. Abdulrazik Tobaishat, as well as the engineers and workmen of Irbid, were most helpful. Dr. Tobaishat provided workmen both in 1984 and 1985.

last two decades. The configuration of the *tell* has altered considerably since 1930, as the population and its needs have increased.

The salvage excavations at Tell Irbid were carried out on the northwestern section of the *tell.* The general aim of the Joint Project, as in all salvage work, was to gain as much information as possible in a short period of time. Specifically, however, it was necessary to elucidate further the nature of the buildings and massive destruction excavated by the Irbid/Beit Ras Project in 1984.

The top of the *tell* encompasses ten hectares, mostly occupied by modern buildings. The excavated area, designated Area C, lies just beyond the west corner of the Irbid Secondary School grounds and extends twenty-seven metres to the north and twenty metres to the south in a broad arc roughly ten metres in width along the slope immediately below this point (Fig. 1). The segment of Area C from twelve metres south to sixteen metres north was left roughly level by the bulldozing, two metres below the school ground level. The remaining portions were left sloping steeply to the lower street (modern) level at the north and south. This slope was cut at the south end as well.

Initially, the entire area was excavated; later, using a combination of traditional probes and open-plan excavation, the area was divided into separate trenches (numbered "1" through "5"). The possibility of misinterpretation of the stratigraphic record did exist due to the way in which the bulldozers had cut the area. The pottery retrieved from the top layers of Area C indicated occupation of the *tell* from ca. 800 B.C. and from A.D. 1900 to the present. In wash, the late antique periods, i.e., the fifth century A.D., were represented.[5] However, the nature of these occupational periods can only be surmised at this point and will be clarified after further excavation.

The following summary of the excavations is concerned with the clear stratigraphic evidence from the 1985 excavations. Tentative phasing for the excavation is as follows:

Phase I: ca. 1150-800 B.C.
Phase II: ca. 1300-1150 B.C.
Phase III: ca. 3200 B.C.[6]

As is clear from the above, there are major gaps in the stratigraphic profile. These gaps are most easily explained by population shifts within the region as well as within the city. They present many interesting archaeological and historical questions. They are not explained by the removal of the *tell;* and, indeed, the evidence from earlier excavations would indicate more continuity of occupation.[7] The results of the recent excavations do indicate that one of the high points of occupation was during the period ca. 1200 B.C.

Phase I

Phase I occupation was identified on the north and south edges of Area C. The reference point for the discussion of the phases is the major wall, Wall 1 (Fig. 2). Wall 1 was constructed during Phase 11 and formed the western wall of Room 1 (Fig. 2), also part of Phase II. In Phase I, the area of Room 1, not the room itself, may have been reused; however, because of the bulldozer, this is unclear. Over Wall 1, adjacent to Room 1, layers of "smeared" mud-brick were excavated which contained pottery dating to Phase I. North of Room 1 (Fig. 2), pits and a *tannur* were excavated; these rested on Phase II layers. The pottery from these *loci* does not indicate a break in occupation, but rather continuity, although the character of the occupation may have altered somewhat.

In the south, the stratigraphic evidence is more complicated. The southern

[5] The authors are of the opinion that to use the traditional designations of EB, LB, etc., merely confuse the issue. This is a beginning effort to begin the discussion of excavations in terms of centuries. This becomes particularly relevant when discussing cultural continuity.

[6] This dates correspond to Iron I and II, Late Bronze and the Early Bronze.

[7] The Department of Antiquities has excavated in various places on Tell Irbid and throughout modern Irbid.

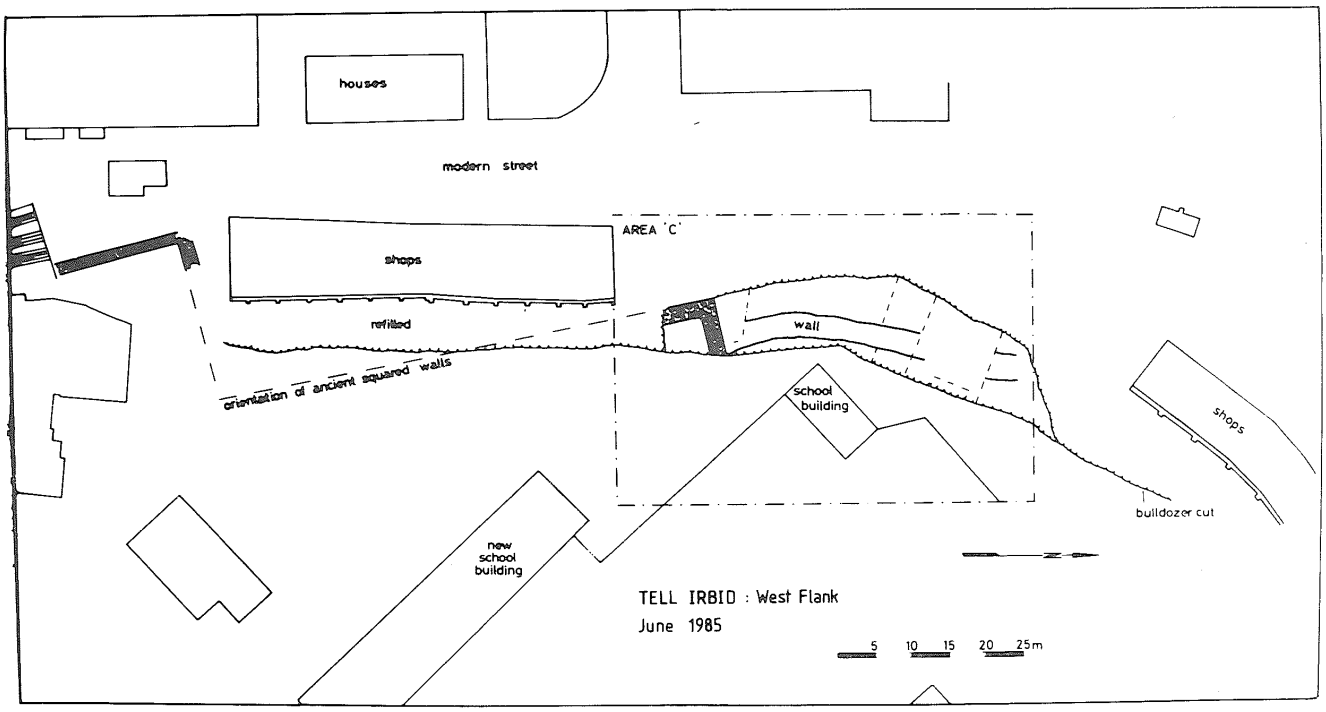

Fig. 1:

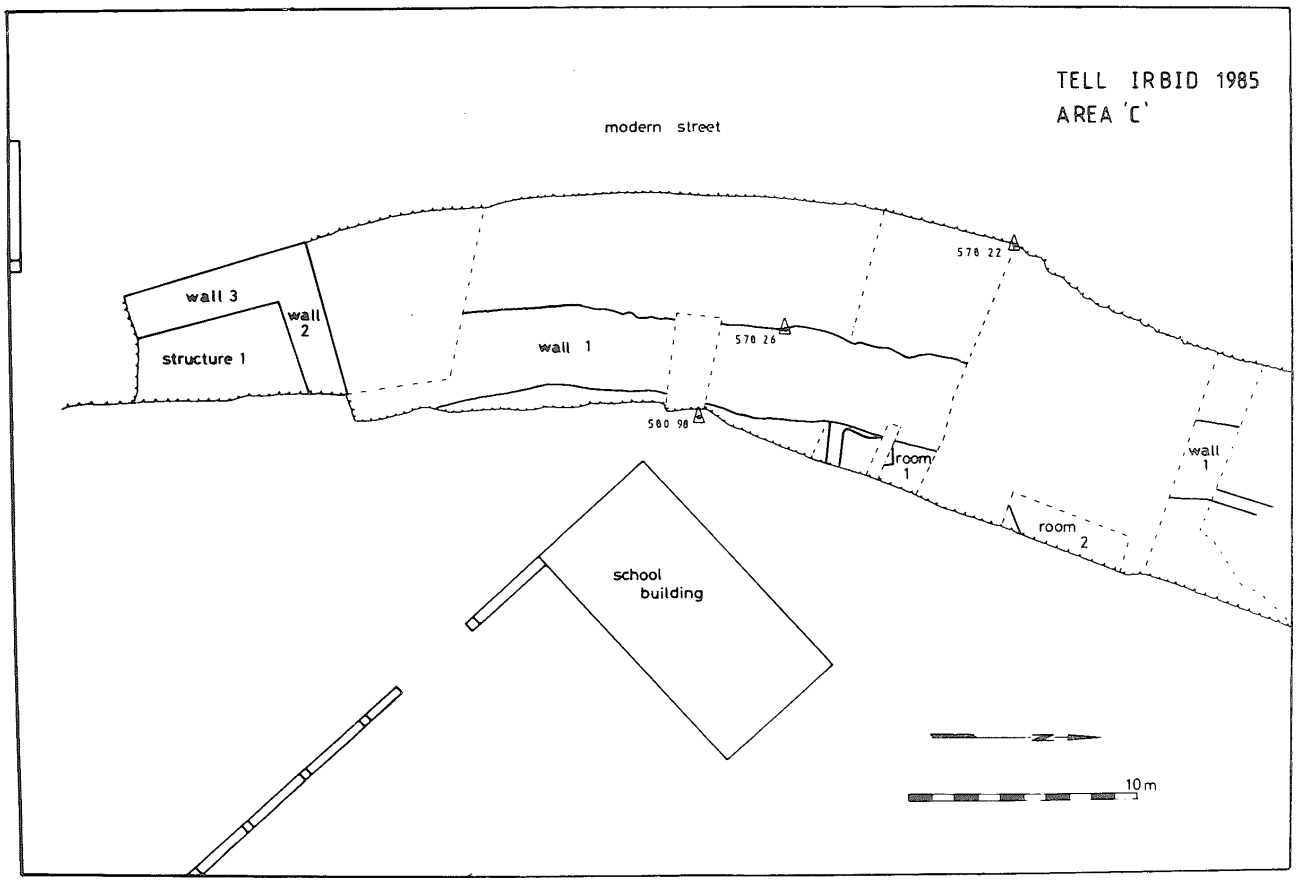

Fig. 2:

extension of Wall 1 was built over the Phase II destruction and thus sealed the lower stratigraphic evidence. There is, then, the possibility of two phases to Wall 1; further excavation should clarify this. For now, it should be noted that the character of the wall in the south was somewhat different in that boulder-sized stones were used, rather than the blocks in the north (Pl. XXI, 1).

Phase II

Phase II is the major occupational phase excavated and is divided into the

following sub-phases: a) a transitional phase between the building of the southern extension of Wall I and Phase IIb; b) the destruction of this portion of the *tell;* c) structures extant during the destruction; and d) levelling layers, laid prior to the building of the Phase IIc structures.

Evidence for Phase IIa was found only in the south, below the extension of Wall 1 (Fig. 2). This transitional phase consisted of reuse of the large Phase IIc east-west wall, Wall 2, by realigning it slightly and building a mud-brick superstructure, the bricks of which and the surfaces associated with the wall were truncated by the building of Wall 2 (Pl. XXI,2). Surfaces were excavated to the north of the wall that suggest a courtyard use of the area. At this point, it is suggested that following the extensive Phase IIb destruction rebuilding did occur and that the excavated area only shows minimal evidence of this. In all likelihood, the major section of the structure associated with the courtyard layers was farther to the west, in which case it has been removed by the bulldozer, or possibly to the east.

Wall I was extended in Phase IIa, but was built in the north during Phase IIc. The total extent of Wall 1 is approximately forty seven metres across Area C. The remnant of Wall 1, that is the remnant left by the bulldozing, on the extreme north was only a mass of boulders. Though only one or two courses of Wall I were preserved at the ends of Area C, the top area of the wall, part of its face (on the south) and its construction were delineated. A section through part of Wall 1, aligned with Room 1 (see below), defined the construction of the southern part of the wall. All of the stones used in the wall were dry-laid and the two faces--west and east--showed no clear coursing. Between the two faces, a fill of cobbles and small boulders was used, which formed the mass of the wall and created its strength. The destruction layer, Phase IIb, was not found over this wall.

The Phase IIb destruction was massive and extended throughout most of the excavated area. It consisted of intensely burned mud-brick superstructure and stone substructure, roofing material, quantities of pottery and other material culture remains.[8] The concentration of the Joint Project's excavations on the north and south edges of the escarpment provides some phasing problems; however, based on the pottery, the two edges represent one destruction.

In the south, the destruction layer, including the area now hidden by the Municipality of Irbid's retaining wall, measured approximately ten metres high and was approximately seventy metres long. An area measuring six metres by four metres and three metres high was carefully excavated during 1985. The destruction debris here was contained by the walls of Structure 1 (Fig. 2), which was reused during Phase IIa. The walls of the structure were made of randomly-sized basalt and chert stones. The mud-brick superstructure had carved into the structure along with the roofing material; mud-brick and mud-plastering was found intact in certain areas. The north-west corner of Structure 1 had a dung storage bin in it with a thick plaster floor extending to the edges of the bin (Pl. XXII,1). Over this floor multiple layers of mud-flooring alternating with dung ash were excavated. It is from the lowest of these surfaces that a bronze arrowhead was recovered.[9]

Below Structure 1, Phase IId was excavated; and, like Phase IIa, is only represented in the south, although similar layers were beginning to appear in the north when excavation was ceased for the season. This sub-phase consisted of the levelling of the Phase III structures and dumping of soil and pottery prior to the building of Structure 1. The dump contained quantities of chert chips and may have acted as a stabilizing layer for the building.

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[8] Carbon 14 samples were collected by Lenzen and McQuitty in 1984 and are being analyzed by the British Museum, London.

[9] This was recovered by Lenzen and McQuitty in 1984. Mr. Graham Phillips, Jerusalem Fellow of the British School, 1984, dated this to the transitional Late Bronze/Iron IA period; our phase II.

To the north of this excavated section, below the Phase IIa courtyard layers, two support pillars were excavated. These suggest a large roof structure over the area. The contemporary Phase 11 features were: pillars, walls and surfaces. In all likelihood, these features are contemporary with the northern section of Area C.

On the northern edge of the area, Room 1 was built up against Wall 1. Mud-facing was found adhering to the inner face of the wall (to the east). Destruction debris (Phase IIb) filled the room and covered a group of objects that imply a cultic use to this portion of Area C.[10] These objects were (Pl. XXII,2): an incense stand, a basalt stand (not pictured), two bowls, a "cup and saucer" which was used as a lamp, a lamp, two goblets and two large storage jars.[11] The objects are well-preserved and indicate a date of ca. 1200 B.C. How extensive the cult was, etc. still needs to be researched.

To the north of Room 1, below the Phase I pits and the destruction, a surface with eleven vessels was found lying on it (Pl. XXIII, 1). These vessels ranged from storage jars to pitchers. They dated to the same period as those from Room 1 and Structure 1. It is probable that this surface and the vessels were part of a large storage room relating to Room 1. It should be noted that occupation was centred to the east of Wall 1, or "inside" of the wall.

Phase III

Phase III is represented by an area measuring two metres by two metres on the southern edge of Area C. The pottery assemblage from this probe area is consistent; that is, dating from ca. 3200 B.C., and containing rims of holemouth jars, bodysherds and rims from grainwash jars, and parts of jugs and juglets. Only one structure was found associated with these early layers--a destroyed wall. This is, however, indicative of early settlement on the escarpment.[12] Throughout the excavations, similar pottery forms were found in later layers: and, on the northern edge of the escarpment, below Wall 1, the stratification seemed to parallel this area.

Conclusions

From the stratigraphic discussion above, it is clear that Tell Irbid was occupied for extensive periods during antiquity. One of the high points was that period of ca. 1200 B.C. An interpretation of Wall 1, Room 1 and Structure 1 is in its preliminary stages; however, the following possibilities exist: a) Wall 1, which forms a curve or arc was a defensive wall with gates to the north and south; b) Structure 1 appears to have been a tower and, therefore, part of the defensive system; c) Room 1 was built up against this defensive arc precisely because of this protective factor. The fact that outer walls, on the outside of Wall I, have been noted in the surveying would suggest that this arc was not viewed as an exterior defensive wall.

Beit Ras

Beit Ras is the modern name for the ancient city of Capitolias, one of the Roman decapolis cities. Over the last few years, the central part of the village has been altered considerably because of the needs of the people for new road, electricity and water systems as well as because peoples' tastes in housing have changed. The work undertaken by the Joint Project concentrated on an area within the old village of Beit Ras that had been partially altered within the recent past for a new road system and that had visible archaeological remains. From previous archaeological work conducted at Beit Ras and secondary research, the history of Beit Ras was generally known as was the *general* stratigraphic profile.[13] It was a large Roman city, an important Byzantine ecclesiastical cen-

[10] Mr. Jonathan Tubb, The British Museum, and Dr. James Sauer, President of ASOR, are to be thanked for "pushing us" in the right direction.

[11] The positioning of the objects suggested a storage place, not a place of primary cult use.

[12] See: Lenzen and McQuitty, forthcoming.

[13] See footnote 3 above.

tre, a significant Umayyad city, and a city that gradually became a village in the following centuries.

The area investigated by the Joint Project was located in the centre of the village along the modern main east-west road and the east of the mosque. The area defined by the Joint Project measured one hundred metres (north-south) and fifty metres east-west, and was designated Area A.[14] Lower than the modern street, there is a "sunken" area within Area A. In this area, there is a west facing arch on the east and parallel one to the west. These two arches, along with the late constructions above them, served as the eastern and western limits of the area (Fig. 3). The eastern and western lines of Area A were jogged somewhat in order to avoid intereference with present day housing. The northern limit of Area A was a field wall.

Six separate parts of Area A were excavated during the season.[15] The tentative phasing is:

Phase Ia: A.D. 1900 to the present
Phase Ib: ca. A.D. 1516-1700
Phase II: ca. A.D. 1100-1516
Phase III: ca. A.D. 950-1100
Phase IV: ca. A.D. 750-850
Phase V: ca. mid-seventh century A.D.-A.D. 750
Phase VI: ca. A.D. 334-mid-seventh century A.D.
Phase VII: ca. A.D. 100-334

This phasing delineation is tentative in nature and is dependent on the preliminary analysis of the pottery, architectural remains, and the stratigraphy.

Unlike Tell Irbid, Beit Ras provided an opportunity to acquire data concerning the most recent past, e.g., 1516 to the present. This is a little known archaeological period in Jordan. Phase Ia, A.D. 1900-the present, consisted of housing and a facade built in the sunken part of Area A. Also within the phase, there seems to have been extensive moving of soil in the area to form olive groves, build houses, etc. The result of this was that excavated layers, although purely of one period were not *in situ*.

The Phase Ia constructions--housing and facade--were built across from and against a series of nine vaults, which faced north. The facade was supported by the earlier vaults and merely abutted them; at no point did it bond with the vault stones. At the entrance to the vaults, one metre to one and a half metres of soil was present when the facades were constructed and steps were built to reach the floors of the vaults. The facade was constructed of re-cut stones and architectural fragments from the ancient city. The size of the stone appears to have been the major criterion for stone selection and not any aesthetic reason. Facing the vaults is an arch which is bonded to an earlier, probably Phase VI, wall. The bonding is of smaller stone, but the idea was to make the ancient wall and the arch appear as one architectural unit (Fig. 4).

Built up against this same ancient wall are two houses at the eastern end of the sunken area. One house, originally a dwelling unit, was partially removed during the season (see below). The other house is a *tabun* house which only recently went out of use. The construction techniques, use of space, arches, etc., were recorded and are typical of the period from 1900 to the present. This construction provided an opportunity to excavate recent construction to understand the building techniques better; and, an opportunity to discuss the construction techniques with the villagers. This provided comparative data for the earlier excavations at Tell Irbid. Part of the roof of the *tabun* house was removed as a probe. This probe showed that the construction was of beams, twigs and mud; and, this information proved to be parallel to the data from the Tell Irbid thirteenth century B.C. structures. Also in relationship to finding out more about late construction, as well as to determine the possibility of finding part of one of the *decumanii* of the Roman city *in situ*, a seven metre section (east-west) of the soil left after a new road was built in

[14] This designation is based on Lenzen and McQuitty's survey.

[15] The excavated areas are not designated squares or areas.

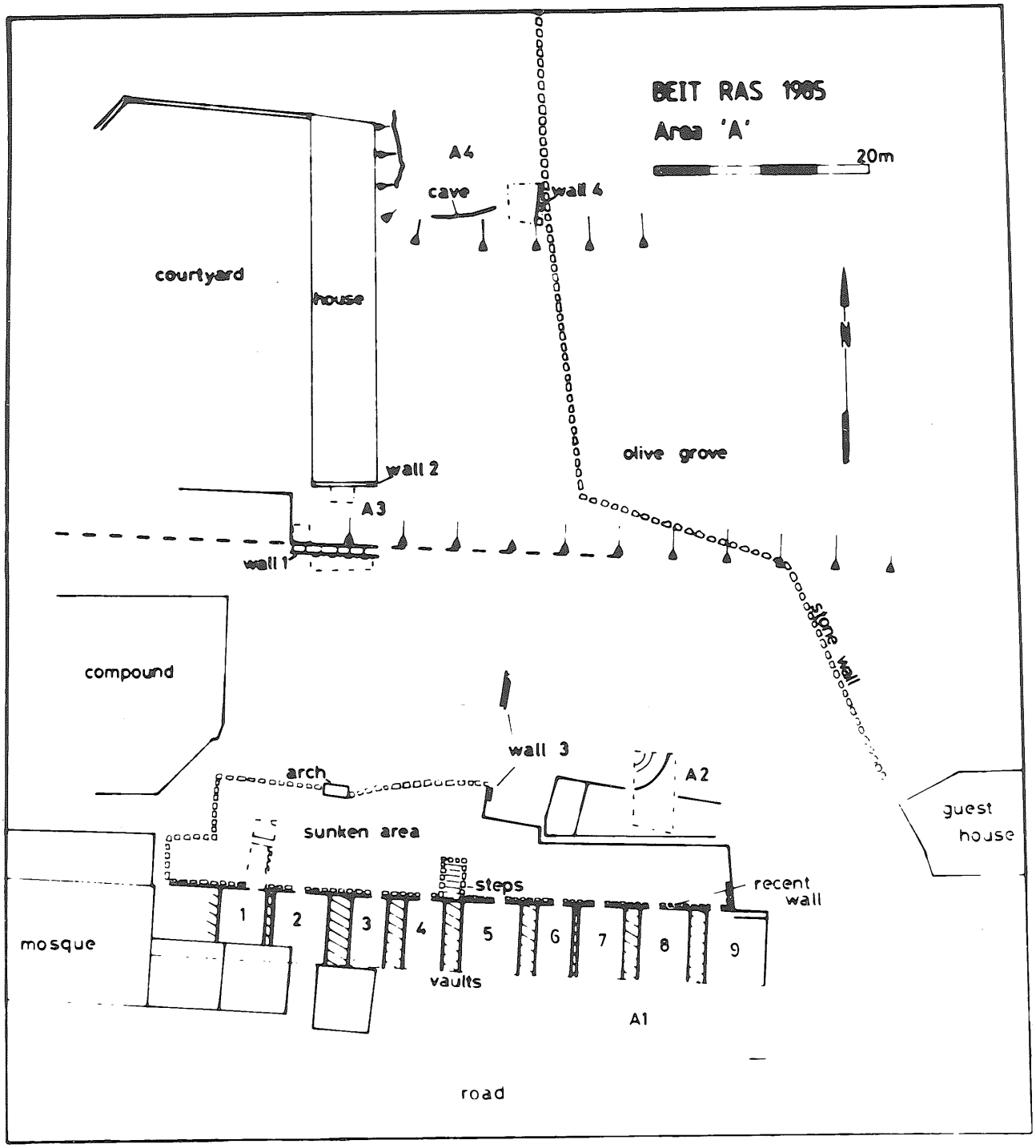

Fig. 3:

the village was trimmed and a 2.00 x 2.00 m. probe was excavated, to the south of the vaults. Successive layers of mud-flooring and dung ash were found within what had been a large stone and mud structure, removed within the last ten years. This flooring technique was also found in the Tell Irbid structures. Below the foundations for this structure, foundation stones for an earlier strutue were found; however, no dating evidence was retrieved. This structure was built prior to the living memory of the villagers. Founded on bedrock were two cyst burials which contained pottery dating to ca. A.D. 1700. It appears from this small probe that the vaults of Phase V-VII abutt the bedrock. No remains of the Roman, Byzantine or Islamic city plan were found.

Because the nine east-west vaults were known and had been partially investigated previously,[16] a major part of the work during the season concentrated in this area. The two side vaults--one facing east,

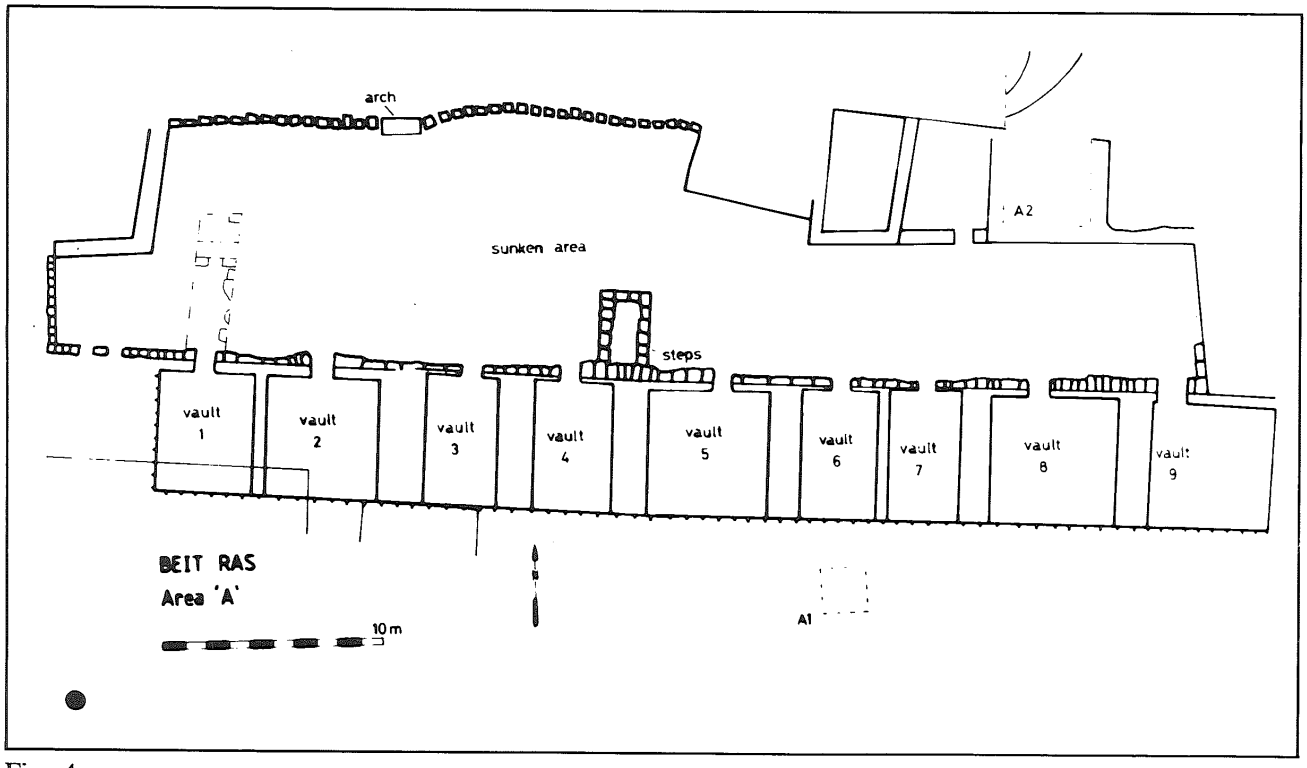

Fig. 4:

the other west-were not investigated as they have been or are being presently used as cesspits. The nine north facing vaults were all investigated and recorded; two of them, Vaults 1 and 6, were carefully excavated. The measurements of each vault varied (Fig. 4). This is accounted for partially by the amount of debris in each vault, but, more significantly, by the conclusion that these vaults post-date the Roman period and are irregular reuse of the area. It seems probable that Vault 9 is Roman in date; and, that Vaults 1 through 8 were constructed during the sixth to eighth centuries A.D.

The stratigraphic results of the excavation of Vaults 1 and 6 are consistent with each other. During Phase I, the vaults were used for storage, animals (Vault 1) and living (Vault 6). Prior to this, they were used for living quarters and large storage holes and cisterns were dug into the floors (Phase II). All evidence of Phase III and Phase IV use of the vaults was removed in antiquity. The style of the tessellated pavements found inside of the vaults does, however, provide a clue to the date (Pl. XXIII,2). (Probes through the make-up for the tessellated pavements did not provide dating evidence.) The inside of both vaults had a simple utilitarian pavement with a border pattern of angled tesserae. The tesserae were uniformly large, *ca.* two centimetres cubed, and were made from the locally available limestone. The bedding, although adequate, was not substantial. Outside of Vault 1, a tessellated pavement of the same pattern was found (Pl. XXIV, 1). This outside pavement extended below both the east and west baulks of the probe area; and, one can assume it originally extended in front of all nine vaults. To the north, this pavement was limited by a two-course wall. This would suggest that when the vaults were built, the outside pavement and the wall were built as well; and, thus, a redefinition of the space from the Roman period is suggested.

Excavations in the house, early twentieth century, across from Vaults 8 and 9 helped to support the notion of the redefinition of the space. A water installation, perhaps a pool, was excavated. The material culture remains indicated a date of construction during the late seventh or early eighth century A.D. A tessellated pavement was found in association with

[16] See: Lenzen and McQuitty, forthcoming.

this installation and was dated to the same period. Happily, a rebuild of the pavement was also found and this dated to the ninth century (Pl. XXIV,2).

To the north of the vaults, approximately thirty-three metres, another section of Area A was excavated. A wall, measuring one hundred metres east-west and of fine header-stretcher construction, was partially visible. Probes against this wall showed that the wall and the buildings around it were robbed during recent memory and thus no conclusive date of this wall is yet available. On construction alone, it can be dated to *ca.* A.D. 200. This was a high terrace wall which could have separated the upper part of the Roman city from the lower part of the city. Together with a heavy, massive foundation wall built against it and to the south, this wall supported a massive structure. Architectural fragments from the Roman period would indicate that a public building was destroyed to build the foundations. Because of the nature of the material culture remains excavated, e.g., gilded mosaic, glass lamps, it is suggested that these walls were the foundations for the major church in this area, as suggested by Schumacher.

To the north of the large wall, a cave, partial arch and a wall were visible when excavations were started. This area had been recently bulldozed, creating problems for excavation in that large slabs of the limestone were throughout the area. The cave, like many caves, cisterns, etc., in Beit Ras, had been used for a cesspit within the recent past; therefore, only one section of it was excavated. It appears that this entire area was used as an industrial area: inside the cave surfaces were found dating from *ca.* A.D. 600 to 1500; and, outside the cave surfaces and walls were found dating from *ca.* A.D. 200 to 750.

Conclusion

The excavations in Beit Ras indicate that occupation of ancient Capitolias was continuous from *ca.* A.D. 200 to the present. There does not seem to be a major hiatus in occupation, although there is a lack of information from the period of *ca.* A.D. 800 to 900. It seems likely that continued excavation in this area of Beit Ras will produce more data relative to the importance of this occupied ancient site.

Acknowledgements

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The Irbid/Beit Ras Project, for this aspect of their work, was supported by a generous contribution from the Friends of Archaeology and by anonymous donations; these are gratefully acknowledged. Without the support of the archaeology graduate students of the Institute of Archaeology and Anthropology, many members of the international community of Amman and Irbid, who unstintingly gave of their time and energy, and the graciousness of the people of Irbid and Beit Ras, the project would not have been nearly as exiciting and as successful.

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PRELIMINARY REPORT ON THE THIRD SURVEY SEASON IN THE NORTH-WEST ARD EL-KERAK, 1985

by
Udo F. Ch. Worschech

The third season of the reconnaissance survey in the northwest Arḍ el-Kerak was carried out in August and September 1985. The project was funded by the Deutsche Forschungsgemeinschaft (Bonn, Germany) and the Theologisches Seminar Marienhöhe (Darmstadt, Germany). The members of the survey-team of this season were Ursula Worschech, M.-L. Jauch, U. Rosenthal, and the author. Mr. E. Masa'deh was the helpful and able representative of the Department of Antiquities.

This survey owes its importance to the fact, that the territory of the slopes extending from the Transjordanian plateau to the Dead Sea between the Wādī el-Kerak and the Wādī el-Mūjib have never been before the object of archaeological campaigns. I want to express my gratitude to J. Maxwell Miller (Atlanta, USA) and S. Mittmann (Tübingen, Germany), who suggested this project to me and were helpful in many regards.

The initial campaign of this reconnaissance-survey took place in the spring of 1983. Another campaign followed in the summer of 1984. For a complete coverage of the results reached during the two initial campaigns see the already published booklet, where methods, goals, and objectives are presented in detail, as well as site descriptions and drawings pertaining to the more important discoveries.[1] The following catalogue of sites is a continuation of the already published material, continuing also the figuration of the sites (Fig. 1).

CATALOGUE OF SITES

Site No. 72

Pal. Grid: 168768 Elev.: 950 m. Name: Umm Sidreh

This site is located ca. 500 m. northwest of ed-Dimnah close to a small wadi flowing into Wādī Ibn Ḥammād. At the westside of the compound the remains (subsurface and curbstones) of an ancient roadway can be seen and followed for ca. 200 m. northward where it disappears on a rocky plateau. Between Umm Ṣidreh and Yarūt (ca. 2 km. to the east) recent and old lines of field borderstones can be seen dividing the fertile land into larger and smaller units. The building remains of this site are 16 x 11.50 m. The perimetre wall, which is 1.10 m. thick is standing 2-3 courses high (especially at its southern and eastern side). A smaller wall (ca. 0.50 m. thick) is encircling a courtyard at the eastern side of the building covering an area of ca. 16 x 10 m. ca. 10 m. in easterly direction is a cistern which is still in use. A fairly large tombstructure (3.50 x 1.20 m.) built of undressed stones is ca. 10 m. northeast from the courtyard walls. The installation is below the surface. A burial had taken place there recently. The rock outcroppings in the vicinity show considerable quarrying. Pottery: Chalco-EB flints (13 pieces); Nab (1 rouletted ware, Nab-R, ER/LR, Byz.

[1] U. Worschech, et. al., 'Northwest Ard el-Kerak' 1983 and 1984. A Preliminary Report, *BNB 2*. Munich, 1985.

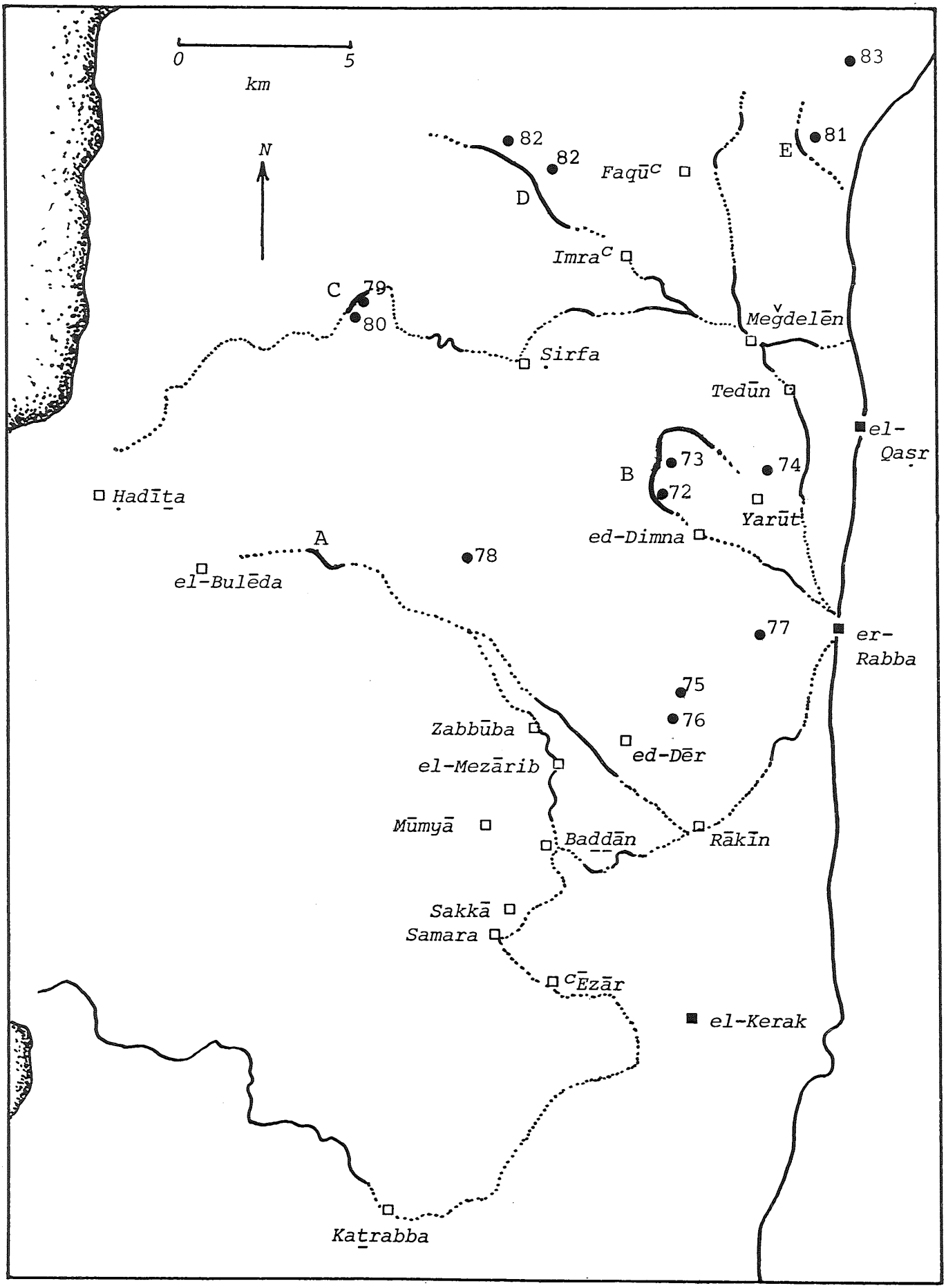

Fig. 1: Map of Sites and Roads.

Site No. 73

Pal. Grid: 167791 Elev.: 950 Name: Sweīmeh

This dolmen-like tombstructure is built of very large stone slabs forming a square of 5.20 x 5.20 m.[2] The fairly dressed boulders are ca. 0.40-0.70 m. wide and between 1 to 2 m. long. The stones forming walls are set upright on their oblong sides, ca. 0.50 m. above ground. The square is covered by two huge fairly dressed stone slabs forming a chamber (Fig. 2 and Plate XXV, 1). The square tombstructure was once encircled by an oval shaped ring of stones of which only few seem to have remained *in situ*. The length of its axis running east west is ca. 11 m. No pottery.

Sub-Site No. 73.1

Only about 10 m. to the southwest of the tomb a stone slab measuring ca. 1 x 0.80 m. with numerous cupholes and grooves connecting some of the cupholes. The diametre of the largest cup is ca. 0.12 m, the smallest 0.04 m. (see Pl. XXV, 2). There are several (cultic?) slabs like this one in Transjordan[3]; however, also in this case no clear pattern of the cuphole arrangement can be discerned giving clues to the function, meaning, and use of these installations. No pottery.

Site No. 74

Pal. Grid: 185795 Elev.: 920 m. Name: Ez-Zaqība

This site is located immediately beyond the head of Wādī Yarūt when following a sand track in northwesterly direction into a small forested area. The large stone enclosure found there measuring 85 x 85 m. can be tentatively interpreted as a medieval Islamic compound. At its four corners are the remains of small towers ca. 2 x 2 m. At the eastside are two towers measuring 6 x 6 m. (flanking an entrance?). The enclosure wall is 1 m. thick consisting of two rows of fairly dressed outer lines of stones which are filled with smaller fist-to headsized stones. A probe trench revealed that the wall was sunk into the ground by only one row of stones with no further foundations. Since there were no wall lines within this compound it is very likely that it had served only as a protective walled enclosure for tents. The enclosed area has mainly large flat rock outcroppings into which rock tombs were cut. Some LR and several pieces of Ayy/Mam pottery were found.

Sub-Sites 74.1 and 74.2

Due to extensive digging by the local people in this area several tombs had been opened, two were not completely excavated. Permission was granted by the Department of Antiquities to continue the excavation.

Tomb 74.1 which is close to the north wall of the compound has one small and two large loculi (both are 0.70 m. wide, 1.60 m. and 2.05 m. long, the opening is ca. 0.70 m.). All loculi had been excavated before. However, a large soil heap had remained in the chamber containing bones and LR and Mam pottery. All are unstratified.

Tomb 74.2 contained two child interments associated with broken pieces of LR and Mam. pottery. The much disturbed stratigraphy and the disarticulation of the human remains are partially due to the reuse of the tombs in Mamluke times and to the uncontrolled digging there recently.

Sub-sites Nos. 74.3 and 74.4

Site 74.3: this enigmatic structure (Fig. 3) consists of two parallel N-S running lines of heavy boulders forming a straight "lane" ca. 4 m. in width and 107 m. long. At its southend the boulders are remarkably large - if not megalithic (one measuring 3 x 2 x 2 m.) forming a funnel-shaped enclosure in a slight depression at the headwaters of the Wādī Yarūt. Since the ground is slightly sloping

[2] For comparison see A. Dajani, *ADAJ*, 12/13 (1967), 56ff.

[3] For further parallels see J. Undeland, 'A Cultic Stone Slab at Damiya', *ADAJ* 18 (1973), 55-59.

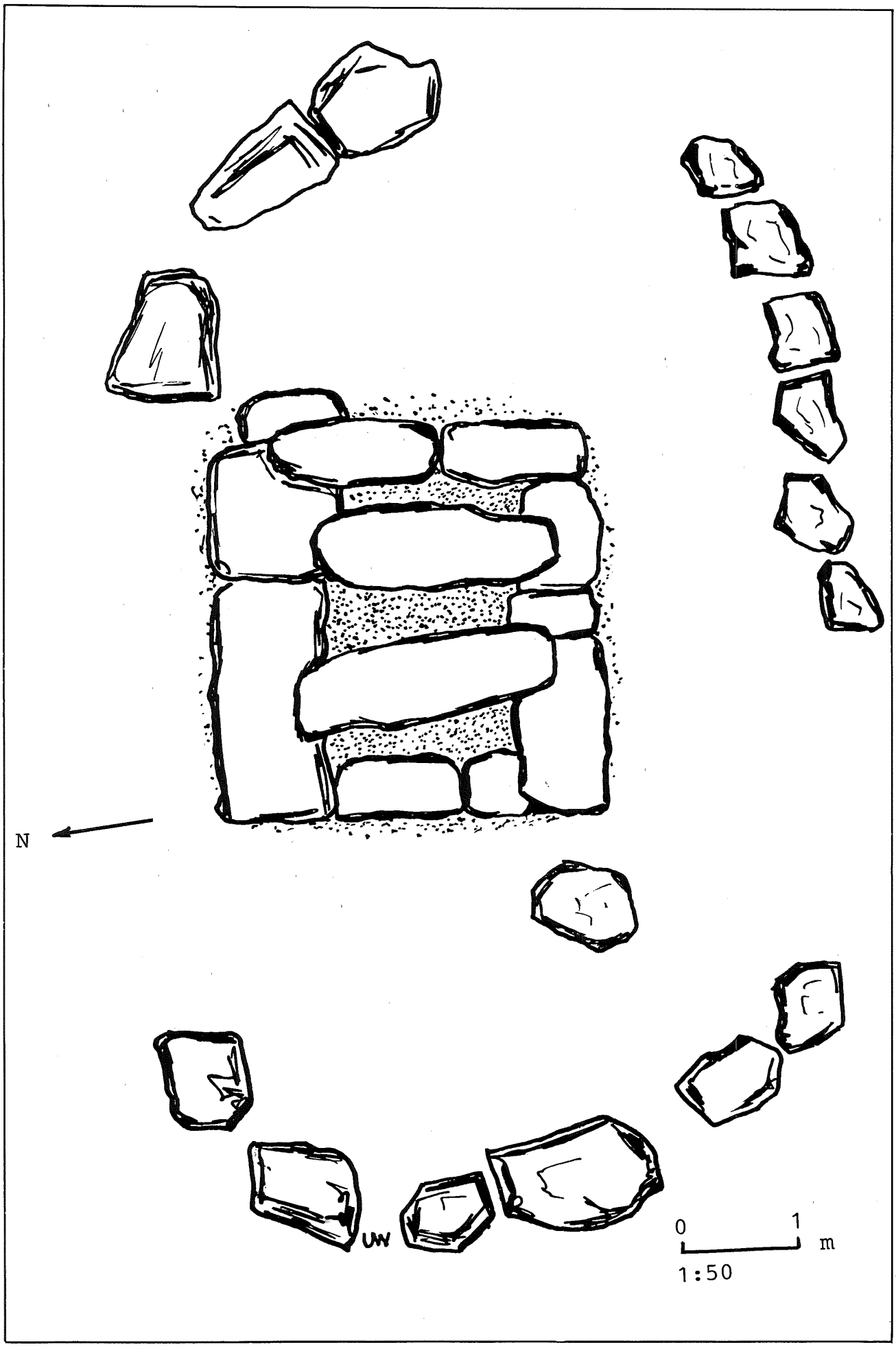

Fig. 2: Sketch of dolmen-like tomb.

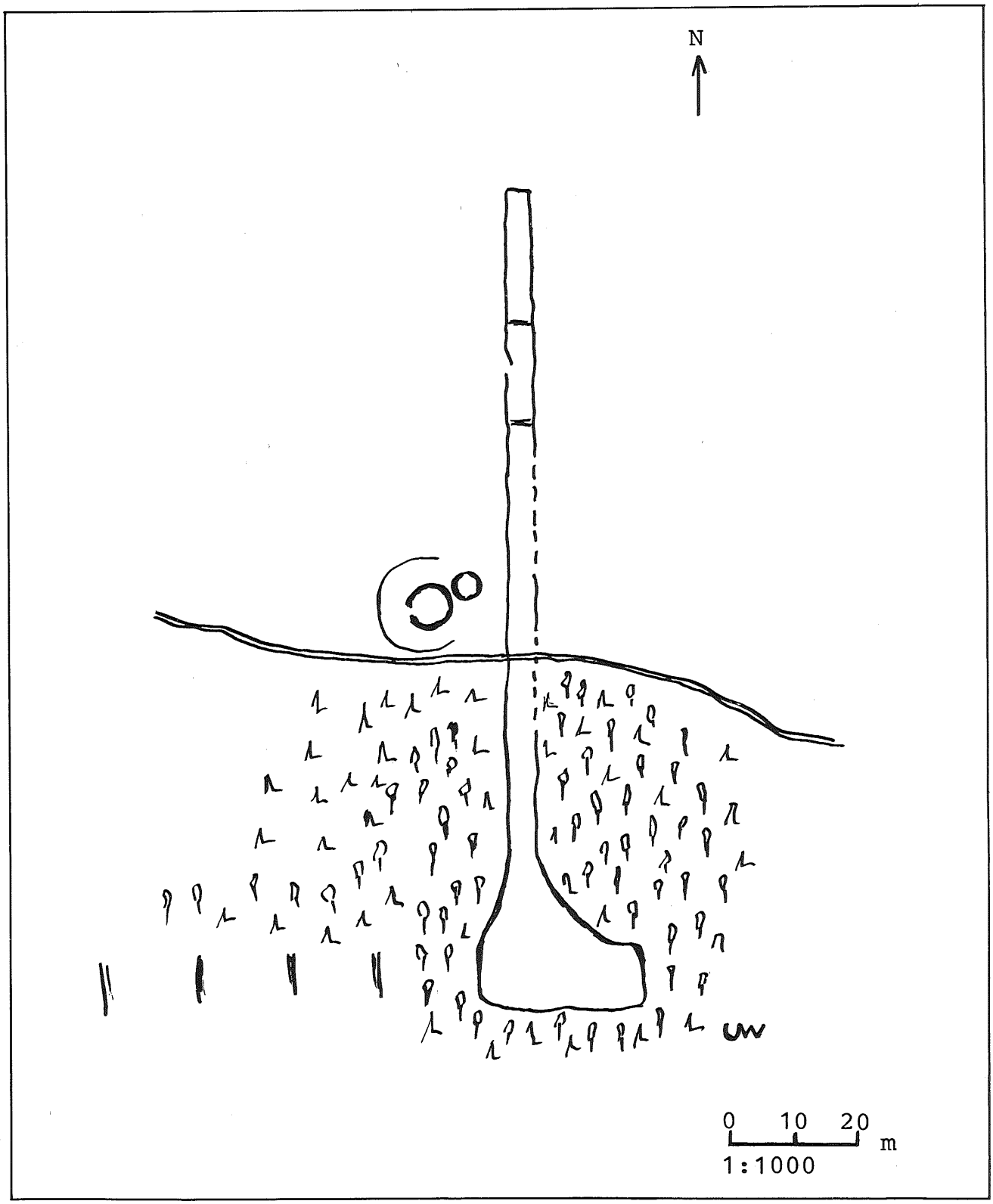

Fig. 3: "Lane" and funnelshaped enclosure of prehistoric (?) site.

from north to south the enclosed platform is ca. 4 m. lower than the northend of the parallel lines of boulders. No pottery.

Site 74.4: there are two stone circles in the immediate vicinity of No. 74.3 built of heavy boulders. The larger circle (8 m. in diametre) has a well set entrance (ca. 0.80 m. wide) at its westside. The enclosure walls are resting on a pavement which can also be found inside the structure. The smaller circle (6 m. in diametre) is built of smaller boulders and has no pavement inside. There is a semi-circle of small stones to the west of the entrance circumscribing both stone circles; its diametre is 22.50 m. No pottery.

Sub-site No. 74.5

About 250 m. to the northwest of Nos. 74.3.4 following a sandtrack is a monolithic limestone block (Fig. 4) set upright on its oblong side measuring at its base 2.10 m; at the south end it is 1 m. high, at its northern end only 0.40 m., its width is ca. 0.40 m. Viewed from the top it has a streamlined shape. There are three cupholes of various sizes (ca. 0.08-0.14 m. deep) cut into its top surface: the longitudinal axis of the largest is 0.50 m., its width 0.30 m.; the smaller cupholes are 0.15 and 0.12 m. in diametre. The cupholes are connected by two groove lines (0.40 and 0.15 m. long). No pottery.

Site No. 75

Pal. Grid: 173733 Elev.: 1015 m. Name: Kh. Qabū, Deir el-Maḥrūḳ

This site is located on a high ridge above a deep wadi flowing into Wādī Ibn Ḥammād. Ca. 1 km. south of No. 75 is the small village of Ẓahirīye. The entire region between Batir and Rakin is very fertile and it is thus very likely that Kh. Qabū is another of the typical isolated fortified farmhouses[4]. The size of the relatively well preserved building is 21 x 15 m. with a towerlike structure (6.50 x 6.50 m.) at its northwest corner and another tower or courtyard (7.80 x 6.50 m.) at the northeastern side (Fig. 5). The interior and exterior wall lines are still standing three to five courses high. Two cisterns were located inside the building. The apse in the room at the southeastern corner of the building could date from Islamic times, however, the older name of the site - Deir el-Maḥrūḳ - seems to have preserved the Christian tradition of Baptism at this site. It could, therefore, well be that this room was rebuilt and used in Byzantine times as a small chapel. There is a cellar entrance ca. 35 m. to the east. A water reservoir is located ca. 50 m. to the southwest. Pottery: Ir I, II, Nab, ER, LR, Byz, Um, Mam.

Site No. 76

Pal. Grid: 177725 Elev.: 1028 Name: eẓ-Ẓahirīye

Today the Khirbeh (ca. 200 x 150 m.) is covered by a number of recently erected farmhouses, corrals, and walls protecting entrances to large caves which are also in use today. The ancient remains are difficult to follow, and whatever wall lines were found do not allow to draw groundplans of individual compounds. In addition, the older houses were partially built with stones from the ancient buildings. The only building from antiquity of which the perimetre walls are still standing three courses high was found on the highest point of the Khirbeh. Its massive walls are built of undressed stone slabs. The walls are 1.30 m. thick enclosing an area of 14 x 12.80 m. In the northeast corner an old farmhouse had been erected mostly built from the stones of the ancient building, whose remaining walls serve as an enclosed courtyard. The farmhouse measures 10 x 7 m. Four cisterns were counted located in close proximity to what appeared to be the former village or town centre.
Pottery: Nab-R, ER, LR, Byz, Um, Mam.

Site No. 77

Pal. Grid.: 175744 Elev.: 960 m. Name: Butayyīr

Butayyīr is located just beyond a small wadi to the east (ca. 500 m.) of the village of Batīr. Slight rises and depressions in the area (ca. 150 x 100 m.) as well as some exposed foundation walls are indicative of a small settlement. However, due to the little erosion here no individual building complex could be identified and drawn. Some exposed walls are 0.60 to 1 m. thick. Six cisterns were counted of which two are still in use. A late Mamluke farmhouse is at the east side of the site. The excavation of one cistern by a villager brought to light excellently executed pottery and glass frag-

[4] U. Worschech, 'Die Šēhburgen am Wādī Ibn Ḥammād', *BN* 28 (1985), 66-88.

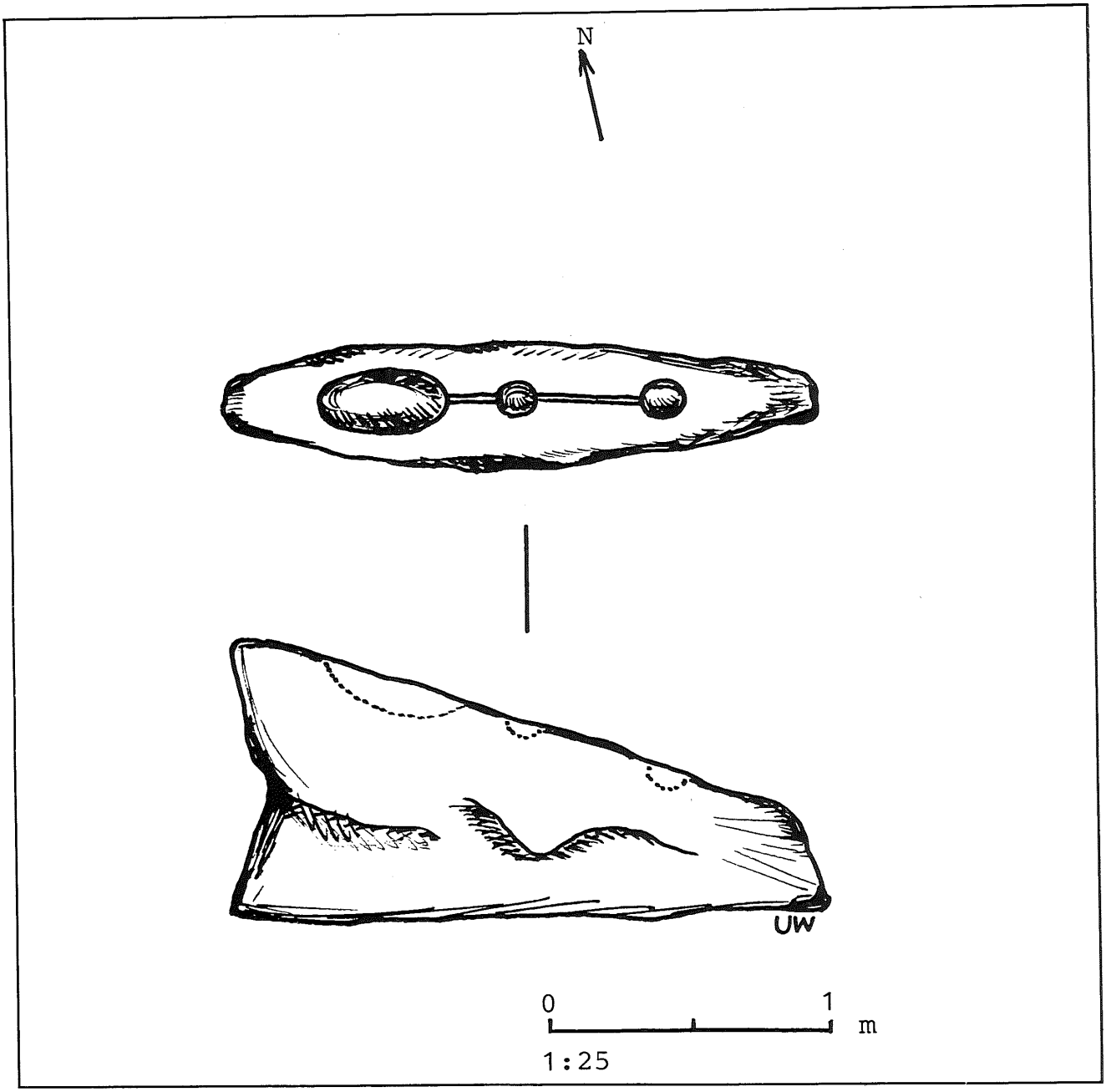

Fig. 4: "Standing stone" with cup holes.

ments which may point to the importance of this site. The pottery is exclusively ER and LR, with only few pieces from Byzantine times.

Site No. 78

Pal. Grid.: 118783 Elev.: 420 m. Name: Umm Qal'a

There are two building remains to this site.[5] They can be reached on a difficult roadway from Abū Mudawer (No. 14) or Khrēishiya (No. 71). The remains of the larger complex measure 28 x 19 m. (Fig. 6). There is a well preserved tower (4-5 courses high; 7 x 7 m.) at the southeast corner, and a smaller one (8 x 3 m.) at the north-west corner of this complex. Despite of the debris of the collapsed interior walls it is possible to reconstruct the room arrangement. Four rooms seem to have surrounded an open courtyard which had an entrance at its east side. There is also an entrance to the large tower from the south (1.10 m. wide). Close by the tower is a large cistern, which is still in use. The site is located on a terrace above Wādī Ibn Ḥammād, and is surrounded by fields. There is also evidence of ancient terracing towards the westside of the building.

[5] A. Musil, *Arabia Petraea, I: Moab* (1907), p. 157.

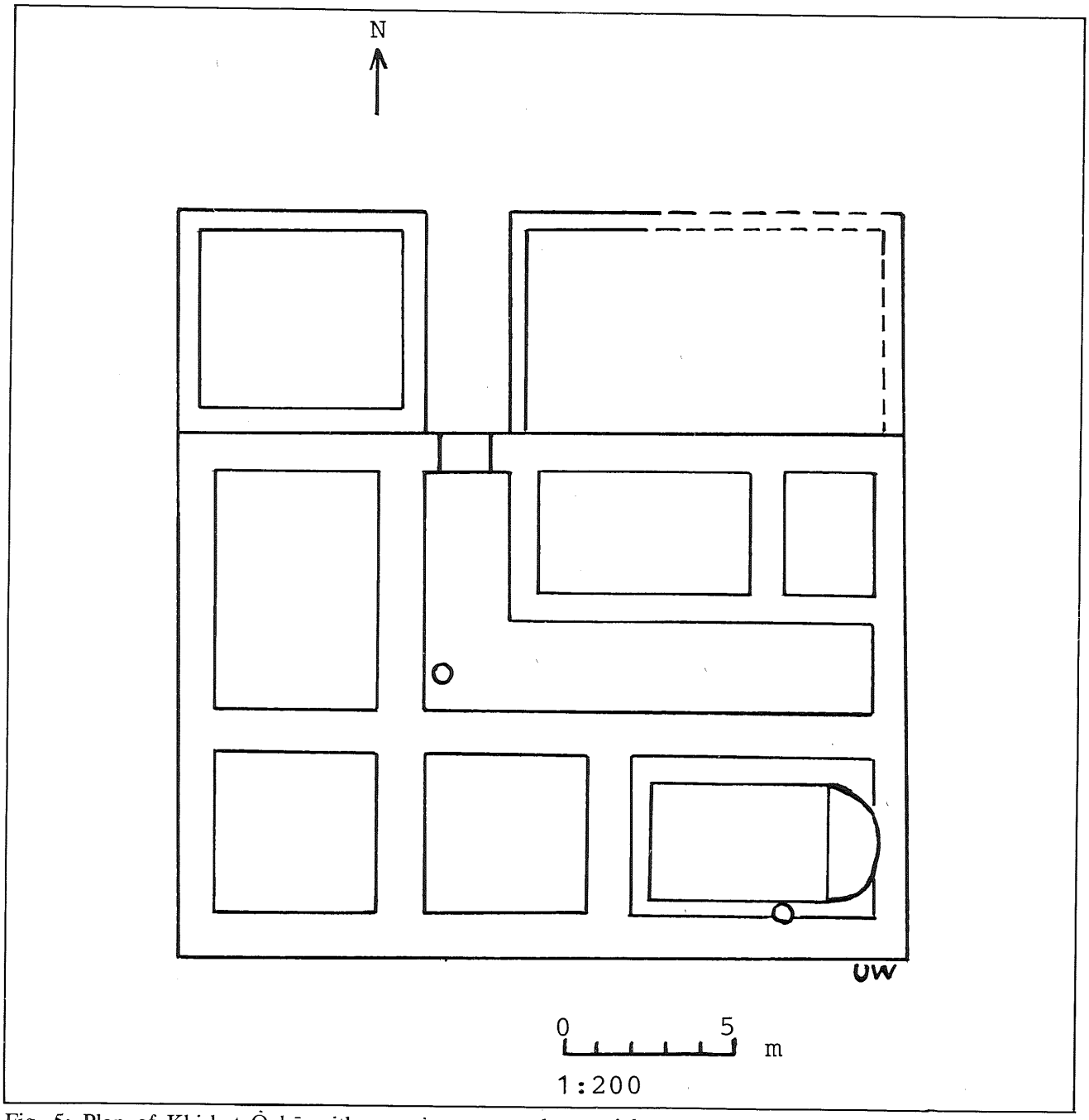

Fig. 5: Plan of Khirbet Qabū with apse in room at lower right.

Pottery: Poss. Ir I/II, Nab, Nab-R, ER, LR, Byz, Mam; one Roman coin.

Sub-site No. 78.1

Pal. Grid: 115784 Elev.: 430 m.

Situated on a cliff high above Wādī Ibn Ḥammād and ca. 300 m. west of site No. 78 are the remains of a tower (8.50 x 8.50 m.). built of well dressed stones standing two to three courses high. There are no interior wall lines. From this tower-like building one has a commanding view to the west where the Wādī Ibn Ḥammād flows into the Dead Sea. It may well be that this tower was built to guard the approach from the Ghor to the plateau. Pottery: Ir II, ER/LR, Byz, Mam.

Site No. 79

Pal. Grid: 95835 Elev.: 560 m. Name: Ḥafāyir

There is a small towerlike structure (7.50 x 7.50 m.) at the south slopes of Wādī el-Ḥafāyir ca. 150 m. downstream from Ḥauḍ el-Ḥafāyir (No. 64). The north face of the structure is preserved up to 4-5 courses (1.50 m. high). There are no interior wall lines. No pottery.

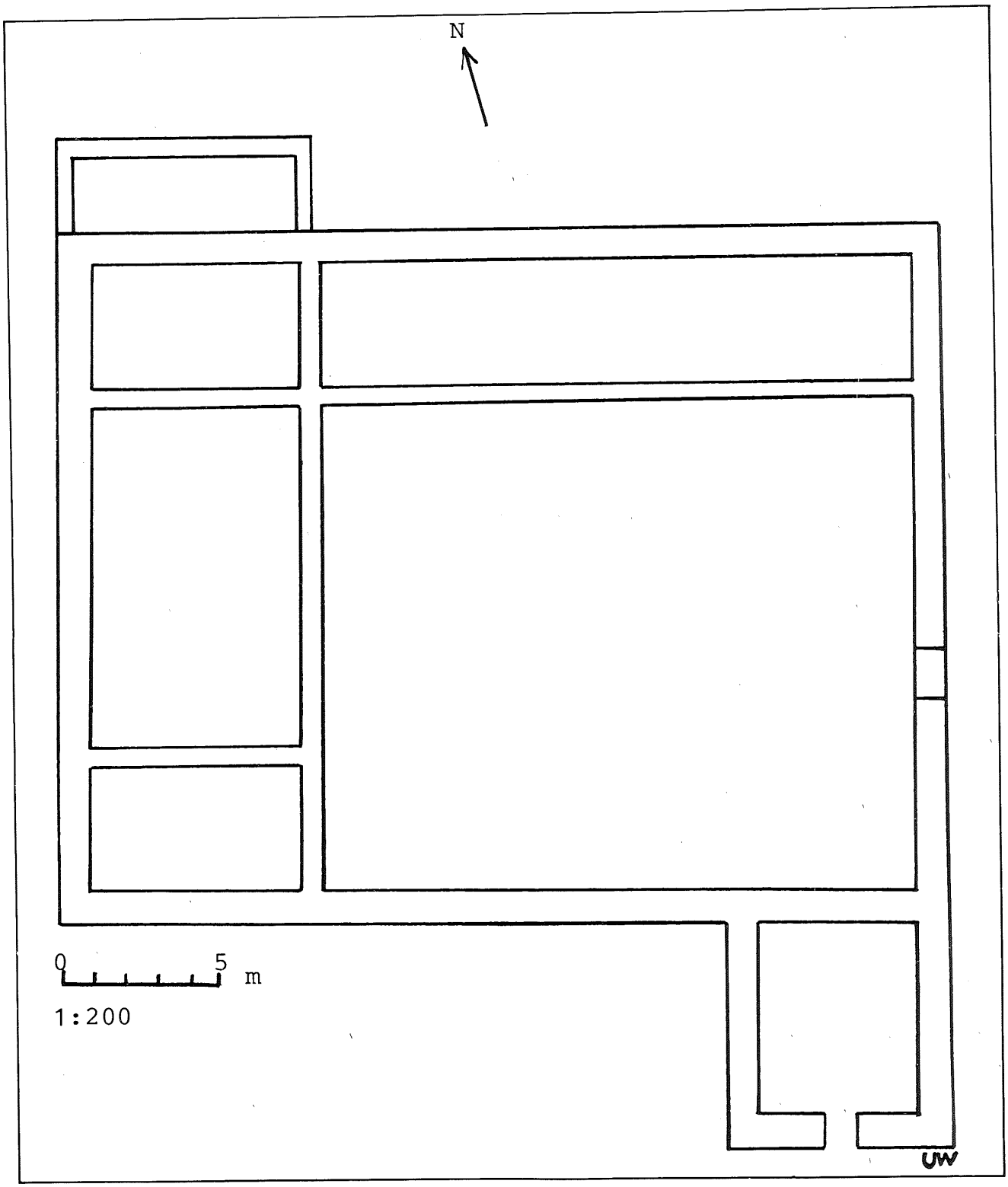

Fig. 6: Plan of Umm Qal'ā.

Site No. 80

Pal. Grid: 94835 Elev.: 570 m. Name: Ḥafāyir

This site is located ca. 250 m. southwest from 'Ain el-Ḥafāyir. The site is surrounded by fields. Also ancient terracing can be seen at the slight slopes of the hills to the south of the site. There are three buildings to this site. The largest (21 x 12 m.) consists of three rectangular parallel running rooms. Their sizes vary in width (5 m, 3.50 m., 3.50 m.), however, they are of equal length (10 m.). There is an open walled courtyard at their southside measuring 12 x 11 m. Its walls are 0.60 m. thick. About 17 m. to the north is another building (12 x 10 m.) with no interior walls. It is likely that this may have been a cellar-like installation since the foundation

POTTERY SEQUENCE AT SITES IN THE NORTH WEST ARD EL-KERAK (WORSCHECH-SURVEY), 1985

Nr. Name Pal. grid.	PL Ach Epi	NL PP PN	CL	FB I II III	MB I II	LB I II	Ir I II IIC	H	Nab	R E L	Byz	Um	Ayy/Mam
72 Umm Ṣidreh 2168.0786			+						+	+ +	+		
73 Sweīmeh 2168.0790													
74 eẓ-Zaqiba										+			+
.1 tomb										+			+
.2 tomb 2186.0793										+			+
75 Kh. Qabū, Deir el-Maḥrūḳ 2163.0740							+ +		+	+ +	+	+	+
76 eẓ Ẓahirīye 2162.0732									+	+ +	+	+	+
77 Butayyīr 2183.0735										+ +	+		
78 Umm Qal'a 2115.0787							+ + +		+	+ +	+		+
.1 Umm Qal'a 2114.0787							+ +			+ +	+		+
79 Wadi el-Ḥafāyīr 2100.0834													
80 Ḥafāyīr 2098.0835										+			
81 Shiḥān 2201.0877							+ + +		+	+ +	+	+	+
82 Ṣaḥrīj 2154.0868	+									+ +			
83 Freiwān 2211.0899									+	+ +		+	+

stones inside the building are exposed up to five courses while outside the top of the foundation wall is at level with the ground. An entrance is leading into the compound (1.50 m. wide); there are three steps leading down. Between the two installations is another smaller building measuring 6 x 4 m. Only the foundation stones can be seen. The walls of the two main buildings are 1-1.10 m. thick and are built of undressed and fairly dressed stones. They are standing 1-2 courses high. Despite of intensive search only 6 pieces of pottery were picked up. It is likely that due to the slightly sloping area most of the pottery has been washed down into the Wādī Ḥafāyir. Pottery: ER.

Site No. 81

Pal. Grid: 201877 Elev.: 1064 m. Name: Shiḥān

The recent use of Jebel Shiḥān has been given up. Therefore a detailed examination of the ancient remains on top of the mountain was possible (Fig. 7).[6] There was no serious destruction of the ancient remains when modern equipment was installed here (we appreciate the watchful eye of the Department of Antiquities during that operation).

The perimetre wall (1.30 m. thick) can be followed around the entire (at places irregularly built) ancient citadel (51 x 40 m.) standing 2-3 courses high. However, stone fall, rubble, and debris have accumulated so heavily that only a few interior wall lines can be made out clearly. Several towers are flanking the complex, others can be seen inside the citadel. There are a cistern and an oval shaped (ca. 5 m. in diameter) pool as well as two columns (0.50 m. in diameter) *in situ.*
Pottery: (Ir I?), Ir II, Nab, Nab-R, ER, LR, Byz, Um, Ayy/Mam, Tessarae.

Site No. 82

Pal. Grid: 154868 Elev.: 900 m. Name: Ṣahrīj

This "site's" name refers to a flat region north of Imra' between Wādī el-Faqū' and Wādī Abū 'Ujeil. Rectangular enclosures built of undressed basalt blocks form a large compound (ca. 80 x 50 m.) in a fertile area where recent agricultural activities can be observed. There are also many cisterns and caves still in use. Inside and around the camplike enclosures no pottery was found, however, a large amount of possible epipalaeolithic flints strewn over the area were picked up (these will be published elsewhere). A rocky and difficult roadway runs over a mountain ridge to a narrow plateau from where one has a magnificent view along the Wādī esh-Shuqeiq towards the Dead Sea. Ca. 1 km west of the enclosures the remains of a possible tower (Pal. grid: 145869) have been destroyed and pushed aside when the roadway was prepared with bulldozers. However, the large amount of pottery and the many scattered undressed boulders allow to pinpoint this site. But no measurements could be taken. Pottery: ER/LR.

Site No. 83

Pal. Grid: 211898 Elev.: 875 Name: Freiwān[7]

Located at the southwestern side of Wādī el-Freiwān - almost opposite Kh. el-Miṣ'ar - is a large area (ca. 200 m. in length) of once agriculturally used ancient remains. Many cisterns and caves - most of them still in use today - as well as foundation walls of farmhouses (altogether four measuring between 4 x 4 and 7 x 7 suggest an open agricultural settlement. The four building remains are lined up at the slopes of a ridge running N-S above a dried up

[6] *Ibid.*, 376.

[7] N. Glueck, 'Explorations in Eastern Palestine' I, *AASOR* 14 (1934), p. 58.

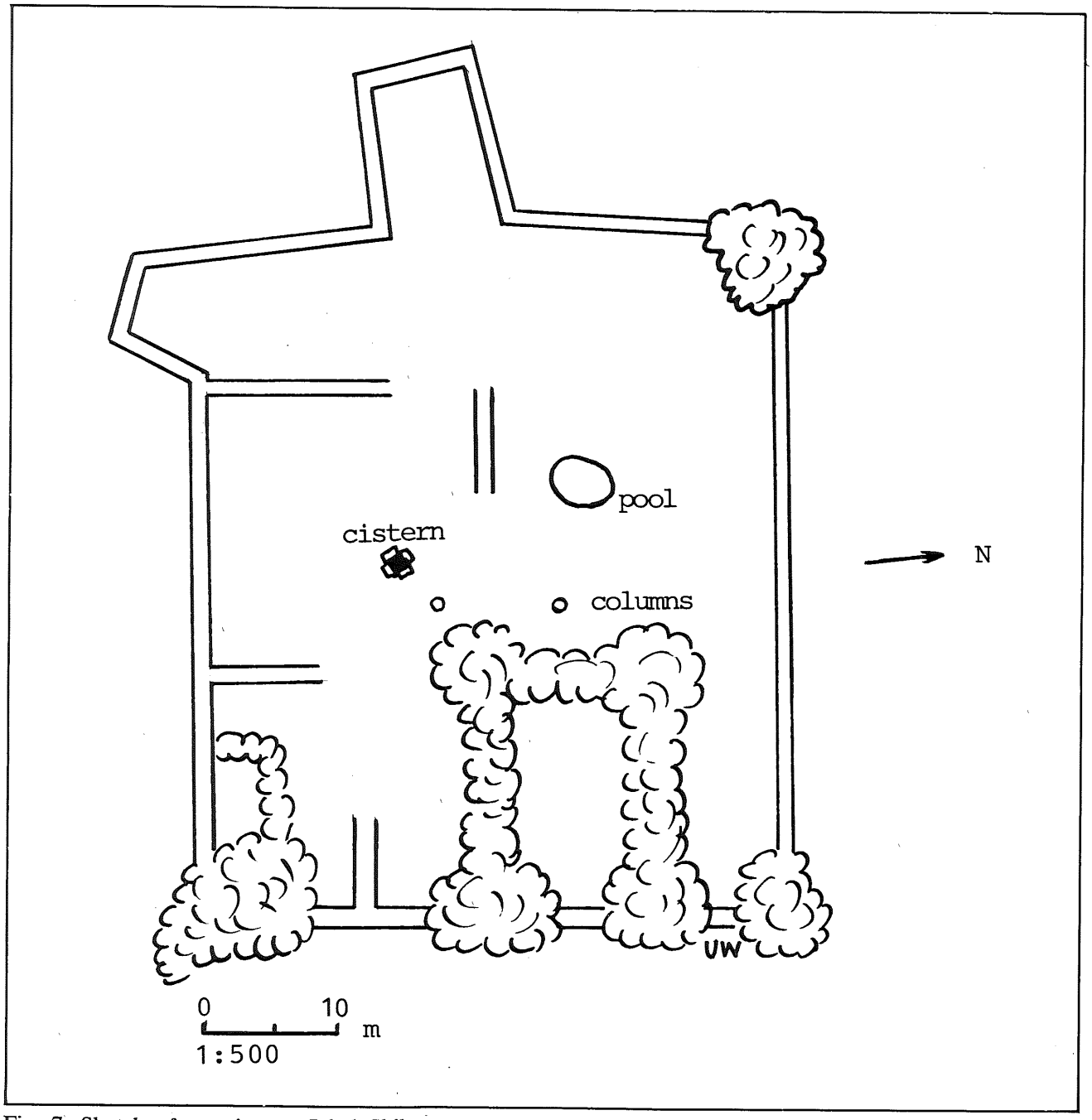

Fig. 7: Sketch of remains on Jebel Shiḥan.

wadi. The only impressive ancient remain in this line of small houses is a building complex of ca. 30 x 26 m. Due to the heavy destruction and stone and rubble accumulation it was not possible to draw an exact sketch of this building which may belong to the Nabatean-Roman epochs. The destruction of this complex by fire must have been very intense since by approaching the site from the east the soil immediately around and below the building is of dark grey colour and ashy consistence. Only the Western wall is 2 courses high and built of roughly dressed basalt blocks. Pottery: Nab, Nab-R, ER, LR, Byz, Ayy/Mam.

Ancient roads in the Northwest Arḍ el-Kerak

In 1984 an entirely new ancient road-system of secondary roads was discovered connecting the western hinterland of the Arḍ el-Kerak with the Via Traiana. A detailed description of these roadways has already been published.[8] All roads - also

[8] U. Worschech, E.A. Knauf, 'Alte Straßen in der nordwestlichen Arḍ el-Kerak', Ein Vorbericht, *ZDPV* 101 (1985).

those described below - are ca. 4 m. wide and have either subsurfaces or curbstones or both as identifiable sections. In the following, brief descriptions of these new roadsections are given (see also Fig. 1).

Section A

A stretch of ca. 220 m. close to the north bank of Wādī el-Kerak. Subsurfaces and supporting walls can be seen at the point where the road is coming around a sharp corner at the foot of a high mountain. From there it continues towards Buleida but disappears among fields.

Section B

Close by Site Nos. 72 and 73 the curbstones of a road can be followed going from Dimnah northward and then turning to Yarūt in the east (Pl. XXVI, 1). The road can be traced for ca. 300 m. It disappears on the rocky surface near site No. 73; however, it can be seen approaching Yarūt.

Section C

This is another section of the roadway from Ṣirfa to Ḥaditha through the Wādī Jarra. The road remains are just opposite site No. 79. It has a stone embankment (Pl. XXVI, 2; curbstones can be seen only at certain intervals since erosion has taken away much of the ancient roadway. A stretch of ca. 250 m. can be made out clearly.

Section D

North of Imra' a rather long section of a newly discovered ancient roadway can be followed ca. 2000 m. (Pl. XXVII, 1). Close to site No. 82 - the ER and LR watchtower - the road descends into the deep canyon of Wādī esh-Shuqeiq. The roadway was not followed any further at this time.

Section E

There is a stretch (ca. 150 m.) of an ancient roadway passing the citadel of Shiḥān ca. 100 m. to the west. This road may have left the via Traiana south of Shiḥān and then continued over it in northwesterly direction crossing or joining a roadway from Faqū' into Wādī el-Mūjib. Due to agricultural activities north of Shiḥān, this, however, is difficult to verify.

Summary

The reconnaissance-survey of 1985 in the northwest Arḍ el-Kerak has discovered 17 formerly unknown ancient sites, one new roadway to the Dead Sea through the Wādī esh-Shuqeiq, and new sections of roads already examined in 1984.

Again isolated farmhouses, church remains, open settlements, tombs, and probable prehistoric remains indicate the rich and manifold culture in the ancient Arḍ el-Kerak. However, there are no tell-like settlements comparable to those discovered during previous campaigns.

The periods dated range again from the Chalco/EB to the Ayy/Mam and late Islamic times with no clear indications of MB-settlements, and only some evidence of the LB-periods.

It is hoped that this survey can be continued in the near future to explore the slopes and valleys close to the Wādī el-Mūjib.

Acknowledgements

I would like to thank Dr. A. Hadidi, Director-General of the Department of Antiquities of Jordan, Amman, for his most considerate assistance in supporting this project, and for providing the survey license for us, as well as for his unbureaucratic help when special requests were made. I also would like to thank Dr. E. A. Knauf, Director of the Deutsches Evangeliches Institut für Altertumswissenschaft des Heiligen Landes, for his scholarly assistance and for accomodations in the Institute during the final days of the survey.

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KHIRBET EL BURZ[1]

by
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Introduction

Khirbet el Burz was surveyed by the authors over a period of two days in October 1984 on the instigation of Mr. Mahmoud Rousan and as part of Dr. C. J. Lenzen's survey in northwestern Jordan.[2] The site was again visited and surveyed in November 1984 by Lenzen/McQuitty and Dr. David McCreery, Director of the American Centre for Oriental Research, Amman. The only previous survey was that of Nelson Glueck in 1942.[3]

Location

Khirbet el Burz is situated in north-west Jordan, approximately seven kilometres north-west of the modern city of Irbid and two kilometres south-west of the modern village of Sama at grid reference 2253/2258.[4] The area is characterized by deeply dissecting *wudyan* dating from the Late Pleistocene period which run into the east-west Wadi el 'Arab and by sloping hills which rise up to the watershed between Wadi el 'Arab and Wadi Yarmouk. The area receives an average rainfall of 400 mm. per annum and as there are no springs in the immediate vicinity of Khirbet el Burz, a cistern system is employed for water supply, making use of both surface water run-off collection and rainwater storage. The impression of the landscape today is similar to that of antiquity;[5] extensive exposures of calcrete bedrock are covered with sparse vegetation. This impression was only slightly altered during Ottoman times when the few existing trees were cut down for fuel. The modern use of the land has changed little over the centuries: wheat, lentils and olives are cultivated. In addition, the land is used for grazing, both by Bedouin flocks and those of the villagers. The Bedouin are in the area from late summer, after the harvest, until early spring.

The Site

The site lies on a low promontory at a height of 400.00 metres, bordered on the north, west and south sides by the Wadi 'Ish Ghurab. The site measures approximately 205 metres north-south and 288 metres east-west. The edges of the site are cultivated but the top remains fallow. The soil on the top is grey in colour due to the occupation and merges into the Mediterranean sub-rossa soil on the cultivated slopes.

To the north, the land drops steeply to the *wadi* while on the west and the south it slopes more gently. Over the whole site caves occur naturally which are now used by the Bedouin for stabling their flocks during the winter months. Traces of earlier construction were found in the caves which suggest occupation. The west side of the site is being bulldozed to make way for a new access road.

Survey Methodology

The aim of surveying the site was to discover which periods of occupation were represented at the site, both in material culture remains such as pottery, and in architectural remains, i.e., graves. Moreover, it was hoped to determine

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[1] The site is also known as Khirbet el Birz and Khirbet el Bourj.

[2] Dr. C. J. Lenzen carried out a survey of part of north-west Jordan during 1984 as a National Endowment of the Humanities fellow at ACOR, Amman.

[3] Nelson Glueck, *Explorations in Eastern Palestine IV, AASOR*, Vols. 25-28 (1945-1949) p. 148.

[4] The map used was the 1941, 1:25,000 Transjordan series.

[5] Personal communication, Dr. John Powell, the British Geological Survey of Jordan.

intra-site variability and density for the periods of occupation by gridding the site and surveying accordingly. The site was divided as shown in Figure 1. The approximate centre of the Khirbet was marked and from this three concentric circles of radii twenty, forty and sixty metres respectively were marked. Each circle was divided into four segments and fifteen minutes was spent collecting material culture remains (mcr's) in each segment by one person. The perimeters of the site were surveyed according to compass direction.

Results

Although further work on the mcr's is necessary before detailed statements about the intra-site variability can be drawn, primary conclusions can be made. Ceramically, the periods from the mid-first century A.D. through to the nineteenth century A.D. were represented with possible earlier sherds on the southern and western slopes. The Roman (A.D. 100-A.D. 334) and Byzantine (A.D. 334-A.D. 632) sherds were concentrated on the west and south-west sides of the Khirbet correlating with Byzantine shaft graves which clustered in the west (see discussion below). This sector of the site was also where the Umayyad and 'Abbāsid pottery was concentrated suggesting immediate continuity of occupation (A.D. 661-A.D. 950) from the Byzantine period. Ayyūbid and Mamlūk (A.D. 1100-A.D. 1516) sherds were most frequent in the east and south-east quadrants while those of the Ottoman period were found on the northern slope facing the modern village of Sama. Architecturally, the information was, for the most part, scanty; however, certain features stand out.

A. Structure A (Plate XXVIII, 1)

This structure lies on the highest point of the khirbet in the eastern half of the site. It is rectangular, measuring ten metres north-south by fifteen metres east-west, and one corner has been robbed out so that the squared blocks and plastered interior are visible. Although no pottery was found directly in association with this, it could be interpreted as a look-out installation; underneath this there was a cave, possibly used for stabling animals.

B. Courtyard Complex (Figure 1: B)

This complex is located on the north-west side of the site overlooking the steep drop to the *wadi*. It consists of a stone perimeter wall within which are structural remains and two cisterns. This probably represents a housing complex dating from the latest village occupation of Khirbet el Burz in the early nineteenth century.

C. Underground Channel (Figure 1)

This channel or tunnel, exposed by the bulldozer, was accessible for a length of ten metres. It was carved out of bedrock and was supported by two sets of adjacent rounded arches with a visible height of one and a half metres, made of well-dressed stones. Mid-seventh century A.D. pottery was collected from the interior. It is conceivable that this channel was used for water transportation.

D. Cisterns (Figure 1)

As mentioned above, there are no natural springs within the area and, therefore, cisterns are used for water storage. These are concentrated at the western end of the site where the outcropping of bedrock is more consistent. They appear to be of two types: simple cisterns and those with drinking troughs adjacent (Plate XXVIII, 2). In many cases, the "channel" leading water to the cisterns can be traced (Plate XXIX, 1).

D. Graves/Tombs (Figure 1)

Again, the graves/tombs are concentrated at the western end of the site where the bedrock is visible. They range from simple stone-cut shaft graves (Plate XXIX, 2), to more complex loculi tombs. In spite of being robbed and thus having no associated material culture remains, stylistically these can be dated to the Byzantine period.[6]

[6] Dr. John Davis of Grace Theological Seminary, USA, is presently compiling a typology of tombs in Jordan.

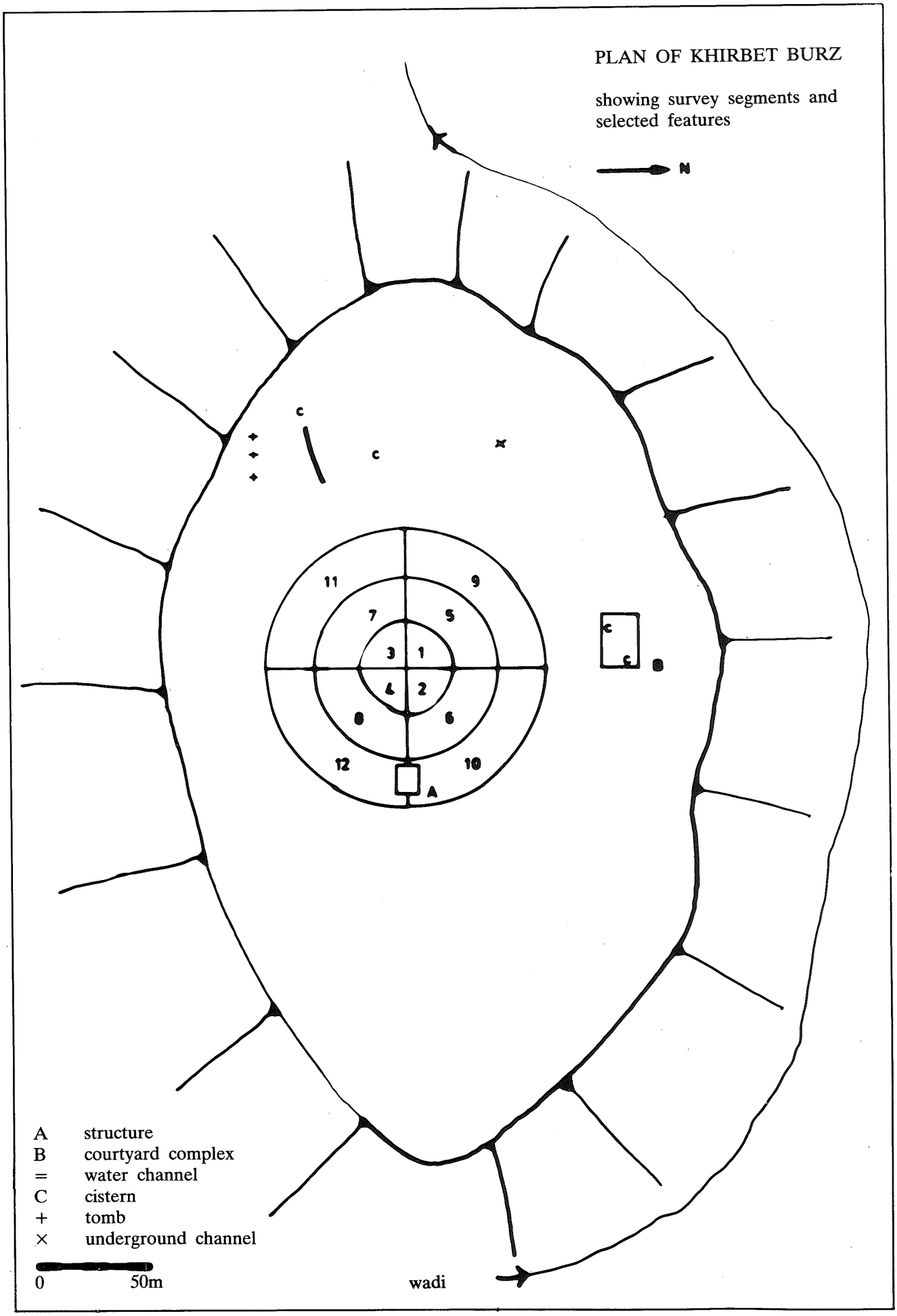

Fig. 1: Plan of Khirbet el Burz showing segments and selected features.

Conclusion

One of the most important aspects of the survey work at Khirbet el Burz has been that it shows that there was continuity of occupation in northern Jordan from the Roman period to the present day. In the sixteenth century Ottoman tax records tell us that el Burz was a thriving village.[7] This belies one of the long-held beliefs concerning northern Jordan: that it was occupied only by nomads from the Umayyad to the Ottoman period. Excavation of this rich site, planned for the future, will determine the nature of this little known period of occupation, its fluctuations in intensity and its differences from earlier, i.e., Roman and Byzantine, occupation.

The site itself lies in a strategic position, primarily for trade, and within a fertile agricultural area. Survey work by Lenzen has shed light on a secondary road system along the Wadi el Arab[8] which was probably in use during the Roman/ Byzantine (Decapolis) period, as well as during the later Islamic periods. Khirbet el Burz was, in all likelihood, a trade stop along the Wadi el 'Arab, itself one of the main trade arteries between the southern Hauran and Palestine.

Previous study of the Islamic periods in Jordan has concentrated on urban sites, e.g., Jerash, the Amman Citadel, Pella; or, on unique sites, e.g., the desert "castles". There is a need to investigate secondary, rural sites so that a more balanced view of the nature of the settlement can be obtained. Because of its relatively untouched state, Khirbet el Burz provides an excellent opportunity to research this question.

Acknowledgements

The authors would like to express their gratitude to the Director-General of the Department of Antiquities of the Hashemite Kingdom, Dr. Adnan Hadidi, for permission to survey the site and his support; and to the Irbid office of the Department of Antiquities for support and cooperation, in particular Mr. Sultan Shraideh.

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[7] Wolf-Dieter Hütterhoth, Kamal Abdulfattah, *Historical Geography of Palestine, Transjordan and Southern Syria in the Late 16th Century,* Erlangen, 1977, p. 200.

[8] The surveyed portions of the road lie between Irbid and el Burz. A report on this survey is forthcoming.

AN EB/MB TOMB AT TLA' EL - 'ALI

by
Emsaytif Suleiman

An EB/MB tomb was discovered accidentally on the 8th of May 1984 in the Um ed-Ḍeba' area while work on the project of Tla' El-'Ali sewage was occuring. The tomb was located ap.5m. east of Mrs. Qamar El-Koni house.

The discovery was reported immediately. The excavation clearance, planning, description and study of the pottery in the tomb was done by the author.

Description of the tomb (Pl. XXX)

The tomb was a rock-cut cave, comprised of a single burial chamber in a semi-circular shape (2.90 m./N-S and 2.40 m/E-W) with a domed roof (Height 1.25 m.) and plain floor covered with a thick layer (ca: 10-12 cm.) of soft ḥuwwar. The entrance was a shaft located at the west end of the tomb (Diam. 1 m.) and it was closed by a rough semi-circular stone (Diam. 0.95 m.).

Three pottery pots and fragmentary remains of human skeletons were found on the floor at the southern end of the tomb.

Description of Pottery (Pl. XXX).

No. 1: Amphoriskos: Round shape, simple rim, two loop handles and a flat base. Gray ware with lime deposit inside and outside. Parallels: Lapp 1966: Pl. 7:5; Fig. 19:5; Tubb 1985: NE 10a:3.

No. 2: Jug: Globular shape, slightly everted rim, one angular handle from rim to shoulder and a flat base. Reddish-Gray ware, herring bone incisions on shoulder and handle with lime deposits inside and outside (incomplete, mended).

Parallels: Dajani 1967-68: Pl. XL: 1.
Hadidi 1982: Pl. LXXIV: 1.
Zayadine 1978: Pl. IX: 4.

No. 3: Storage Jar: Globular shape, everted rim two ledge envelope handles and a flat base. Gray ware, herring bone incisions on shoulder with lime deposits inside and outside.

Parallels: Dajani 1967-68: Pl. XL: 5.
Hadidi 1982: Pl. LXXIX: 4.
Zayadine 1978: Pl. IX: 5.

Date of the Tomb

The pottery of Tla'el 'Ali tomb is very close to those of EB-MB tombs of Jabal Jofeh, Jabal Taj, Sport City, Dhahr Mirzbaneh and the Cemetery of Tiwal esh-Sharqi (See Bibliography).

The acceptable date for the tomb under discussion is the beginning of the twentieth century B.C. (Ca: 1950 B.C.), as Zayadine suggested in his dating for the Sport City tomb (Zayadine 1978: p. 65).

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Bibliography

A. Hadidi,
1982 "An EB-MB Tomb at Jabal Jofeh, *ADAJ,* XXVI, p. 283-286. Pl. LXXIX.
F. Zayadine,
1978 "An EB-MB Bilobate Tomb at Amman". *Archaeology in the Levant",* p. 59-66, Pl. XI.
J. N. Tubb,
1985 "Excavations in the Early Bronze Age Cemetery of Tiwal esh-Sharqi 1984, *ADAJ,* XIX, Forthcoming.
P. W. Lapp,
1966 *The Dhahr Mirzbaneh Tombs,* New Haven, 1966.
R. W. Dajani,
1967-68 "AN (EB-MB) Burial from Amman", *ADAJ,* XII-XIII, p. 68-69, Pl. XL.

PRELIMINARY REPORT ON A SIXTH SEASON OF EXCAVATION BY THE UNIVERSITY OF SYDNEY AT PELLA IN JORDAN (1983/84)

by
T. F. Potts, S. M. Colledge,
P. C. Edwards

Introduction

The University of Sydney commenced its sixth season of excavation as partner with The College of Wooster, Ohio in The Joint Expedition to Pella (Tabaqat Faḥl) on 14 December, 1983.[1] Digging ceased on 17 February 1984, except for the clearance of Tomb 62, which required a small team to stay on until 25 March. The expedition staff numbered twenty-five[2].

Excavation this season was concentrated more on the main city mound, Khirbet Faḥl, than in the previous two seasons. Our primary effort focused on the Iron and Bronze Age deposits of Areas III and IV (see *ADAJ* XXVIII [1984, p. 55-86] for the location of these and other areas mentioned). In some plots (IIIP, IIIQ, IVE) this involved removing the remaining Hellenistic and Byzantine strata; these are now completely excavated in all but IIIP. A new plot, IIIF, was established east of IIIC to extend the "East Cut", and a new area, XXVIIIA, was opened on the southern edge of Khirbet Faḥl to investigate a stretch of Middle/Late Bronze Age stone walling. Area XXIIIA, on the north of the *tell,* was continued and yielded more Hellenistic remains. Three operations were undertaken beyond the *tell.* In Area XIVM (Jebel Sartaba) a few days were spent extending the sequence of Chalcolithic floors, partially excavated in the previous season, down to bedrock.[3] The investigation of the Epipalaeolithic (Natufian) remains in the Wadi Hammeh (Area XX) was continued, as was the search for tombs in the hills surrounding the *tell* (Areas VI and XI).

The following report presents the results of these excavations in chronological

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[1] It is a pleasure to acknowledge the invaluable assistance provided by Dr. Adnan Hadidi and the staff of the Department of Antiquities throughout the season. Dr. A. N. Garrard and Mr. S. Hart of the British Institute of Amman for Archaeology and History extended us their customary hospitality and more than once came to our aid with supplies and expertise. Special thanks are due also to Mr. T. C. Mitchell of the British Museum, London, Dr. P. R. S. Moorey of the Ashmolean Museum, Oxford, and their conservator colleagues who kindly undertook to conserve and restore the ivories, tablets and Astarte cult stand, Dr. J. J. Gowlett of the Oxford Radiocarbon Accelerator Unit who made dating facilities available *gratis* within a short space of time, Dr. A. N. Garrard for supervision of the faunal remains from site Wadi Hammeh 27, The Institute of Archaeology, London University for facilities for the study of plant remains and Mr. G. C. Hillman of that institution for advice with techniques of botanical identification, and finally Dr. E. A. K. Middlemost of the Department of Geology, University of Sydney for materials identification. The many acts of kindness by the Australian Ambassador to Jordan, Mr. R. Gate and Chargé d'Affairs Mrs. V. Kingsmail were also much appreciated. As in previous years, the expedition was funded chiefly by the Australian Research Grants Scheme, the Australian National Gallery and The University of Sydney, with contributions from The University of Queensland and The Australian Institute of Archaeology.

[2] The team consisted of: A. W. McNicoll, J. B. Hennessy, T. F. Potts, Co-directors; J. Hanbury-Tenison, Field Director; M. Wheeler, I. Biggs, Pottery Cataloguers; E. McGrath, Small Finds Cataloguer; B. Teissier, Conservator and Site Supervisor; V. Evans, Photographer; I. Edwards, K. Eriksson, L. Randle, Draughtspersons; S. Colledge, Paleobotanist; S. Bourke, Palaeosteologist and Site Supervisor; B. Churcher, P. Edwards, S. Gordon, T. Hart, K. North, C. Shepherd, S. Thorpe, P. Watson, Site Supervisors; Sultan Shreideh, Mohammad Darwish, Department of Antiquities Representatives; Badri Madi, Foreman: Abu Sami, Cook.

[3] The results of this operation will be included in the forthcoming interim report *Pella in Jordan 2.*

order; the author is designated at the end of each section.

The Hellenistic finds of Areas IV and XXIII and the Byzantine finds of Areas IV and VI (tombs) will be described after the coming season.

T.F. Potts

The Natufian Settlement in the Wadi Hammeh (Area XX)

Wadi Hammeh 27: Early Natufian

During the 1983/4 Pella season, the 2.00 m. x 3.00 m. *sondage* made at the Natufian site of Wadi Hammeh 27 in 1982/3 (XX D) was extended to form a 9.00 x 5.00 m. plot (XX D+). Work was also begun on a plot of the same dimensions situated to the north (XX F).

The site lies on the flat top of a ridge, a remnant Pleistocene valley fill, which lies upstream from the confluence of the Wadi al-Hammeh and the Wadi al-Himar (Pl. XXXI).[4] The evidence of surface scatters of archaeological material, the architecture excavated so far and further exposed wall stubs, and a seventy metre stretch of cultural debris exposed in the cliff section indicates a minimum area for the site of 2000 square metres. Since much of the site has evidently been lost through erosion, the original area may have approached half a hectare.

In both plots (Fig. 1) segments of substantial structures dry-built from limestone rubble have been uncovered just below topsoil layers. In each plot several large stones in the bottom course were roughly squared. Wall stubs are preserved up to three courses in XX D+, Wall 1, and to two courses in XX F, Wall 1. The maximum surviving wall height is 0.55 metres in XX F, *sondage* 1. From *sondage* 1 it also appears that Wall 1 is based on a broader platform (F. 5) composed of limestone rubble and clay. The segment of wall uncovered in plot XX F follows an arc 7.90 metres long.

The plan emerging in XX D+ is less clear, but it would appear that the construction here consists of sections of concentric curvilinear walls. If these remains turn out to be part of a circular structure, this would enclose the line of three engraved slabs (Feature 2) described in a previous report.[5]

The predominant type of archaeological deposit at Wadi Hammeh 27 is a single, thick, undifferentiated occupation horizon consisting of a brownish-black medium clay *(Standard Soil Colour Charts,* 7.5 YR 2/2). The greatest depth this has been excavated to is 0.75 metres in plot XX D+ (Fig. 2, loci 3.3 and 3.4).

The deposit lies directly under topsoil layers and over the travertine deposit which was utilized as floor space in the settlement (XX D, locus 3.2). A similar sequence occurs in plot XX F.

Other than a small amount of more recent artefacts in topsoil mixed with a strong proportion of Natufian material, the artefactual inventory from occupation and floor layers is purely Natufian. The recent material consists of a number of coarse terracotta and brown slip painted sherds attributable to the Late Byzantine and Early Islamic periods,[6] a small bronze coin and a modern bullet.

The past season produced additional artefact types and provided a much firmer base for the quantitative analysis of the flaked stone industry. Though less than half the volume of plot XX D+ has been excavated to floor level, over 50,000 lithic pieces have already been recovered (Table 1).

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[4] P. G. Macumber, Geology and Geomorphology of the Lower Wadi Hammeh Sites, in McNicoll, A., Preliminary Report on Fifth Season of Excavation at Pella in Jordan, *ADAJ,* in press.

P. C. Edwards, Two epi-palaeolithic sites in the Wadi Hammeh (Area XX), in McNicoll, A. *et. al.*, Preliminary Report on the University of Sydney's Fifth Season of Excavation at Pella in Jordan, *ADAJ,* in press.

[6] A. G. Walmsley, The Umayyad Pottery and its Antecedents, in McNicoll, A., Smith, R. H. and Hennessy, J.B., *Pella in Jordan 1,* Canberra 1982, 143-157.

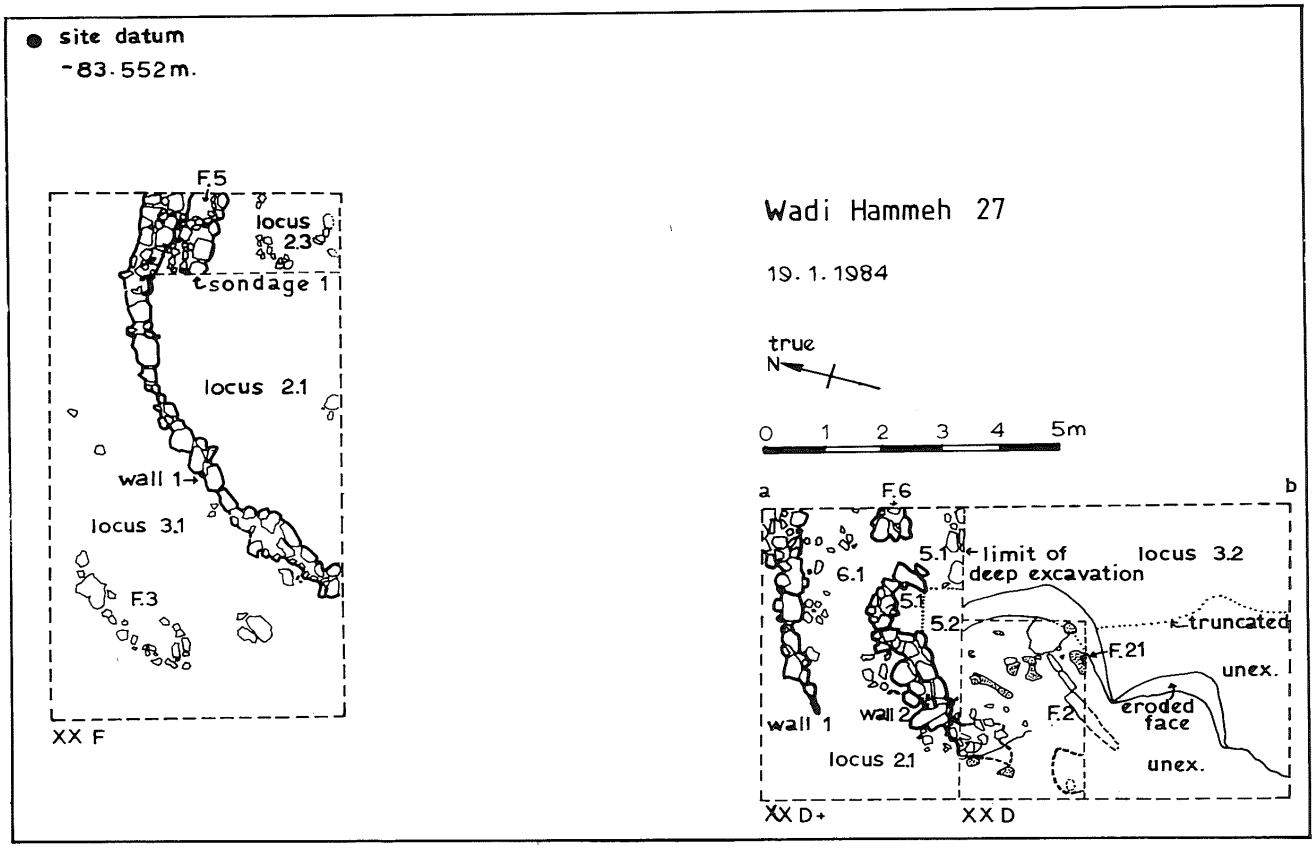

Fig. 1: Wadi Hammeh 27. Plan of excavated part of settlement.

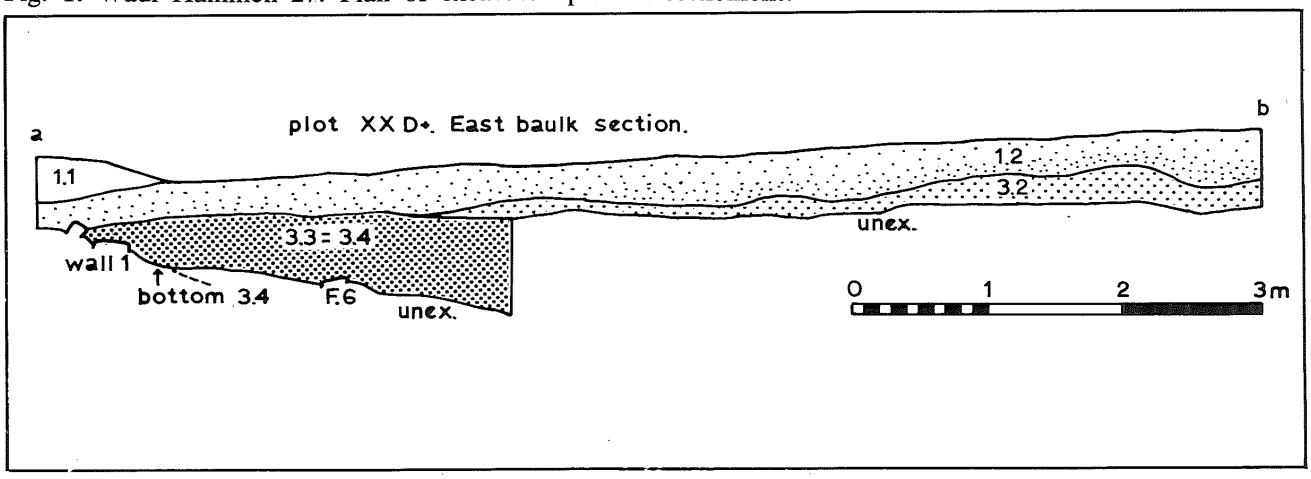

Fig. 2: Wadi Hammeh 27. Section a-b. See fig. 1 for position.

Table 1: Inventory of lithics from all levels, Plots XX D and XX D+.

	N	%
Debris	29,383	58.6
Debitage	19,704	39.3
Cores	195	0.4
Retouched	837	1.7
	50,119	100.0

A high percentage of the lithic material from XX D+ consists of debris and debitage, attesting to the considerable scale of chert flaking carried out in this area. Most of the cores are small bladelet cores. The major type is the single platform core followed in frequency by change of orientation cores and a small type worked down to form a globular, multiple platform core.

For the retouched tools the results gained in the past season have further amplified the trends evident from the initial season's finds (Table 2). The microlithic and geometric microlithic categories are marginally predominant, followed by burins, and notches and denticulates made mainly on bladelets.

The most common bladelet types are Helwan and inversely retouched bladelets. The presence of silica sheen on the cutting

Table 2: Inventory of retouched tools from sealed deposits, Plots XX D and XX D+.

Type No.	*Type Description*	*N*	*%*
A	Scrapers on Flakes and Blades		
1.	End scraper on flake	5	
3.	Thumbnail scraper	2	
4.	Transversal end scraper	1	
5.	Rounded scraper on flake	7	
		15	2.2
B	Carinated and Core Scrapers		
13.	Nosed scraper, thick	3	
16.	Carinated narrow scraper	3	
17.	Micro-carinated scraper	1	
18.	Nucleiform scraper	1	
		8	1.2
D	Burins		
21.	Burin, dihedral	14	
22.	Burin, dihedral offset	17	
23.	Burin, dihedral angled	9	
24.	Burin on natural surface	21	
25.	Burin, double dihedral	1	
27.	Burin on straight truncation	11	
28.	Burin on oblique truncation	17	
29.	Burin on concave truncation	10	
30.	Burin on convex truncation	16	
31.	Burin, transverse on lateral retouch	1	
33.	Burin, multiple on truncations	1	
34.	Burin, multiple, mixed	3	
35.	Nucleiform burin	7	
36.	Burin, ventral	2	
		130	19.0
E	Retouched and Backed Blades		
38.	Blade completely retouched along one edge	1	
39.	Blade retouched on both edges	1	
40.	Blade, alternately or inversely retouched	4	
43.	Helwan blade	2	
44.	Broken retouched or backed blade	4	
45.	Blade with silica sheen	1	
		13	1.9
F	Truncated Pieces		
46.	Truncated backed piece	3	
47.	Truncated piece	20	
		23	3.4

H	Microliths		
50.	Partially retouched bladelet	2	
51.	Completely retouched bladelet	8	
52.	Pointed retouched bladelet	1	
53.	Bladelet retouched on both edges	1	
55.	Alternately retouched bladelet	6	
56.	Inversely retouched bladelet	49	
57.	Partially or completely backed bladelet	16	
61.	Narrow curved pointed backed bladelet	1	
62.	Broad curved backed bladelet	3	
66.	Helwan bladelet	108	
67.	Various backed bladelets	12	
68.	Broken backed bladelet	7	
		214	31.9
I	Geometric Microliths		
70.	Scalene triangle	1	
73.	Rectangle	1	
76.	Trapeze	3	
81.	Lunate	28	
82.	Helwan lunate	112	
		145	21.2
K	Notches And Denticulates		
84.	Piece with small notch	4	
85.	Piece with large notch	12	
86.	Piece with large notches	39	
87.	Denticulated piece	27	
		82	12.0
L	Various Tools		
88.	Piece esquillée	7	
89.	Retouched flake	9	
91.	Racloir	1	
92.	Perforator	7	
93.	Borer	9	
94.	Lame à machure	5	
95.	Pick	2	
96.	Varia	13	
		53	7.8
	Total	683	100.0

edge is most clearly correlated with these two types, followed by abruptly backed bladelets (Table 3).

Table 3: Presence of silica sheen on varieties of backed bladelets, from sealed levels, XX D and XX D+.

Bladelet type	*No. of bladelets*	*No. with silica sheen*
Helwan	108	25
Inverse	49	8
Abrupt	16	4
Other	18	5
	191	42

The frequency of Helwan lunates to other forms is 80%, an indicator, together with the corpus of ground stone, bone and shell, and decorated artefacts, that the site is to be considered as Early Natufian. Radiocarbon dates now obtained corroborate this evidence. Samples of charred seeds from two contexts in XX D+ were submitted to the Radiocarbon Accelerator Unit, Oxford. The dates from the samples are as follows:

OxA - 393 Humic acids from grain 11,920±150 b.p.
OxA - 394 Charred grain 12,200±160 b.p.

In the 1983/4 season, bone ornaments in the form of drilled beads made from *Gazella* phalanges and flat pendants were discovered at Wadi Hammeh 27 (Table 4, Pl. XXXII: 1,2). One of the several *Dentalium* fragments found also has a hole drilled laterally through at one end as if to make it suitable for vertical suspension (Pl. XXXII: 3).

New ground basalt tools (Table 5) include three large, complete pestles, each with a distinctively individual shape (Pl. XXXIII: 1-3). There are further finds of miniature bowls (Pl. XXXIII: 4) and from topsoil some discoidal basalt plates. One fragment of a basalt bowl was engraved on its exterior with a concentric pattern reminiscent of the engraved slabs in XX D.

The technique of grooving occurs on fragmentary examples of a plaque and a pestle, however a clearer example of this type is a limestone plaque with a deep V-shaped groove cut down its centre (Pl. XXXIV: 1). This class of object is clearly not meant to have served as a whetstone or shaft straightener but rather had a decorative or symbolic purpose. From plot XX F a more obvious whetstone was found in the form of a fragmentary piece of burnt limestone, carrying longitudinal striations which constitute parallel grooves (Pl. XXXIV: 2). The stone assemblage is completed by a reproduction of the bone pendants in schist (Pl. XXXII: 4).

Two unusual items remain to be described. The first is a fragment of an apparently zoomorphic figurine (Pl. XXXIV: 3). It has several tiny holes pricked in its surface and a 'collar" deeply incised around its girth. The major interest is whether the object is ceramic or even a mixture of lime and ash. It is light and has a very fine-grained texture. Save for destroying the object for thin section analysis, there is little means at present for ascertaining the constituent material(s) of the object unequivocally.[6A]

The second item is a roughly blocked out piece of limestone which was found as part of Wall 2 in plot XX D+. Sixty-five holes have been drilled into the limestone piece on a side which forms a flat plane (Pl. XXXV). Judging from the conical sections of the holes and the circular striations running around their rims, considerable rotational energy was achieved in making them. Many of the holes are drilled more than 0.5 centimetres deep, and some up to nearly a full centimetre.

Considerable interest centres on the function of the engraved slabs found in XX D and their relationship to the structure which enclosed them. When the function of the complex in plot XX D+ is considered it is necessary to take into account the positive evidence which now exists to show that at least some of the artefact types found at Wadi Hammeh 27 were made within the confines of the XX D+

Table 4: Inventory of bone and shell artefacts from sealed levels (XX D, XX D+ and XX F).

Artefact type	*No. complete*	*No. fragmentary*
Bone point	3	10
Bone pendant	5	1
Bone bead	2	2
Dentalium piece	–	8
Dentalium pendant	1	–
	11	21

Table 5: Inventory of ground stone artefacts from sealed levels (Plots XX D, XX D+ and XX F).

Artefact type	*No. complete*	*No. fragmentary*
Large basalt bowl	1	3
Miniature basalt bowl	3	1
Basalt mortar	–	1
Basalt pestle	3	6
Grooved basalt plaque	–	1
Basalt grinding stone	4	–
Limestone mortar	1	–
Grooved limestone pestle	–	1
Grooved limestone plaque	1	–
Limestone hammerstone	1	–
	14	13

structure.

These craft activities may be categorised as follows:

a) The preparation and application of mineral pigments.
b) The manufacture of bone beads.
c) The manufacture of flaked stone tools.

Hundreds of fragments of red, mauve and yellow ochre have been found dispersed throughout the matrix of locus 3.4 in plot XX D+. These are evidently derived from larger pieces of the raw material such as the two fist-sized chunks of red and yellow ochre, which together with some fragmentary long bones stained yellow, were found stored in pit F. 21 in XX D.

Large basalt pestles were used to pulverize the ochre, an operation documented by two pestles which carry red and yellow stains on their respective ends. The types of miniature bowls and basalt plates found at the site would have been suitable as receptacles for mixing and holding the pigments. Evidence for the application of ochre pigments includes the stained bone fragments mentioned above and the aforementioned fragment of engraved basalt bowl which was coloured red on its interior surface.

The predominant class of complete animal bone found at Wadi Hammeh 27 is the phalanx of *Gazella*. This, in itself, is unsurprising as the gazelle was a staple of the Natufian economy. The differential survival of these small, dense bones is a contributing factor to this pattern, and it is possible that butchering practices which involved stripping away the hooves together with the skin accentuated this survival pattern. In Plot XX D+ the large number of finds of podial elements may also be connected with the manufacture of bone beads. They include the articulated bones of a gazelle hoof sitting alone at the base of Wall 1. The link between what may have been a cache of the raw material and what was certainly the finished product (Pl. XXXII: 1) are two half-finished beads made on gazelle phalanges (Pl. XXXII: 5)

which had been whittled down to half length but subsequently lost or discarded before completion.

The background to these various activities remains the huge quantity of lithic debris found from XX D+. A similar amount has been found from a smaller volume in XX F, and judging by surface scatters of material, chert flaking was a ubiquitous activity at the site.

In addition to the material evidence of debris for the several activities outlined above, it may be added that the presence of awls and drills, and particularly the high numbers of large, sturdy burins, correlate well with the numerous products of drilling and engraving found in plot XX D+.

Evidence for food refuse in the form of hearths, charcoal and fragmentary bone has been relatively slight, though several bone fragments were burnt. Whether this pattern is typical or atypical of the site will have to await the sounding, both inside and out, of further structures.

As indicated above most identifiable bones and bone fragments are podial or metapodial elements. New *taxa* recovered in the past season include *Equus, Vulpes, Lepus* and *Testudo.* Bone identifications are supervised by A. N. Garrard. A preliminary list of identified species from both seasons is given below in Table 6.[7]

Table 6: Preliminary list of animal taxa from sealed levels (Plots XX D, XX D+ and XX F).

Equus sp.	Aves
Gazella sp.	Testudo sp.
Ovis/Capra sp.	Potamon sp.
Carnivora (large)	Dentalium sp.
Vulpes sp.	Melanopsis praemorsa
Lepus sp.	

Indirect evidence for the exploitation of plants in the form of mortars, pestles, querns, grindstones and sickle blades is now familiar from Wadi Hammeh 27 as other Natufian sites. yet the physical remains of these plants have proved rather elusive in the sandy, acidic soils of the Levantine Coastal Plain.

An unusual and welcome aspect of the work at Wadi Hammeh 27 has been the recovery of a broad tableau of economically exploited plants. During the 1982/3 season it was discovered that there was preserved plant material within the archaeological contexts. Wood charcoal and charred seeds were recovered by flotation.[7A] It was decided to continue the programme of flotation during the larger-scale excavation of the site. A flotation machine was set up in the wadi Hammeh. It was used without a pump but instead the head of pressure of the stream was utilised by leading the inlet hose pipe upstream for *ca.* one hundred metres. This was sufficient to produce a constant flow of water through the machine, over the weir and on to the sieves. The pressure was insufficient to adequately break up the soil matrix to release the charred fragments and so gentle manual agitation was required for each sample introduced. The sieve size used for the recovery of the plant material was 500 μm. One bucket *(ca.* 7.4 litres) of deposit could be processed at a time. It was possible to keep up with the rate of excavation (of the two plots) if approximately one quarter of the total excavated deposit was floated. In this way it was possible to monitor the relative proportions of charred fragments in the contexts immediately and therefore recover more of the same context if it proved exceptionally rich. A greater volume of soil from Plot XX D+ was floated because within this trench deeper stratigraphic layers were revealed prior to the complete removal of topsoil in Plot XX F. The total volumes from each context are given in Table 7.

Analysis of the remains was carried out at the Institute of Archaeology, London, in the Department of Human Environment. All charred items (whether immediately recognizable as seeds/fragments of, or not) were extracted from the flotation samples. The charred remains

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[7] A. N. Garrard, Personal Communication, 1984.

[7A] G. Willcox, Archaeobotanical investigations at Pella, typescript, Department of Archaeology, University of Sydney, 1983 ms; see also Edwards *op. cit.* for a list of identified *taxa.*

Table 7: Volumes of excavated deposit, from Plots XX D+ and XX F, which were floated.

Area	*Plot*	*Locus*	*Level*	*Volume (buckets)*	*Volume (litres)*
XX	F	2	1	4	29.6
		2	2	6	44.4
		2	3	19	140.6
	D+	3	3	9½	70.3
		3	6	¼	1.9
		3	4(a)	44½	329.3
		3	4(b)	51	377.4
		3	4(c)	22	162.8
		3	4(d)	4	29.6
		5	1	5	37

were finely comminuted and the sorting process was extremely time consuming. From certain contexts several hundreds of items were extracted the majority of which were no larger than *ca.* 1 mm.[3] Preservation was generally quite poor. Small fragments of bone, small mammal bones and *mollusca* were also sorted from the flots.

The charred remains from the context XX D+ 3.4(b) have been sorted and the preliminary identifications are listed in Table 8. This context showed the greatest range of taxa. Identifications have been made, where possible, after comparison of the ancient specimens with modern reference material (in the reference collection prepared by G. C. Hillman). Most of the identifications carry a certain amount of doubt either due to poor preservation which prevented an exact comparison or as an indication that cross checking with modern equivalents had not been possible. Considering that the original volume of deposit from which the seeds and fragments came was *ca.* 380 litres, XX D+ 3.4(b) was by no means a rich context. Only a small percentage of the charred items which were extracted was identifiable. In some cases it was even quite difficult to distinguish small pieces of wood charcoal from fragments of seeds. The sample from this context contained several specimens of seeds which are almost certainly members of the family Gramineae (grasses), for which, as yet, there has been no positive identification. In the table these specimens are referred to as "species X". There were no whole seeds in this sample, commonly the grains had broken just above the base, as illustrated in Figure 7, with what appeared to be the vestiges of the husk adhering. The drawings show the two lateral appendages which could be the remains of the pairs of prominent nerves of the paleas[8]. In some cases the basal part of the husk had become separated, as illustrated in Figure 6: 6, and on several of the better preserved seeds a circular "attachment scar" could be seen. Some of the "body" fragments of the seeds were recovered and these were noticeably laterally compressed. Although the grains were charred, the outer layers had a reddish tinge and it was easy to distinguish even the smallest fragments of this "species X". To enable identification of this taxon it was thought necessary to examine the micromorphology of the grains and, in particular, to look at the micro-structure and cell patterns of the surface layers, always assuming that preservation allowed such a study. This was done with the aid of a Scanning Electron Microscope. The resulting photographs, Plates XXXVI and XXXVII, show details of the outer layer of the seed coat (? palea) with a regular arrangement of "circular cavities" overlying another layer with parallel ridges. These layers appear to cover the lateral appendages on the seed. "Species X" was

[8] G. C. Hillman, Personal Communication.

found in all contexts from both plots XX D+ and XX F and its identification is considered a priority.

Table 8: Preliminary list of plant taxa from context XX D+ 3.4(b).

	No. of items
'Species X' - 'body' fragments	115
'Species X' - basal fragments	27
cf. *Stipa* spp. - fragments	4
Hordeum cf. *spontaneum*	1
Gramineae indet. - fragments	120
Awn fragments	47
cf. *Lens* sp.	1
Leguminosae - fragments	5
cf. Liliaceae	1
Leguminosae/Liliaceae	18
Small round seeds:	
cf. *Cuscuta* sp.	140
Cruciferae - conduplicate	18
cf. *Trifolium* sp.	12
Type with 'seams'	67
Type with thick testa	250
Charcoal fragments	

[(1) No taxonomic ordering has been attempted for this list.
(2) There are many more specimes within this context which require detailed examination prior to identification.]

This context contained several fragments of cylindrical grains which are referred to in the table as cf. *Stipa* spp., steppe grasses. The average diameter of these seeds was 0.8 mm., and therefore are probably representative of the smaller species of the genus. The seeds of this genus lack obvious distinguishing features, with the exception that commonly the embryo detaches and leaves a "chisel-shaped" end and the hilum is narrow and shallow.[8A] These ancient fragments were poorly preserved and it was impossible to make a definite identification. One fragment has been assigned to *Hordeum* cf. *spontaneum*, wild barley. As shown in Figure 6:2, this specimen has a wide, shallow furrow, it is dorso-ventrally compressed and the cross-section is angular. The size/width of this fragment is comparable with the wild barley as opposed to the small seeded barley grasses. The sample from XX D+ 3.4(b) contained many small fragments which have been identified as indeterminate Gramineae (grasses) on the basis of texture. The texture of charred grasses and cereals is easily recognizable. None of the fragments carried features which would allow for genus/species identification, in a few cases the rounded surface of the grain had survived. Remarkably, awn fragments had survived in this (and other) samples from the site. These are the

[8A] More taxonomic details of the genus will be given for the site Abu Hureyra in G. C. Hillman, *et. al.* Detailed account of plant remains from the mesolithic and aceramic neolithic levels at Tell Abu Hureyra, Syria, forthcoming.

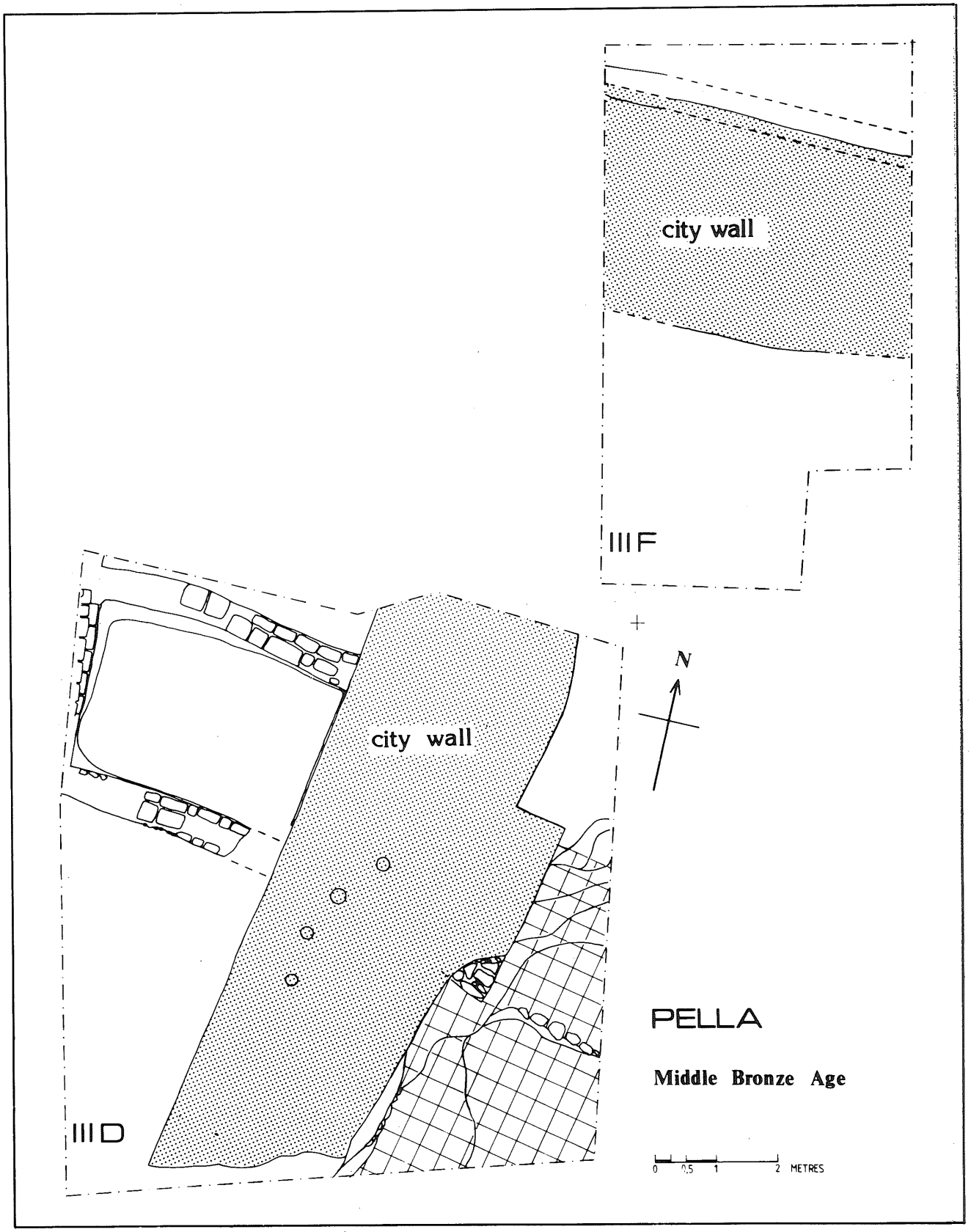

Fig. 3: Middle Bronze Age town wall and associated architecture.

fragile "bristles" attached to the husks of grasses. The ancient specimens were twisted, Figure 6: 5. The awns of *Avena*, oats, are twisted and also have barbs which can be seen at high magnifications under the Scanning Electron Microscope.[9] It is hoped that a similar examination of the ancient awn fragments may reveal disting-

[9] B. R. Baum, Additional taxonomic studies on *Avena* fatuoids: some morphological attributes seen using the scanning electron microscope. *Canadian Journal of Botany*, 49, (1971) p. 647-649.

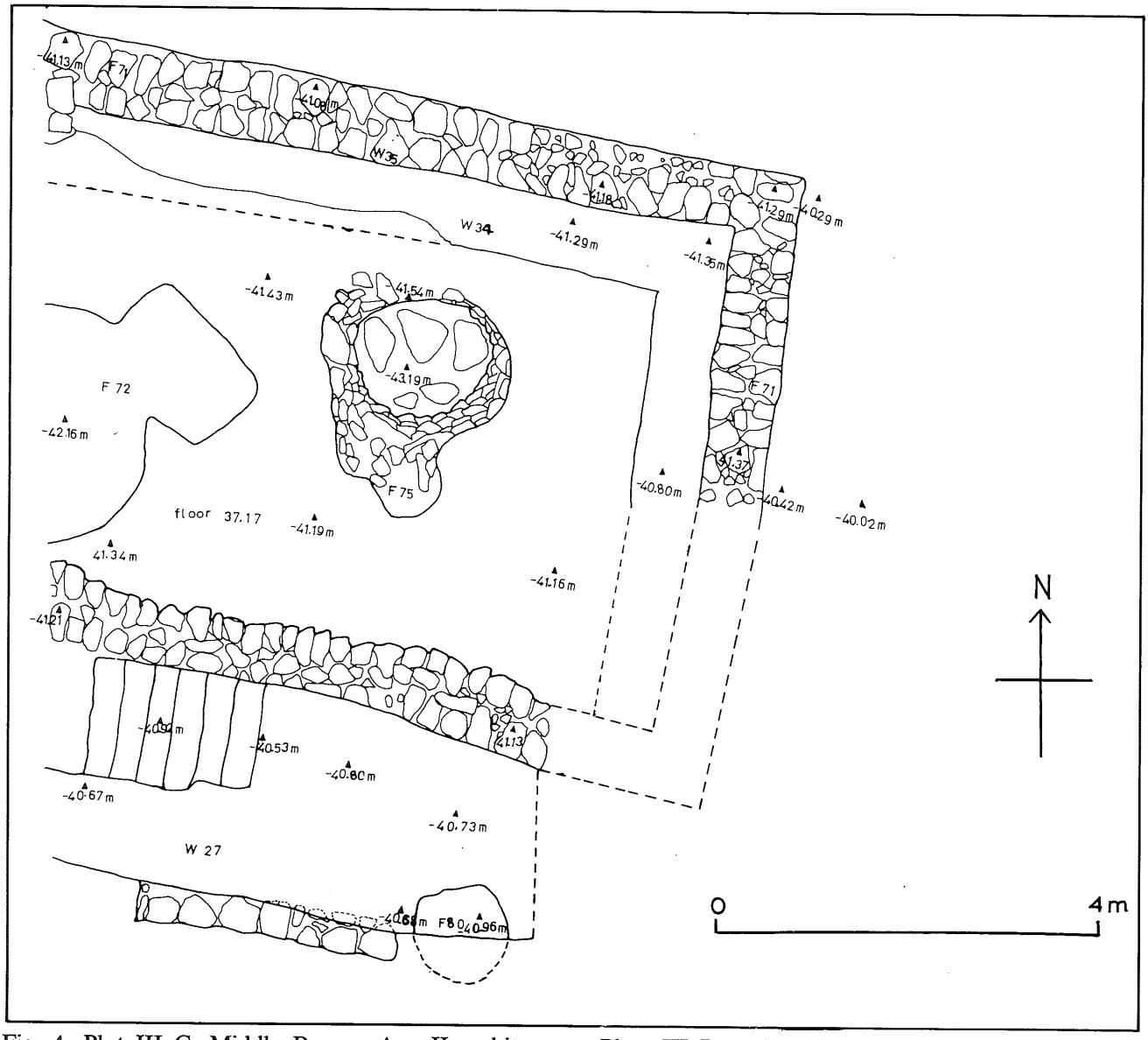

Fig. 4: Plot III C. Middle Bronze Age II architecture. Plots III D and III F.

uishing features.

The charred cotyledons of members of the family Leguminosae (peas, beans) also have a characteristic texture which makes it possible to separate even the smallest fragments. In Table 8 the specimens assigned to Leguminosae are those having part of the hemispherical surface of the cotyledon, as illustrated in Figure 8: 2, together with the characteristic internal texture. One fragment in this context showed the fusion of two cotyledons which resulted in a lenticular, as opposed to a spherical-shaped seed and thus resembled seeds of the genus *Lens,* lentils. The internal structure of seeds of several genera of the family Liliaceae (lilies) is formed of large isodimetric cells which, when viewed in transverse section across the seed, form radiating rows from the central embryo cavity. A large specimen in context XX D+ 3.4(b) possessed these features. The textures of the seeds of the two families, Leguminosae and Liliaceae, can look very similar and the category "Leguminosae/Liliaceae type" in Table 8 refers to fragments with no other distinguishing features apart from texture.

The large majority of the charred remains in this context (and in all others from XX D+ and XX F) were "small round seeds". These required sorting at high magnification in order to see any distinguishing features. Many were badly preserved and will require more time (and patience!) to separate into different taxonomic types *(ca.* 150-300 of these "small round seeds" were submitted for C-14 dating). Of the better preserved specimens, five different taxa have been identi-

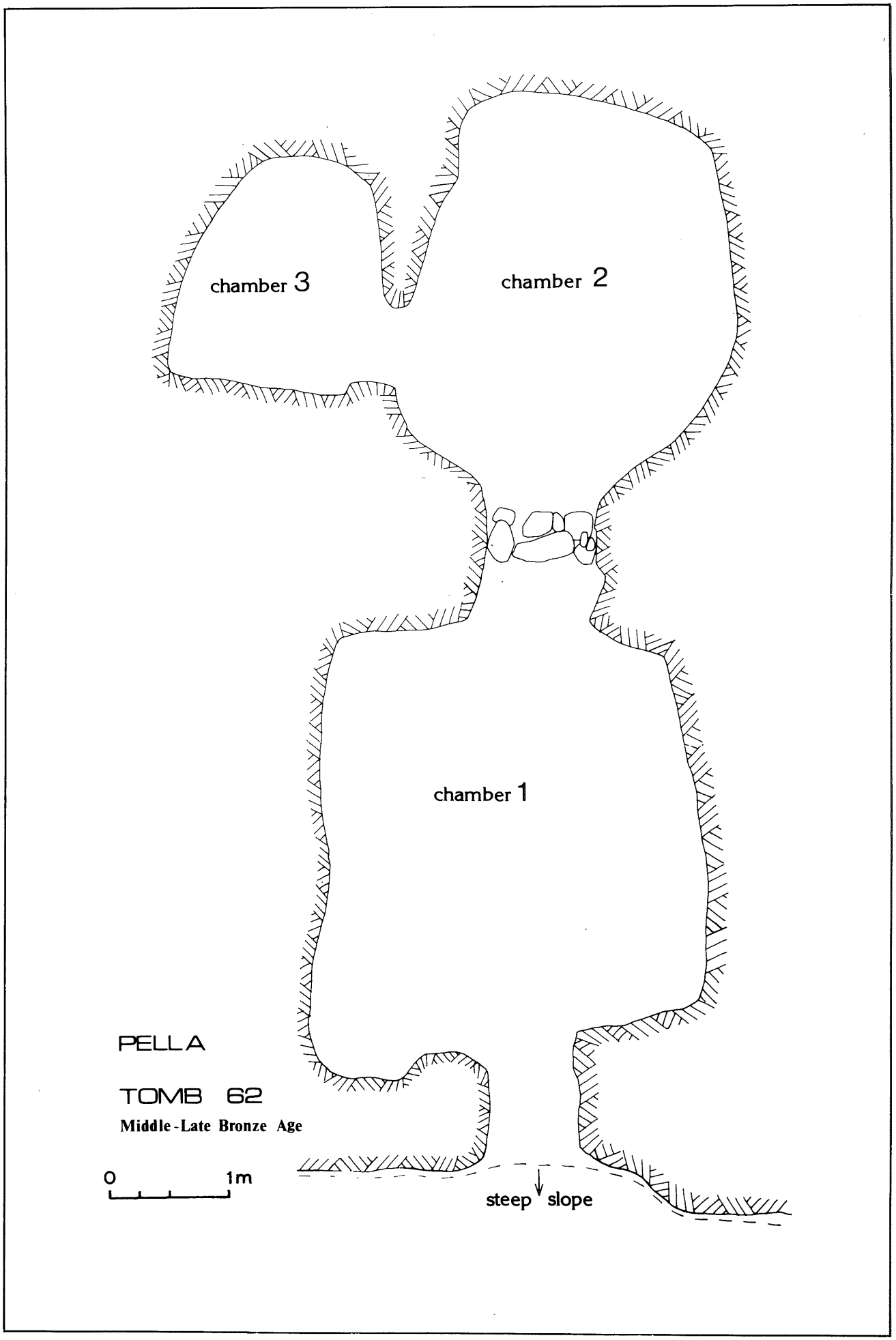
chamber 3
chamber 2
chamber 1
PELLA
TOMB 62
Middle-Late Bronze Age
0
1m
steep
slope

Fig. 5: Tomb 62.

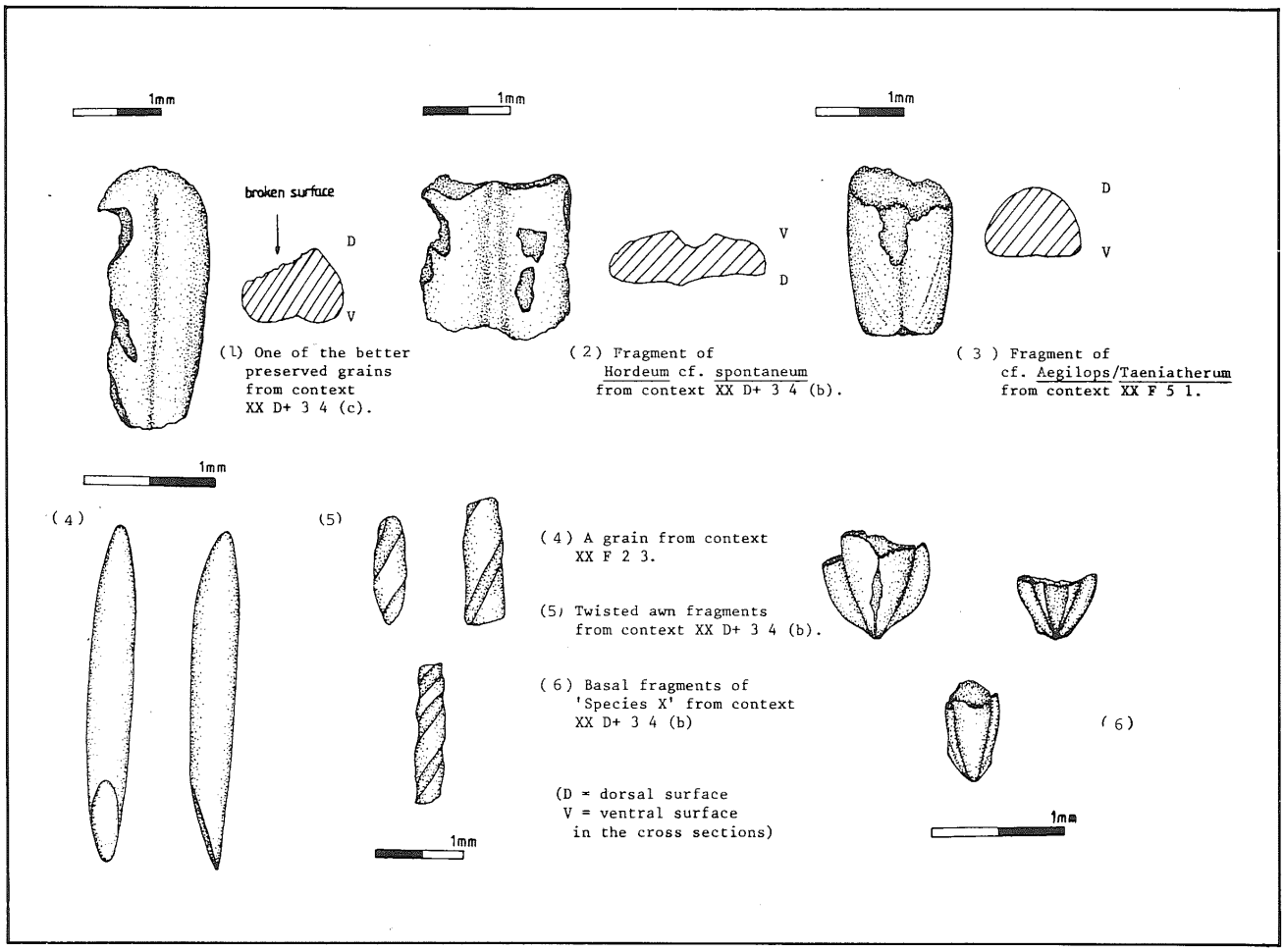

Fig. 6: 1. One of the better preserved grains from context XX D+ 3.4.
2. Fragment of *Hordeum* cf. *spontaneum* from context XX D+ 3.4b.
3. Fragment of cf. *Aegilops/ Taeniatherum* from context XX D+ 5.1
4. A grain from context XX F 2.3.
5. Twisted awn fragments from context XX D+ 3.4b.
6. Basal fragments of 'species X' from context XX D+ 3.4b.

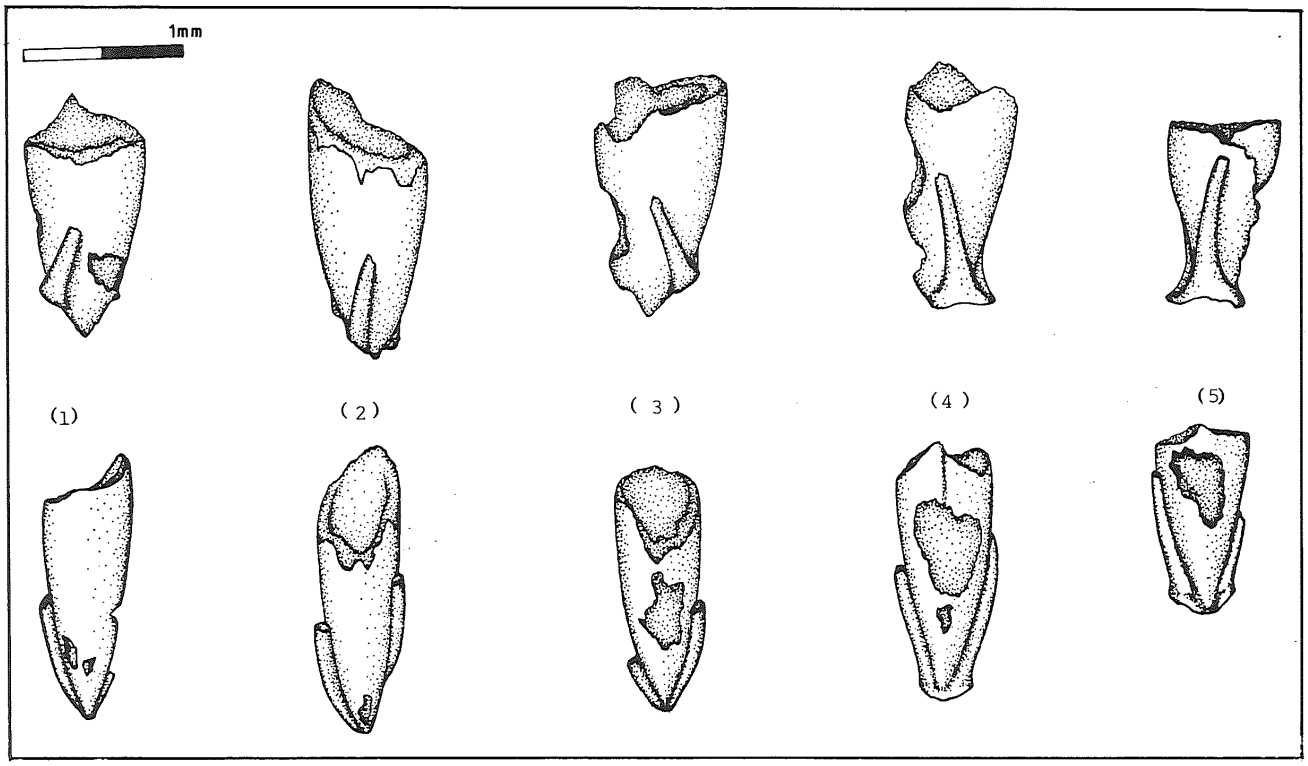

Fig. 7: Lateral (above) and ventral (below) views of specimens of 'species X' from context XX D+ 3.4b. Fragments (4) and (5) show the circular 'attachment scar' at the base of the seed.

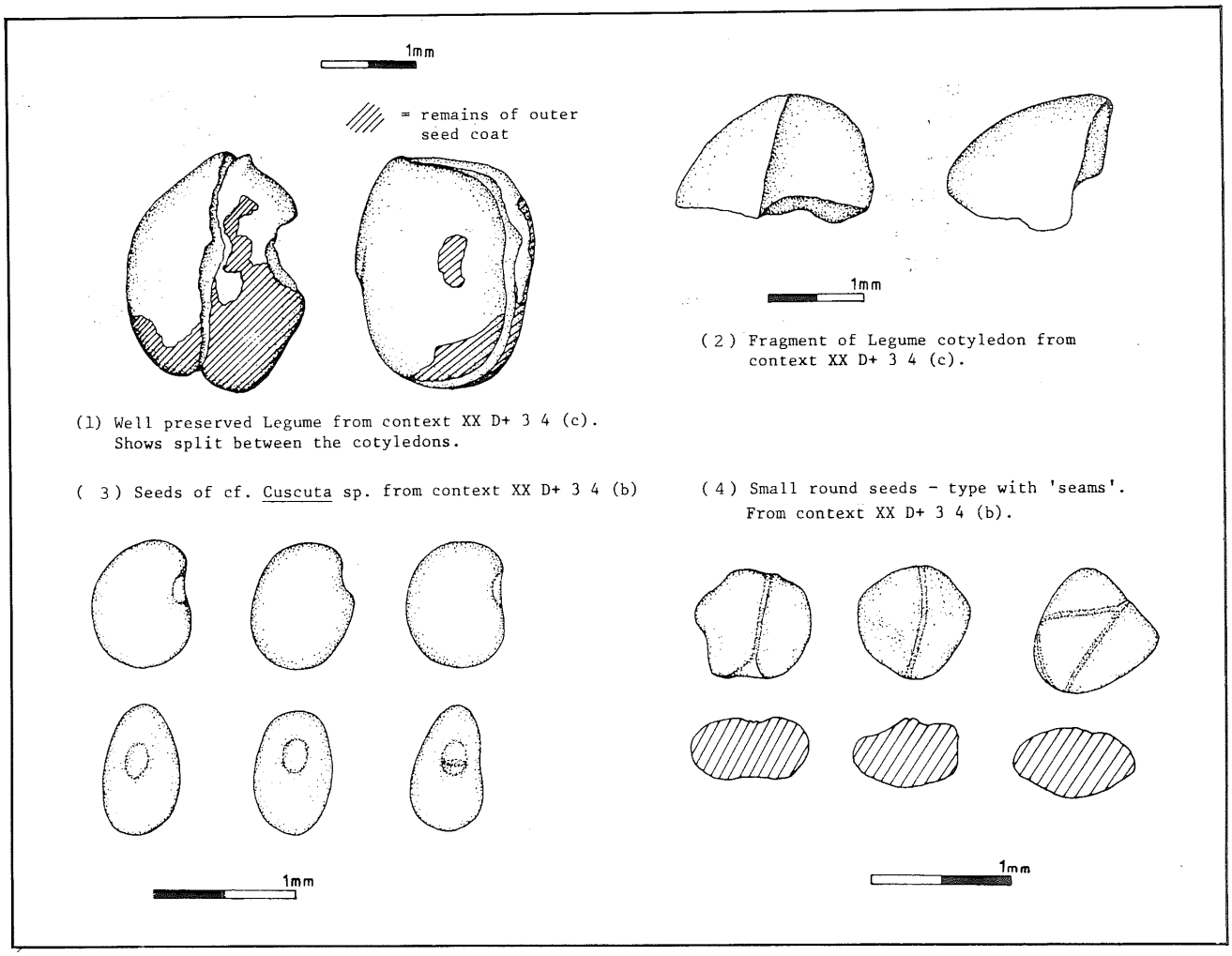

Fig. 8: 1. Well preserved legume from context XX D+ 3.4c. Shows split between the cotyledons.
2. Fragment of legume cotyledon from context XX D+ 3.4c.
3. Seeds of cf. *Cuscuta* sp. from context XX D+ 3.4b.
4. Small round seeds - type with 'seams'. From XX D+ 3.4b.

fied so far. The preliminary identifications include cf. *Cuscuta* sp. (Fig. 8: 3), a conduplicate Cruciferae, cf. *Trifolium* sp. (seeds with "tuberculate" surface pattern), and two taxa for which there are, as yet, only descriptions rather than names, a small angular type with 'seams' (Fig. 8:4), and a type which has seeds commonly split in half, with a thick testa.

Large lumps of charcoal have also been sorted from the flotation sample and identifications will be made in due course.

There were no noticeable concentrations of charred remains in any of the contexts from plots XX D+ and XX F. Context XX D+ 5.1 was very much richer than any others sampled and this would be expected because it was nearest to the floor level within the XX D+ structure.

The Natufian site was exceptionally well positioned for exploitation of the range of plants at the forest margins together with those in the steppe forest.[10] As Harris notes,[11] it is vitally important to study the exploitation of wild plants on pre-agricultural sites and to understand the pre-domestication processes of wild plant manipulation which gave rise to agriculture and fully cultivated crops.

The greatest problem encountered

[10] W. Van Zeist and S. Bottema, Vegetational history of the Eastern Mediterranean and the Near East during the last 20,000 years in J. L. Bintliff, and W. Van Zeist, *Palaeoclimates, Palaeoenvironments and Human Communities in the Eastern Mediterranean Region in Later Prehistory, BAR International Series,* 133 (ii), (1982) p. 277-321.

[11] D. R. Harris, Ethnohistorical evidence for the exploitation of wild grasses and forbs : its scope and archaeological implications, in W. Van Zeist and W. A. Casparie, *Plants and Ancient Man,* 1984.

when dealing with the plant remains from very early sites is undoubtedly the inevitable poor preservation. Identification has to be based on the recognition of internal patterns of plant tissues, their cell patterns and microscopic details, such as plumule structure, rather than on the gross morphology of whole seeds. Unfortunately, this automatically makes the sorting process extremely lengthy. For the plant remains from the Wadi Hammeh it is hoped that during the next year a greater amount of time will be devoted to these problems so that it will be possible to confirm identifications and produce lists of taxa which are far more informative than the one included here.

In the coming Pella season it is intended to complete the excavation of plots XX D+ and XX F while continuing full recovery of finds by dry and wet sieving, and water separation of botanical remains. It is hoped to run this strategy in conjunction with topsoil clearance over a wide area in order to elucidate the village plan and locate further structures.

Phillip C. Edwards and Sue Colledge

The Middle Bronze Age (Area III)

Three plots, IIIC, IIID and IIIF, produced material dating to the later half of the Middle Bronze Age. The earliest construction uncovered is the town wall and associated architecture in IIID, now the southernmost of the series of trenches down the south-east corner of the *tell;*[12] probably contemporary with this is another large wall in IIIF (a new 5.00 x 10.00 m. plot east of IIIC). The remains of domestic architecture in IIIC, immediately upslope from IIID, date to a later phase of the Middle Bronze Age.

The Middle Bronze Age Town Wall and Associated Architecture (IIID, IIIF) (Fig. 3)

The removal of the rubbish and wash deposits in IIID, dating from Late Roman to Umayyad times, was completed in 1984. The rubbish varied in depth from roughly 3.00 m. in the north-west of the plot to over 5.00 m. in the south-east. The underlying remains, dating to the Middle Bronze Age, are heavily eroded and present an irregular surface sloping sharply from north-west to south-east. Running diagonally across the plot from south-west to north-east is a large mud-brick wall, 3.30 m. wide, which must be the town fortification (IIID Wall 1). Inside this wall only the highest preserved deposits, in the north-west corner, have been excavated. One complete room and a small part of another have been cleared. Outside the wall the much deeper Roman rubbish deposits finally gave way to a second large mud-brick feature, distinct from the wall, but clearly related to it.

The inner line of the town wall is quite clear in plan from the distinctive colour of its bricks, even where the adjacent deposits have not been cleared from the face. The northern half of the outer line is also clear; it has been partly freed from the Middle Bronze Age accumulation against its face. There is an external buttress about midway along which increases the wall's total width to 4.18 m. It is presumably one of many. The southern corner of the buttress has been completely destroyed by erosion revealing a foundation of medium-sized, angular stones. The outer face of the wall south of the buttress is also lost. Not much has been removed, however, and its original line can be safely reconstructed on the basis of the wall's regular width from the inner face. A number of courses of rounded (ca. 0.20 x 0.30 m.) stones underlie the brickwork near the southern preserved end of the wall. These may, however, be a much later (Roman) attempt to prevent further collapse of the wall. It had been severely undercut by erosion at this point and the cavities filled with Roman wash. The date of the stone courses will be established when they are removed and the fill amongst and behind them examined.

The superstructure consists of two

[11A] G. C. Hillman, Personal Communication.

[12] Plot IIIE, below IIID, produced no stratified deposits earlier than Byzantine and has been backfilled.

brick types. The lower and uppermost parts are built from crumbly dark grey bricks; sandwiched between these layers is a 1.20 m. thick band of green bricks of the same crumbly texture. The divisions occur consistently across one course. A thin (ca. 2-3 cm.) layer of mud-plaster was applied to both faces.

A group of four round holes, between 0.28 and 0.35 m. deep, describe an arc in the body of the wall. It is possible that these holes represent an original structural feature of the wall (reinforcing beams?); but since they lie directly under late rubbish it is, perhaps, more likely that they reflect secondary activity. They contained no material that could be identified as wood.

As can be seen in the the plan (Fig. 3) the outer face of the wall seems to be turning slightly to the north before running into the unexcavated deposits in IIIC. This may be partly due to the inward cant of the wall's upper courses. The ancient topography in this area is not yet established. The wall is probably running uphill over the neck which connects the site of Khirbet Faḥl to the eastern hills. This rise would account for some of the eleven metres which separates the height of the preserved top of the wall where it enters IIIC from the base level in the south-east corner of IIID.

In this latter area, outside the wall, are the very heavily eroded remains of another large feature built of hard, clayey, yellow mud-bricks. This also is probably an element of Pella's Middle Bronze -Age defensive system, but in its present state and with the limited area so far exposed, one can not be sure. Its northern limit runs almost parallel to the northern end of the buttress but its southern and eastern limits are undefined; it extends into the baulks in both directions, covering the entire south-east corner of the plot (except for a small area where it has been eroded completely away onto earlier material, as yet unexcavated). The top nowhere survives; the preserved brickwork rises to a maximum height of 4.50 m. against the buttress. it seems to have been built right up against the face of the town wall; its courses run parallel to the latter, and preserve in negative the line of the destroyed southern corner of the buttress. What function it served one can, at this stage, only speculate upon: most probably it is another large wall, but it may be a massive buttressing.

Plot IIIF, 5.00 x 10.00 m. immediately east of IIIC, was established this season to recover the rest of two MB IIc rooms in IIIC which yielded an unusual group of artefacts in 1981.[13] As it turned out, these rooms continued for approximately a metre only and produced nothing exceptional. But the plot proved rewarding for other reasons; below and east of the rooms lies a mud-brick wall, 3.58 m. wide, running approximately east-west (Fig. 3). As with the town wall, the primary related surfaces have not been reached: on the north side a series of secondary wash and rubbish deposits dating to MB IIb-C have been encountered below a thick Hellenistic fill extending into IIIF from IIIC.[14] On the south the bottom of the deep Roman-Umayyad rubbish has not yet been reached. But the stratified rubbish north of the wall at least provides a *terminus ante quem* which is confirmed by the typical Middle Bronze Age bricks — hard, clayey, yellow-brown — employed in its construction. This dating indicates that the wall in IIIF must be at least partly contemporary with the town wall in IIID. The details of their stratigraphic relationship, however, cannot yet be described since the junction in IIIC has not been excavated.

Both faces of the wall are well-preserved up to the point where the hard yellow-brown bricks give way to completely different crumbly chocolate coloured bricks with cream mortar. This upper brickwork formed the eastern limit of the northern of the two Phase A rooms from IIIC and eventually collapsed into it. No true face of this chocolate coloured brickwork survives but it is preserved over almost the full width of the original wall and was probably of comparable dimensions. At some stage, perhaps contempor-

[13] See *Pella in Jordan 1*, p. 49 and fig. 6a.

[14] See *Pella in Jordan 1*, p. 68, fig. 12.

ary with this rebuilding, a skin wall in harder brown bricks was added to the northern face slightly off-set to the north. Only its western end was preserved.

A construction date for the walls in IIID and IIIF cannot be given until their primary surface have been uncovered. For the time being the earliest *terminus ante quem* is provided by the small amount of pottery from the structure built against the inside of the town wall in the north-west corner of IIID. One complete room has been excavated along with a small part of the adjacent room to the north. They are over 4.00 m. higher than the base level of the town wall's outer face, but this may be at least partly the result of terracing or natural fall on the side of the mound. Unfortunately, very little pottery was left *in situ* on the floors; most of the material recovered relates to an intentional fill which was brought in for the next construction phase of which very few traces remained (much more awaits excavation in IIIC). At present only a date in the Middle Bronze Age can be assured.

The walls of the room are mud-brick on stone foundations and survive to a maximum height of over one metre. The interior faces carry a coating of pebbly mud-plaster which thickens considerably from *ca.* 3 cm. to over 15 cm. as it curves onto the floor. The room has no doorway; entry must have been from above.

Finds were very few in IIID and IIIF. The Hellenistic fill in IIIF produced a faience "common style" Mitannian cylinder seal (70037) showing a recumbent antelope (Pl. XXXVIII: 2). Lower down in the MB II rubbish against the IIIF wall, part of a calcite/alabaster bowl (70132) decorated with a ram's head (presumably one of four) was found. A similar complete bowl was recovered from a Pella tomb in the second season (unpublished).

Middle-Late Bronze Age Domestic Architecture (IIIC) (Fig. 4)

In the 1981/2 season a thick chip-lime plaster floor associated with the large stone wall (IIIC Wall 3), running north-south through the plot, was uncovered.[15] These belong to building Phase V in the sequence published in *Pella in Jordan 1,* pp. 49 ff. In the two subsequent seasons the remainder of this phase, extending into IIID, was excavated and removed and approximately 1.20 m. of earlier Middle Bronze Age strata uncovered. The southernmost stones of wall 3 are now all that remain of Phase V.

The trenches of the Phase V walls were deep and have seriously interrupted the stratigraphy of the lower deposits. More excavation will be necessary before a clear picture can be drawn; at present the building sequence seems to be as follows.

The earliest feature uncovered consists of three sides of a rectangular room 4.10 m. wide and over 6.10 m. long. The walls (Wall 35) are constructed of dark bricks, not particularly hard, on a neatly laid stone foundation. the south-east corner is still obscured by the last vestige of Wall 3 and the west wall lies unexcavated beyond the plot in IIIN. There is as yet no doorway. The southern wall was built directly against a 1.90 m. wide hard, yellow mud-brick wall (Wall 27), which is probably an earlier construction corresponding to a late phase in the use of the green mud-brick wall; it runs up to, and seems to be cut into the latter.

Another wall (Wall 34) was built immediately against the inside of the room on the north and east side effectively widening its walls and reducing the interior space. No bricks are visible, but the line of the walls is clear from the mud-plastered inner face and the homogeneous red-brown gritty texture of the body of the walls. They have not yet been excavated to their bases so their stratigraphic relationship to Wall 35 is unknown.

The lowest floor of the room yet excavated consists of fine white plaster (IIIC 37.17). A stone-lined pit (F.75) nearly 2.00 m. deep was sunk from this floor near the northern wall. Judging by the discolouration of the sherds inside, it was probably a cesspit. A sequence of later floors and packing was best preserved to

[15] See *ADAJ*, XXVII (1983), p. 331-336.

ca. 0.80 m. depth in the north-east corner of the room (IIIC, 37.13, 39.1, 39.3-5, 39.8-9) and along the western baulk (IIIC 37.11, 37.13). Elsewhere they were largely cut away by the levelling operations and trenches for the walls of Phase V (see below). After a thicker packing (and probably a partial collapse), IIIC 37.4, another series of floors and packing occur (IIIC 36.9, 37.1-3, 37.5-7, 37.9-10). These were only preserved over an area of ca. 1.00 m.^{2} against the western baulk, so it is unclear how much of the room was still standing at this stage.

Contemporary with the second lowest floor (IIIC 37.13) the cesspit was filled with soil and smaller stones used to line a shallower pit (F. 69). A large pit (F. 72) was cut further west extending into the IIIC/IIIN baulk.

Remains of a later architectural phase were encountered in the north of the plot. Two walls running north-south (walls 29 and 30) and two running east-west (walls 32 and 33) define parts of two small rooms immediately north of the earlier structure. The surviving courses are of small to medium-sized stones which, in the case of Wall 32, lie directly over the western end of the north wall of the earlier room (Wall 35). At least this part of that structure must, by then, have fallen into disuse. The associated surfaces are very disturbed, and the floor contemporary with 37.17 has not yet been reached in this area. The floors of these strata were kept very clean and produced very few finds. They included parts of a bone pin (70065) and a gypsum/calcite bowl (70076).

The late Middle Bronze Age strata extend a little way into the north-west corner of plot IIID before being cut off by erosion. In this area, south of the wide mud-brick Wall 27, a sequence of floors similar to those inside the large room was excavated, including a fine white plaster surface corresponding to IIIC 37.17. More floors below this have been excavated in this locus proving that Wall 27 dates back to an earlier period and remained in use for a considerable time. Again the surfaces were kept well-cleaned; a group of three large well-preserved bone awls were among the few artefacts recovered.

Above these strata in the western two-thirds of plots IIIC/D lay a collapse and levelling deposit (IIIC 30.9, 36.8) from the top of which the trenches for the Phase V walls were dug.[16] A further wall belonging to Phase V was discovered in the north-west corner of IIID (Wall 28). It runs approximately east-west and its dimensions (1.20 m. wide, surviving to a height of 1.40 m. in the western baulk) and monumental construction indicate that it is the southern return to Wall 3 of IIIC. Erosion has completely destroyed their junction at the southeast corner of the plastered room (locus 36). It was suggested in a previous report[17] that Wall 3 may represent the town wall of the Late Bronze Age. This is now thrown into some doubt. The stretch of similar walling excavated in Area XXVIIIA (see below) is relevant to this issue. At present, it must be admitted that either or both of these constructions may belong not to a defensive circuit, but to large buildings.

The trenches for the Phase V walls (IIIC Walls 3, 15/31, 16, 17 and 28) varied in depth from 1.05 m. to only 0.10 m. When they had been excavated and beds of small stone footings laid, Walls 3, 15, 16, 17 and 28 were built and a thick chip-lime plaster floor (IIIC 36.7) laid over the whole area. This floor covered the footings of Wall 31. After an interval of undetermined length, this wall was build directly upon the plaster floor, thereby connecting the corner of Walls 15/16 to Wall 3. The later architectural additions and replastering of this surface were excavated in the fourth season and have been described in a previous report.[18]

The function of the Middle-Late Bronze Age architecture in IIIC is not entirely clear. The large room with plastered floor and cesspit and the stone walls which succeed it to the north are probably domestic, but Wall 27 suggests a more

[16] *Ibid.* and *Pella in Jordan 1*, p. 49.
[17] *Pella in Jordan 1*, p. 58.
[18] *ADAJ*, XXVII (1983), p. 331.

monumental construction. Its connection with the mud-brick town wall (visible in the erosion section at the southern end of IIIC) raises the possibility that it is too an element of the city defenses. The uncertainty regarding the function of the Phase V structure was mentioned above. It may be added here that any defensive advantage deriving from the monumental quality of Walls 3 and 28 would have been partly negated by the Phase A collapse[19] and the remains of the mud-brick town wall which was left standing, albeit in a dilapidated state, immediately outside Wall 3.

Ivories and Cuneiform Tablets from a Phase V Pit (Plot IIIC)

The most spectacular finds of the season came from a pit (F. 80) cut down from a Phase V floor into Wall 27 of plot IIIC. The pit was sealed by a layer of thick chip-lime plaster from one of the Phase V floors, IIIC 36.1 and 36.7, and partly covered by the western end of wall 25/26 (Fig. 4).

The artefacts were concentrated in the lower thirty centimetres. Unfortunately, the upper soil contents (which contained nothing unusual) was excavated in the fifth season and erosion between seasons destroyed part of one side of the ivory box 70402. A few pieces of a second container, 70416, were recovered at the edge of the pit; more of this may also have been lost.

It is difficult to say why this unlikely group of objects came to be deposited in a pit. Only the ivories are of a value worth hiding. The goods were distributed irregularly about the bottom of the pit apparently at different times.

Of the ivories, the more complete is the "Lion Box" (Pl. XXXIX). The box itself was made of wood which has completely perished. We are left with the ivory inlays which decorated its sides (70402) and lid (70415). Fortunately they retained their original juxtaposition in the soil thereby permitting a confident reconstruction of its shape and dimensions, though some points of detail remain uncertain.

The box was rectangular, 13.2 x 8.6 cms. Each side consists of three rectangular panels, a large undecorated panel in the centre with smaller decorated panels either side. The panels are surrounded on all sides by thin matchstick-like ivory bars. All of these elements were inlaid into the wooden frame. On the box's short sides, the two side panels of ivory are overlaid with separately carved Djed pillars modelled in low relief. On the box's long sides, the side panels carry pairs of papyrus fronds touching at the top of the stalks, another well-known Egyptian motif. The central panels may also originally have carried decorative elements. The present arrangement with all the decoration concentrated at the corners makes for an odd and unlikely effect. Since all four central designs are missing one may conjecture that they were crafted from some perishable material such as ebony or of a valuable and/or reusable material such as gold which has been removed.

The lid of the box lay about ten centimetres away. It carries two compositions: a pair of rampant antithetical lions, their front paws resting on a pair of intertwined serpents, all on a rectangular background consisting of ten flat ivory panels; and an Egyptian winged disc bordered below by a third serpent. The juxtaposition of these compositions in the soil, upside-down to one another and at an angle of about 60°, indicates that the lid was not flat but rose to a ridge at one end in the manner of many Egyptian boxes.[20] The triangular openings on the sides of the ridge accommodated ivory "eyes of Horus".

Egyptian lids of this type were slid into place and secured by tying string around a pair of knobs, one set in the ridged end of the lid and another in the short side below. A gold-capped bronze "stud" found in the pit is probably one of these (70433). Two other small pieces of gold may also derive

[19] *Pella in Jordan 1,* p. 49, fig. 6a.

[20] See, for example, the boxes from Tutankhamen's tomb: H. Carter and A. C. Mace. *The Tomb of Tutankhamen* (1933), Vol. I, Pl. LVI: B; Vol. III, Pl. LXXI: A.

from the box. One is a group of three small gold links (70438), the other a piece of sheet gold moulded into the form of a segmented gable (70444).

The style of the box is difficult to localise. Many elements are unambiguously Egyptian: the Djed pillars, papyrus fronds, winged disc, intertwined serpents, and Wedjet eyes. But the most prominent figures — the lions — are not. While close parallels are elusive, their antithetical arrangement and style are, in general terms, Levantine. The stylized rendering of the manes in a double curve on the shoulder and projecting in a sharp point in front of the chest links them to the lions and sphinxes from Acemhüyük dated to the eighteenth or nineteenth century B.C.[21] and raises the possibility that the Pella box is substantially older than its context of deposition.

However that may be, it is clearly a work of the very highest technical and artistic quality. Both in conception and execution the hand of a master craftsman is evident. The technique of placing cut-out figures modelled in low relief on plain ivory panels seems to be previously unattested in the ancient Near East.

Fragments of a second container inlaid with ivory (70416) were found a few centimetres away (Pl. XXXVIII: 1). In this case not enough survived to permit reconstruction of the original shape or dimensions. The body of the container must again have been made of wood. All the surviving pieces probably come from the decoration of its sides. Two complete and one fragmentary Djed pillars are preserved. As in the Lion Box they are surrounded by match stick-like bars but unlike that box they were set directly on the wood, not on plain ivory panels. Two tall plain rectangular panels do survive but these were placed separately beside the Djed pillars. It is again possible that the back panels and framed areas held motifs made from another material which has been removed or has perished.

The workmanship and technique of the two boxes are very similar. They may be products of the same workshop or even the same craftsman.

A few centimetres lower were fragments of two cuneiform tablets of unbaked clay (70417, 70418) (Pl. XXXVIII: 3). Both are damaged and no complete words can now be read. They are nonetheless an important addition to the still extremely limited corpus of Bronze Age cuneiform inscriptions from Palestine and Transjordan[22] and provide the earliest evidence yet of literacy at Pella.[23]

A third clay fragment carries part of the impression of a stamp seal, probably a scarab. The design consists of a striding man in conquering pose, holding aloft a mace with which he is about to smite a kneeling victim. This familiar Egyptian motif seems not to appear on scarabs before the reign of Tuthmosis III[24] and may, therefore, prove crucial for the dating of the other contents of the pit. The right edge of the impression is lost but around the rest of the oval field is a smooth groove, U-shaped in section, corresponding to the seal's mount, probably gold. The fragment is too small to allow definite identification of the type of document. It may be part of a tablet, but it could also be a clay tag or sealing. Boxes, including those with ridged lids like the Lion Box,

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[21] C. Decamps de Mertzenfeld, *Inventaire commenté des ivoires phéniciens et apparentés dans le Proche-Orient,* Paris 1954, pl. CXXVI: 1088, 1089; Pl. CXXVII: 1093, 1096. For date: P. O. Harper, *The Connoisseur* (Nov. 1969), p. 156-162.

[22] One Akkadian tablet has previously been found east of the Jordan River at the Iron Age site of Tawilan: S. Dalley, *Levant* XVI (1984), p. 19-22.

[23] Previously the earliest evidence of writing at Pella were the two fourteenth century tablets found at el-Amarna in Egypt; J. A. Knudson, *Die El-Amarna Taflen,* Leipzig, 1915, nos 255, 256.

[24] Compare W. F. Petrie, *Scarabs and Cylinders with Names,* London, 1917, Pl. XXVII, nos. 41, 42; E. Horning and E. Staehelin (eds) *Skarabäen und andere Siegelamulette aus Basler Sammlungen,* Mainz 1976, nos. 305-309 (and p. 188 for a discussion of this motif); H. R. Hall, *Catalogue of Egyptian Scarabs etc. in the British Museum,* Vol. I, *Royal Scarabs,* London 1913, nos 1108-1115. On the problem of dating such representations see: B. Jaeger, *Essai de classification et datation des scarabées Menkhéperrê,* Göttingen 1982, esp. p. 167.

were sealed in this manner. Unfortunately, the back of the impression, which would in this case have received the imprint of the string, has not been preserved. It does, however, have finger impressions on the left side which are not evident on either of the tablets.

A close date for the pit cannot be given until the Phase V pottery has been analysed. A preliminary assessment suggests a range in the late sixteenth or fifteenth century B.C.

Area XXVIII

Area XXVIII, established in the sixth season, is located approximately mid-way along the southern crest of the *tell* above a precipitous drop into the Wadi Jirm. Erosion has been very severe here as elsewhere on the southern slope of the mound, and a series of wash gulleys have cut deeply into the side of the *tell.* One of these revealed the existence of a large stone wall running east-west along the edge of the *tell* and since further erosion will soon cause its collapse a small trench was established against its inner face (Plot XXVIIIA). The wall attracted attention because of the similarity in its dimensions (still standing to over 2.00 m.) and monumental construction to Walls 3 and 28 in Plots IIIC and IIID at the southeastern corner of the *tell* (see above). As was mentioned above, the function of these latter walls remains uncertain, particularly the question of whether they constitute a Middle-Late Bronze Age town wall. It was hoped that the new stretch might, if proved contemporary, help to settle this issue. It is situated where one would expect a defensive circuit to run, right along the *tell*'s edge, but how far it extends in either direction is unclear. If it continued any considerable distance some stretches will have been destroyed by the deeper wash gulleys but enough should survive to establish a connexion with Wall 28 of IIID. As yet, however, we have nothing but their constructional similarity to judge by; they may prove to be independent constructions.

The uppermost levels of XXVIIIA consisted of a paved Byzantine floor and retaining wall. Approximately 0.50 m. of underlying deposits adjacent to the highest surviving course of the wall have been excavated. These date to MBIIB-C but until the manner of the wall's construction (freestanding, terrace, or trench-built) has been determined, this cannot provide a *terminus ante quem* for its erection.

Two pit burials cut from two successive floor surfaces inside the wall were excavated. The lower contained the skeletons of three infants accompanied by a torpedo juglet, a black burnished juglet and a carinated bowl (chalice). The higher grave (Feature 10) is situated in the northwest corner of the plot and the north and west edges of the grave lie just in the baulks. All of the contents, however, were recovered. The sides of the grave are lined with medium-sized flat-faced stones.

The grave contained the articulated skeletons of four adults/ sub-adults and the following offerings: a lamp (72170), a low, open bowl (72215), two carinated bowls (chalices) (72291, 72318), two cylindrical juglets (72332, 72290), a copper/bronze pin (70344), a wedge-shaped piece of bone, bored through and incised (70319), geometrically engraved bone inlays from three wooden boxes, a faience flask decorated with the pattern of a lotus flower (70323) and the shells of two tortoises (70337, 70338).

Both graves were discovered near the end of the season and the processing and recording of the material is not completed.

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The Late Bronze-Early Iron Ages (Areas III and IV)

In Plot IIIN the Early Iron Age house of Phase IA,[25] which had been destroyed by fire, was removed and an earlier architectural phase uncovered. This is Phase II in the sequence established in

[25] *ADAJ* XXVIII (1984), p. 64 ff.

IIIC.[26] The preserved architecture consists of parts of three stone walls (Walls 54, 55, 59) in the south-west quadrant of the plot (Pl. XL: 1). To the north is a courtyard with three *tabūn* ovens (Features 88, 93, 94) and a number of pits (Features 82, 85, 86).

The walls are constructed of medium-sized stones not as carefully laid as in the succeeding phase. They survive to a few courses only; the superstructure was presumably mud-brick. The floors consist of tamped earth.

In Plot IIIC a number of vestigal surfaces overlaid the main phase II floor, IIIC 16.2[27] These, along with the Phase IB surface, lensed out towards the west and did not reach the IIIN west baulk. This accounts for the slope of the Phase IA floor west of the pillar bases.[28]

Phase II does not seem to have been destroyed. No complete vessels were found *in situ* and apart from the usual domestic inventory — sherds, basalt quern fragments — the lower half of a ceramic nude female figurine (70198), Two "spindle whorls" (70069, 70207) and fragments of a bronze pin (70256) were the only noteable finds. The Phase IB deposits, though not related to any architecture, produced a copper/bronze bracelet fragment (70026), the pelvis of another nude female figurine (70052), and half of a cylindrical bone container decorated at each end with bands of cross-hatching (70055). This last piece is probably a survival from the Early Bronze Age.[29] The pottery largely repeats that recovered in IIIC and will be illustrated in the forthcoming interim report *Pella in Jordan 2.*

By the end of the season, the western continuation of the phase III[22] walls from IIIC (Wall 9 and F.20) were beginning to appear in the eastern half of IIIN but only a small area of the associated floor was reached (Pl. XL: 1). Among the finds from this phase are a bone "spindle whorl" (70326), a disc-shaped ceramic lid (?) (70329), a clay "spindle whorl" (70260) and fragments of bronze pins (70219, 70309).

In Plot IIIQ, immediately west of IIIN, the last of the Roman deposits were removed and the uppermost Iron Age strata exposed. These levels are very disturbed; only a few wall stumps and *tawabeen* survive. The latest reconstructable architecture, that of Phase IA, was reached at the end of the season. Only the tops of the walls have yet been uncovered; none of the floor has been excavated.

In Plot IVE, ten metres north of IIIQ, the uppermost Iron Age levels are again poorly preserved and the stratigraphy interrupted by the deep foundation trenches of Hellenistic walls. Very little architecture has survived. The walls are poorly built of medium-sized stones. The stratigraphy here cannot be tied to that of Area III until Plot IIIP, between IVE and IIIQ, has been taken down to these levels.

The metre or so of Iron Age deposits excavated so far in IVE consists of a close sequence of poorly defined surfaces, wash and rubbish deposits with occasional fills or collapses. Very few of these deposits can be confidently followed any distance and this uncertainty is compounded by the Hellenistic trenches which divide the plot into a number of stratigraphically isolated units. The lowest surface uncovered was burnt in the small area excavated. On the floor lay a pair of jugs one of which contained twelve carbonized wooden spindle whorls (70340) (Pl. XL:2) and a conical clay stamp seal (70341) (Pl. XL: 3). The figures on the seal are rendered in a crude, purely linear style. two quadrupeds and a snake are visible around the edge but the identity of the central motif is unclear.

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[26] *Pella in Jordan 1,* p. 56-58, fig. 7a. The separate phasing for IIIN in *ADAJ* XXVII (1983), p. 336-342, is partly incorrect and now entirely superseded. (The revised phasing of the upper strata of this plot will appear in *Pella in Jordan 2* (forthcoming)). The one phase sequence now applies to all plots of Areas III and IV.

[27] *Pella in Jordan 1,* p. 56.

[28] *ADAJ* XXVIII (1984), in press.

[29] For comparanda and discussion see J.B. Hennessy, *The Foreign Relations of Palestine in the Early Bronze Age,* London 1967, 82-3, Pl. LXXVII: 12-17.

[30] *Pella in Jordan 1,* p. 58, fig. 7b.

The latest continuous surface, *ca.* one metre higher, was also heavily burnt. This is the only floor that can be followed across a large area of the plot. Towards the centre lay the remains of nine large storage jars, burnt and broken in the conflagration (Fig. 11:6). They sat upon an area of stone paving evidently intended for this purpose. The rest of the floor consisted of tamped earth.

The most important finds came from a thick deposit *(ca.* 0.30 m.) of broken pottery in the north-west corner of the plot. The stratigraphy is disturbed but there are enough indications to be sure that this deposit falls between the two burnt surfaces described above. It was cut into by a later pit which has unfortunately removed some of the sherds. In addition to a large number of vessel fragments, the deposit contained parts of two ceramic cult stands (Pls. XLI, XLII). Both are tower-shaped with flat sides and stand about 0.50 m. high with a flat tray near the top of the interior.The more complete (72064) (Pl. XLI), is decorated on each side with two incised pine trees separated by horizontal bands of "rope" decoration, and double rows of applied "studs" below the rim. Horn-like swellings at each corner imitate the familiar stone altars from Palestine. The exterior surface is applied with a red wash. The interior tray was more than once relined with plaster and a new coat of red wash.

The other stand (72066) (Pl. XLII), is less complete. The best preserved side, presumably the front, carried two moulded figures of the nude goddess Astarte standing above the modelled head of a feline.[31] Her arms fall straight by her sides; her hair falls in a curl either side of the face in the familiar manner deriving from representation of the Egyptian goddess Hathor. Above the figures are six applied bands of plain and "rope" decoration and above these two rows of incised double chevrons. The other sides, of which fragments survive, are covered with a thick red slip and decorated with geometric designs in yellow paint. The lowermost rope band of the front continues along the sides but changes to a plain band at the back. None of the base and very little of the interior tray was recovered but a small part of rim, from which rises a modelled human head, survived. This head was set at the right rear corner of the offering tray facing inwards. It carries the same red and yellow decoration as the sides. Below the rim is set a single row of studs. Traces of blackening from fire inside the rim and around the face suggest that this stand once held burnt offerings, presumably to Astarte. Similar blackening on the front facade is less easily explained.

A close date for the cult stands cannot be given until the associated pottery has been fully analysed. A selection is illustrated in Figures 11: 1-5; 7; 8. Parallels with cult stands and vessels from Taanach, Megiddo[32] and elsewhere suggest a broad eleventh - nineth century B.C. range, with the tenth century perhaps the most likely. The fabric, firing and slip of the horned stand (72064) are very similar to one of the Taanach stands which has been dated to that century.[33] Some Cypriot black-on-red ware sherds which were recovered from the deposit support such a dating (Fig. 11:2).

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Tombs

The search for tombs was conducted throughout the season by Mr. Sultan Shraideh of the Department of Antiquities. An unsuccessful investigation was made of the hill immediately to the west of the *tell,* now covered by an orchard, where

[31] The top half of the left Astarte and the right feline head were missing and have been restored at the Ashmolean Museum, Oxford.

[32] Taanach: P. Lapp, *BASOR* 195 (1969), p. 42-44; Megiddo: H.G. May, *Material Remains of the Megiddo Cult,* Chicago, OIP XXVI, 1935, Pls. XIII-XV. For the Astarte stand compare also the earlier stands and house models from Meskene on the Euphrates: J. Margueron, *Syria* LIII (1976), p. 193-232, especially "Tour J", "Tour O", and "Maison V". A fuller study of the Pella cult stands and comparanda will appear later.

[33] Lapp, *loc. cit.*

road-building had uncovered Middle-Late Bronze Age tombs. A deep trench in Area XI on the steep north slope of Tell Husn uncovered part of a Roman or Byzantine rock-cut chamber ("Tomb 63"); it is probably not a tomb and work here was discontinued.

Area VI

Tomb 60[34] is a looted MBIIc or LBI pit tomb. Its contents had been thoroughly robbed, perhaps during the cutting of an adjacent Roman/Byzantine tomb. The scattered fragments of a chocolate-on-white jar are all that remain to indicate its date; an Iron Age bar-handled bowl found higher in the fill must be intrusive.

Tomb 61, like its neighbour Tomb 52,[35] had also been robbed. The plan suggests a Late Roman date.

Tomb 64 is located further to the south, beside Tomb 54, which was excavated in the fifth season.[36] It was discovered on the last day of excavations and the recording of the artefacts has had to be held over until the next season. Like Tomb 54 it contained quantities of well-preserved timber from coffins and beams presumably employed to support the roof. This was not successful and much of the roof has collapsed. The bones from the *loculi,* however, are in an excellent state of preservation as are the other organic remains; a tuft of hair, a pair of leather sandals and a bed of leaves under one of the skeletons.

The tomb was robbed after the roof had begun to collapse (some of the fall was used to prop open the lid of one of the sarcophagi) and most of the artefacts removed. Some lamps and other vessels of clay and glass were recovered inside the tomb and in the *dromos* around the door. The date of the tomb is probably close to that of Tomb 54 but a definite statement must await further analysis.

Area XI

Tomb 62 (Fig. 5) is located on the north-east crest of Tell Husn about twenty metres along the contour from Tombs 20 and 22[37] with which it is largely contemporary. It consists of three rock-cut chambers entered through a short *dromos.* The roof of chambers 1 and 2 had completely collapsed and that of chamber 3 partially fallen thereby crushing much of the pottery below, but still hundreds of vessels were retrieved, virtually or completely intact. The total inventory of approximately two thousand artefacts makes Tomb 62 much the richest burial discovered at Pella and one of the very largest of its date in the Levant.[38]

The burials were seriously disturbed by roof collapse and water action. The bones are very fragmentary and what survives is in an extremely poor state. An estimate of the number of interments will probably have to be based chiefly on the teeth. Preliminary impressions suggest a hundred or more individuals.

The majority of funerary offerings consist of pottery vessels dating to L.B. IA, perhaps beginning at the end of MBIIc (Figs. 9, 10). The types includes many familiar forms: lamps,low, open bowls (plain, red slip and occasionally with a thin white slip), simple carinate or round profile bowls (plain and red slip), double carinate bowls ("chalices"), ovoid two-handled jars, large and small dipper juglets, cylindrical juglets (plain, red burnished, black burnished and white burnished), white slip bowls and white slip jars. The painted vessels include some unusual pieces. In addition to the typical chocolate-on-white jars (Fig. 9:2) and low open bowls, there are also three cylindrical juglets (Fig. 9:3), two amphoriskoi (Pl. 16.4), and a carinate bowl (the typical white slip bowl form) in this style of

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[34] Tomb numbers 55 to 59 were not assigned this season.

[35] *ADAJ* XXVIII (1984), in press.

[36] *Ibid.*

[37] *Pella in Jordan 1,* p. 43-49.

[38] Compare the tomb excavated by C., Clamer at Tell Balata (Schechem), in 1976: *Qadmoniot* XIV, 1-2 (1981), p. 30-34; *IEJ* 27 (1977), p. 48. The Shechem tomb contains parallels for much of the Tomb 62 pottery and small finds. However, it continues later (into LB IIA) and seems to be somewhat larger.

decoration. Other vessels have a less resiliant white slip covering only the upper half of the vessel (Fig. 10:3) and form an easily recognisable variant. The "chocolate" decoration is often actually bichrome; usually a purple-brown and a rusty orange. Some cruder jars imitate the chocolate-on-white designs, especially the solid pendant triangles, in red-brown paint on an unslipped surface. Some of the white slip bowls have a markedly coarser fabric and carry a thin, unburnished slip. These also may be local imitations.

Beside these Transjordanian and Palestinian types there are also Cypriot imports: a number of spherical black lustrous wheelmade ware juglets (Fig. 9: 5), a monochrome bowl and a red lustrous wheelmade ware "spindle bottle".

Other contents of the tomb include: many scarabs; three cylinder seals; copper/bronze toggle pins, earrings, arrow heads and a knife; glass beads (including mould-made "spacer beads"); bone inlays, incised with geometrical designs, from wooden boxes; bone "spindle whorls" (buttons?); a palmwood "spindle whorl"; calcite/alabaster flasks; a silver crescent earring; frit, banded agate, carnelian and other stone beads; two gold earrings and a gold toggle pin.

When the contents of the first chamber were removed a tamped earth floor appeared underneath. This proved to be the uppermost of a series of surfaces and floor packings, approximately 0.30 m. thick. On one of these surfaces lay numerous basalt querns, grinding stones and potsherds. These include typical domestic forms such as cooking pots, dating to the late Middle Bronze Age. Evidently the three chambers had originally functioned not as a tomb but as a food processing area.[39]

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Catalogue of Bronze and Iron Age Pottery, (Figures 9-11).

All vessels are wheel-made. Scale of illustrations, 1:3

Figure 9: Tomb 62 (Area XI)

1. CN 5009 (Reg. no. 72062) Loc. 1 lev. 2
   Carinated bowl. Monochrome decoration. Fairly finely levigated clay with fine to medium chert and lime grits. Fired buff throughout. Very friable.
2. CN 5353 (Reg. no. 72340) Loc. 1 lev. 2
   Jug. Chocolate-on-White Ware. Well levigated clay with some chert and lime inclusions. Fired hard, light buff throughout. Creamy burnished white slip on exterior and base of neck interior. Slip worn in bands on interior of neck and in patches of exterior. Purple-brown painted decoration. Rim chipped; otherwise intact.
3. CN 5354 (Reg. no. 72341) Loc. 1 lev. 2
   Cylindrical juglet. Chocolate-on-White Ware. Very finely levigated clay with no visible grits. Fired hard, metallic grey at core and pale buff at edges. White slip all over. Decorated in purple-brown paint.
4. CN 5053 (Reg. no. 72084) Loc. 1 lev. 2
   Amphoriskos. Chocolate-on-White Ware. Fairly well levigated clay with some small chert grits. Fired light buff throughout; soft and chalky. White slipped from just below shoulder carination up and over lip (note that the drawing is incorrect in showing the slip all over). Purple-brown painted decoration.
5. CN 5236 (Reg. no. 72224)
   Juglet. Cypriot Black Lustrous Wheelmade Ware. Very finely levigated clay fired dark grey throughout.

Figure 10: Tomb 62 (Area XI)

1. CN 5984 (Reg. no. 72098) Loc. 1 lev. 2
   Bowl. Undecorated. Fairly levigated

[39] It is interesting to compare this with the reuse of an earlier (Chalcolithic-EB I) burial chamber for the Shechem tomb; see previous note.

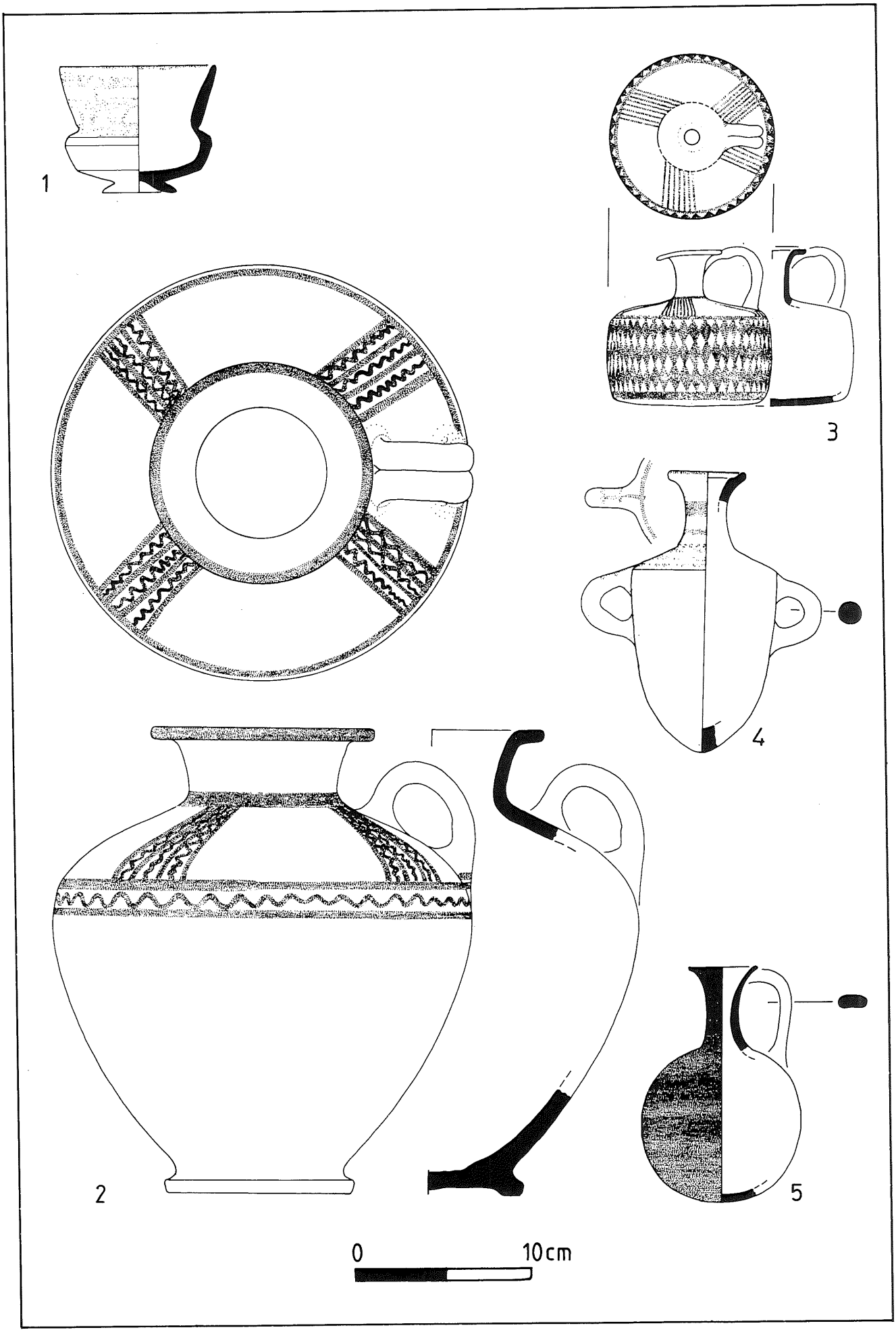


Fig. 9: Pella. Tomb 62 pottery. M.B. IIc-L.B. Ia

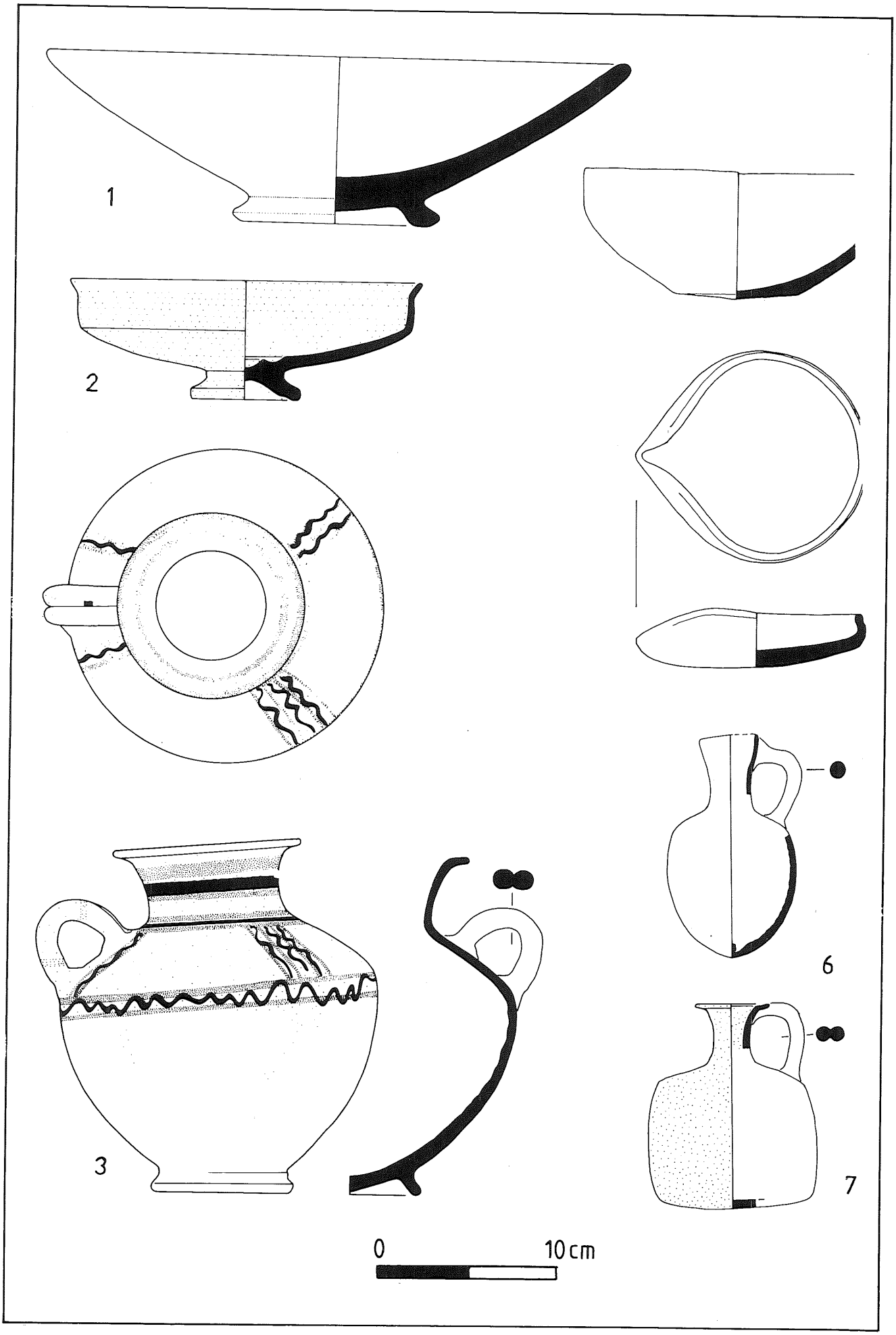
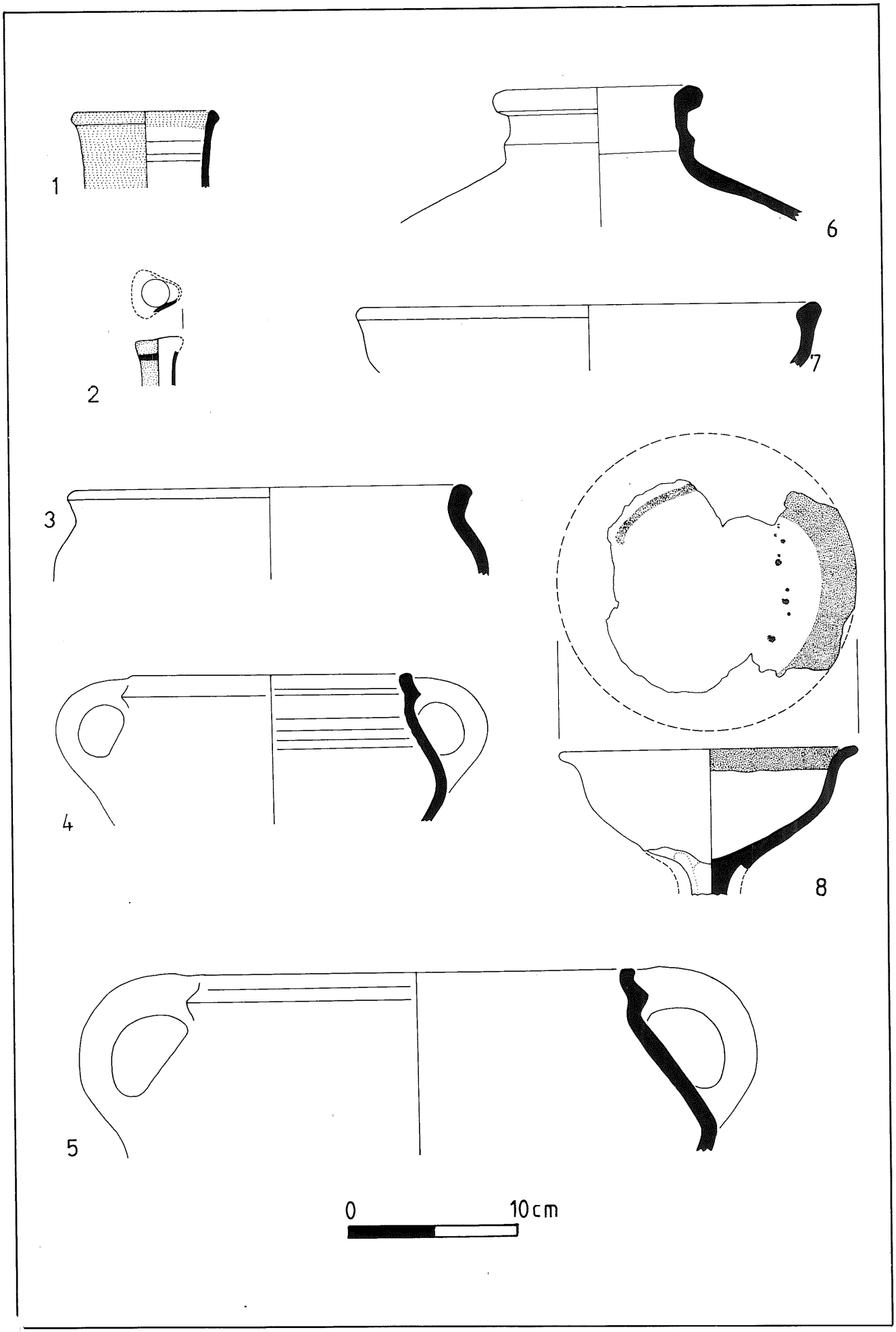


Fig. 10: Pella. Tomb 62 pottery. M.B. IIc-L.B. Ia.



Pl. 11: Pella. Plot IV E. Early Iron Age Pottery.

clay with many small and some large, mainly chert, inclusions. Fired buff with orange exterior and grey on interior towards the core.

2. CN 5115 (Reg. no. 72119) Loc. 1 lev. 2
Bowl. White slip. Very well levigated clay with some tiny red and white grits. Fired creamy buff throughout. Burnished white slip all over.
3. CN 4977 (Reg. no. 72040) Loc. 2 lev. 1
Jug. Chocolate-on-white Ware. Fairly levigated clay fired light orange-brown; fiarly soft ware. Vestigal white slip from shoulder up. Bichrome decoration in black and red-brown paint.
4. CN 4947 (Reg. no. 72011) Loc. 1 lev. 2
Bowl. Undecorated. Fairly levigated with fine and medium chert and lime grits. Fired hard buff at core and reddish-buff at surfaces.
5. CN 4968 (Reg. no. 72032) Loc. 1 lev. 2
Lamp. Fairly levigated clay with many medium chert and lime grits. Fired buff throughout.
6. CN 4951 (Reg. no. 72015) Loc. 1 lev. 2
Dipper juglet. White slipped. Very well levigated clay with few visible grits. Fired hard grey at core to greyish-buff at interior surface. Thick creamy white burnished slip on exterior.
7. CN 5042 (Reg. no. 72078) Loc. 1 lev. 2
Cylindrical juglet. White slipped. Well levigated clay with some fine grits. Fired pale pinkish-buff. Creamy white burnished slip all over exterior.

Figure 11: Plot IVE, Early Iron Age

1. CN 4815 Loc. 21 lev. 3
Jar. Matt red slip on exterior and over lip.
2. CN 4772 Loc. 21 lev. 2/3
Trefoil juglet. Cypriot Black-on-Red Ware.
3. CN 4703 Loc. 21 lev. 2
Krater/Deep Bowl. Fairly levigated clay with fairly large and medium chert and lime grits fired grey at core and buff-brown at surfaces. Many air pockets.
4. CN 4707 Loc. 21 lev. 2
Cooking pot. Fairly levigated clay with many sandy fine and medium grits. Fired black at core and brown at extreme surfaces.
5. CN 4695 Loc. 21 lev. 2
Cooking pot. Coarsely levigated clay with many small mainly white (quartz?) grits. Fired light grey at core to red-brown at surfaces.
6. CN 4194 Loc. 16 lev. 7
Jar. (Ware description not available) Undecorated.
7. CN 4716 Loc. 21 lev. 2
Bowl. Undecorated. Fairly levigated clay with fine and medium chert and lime grits. Fired buff, grey in a few patches. Well smoothed inside and out.
8. CN 4698 Loc. 21 lev. 2
Pedestal Bowl ("Chalice"). Fairly coarsely levigated clay with medium and fine chert and lime grits. Fired greyish at core to buff at exterior. Decoration in red-brown paint on the rim, interior and exterior.

T. F. Potts
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PRELIMINARY REPORT OF THE SIXTH SEASON OF THE 'AQABA-MA'AN EPIGRAPHIC AND ARCHAEOLOGICAL SURVEY

by
W. J. Jobling

Introduction

The sixth season of the 'Aqaba-Ma'an survey was completed during the months from December 1984 to February 1985 at the invitation of the Director of Antiquities of the Hashemite Kingdom of Jordan and with the official Permit of that Department.

Special accommodation and research facilities at the 'Aqaba-Ma'an Biology Station were made available by Dr. Duraid Mahasneh, Vice President of the 'Aqaba Region Authority. These co-operative arrangements between Jordan and the University of Sydney are indicative of a happy and mutually valuable relationship which is much appreciated.

As in the previous seasons, the 'Aqaba-Ma'an Survey was funded by the Queen Elizabeth II Fellowships and the Australian Research Grants Scheme of the Australian Department of Science and Technology and the University of Sydney.[1]

This year the survey team consisted of Mr. R.V.H. Morgan, Administrator Curator of the Newcastle Maritime Museum. As in previous years, Mr. Morgan was responsible for the photography and cartography of the project and assisted considerably with hydrological, climatological and maritime research in the area. He has also been working on the museological aspects peculiar to this area of research. As well as this, Mr. Morgan prepared all the sketch plans of new sites and assisted with the tracing of rock art and inscriptions. Mr. Morgan is preparing a computer coordinated catalogue of all the photographic material of the survey. It is planned to produce a videodisc edition of the epigraphic material as part of this catalogue.

The department representative was Dr. Zeidun Al-Muheisen of C.N.R.S. at Petra. Future survey and excavation work in the area and prospective arrangements have been made for a seventh season with his assistance. Mr. Michael Bannigan and Mrs. Lee Jobling of the University of Sydney joined the survey in February and assisted with the field work, photography, cataloguing and report. Together with the director, Mr. Bannigan, who was the photographer to the survey in the 1984 season, has also commenced a special computerized analysis of the graphics of the North Arabian scripts of the area.[2]

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[1] The director is grateful to the Australian Government for the continued funding of this project of exploration and research begun in the 1979-80 season. The director also gratefully acknowledges the continued support and approval of the Vice Chancellor of the University of Sydney, Professor J. M. Ward, and of Professor Eric Sharpe of the Department of Religious Studies in granting permission and funds for Special Duties Overseas and extra facilities during the year for research at the University of Sydney. The use of computer facilities and research skills associated with the catalogues, gazetteer, rock art and inscriptions of the 'Aqaba-Ma'an Survey have been of great significance.

The director acknowledges the work being done at the University of Sydney by Miss Sue Jorgensen and Mr. Jason Catlett with regard to the computer generated data of the catalogues, gazetteer, North Arabian inscriptions and linguistics. Miss Jorgensen, who is the ARGS funded research assistant in Australia, has compiled an extensive bibliography of research in the 'Aqaba-Ma'an and related areas and as well as this has begun research work on the comparative semitic philological and historical linguistics of the North Arabian inscriptions of the area.

Mr. Christopher Morgan, a graduate in Anthropology from the University of Sydney, has been analysing the stylistics of the rock art of the whole area using the Penrose multivariate statistical analysis program.

Mrs. Ina Kehrberg of Jerash is continuing with the analysis description and drawing of the lithics and pottery from the previous seasons (1-5).

Aims

The sixth season of the 'Aqaba-Ma'an Survey had the following specific aims:

1. The further location, recording and photographing of inscriptions and rock art of the area;
2. To give particular attention to exploring and recording the areas in and around the Wadi Ḥafir, Wadi edh-Dhiqa, Wadi Sabit and Wadi Saham;
3. The identification of further sites along the Edomite Escarpment in the light of the preliminary sweep along this area in the fifth season of the survey in 1984;
4. The further location and study of archaeological evidence for the ancient hydro-technology of the area.

Broadly speaking these aims are in accord with the initial intention of the project, although it is noted that as each season has been completed it has been necessary to review and revise the plans for future research in the light of new evidence.[3]

Rock Art, Inscriptions and the Wadi Ḥafir

During the fourth season of the survey the 25 km. long Wadi Ḥafir was explored and very large numbers of well preserved North Arabian (Thamudic) inscriptions and rock art were discovered (Figure 1: 'Aqaba-Ma'an Survey 1985). Since then a systematic examination of the wadi has begun from the heights of Ras Ḥafir on the old Edomite escarpment down the wadi to the point where it debouches into the Ḥisma near Qā' ed-Disi. Thousands of inscriptions and outstanding examples of pre-Islamic rock art have been located. Many rock art panels are signed and, probably for the first time, it is possible to identify and describe collections or even schools of rock art. Preliminary content analysis of these panels and their motifs and comparison with Persian decorative motifs and Byzantine floor mosaics located elsewhere in Jordan, the Sinai and Southern Israel provide valuable evidence for the delineation of the common culture of the Arabs of Jordan from the periods from the late sixth century B.C. through to the seventh century A.D.

The Wadi Ḥafir provides an important and geographically well contained area which is being carefully mapped and studied as a micro-environmental catchment area of singular significance for the trade routes passing from the *Ḥisma* to the Edomite plateau.

The rock art and inscriptions of the 'Aqaba-Ma'an area of Southern Jordan are eloquent semiotic evidence of the life, imagination and creative response of various generations of human occupation, possibly going as far back as the Upper Paleolithic period. Comparable to similar desert areas in the Middle East, this evidence provides modern scholars with an opportunity partly to enter into the mind of the ancient inhabitants of this area which is a marginal interface area between the Mediterranean and oriental worlds.

Reflecting a succession of different styles and generations of human response to an apparently considerably variable climatic environment, these long neglected epigraphic and glyptic remains are eloquent archaeological testimony to the occupation of these areas. While Emmanuel Anati's 7-Style Analysis remains somewhat inconclusive, it may yet be possible to generate less subjective assessment of this graphic evidence which will relate more accurately to the ten thousand or so years of human occupation.[4]

Preliminary research has begun into the style and schema of many of the rock art depictions on some rock panels in the area. The rock art, and associated epigraphy, were probably added to rock panels over a long time period. Therefore, it should be possible to detect variations in

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[3] See (i) W. J. Jobling, 'Recent exploration and survey in Southern Jordan: rock art, inscriptions and history', *Berytus* Vol. XXXI, 1983, p. 27-40; (ii) W. J. Jobling, 'Preliminary Report on the Archaeological Survey Between Ma'an and 'Aqaba', *ADAJ*, XXV, 1981, p. 105-111.

[4] Emmanuel Anati, *Arte rupestre nelle Regioni occidentali della Penisola Iberica*, Edizioni d Centre, Samuel H. Kress Foundation, New Yo 1968. p. 124.

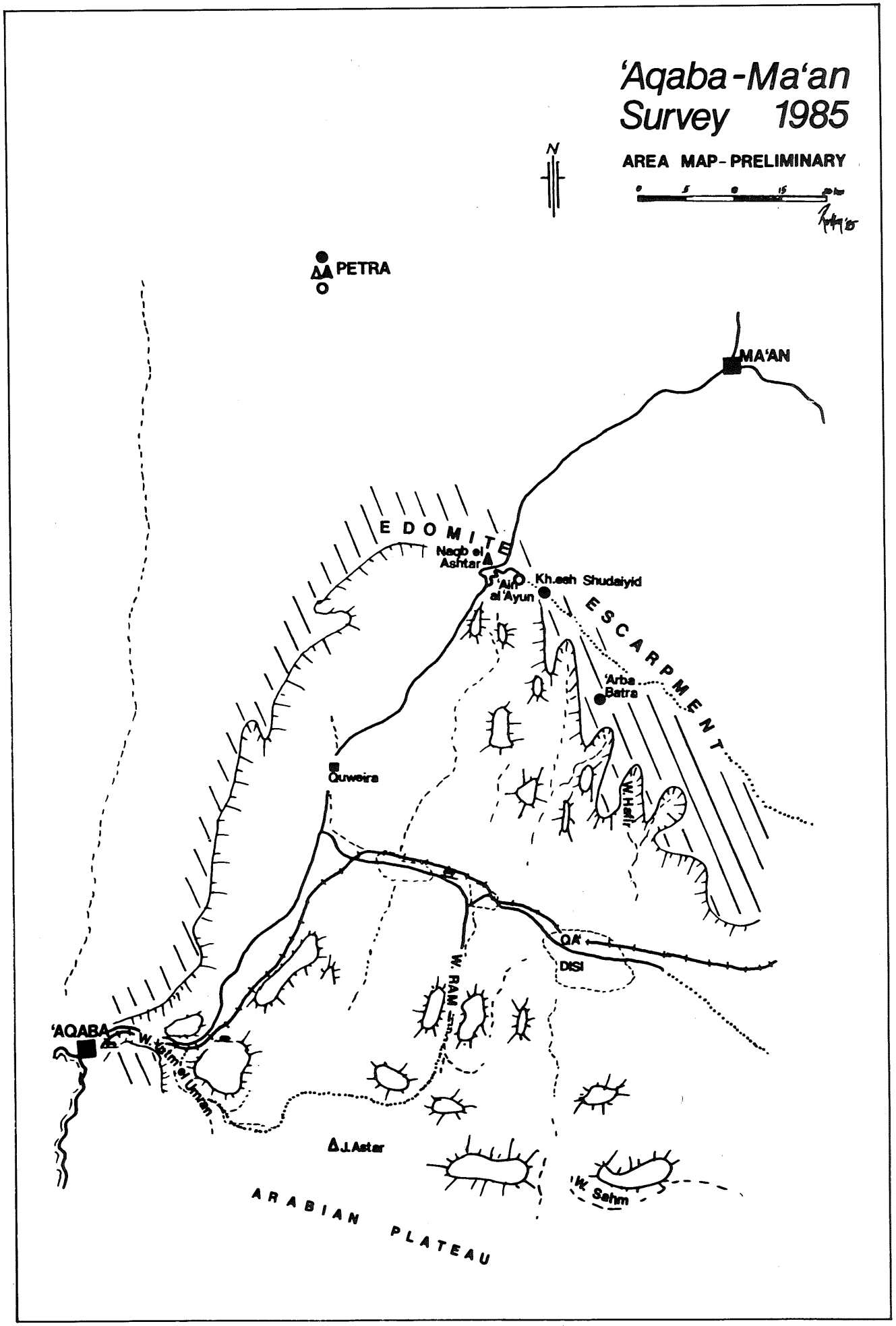

Fig. No. 1. Map 'Aqaba-Ma'an Survey 1985.

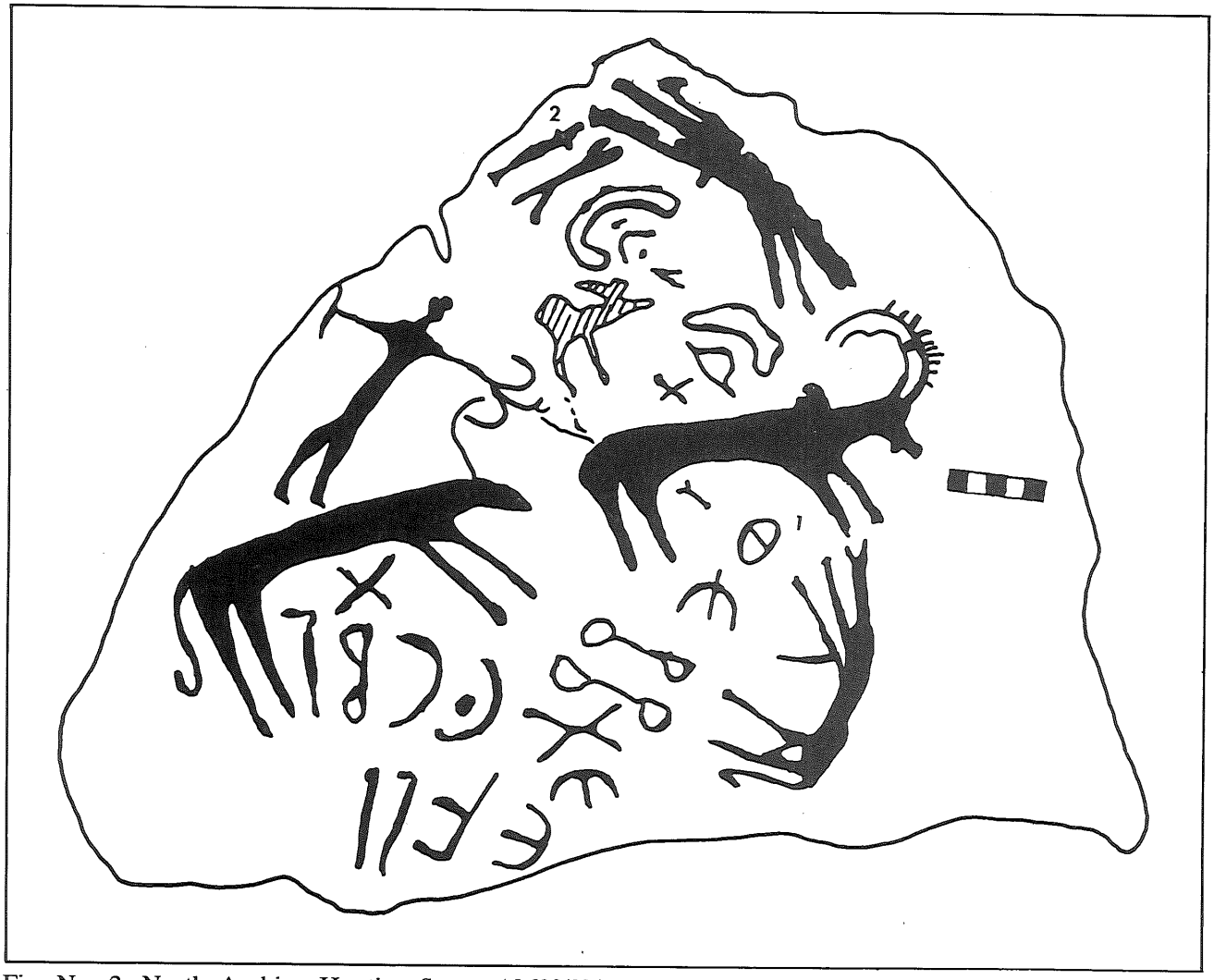

Fig. No. 2. North Arabian Hunting Scene AM83/37/22

style and schema in the rock art on the panels being analysed. If observed stylistic variations can be measured, then multivariate statistical analysis could be carried out. Measuring a range of common attributes in the rock art depictions has shown (in early tests using Penrose co-efficients), that different styles of rock art cluster together. These results suggest that depictions were not added at random.

The long term implications of this direction of research are that a chronological sequence of rock art styles may be developed on the basis of measured statistics. This would give meaning to the rock art panels as well as allowing for interrelationships between different sites in the region to be analysed reflecting population movements and contact between groups of artists in the historical past.

In 1983 considerable attention was paid to a particular style of art which had been located in earlier surveys.[5] Since then a large repertoire of this stylized and often signed pre-Islamic art has been located in the area generally and in the Wadi Ḥafir in particular. A good example of this art is the following hunting scene Wadi Ḥafir AM83/37/22 (Figure No. 2 and Pl. XLIII).

A preliminary reading of the North Arabian (Thamudic) inscription is as follows:

Transliteration:

1. *W. ḥgg. bn. bglt. ḵṭṭ. kll*
2. *l. 'm. bn. smdt*

Arabic:

1. وحجج بن بجلت خطط كلل

[5] W. J. Jobling, 'The Aqaba-Ma'an Archaeological and Epigraphic Survey, 1980-1984', *TRASUS*, Vol. 2, No. 2, 1984, p. 34-52).

2. ل ام ابن سمدت

Translation:

1. And ḥgg son of bglt drew all (of it)
2. By 'm son of smdt

During this season many similar hunting scenes which have stylistic and content correlations were also located, identified and copied. A good example of this recent material is AM 85/93/25 (Figure No. 3 and Pl. XLIV).

Transliteration:

1. *w. ṯḥbb. ḵṭṭ*
2. *w. slmt. ḵṭṭ h. wᶜl. kll*
3. *l. ḥglt*

Arabic:

1. و تحبب خطط
2. وسلمت خطط هـ ومل كلل
3. ل حجلت

Translation:

1. And ṯḥbb drew (it)
2. and slmt drew the ibex all (of it)
3. by ḥglt

This panel may be divided up into two sections. In the upper panel it is interesting to note that the stylized human figure on the left is a woman. The breasts on this figure are quite clearly represented in the rock drawing. Thus the scene captures a hunting episode in which a huntress is involved. If the scene is to be identified with inscription No. 1, then it is suggested that we not only have here a good clear picture of a female involved in hunting the ibex but that we know her name to have been ṯḥbb (*see HIn. p. 129).

In the lower panel, a second hunting episode is recorded in which stylized human and canine forms are portrayed along with the long horned animal which is the object of the hunt as in the top panel. However, in this case the inscription (or caption) to the panel indicates that the animal is the *wᶜl* or Nubian Ibex *(capra ibex nubiana).* This North Arabian (-Thamudic) name bears favourable comparison with the later classical Arabic name وعل *(wᶜl)* and the Biblical Hebrew יעל. From a philological point of view it is also interesting to note that the definite article is *ḥ.*[6]

This scene compares interestingly with AM85/83/15 from the Wadi Ḥafir (Pl. XLV) which does not have any inscriptions but does have close parallels in style and content. Scenes such as these also provide considerable insight into the stylistic variety and artistic competence of their authors. As well as this, analysis of these scenes provides considerable detailed evidence for the lifestyles, society and fauna of the area in the period of the pre-Islamic North Arabians and also elucidates, to some extent, theories of the climate and ecology of the 'Aqaba-Ma'an area.

Of philological importance has been the number of drawings which, combined with their inscriptions, provides clear evidence that the grapheme previously identified as *ṯ (thā)* has a phonetic value of *g* (ğim). This grapheme consists of two circles joined by a vertical bar.

Two outstanding and quite clear examples of this new epigraphic evidence were found in the Wadi Ḥafir. The first example (AM85/100/12) was initially recorded in 1983. It is clearly inscribed on the top of a very large panel (Figure No. 4 and Pl. XLVI).

As can be seen from both the drawing and the plate, the carefully drawn camel has been identified by the inscription inscribed down the front of its neck. Underneath the belly of the camel the artist has signed his drawing.

AM85/100/12

Transliteration

1. *l. k't. h. gml*
2. *w. k't. bn. gff. ḵṭṭ*

Arabic:

1. ل كات هـ جمل
2. و كات بن جفف خطط

Translation:

1. By k't the camel
2. and k't son of gff drew it

The second clear example of the phonetic value of this grapheme in this area come from a little further north along the Wadi Ḥafir (Fig. No. 5 and Pl. XLVII).

This second example, though defaced

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[6] Cf. (i) W. Fischer (ed.), Grundriss der Arabischen Philologie, Band I, Wiesbaden 1982, p. 20; (ii) F. V. Winnett, *A Study of the Lihyanite and Thamudic Inscriptions,* Toronto, 1937, p. 16ff.

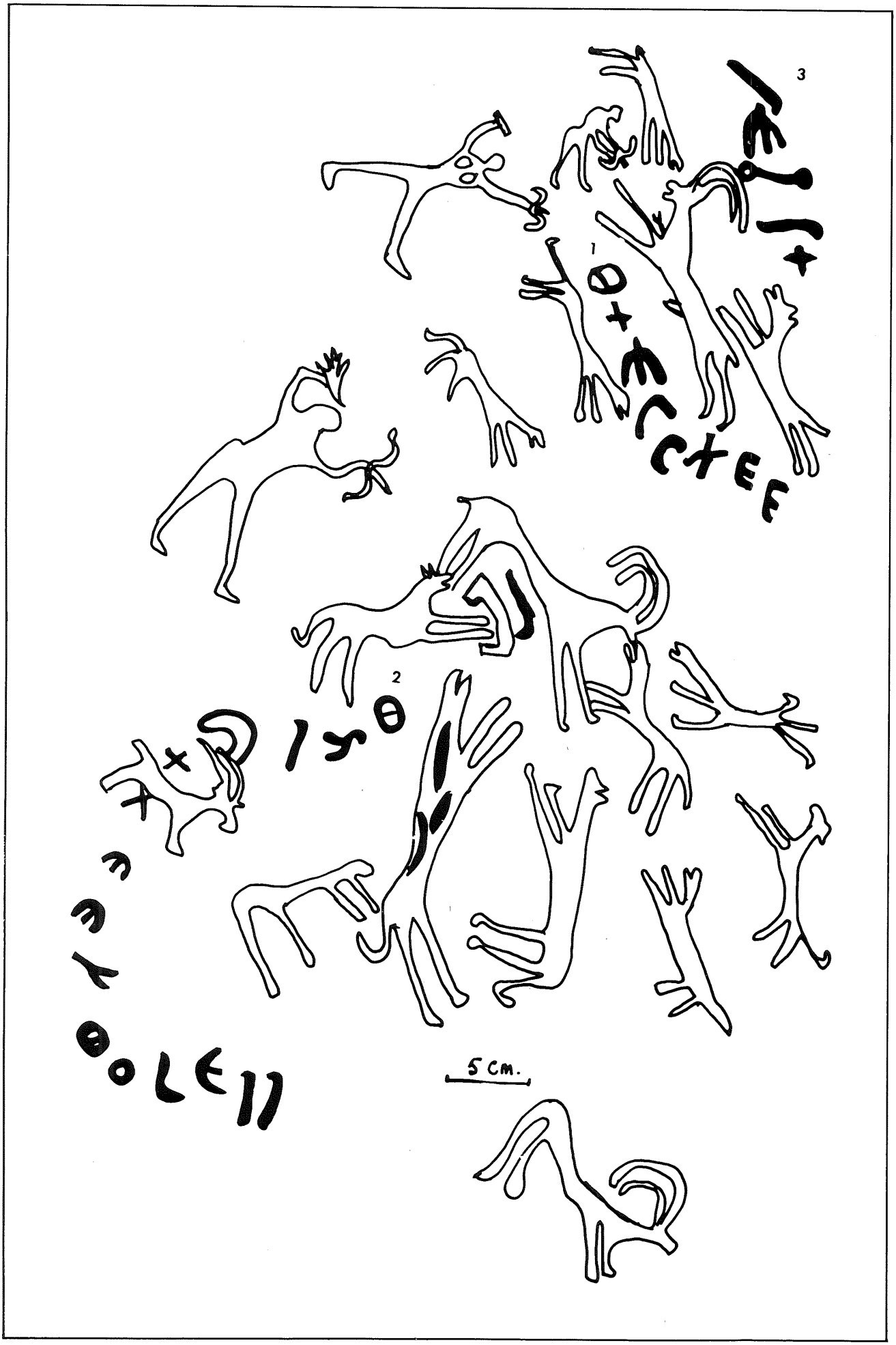

Fig. No. 3. North Arabian Hunting Scene AM85/93/25

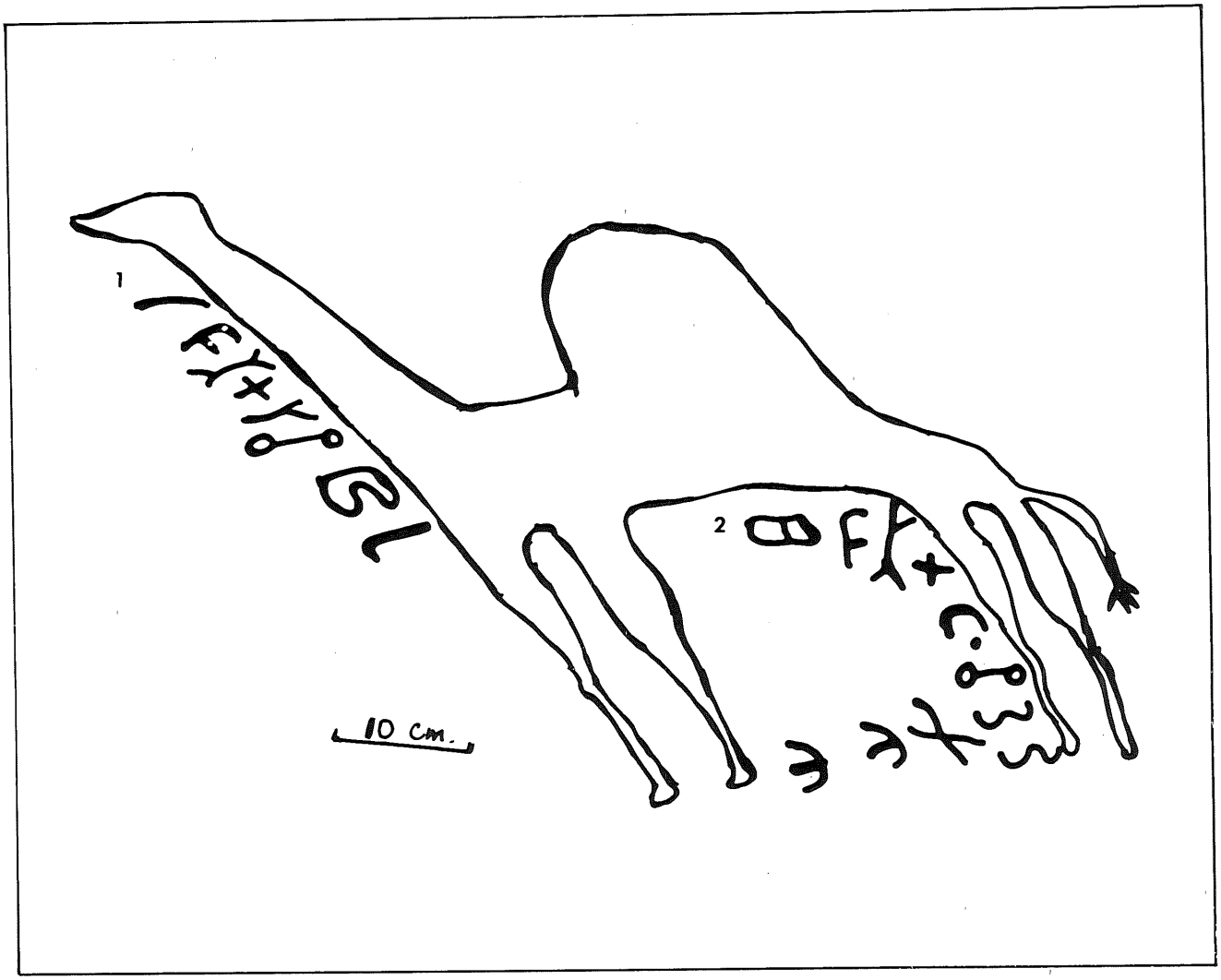

Fig. No. 4. North Arabian (Thamudic) Inscription and Drawing AM85/100/12

by a later drawing of a camel is as follows:
AM85/99/1
Transliteration:
1. zḥ. bn [ ] bn. ʿm. ḵṭṭ. gml
Arabic: بن عم خطط جمل ( ) ل زح بن
Translation:

By zḥ son of [ ] son of ʿm he drew a camel

Both examples, the first (AM85/100/12) with the definite article *(ḫ)* and the second (AM85/99/1) without the definite article provide good examples of the phonetic value of this particular grapheme. In these two instances the apposite situation of the inscription to the drawing (in this case of a camel) and the established equation of the respective second and third graphemes with the phonemes *mīm* and *lām* make it clear that the grapheme (or sign) filling the first consonant slot is *ǧim*.[7]

Hydrology, Climate and Demography

Since the first season of the survey special attention has been given to the location and recording of major antiquities and epigraphic sites in the area. One important result of this aspect of the survey has been the location of a large number of significant cisterns, dams and shaft wells which are part of the hydrological knowledge and technology of the previous inhabitants of these marginal desert areas. The location of the Qaṭṭar Ḥafir provided for the first time evidence for a water supply which would enable more than just seasonal occupation of the Wadi Ḥafir and also facilitate the transit of trade caravans through the wadi to the Edomite escarpment and thence to the major trading centres of Ma'an and Petra (Pl. XLVIII).

[7] See E. A. Knauf, Südsafaitish, *ADAJ,* XXVII, 1983, pp. 587-596.

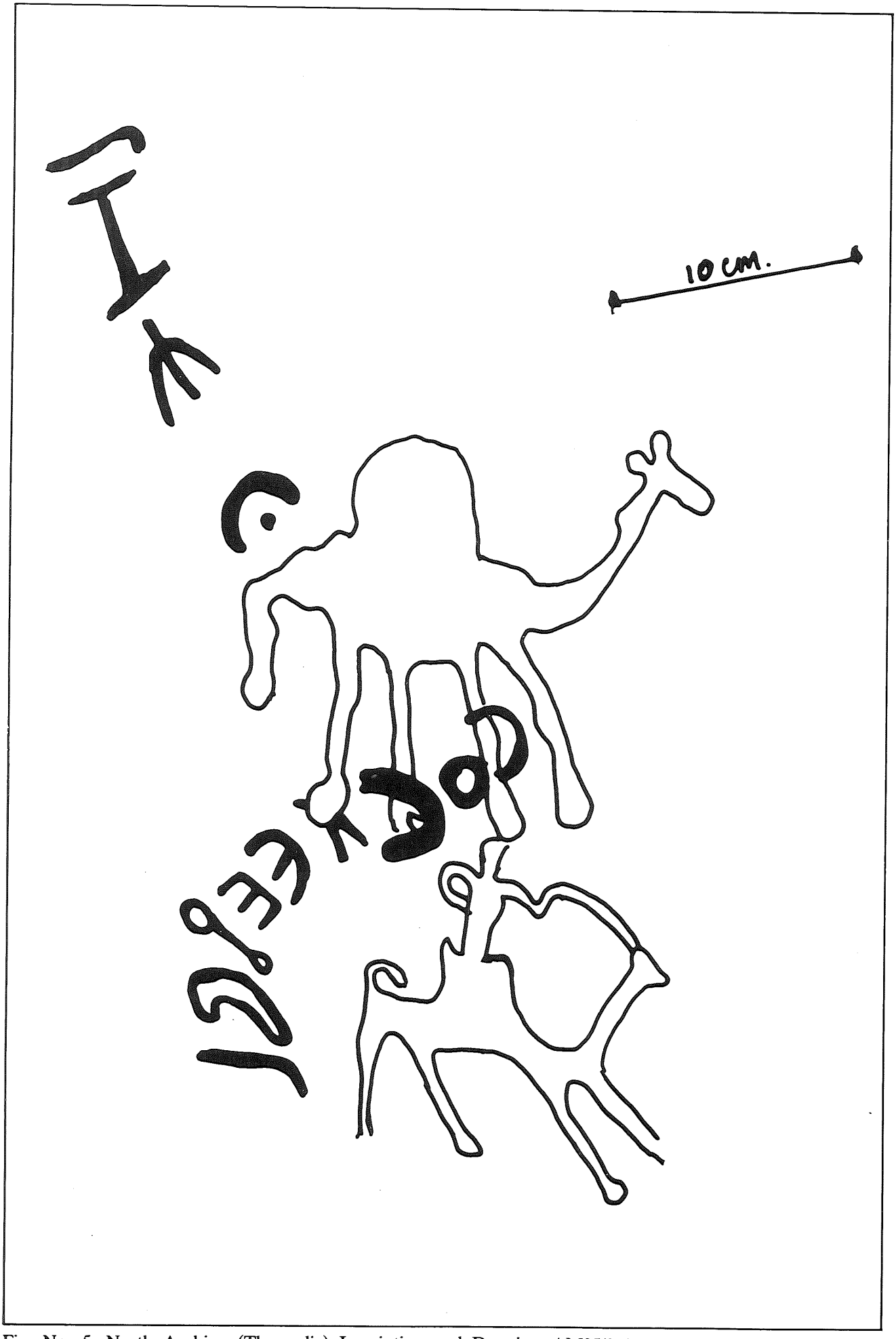

Fig. No. 5. North Arabian (Thamudic) Inscription and Drawing AM85/99/1

In depth and technology the Qaṭṭar Ḥafir rivals the hydrological constructions of 'Ain el-Shellaleh and 'Ain Abu Nukheila in Wadi Ram further south and with them provides evidence for the pattern of both occupation and transit through the Ḥisma to the Edomite plateau.

Qaṭṭar Ḥafir (see Fig. Nos. 6 & 7) is strategically situated in a rock overhang just below the outflow (or aquifer) in the non-porous strata of the western wall of the wadi and well to the north and relates directly to the geography of the Edomite plateau. A natural spring site, Qaṭṭar Ḥafir has been extensively excavated over several millenia of human usage. Worn and severely weathered North Arabian (Thamudic) inscriptions and rock drawings occur in and around the overhang. Epigraphic sites are indicated as Nos. 1-6 on Figure No. 6. There are also well worn stone troughs and the remains of channels cut into the wall of the overhang to utilize the runoff and drainage from the spring. While this water resource is still used by the Bedouin, it seems to have been allowed to fall into disrepair. Dr. Al-Muheisen has suggested that the stone cutting technique employed in those sections which have been excavated to provide greater water storage capacity are Nabataean (see Fig. No. 7). The very large subterranean reservoir has been designed to ensure that the slow but continual water flow is stored and made accessible. The remains of small stone buildings may be associated with the defence or control of the water supply. Situated, as it is, high up on the western wall of the Wadi the site commands a controlled view of the north to south sweep of the Wadi Ḥafir, and therefore, would have been easy to defend and control. While more work remains to be done at this site in future seasons it is perhaps possible to speculate that the Qaṭṭar Ḥafir together with the large numbers of inscriptions and rock drawings of the Wadi Hafir provides evidence for one of the major transit lanes from the Ḥisma to the Edomite plateau. Tracks deeply worn into the escarpment wind up to the top of the northern plateau from the Wadi Ḥafir. Like similar tracks deeply worn into the granite at Far'at Mahlibah further south those leading up from the Wadi Ḥafir pass by a series of shaft wells which are sunk into depressions along the perimetre of the escarpment.[8]

The locating of Qaṭṭar Ḥafir and research and excavations conducted in previous seasons at Tell el Kharaza to the south west provide new and extensive evidence for patterns of hydrological activity and techniques in the area north of the Ḥisma. At Tell el Kharaza there is a well made Nabataean dam (Pl. XLIX) and a deeply carved series of water channels (Pl. L) which are the products of Nabataean engineering.[9] Together, these two sites provide evidence for the variety and scope of the hydrological technology of the pre-Islamic indigenes of this area.

Summary Remarks

A highly successful survey and epigraphic research season was completed. Much more work remains to be done in the area and in particular future seasons are planned to cover in depth research in some of the micro-area studies noted in this report. There can be little doubt that once again research and exploration conducted this season indicate that this area in Southern Jordan has an important history and is a key area in the foreign and trade relations of pre-Islamic Arabia and the Levant.

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The University of Sydney

[8] W. J. Jobling, 'Aqaba-Ma'an Survey, Jan.-Feb. 1981', *ADAJ*, Vol. XXVI, 1982, p. 202.

[9] W. J. Jobling, 'The 'Aqaba-Ma'an Archaeological and Epigraphic Survey 1982 Season', *Liber Annuus*, XXXII, 1982, p. 468.

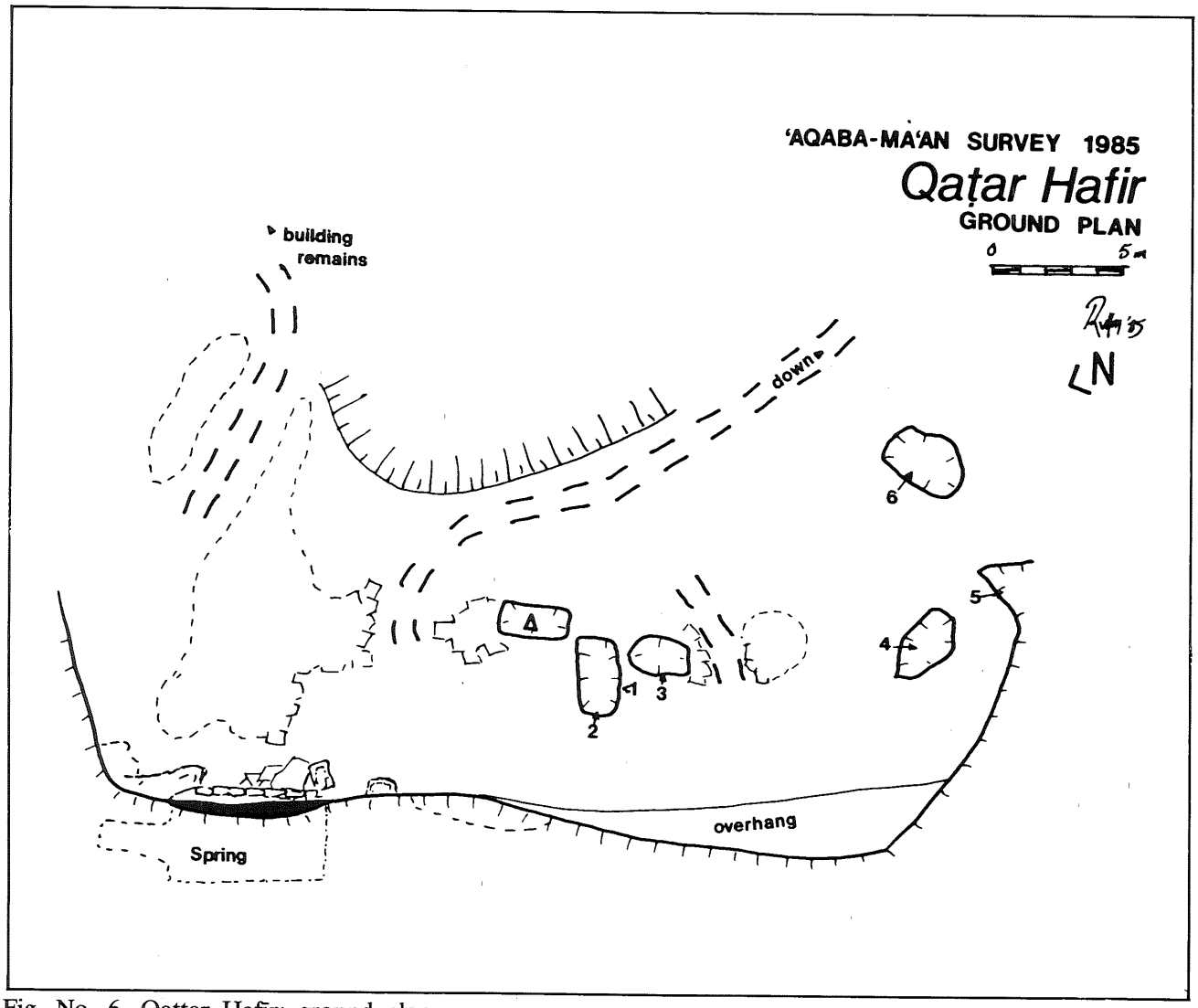

Fig. No. 6. Qaṭṭar Ḥafīr: ground plan

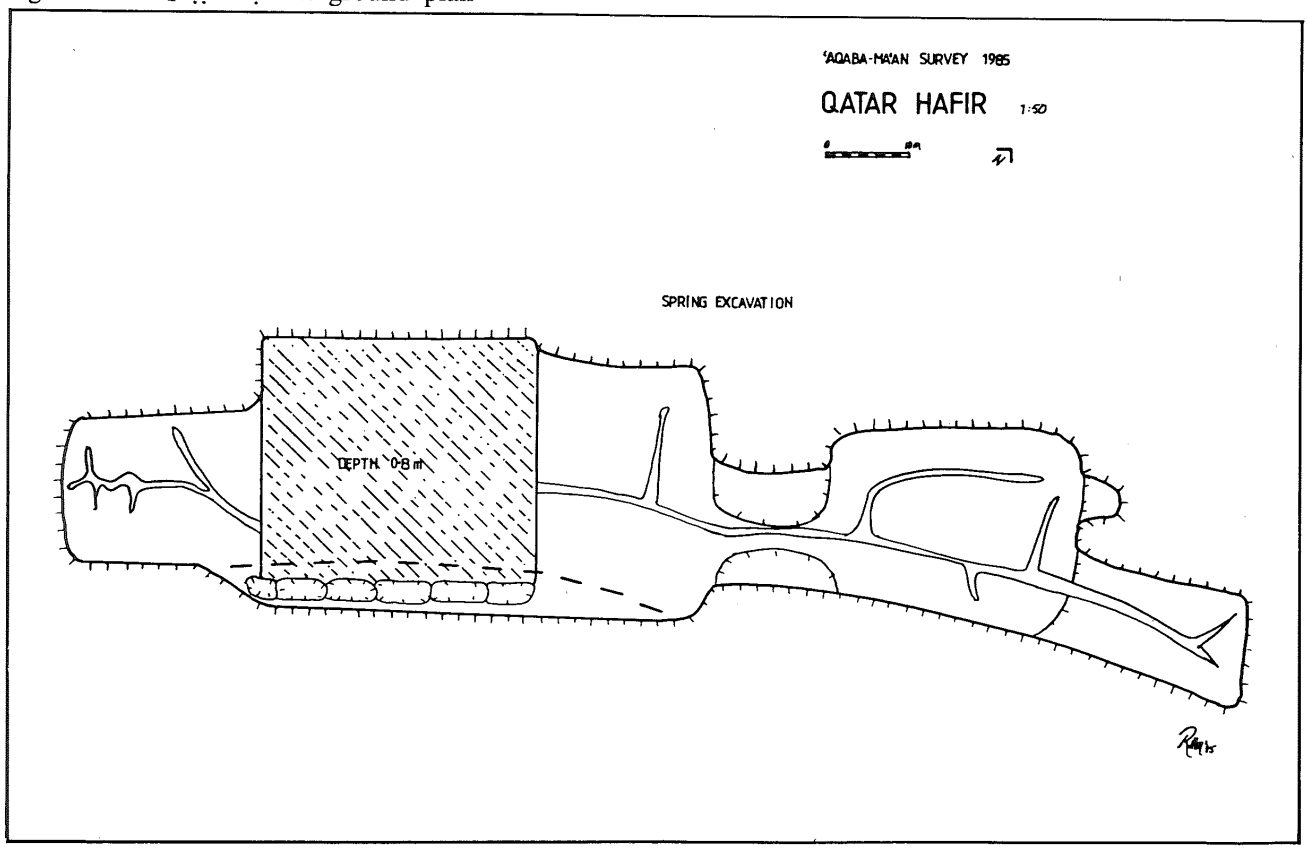

Fig. No. 7. Qaṭṭar Ḥafīr: Spring excavation

THE 1984 SEASON AT ABILA OF THE DECAPOLIS

by

W. Harold Mare, Michael J. Fuller, John J. Davis, Horace D. Hummel, Jonathan F. Grothe and Neathery B. Fuller.

The third season of the Abila of the Decapolis Archaeological Excavation, northern Jordan (Pl. LI: 1), was conducted June 25 to August 10, 1984. The main sponsor of the excavation was Covenant Theological Seminary. Co-sponsors were Cincinnati Christian Seminary, Concordia Seminary, St. Louis, and Grace Theological Seminary, Indiana.

Abundant assistance for the excavation was graciously given by the Department of Antiquities of Jordan, Dr. Adnan Hadidi, Director-General. Through Dr. Hadidi's direction and encouragement, the Department provided the use of some archaeological equipment and the rental of a department jeep and arranged for the use of the Harta Secondary Girls' School for staff headquarters. Mr. Sultan Shureidah, District Inspector of the Irbid office of the Department of Antiquities, and Mr. Ibrahim Zu'bi, District Inspector of the Ramtha office, ably assisted the excavation in many ways.

The core staff decided that the field operations in 1984 should be concentrated in four areas (Pl. LI:2): Tell Abila (north tell) to expand the excavation of the basilica and other buildings beginning to be uncovered in the 1982 excavation and to probe the city wall at the north of the tell; to excavate on Khirbet Umm el 'Amad (south tell) to determine the function and age of the archaeological deposits there; to continue excavating the tombs (along the wadis) both undisturbed and salvage projects to gain additional information on the cultural history of the site; to expand the survey work to test the models of intersite and intrasite settlement patterns and to study further the hydrological system of Abila; to continue special archaeological studies in geology, in archaeobotanical, zoöarchaeological and anthropological remains recovered during the excavation; and to collect systematically ethnoarchaeological and ethnohistorical data related to the population of Harta.

Area A:
The Excavation on Tell Abila
(Supervisor: Horace Hummel)

In Area A situated slightly east of the summit of Tell Abila (Fig. 1) the four squares, A 1-4, of 1982 were expanded and more deeply probed; six new adjoining squares, A 5-10, were begun still making an "L" shaped configuration.

The four following phases were found in evidence in Area A: *Post Umayyad; Umayyad; Byzantine; Roman;* and *Hellenistic,* with Iron II C/Persian sherds sometimes mixed in.

The excavation of additional squares of A 5-10 further clarified the evidence for the Umayyad Phase at the site. The Umayyad structure found built over the apses of the basilica, and the adjoining building just to the east of the basilica both showed the reuse of materials from the triapsidal Byzantine basilica. Voussoirs from the Byzantine basilica had been used to bisect the central apse of the basilica (Area A 9-10), a technique which, with the stockpilings of the architectural fragments in A 8, may have been the preparation for the construction of an Umayyad building (possibly a mosque) within the walls of the ruined basilica. Alternately, these fragments may have been for the building in A 3, east of the basilica, exampled by a fragment of a triglyph from a frieze of an earlier Hellenistic or Roman structure seen built into Wall A 3002. The ceramic profile in the majority of loci in A 5, 6, 8-10, and the upper loci of A 7 (Loci 7001-7003) point to Umayyad presence.

The Byzantine Phase in Area A continued to be seen in the large triapsidal basilica further uncovered in A 5-10: in A 8

a cross design was exposed on an excavated column (the pinholes were in the design of a cross); a fragment of a white marble chancel piece decorated with a cross and wreath design was discovered; and fragments of fifth and sixth century glass lamps were found within the Byzantine structure. Also within the Byzantine basilica was found a stone inscription containing what seems to be the word, Abila. The Byzantine basilica is to be dated to the fifth-sixth centuries A.D. Area A 7 demonstrated stratigraphic evidence of Byzantine activity, namely through Loci A 7004, 7006-7021. Included in this evidence was water conduit A 7010, oriented in a west-southwesterly direction, with Byzantine and earlier sherds found in its .25 cm. of silt sediment (Locus 7011).

The Area A 1984 excavation supports the hypothesis from 1982 that Walls A 1005/2015, 1006 and 1024/1032, and related walls were part of a Roman rebuilding on top of Hellenistic walls. The quality of workmanship and the related installations (i.e., the tabun) suggest that these walls may have belonged to a domestic structure. Further evidence of an impressive Greek/Roman building was discovered in 1984 at the western extension of the north side of the central apse of the Byzantine basilica in Area A. Here the upper and the two lower courses of apse Wall A 5002 showed a difference: all the headers of the upper course revealed very irregular surfaces, while the two lower courses in header-stretcher construction had smooth surfaces; further the joint connecting the apse to the western extension is out of line and irregular. All of this suggests that the basilica may have reused the walls of an earlier Roman temple. A Hellenistic/Roman temple at Abila is depicted in a tomb, the Temple Tomb (in the South Transect) painted in the Roman period--see the fluted columns and Corinthian capitals painted on the east wall; a temple with Ionic order capitals is painted on the north wall of the Temple Tomb. Broken Ionic order capitals have been found in the saddle area between Tell Abila and Umm el 'Amad.

Further it is to be noted that the wall complexes in A 1 and 2 exhibit pure Hellenistic domestic habitation (Fig. 5). A 2081 (the tabun) showed evidence that its earliest use was Hellenistic: in its lowest course was found a piece of Hellenistic "white ware," and in the ash inside the tabun a Hellenistic coin (No. 132, A 2037, dated 155-154 B.C.) came to light. The lowest level (437.81 metres) of the tabun corresponds to the lowest course of Walls 2018 and 2019, and Tabun 2081 rests against Wall 2018. Thus the earliest use of those walls may be posited to be Hellenistic. Other Hellenistic evidence is ceramic, including a base of an Eastern Terra sigillata plate (Locus A 1020, No. 1419, dated second-first century B.C.) and a rim, black exterior and red interior (Locus 1049, No. 720, second century B.C.).

The location of Hellenistic domestic walls on the summit of Tell Abila suggests that the population then may have used one of the aqueducts discovered in 1984 which brought water from 'Ain Qweilbeh to the site. The Umm el 'Amad Lower Aqueduct may have been built in the Hellenistic period, or even in the preceding Iron II period for this purpose (see the survey report below).

Area F - North City Wall
(Supervisor: Reuben G. Bullard)

The exposed perimeter wall on the north slope of Tell Abila, Area F, called for special attention (Plate LII: 1). Between the 1982 and 1984 seasons a local farmer bulldozed out the north slope of Tell Abila and exposed an extensive segment of a massive perimeter wall some 5 meters high. When appraised of what had happened, the government stopped the farmer's activity. In 1984 the Abila excavation put in a probe at this wall to test its composition and period of construction. The preliminary investigation showed the wall to be Roman-Byzantine, evidenced by the pottery (F 1002, sherd No. 924, rim, and F 2001, A, sherd No. 810, a base, both pieces early first century red ware), and the glass and coin data (coin No. 174, F 1, unstratified dated to the reign of Nabataean King Aretas IV, 9 B.C.-A.D. 40).

Area D:
The Khirbet Umm el 'Amad Excavation
(Supervisors: Reuben G. Bullard, Michael J. Fuller, and Jonathan F. Grothe)

The Area D excavation (Fig. 3) was undertaken to test the date and function of the materials to be found in this sector. The work was laid out in two regions. One part, Area D 1-4, 11, 12, was laid out near the crest and to the southeast of the theater cavea, at the region of the column ruins, which in 1888 Schumacher had called a "temple." The second probe, D 5-10, was positioned some 30 metres to the northwest of the columns region, in a depression containing some protruding column fragments.

In the first sector, D 1-3, a "gas pipe" trench 1 by 15 metres was excavated; a Robber's Trench (D 4) to the north of D 1-3 was probed to salvage some stratigraphic information. Also two 5 metre by 5 metre squares (D 11 and 12) were eventually opened to the east of D 2 to bring further clarification of the remains found in D 1-3 and 4.

The excavation of D 1-3 (called Trench I) and D 4 (Fig. 4) produced evidence of Umayyad habitation; Umayyad sherds were found in the loci next to the surface here (Strata I-III). But this Umayyad material was not related either to building reuse or architectural stockpiling. Also Umayyad sherds were found resting directly upon the paving stone floor in Square D 4, suggesting that the Byzantine basilica on the summit of Umm el 'Amad had not fallen into disuse until that date.

Evidence of periods earlier than Umayyad were found in D 1-4. In D 1-3 below the surface of the micritic limestone flagstone pavers (Stratum IV), the fill layer (Stratum V), the dark brown clay layer (Stratum VI), and the mortar layer (Stratum VII) proved to be Byzantine, according to the sherd finds. In the Robber's Pit (D 4) (Pl. LII: 2) Stratum VII, below the pavers, and the setting-bed plaster (Stratum V) and the underbedding (Stratum VI) proved to be the same. In D 11 and 12, Stratum III above the pavers (Stratum IV) and Stratum VII below the pavers and the underbedding (Strata V and VI) also proved to be Byzantine.

The exposure of a Corinthian capital with a Christian cross in relief on one side in D 3 (Locus 3007) showed that the structure in D 1-4, 11, 12, was not, in the time in question, a Roman "temple" but a Byzantine basilica; the fall of the column pieces there show that the building was oriented east-west. The excavation in D 1-3 and 11 and 12 uncovered the line of the north and south stylobates (also in the south of Square D 12 a threshold stone was found); paving stones were found both within and outside the stylobate line (see Fig. 2). Late Byzantine loci were found in D 3010, 2018, 2019, 3011, 4003, 4004, 4005, and D 12009; the Byzantine glass lamp handle fragment found in D 11 (cf. Fig. 7) suggests that the building was used during the fifth and sixth centuries.

It is possible that the Byzantine basilica was laid on the foundation of an earlier Roman structure. The shallowness of the probe in D 3 before encountering the mortar surface (D 3008) compared to the meter of layers of fill south of Stylobate D 2017, suggests that in Late Byzantine times (cf. the area of the previously standing structure which had D 2017 as the south wall and the mortar beneath D 3011 as its floor) was altered by dumping fill layers in D 2 to bring this section up to a level for the new structure's floor pavers (Stratum IV, D 1014, D 2012, and D 3009). The huwwar surface in D 4 found at a considerably lower level than the floor pavers there, also suggests a Late Roman use of the site, as does also the massive size and depth of the stylobate D 2017 in relation to the apparent size and height of the columns it was to support. Additional supporting evidence is the Roman coin (No. 175, dated A.D. 296) found in D 4, Stratum IX.

In 1982 it had been suggested that the region to the west of the fallen columns on Umm el 'Amad had been a Roman forum area. Two test trenches, Trench II (D 5-7) and Trench III (D 8-10) were opened west-northwest of the fallen columns (toward the olive grove) to ascertain the period and function of the strata and

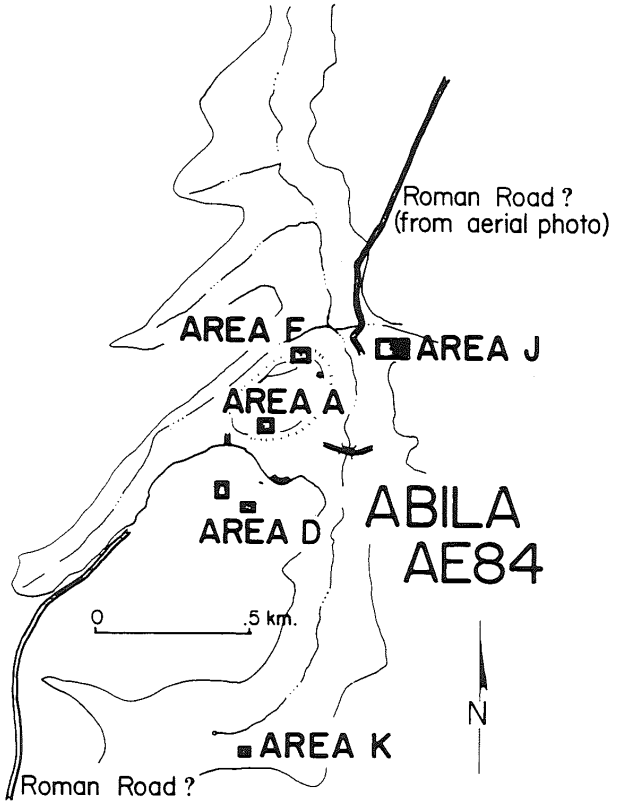

Fig. 1: Map of Areas Excavated in 1984.

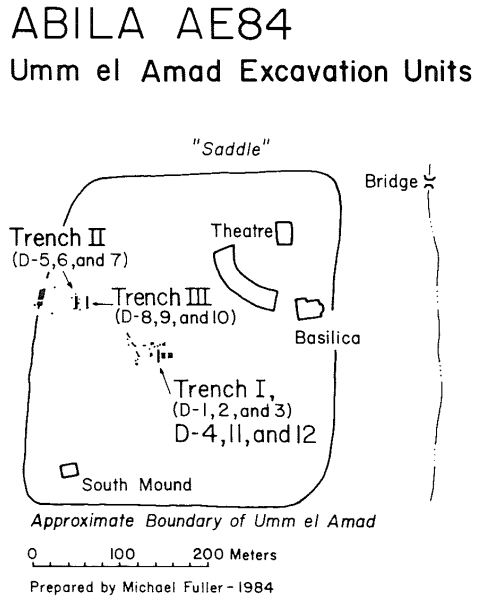

Fig. 2: Map of Abila Cemetery Areas.

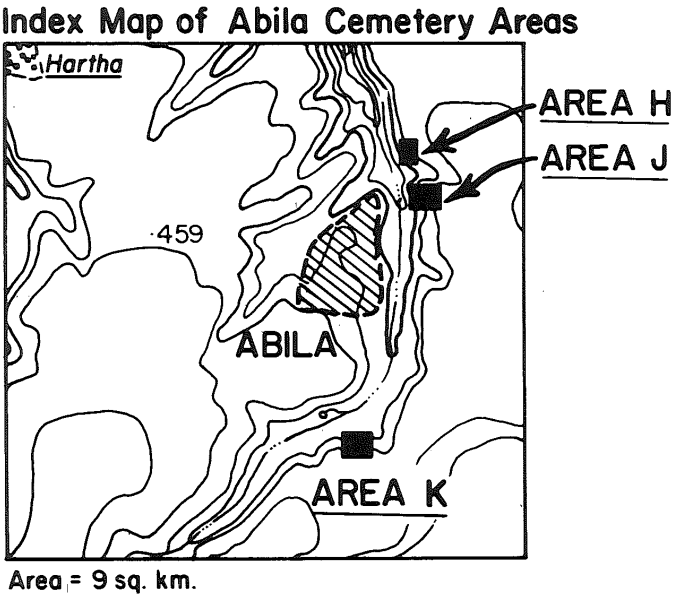

Fig. 3: Umm el 'Amad Excavation units.

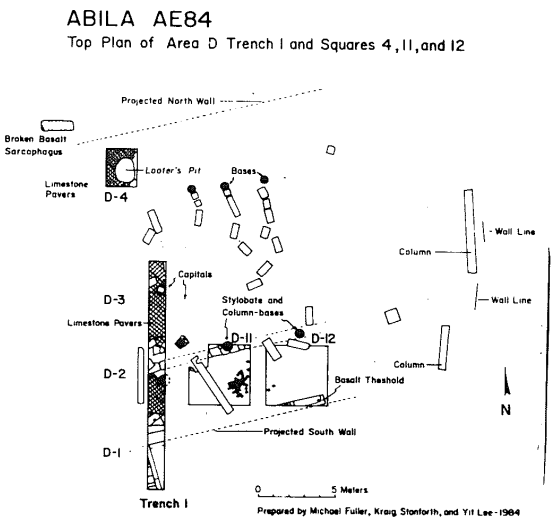

Fig. 4: Top plan of Area D, Trench 1 and Squares 4, 11 and 12.

structures in this region. Trench II ("Forum West"), measuring 1 by 15 meters, was laid out lengthwise on a north-south line; Trench III, also 1 by 15 meters, was subsequently laid out parallel to Trench II, but 17 meters east of it (see Fig. 3).

Architectural features encountered in Trench II (D 5-7) included remains of two stylobates: one, a set of three large (.95 cm. wide) footworn stone pavers (D 5003) rested on bedrock and ran east-west across the trench; the other stylobate, consisting of large (.93 cm. wide) pavers, (D 7005) was located 1 metre north of the south end of D 7, extending across the trench. The pottery deposits in D 5-7 were mainly Byzantine-Umayyad, and the stratigraphic evidence suggests the periodic dumping of material into this sector in Byzantine times. The origin of the materials is unclear, but there is a possibility that this area and that to the north of D 7 were occupied earlier than Byzantine times--compare Stratum Va, D 7019, containing Iron IIC/ Persian ceramic evidence.

The aim in excavating Trench III, D 8-10, located ca. 17 metres east of Trench II and slightly up the terrace toward the basilica ruins, was to discover if the parallel stylobates uncovered in D 5003 and D 7005 continued this far. The surface debris of D 8-10 showed a large concentration of boulder-size building stones, mostly worked basalt blocks. The stratigraphy of Trench III proved to be similar to that of Trench II, with evidence that the bedrock sloped from south to north and that there had been a filling and levelling of material there in preparation for building activities. The pottery corpus in D 8-10 showed Byzantine and Umayyad material in Strata I, IIa, IIb, and III, and Byzantine in Strata IV, V (e.g., the lamp fragment with cross motif in the east balk of D 9009), and VI (e.g., six Byzantine sherds were found in D 10013). Architectural features unearthed in Trench III included two large flagstones in D 8 (Locus 8005), one course on a line parallel with Stylobate D 5003; and a configuration of two courses of flat-surfaced flagstones in D 10, 1 meter by 1.13 metres, with its north line being in line with the north edge of stylobate D 7005. Important finds included a few pieces of marble (such as Euboean marble also found in Trench II). The large number of glass fragments, namely of domestic glassware, together with the lamp with the cross design, suggests that a middle class group resided here in Byzanine times.

There are only enough column fragments uncovered in D 5-7 and 8-10 to make two full columns. Although the structural and artifactual evidence in Trench III points to the region as being a residential area, the large open area of Trench II and the paucity of glass and ceramic evidence there allow for a range of interpretations for the function of the region: a street or market (like a meat market); a palaestra; or a garden of a Byzantine villa, with two columns to mark its entrance.

Areas K and J:
Tomb Excavation
(Supervisor: John J. Davis)

The 1984 excavated tombs, both salvage and undisturbed tombs (Fig. 2), again presented evidence of the Early and Late Roman and Byzantine periods as did the Area H and J tombs excavated in 1982. The 1984 tomb excavations were first made in Area K, located to the southeast of 'Ain Qweilbeh, and then in Area J, on the east bank of Wadi Qweilbeh, just east of Tell Abila.

The Early Roman Period (63 B.C.-A.D. 135), Tombs K 1 and J 21

Tomb K 1 (Fig. 6) was a standard type Roman tomb featuring a central chamber, fifteen loculi, and a floor grave inside along with two loculi in the west wall outside the entrance. Shallow trough graves had been cut in the bottoms of Loculi 6, 7, and 14. Stone pillows had been cut in the rear of Loculi 2, 4, 9, and 10; geotectural features indicated that simple shroud burials were intended with the head positioned toward the rear of these loculi. The stratigraphic and ceramic evidence suggested that a small portion of the tomb was prepared in the Early Roman period with its major

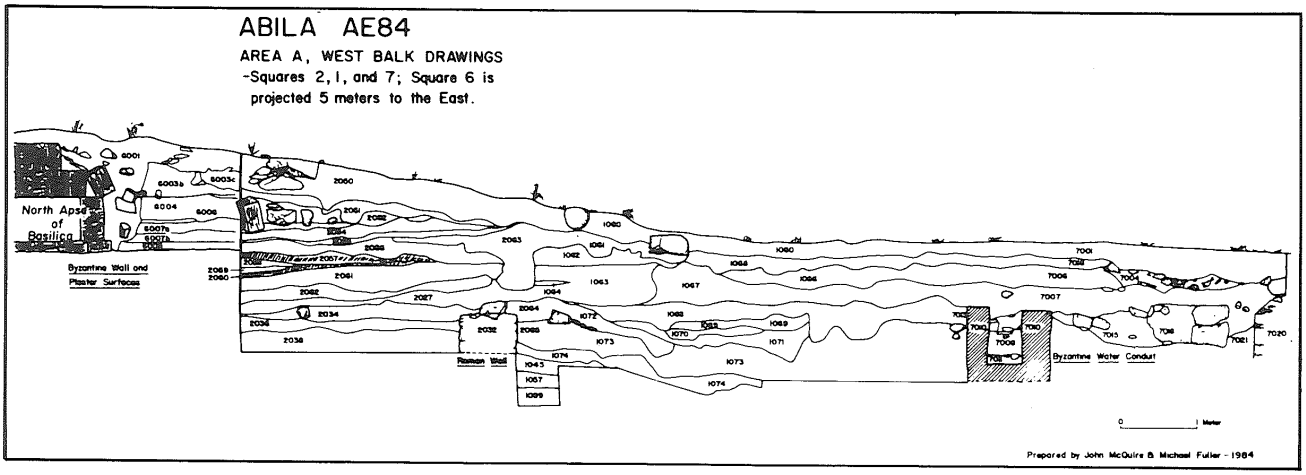

Fig. 5: Area A, West Balk Drawing.

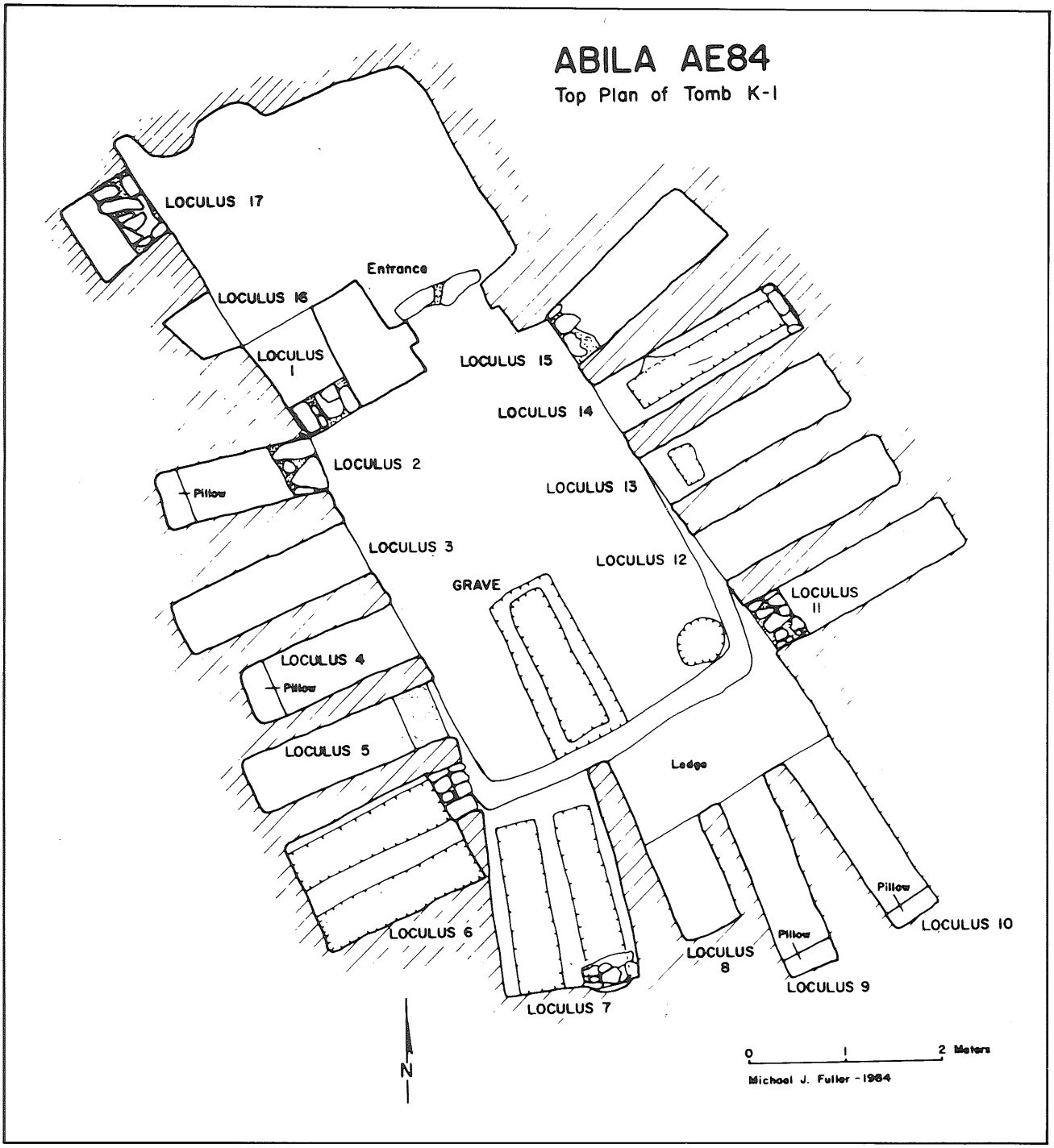

Fig. 6: Top plan of Tomb K-1.

expansion and use occuring in the Late Roman period (A.D. 135-324), with concluding modification dating to the Byzantine period (A.D. 324-640) a period when the floor grave was cut into the rear of the tomb and two small loculi were cut outside the entrance in the west wall. Most of the thirteen complete lamps in the tomb were of Late Roman date and likely of local manufacture. One Late Roman lamp of white ware (No. 23) was an imported piece. The LR lamps were mainly of the rounded type, with decorated discs. Other standard funeral artifacts found included beads, ear-rings, bracelets, coins, bowls, cooking pots and juglets. Five intact glass unguentaria were found in Loculus 11, standard types paralleled at Pella, Jericho, etc.

The nine limestone busts (cf. Pl. LII. 3) found in the main chamber of K 1, located in some instances at the end of individual loculi which in the main had been sealed with stone slabs or with stone and mortar, suggest the tomb was used for cult feasts or annual family reunions; but a strong Roman burial cult is not indicated since pig bones were missing.

The two trough graves in Loculus 7 (Loculus 6 also has the same) point to the burial of important persons (cf. Khirbet Shema and Bethany). The shortened Loculus 8 (one-half the length of Loculus 9) with its two disarticulated adult burials, suggests secondary burial use. Short Loculus 1 had nine secondary burials. This practice of ossilegium has a history traceable to Chalcolithic times. Byzantine reburials are seen in the short Loculi 16 and 17 outside the tomb entrance (Fig. 6).

Tomb J 21 (J cemetery west), had three loculi, two cut into the southeast wall and one into the northeast; a grave was cut into the north sector floor. The tomb originated in the early second century A.D.; several lamps there dated to the third century A.D. Among the eleven persons buried in J 21 was a five-year-old child in Loculus 3 which also contained remains of an adult and a small bracelet, a patula, a necklace of fine beads, and a amethyst gemstone, artifacts pointing to a female burial. Food offering remains of chicken and sheep and goat bones were found in Loculus 2.

Cemetery data thus far accumulated at Abila points to an Early Roman or Herodian population of modest size varying in degrees of economic sophistication.

The Late Roman Period (A.D. 135-324), Tombs J 6, J 13, Sarcophagus K 2

The Abila cemetery remains thus far studied show that burial activity in the Late Roman period was intense and widespread.

Tomb J 6 (J cemetery north) had been recently robbed and badly disturbed. This tomb consisted of a central square chamber with six loculi, two in the west wall and four in the south. A recessed opening was cut into the east wall with a bench provided for a fully extended burial. Ceramic and stratigraphic data point to a Late Roman origin with limited use and later Byzantine limited reuse of the tomb. A small globular juglet with a lip-to-shoulder strap handle and a small Herodian period glass vase were found and also parts of glass bowls, metal hinge spikes, ceramic juglets and bowls. A Byzantine lamp base (Locus J 6005) points to Byzantine reuse of the tomb, and the fragment of a metal brace with nails to the use of a wooden coffin.

Small Tomb J 13 (with its fine masonry) and a long narrow entrance leading into a small chamber with an arcosolium on the east wall and another on the north wall. It was used first in Late Roman times, then in the Early (A.D. 324-491) and Late Byzantine (A.D. 491-640) periods, and in the Umayyad period (A.D. 630-750). Among the Late Roman and Byzantine artifacts are lamps, bone pieces, fragments of glass vessels and bowls, beads, bracelets, a gold earring, and small bronze funerary bells (cf. such bells at Jerusalem, Petra, etc.). In the standard Jordan and Palestine lamp repertoire represented here see lamps No. 99 and No. 114 in Figs. 10 and 11.

The excavation of the recently exposed Roman sarcophagus K 2, found several meters south of Tomb K 1, revealed a structure cut from a solid block of basalt; it represented fine Roman work-

manship, exhibited by the low relief bucrania and cord or garland design on its front (parallels at Beth She'arim). The lid, of traditional gable type, was fixed to the body of the sarcophagus by four iron spikes found in melted lead.

The Byzantine Period (A.D. 324-640), Tombs J 7, J 8, J 11, J 12; Graves J 9, J 10, J 14, J 15, J 18, J 22, J 23, J 24, J 25.

Tomb J 7, originally used at the end of the fifth century A.D., had a small, single rounded chamber; an iron coffin ring (six were found in J 5, 1982) found points to a wooden coffin burial. Byzantine Tomb J 8 was a single, narrow loculus, a Roman type at Heshbon. Small chamber Tomb J contained an articulated male propped up in the cramped space, evidence pointing to a poorer class burial. Artifactual evidence in small chamber Tomb J 11 was Byzantine.

Representative of the nine undisturbed fully articulated Byzantine grave burials, graves exhibiting ledges on which were placed sealing stones, is Grave J 9 which contained two females (all the other eight graves contained a single burial), one laid on top of the other. The artifactual assemblage here included five juglets, of the style of slightly flaired rim and handle extending from lip to shoulder; this is characteristic in northern Palestine, with earliest Hellenistic types, and then copies occurring in the third century Roman period and in Byzantine times. The homogeneous ceramic materials in Grave J 9's entrance fill points to the Byzantine period for the burials, showing that the juglets were produced in the Byzantine period, or indicating that they were heirlooms from the earlier Hellenistic or Late Roman periods.

Also distinctive among the Byzantine graves was well-cut Grave J 15 which contained a fully articulated female (10 to 15 years old) with a bronze ring on her finger, a small bell at her waist, and a number of beads nearby. Interestingly, Grave J 23 was hastily cut over earlier Grave J 25 which contained fetal bones still in a 17- to 25-year-old female's pelvic region; also finds there included a complete typical long-spouted Hellenistic-type lamp (see Fig. 11: 1, No. 109), possibly an heirloom — a Byzantine or Late Roman copy of an Hellenistic original, or an actual Hellenistic piece. Byzantine Grave J 24 also contained a Hellenistic-type lamp, dark, long-spouted (J 24005, No. 110), possibly an heirloom.

Pathological information from the human skeletal remains at Abila show common problems (true also of many Palestinian sites) of osteoarthritic lipping, dental enamel wear, cavities and attrition, peridontal disease, and fused vertebrae. The mortality rates at Roman and Byzantine Abila were high: 36 percent of the 134 individuals studied died before their 16th birthday.

The burial settings observed, all the way from elaborate and painted tombs to the loculi tombs and simple graves, point to a wide socio-economic spread of the Roman-Byzantine population. The masonry skills reflected in the tombs and graves represent a wide variety of workers, from skilled artists and masons (possibly from traveling guilds) to average or poor work of local masons.

Survey - Architectural Investigations

(Supervisor: Michael J. Fuller)

Hydrological Investigations:

In addition to the Khureibah Aqueduct (possibly of Roman date) south of 'Ain Qweilbeh, investigated in 1982, the 1984 survey team discovered two other underground aqueducts which run from 'Ain Qweilbeh north under the eastern edge of Umm el 'Amad toward the saddle area between the two tells (Fig. 7). The "Upper Aqueduct" runs one to three meters higher in elevation than the "Lower Aqueduct."

The Upper Aqueduct had been constructed in two steps: (1) construction-maintenance shafts *(putei)* were cut down into the bedrock; (2) then the *putei* were connected by tunnels dug between *putei,* thus creating "joins" in the aqueduct.

Lamp niches were cut into the walls to hold clay lamps for light during construction. The survey investigation consisted of: mapping of an open section of the aqueduct; digging out a soil "choke" (caused by a poorly sealed puteus); and then continuing the exploration and mapping. The total of 1,062 metres of the Upper Aqueduct was mapped, a process accomplished through 122 survey stations in the aqueduct. At each station the following measurements were made: passage bearing; distance to the next survey station; ceiling height; and passage width. Cross-sections were drawn for 24 locations in the Upper Aqueduct. For each cross-section drawn there was a "test probe" excavated in the tunnel floor to determine the depth of the mud fill, fill cemented with calcium carbonate (an average .30 to .40 cm. of mud) (Fig. 8). When the hardened mud was dug out, sherds of glass and pottery (of the ribbed variety, Late Roman and Byzantine) were discovered. Also Ayyubid/Mamluk sherds were found resting on the surface of the mud fill in both the Upper and Lower Aqueducts. An extensive Greek inscription (now being studied) was found painted on the Upper Aqueduct wall, as well as an assortment of incised crosses and Christian monograms, painted Greek letter graffiti, and four engineering graffiti scratched into the walls.

The mean width and height measurements of the Upper Aqueduct (0.78 cm. wide and 1.76 metres high) compare closely with the width and height of the tunnel portion of the first and second century A.D. Caesarea Maritima High Aqueduct (0.60 cm. to 0.65 cm. wide and 0.60 cm. to 1.50 metres high) and the Roman-Byzantine Aqueduct under the Forum at Samaria (0.50 to 0.65 cm. wide and 1.35 to 1.78 meters high). On these comparisons and the ceramic evidence, the Upper Aqueduct is dated to Roman-Byzantine times.

The Lower Umm el 'Amad Aqueduct was discovered during the first day of detailed mapping of the Upper Aqueduct. Starting from an entrance into the lower tunnel some distance north of 'Ain Qweilbeh, a distance of 777.4 metres of this tunnel was mapped; the distance from the last excavated soil choke south to the spring is over 1,200 metres. Actually both aqueducts should be about 1,400 meters long, the distance from the spring to the saddle area between Umm el 'Amad and Tell Abila. Pottery sherds from the Lower Aqueduct date from the Roman, Byzantine, and Ayyubid/Mamluk periods. The Ayyubid/Mamluk sherds found on the surface of the mud fill on the floor of the aqueduct indicates the tunnel was used in the Ayyubid/Mamluk period as a temporary shelter. The Lower Aqueduct truncated several small tombs which are pre-Roman; the Lower Aqueduct was probably constructed during the Hellenistic or Early Roman urban expansion of Abila, or even built as early as the Iron Age or Persian periods.

Experiment comparing Sherd Densities from Survey Cells:

In 1984 a survey experiment was conducted in the area immediately north of Tell Abila to provide information for correlating the fine grain 20 x 20 meter survey technique of 1980 with the coarse grain 100 x 100 survey technique of 1982. By marking off a special cell measuring 50 x 100 meters and five small cells measuring 20 x 20 meters and altering the total time of surface sherd collection, 30 minutes in the 50 x 100 meter cell and 60 minutes in the 20 x 20 meter squares, it was determined that one can correlate the sherd densities, for instance, of a 100 x 100 meter cell, and a group of 20 x 20 meter cells, when the different amounts of time spent in collection are recorded.

Regional Site Testing:

The excavation of 12 test units in the North Regional Transect in cells NT 1, NT 2, NT 3, NT 4, NT 5, and NT 11, provided basic confirmation of the age (Late Roman and Byzantine) and functional interpretations of the area (i.e., Late Roman-Byzantine domestic and farmstead areas) developed during the 1982 regional survey.

Ethnoarchaeological Studies

(Supervisor: Neathery Batsell Fuller)

The objectives of the ethnoarchaeological studies were four: (1) start a folk history of the Village of Harta; (2) begin a census of the village; (3) gather economic and food production data; and (4) locate and verify various archaeological sites which the villagers and Bedouin had discovered.

Ḥarta is a small to medium size modern Arab village established in 1781; its present population is about 5,000. It is located about 16 kilometers from Irbid, the second largest city in Jordan. Ḥarta is only about 1 kilometer from Abila, both of which, then, are near the major lines of communication between Philadelphia (Amman), Gerasa (Jerash), and Damascus. The 'Obediat tribe is the major family in Ḥarta, with other families, the Fahmowi, 'Omary, Safady, Sukni, (Muslim tribes), and the Hadat (a small Christian family) making up the difference.

In agriculture some of the chief crops of the Ḥarta-Abila region include melons, cucurbits, grapes, wheat, barley, tobacco, and fruit crops from pomegranate, lemon, apple, fig, plum, and olive trees. Although domestic animals, such as cows are kept, there are fewer and fewer of such animals. Of course, one sees herds of sheep and goats, tended by Bedouin who dwell in turn in various parts of the area.

The main source of water for Harta is 'Ain Qweilbeh. Tabuns (ovens) for baking flat bread, important in ancient days at Abila, is becoming less important in modern Ḥarta. More and more people are buying their bread. Even old olive presses are in short supply. The newest olive press, mechanically run, is located near Ḥarta's post office.

Several regional archaeological sites (Fig. 9) were visited and surveyed in 1984. Liksara, a site about 50 meters in diameter located east of Ḥarta on the edge of a wadi scarp, seems to have been a small farmstead, dating mainly to Ayyubid/Mamluk times (15 sherds), and possibly also to the Umayyad/Byzantine (3 sherds), and Byzantine (5 sherds) periods. Bir Ruways, to the northeast of Harta, covering about 300 x 100 meters, produced 152 sherds and some tesserae, in distribution showing Islamic predominance on the west side of the site and Byzantine on the east; nearby (200 metres to the southeast) there was a group of tombs (both loculus and arcosolium types). Northwest of Ruways was Lijwar, a site of medium size, 178 sherds of the Byzantine, Byzantine/Umayyad, and Ayyubid/Mamluk periods were collected; an old unused olive press was found in a nearby cave together with 38 Ayyubid/Mamluk sherds.

The "fort" Ḥabis (a word meaning "prison") on the side of the steep slope of the Wadi Yarmuk, consisted of a series of rooms or cells (with a Latin cross cut in the wall above the cells) with one large cell resembling a chapel. Eight Byzantine sherds were collected near the cells. The site of Ras Yusuf was found on the plateau overlooking Ḥabis, with a majority of the 82 sherds found there being Byzantine (a few were Roman and Umayyad); tesserae and plaster fragments were also found. The site of Ḥabis may well have been a place where Christian ascetics lived and worshipped, and the site is possibly to be identified with the Crusader fortress, Ḥabis Jaddak (A.D. 1097-1187).

Glass Studies

(Supervisor: Neathery Batsell Fuller)

The pieces of glass surveyed represent a cross-section of domestic glass used in Syro-Palestinian sites from 200 B.C. to the sixth century A.D. This collection is markedly devoid of any of the fine "art" glass objects usually associated with glass of these periods. Such fine art objects are probably in the hands of private citizens or museums (due to the clandestine digging at the site). The results of the Abila glass analysis does not appear to differ in any major respect from the results of such glass studies of Jerash and Pella materials.

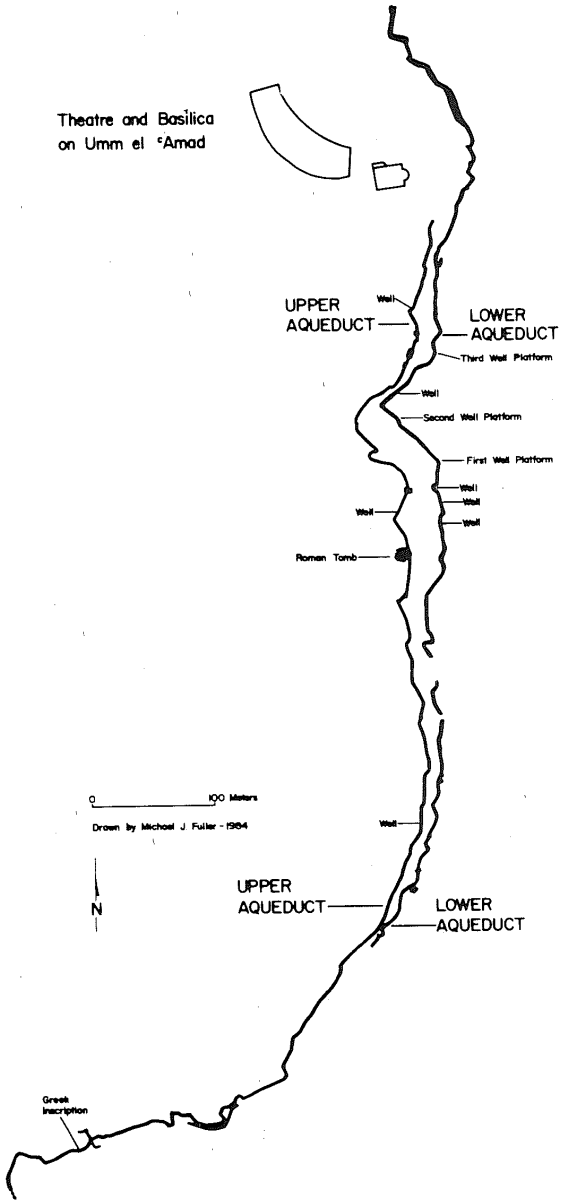

Fig. 7: Map of Umm el 'Amad Upper and Lower Aqueducts.

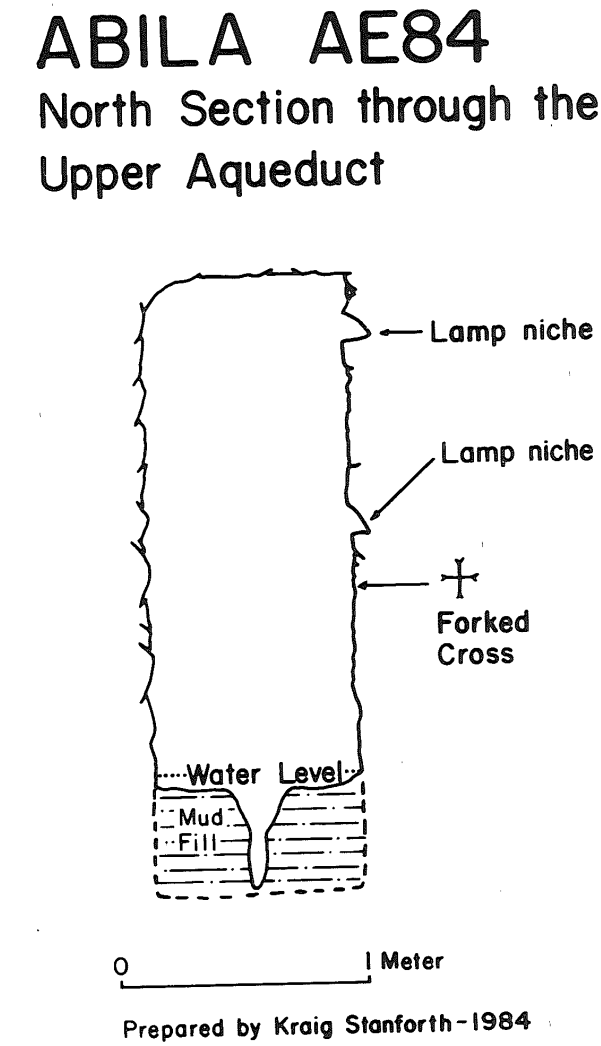

Fig. 8: North Section through the Upper Aqueduct.

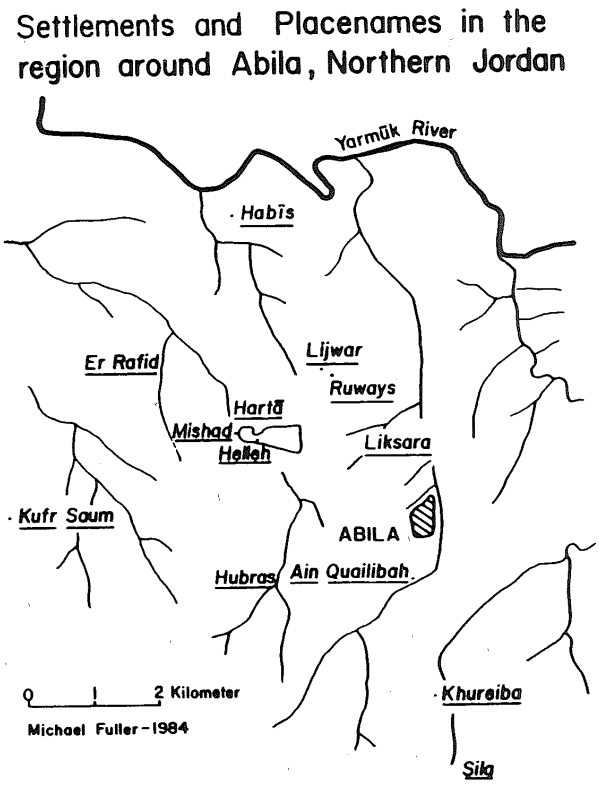

Fig. 9: Map of Settlements in the Abila Region.

The 1984 Season in Perspective[1]

The broad ranging research[2] engaged in by the Abila staff[3] brought a wider comprehension of the history and culture of Abila of the Decapolis. Evidence from this integrated research coming from excavation on the tells and the tombs, survey and hydrological studies, and geological and ethno-archaeological research points to an Early Roman Abila of moderate size with considerable expansion in the Late Roman and Byzantine periods. A wide socio-economic base is indicated at the city during these periods. Evidence for the later Umayyad and earlier Hellenistic city is just emerging. Further understanding of these and earlier periods, as well as a better understanding of Roman-Byzantine Abila, awaits further excavation.

Selected Finds from the 1984 Excavation at Abila of the Decapolis (Listed by object number and area identification number.)

Figure 10 (Ceramic artifacts)

Fig. 10:1, No. 9 (A 7). Two-piece mold-made lamp, Byzantine with inscription; spout missing. Rough texture, fired to pink colour (5 YR 7/3); some grits. Double raised rim around a central orifice (dia. 2.4 cm.), with inscription around orifice, reading, r. to l. APOC MY; l. to r. - IXY E. Bottom, raised ring. Max. ht. 3.3 cm.; max. length preserved 8.5 cm.; max. width 6.5 cm. Probably fifth-sixth cent. A.D. See Hayes, *Anc. Lamps,* Pl. 57, No. 497; Bagatti (1971), p. 361, No. 224.

Fig. 10:2, No. 23 (K 1, 1042). Two-piece

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[1] The 1984 Abila excavation had affiliation with the American School of Oriental Research and with the American Center of Oriental Research in Amman. The expedition, as always, had splendid support, cooperation, and assistance from the Department of Antiquities of Jordan, Dr. Adnan Hadidi, Director-General, and Mr. Sultan Shureidah and Mr. Ibrahim Zu'bi, Department Representatives. To all these who contributed to the success of the third season of work, the expedition gives sincere thanks.

[2] The stratigraphy discovered thus far at Abila of the Decapolis can be divided into five phases (based mainly on the ceramic, glass, and stratified numismatic evidence): (1) Modern and Post-Umayyad (with modern ceramics and coins found, and ceramics of the Ayyubid/Mamluk period); (2) Umayyad (Umayyad sherds); (3) Byzantine (Early and Late Byzantine artifacts, sherds, and coins); (4) Roman (Early and Late Roman artifacts, sherds, coins and glass); and (5) Hellenistic (Late Hellenistic lamps, sherds, coins and glass). The ceramic, numismatic, and glass evidence mentioned above was supplemented by the evidence of architectural styles (walls, structures, distinctive architectural fragments, such as the triglyph from a frieze of an earlier Roman or Hellenistic structure found imbedded in the Area A 3002 wall), and the tomb wall paintings (e.g., those on the Umm el 'Amad Temple Tomb painted during the Roman period); and the structure of the aqueducts — structures coming from the Roman-Byzantine periods, or even from the Hellenistic or Iron periods (as is possible for the Lower Umm el 'Amad Aqueduct).

[3] The American staff of third-three persons served in the following capacities; W. Harold Mare, Director: Michael J. Fuller, Chief Archaeologist and Chief Architect-Surveyor; John J. Davis, tomb Supervisor; Reuben G. Bullard, Geoarchaeologist; Horace D. Hummel, Area A Supervisor; Jonathan F. Grothe, Area D Supervisor; Kathleen A. McGregor, Registrar and Ceramicist; and Thomas J. Kick, Osteologist. Square Supervisors were: Gunnar Brockett, Howard Bullard, Ernie Campbell, Neathery B. Fuller, J. Marshall Magner, Robyn Magner, Lee Maxwell, Mark Meehl, Randy McGuire, Shannon McPherson, Bruce Peffer, Robert Smith, Kevin Vogts, Catherine Williams, David Wilson, John Wineland, and Wilkie Winter; Photographers, Eddy Jones and Douglas Potter; Educational Director, Wilkie Winter. Other Specialists were: Neathery B. Fuller, Ethnoarchaeologist; J. Marshall Magner,. Entomologist; Yit Lee, John McGuire, Steve Ray, Kraig Stanforth, Architect-Surveyors; Kathleen McGregor, John Shoup, John McGuire, Artists; Neathery B. Fuller and Ernestine T. Magner, Flotation Supervisors. Ernestine T. Magner served as Botanist; John Shoup as Camp Director; Robyn Magner as Construction and Electronic Specialist; and David McCreery, Director of the American Center of Oriental Research, as Consultant. Special thanks go to Eleanor Soltau, M.D., and Aileen Coleman, R.N., for their willingness to store all the Abila equipment in the off-season at the Annoor Hospital, Mafraq, Jordan, and to Clem E. Rowe, St. Louis, and David F. Graf, University of Michigan, for their study in the United States of the coins and the inscriptions, respectively.

The Abila Excavation expresses special thanks to all of the above for making the third season of work at Abila of the Decapolis a success.

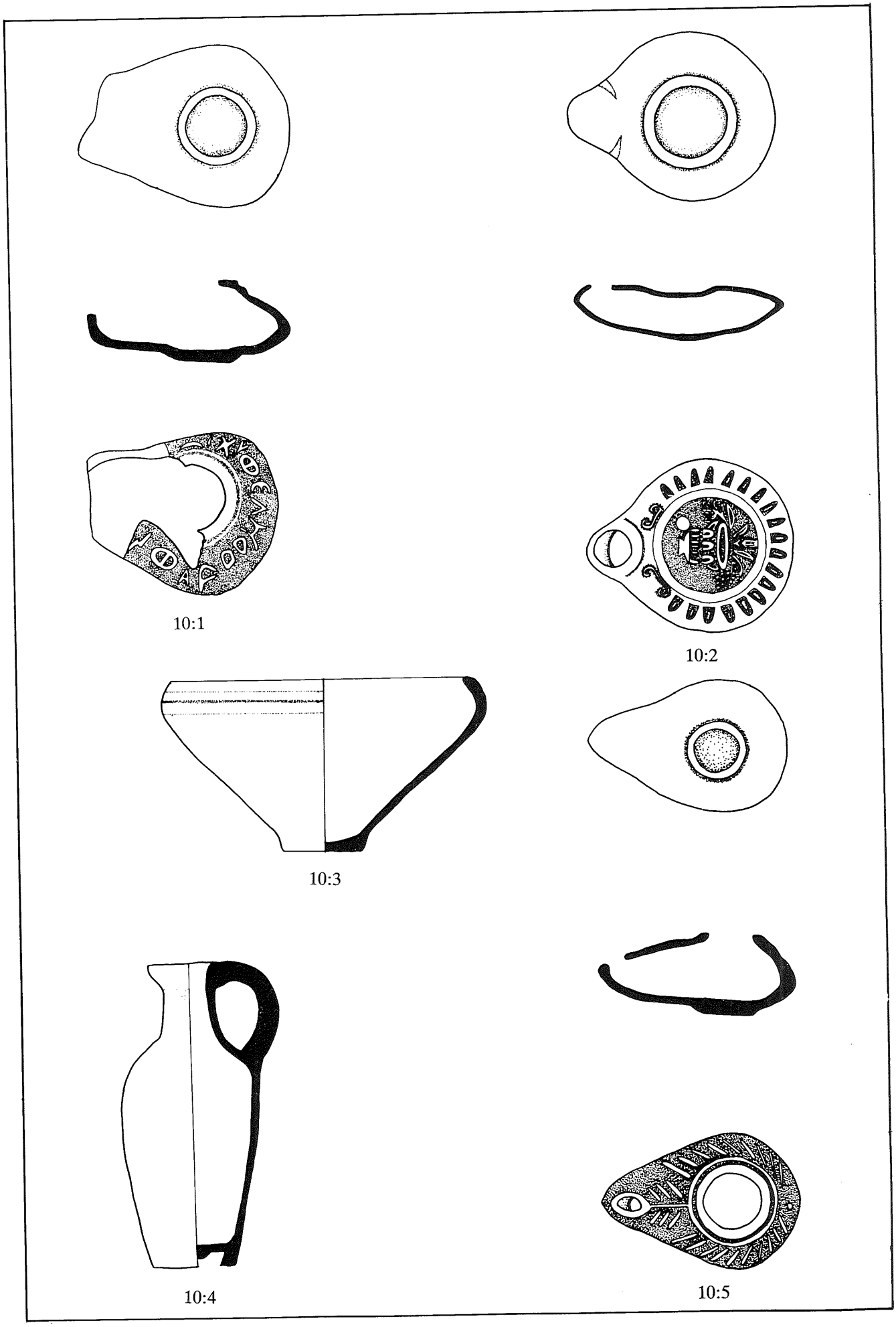

Fig. 10: Selected finds: Ceramic Artifacts.

mold-made lamp. Roman, with circular body and flower motif. Finely mixed clay, sparse grits, fired to an off-white (2.5 Y 8/2). Two concentric rings with attached rays around the central disc; two scroll designs one on either side toward the wick orifice; a shallow disc inside the circles with the design of a two-handled flower pot decorated with loops and rays, and with leaves and flower rising from the pot; small central orifice at lower left of pot. Carbon black on wick orifice. Max. ht. 1.9 cm.; max. length 8.5 cm.; max width 7.0 cm. Cf. McNicoll, et. al., *Pella,* (1982), pp. 146, 7, No. 13.

Fig. 10:3, No. 43 (K 1, 1002). Small wheel-made bowl, almost intact. Roman. Uneven manufacture, pinkish tan texture (7.5 YR 8/4); some evidence of reddish gray slip (5 YR 5/8) both inside and out; some evidence of small drips of reddish brown slip (2.5 YR 5/6) on exterior. Slightly turned in rim, sloping sides to a small string cut base; smooth on exterior, ribbed on interior. Max. ht. 7.5 cm.; dia. at rim 13.6 cm., at base 4.7 cm.

Fig. 10:4, No. 47 (J 9, 9004). Small, moderately slender jug, wheel made; intact. Roman. Medium grained texture, pinkish white (7.5 YR 8/2). Cylindrical body with inverted base and bottom; sloping shoulder merging with a gentle-flairing neck with thickened rim, slightly inverted; round and slightly flattened handle from rim to shoulder. Max. ht. 12.6 cm.; max. dia. at rim 3.2 cm., at body's widest point 5.7 cm. Roman, possibly Early Roman. Cf. Hayes, *Roman Pottery* (1976) Pl. 33, No. 330; see also Pl. 5, No. 47; Pl. 19, No. 156; Pl. 20, No. 157; Pl. 37, No. 341.

Fig. 10:5, No. 99 (J 13, 13005). Two-piece mold-made lamp. Byzantine. Good quality; fairly well mixed clay; even firing to pink color (7.5 YR 8/4). Raised circular ridge around central orifice (dia. 2.2 cm.) with outer circle surrounded by oblique rays and dot to back; straight line from outer circle to elongated wick orifice (with carbon black), with three oblique rays on each side of line; underside raised ring foot (dia. 2.9 cm.). Max. ht. 3.0 cm.; max. length 8.0 cm.; max. width 5.5 cm. Probably sixth cent. A.D. Cf. Smith, *Pella* (1973), Pls. 66, 84, Nos. 311, 384, p. 219.

Figure 11 (Ceramic and glass artifacts)

Fig. 11:1, No. 109 (J 25, 25004). Small mold-made lamp. Late Hellenistic. Uneven texture fired to white (10 YR 8/2); evidence on upper surface of red body wash (10 R 5/6). Intact except for small hole toward the rear; small (?) handle broken; rim around central orifice (dia. 1.4 cm.) with rays on two sides; 2.5 cm. long neck extending to wick orifice (some carbon black); double scroll with three projecting arms extending toward wick orifice; flat bottom with slightly raised circular base. Max. ht. 2.3 cm.; max. length 8.0 cm.; max. width 4.5 cm. Probably second-first cent. B.C. Cf. Hayes, *Anc. Lamps* (1980), Pl. 8, No. 61; McNicoll, et. al., *Pella* (1982), p. 139, No. 14, 15.

Fig. 11:2, No. 114 (J 13, 13005). Two-piece mold-made lamp. Byzantine with Christian motif. Fine mixed clay, fired to reddish yellow (7.5 YR 7/6); few grits. Three concentric rings with attached rays on three sides with the four rays at the back sloping up to a stub handle; central orifice dia. 2.6 cm.; Christian cross (horizontal equal arms with dot at each end; perpendicular double arms with flaired ends; one dot in the middle of each quadrant between arms); cross extends toward the wick orifice (slight carbon black); diagonal rays on either side of cross. Slightly rounded bottom and slight circular base. Max. ht. 2.8 cm.; max. length 8.5 cm.; max. width 6.2 cm. Fourth-sixth cent. A.D. Cf. Hayes, *Anc. Lamps* (1980), pl. 38, Nos. 303-306.

Fig. 11:3, No. 126 (J 21, 21008) small mold-made lamp. Late Hellenistic. Finely mixed clay, fired to gray (5 YR 6/1), with evidence of dark gray slip (2.5 YR N4/); some grits. Small round body (broken from back of central orifice) with sloping elongated, narrow neck and slightly flaired and elongated large wick orifice (dia. 1.2 cm.

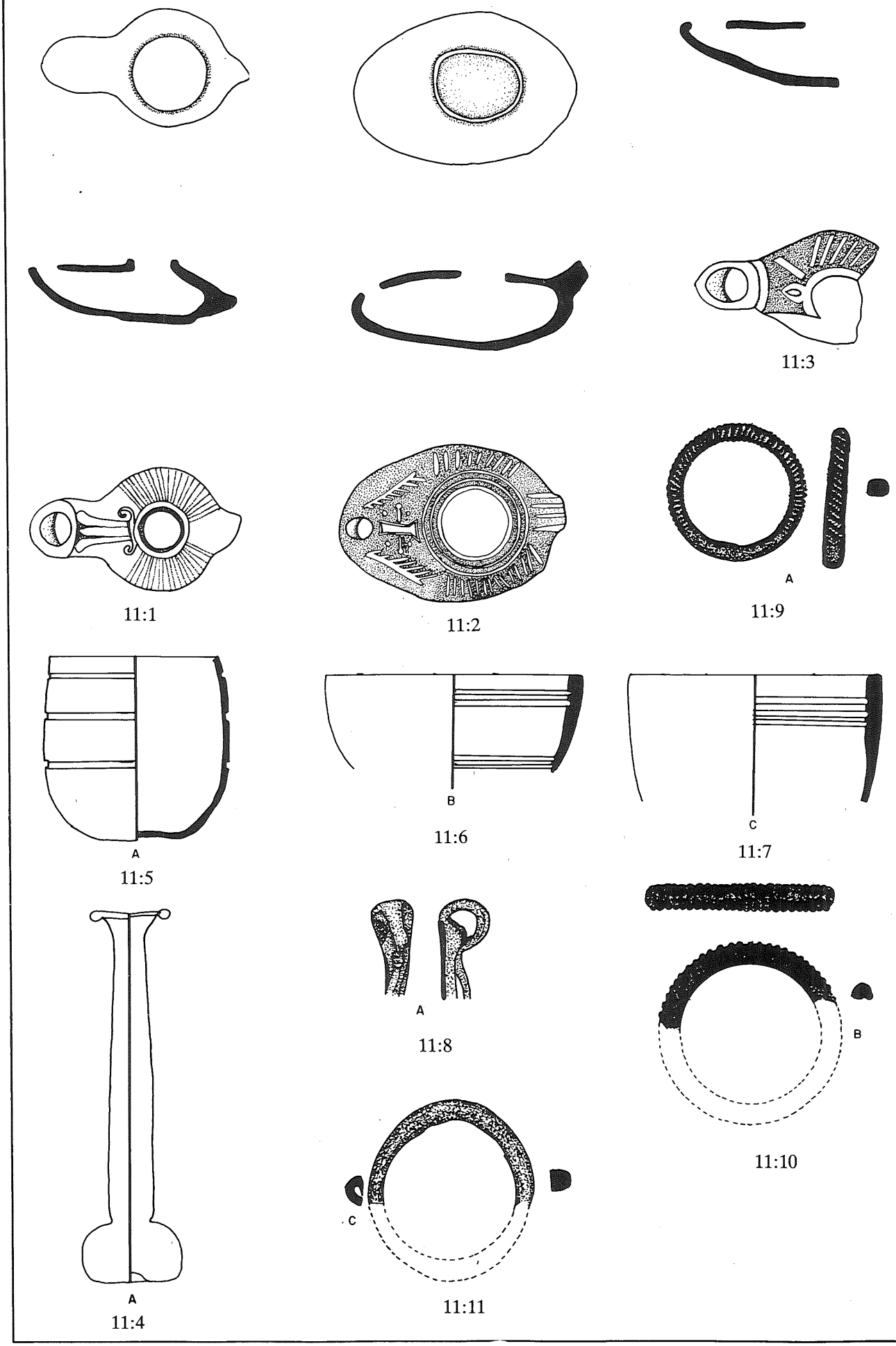

Fig. 11: Selected finds: Ceramic and Glass Artifacts.

by 1.4 cm.; carbon black present; horizontal band just before orifice and one oblique band and on either side of wick orifice); circular band around central orifice) dia. 1.4 cm.) and attached rays on the one side preserved; lozenge extending from central orifice toward the wick orifice. Max. ht. 2.3 cm.; max. length projected 8.0 cm.; max. width 4.3 cm. Second-first cent. B.C. Cf. Hayes, *Anc. Lamps* (1980), Pl. 8, Nos. 66, 68, McNicoll, et. al., *Pella* (1982), pp. 138, 139, Nos. 14, 15; p. 141, No. 8.

Fig. 11:4, No. 36 (K 1, 1037). Free blown, tall-necked unquentarium with an infolded and flattened rim. Roman. Light green glass. Height 14.4 cm.; max. width 3.4 cm.; 23.3 gr.; volume 15 ml. Second-third cent. A.D. Cf. Hayes, *Roman Glass* (1975), Pl. 17, No. 239; McNicoll, et. al., *Pella* (1982), p. 147, No. 20.

Fig. 11:5, J 6, 6005. Lathe cut cup. Roman. Polished rim, light green glass. Rim dia. 6.7 cm.; depth 6.9 cm. This cup has parallels in Goldstein, *Pre-Roman and Roman Glass* (1979), p. 138.

Fig. 11:6, A 1, 1050, Lathe cut bowl. Roman. Polished rim; light green glass; rim dia. 10.1 cm. This is a traditional lathe cut form that harks back to the Hellenistic period. Cf. parallels in von Saldern (1980), Pl. 20, Nos. 8 and 56.

Fig. 11:7, D 10, 10002. Lathe cut bowl. Roman. Polished rim; light green glass; rim dia. 9.9 cm. Cf. parallels in von Saldern (1980), Pl. 20, No. 56.

The above J 6, A 1, and D 10 cast, lathe cut, and polished glass vessels are a part of a common type on the Syrian-Palestinian coast, Cyprus, Asia Minor, Greece, Italy, Egypt, and Southeastern Europe. See von Saldern, "Two Achaemenid Glass Bowls and a Hoard of Hellenisttic Glass," *Journal of Glass Studies,* 1975.

Fig. 11:8, D 11, 11007. Late Byzantine lamp handle. Light green glass. Cf. von Saldern (1980), Pl. 23, Nos. 235, 237-250, 266.

Fig. 11:9, No. 148, J 21, 21010. A complete ribbed glass bracelet. Roman, or possibly Hellenistic. Reddish-brown glass. Inside dia. 40.6 cm.; outside dia. 45.0 cm.; thickness 6.5 cm.; weight 13 gr. Cf. von Saldern (1980), Pl. 10, No. 233.

Fig. 11:10, F 1, 1012. Fragment of a black, ribbed glass bracelet. Roman, or possibly Hellenistic. Inside dia. 5.5 cm.; outside dia. 7.1 cm.; max. thickness .9 cm.; weight 29 gr. Cf. von Saldern (1980), Pl. 10, No. 233.

Fig. 11:11 J 7, 7002. Fragment of a biconical, black bracelet. Byzantine. Inside dia. 5.6 cm.; outside dia. 6.6 cm.; max. thickness .9 cm.; weight 1.1 gr. Cf. von Saldern (1980), Pl. 16, No. 679.

Plate LIII: 1, 2 (Coins from the 1984 Season)

No. 174 (F 1, unstratified). Bronze coin. Place of origin: Nabataean Kingdom, reign of Aretas IV and Shaquilath. Date: 9 B.C.-A.D. 40. Obverse: conjoined busts of Aretas IV and Shaquilath; inscription (if any) illegible. Reverse: double cornucopiae; Nabataean script above and below.

No. 132 (A 2, 2037). A Greek bronze, 20 mm. Place of origin: Syria, reign of Demetrius I Soter; struck in Tyre. Date: 155-154 B.C. Obverse: diademed head of Demetrius, right. Reverse: Stern of a galley, left, with standard; above and below Greek inscriptions; above, "of the King Demetrius," below, "of the Tyrians," and some uncertain Phoenician letters.

Plate LIV: 1, 2 (Coin)

No. 105 (Tell Abila, unstratified). Bronze 25 mm. Place of origin: Coin of Gadara of the Decapolis, in the reign of Elagabalus. Date: A.D. 218-219 inscription B.C.). Obverse: radiate bust of Elagabalus, right (inscription illegible). Reverse: tetrastyle temple, with a statue of Zeus enthroned holding Nike and scepter; below, inscription: ΓΑΔΑΡ(Ε) (WN?); to the left, date-mark: ΕΒΠC.

New Areas of Archaeological Importance

Expansion of the excavation on Tell Abila and Umm el 'Amad is needed to understand better the size, structure, and function of the two basilicas, one on each of the two tells, and to get a better picture of the Umayyad and the earlier Roman and Hellenistic cultures beginning to appear on Tell Abila in Area A and the Byzantine domestic/residential setting on the west side of Umm el 'Amad. The north city wall (Area F) on Tell Abila needs additional probing to determine further its age, extent and function in the Roman, Byzantine, and possibly earlier periods. Excavation needs to be opened up in the theater and saddle area between the two tells to give understanding as to the size, age, and function of the theater and of the massive ruins just to the north of the theater. Further excavation in the Roman-Byzantine tombs will be helpful in understanding Abila's culture, but search needs to be made for the Hellenistic, Iron Age, and Bronze Age tombs for a further understanding of the culture of the city in those periods. Further investigation of the underground aqueducts needs to be made, but the survey needs to expand into the outlying region to see what other parts of the hydrological system might be found and to study what relationship there might be between this hydrological system and that at Gadara (Umm Qeis).

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RECENT EXCAVATION & RESTORATION AT QASR EL BINT OF PETRA

by
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A campaign of excavation was resumed at the temple of Qasr el Bint[1] (Pl. LV,1) from the 3rd of October to December 20th, 1983 and in May 1984. The main objectives were to secure more dating evidence and architectural elements by the clearance of the eastern compartment 1 of the triabsidial *cella* (Fig. 1) which was obstructed by 2.90 m. of stone tumble. Excavations were also continued along the southern wall. In 1984, a programme of consolidation of the architectural stucco decoration together with the northeastern *anta* was also initiated (see below). The work was supervised by the writer and architect F. Larché who prepared the drawings but was also responsible of the excavation in November. Miss Marylene Barret and Mr. Patrick Blanc were in charge of the stucco consolidation while Abdel-Majid Mjelli from the Jerash Project conducted the consolidation of the northeastern *anta*.

Progress of Excavation:

As has been previously noticed,[2] the remarkable feature of the stone tumble in compartment 1, was a layer of burn, about 20 cm. thick (Fig. 2). This layer resulted from a fire which destroyed the roof timbers of the balcony which were fitted in the square lodgments of the South wall (Pl. LV,2) and rested on the two columns *in antis* of the compartment. It is now clear that arches (Fig. 3) spanned the columns as can be deduced from many voussoirs recovered in the tumble. Curiously, the arches were covered on the north and south sides by a wooden frame. Recently, the two cavities in the eastern wall where the beams were engaged, have been cleared. The South cavity averages 1.30 m. in depth, 0.65 in height for a width of 0.22 m. but the northern one is smaller in size: the height is 0.65 m. while the depth is 0.47 and the width not more than 0.10 m. (Pl. LVI, 1,2). Both of the cavities yielded carbonised wood and in the southern one, a long iron nail was found.

After the removal of the burned layer 2 in the compartment, seven irregular enclosures, built with reused stones and marble fragments were brought to light (Fig. 1 & Pl. LVII,1). Enclosure 2, north of the eastern column, was of rectangular shape and averages 2.50 m. long and 0.96 to 1.04 m. wide with a height of 1.13 m. An inscribed marble base and other fragments (see below) were built in the western wall and lion's head and stands were engaged in the other walls (Pl. LVII,2). Two other lion's stands were constructed in the next enclosure 3 and a fragmentary fluted column of white marble was built across (Pl. LVII,3)

The function of the enclosures could not be determined for they were filled with rubble. It could be assumed that they were intended to raise the floor of the *cella*, after the premeditated destruction of the temple. This intentional violence is made clear by the discovery of the middle marble step of the compartment which was stripped out and propped against the eastern column (Pl. LVIII,1), at the level of the enclosure walls.

The compartment which measures 8.27 m. E-W by 7.72 m. N-S, was paved with white marble slabs (Pl. LVIII,2,3), and a greyish marble dado revetted the walls to the height of 0.70 m. as could be concluded from fragments still *in situ*, between the eastern *anta* and the wall.

1. For a preliminary report, see F. Zayadine, *ADAJ*, XXVI (1982), p. 374-380 with bibliography.
2. *Idem*, p. 377.

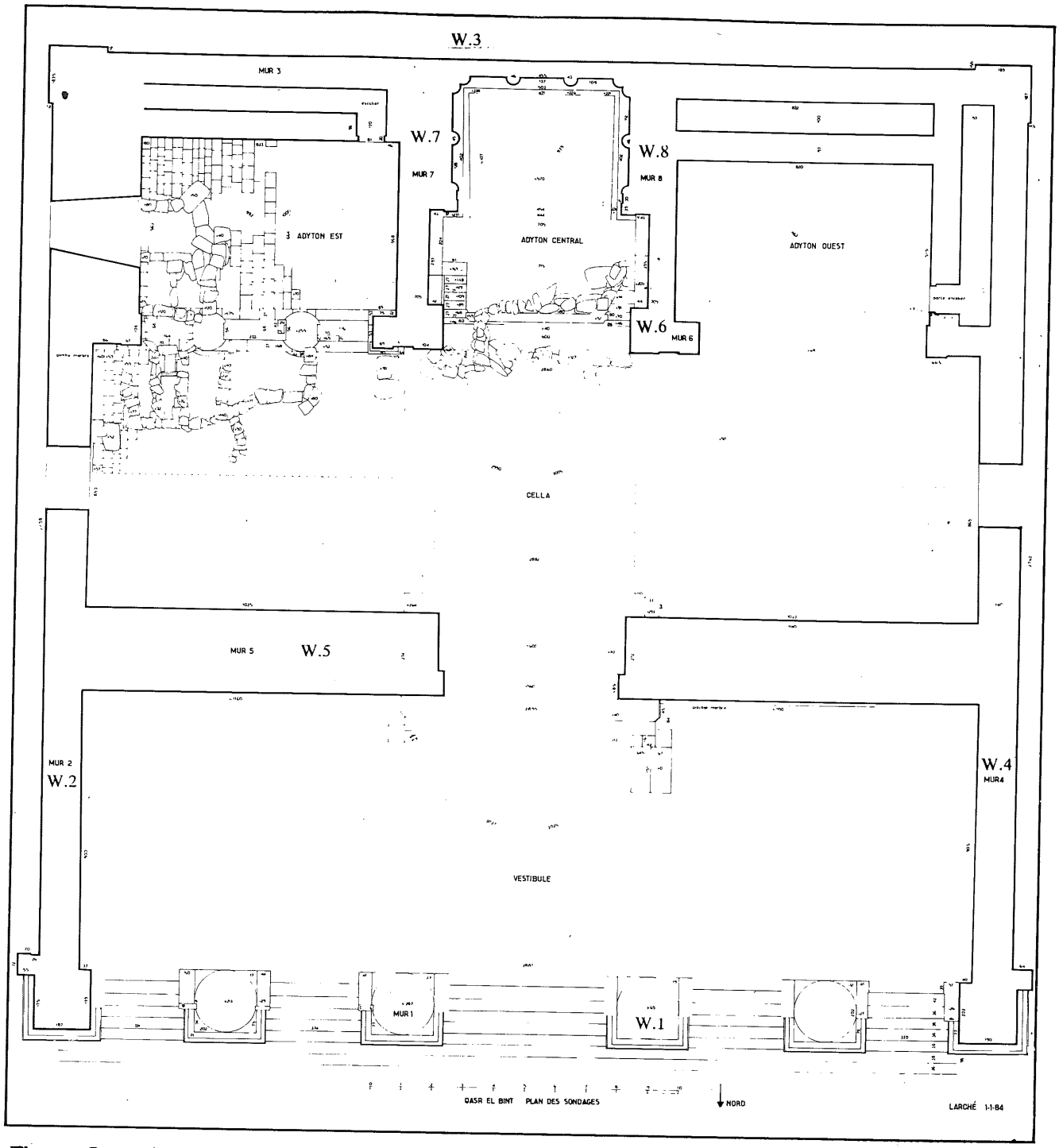

Fig. 1. Ground Plan of Qasr el Bint (after F. Larché)

Very little dating material has been retrieved in the excavation. A fragmentary lamp in locus 2 and a bronze coin of Gallienus found on the floor to the North of the columns are the only relevant objects (see below). On the other hand, a large amount of moulded stucco was collected and some fragments were coated with a golden leaf, a discovery which gives some credit to the description of the *idoleion* of Petra by the Byzantine lexicon Souda (10th century A.D.): "The whole temple is shining with gold".

Elevation of the East Compartment:

In his hypothetical elevation of the side compartments, Kohl[3] has reproduced the two columns *in antis* in the balcony. But no elements of this upper order was found in the excavation. As a working hypothesis, architect Larché reconstructed a plain wall. (Fig. 4). This reconstruction is supported by remains of stucco revetment

3. *Kasr Firaun in Petra,* Leipzig, 1910, p. 13, Fig. 12.

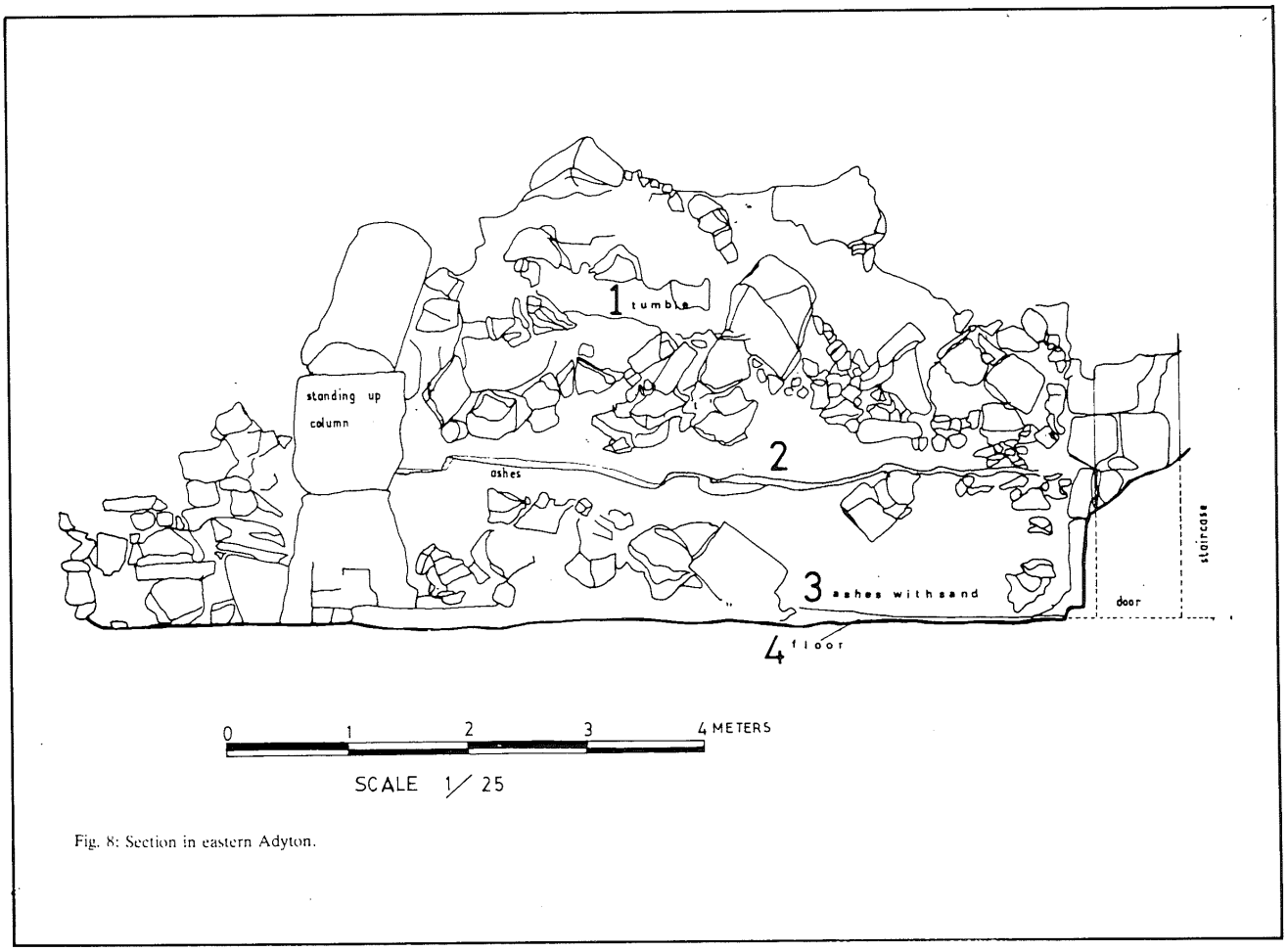

Fig. 8: Section in eastern Adyton.

Fig. 2. Section of tumble in East compartment 1.

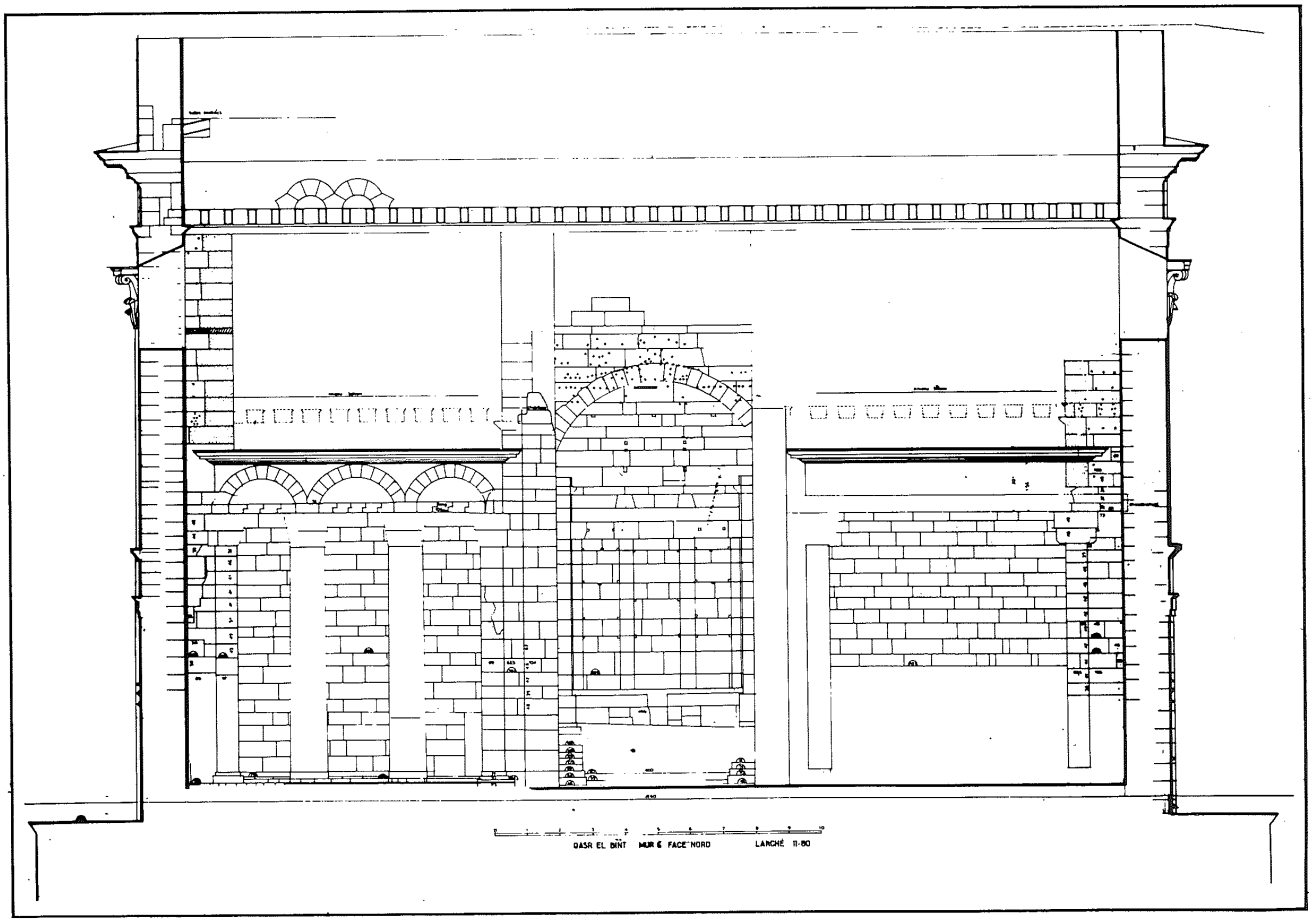

Fig. 3. North elevation of the triabsidial *cella*.

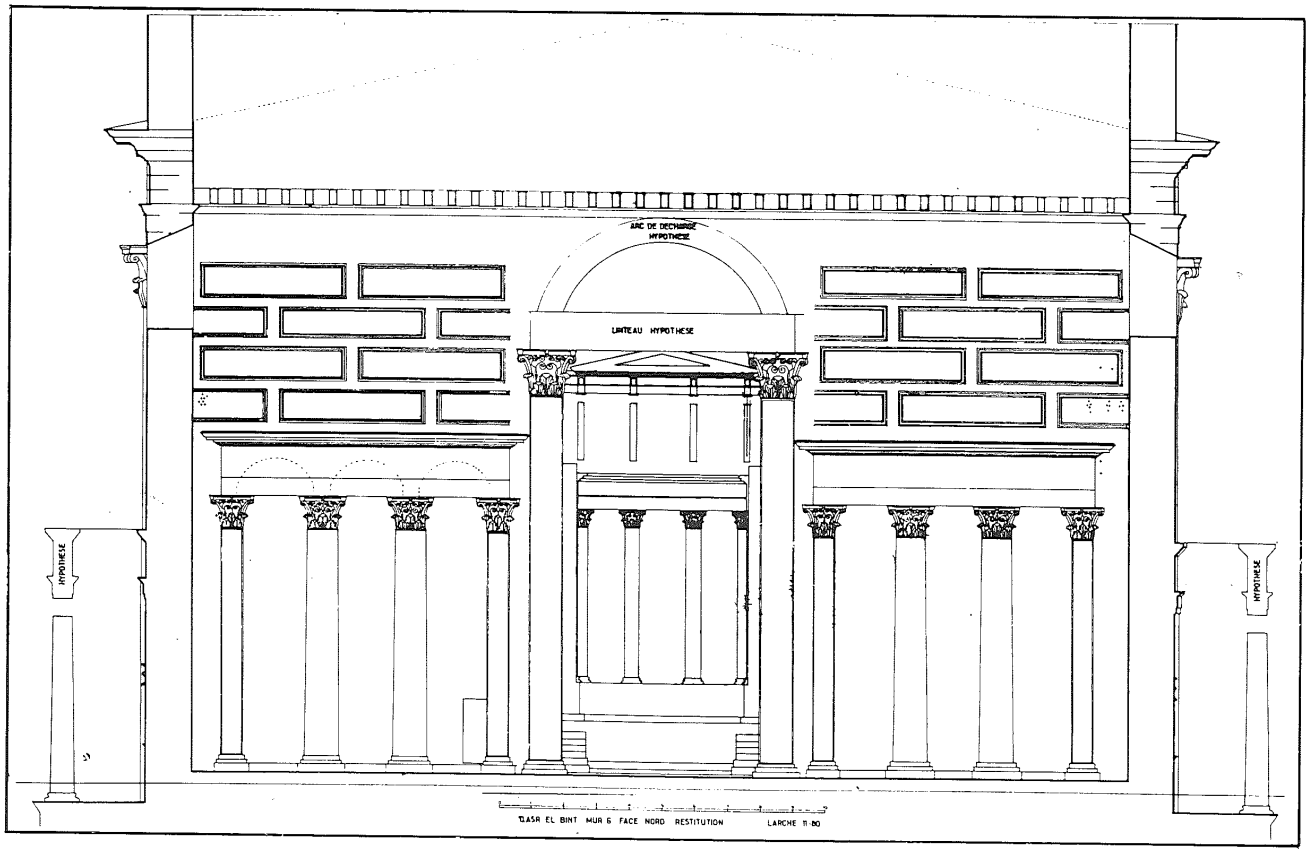

Fig. 4. Reconstructed elevation of the N. facade of the triabsidial *cella* (after F. Larché).

in the western compartment and finds a parallel in the South *Thalamos* of the Bel Temple at Palmyra,[4] dedicated in April 32 A.D. It can be assumed that the balcony chamber was lit by narrow slits. A stairway, 0.82 m. wide which is lodged in the South wall ascends to this chamber and continues to the attic. The access to the second flight was through a doorway pierced in the South wall (see below). A cornice fragment (0.40 m. by 0.27 m.) is built in the north wall of the stairway and can be considered as evidence of an earlier monument (Pl. LIX, 1).

Roofing:

The problem of the roofing of the temple was discussed by architect G.R.H. Wright[5] in his 1961 review, prior to any major excavation. He reconsidered, in a recent note,[6] this puzzling feature which can be re-analysed in the light of the recent observations:

1. There is no doubt that the side compartments were covered by a terrace roof, supported by timbers which were placed in square lodgements (Pl. LV,2).

2. On a higher level, the cella was roofed in two spans of 6.72 m. and 8.70 m.

3. The *pronaos* was also covered by a terrace roof of 9.06 m. in width, the beams supporting this terrace being lodged two by two in square cavities, protected by an arch. There is no reason to suppose that these arches (Pl. LIX,2,3) were decorative as stated by G.R.H. Wright[7]: thanks to the scaffoldings, some of the cavities has been recently cleared and yielded carbonised wood.

4. Above the level of the pronaos terrace, there is a high parapet of about 5 m. Wright was annoyed by this wall and concluded: "...unless there were another roof at a higher level, no structural purpose can be seen in carrying this wall above the terrace."[8] On the other hand, he reports "in the clearance of the podium some remains of roofing tiles"[9] ...and a corbel stone was noticed by him in the upper

4. H. Seyrig, R. Amy, E. Will, *Le temple de Bel à Palmyre,* Paris, 1975 p. 53-64.
5. *PEQ,* (1961) p. 17 ff.
6. *Damaszener Mit.* 2 (1985) p. 321-325.
7. *PEQ* (1961) p. 27 & *D.M .,* 322.
8. *PEQ, op. cit.,* p. 27.
9. *Idem,* p. 29.

course of the eastern wall.[10] Although he was intrigued by these elements, he could not accept the possibility of a pitched roof because he thought this solution "so contrary to the tradition to which the temple belonged".[11] In his recent note, he made a hypothetical comparison with the Solomon Temple in Jerusalem, where the *pronaos ('ulam)* was roofed at a "higher level than the rear parts of the building".[12] But our recent discoveries prove that this comparison cannot stand. On the one hand, a large amount of roof tiles were collected all over the excavated areas, in the pronaos as in the cella. On the other hand, many stone blocks, provided with one or two parallel grooves were found in the tumble. Some of them still preserve the remains of roof tiles (Pl. LX,1) and others are *in situ* in the upper course of the eastern wall. A pitched roof, covering the entire sanctuary, is the only reasonable solution to these structural elements. Two blocked doorways are noticeable in the southern face of the pronaos wall (Fig. 5) and permitted the circulation from the inner attic to the stairways on both sides of the main gate (Pl. LX,2) and probably to the *pronaos* terrace. Besides, there is a pediment fragment *in situ* in the northern facade of the *pronaos*. Another pediment fragment has been reported in Sq. 7/7 [(12 bis)]. There is no room here to discuss the origin and parallels to this unexpected feature in an Oriental temple. But its existence at Qasr el Bint is beyond any doubt.

The Finds:

Because the temple was looted and reoccupied through different periods, very little relevant objects were collected from our digs. Nevertheless, some finds of significant chronological value will be discussed here:

1. Lion's stands (Pl. LXI, 1-4).

Marble elements, representing lion's heads and paws were found reused in the enclosure walls mentioned above in the East compartment. Most of the stands were damaged but some of them were restored and the complete examples average 0.37 m. to 0.40 m. in height, with a width of 0.14 to 0.18 m. The best preserved stands show a lion's head with an outstretched tongue and two fangs; a mane encircles the animal's face. The head stands on a leg with four roughly carved claws. Since the top of the stands is flat and preserves traces of a small ridge on one side, it is likely that these furniture elements were used to support couches *(klinè)* or tables. A good parallel can be observed on a Syrian sarcophagus,[13] now in the Istanbul museum. It is dated to the first half of the third century A.D. and depicts a reclining lady on a couch with a table in front supported by a similar lion's stand.

There is no clear indication that the couches or tables were in use in the East compartment for a triclinium. But it is not impossible that this chamber was the gathering place of the sacred *symposia,* in relation with the cult of Dusares-Dionysos. We know from Strabo,[14] that 13 members, accompanied by two girl-singers gathered for the sacred banquets and that the king holds many drinking-bouts. He served his guests himself,[15] probably as a *symposiarchos.* Many rockcut triclinia are known at Petra [16] and it is probable that the cultic symposia of the temple were held in the

10. *Idem,* p. 28.
11. *Idem.* p. 28.
12. *D.M. op. cit;* p. 322 & Fig. 5c. Although the Herod's temple & Qasr el Bint, may belong to the same period, there is no connection between the two monuments as far as the roofing system is concerned.
12 bis. *ADAJ,* XXVI (1982) Pl. CXXX.
13. G.M.A. Richter, *The Furniture of the Greeks, Etruscans & Romans,* The Phaidon Press, 1966, p. 109 & Pl. 551.
14. *Geog.* Loeb Classical Library, Translated by H.I. Jones, London, 1966, XVI, 4,26.
15. "The king is so democratic that, in addition to serving himself, he sometimes even serves the rest himself in turn" (Geog. XVI, 4, 26). What the informator of Strabo considered as a sign of democracy is no more than Oriental custom, still in use in the bedouin society.
16. For the Triclinia of Petra, see Dalman, *Petra und seine Felsheiligtümer,* Leipzig, 1908. For Beida, see F. Zayadine, *ADAJ,* XXI (1976), p. 139-142 and *Syria,* LXII (1985) p. 151-152.

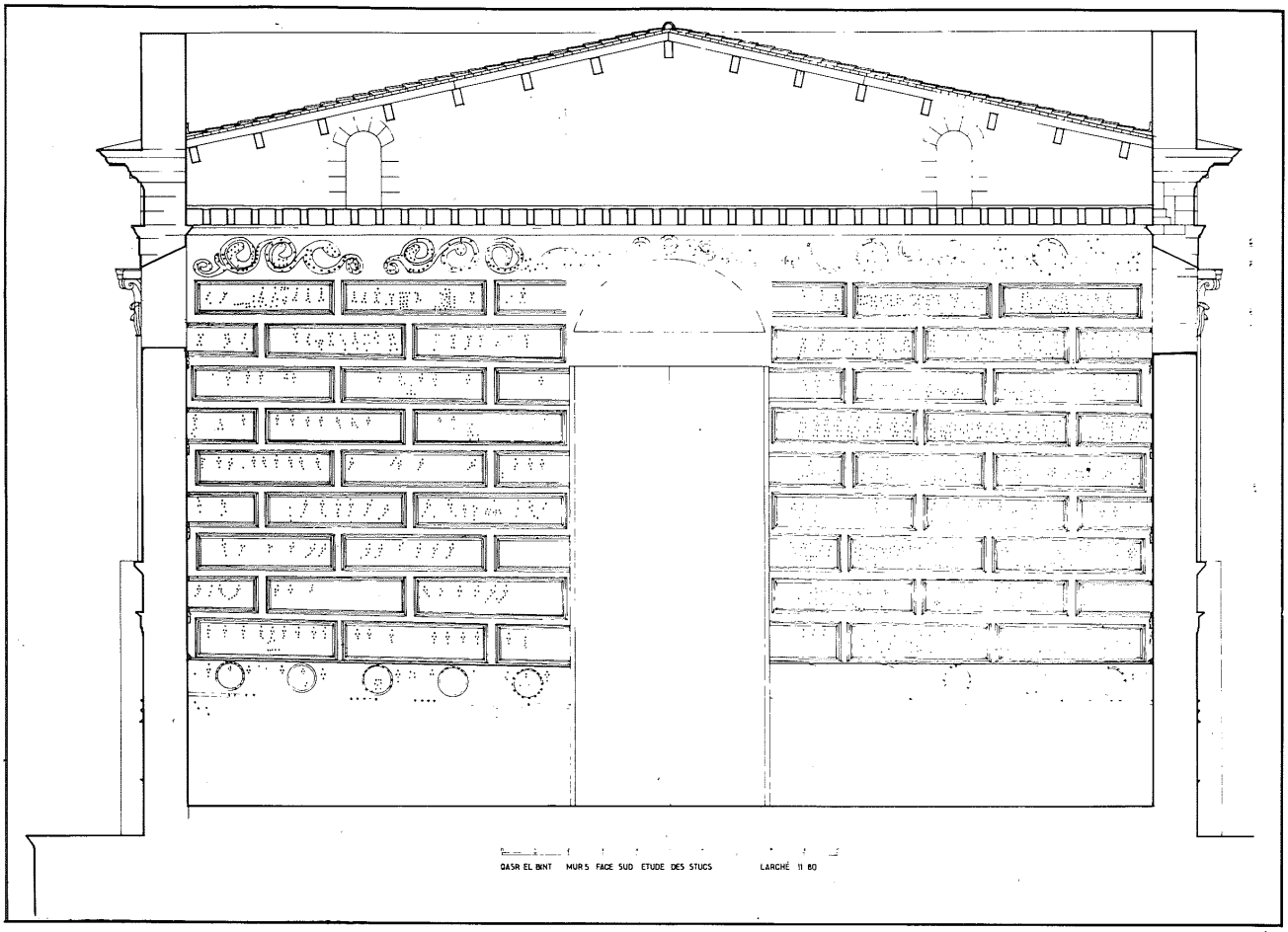

Fig. 5. Inner S. facade of wall 5 in the *cella.*

side compartments of the triabsidial *cella.* At Palmyra, the banquet hall in relation with the temple of Bêl, was identified with a large construction, near the main altar.[17] A good amount of tessarae which were tickets of the *thiasis'* members were collected in the drainage system. Some of these tickets represent the members on a couch with a cup of wine.[18] According to the Roman Geographer, the symposium members of Petra were permitted to drink not more than eleven cupfuls of wine, "each time using a different golden cup".[19] The tessarae of Palmyra were interpreted by H. Seyrig as the remains of the last drinking bout,[20] before the capture of the city by Aurealian in 272 A.D. The fragmentary marble stands of the Qasr could be the testimony of the last symposium, in the Roman period.

2. A bronze coin: (Pl. LXII,1)

A badly preserved coin was found on the floor of the cella, in front of the East compartment.

Ob.: Rad. bust of emperor.

Rev.: Seated Tyche, holding trophy with left hand, right unclear. The bust of Gallienus is recognisable, but the inscription is almost completely eroded. It should read: IMP C P LIC GALLIENUS P F AUG.[21] But only a few letters are visible. The image of the Petra Tyche on the reverse is well preserved.

3. A lamp fragment was found in the burned layer of the East compartment. It is of red clay with a rounded discus decorated with ribs. The protruding triangular nozzle is burned. (Pl. LXII,2).

There is no close parallel to this lamp in the Petra corpus. But the shape and ware are similar to the collection of lamps found at the potter's kiln of Zurrabeh,[22] at the entrance of the site and at tomb 64 B,[23] opposite the Khazneh. This group is dated

17. H. Seyrig, *Le temple de Bel à Palmyre, op. cit.,* 241-243.
18. *Ibid,* p. 242.
19. *Geog., op. cit.,* XVI, 4,26.
20. *Le temple de Bel, op. cit.,* p. 241-242.
21. *ADAJ,* XXV (1981), p. 210 N° 143 & Pl. LIII. The rev. is different in the Samaria example.
22. *ADAJ,* XXVI (1982) p. 393 & Pl. CXLI, N°s 55-56.
23. *Idem,* p. 369 & Fig. 2, 4.

to the Late Roman period, in the 3rd-4th century A.D.

4. Greek Inscriptions:

A- An inscribed marble base, about 7,5 cm. high, was built, as noticed above, in enclosure 2. The Greek inscription is fragmentary. It reads:

Σ ΥΨ....ΙΑ. = [Δίο] ς υψ [ιστος]... ια

It is possible to restore in this fragment: (Pl. LXII,3)... of (?) Zeus Hypsistos

The second part IA ends with an ivy leaf.

The block was probably a base for a statue or a couch. At Palmyra, the name of Bel was inscribed on a tessara, below the representation of a bed.[24] At any rate, this poorly preserved inscription is the first testimony of the god venerated in the Qasr: Zeus Hypsistos or Heavenly Zeus is the equivalent of Baalshamin or Dusares.

B- Marble fragment inscribed with 3 lines, found in enclosure 3 (Pl. LXII, 4):

Text:

1. τ]ησ οἰκου [μένης
2. αὐτοκρ]άτορι Καί [σαρι
3. ...]ευσ [εβῶν 'ανέθηκεν]

Translation:

1. of the universe....
2. ...to the emperor ceasar
3. ...in piety (erected)

This is an imperial dedication of the 2nd century A.D., probably from the time of Hadrian or Antoninus Pius.[25]

Excavation along the South Wall:

Excavation along the South Wall 3 was resumed from April 2nd to May 15th, 1984. A Square, 5 by 5 m. was plotted east of Sq. 7/7 A and designated as Sq. 7/7 B. As in the adjacent Squares, the first two layers Loc. 1-2, were modern rubbish from the Nazzal Camp. But after the removal of Loc. 3, a light brown sand, a layer of stone fall was encountered which included a small cornice fragment. The stone blocks which fell in regular courses were left in situ and numbered for a future restoration project. For this reason, the Square was reduced to only 1.50 m. from the South Wall. The collected sherds were Nabataean (minority), Late Roman, Byzantine and Medieval. The other loci yielded mainly Byzantine pottery. Loc. 7, a loose gray sand lay under a fallen block and contained 5th-6th century Byzantine pottery. It indicates that an earthquake shock[26] destroyed the monument at this period. The last layer of limy mortar was the bedding for the pavement.

The next Sq. 6/7 which has been excavated by Dr. Hammond's team, corresponds to the central *adyton,* below the architectural stucco decoration (see below). The level of the podium was reached and consisted of hard limy surface. A column drum, fixed in this layer at the distance of 3.60 m. from the wall was exposed, but it could not be ascertained whether this drum, without base, is *in situ* or not.

Consolidation:

The Qasr el Bint temple is in bad condition of preservation through earthquake tremors and weathering. Wooden laces were also inserted in between the stone courses and their disintegration caused the dismanteling of the walls. The restoration of the monument was considered in this condition as a complicated job. A British company offered to consolidate the building with epoxy resin. But this solution was refused by the Department of Antiquities because it is irreversible and very costly. The traditional methods of restoration seemed to be more appropriate. Already in 1961-62, the southeastern angle has been restored with the original sandstones and the work was considered as acceptable by archaeologists. In 1979-80, the doorjambs of the main gateway were restored with the same method under the supervision of architect Yusef Alami and

24. *Le temple de Bel, op. cit.* p. 242.

25. M. Sartre who examined the inscriptions, kindly informed me that he is inclined to place the texts in the 2nd century A.D.

26. According to Ph. Hammond, Syria, LXII (1985) p. 159, an earthquake destroyed Petra in July, 9th, 551.

Muhammed Murshed from the Department of Antiquities, on behalf of the Petra-Jerash Project.

Since the northeastern *anta* was disjoined and threatening to fall down, it was decided to undertake urgent consolidation. After consultation with experts such as Pr. R. Lemaire from Louvain and H. Kalayan, working for the Jerash Project, it appeared that the best solution was to dismantle and rebuild 10 courses (Pl. LXIII,1,2 & Fig. 6). The operation was entrusted to Abdel-Majid Mjelli from the Jerash project.

The width of the anta averages 1.85 m. while the wall is 1.35 m. thick. The sandstone blocks were laid in the header-stretcher technique and the core consisted of rubble and limy mortar. A wooden lace is partly preserved under the 10th course but its disintegration from the North, together with the earthquake tremors caused many blocks to be dislodged. It appeared that many dressed blocks were integrated into the fill of the wall: a drafted block of 1.60 m. by 1.00 m. and about 0.50 m. to 0.60 m. thick and another one of 0.65 by 0.39 and about 0.40 m. high preserved traces of stucco (Pl. LXIV,1). A smaller block was coated with yellow-ochre stucco. Wood wedges, the largest of which being 24 cm. by 8.5 and about 3 cm. thick (Pl. LXIV,2) were found under the stone blocks. One of them was a spatula about 16,5 cm. long, pierced with a hole at one end. But its original function remains unknown. The wood pieces are of the local juniper tree (Arabic *'ar'ar).*

The dismanteling of the anta and its rebuilding was complicated by the absence of a good crane. On the other hand, the *anta* was revetted with geometrical stucco reliefs which made the removal of the stones very delicate. Nevertheless, the flaking out stucco on one of the blocks was consolidated with epoxy, before removal. A moveable crane *(palanko)* was used to lower the stones one by one and set them back. It was a long process from April to July 1984 but the results are satisfactory.

At the level of the wooden lace, a concrete bed reinforced by steel was laid but a cavity of 16.5 cm. was left to restore the lace. It is the opinion of the present writer that such operations, are very expensive and delicate. It is more reliable, in the future, to concentrate on consolidation and protection of the walls from rain infiltration.

B. Consolidation of the stucco revetment:

As has been noticed in earlier reports,[27] the inner and outer walls of the Qasr were coated with architectural stucco decoration. Although Kohl stated in 1910 that this decoration was for him 'the most precious element of the whole construction,"[28] little attention was paid to his remark by modern archaeologists. Important remains are extant on the *antae,* the eastern and southern walls. But where the stucco decoration has vanished, the affix holes, carefully plotted by architect Larché, help reconstruct the original revetment: the inner southern face of the pronaos was coated with medallions at the height of 3 metres from ground. Then follow rectangular pannels, terminated by a vegetal scroll under the roof (Fig. 5). The outer face was decorated with a register of pilasters at the same level and the same ornamentation continued. On the eastern wall, above the socle and the orthostats courses of 1.60 m. and 170 m., a register of stucco pilasters averages 2.65 m. The stucco was consolidated by Miss Marylene Barret in September 1985. The cleaning of the register from the sand deposit revealed in the upper panel frieze the traces of blue paint.

More elaborate architectural stucco is preserved on the southern wall: the pilasters of the East wall reappear but in the central part, corresponding to the *adyton,* the architectural stucco depicts a shrine facade decorated with six pilasters or columns (Fig. 7, 8 & Pl. LXV,1), which support an architrave and a frieze of cupids holding garlands, between relief panels. The whole decoration is crowned by a central segemented pediment, flanked by two half pediments. This composition was

27. *Syria,* LXII (1985) p. 147.

28. *Kasr Firaun, op. cit.,* p. 26.

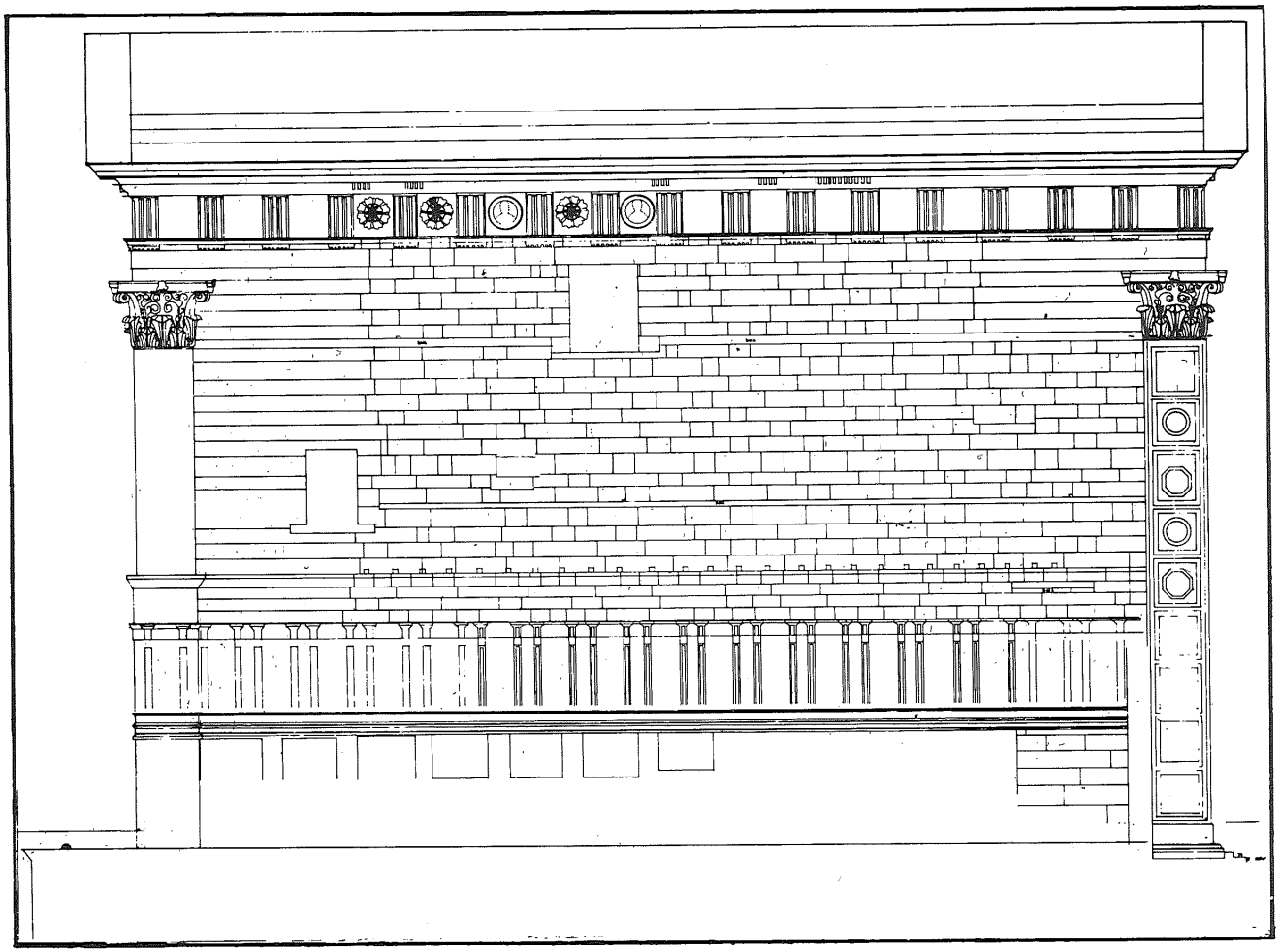

Fig. 6. Outer facade of East wall 2.

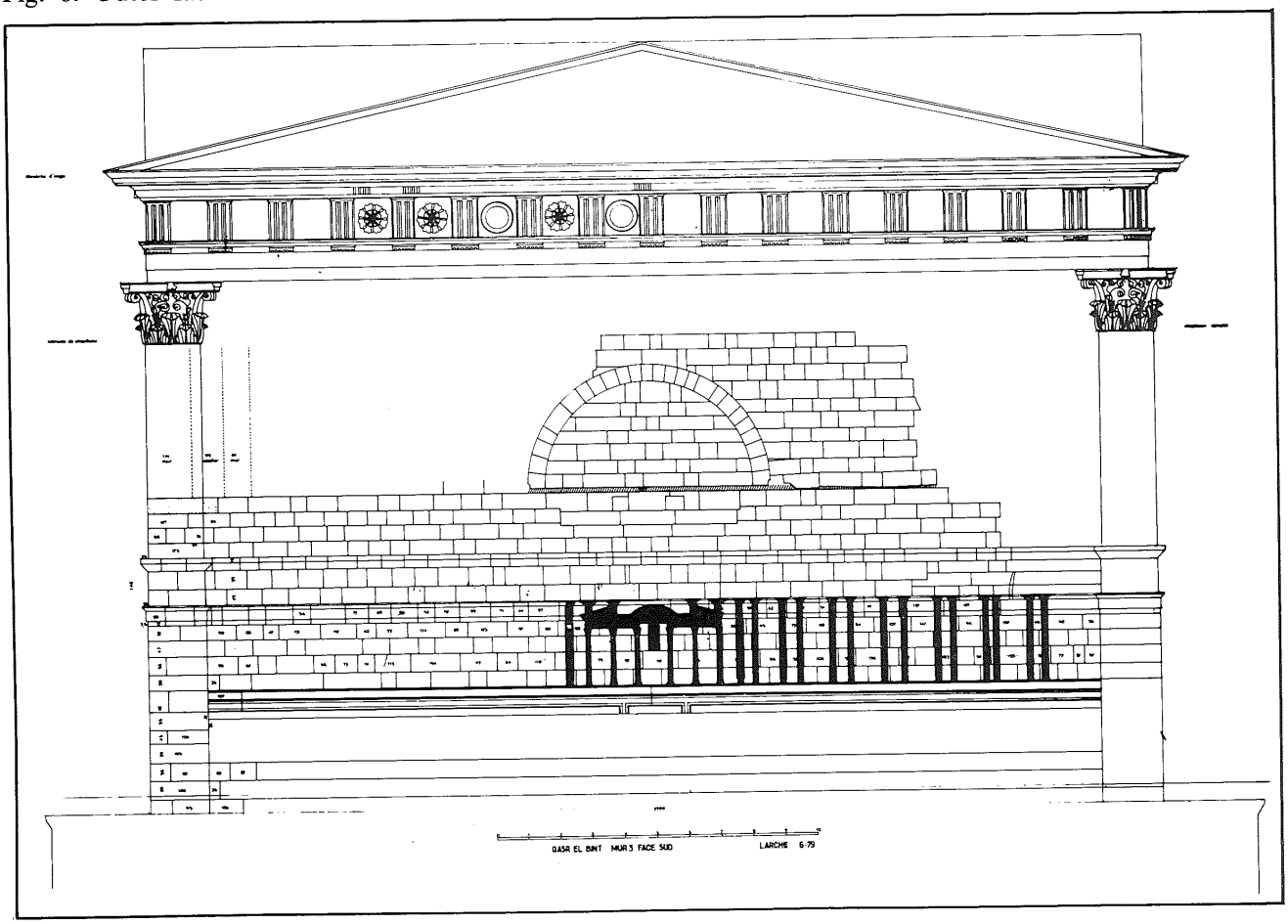

Fig. 7. Elevation of S. Wall 3.

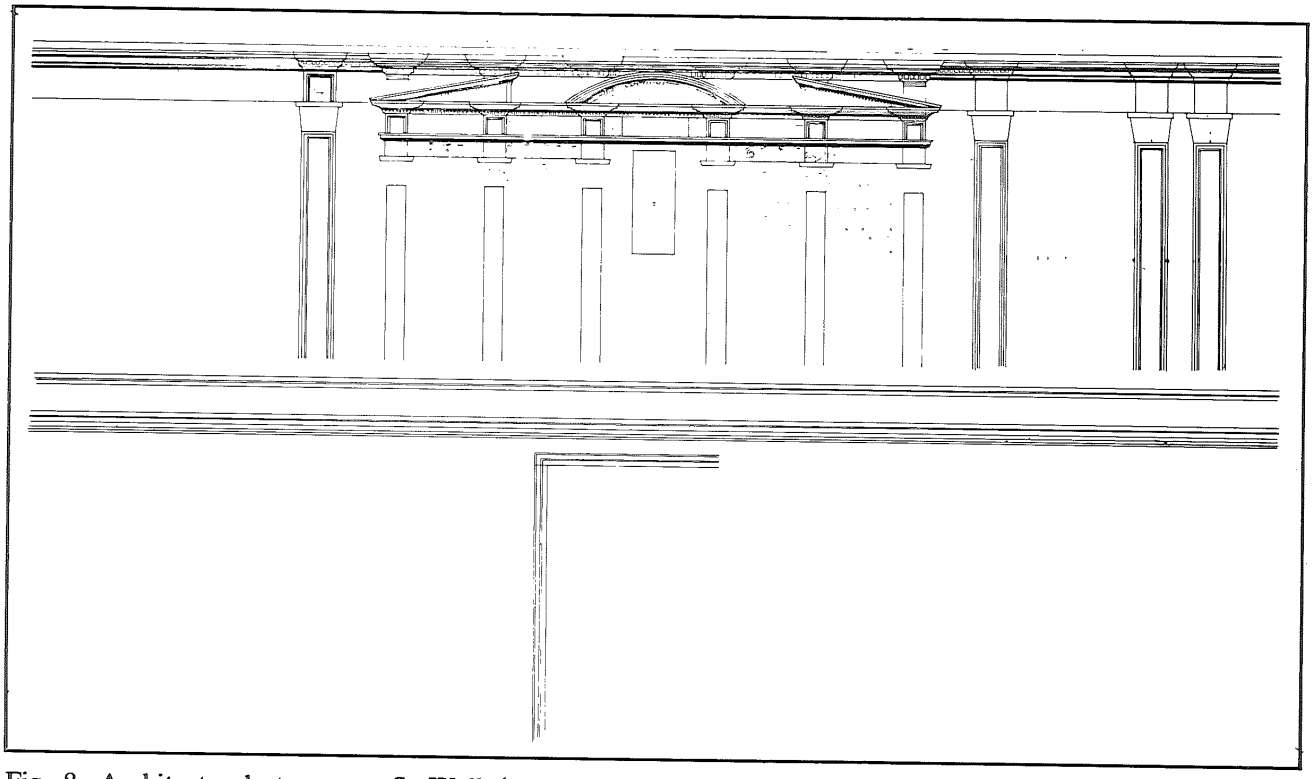

Fig. 8. Architectural stucco on S. Wall (F. Larché).

compared by Kohl to the Corinthian Tomb and other similar monuments of Petra,[29] carved in the rock. To make this comparison more plausible, the German scholar filled the plain attica between the two cornices, above the stucco decoration, by a tholos and broken pediments. But there are no traces of stucco or affix holes to support this reconstruction. It can be better compared to the decoration of the Forum of Trajan in Rome.[30] The architect of this monumental market place was Apollodoros of Damascus, according to historical traditions, and similarity of its decoration with the Qasr stucco may account for the Oriental influence on the Roman architecture.

The consolidation programme entrusted to Marylene Barret and Patrick Blanc (Pl. LXV,3) from October 10 to 21 was urged by the bad preservation conditions of this outstanding decoration. The operation included surface cleaning from intrusive deposits such as blown-in sand and insects' nests. The following steps included the injection of a resin solution (paraloïd B 72 in 5% of trichloroetane and the consolidation of the edges by a mortar composed of ⅓ of lime with local sand of Petra. The same mortar was used to fill the gaps between the sandstone blocks. A cleaning test with butylamine revealed traces of yellow-ochre paint on the stucco. It is hoped that this short campaign will be followed by an exhaustive programme of restoration.

General conclusion:

New dating evidence for the constructional and occupational history of Qasr el Bint have been gathered from the recent excavations and may be summarised as follows:

1. The assumed date of the construction of the temple under Obodas III (28-9 B.C.) can be confirmed by the architectural stucco. This revetment is necessarily later than the building of the temple and was probably remodelled in later periods. But the affix holes all over the walls is a good proof of its existence in the original phase.

2. An earlier monument of some importance preceded the Qasr and was coated with stucco as demonstrated by the

29. *Ibid.*, p. 36 ff.

30. See for example, L. Crema, *Encyclopedia Classica*, III, Torino, 1959, Fig. 416.

many blocks retrieved during the restoration of the northeastern anta. It is not possible to give credit to the date postulated by T.J. Milik[31] in the 3rd century for lack of precisely datable material. But it is not impossible to push back the origin of the monument to a generation before Obodas III.

3. A Roman imperial phase is now confirmed by the fragmentary Greek inscriptions. The looting and destruction by fire is evidenced by the coin of Gallienus and the pottery sherds.

4. The Byzantine occupation can be ascertained by the finding of a burial along the southern wall and a coin of Arcadius (383-408), found in Square 7/7 provides the *antequem* date of this occupation.

5. The earthquake of 19 May 363 ruined the Qasr and another tremor in the 6th century A.D. caused more destruction and made the monument practically inaccessible.

6. It is for this reason, I believe, that the Ayyubid house[32] was built on the monumental stairway.

7. In the last century, the temple was visited by explorers and tourists who left their signature in the *pronaos.*[33]

Other informations are still burried in the western compartment and need to expend more efforts.

F. Zayadine
March 1986

31. *Le Monde de la Bible,* 10 (1981) p. 14.

32. *ADAJ,* XXVI (1982) p. 374-376.

33. *Ibid.,* p. 377.

THE RETURN OF THE NOMAD: AN ANALYSIS OF THE PROCESS OF NOMADIZATION IN JORDAN

by
Øystein S. LaBianca

Introduction

While the process of sedentarization of pastoral nomads has received a great deal of attention among Middle Eastern anthropologists in recent years, relatively little is known about the opposite process of nomadization whereby a regional food system shifts from an emphasis on crop production by settled villagers to one emphasizing stock production by pastoral nomads. This paper examines the process of nomadization in Jordan during the Iron II/Hellenistic, Late Byzantine/Umayyad, and Late Mamlūk/Ottoman periods in the light of ethnoarchaeological, historical and archaeological evidence uncovered by the Andrews University Heshbon Expedition.

Highland Region

The highland region which is located to the east of the northern tip of the Dead Sea has, since Antiquity, been a frontier region which has experienced great temporal variability in patterns of human settlement and landuse. Archaeological excavations at Tell Ḥesban and the findings of surface surveys carried out within a ten kilometre radius of this site have convincingly confirmed the impressions of earlier scholars who noted the instability of sedentary occupation in this region since ancient times.[1]

In our continuing attempts to understand the shifting patterns of human settlement and landuse over time in this region, we have begun to focus our inquiries on the role of two complementary processes which, we believe, represent fundamental cultural processes in this region. These are the processes of sedentarization, on the one hand, and nomadization on the other. While much attention has already been devoted to the process of sedentarization, whereby nomadic groups of herdsmen abandon their migratory existence in favour of settled livelihoods in villages and towns,[2] much less is known about the complementary process of nomadization, whereby populations abandon their settled ways in favour of various types of nomadic livelihoods.

One reason for the neglect of this topic is, no doubt, the fact that sedentarization is presently an ubiquitous phenomena throughout much of the contemporary Middle East, whereas bedouinization is a phenomena that, although it continues to occur as well (for example, in the case of displaced Palestinians who, because they have been forced to leave their traditional lands, have reverted to living in tents and raising sheep and goats in Jordan), has for various reasons received much less attention. Certainly, it is a much less ubiquitous process today and one which may also be more subtle. Given the diachronic patterns afforded by archaeological research, however, the process of nomadization emerges as a phenomena equally as fundamental and important as that of sedentarization to any comprehensive understanding of the trans-

[1] N. Glueck, *The Other Side of the Jordan*, New Haven, 1940; W. Caskel, The Bedouinization of Arabia, In Studies in Islamic Cultural History, *American Anthropologist*, 56 (1954), p. 45.

[2] F. Barth, *Nomads of South Persia*, Boston, 1961; D. G. Bates, The Role of the State in Peasant-Nomad Mutualism, *Anthropological Quarterly*, 44 (1971) p. 109-131; D. G. Bates, *Nomads and Farmers: A Study of the Yoruk of Southeastern* Turkey, Ann Arbor, 1973; A. R. George, Processes of Sedentarization of Nomads in Egypt, Israel and Syria: A Comparison, *Geography* 58 (1973) p. 167-169; D. Chatty, *The Current Situation of the Bedouin in Syria, Jordan and Saudi Arabia and their Prospects for the Future*, Amman, 1978; W. Lancaster, *The Rwala Bedouin Today*, Cambridge, 1981.

formations being investigated here. In this paper my aim is to suggest the pertinence of the concept of nomadization to generating hypotheses about why and how settlement and landuse patterns east of Jordan reverted from sedentary agriculture to pastoral nomadism at different periods in time.

Neither "nomadization" nor the less appropriate but related concept of "bedouinization" are terms which are in common usage in the published literature dealing with socio-cultural aspects of the Middle East. By contrast, the term "sedentarization" is frequently encountered,[3] a fact which highlights the greater interest to date in the latter process among students of Middle Eastern societies.

Thus far, only one article has come to this researcher's attention which specifically refers to "bedouinization." Written in 1954 by Werner Caskel, who was at the time a Professor of Oriental Philology at the University of Cologne, the article is of particular relevance to the present study because it makes specific reference to the fact that in Arabia and the countries of the Fertile Crescent "the processes of de-Bedouinization can be traced fairly exactly." Indeed, Caskel even notes that "in Transjordan these processes can even be proved by archaeological evidence."[4] The French appear to be the principle users of the term "nomadization".[5]

But while the terms themselves have not been used much in the English literature, the processes to which they refer have, however, been noted by a number of English-speaking anthropologists.[6] For example, Haaland[7] has suggested that one reason why people return to nomadic pastoralism is the fact that it is notably responsible to inputs of labour, thus making it an attractive alternative when sedentary agriculture becomes more difficult. This economic advantage of pastoralist production has also been noted by Barth.[8]

Regarding the origin of nomadic pastoralism, Lees and Bates[9] have suggested that specialized nomadic pastoralism was a consequence of agricultural expansion into arid regions, resulting in increasing numbers of households turning to full-time herding to find adequate food for their animals. This view represents a refinement of earlier proposals by Robert Adams.[10]

To these economic perspectives on why people become nomads must be added views emphasizing the political dimensions. Historians, for example, are inclined to view the rise and fall of nomadic societies as a direct consequence of the strengthening or weakening of the administrative grasp and military power of state governments.[11] Anthropologists like

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[3] Barth, *ibid.;* E. Marx, *Bedouin of the Negev,* Manchester, 1967; George, *ibid.;* C. Nelson, ed. *The Desert and the Sown,* Berkeley, 1973; D. G. Bates and A. Rassam, *Peoples and Cultures of the Middle East,* New Jersey, 1983.

[4] Caskel, *ibid.*

[5] F. Aubin, Anthropologie du Nomadisme, *Cahiers Internationaux de Sociologie,* 56 (1974) p. 79-90; P. Bonce, Atlas of Agrarian Structures South of Sahara, *Etudes Rurales,* 1975 p. 117-118.

[6] P. C. Salzman, The Study of 'Complex Society' in the Middle East: A Review Essay, *International Journal of Middle East Studies,* 9 (1978) p. 539-557.

[7] G. Haaland *Economic Determinants in Ethnic Process, in Ethnic Groups and Boundaries,* Boston, 1969.

[8] F. Barth, A General Perspective on Nomad-Sedentary Relations in the Middle East, in *The Desert and the Sown,* Berkeley, 1973.

[9] Bates, The Role, *Ibid.;* Bates, *ibid.,* Nomads.

[10] R. M. Adams, The Mesopotamian Social Landscape: A View from the Frontier, in *Reconstructing Complex Societies,* MIT, 1972; R. M. Adams, Strategies of Maximization, Stability, and Resilience in Mesopotamian Society, Settlement, and Agriculture, *Proceedings of the American Philosophical Society,* 122 (1978) p. 329-335.

[11] Caskel, *ibid.;* W. Hütteroth, The Patterns of Settlement in Palestine in the Sixteenth Century, in *Studies on Palestine during the Ottoman Period,* Jerusalem, 1975; P. Mayerson, The First Muslim Attacks on Southern Palestine (A.D. 633-634), *American Philological Association Transactions,* 95 (1964) p. 155-199; A. Reifenberg, *The Struggle between the Desert and the Sown,* Jerusalem, 1955; M. Rowton, Enclosed Nomadism, *Journal of the Economic and Social History of the Orient,* 17 (1974) p. 1-30; M. Sharon, The Political Role of the Bedouins in Palestine in the Sixteenth and Seventeenth Centuries, in *Studies on Palestine during the Ottoman Period,* Jerusalem, 1975, p. 11-30.

Irons,[12] on the other hand, have argued that nomadism can be viewed as a defensive adaptation to the state machinery, as in the case of the Yomut Turkmen.

Pastoral Nomadism

The first proposal which I would like to make, with reference to the situation in Jordan, is that pastoral nomadism has played a role of one sort or another on the socio-political stage of this region during all of the cultural periods investigated so far by the Heshbon Expedition. Until now this would take us back to the Late Bronze Age (1550-1200 B.C.). Not only is this proposal readily supportable by historical sources dealing with the cultural history of this region,[13] but this state of affairs is reflected in numerous ways in the archaeological evidence from Tell Hesban and vicinity, as has been discussed elsewhere.[14]

A second proposal which can be supported by the evidence on hand is that various types of coexisting pastoral nomadic strategies may emerge as the end product of the process of bedouinization in this region. This is particularly apparent during the latter part of the Ottoman or Turkish period in Jordan *(ca.* A.D. 1880-1917), when the region located within a ten kilometre radius of Hesban was exploited by means of at least three different pastoralist strategies:

Camel and horse breeding Beni Sakhr bedouin visited the highland region to the south and east of Hesban during the spring and summer. Having gradually pushed their way northward over the past three hundred years from their traditional home territories in the Arabian desert, this group was described by Tristram[15] as being the "suzerains" of this highland area. Although they themselves avoided tilling the fertile soils of this plateau, their slaves, the Abu Endi, did so for them in exchange for protection.

In contrast to the horizontal migration pattern followed by the Beni Sakhr, the Adwan tribesmen and the various tribal entities attached to them followed a vertical or transhumant pattern of migration, grazing their herds of sheep, goats, and cattle on the hills and slopes to the north and west of Hesban. During the fall and winter they returned to their cultivated fields in the Jordan Valley.

A similar pattern was followed by the Hamideh tribesmen along the slopes leading down from the highland plateau to the shores of the Dead Sea. But unlike both the camel and horse breeding Beni Sakhr and the cattle and sheep breeding Adwan, the Hamideh Arabs herded a particular breed of small, black cattle[16] and donkeys. There was also a position of subservience to the Beni Sakhr.

A third proposal, and one which echoes the views of numerous historians concerned with this region, is that the process of nomadization appears to gain increasing momentum during periods of weakening military and administrative control by state governments.

This was the case during the sixth century B.C., when the Babylonian invasion of the kingdoms of Ammon, Moab,

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[12] W. Irons, Nomadism as a Political Adaptation: The Case of the Yomut Turken, *American Ethnologist,* 1 (1974) p. 635-638; and, Variation in Political Stratification Among the Yomut Turkment, *Anthropological Quarterly,* 44 (1971) p. 143-156.

[13] Rowton, *ibid.;* and, M. E. Kirk, An Outline of the Ancient Cultural History of Transjordan, *PEQ,* 76 (1944) p. 180-198.

[14] Ø. S. Laßianca, Agricultural Production of Hesban's Hinterland in the Iron Age, ASOR Annual Meetings, 1979; and, Agricultural Production on Hesban's Hinterland, 198 B.C.-A.D. 969, AIA Meetings, 1979; and, Aspects of a Central Jordanian Food System: An Investigation of Interrelated Changes in Settlement, Landuse, Operational Facilities and Diet at Hesban and Vicinity, Ph.D. dissertation, Andrews University, 1984, unpublished; and, Temporal Variability in Nomad-Sedentary Relations in Central Transjordan, American Anthropological Meetings, 1979; and, Temporal Visibility in Nomad-Sedentary Relations in Central Transjordan during the Islamic Era, MESA Meetings, 1979; and, L. T. Geraty and Ø. S. LaBianca, The Local Environment and Human Food-Procurring Strategies in Jordan, Andrews University, unpublished, 1983.

[15] H. B. Tristram, *The Land of Moab,* New York, 1873, p. 247.

[16] *Ibid.,* p. 266.

and Edom brought an end to these local Transjordanian governments.[17] Over the ensuing centuries, a process of nomadization occurred, which appears to have led to the establishment in this region during early Hellenistic times (332-200 B.C.) of a group of nomads practicing vertical or transhumant pastoralism.

The basis for this suggestion is the fact that the political boundaries established by the Hellenistic overloads during this period ran along the highland region of the Transjordanian plateau rather than down along the Jordan-Dead Sea basin.[18] Given the dearth of settlements along the highland region during this period, and given the semi-sedentary ways of transhumants, making them more amenable to government control, this seemingly arbitrary location of the border is understandable after all. Furthermore, as Caskęl[19] has noted regarding the bedouins which inhabited northern Arabia during this period, they were literate peoples whose "thamudenic" inscriptions and drawings were numerous, and whose "gods and rites were borrowed from the city dwellers."

While the process of nomadization which followed the withdrawal of Byzantine military defences east of the Jordan and the Dead Sea during the sixth century A.D.[20] again attests to the importance of the political dimension in accounting for return of the bedouin, the outcome of the process differs somewhat. Instead of the establishment of a predominantly vertical or transhumant form of pastoralism in this region, a horizontal type of nomadism appears to have emerged involving horses and camels and commitments to the ways of desert tribesmen.[21]

This appears also to have been the case following the demise of the brief 'Ayyūbid-Mamlūk (A.D. 1260-1400) occupation of this area, as has been shown by several recent studies of the Ottoman or Turkish period in Palestine.[22] Indeed, according to Ottoman tax records from the sixteenth century, the horse and camel breeding Beni Sakhr may already have established themselves in Transjordan by this time.[23]

To these proposals could be added others regarding the rate at which the process of bedouinization occurs and regarding the reasons for the different outcomes of these processes at various points in time. Indeed, in offering the proposals summarized above, my main aim has not been to convince of the process of nomadization in Jordan. As should by now be apparent, we have very little direct archaeological evidence to base any of our proposals on. We have relied heavily on pertinent ethnoarchaeological information and literary sources for much of our discussion.

What I wish to emphasize instead is that, first, we know very little about the process of nomadization compared to what we know about the process of sedentarization; and that, second, archaeological methods may offer an as yet largely untapped source of data for investigating this process. Only when we return to the field with an explicit concern with the problem--nomadization--can we hope to test proposals about the origins of, and reasons for, the persistence and change of pastoral nomadism which have already been suggested by our cultural anthropologist colleagues.

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Berrien Springs, MI.

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[17] Hashemite Kingdom of Jordan, *Archaeology of Jordan*, Amman, 1978.

[18] I am indebted to Professor Geraty for pointing this out to me.

[19] Caskel, *ibid.*, p. 39.

[20] Mayerson, *ibid.*

[21] Caskel, *ibid.*; Mayerson, *ibid.*; and, D. R. Hill, The Role of the Camel and the Horse in Early Arab Conquests, in *War, Technology and Society in the Middle East*, Oxford, 1975.

[22] Hütteroth, *ibid.*; Sharon, *ibid.*

[23] Hütteroth, *ibid.*

PRELIMINARY REPORT ON A SURVEY IN EDOM, 1984

by
Stephen Hart and Robin Kenneth Falkner[1]

Introduction

In the introduction to the third volume of his *Explorations in Eastern Palestine,* Glueck states that "despite the large number of sites visited... the possibilities of discovery of still additional ancient sites there have definitely not been exhausted". A little further down the page he states "On the whole, however, the writer is confident that not very many sites in Edom and Moab whose ruins have not been completely obliterated remain undiscovered".[2]

While the former statement is undeniable, results of such undertakings as the recent surveys in the Wadi el Hasa belie the latter.[3] A vast amount still remains to be discovered.

A number of sites of the historic periods have been excavated on the Edom plateau, although little has yet been finally published. Iron Age sites have been excavated at Umm el Biyara, Tawilan and Buseirah;[4] Nabataean and Roman material has flowed abundant out of Petra;[5] and Nabataean-Roman and Islamic material has been found at Udruh.[6] This growing body of material, together with his own researches on the ceramics of Tawilan and Buseirah helped the author to decide that the time was auspicious to undertake some modern survey work in the area.[7]

A relatively large area was chosen for the first season's work, namely between Tafila in the north and Ras en-Naqb in the south, bounded on the west by the escarpment and on the east by the desert (Map 1). An area in the south was surveyed in considerable detail with a scatter of sites being visited further north. A further season of work is planned to fill in the gaps. The area around Udruh has already been surveyed by Killick[8] and so was not visited.

The survey took place in August-September 1984, funded by the British Institute at Amman for Archaeology and History.[9] Due to a lack of expertise in matters lithic, flints were not collected, the survey concentrating on ceramic material only.

The results of the survey are summarised in Table 1, which is to be interpretted

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[1] Falkner is responsible for the Islamic period notes; Hart for the rest.

[2] N. Glueck, *Explorations in Eastern Palestine III, AASOR,* New Haven, 1939.

[3] B. MacDonald, et. al., The Wadi el Hasa Survey 1981: A Preliminary Report, *ADAJ,* XXVI (1982) p. 117-132; and The Wadi el Hasa Archaeological Survey 1982: A Preliminary Report, *ADAJ,* XXVII (1983) p. 311-324.

[4] C.-M. Bennett, Fouilles d'Umm el-Biyara, *RB,* LXXIII (1966) p. 372-403; and, Excavations at Buseira, Southern Jordan 1971: A Preliminary Report, *Levant, V (1973) p. 1-11; and, Excavations at Buseirah, Southern Jordan 1972: Preliminary Report, Levant,* VI (1974) p.1-24; and, Excavations at Buseirah, South Jordan, 1973: Third Preliminary Report, *Levant,* VII (1975) p. 1-19; and, Excavations at Buseirah, Southern Jordan, 1974: Fourth Preliminary Report, *Levant,* IX (1977) p. 1-10; Excavations at Tawilan in Southern Jordan, 1982, *Levant,* XVI (1984) p. 1-24.

[5] Various excavators including Hammond, Khairy, Parr and Zayadine.

[6] A.C. Killick, Urdruh-1980, 1981 Seasons: A Preliminary Report, *ADAJ,* XXVII (1983) p. 231-243; and, Udruh-The Frontier of an Empire: 1980 and 1981 Seasons, A Preliminary Report, *Levant,* XV (1983) p. 110-131.

[7] I.E., Hart. An Analysis of the Iron Age Pottery from Tawilan now nears completion and the final report on the site may be anticipated in the near future.

[8] Personal communication.

[9] The survey team consisted of Stephen Hart (Director), Mr. Stephen Bourke, Ms. Susan Thorpe and Ms. Pamela Watson, with Mr. Ghassan Ramahi representing the Department of Antiquities. Our thanks to Dr. Hadidi and the Department of Antiquities for their valuable assistance and for allowing us to use Shobak Castle as a base of operations.

as follows:

O : No architecture obviously associated with this period, Sherds only.
B : Isolated building or watchtower
H : Hamlet or small group of buildings
V : Village
W : Walled settlement
F : Fortress
Q : Function uncertain
T : Tombs
? : Possible sherds of this period

Dating in all cases is provisional and subject to change when the material has been more fully examined. Symbols in parentheses refer to an inferred form of settlement not positively identified.

Pre-Iron Age

Virtually no material pre-dating the Iron Age was found. A mat-impressed flat base from site 024 may be Chalcolithic and a rolled rim from site 021 may belong to the Chalco-EB corpus but neither is certain. All other finds were Iron Age or later.

Iron Age (Map II)

Nearly all the Iron Age material fits into the corpus of excavated material from Tawilan and Buseirah, i.e., seventh-sixth centuries B.C. A representative selection is illustrated in Figures 1 and 2.

The necked bowls Figure 1: 1-3 are a common Edomite form with many parallels.[10] Bowls with slightly thickened rims, Figure 1: 5 and 7 are common in many variations. Parallels may be found in Glueck.[11]" The simple bowl rim Figure 1: 9 probably comes from a carinated bowl.[12] Cooking pots Figure 1: 10-13 are the most common form and, with small variations are mostly very similar. Parallels may be found in Bennett.[13]

The storage jars published in Figure 2 are all common Edomite forms although few have yet been published. Glueck[14] provides parallels to No. 2. The handle with the potter's mark (Fig. 2: 6) is of clear Iron Age fabric although no parallel for this particular mark has yet been found.

The cooking pot Figure 1: 14 does not fit well into the Seventh-Sixth Century corpus. The small size of the sherd makes it difficult to be certain but perhaps it belongs rather in Iron II A-B.[15] Numbers 15-18 also do not fit well into the standard Edomite ware-shape interface and may perhaps be earlier forms. A rather inexact parallel for No. 17 may be found in Lachish III Pl. 98 No. 587 Level III (Nineth-Eighth Centuries B.C.).

Classical Periods (Map III)

The majority of classical pottery found appears to belong to the First Century A.D., shading a little into the centuries on either side. The period seems to have been one of great prosperity and countryside is covered with farms, hamlets and villages. Later material is much scarcer, being confined to a few, generally larger, sites. Whether this decline can be tied to the Roman takeover of A.D. 106 or whether other factors are involved remains to be determined. A representative sample of the material is published in Figure 3.

Number 1 is of Nabataean Sigillata.[16] No exact parallel has yet been found but the form is probably First Century B.C.

Number 2 and 3 are of Khairy's[17] Type F7- "not of the very fine ware". They are dated "Turn of the Christian Era until around the end of the Third Century A.D." although this is now to be refined to

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[10] Bennett, *Levant,* 1974, *ibid.,* Fig. 15:4, Bennett, *Levant,* 1975, *ibid.* , Fig. 5:13, 18; Bennett, *Levant,* 1984, *ibid.,* Fig. 3: 799.

[11] N. Glueck, *Explorations in Eastern Palestine II, AASOR,* New Haven, 1935, Pl. 23:13, 15, 16.

[12] Bennett, *Levant, 1975, ibid.,* Fig. 5:45.

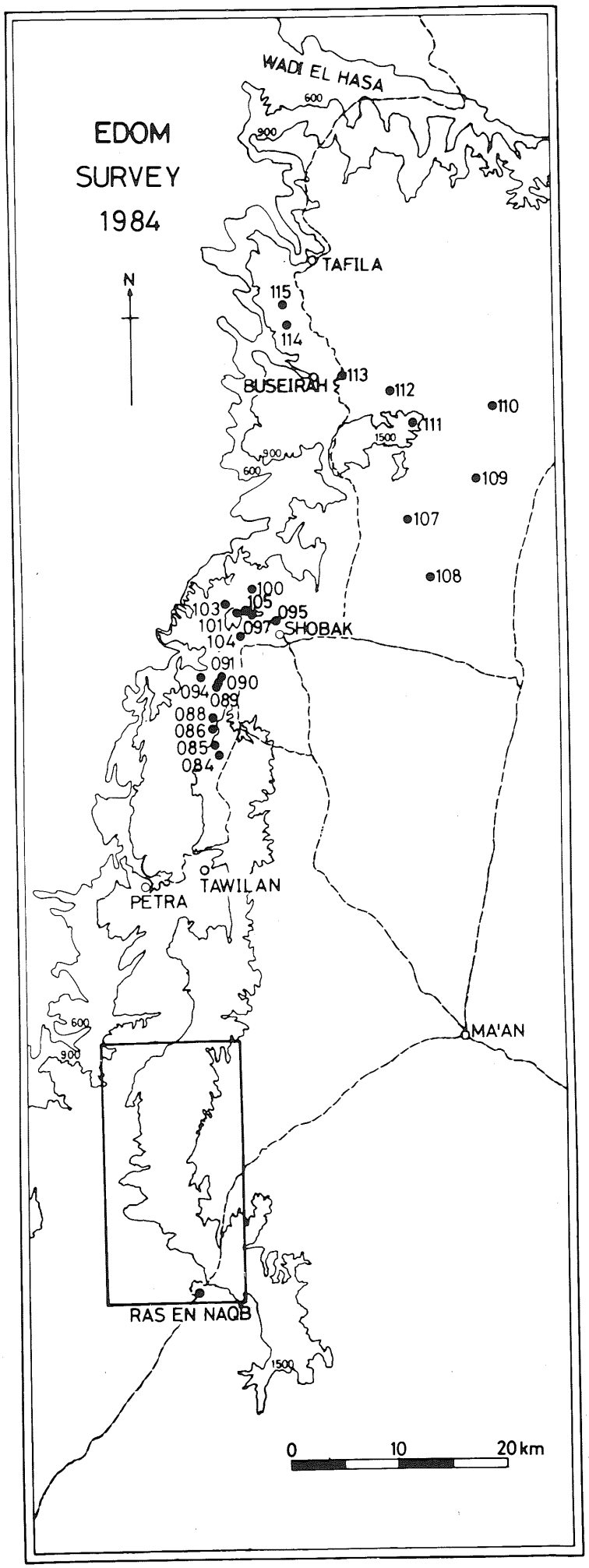
[13] Bennett, *Levant,* 1984, *ibid.,* Fig. 5: 842, 796, 837.

[14] Glueck, 1935, *ibid.,* Pl. 26B:13, 14.

[15] Ruth Amiran, *Ancient Pottery of the Holy Land,* Jerusalem, 1969, p. 76:7.

[16] A. Negev, Nabataean Sigillata, *RB,* 3 (1972) p. 381-398.

[17] N.I. Khairy, A Typological Study of the Unpainted Pottery from the Petra Excavations, Ph.D., University of London, unpublished, 1975.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Map. I

the First Century[18] A.D.

Number 4 is a development of the Hellenistic Fish Plate, First Century B.C.-First A.D.

Number 5 belongs with Khairy's Bowls F.17 in general type, although there is no specific parallel. An example from Petra is similar and is dated to Phase V, First Century B.C. by Parr.[19]

Bowls, numbers 6-9, are the very common type F.1 "last quarter of the Second Century B.C. until about the first half of the Second Century A.D." with a revised date for these examples being probably the second half of the First Century A.D.

Cooking pots 10-16 (and perhaps also 17 and 18) are of Cooking Pot types F6 and F7 "first half of the First Century B.C. until the late Roman period". A revised date for those examples is the First Century A.D. Other examples are published by Parr and Hammond.[20]

Numbers 19-23 are Cooking pots Type F.8 "beginning of First Century B.C. until the middle of the Second Century A.D." to be revised to the First Century A.D. Parr publishes no exact parallels but Fig. 4 No. 53 is similar and dates to Phase VIII, late First Century B.C.[21]

Numbers 24-27 belong to Jar type F.11 "beginning of the First Century B.C. until about A.D. 70" revised to a general First Century date.

Number 28 is of jar form F. 14 "second half of the First Century B.C. until about the third-fourth centuries A.D." revised to a general First Century date.

Numbers 29-31 belong to the late Roman-Byzantine corpus. Number 31 may perhaps be considered as a development of the fine Nabataean bowls.

Islamic Periods (Map IV)

With the exception of sherds 34 and 37 which would seem to be Umayyad and 'Abbāsid respectively, this corpus deals with post-Ayyubid forms. As the material comes from a survey, dating evidence is extremely limited and this, together with the paucity of publications for this period in the area, makes the dating here only tentative especially in the case of the Ottoman sherds. Summary on Table 2.

No definite parallels will be cited here as with hand-made pottery it is hard to decide, except in rare cases, what exactly constitutes a congruent sherd. The general forms are however found elsewhere, see Sauer 1973,. Fig. 4; Tushingham 1972, Fig. 7 and 8; Gilmore et al 1982, Plate 33B; Ingraham et al 1981, Plates 83-87; Smith 1973, Plates 73-76). For the painted pottery see especially Franken and Kalsbeek (1975, chapter 9), and Sauer's review of the same (Sauer 1976).

All sherds illustrated are hand-made unless otherwise stated. "Ware as 1" means that the inclusions are the same (as seen by eye). The ware may not be technically congruent. Figs. 4, 5 & 6.

Conclusions

One curious factor clearly revealed by this survey is that settlement on the Edomite plateau suffers from a strong "ebb and flow". The area is well settled in the Seventh and Sixth centuries B.C., in the First Centuries B.C. and A.D. and again in the 'Ayyūbid/Mamlūk period. A number of reasons may be tentatively put forward:

1) Geographical: because of the great differences in altitude found at the edges of the rift valley here (below sea level in the

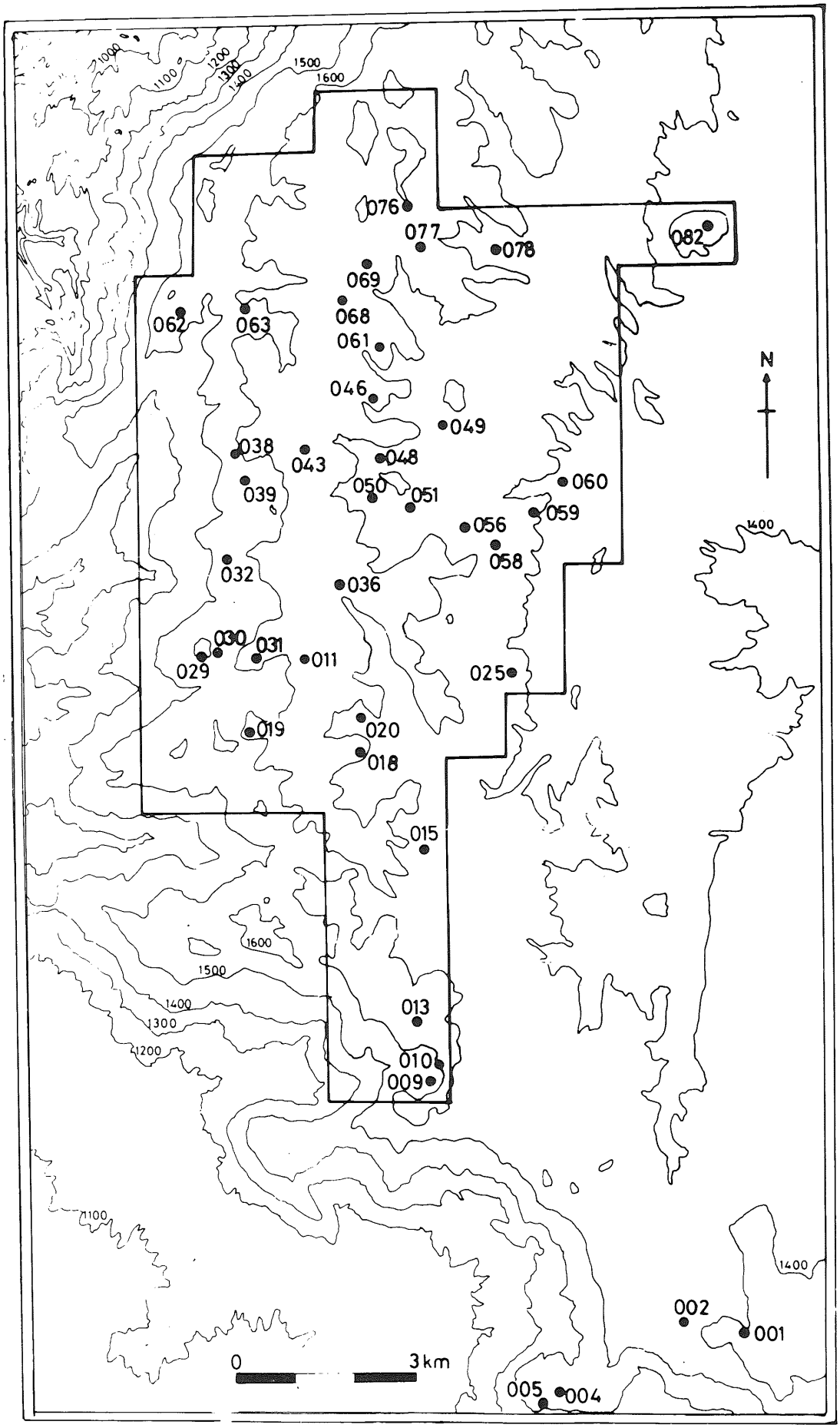
[18] I am most grateful to Dr. Nabil Khairy for his valuable comments on my material and for lending me a copy of his thesis. For the remainder of these Classical pottery notes I shall quote first from Dr. Khairy's thesis and then add his personal comments as to a revised date without acknowledgement in each case.

[19] P. J. Parr, A Sequence of Pottery from Petra in *Near Eastern Archaeology in the Twentieth Century: Essays in Honor of Nelson Glueck,* New York, 1970, Fig. 3:5.

[20] *Ibid.,* Fig. 6:83, 86; Fig. &: 104-105, Fig. 3:33 and, Philip C. Hammond, *The Excavation of the Main Theater at Petra, 1961-1962, Final Report,* Colt Archaeological Institute, 1965, Pl. LVIII.

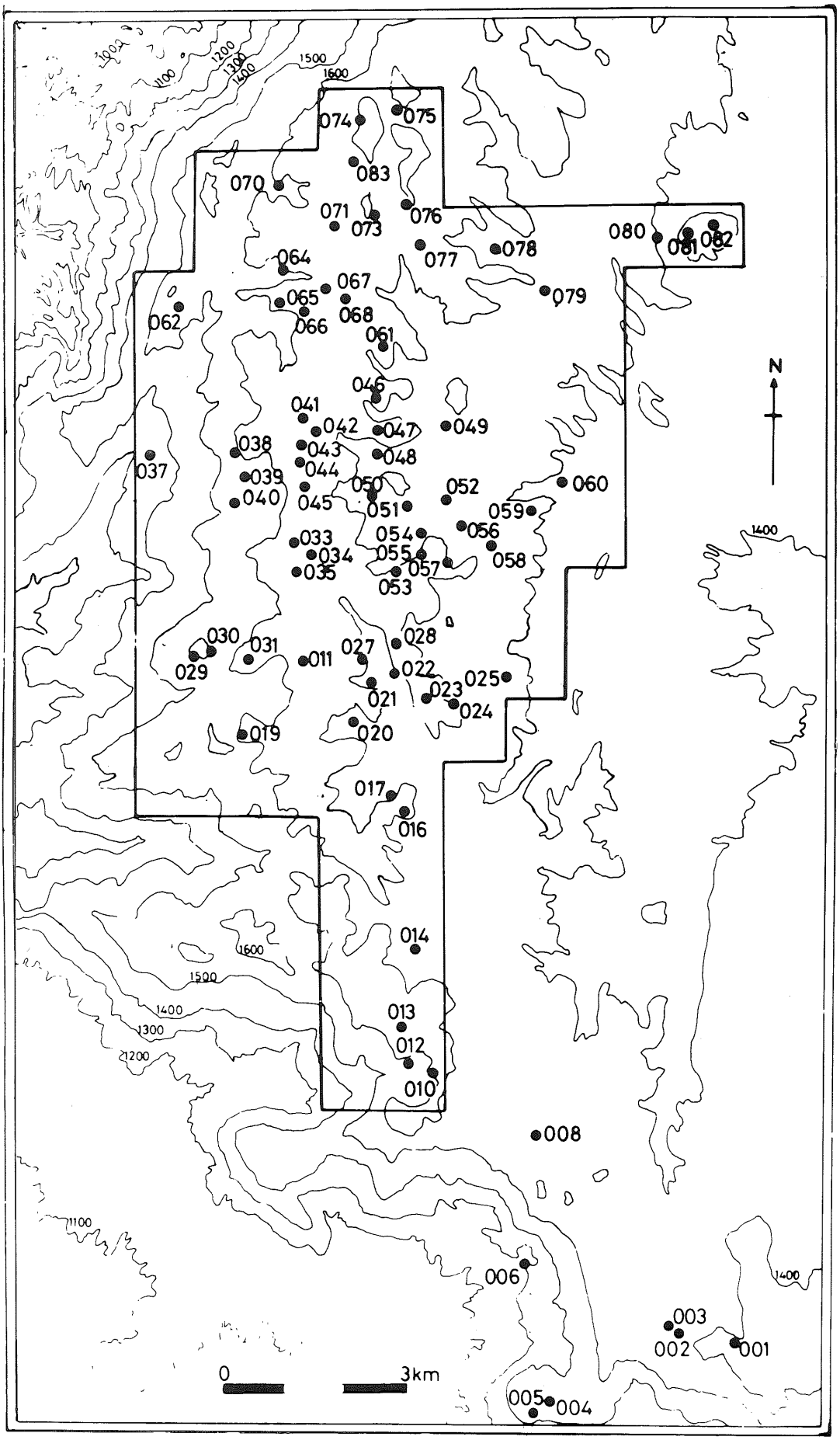
[21] Alistair Killick has indicated, when he kindly undertook to look at this material, that forms 19-23 and 24-27 may occur in Late Roman contexts at Udruh.

IRON AGE SITES



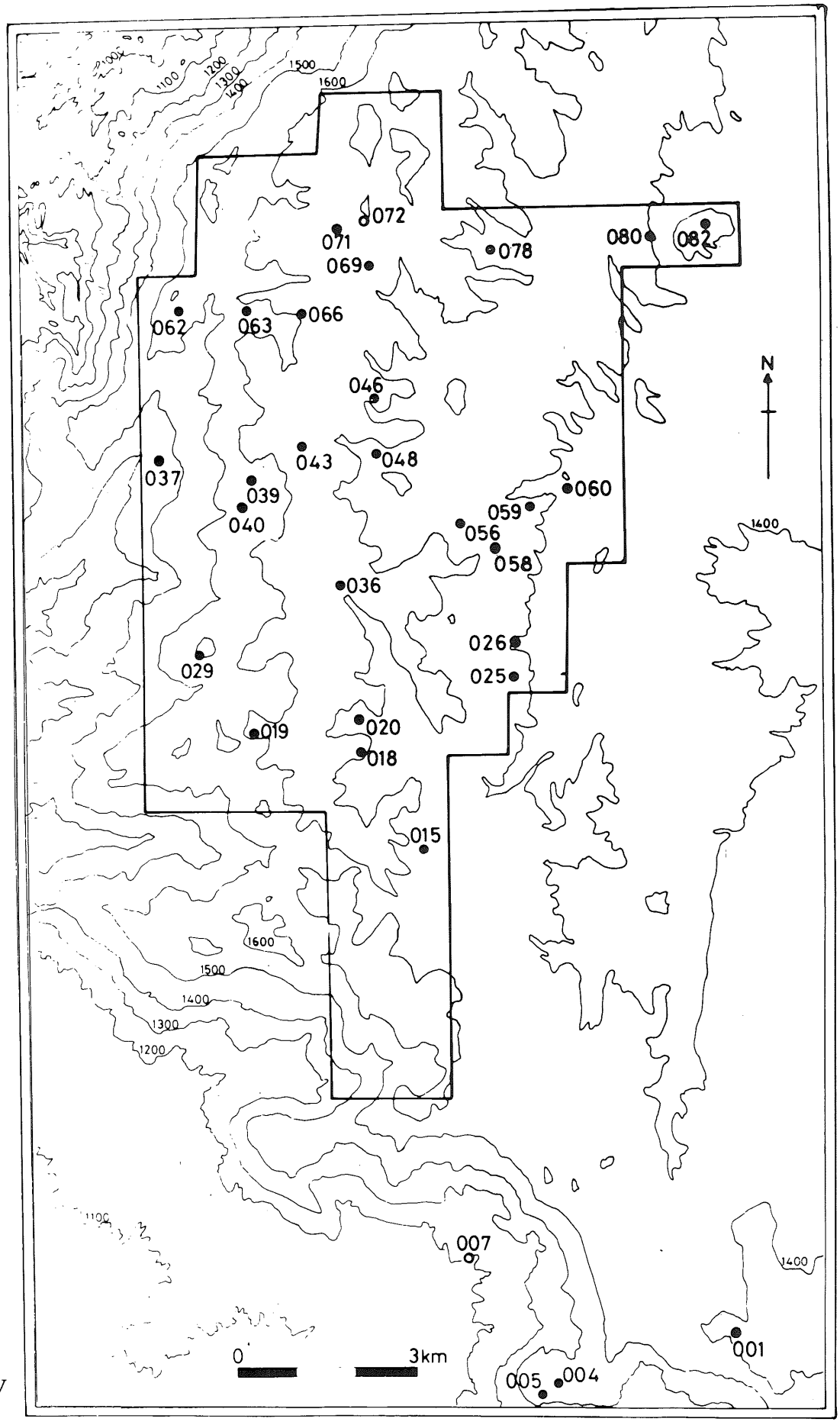
Map. II

CLASSICAL SITES



Map. III

ISLAMIC SITES



Map. IV

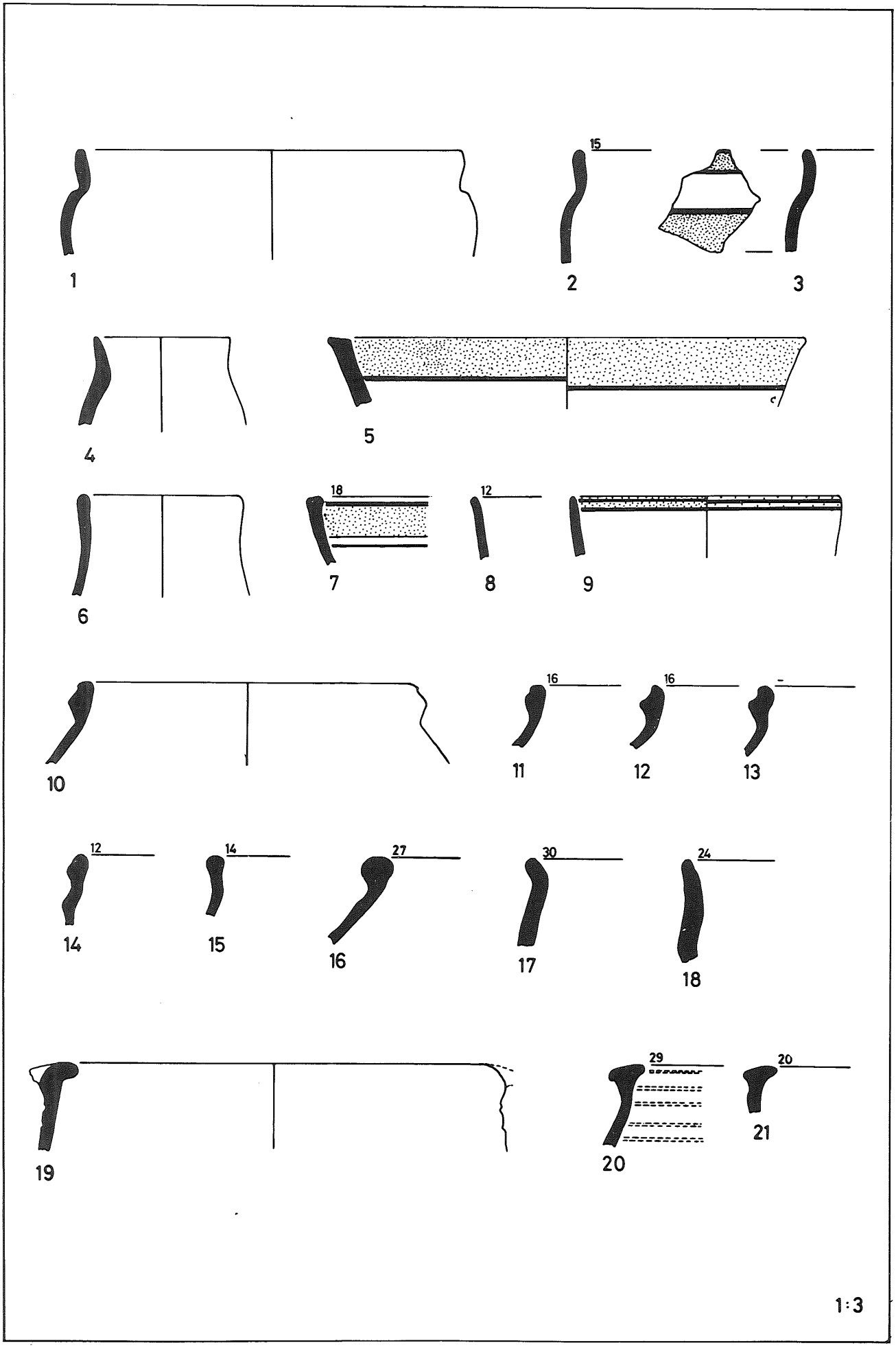

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Fig. 1:

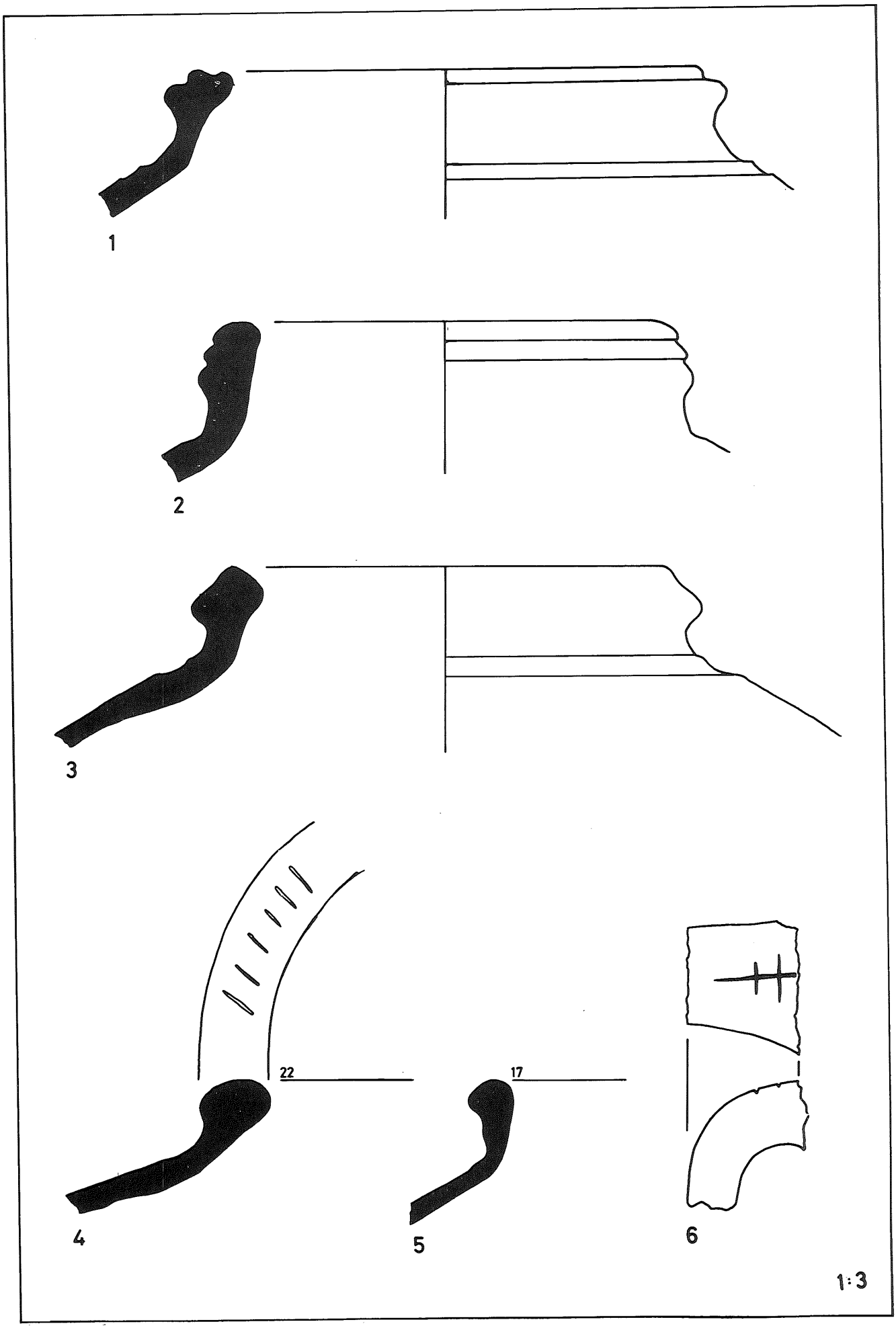

Fig. 2:

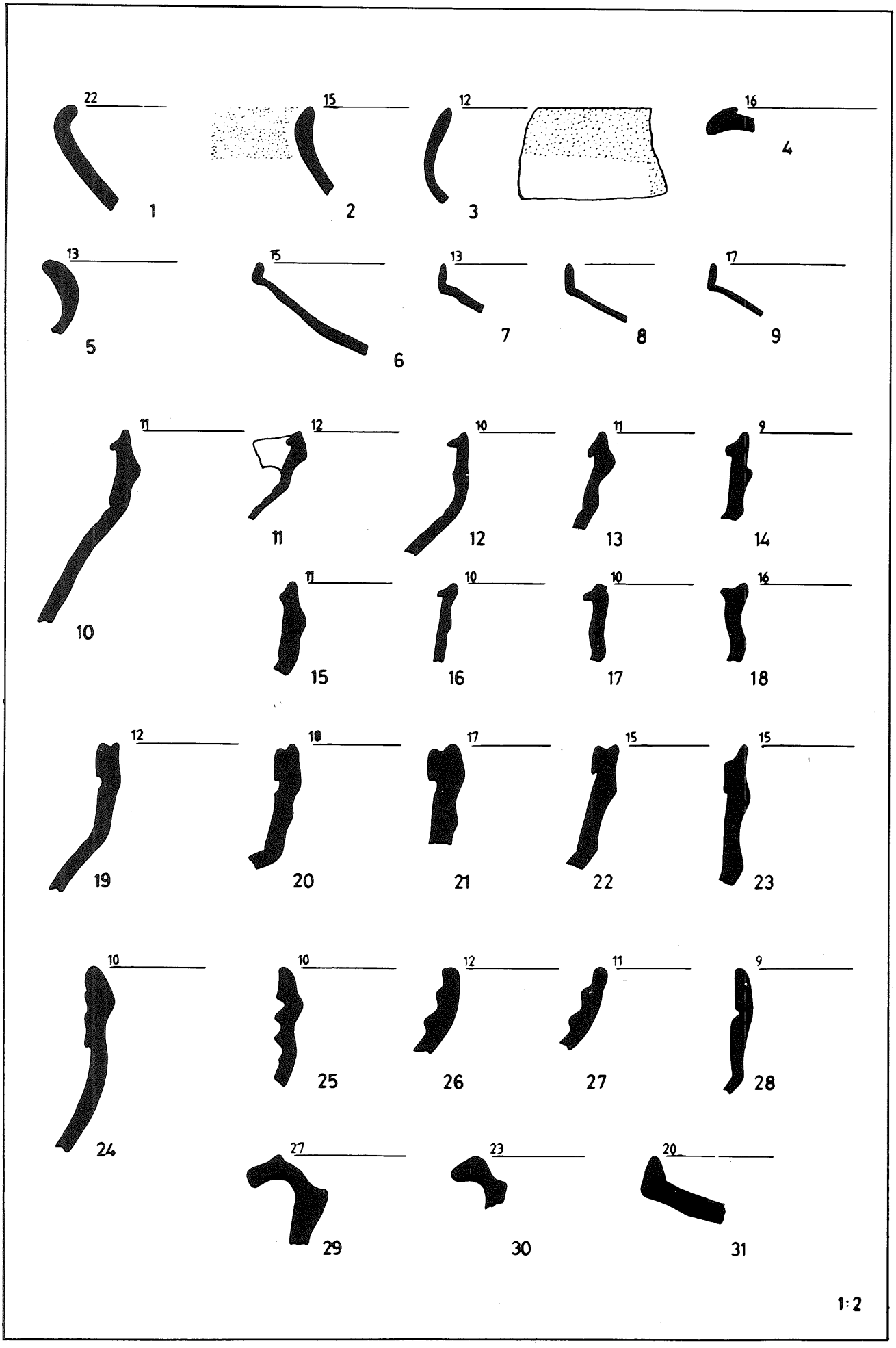
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Fig. 3:

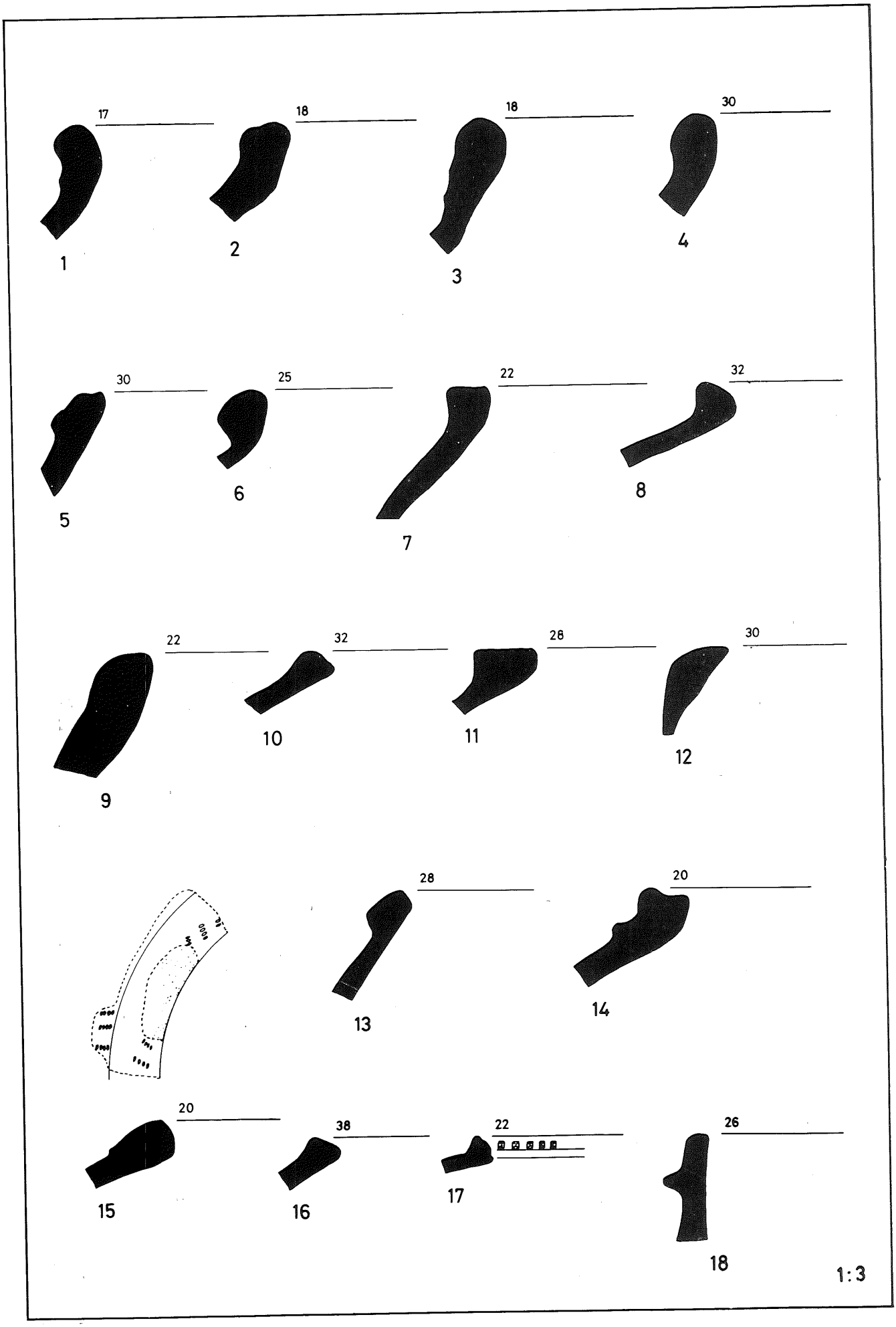
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Fig. 4:

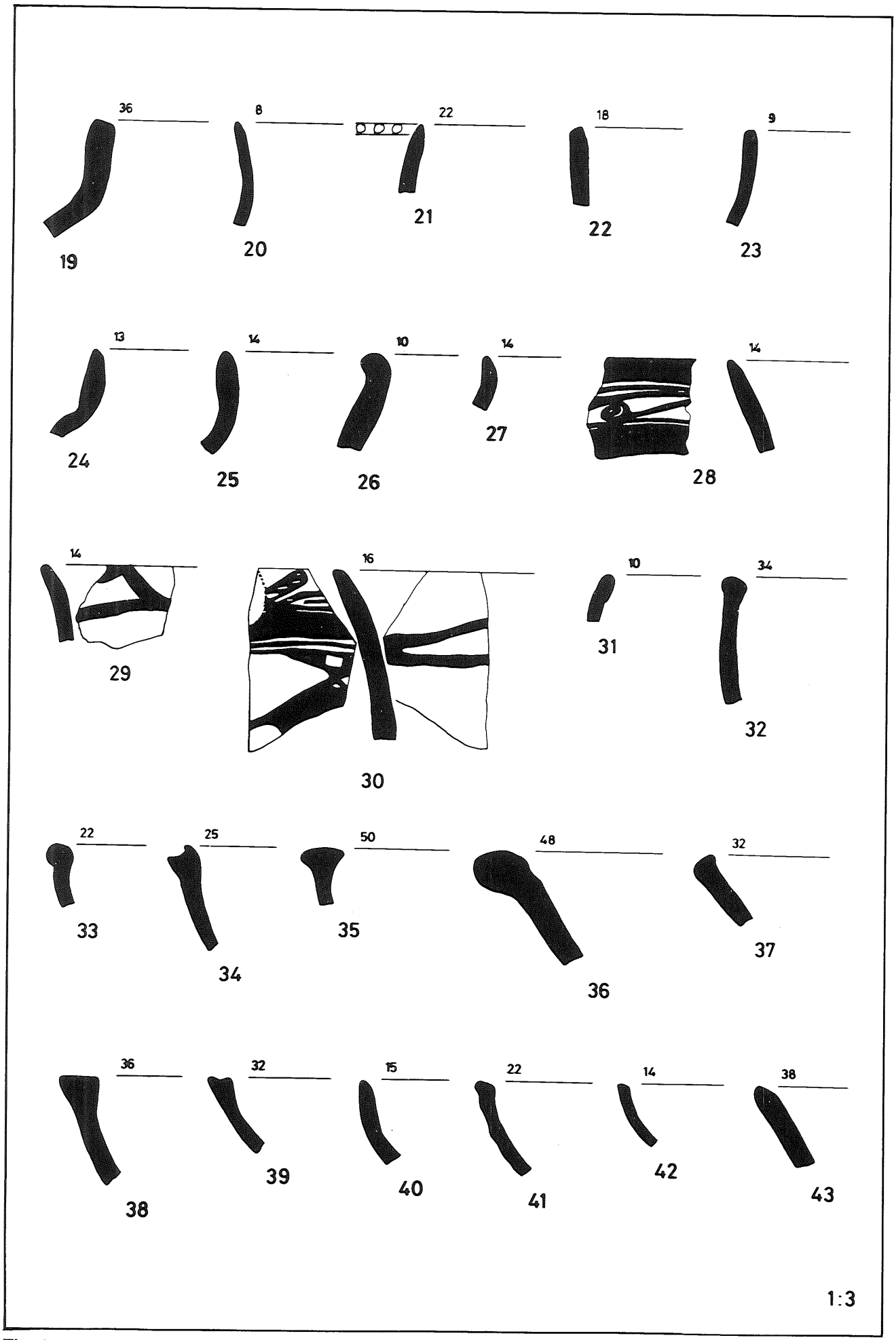
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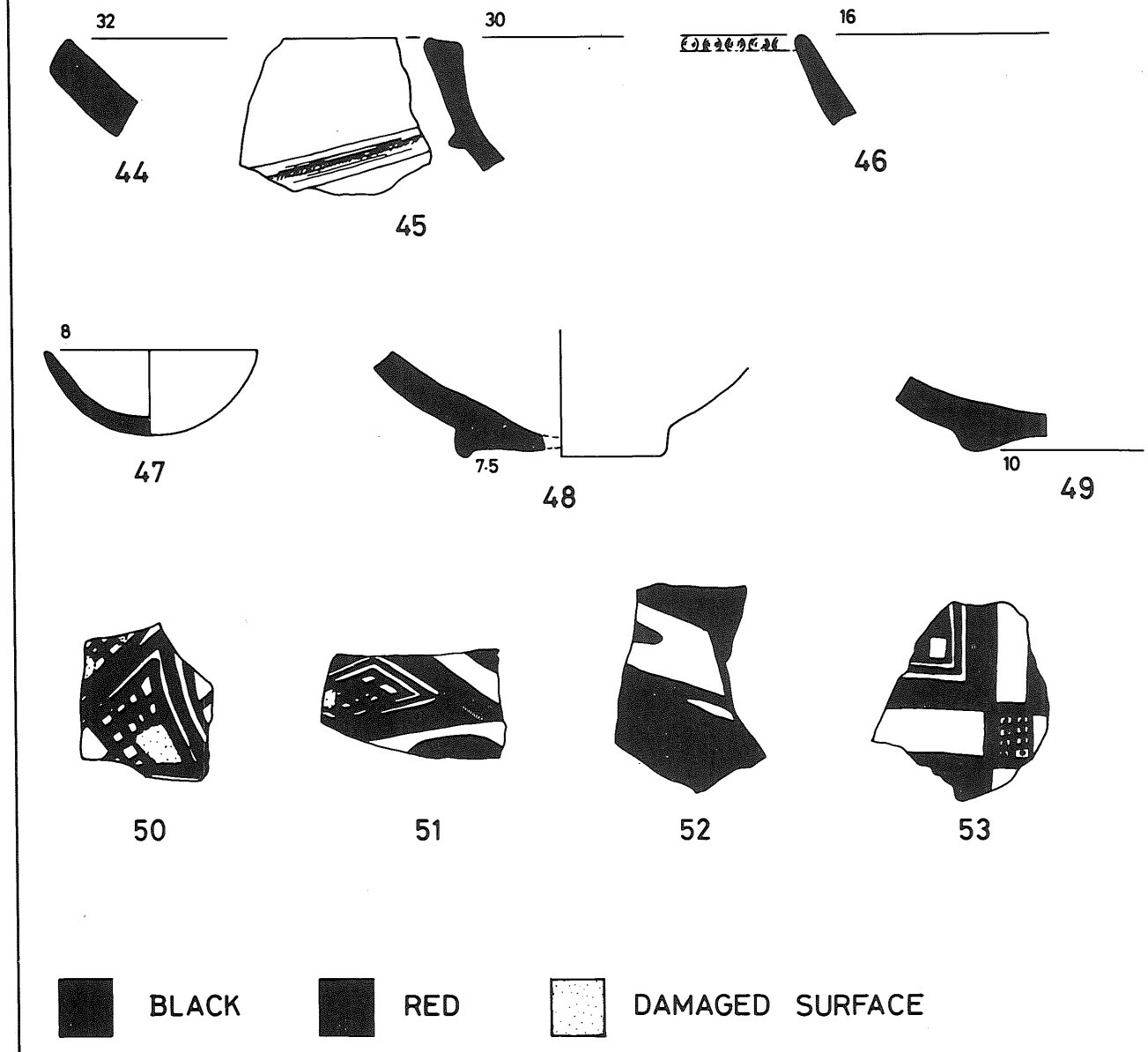
Fig. 5: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BLACK
RED
DAMAGED SURFACE

Fig. 6:

Wadi 'Arabah to over 1600 m. on the plateau) and the numerous springs to be found on the plateau the area is best suited to nomadic utilisation. The plateau is bitterly cold in winter but well supplied with water in summer. The 'Arabah is stiflingly hot in summer and virtually waterless but is pleasant in winter. Thus, all other factors being equal, the nomadic life is by far the most comfortable. It is still indulged in by many bedouin today.

2) Political: the change from the putative nomadism of the early Iron Age to the settlements of the Seventh Century B.C. may most probably be attributed to the Assyrians — a people with ferocious organisational ability. Assyrian motives would have concerned the security of the trade routes into northern Arabia. After the fall of the Assyrian empire the Babylonians and Persians would have held Edom together for a while (see for instance the cuneiform tablet recently discovered at Tawilan[22] dating to the accession year of a Darius, probably Darius I) but by the mid-Fifth Century B.C. a reversion to nomadism seems to have taken place.

It is not until the First Century B.C. that Edom again rises to prominence with the civilisation of the Nabataeans. The Nabataeans as a people are, of course, known much earlier but there is little evidence that they were a settled people much before the First Century B.C. The question of continuity between the Edomites and the Nabataeans is a vexed one I have no intention of pursuing here but I think it is fair to say that there is little continuity of settlement whatever similarities of language, art or anything else may be traced. Iron Age villages such as 015, 018, 030, 032, 036, 051, 063, 069, 076, 094, not to mention Tawilan and Buseirah show no evidence of major Nabataean reoccupation. Political factors presumably also contribute to the fall of the Nabataean Kingdom in as much as there seems to be a severe decline following Roman annexation.

Another gap in settlement follows — a few villages and fortresses can be traced in the late Roman and Early Islamic periods but it is not until the 'Ayyūbid-Mamlūk period that settlement again becomes extensive. The pottery of the late Mamlūk and early Ottoman periods is little understood in this area but a gap in occupation is not impossible here also. The Islamic material however requires much more analysis before any firm conclusions can be made.

3) Land Use: geomorphologist Phillip Macumber[23] has pointed out that the intensive sort of agriculture apparent on the plateau in the Nabataean and probably Iron Age as well is very likely to result in a dropping of the water table. This is a factor still to be investigated but it might well prove to be most important and may well go a long way towards explaining the cyclical nature of settlement in this area.

A further season of work is planned for 1985 which will continue the survey and make soundings at a few selected sites. it is hoped that the situation will become a little clearer following the analysis of this material.

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British Institute
for Archaeology & History
Amman.

[22] Bennett, *Levant, 1984, ibid.,* p. 19-21.

[23] Personal communication.

Table 1

Site No.	Glueck No.	Name	IA IIA-B	IA IIC	2nd-1st B.C.	1st-2nd A.D.	L. Rom-Byz	Umm	Ayy.-Mam.	Ott.	Mod.	Class. Indeter	Period Uncer.
001	34	Kh. esh-Shudaiyid	—	F	B	H	—	—	O	?	—	—	
002			—	O	—	—	—	—	—	—	—	O	
003	33	Kh. el-Fuweilah	—	—	—	—	—	—	—	—	—	(H)	
004	31	Kh. Neqb esh-Shtar	—	O	—	F	—	—	—	O	—	—	
005	31	Kh. Neqb esh-Shtar	—	B	—	—	—	—	—	O	—		
006	44	Ain Umm Mansur	—	—	—	B	—	—	—	—	—	—	
007	45	Ain Jemmam	—	—	—	—	—	—	—	—	—	—	
008			—	—	—	—	—	—	—	—	—	H	
009	49	Rujm Bir Turki	—	F	—	O	—	—	—	—	B	—	
010			—	?	—	V	O	—	—	—	—	—	
011			—	O	—	B	—	—	—	—	B	—	
012	50	Kh. Bir Turki	—	—	—	H	—	—	—	—	B	—	
013			—	O	—	O	—	—	—	—	H	—	
014			—	—	—	(H)	—	—	—	—	H	—	
015			—	V	—	O	—	—	—	O	—	—	
016			—	—	—	?	—	—	—	—	—	—	
017			—	—	—	V	—	—	—	—	—	—	
018			—	V	—	—	—	—	—	O	—	O	
019			—	O	—	?	—	—	V	—	H	—	

Site No.	Glueck No.	Name	IA IIA-B	IA IIC	2nd-1st B.C.	1st-2nd A.D.	L. Rom-Byz	Umm	Ayy.-Mam.	Ott.	Mod.	Class. Indeter	Period Uncer.
020			—	O	—	—	B	—	—	?	—	—	
021			—	—	—	B	O	—	—	—	—	—	
022			—	—	—	—	—	—	—	—	—	B	
023			—	—	—	—	B	—	—	—	—	—	
024			—	—	—	V	—	—	—	—	—	—	
025	73	Kh. Qurein South	—	O	—	?	V	—	?	V	—	—	
026		Kh. Qurein North	—	—	—	—	—	—	?	V	—	—	
027		Rujm Sallam	—	—	—	—	—	—	—	—	—	B	
028			—	—	—	B	—	—	—	—	—	—	
029			—	?	—	—	—	—	?	—	—	(B)	
030			—	V	—	O	—	—	—	—	H	—	
031			—	O	—	(B)	—	—	—	—	—	—	
032		Kh. Khilal	—	F	—	—	—	—	—	—	—	O	
033			—	—	—	B	—	—	—	—	—	—	
034			—	—	—	B	—	—	—	—	—	—	
035		Fera' Dor	—	—	—	V	—	—	—	—	—	—	
036		Kh. el Munsouria	—	W	—	B	—	—	?	O	—	—	
037	(90)	Kh. Dilaghah (East)	—	—	—	—	—	?	(V)	—	V	—	
038			—	?	—	H	—	—	—	—	—	—	
039		Ain (Kh.) Mudeilija	—	F	?	F	—	—	—	—	—	—	
040		Ain (Kh.) Mudeilija	—	—	—	H	—	—	?	B	—	—	

Site No.	Glueck No.	Name	IA IIA-B	IA IIC	2nd-1st B.C.	1st-2nd A.D.	L. Rom-Byz	Umm	Ayy.-Mam.	Ott.	Mod.	Class. Indeter	Period Uncer.
081			—	—	—	B	—	—	—	—	—	—	
082	82	Rujm Sadaqa	—	?	—	F	—	—	—	?	—	—	
083			—	—	—	—	—	—	—	—	—	B	
084	145	Kh. el-Maqdas	—	(V)	—	(V)	—	—	—	—	V	—	
085			—	O	—	—	—	—	—	—	—	O	
086	140	Kh. el-Kur	—	W	—	—	—	—	—	—	—	O	
087		Ain el-Iraq	—	O	—	B	—	—	—	—	—	—	
088	141	Kh. el-Iraq	—	B	—	—	—	—	—	—	—	O	
089	163	Kh. el-Weibdeh	—	O	?	?	?	—	—	—	—	—	
090	164	Kh. Ishra	—	V	V	?	—	—	(V)	(V)	B	—	
091	166	Kh. Shemmakh	—	O	—	O	—	—	—	?	—	—	
092			—	—	—	—	—	—	V	?	(V)	O	
093			—	—	—	—	—	—	V	?	(V)	—	
094	167	Kh. Usdur el-Leweimeh	—	F	—	0	—	—	—	—	—	—	
095			—	?	—	—	—	—	?	?	—	O	
096			—	?	—	B	—	—	—	—	—	—	
097			—	—	—	?	—	—	—	—	—	O	
098			—	—	—	H	—	—	—	—	—	—	
099			—	—	—	B	—	—	—	—	—	—	
100			—	—	—	B	—	—	—	—	—	—	

Site No.	Glueck No.	Name	IA IIA-B	IA IIC	2nd-1st B.C.	1st-2nd A.D.	L. Rom-Byz	Umm	Ayy.-Mam.	Ott.	Mod.	Class. Indeter	Period Uncer.
101			—	—	—	—	—	—	—	—	O	O	Q
102			—	—	—	B	—	—	—	—	—	—	
103		Umm Shbeik	—	—	—	—	—	—	V	V	—	O	
104			—	—	—	V	—	—	—	—	—	—	
105		Kh. Sihan	—	O	—	—	—	—	V	V	H	O	
106			—	—	—	H	—	—	—	—	—	—	
107		Hudeira	—	—	—	—	—	—	V	V	—	—	
108	183	Tawil Ifjeij	—	O	—	F	—	—	—	?	—	—	
109		Tell el Juheira	—	F	?	F	—	—	—	—	—	—	
110	185	Jebel el Qiranah	?	(F)	?	F	—	—	—	—	—	—	
111		Kh. Ata'ita	—	(F)	—	F	—	—	—	—	—	—	
112	(184)	(Ras el-Hala)	—	O	—	T	—	—	O	—	—	—	
113		Umm Dayiea	?	O	?	V	V	—	V	V	—	—	
114		Kh./Qalat es-Se'la	—	(V)	(V)	?	—	?	F	?	—	—	
115	203	Kh. Qasr ed-Deir	—	O	—	(V)	—	—	O	—	—	—	

Site No.	Glueck No.	Name	IA IIA-B	IA IIC	2nd-1st B.C.	1st-2nd A.D.	L. Rom-Byz	Umm	Ayy.-Mam.	Ott.	Mod.	Class. Indeter	Period Uncer.
041			—	—	—	B	—	—	—	—	—	—	
042			—	—	—	B	—	—	—	—	—	—	
043		(Kh.) Rassif	—	O	?	V	—	—	?	O	—	—	
044			—	—	—	B	—	—	—	—	—	—	
045			—	—	—	(B)	—	—	—	—	—	—	
046			—	O	—	H	—	—	—	?	B	—	
047			—	—	—	—	—	—	—	—	—	B	
048			—	O	—	—	—	—	?	O	—	F	
049			—	?	?	B	—	—	—	—	—	—	
050			—	O	—	V	—	—	—	—	—	—	
051			—	F	—	O	—	—	—	—	—	—	
052			—	—	—	H	—	—	—	—	—	—	
053			—	—	—	B	—	—	—	—	—	—	
054			—	—	—	B	—	—	—	—	—	—	
055			—	—	—	B	—	—	—	—	—	—	
056			—	O	—	V	—	—	—	?	—	—	
057			—	—	—	B	—	—	—	—	—	—	
058	77	Kh. Umm Hashas	—	F	O	?	—	—	O	O	—	—	
059	76	Kh. Umm Ras	—	O	—	V	—	—	O	?	—	—	
060	75	Kh. Dhor	—	?	—	F	—	—	V	?	—	—	

Site No.	Glueck No.	Name	IA IIA-B	IA IIC	2nd-1st B.C.	1st-2nd A.D.	L. Rom-Byz	Umm	Ayy.-Mam.	Ott.	Mod.	Class. Indeter	Period Uncer.
061			—	O	—	B	—	—	—	—	—	—	
062	89	Kh. er-Reseis	—	O	?	?	—	—	—	O	—	—	
063		Kh. esh-Sharat	—	W	—	O	—	—	—	O	—	—	
064		Mowt al Binat	—	—	—	B	—	—	—	—	—	—	
065			—	—	—	B	—	—	—	—	—	—	
066			—	—	—	H	—	—	O	?	—	—	
067			—	—	—	B	—	—	—	—	—	—	
068	(87)	(Ain Jenab esh-Shemsh)	O	O	—	B	—	—	—	—	—	—	
069		Rujm ʿal-Niswan	—	F	—	—	—	—	—	O	—	O	
070			—	—	—	V	—	—	—	—	—	—	
071		(Juweiza)	—	—	—	H	—	—	?	V	H	—	
072		(Juweiza)	—	O	—	—	—	—	—	O	—	O	Q
073		(Juweiza)	—	—	—	V	—	—	—	—	—	—	
074		Kh. Saqri	—	—	—	B	—	—	—	—	—	—	
075	96	Qabr Shaker	—	—	V	V	—	—	—	—	—	—	
076			—	F	—	—	—	—	—	—	—	O	
077	85	Ain Juweiza Sharqiyyeh	—	O	—	V	—	—	—	—	—	—	
078	84	Kh. el Megheitah	—	H	(H)	H	—	—	—	O	—	—	
079	83	Kh. Mufleseh	—	—	—	V	—	—	—	—	—	—	
080	81	Sadaqa	—	—	—	V	—	(V)	—	—	V	—	

Table II - Islamic Period Pottery

Site	*Umm.*	*Abb.*	*H.M. Unpainted*	*H.M. Painted Monochrome*	*H.M. Painted Bichrome*	*Green Glaze*	*Fine Ware*
001	—	—	x	—	—	—	—
004	—	—	x	—	—	—	—
005	—	—	x	—	—	—	—
015	—	—	x	—	—	—	—
018	—	—	x	—	—	—	—
019	—	—	x	x	—	—	—
020	—	—	x	—	—	—	—
025	—	—	x	—	—	—	—
026	—	—	x	—	—	—	—
036	—	—	x	x	—	—	—
037	—	?	x	—	—	—	x
040	—	—	x	—	—	x	—
043	—	—	x	x	—	—	—
046	—	—	x	—	—	—	—
048	—	—	x	x	—	—	—
056	—	—	x	—	—	—	—
058	—	—	x	—	—	—	—
059	—	—	x	x	—	x	—
060	—	—	x	x	—	—	—
062	—	—	x	—	—	—	—
063	—	—	x	—	—	—	—
066	—	—	x	x	—	—	—
069	—	—	x	—	—	—	—
071	—	—	x	—	—	—	—
078	—	—	x	—	—	—	—
080	x	—	—	—	—	—	—

Site	Umm.	Abb.	H.M. Unpainted	H.M. Painted Monochrome	H.M. Painted Bichrome	Green Glaze	Fine Ware
082	—	—	x	—	—	—	—
090	—	—	x	x	—	—	—
092	—	—	x	x	x	—	x
093	—	—	x	x	—	x	—
095	—	—	x	—	—	—	—
101	—	—	x	—	—	—	—
103	—	—	x	x	—	—	—
105	—	—	x	x	—	x	—
107	—	—	x	x	x	—	—
108	—	—	x	—	—	—	—
112	—	—	x	x	—	—	—
113	—	—	x	x	x	—	—
114	?	—	x	x	—	—	—
115	—	—	x	—	—	x	—

Table II: H.M.: Hand-made. Fine ware refers to Smith's "medieval group B" (Smith 1973) which he mistakenly calls Abassid (see Sauer 1974).

Figure I - Iron Age

1. Necked Bowl. Site 005. Buff coloured ware, moderately well levigated and fired evenly throughout. Small-med. lime and chert? Inclusions. 7th-6th C.B.C.
2. Necked Bowl. Site 015. Similar ware to 1 but less well fired - grey core, surface colour varies from buff to pink. 7th-6th C.B.C.
3. Necked Bowl. Site 039. Moderately well levigated with small-med. lime and chert? Inclusions. Light red ware fired evenly throughout. Painted ext. in black bands enclosing red. Lower section of red is unevenly ring burnished. 7th-6th C.B.C.
4. Jar. Site 025. Moderately well levigated with small lime and chert? Inclusion. Self-slipped in and out. 7th-6th C.B.C.
5. Bowl. Site 090. Moderately well levigated with small-med. lime and chert? Inclusions. Fired light brown in and out darkening to thick, grey core. Brown paint over rim in and out bordered by dark bands, the outside band having fired brown rather than black. 7th-6th C.B.C.
6. Jar. Site 059. Moderately well levigated with small-med. lime and chert? Inclusions. Fired buff-brown throughout. Smoothed surfaces in and out. 7th-6th C.B.C.
7. Bowl. Site 088. Fired orange in and out with dull beige core; small lime inclusions. Moderately well levigated. Black painted bands with red-painted zone between. 7th-6th C.B.C.
8. Bowl. Site 109. Moderately well levigated. Fired buff throughout with small-med. lime and chert? inclusions. Undecorated. 7th-6th C.B.C.
9. Bowl. Site 090. Moderately well levigated with small-med. lime and chert? Inclusions. Fired orange-red in and out to a dull brown core. Red slip int.over rim and cream ext.with black bands. Smooth self-slip below bands int. 7th-6th C.B.C.
10. Cooking Pot. Site 005. Fired orange-red ext.and dull brown int. with a thick grey core. Many small and med. lime and chert? Inclusions. Rough surface finish. 7th-6th C.B.C.
11. Cooking Pot. Site 005. Fired red-brown in and out with thick grey core. Ware similar to no. 10. 7th-6th C.B.C.
12. Cooking Pot. Site 058. Fired dull grey throughout with orange-brown tinges near rim in and out. Poorly fired and levigated with small-med. lime inclusions. 7th-6th C.B.C.
13. Cooking Pot. Site 058. As No. 12. 7th-6th C.B.C.
14. Cooking Pot. Site 068. Poorly levigated with small and med. lime inclusions. Fired orange at surfaces with thick grey core. 9th-8th C.B.C.
15. Bowl or jar. Site 113. Moderately well levigated with many small and medium lime inclusions. Fired light brown at surfaces with thick grey core. 9th-8th C.B.C.?
16. Jar. Site 110. Moderately well levigated with many small and med. lime inclusions. Fired light brown in and out with greyish-brown core. 9th-8th C.B.C.?
17. Jar. Site 089. Well levigated with a few small lime inclusions. Fired even brown at surfaces only with thick grey core. 9th-8th C.B.C.?
18. Bowl. Site 039. Fired orange in and out with dull-brown core. Small to med. lime and Chert? Inclusions with some chaff temper. Surfaces worn. Date uncertain.
19. Bowl or Krater. Site 088. Moderately well levigated with small and med. lime and chert? Inclusions. Fired dull brown at surfaces ext. and orange-brown int. with a thick grey core. 7th-6th C.B.C.
20. Jar. Site 109. Moderately well levigated with mostly small-med. lime inclusions with some chert?. Fired light orange-red shading to cream buff ext., brown int. with thick grey core. Darker bands of burnishing int. 7th-6th C.B.C.
21. Jar. Site 058. Poorly levigated with mostly small-med. Lime inclusions with some chert? And quartz. Fired red in and out with thick grey core. 7th-6th C.B.C.

Figure II - Iron Age

1. Storage Jar. Site 088. Moderately well levigated with many lime, quartz and chert? Inclusions. Fired red at surfaces with thick grey core. White slip applied unevenly ext. 7th-6th C.B.C.
2. Storage Jar. Site 050. Poorly levigated with med.-large lime and quartz inclusions. Fired grey throughout except for red bloom on lip. 7th-6th C.B.C.
3. Storage Jar. Site 088. Moderately well levigated with med. and large mostly lime inclusions. Fired red in and out with thick grey core. 7th-6th C.B.C.
4. Storage Jar. Site 088. Moderately well levigated with med. and large mostly lime inclusions. Fired brown at surfaces with thick grey core. Series of six cuts made across lip with sharp implement. 7th-6th C.B.C.
5. Jar. Site 088. Moderately well levigated with small and med. lime and chert? Inclusions. Fired red-brown in and out with thick grey core. Probably 7th-6th C.B.C. but perhaps slightly earlier.
6. Handle from storage Jar. Site 088. Moderately well levigated with med.-large lime and quartz inclusions. Fired grey throughout. Potter's mark cut in with sharp implement. 7th-6th C.B.C.?

Figure III - Classical

1. Bowl. Site 090. Nabataean Sigillata. Finely levigated buff coloured ware with no visible inclusions. Brown glaze shading to black in places. 1st C.B.C.–1st C.A.D.
2. Bowl. Site 001. Moderately well levigated with few small lime inclusions. Unevenly applied black paint below rim ext. 1st C.B.C. – 1st C.A.D.
3. Bowl. Site 090. Moderately well levigated with few small lime inclusions. Dark red paint-slip all over ext. and below rim and dribbled int. 1st C.B.C. – 1st C.A.D.
4. Bowl. Site 090. Moderately well levigated with few small lime inclusions. Two non-joining sherds, one fired orange throughout, one poorly fired dull grey-brown. 1st B.C. – 1st A.D.
5. Jar. Site 090. Moderately well levigated with few small inclusions. Fired orange-brown throughout. Dark brown paint ext. and firing reddish over rim int. 1st B.C. – 1st A.D.
6. Bowl. Site 110. Well levigated with few small lime inclusions. Firing red-brown with grey core in thicker sections. Dark paint over rim ext. 1st C.A.D.
7. Bowl. Site 090. Well levigated with few small and occasional medium lime inclusions. Fired brown at surface with thick grey core. 1st C.A.D.
8. Bowl. Site 068. Well levigated with no visible inclusions. Fired orange throughout. 1st C.A.D.
9. Bowl. Site 054. Well levigated with occasional small lime inclusions. Fired brown in and out with a thick grey core. 1st C.A.D.
10. Cooking Vessel. Site 020. Moderately well levigated with few fine lime and occasional quartz inclusions. Dark brown surface ext. Otherwise fired orange-brown throughout. 1st C.A.D.
11. Cooking Vessel. Site 004. Well levigated with few lime inclusions. Thin creamy buff wash ext. Fired orange-brown throughout. 1st C.A.D.
12. Cooking Vessel. Site 080. Moderately well levigated with small and medium lime inclusions. Thin grey core. Fired dull grey-brown at surface ext, dark brown surface int. and in section. 1st C.A.D.
13. Cooking Vessel. Site 066. Well levigated with occasional small lime and quartz inclusions. Dark red slip ext. Fired orange-brown throughout. 1st C.A.D.
14. Cooking Vessel. Site 036. Well levigated with occasional fine lime inclusions. Thin cream wash ext. Fired orange-brown throughout. 1st C.A.D.
15. Cooking Vessel. Site 078. Moderately well levigated with numerous small lime and quartz inclusions. Fired orange-brown throughout but duller at surface ext. 1st C.A.D.
16. Cooking Vessel. Site 104. Well levigated with occasional small lime inclusions. White slip ext. Fired orange-brown throughout. 1st C.A.D.
17. Cooking Vessel. Site 053. Well levigated with "sandy" feel to surface. Few lime inclusions. Dark brown slip in and out. Fired orange throughout. 1st C.A.D.
18. Cooking Vessel. Site 053. Moderately well levigated with numerous small lime and quartz inclusions. Fired orange-brown throughout. Dark brown slip ext. 1st C.A.D.
19. Cooking Vessel. Site 062. Moderately well levigated with small and medium lime and quartz inclusions. Fired orange-brown in and out with a darker brown core. 1st C.A.D.
20. Cooking Vessel. Site 083. Well levigated with small and medium lime and quartz inclusions. Fired orange-brown in section, firing redder at surface. 1st C.A.D.
21. Cooking Vessel. Site 033. Well levigated with small and medium lime and quartz inclusions. Fired orange-brown in section, slightly lighter at core. Slip firing dull reddish-brown int. and dark brown ext. 1st C.A.D.
22. Cooking Vessel. Site 068. Well levigated with small and occasional medium lime and quartz inclusions. Fired orange-brown throughout. Very light white wash ext. 1st C.A.D.
23. Cooking Vessel. Site 027. Well levigated with small and occasional medium lime and quartz inclusions. Fired orange-brown throughout. 1st C.A.D.
24.. Jar. Site 068. Well levigated with small and occasional medium lime and quartz inclusions. Fired orange-brown, somewhat darker at core. Remains of thin dark wash ext. 1st C.A.D.
25. Jar. Site 052. Moderately well levigated with small and occasional medium lime inclusions. Fired grey ext. muddy brown int. orange brown in section with thick grey core. 1st C.A.D.
26. Jar. Site 087. Moderately well levigated with small and medium lime and quartz inclusions. Fired orange-brown with grey core. Red paint over rim int. slip ext. firing buff at rim to dark on body. 1st C.A.D.
27. Jar. Site 033. Moderately well levigated with small and medium lime and quartz inclusions. Firing unevenly from dull orange-brown to grey. Section mostly grey with dark brown in places. 1st C.A.D.
28. Jar. Site 010. Moderately well levigated with few small lime inclusions. Fired red-brown throughout. Grey at surface ext.
29. Krater. Site 025. Moderately well levigated with few small lime and quartz inclusions. Thick greyish core. Fired red-brown in and out. Surface ext. and on overhanging lip fired dark grey. Late Roman/Byz.
30. Krater. Site 113. Moderately well levigated with few small lime inclusions. Thick grey core. Fired light brown in and out. Black paint ext. and int. to just below internal lip. Late Roman/Byz.
31. Bowl. Site 113. Moderately well levigated with few small-med. lime inclusions. Fired reddish-brown throughout. Dark paint over rim ext. Late Roman/Byz.

Figure IV - Islamic

1. Large Jar. Site 058. Orange-brown surface, large black core. The ware is chaff-tempered with white grits. Mamluk/Ottoman. Also occurs at Site 059.
2. Large Jar. Site 090. Brown surface, large black core. Ware as 1. Mamluk/Ottoman.
3. Large Jar. Site 025. Creamy orange surface, large black core. Ware as 1. Mamluk/Ottoman. Also occurs at site 058.
4. Large Jar. Site 060. Orange surface, large black core. Ware as 1. Mamluk/Ottoman. Also occurs at site 059.
5. Large Jar. Shobak Castle. Light brown, grey core. Ware as 1. Mamluk/Ottoman.
6. Large Jar. Site 058. Red fabric, off-white slip, small grey core. Chaff-tempered ware. Ayyubid/Mamluk.
7. Large Jar. Site 113. Red-brown fabric, large grey core. Ware as 1. Mamluk/Ottoman.
8. Large Jar. Site 113. Red to orange, Large grey core. Ware as 1. Mamluk/Ottoman.
9. Large Jar. Site 060. Buff to orange, large grey core. Ware as 6. Mamluk/Ottoman. Also occurs at site 059.
10. Large Jar. Site 103. Brown, very roughly made. Chaff and grit tempered. Mamluk/Ottoman.
11. Large Jar. Site 113. Light brown fabric, orange-brown slip, large grey core. Ware as 1. Mamluk/Ottoman.
12. Large Jar. Site 113. Patchy red-brown slip, light brown fabric, grey core. Ware as 1. Mamluk/Ottoman.
13. Large Jar. Site 107. Red-brown surface, large grey core. Ware as 1. Mamluk/Ottoman.
14. Large Jar. Site 113. Orange fabric, creamy grey slip, light grey core. Quartz tempered, high-fired ware. Mamluk/Ottoman.
15. Large Jar. Site 113. Orange. High-fired ware with small black and translucent grits. Impressed decoration. Mamluk/Ottoman.
16. Large Jar. Site 113. Pinkish fabric, large grey core, traces of red slip. Ware as 1. Mamluk/Ottoman. Also occurs at site 114.
17. Jar. Site 113. Wheel-turned, orange brown, light grey core. The ware contains many small black grits. Impressed decoration on inside of rim. Ayyubid/Mamluk.

Figure V - Islamic

18. Jar. Site 105. Light grey to orange fabric, large black core, reddish grey slip. Ware as 1. Mamluk/Ottoman.
19. Large Jar. Site 113. Orange-brown fabric, grey core, red-brown slip. Ware as 1. Mamluk/Ottoman.
20. Jar. Site 025. Orange surface, black core, high-fired. Mamluk/Ottoman. Also occurs at site 059.
21. Jar. Site 025. Pinkish surface, brown fabric. Ware as 1. Cut circles on exterior of rim. Mamluk/Ottoman. Also occurs at site 026.
22. Jar. Site 026. Orange surface, light grey core. Ware as 15. Mamluk/Ottoman.
23. Jar. Site 093. Red surface, black core, very roughly made. Ware as 1. Mamluk/Ottoman? Also occurs at sites 026 and 103.
24. Jar. Site 040. Light Pinkish-brown, large black core, very roughly made. Ware as 6. Mamluk/Ottoman. Also occurs at sites 001, 090, 026, 113.
25. Jar. Site 026. Pinkish fabric, large grey core, cream slip outside. Ware as 1. Mamluk/Ottoman.
26. Jar. Site 040. Dark grey, roughly made. Ware as 1. Ayyubid/Mamluk.
27. Jar. Site 107. Orange surface, large black core. Ware as 1. Ottoman. Also occurs at sites 103 and 113.
28. Jar. Site 113. Light orange-brown fabric, large grey core. Red slip inside, black painted design outside on white background. Ware as 1. Ayyubid/Mamluk.
29. Jar. Site 092. Orange fabric, large black core. Thin cream wash on exterior, dark red painted design on interior. Ware as 1. Ayyubid/ Mamluk. Also occurs at site 058 (without paint).
30. Large Jar. Site 107. Orange fabric, large grey core, black and dark red painted design outside on red-brown slip; dark brown painted design on interior. Black grit-tempered ware. Ayyubid/Mamluk.
31. Jar. Site 001. Light grey fabric, dark grey slip. The ware is fine with small black and shiny particles visible in the section. Ayyubid/Mamluk.
32. Bowl. Site 113. Light orange-brown fabric, large grey core, red patchy slip. Ware as 1. Ayyubid/Mamluk.
33. Bowl. Site 114. Grey to buff fabric, Orange-brown core, black slip on exterior. Wheel-turned. The ware has a sandy surface with black and translucent grits visible in the section. Ayyubid/Mamluk?
34. Bowl. Site 114. Dark red fabric, black core, black slip. Wheel-turned. Ware as 33. Umayyad?
35. Bowl. Site 113. Light brown fabric, black core, orange to red slip. Ware as 1. Ayyubid/Mamluk.
36. Bowl. Shobak Castle. Buff. smoothed surface, wheel-turned. The ware has many black and white grits and a few large translucent grits. Ottoman/Modern.
37. Bowl. Site 037. Light brown to orange fabric with slightly darker core, dull reddish-brown slip. Wheel-turned. fine ware with white and translucent grits and the occasional black grit. Abbasid?
38. Bowl. Site 113. Orange-brown fabric, red-brown slip. Ware as 1. Ayyubid/Mamluk.
39. Bowl. Site 103. Orange-brown frabic, large black core. Traces of red-painted decoration on interior. Ware as 1. Ayyubid/Mamluk.
40. Bowl. Site 001. Dull brown fabric, large black core, light grey slip outside. Very roughly made. Ware as 6. Ottoman? Also occurs at sites 113 and 105.

41. Bowl. Site 113. Orange-brown fabric, large black core. Ware as 1. Ayyubid/Mamluk? Also occurs at site 113.
42. Small Bowl. Site 101. Orange to grey fabric, cream slip inside. Ware as 1 but finer. Ayyubid/Mamluk.
43. Bowl. Site 103. Pinkish-buff surface, large grey core, orange-brown slip inside. Ware as 1. Ottoman? Also occurs at sites 090 and 040.

Figure VI - Islamic

44. Large Bowl. Site 114. Dull orange-brown fabric, black core. The ware is chaff-tempered with a few large white, and many small black grits. Ayyubid/Mamluk?
45. Large Bowl. Site 114. Orange-brown fabric, large black core, traces of red slip inside and on top of rim. Ridge on exterior. Ware as 1. Ayyubid/Mamluk? Also occurs at sites 103 and 113 (but neither with ridge).
46. Small Bowl. Site 026. Orange-brown fabric, grey slip. Lightly impressed decoration around rim. Ware as 42. Ottoman?
47. Small Bowl. Site 101. Black fabric, orange-brown slip. Ware as 42. Otoman/Modern.
48. Base. Site 113. Dull orange-brown fabric, large black core, dark red to brown wash outside. Ware as 1. Ayyubid/Mamluk.
49. Base. Site 093. Dull orange fabric, grey core, cream slip on exterior. Ware as 1. Ayyubid/Mamluk.
50. Jar neck. Site 103. Dull orange fabric, grey core, black painted design on light grey slip outside. Ware as 1. Ayyubid/Mamluk.
51. Jar neck. Site 113. Dark red fabric, large grey core. Red and black painted design on white slip outside (traces of paint and slip on inside too). Ware as 1. Ayyubid/Mamluk.
52. Body sherd. Site 113. Orange to grey fabric, reddish brown ad black painted design on cream slip on exterior. Ware as 1. Ayyubid/Mamluk.
53. Body sherd. Site 113. Dull orange-brown fabric, large black core, buff to orange surface with black and red painted design outside. Ware as 1. Ayyubid/Mamluk.

Bibliography

H.J. Franken and J. Kalsbeek, *Potters of a Medieval Village in the Jordan Valley,* Amsterdam, 1975.

M. Gilmore, et. al., Preliminary Report on the Northwestern and Northern Regions Survey 1981 (1401), *ATLAL,* 6 (1402-1982) p. 9-38.

M. Ingraham, et. al., Preliminary Report on a Reconnaissance Survey of the Northwestern Province, *ATLAL,* 5 (1401-1981) p. 59-84.

E. N. Lugenbeal and J. A. Sauer, *Seventh-Sixth Century B.C. Pottery from Area B at Heshbon,* Andres University Seminary Studies, Vol. X, 1972.

J. A. Sauer, *Heshbon Pottery,* Michigan, 1973.

——— Review of R.H. Smith: Pella of the Decapolis I, *ADAJ,* XIX (1974) p. 169-172.

——— Pottery Techniques at Tell Deir Alla, *BASOR,* 224 (1976) p. 91-94.

R. H. Smith, *Pella of the Decapolis,* Wooster, 1973.

Olga Tufnell, *Lachish III: The Iron Age,* Oxford, 1953.

A. D. Tushingham, *The Excavations at Dibon in Moab, AASOR,* XL, 1972.

THE ARCHITECTURE OF THE MOSQUE IN ISLAMIC MANUSCRIPTS

by
Mahmoud I. Hussein

Islamic manuscripts, with their numerous illustrations, are a magnificent body of material for the study of all branches of Islamic architecture, industries and arts. In addition, it is often possible to study society during the Islamic ages through the illuminations in the manuscripts. I should like hereafter to confine my research to one Islamic element of architecture, i.e., the mosque. Naturally, the illustrations in the manuscripts show other architecture, civil[1] and military[2] as well as religious.[3]

The mosque is the beginning of Islamic architecture in general and religious architecture in particular.[4] It is a uniquely Islamic architecture. The very design had never been used before through any other religion, since it stems from the Islamic decree. And the holy Koran has repeatedly provided for the care of the mosques.[5] The artists of the decorated manuscripts were particularly fond of depicting mosques. We have discovered actual examples of mosques and parts of them which are shown in the early manuscripts in which the artist endeavoured to represent them realistically. The artists observed precisely the arches and the construction material and even created accurate depictions of the geometric and floral decorations from the interiors of such religious buildings.

Among the important examples of manuscript illumination of the early mosques is that of the *Basrah* mosque as shown in an illustration by Al-Wasti in a manuscript of 1224/634 in the Bibliothèque Nationale, Paris.[6] (Pls. LXVI: 1, 2; LXVII, 1). On this manuscript, a written description of the mosque is found along with the illustration. The description emphasizes that the mosque had space for many visitors. A florid portion of the description seems to indicate that numerous scholars and learned men frequented the mosque, held discussions and wrote there. The mosque was "an inspiration for the best ways of speaking, and the scratching of bamboo pens could be heard throughout the bulding".

Another point about the Islamic artist is that he has reflected the mosque's inside shape by drawing the columns, the pulpit and the *mihrab.* (Fig. 1).

Moreover, he represented the decoration of the facade by a number of geometric and floral intermingled patterns in a band running horizontally all across the mosque's facade. An inscribed band underneath this appeared on a floral background. We are able to understand many of the words of this inscription: "Our lord and guardian Al-Emam Al-Mostanser Bellah Amir Al-Momenin. May God make his kingdom immortal." (Fig. 2).

In order for the artist to emphasize that the architecture is a mosque, he has drawn a cylindrical minaret with one balcony based on stalictites limited from underneath by a band having floral Kufic writings which reads: "Mohammed is the Messenger of God". Also the artist attempted to demonstrate his precise knowledge of the Islamic architecture. Accordingly, he drew a window at the base of the minaret. This was the normal method at that time to allow the light into

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[1] Burg Branden, *Islamisch Baukunst in Ägypten,* Berlin, S. 259; Ahmed Fikry, *Mosques and Madrasahs of Cairo,* 1969, Vol. II, pp. 23-75; Ernest Kühnel, *Minaturmalerci in islamischen Orient,* S. 51, 52, 110.

[2] Burg Branden, *op. cit.,* S. 239; E. Kühnel, *op. cit.,* S. 10, 11, 25, 44, 45, 81, 100; S. J. Falk, *Qajar Paintings,* London 1972, Fig. 10, 11, 12, Pl. 2, 3.; N. Al-Arzi, *Kaser el-Zahra,* Baghdad 1977, Pl. 11, 12.

[3] Burg Branden, *op cit.,* S. 30; A. Fikry, *op. cit.,* p. 22; E. Kühnel , S. 49, 93, 96; Oleg Grabar, *Die Entstehung islamischen Kunst Koln,* 1977, S. 106.

[4] Hans Much, *Islamiesh Kunst,* Hamburg, 1920, S. 9; M. Zaki Hassan, *Funun al Islam,* p. 21.

[5] Sura Koran, 2, 3, 7, 9, 17, 18.

[6] Esa Salman, *Al-Wasti,* Baghdad, 1972, Pl. 16, 164.

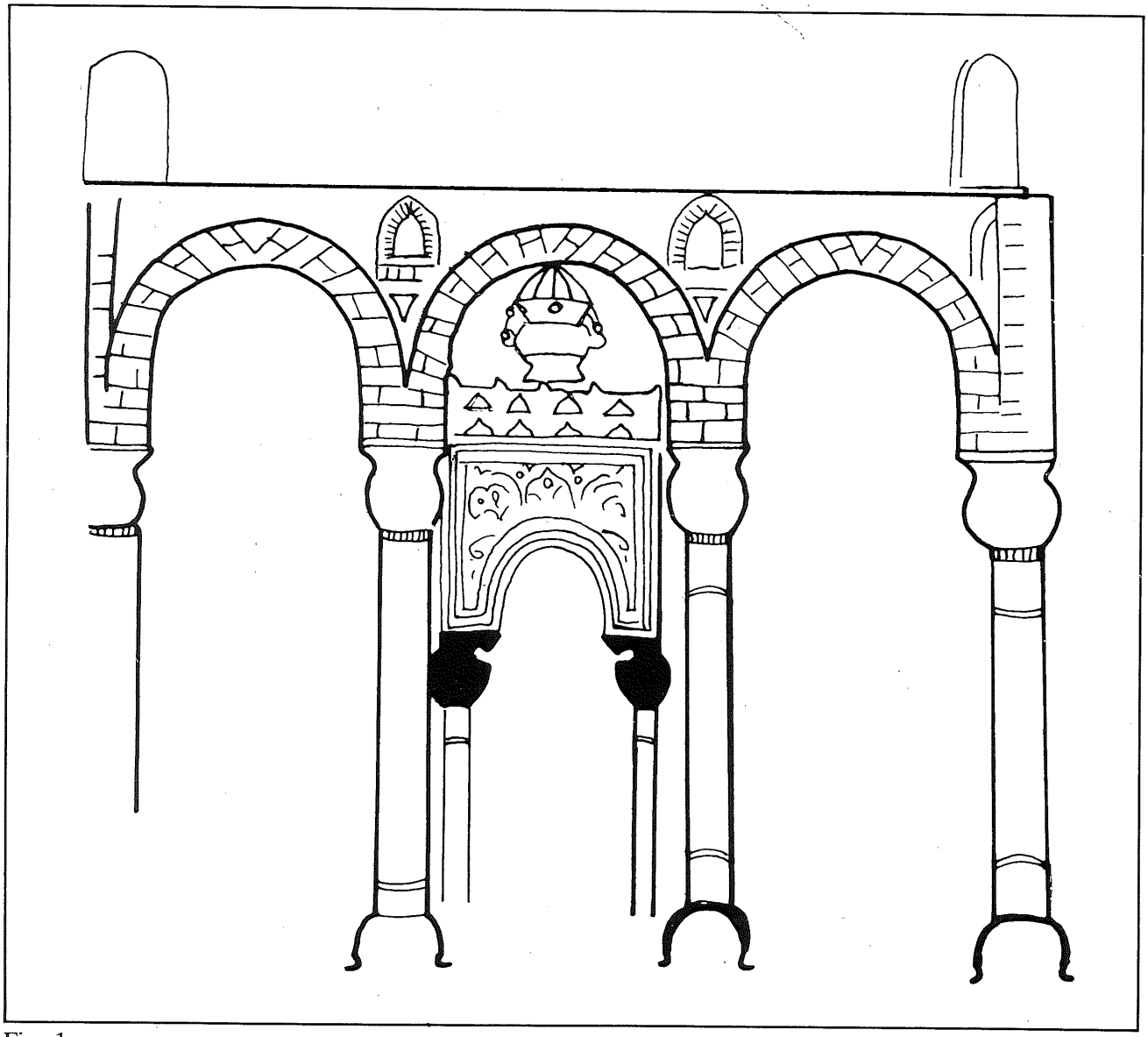

Fig. 1:

the minaret's stairs. It should be noticed that the arches in this mosque rest on columns. He also tried to get to the contemporary mosque architecture as far as the drawing is concerned. He depicts the real cylindrical minaret with one balcony,[7] which reflects a type of minaret widely spread in Iraq during the period contemporary with the decoration of the manuscript. In addition he used a number of decorations employed in a writing style in Kufic and Naskh, which was in use in those regions. In the same manuscript, the mosque of Samarqand[8] is also illustrated. (Pl. LXVII: 2).

We should also notice that the artist drew the mosque's pulpit, the column capitals as well as a number of chandeliers to hang from the tie-beams of the mosque's ceiling. It is remarkable that the artist drew these elements with accurate floral and geometric decorations which were famous throughout Iran. He used on top of them some sort of pointed arches,[9] which are considered an architectural element derived from the environment.

Another scene in Iraq shows us that the Moslem artist drew the mosque considering the angle views from outside. Therefore he drew the *miḥrab* straight in front of the viewer, whilst we remark that beside the *miḥrab* there is the *minbar* or wooden screen topped by two black banners (the motto of the 'Abbāsids). It is

[7] R. Ettinghausen, *Die Arabische Malerci*, S. 116.
[8] *Ibid.*, S. 146.
[9] T. Arnold, *Painting in Islam*, Fig. 579.

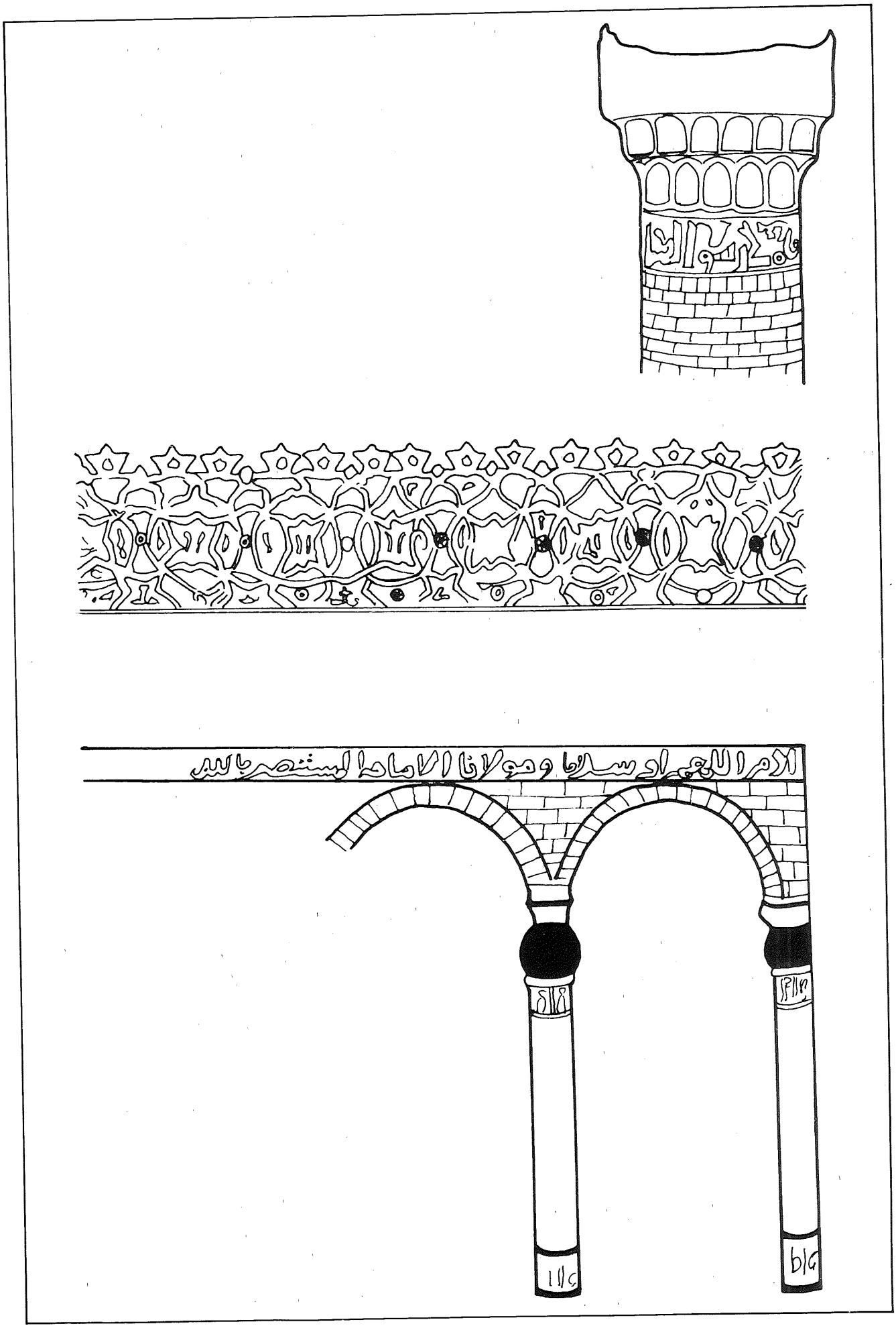

Fig. 2:

remarkable that by the pulpit and the *miḥrab* alone, he suggests the complete architectural building. This is due to the fact that the story connected with the drawing implies the events that took place inside the mosque. It should be noted also that he accurately used the floral decorations in the *miḥrab* and managed to give the impression that they were engraved in the stucco as was the case in Iraq's *miḥrabs* at the time of decoration of this manuscript. The floral intermingled decorations were also widely used in many religious buildings, especially in the *miḥrabs*. Drawing the pulpit that way is considered as an imitation of reality, particularly with regards to the floral decorations and the black banners, the motto of the 'Abbāsids in that period. This is an indication of the probable derivation of his decorative motifs from mosques existing in those areas. The author of Al-Harīrī's manuscript set an example from Morocco's mosque (Pl. LXVIII: 1 and Fig. 6) which talks about two drawn square minarets to prove[10] the spread of such minarets and the excellent understanding by the artist of his surrounding constructions in Morocco.[11] He also drew the elevation of a mosque besides his attempt to show the *miḥrab's* transept bigger than the two side ones.

That is an architectural phenomenon based on justifications in the field of mosque architecture.[12] He also distinguished the dome which spreads as well in the Islamic mosques. The dome[13] existed at the far end of the transept. The *miḥrab* (niche) is topped by a dome to be used in lighting and ventilation and to give more concentration on the importance of such areas of the mosque. The artist brought an example of how the mosque was constructed[14] (Pl. LXVIII, 2 & Figs. 3, 4, 5) and depicted the various stages in its construction: we can notice a group of carpenters who are preparing the required wood for decorating and constructing the mosque. Next to them, another group is preparing the marble sheets for the decoration of the walls of the mosque and another group of stone masons who are trimming and smoothing the required stones. Among them stands the foreman with a stick in his hand urging the workers towards enthusiasm. We conclude from all of that that the artist was realistic and candid and inspired by the existing constructions more than his imagination.

Another scene indicates the very way of the construction[15] through which we can see workers are climbing the wooden stairs close to the walls. They are constructing the walls while another group is mixing mortar, and a third group is carrying the prepared mortar upstairs to be used by the masons in fixing the rows of bricks. Activeness and speed are the characteristics of the two scenes which emphasize that the Moslim artist was keen to follow reality in drawing the mosque scenes.

During the Ottoman period, the artist followed accuracy and reality in drawing the mosque scenes. For instance, in one of the manuscripts[16] there is a scene of a mosque with its slender minaret which resembles a pencil. The vaulted ceilings and the shallow domes which surround a huge one also appears. It is known that the said architectural style spread in Turkey and other subsidiary regions.

The mosque's elevations through the Ottoman period and the different architectural elements such as the domes and ceilings were real, but the artist derived his reality from the main elements of the mosque such as the minaret which had been designed according to the Ottoman style which was characterized by the high pulpits approached by several steps where the orator stood on top of it to deliver his speech.

The above stated topic indicates that

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[10] M. Zaki Hassan, *op. cit.*, Pl. 92, 93.

[11] Oleg Grabar, *op. cit.*, pl. 41.

[12] Probably because a great number of the prayers gather here.

[13] The dome which exists on top of the *miḥrab* (niche) can be seen in many Islamic mosques, for instance, al-Kyrawan, Ahmed Ibn Talon mosque, al-Hakem mosque and el-Azhar.

[14] E. Kühnel, *op. cit.*, S. 51.

[15] K. Otto-Dorn, *Kunst des Islam,* Baden-Baden, 1960, S. 207.

[16] Hans Much, *op. cit.*, pl. 25.

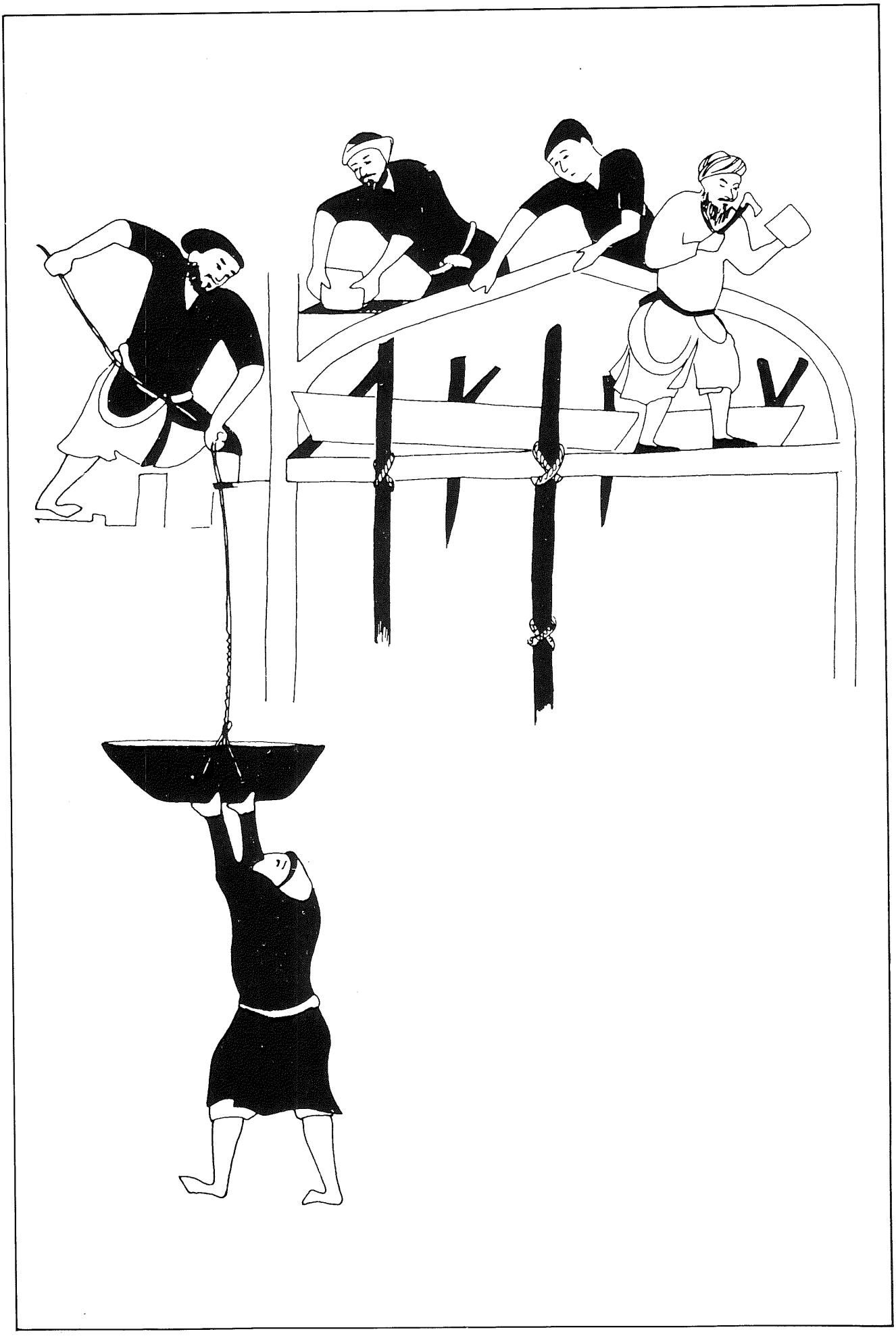

Fig. 3:

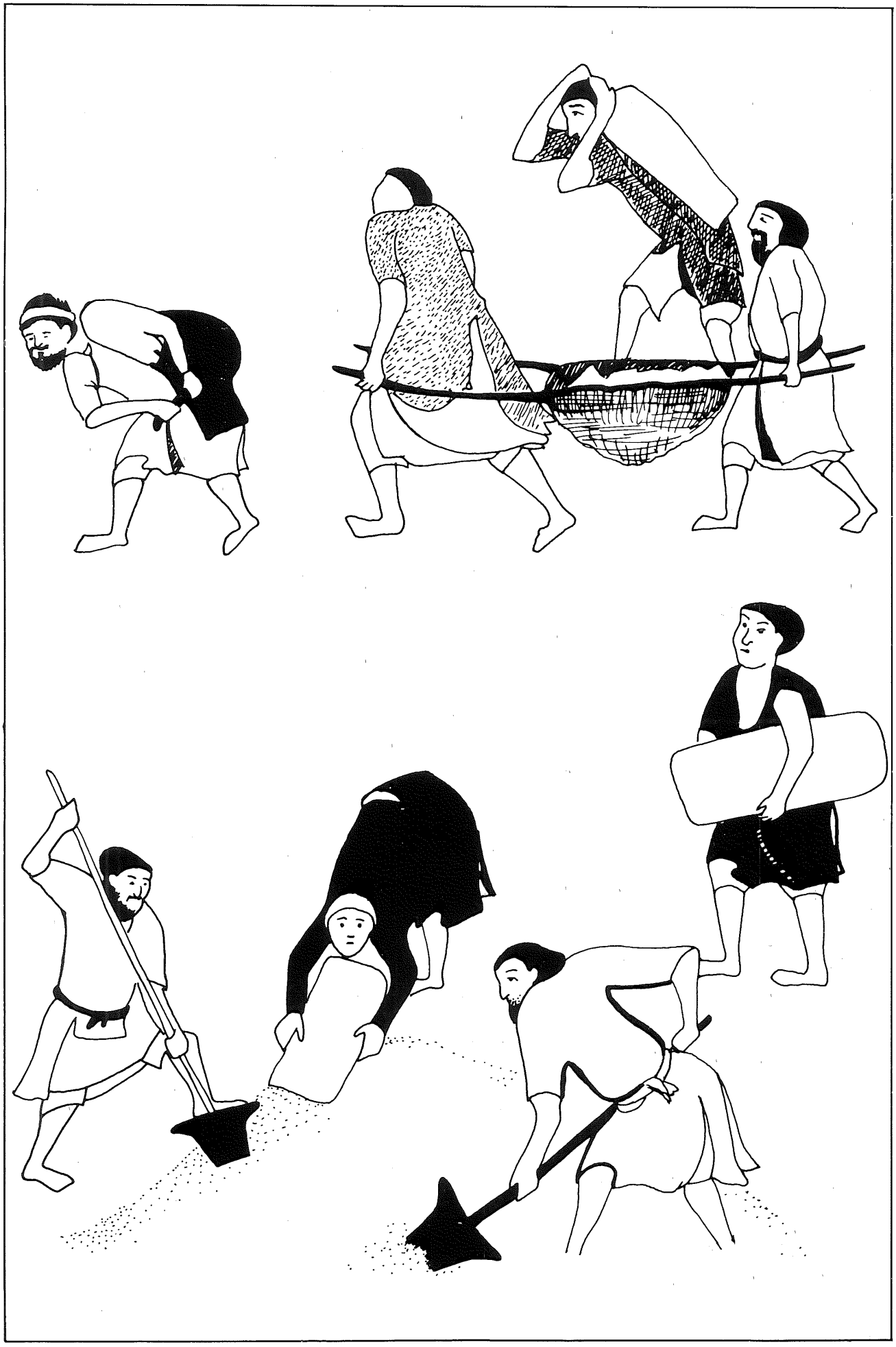

Fig. 4

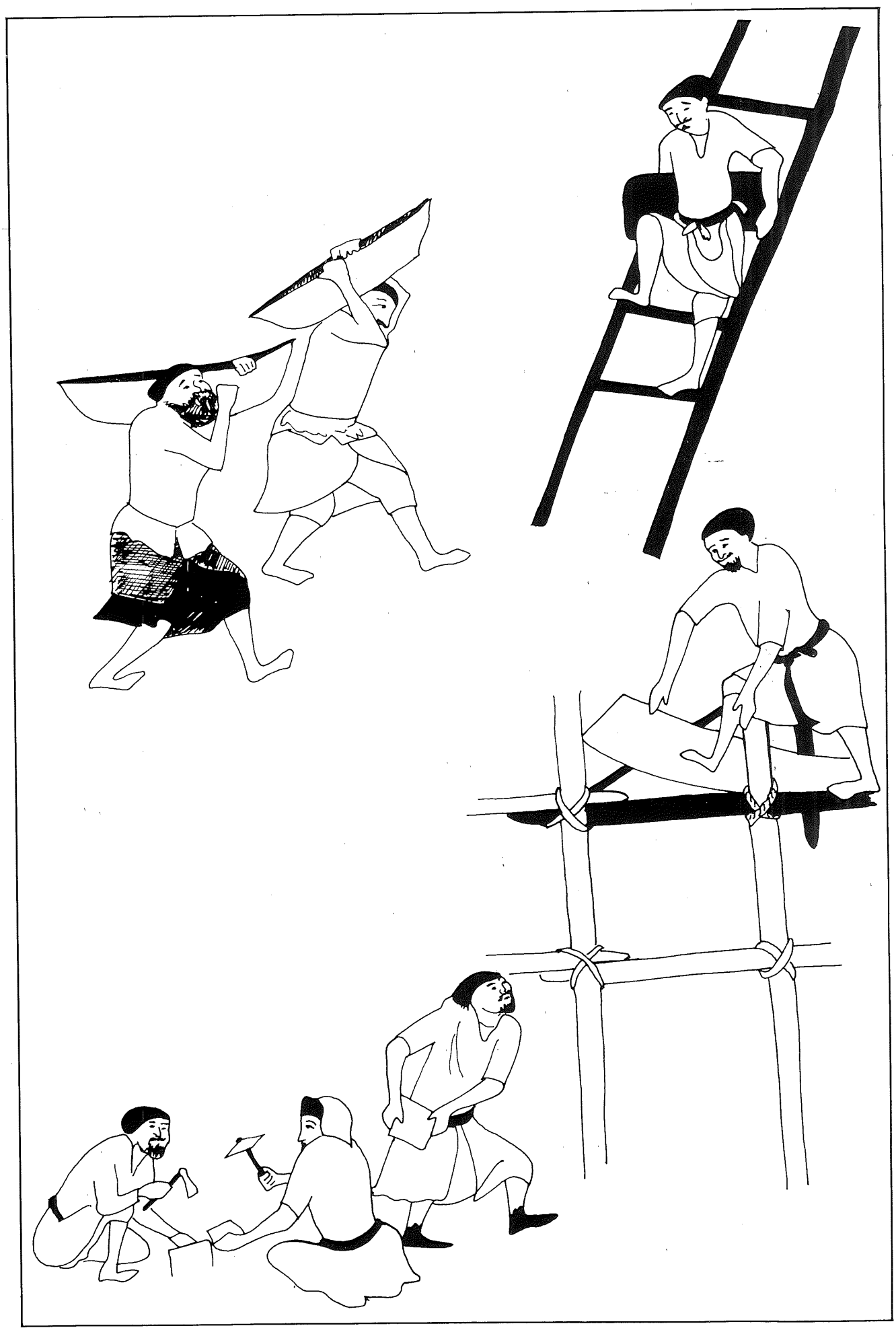

Fig. 5:

the illustrations are not always a precise representation of an existing building but the artist was realistic at those times when he wanted to illustrate architectural elements in his scenes. In this way, he left markers and elements to prove through them the identity of the building and its function, and even its precise position in the development of the mosque in the various regional traditions.

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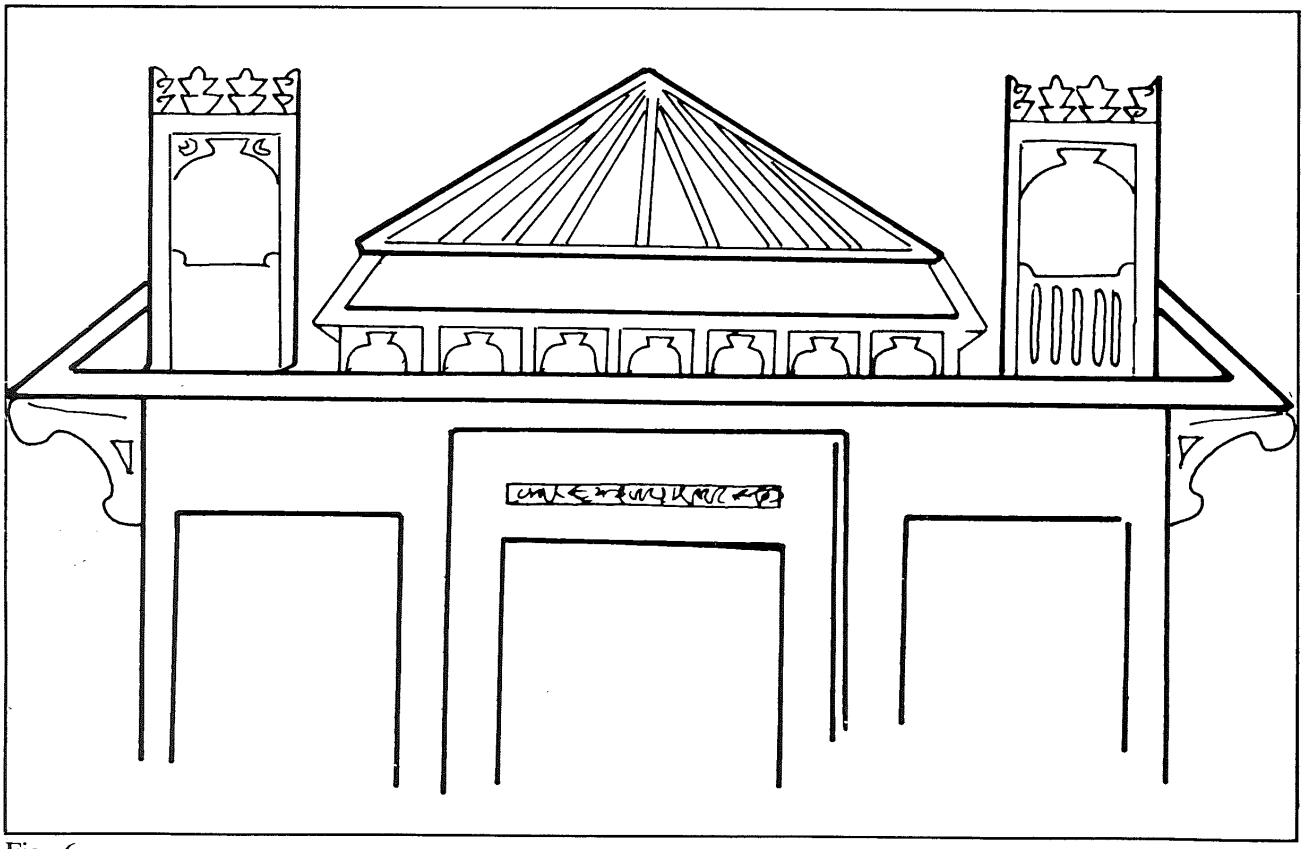

Fig. 6:

ARCHAEOLOGICAL NOTES & NEWS

THE KATARET ES-SAMRA PROJECT: 1985

by
Albert Leonard, Jr.

During January 1985 a one-month programme of excavation was conducted by the University of Missouri-Columbia[1] at Kataret es-Samra located just a few kilometres southwest of Deir 'Alla. The purpose of the short season was to answer three questions raised by the author's previous preliminary work at the site in 1978.[2]

The Late Bronze Age Tomb

One of the principle questions that remained after the 1978 season was whether the large tomb cleared by the Department of Antiquities and later tested by the author had been an isolated occurrence or part of a larger LB cemetery. This year's excavation to the north of that tomb produced a vertical shaft cut into the marl, filled with over fifty intact or restoreable vessels, and a burial chamber holding about a dozen skeletons, a small deposit of pots, a scarab, glass beads and a few fragments of bronze. Although the exact relationship of shaft to burial chamber has been erased by seismic shifting it is most probable that the chamber was entered from the western side of the shaft. The ceramic material would be at home during much of the Late Bronze Age, with special emphasis on the 13th century B.C. The deposit included two Cypriote imports (BR I and BR II) as well as a chalice with a profiled (Early Iron I?) foot.

The fact that sherds from the funerary chamber joined with vessels in the shaft indicate that this tomb was disturbed in antiquity.

Tell Kataret es-Samra

A major topographical feature on the 1:10,000 map is "Tell" Kataret es-Samra. Our work here in 1978 produced a surface collection that covered a wide chronological spectrum but absolutely no evidence for architecture even in two deep trenches cut into the summit. The second goal of the 1985 season, then, was to determine if this was a natural feature or whether it contained the sequence of occupation that defines a true tell. Re-examination of the eastern slopes during the 1985 season produced evidence of mudbrick *detritus* while a small sounding exhibited a sequence of walls and associated debris deposits that indicate that this is, in fact, a true tell. Although we were not able to excavate these walls to secure *loci* due to the brevity of the season, we were amazed at the amount of MB II/LB I(?) in these disturbed contexts and in the general survey of the summit and slopes of the tell. Rolled-rim cooking pots were especially frequent as well as "Chocolate-on-White" ware which was found in a profusion of colours, strongly suggesting a place of manufacture at, or very close to, the site.

The Kataret es-Samra Plateau

The third goal of the 1985 season was to determine whether the extensive spread of Proto-Urban/Early Bronze I (PU/EBI) artefacts over the Kataret es-Samra plateau was to be associated with a settled or with a transhumant society. Unfortunately much of the plateau had been

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[1] The 1985 season was funded by the University of Missouri-Columbia through moneys from the Weldon Spring Fund. Staff release-time was contributed by the Department of Art History and Archaeology and the Museum of Art and Archaeology, both on the Columbia campus. Special thanks are due to Alia, the Royal Jordanian Airline for their continuing support of archaeology.

[2] A. Leonard, Jr., "Kataret es-Samra: A Late Bronze Age Cemetery in Transjordan?," *ADAJ*, XXV (1981) p. 179-195, and *BASOR*, 234 (1979) p. 53-65; and "The Proto-Urban/Early Bronze I Utilization of the Kataret es-Samra Plateau," *BASOR*, 251 (1983) p. 37-60.

recently bulldozed for farming — a process which was quickly halted by the intervention of the Department of Antiquities. The periphery of this bulldozed area does present us with some yet-undisturbed areas, however these must by their very placement on the plateau reflect only "suburbs" of the original settlement. A small probe in one of these areas produced evidence of mudbrick walls and *detritus* together with the major pottery types of the period: red-burnished (PUA/EB1A), dark-on-light painted (PUB/EB1B), the so-called "Esdraelon Ware" (PUC/EB1C), and the more domestic vessels with PUD (*pre-urbaine* D) techniques of bands of incisions and impressed cordons.

Below this stratum was the major surprise of the 1985 season: a unique(?) handmade pottery which in fabrication and vessel-form relates to the Chalcolithic Period, but which exterior surfaces are embellished with red and/or black painted decoration, often on a white slip. All who have seen the material agree that this is not a Mamlūk imitation of earlier pottery styles and that it must represent a pre-PU/EB1 pottery type as its position in the stratigraphy had already shown. This ware certainly indicates a presence of at least one artistically sophisticated potter living at the interface between the *zor* and the *ghor* of the eastern Jordan Valley toward the end of the Fourth Millennium B.C.

In summary, the 1985 season at Kataret es-Samra was very rewarding in that it has answered the three major questions raised by our previous work, as well as given direction to future research at the site.

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SALVAGE EXCAVATIONS IN BEIT RAS, 1985

by
Sultan Shraidah and C.J. Lenzen

During August and September, 1985, salvage excavations were conducted in Beit Ras, the site of ancient Capitolias, by the Department of Antiquities. Two areas were excavated: one the courtyard of an existing house; and, one in an open space created by the removal of a late nineteenth century housing complex where a new house is to be built. The data from these excavations will be incorporated into the interpretative work being done by the Yarmouk University Institute of Archaeology and Anthropology, the Department of Antiquities, and a British/American team of archaeologists.[1]

Area 1 was a 4.00 by 4.00 metre square excavated in the courtyard of a house located north of the main village road and north of the mosque. While digging the foundations for two new rooms, an addition to the standing early twentieth century rooms, a substantial wall of nine courses was found. Stratigraphic excavation of this area showed that the wall was part of an Ottoman, ca. A.D. 1700, construction and had been reused and rebuilt as well. With three other walls, the main wall formed an area measuring 1.50 by 2.20 metres. A blocked doorway in the north baulk and a cave entrance to the south gave the indication that this small area may have formed an entryway. The floors and walls of the entryway were plastered with a fine lime-based plaster, as much as five centimetres thick in some areas. Sometime after the use of the construction as an entryway, the door was blocked and the entire area became a dump. In all likelihood, the dump layers were laid when the late nineteenth/early twentieth century houses were being constructed. The soil layers within the square and particularly within the entryway contained valuable material culture remains, i.e., pottery, glass, statues, etc., from the period from ca. A.D. 400 to ca. A.D. 750; but, these remains were consistently mixed with those from the Ottoman period. The top fifty centimetres of the area were recent fill/dump layers and part of the water-laid courtyard surfaces for the present, partially standing houses.

Area 2 was located thirty metres to the west of Area 1. Workmen building a new house in the area brought the area to the attention of the Department of Antiquities. Foundation trenches for the new house were excavated in rows; each row consisted of four trenches measuring two metres by three metres, with a depth of two metres. As there is considerable build up of housing and courtyard layers in Beit Ras, usually measuring one to two metres in depth and not dating to before the last one hundred years, the workmen initially encountered soil layers with a mixture of material culture remains from the various periods of occupation of Beit Ras. In one foundation trench, a well-cut limestone block was removed revealing an arch below the topsoil layers.

This arch or vaulted area measured from three to four metres in height and was two and half to three metres wide. It was built against bedrock in the south and opened to the north and showed evidence of rebuild. To the west, there was an opening that led to three "caves," all of which contained evidence of late antique occupation. The vaulted area was filled with silt to a depth of one to two metres, indicating a period when the northern opening had been exposed. No evidence of any use of the vault was found in this silt layer, e.g., the indications were that the vault was open and not known about, and

[1] C. J. Lenzen, R. L. Gordon, A. M. McQuitty, "Excavations at Tell Irbid and Beit Ras," *ADAJ*, forthcoming.

was covered before the building of the late nineteenth century housing complex. Below this silt, a large wall was encountered which divided the vaulted area into two separate areas: the small one to the north where a *tabun* had been, the fragments of which were found, and the larger one to the south. This southern area was divided into two chambers, one of which was for dung storage and can be associated with the use of the vault as a tabun house. The dating on this, although tentative in nature, is to the ca. A.D. 1700 period. Before this use of the vault, evidence was found on the floor and walls of the vault of it having been used as a house: mud-plaster was found, and niches for lamps, household articles were cut into the bedrock and built into the vault.

Unfortunately, there is no archaeological data to support the original date of the vault and this determination must be made on architectural grounds only. The vault was rebuilt or restored with re-used blocks and miscellaneous-sized stones. One can hazard the guess that this was done when the vault was made into a house, again there is no archaeological data to support an accurate date. From the construction of part of the arch and the southern retaining wall, it appears that the original use and construction of the vault was ca. A.D. 300. The original parts of the vault are made of well-cut limestone blocks, and were rounded. Although the suggestion is a tentative one, it would appear that Capitolias of the period between A.D. 300-500 was built on different levels using the natural bedrock as support for series of vaults which defined the streets (blocks) of the city.

As in previous work conducted in Beit Ras, the stratigraphic data points to an elaborate Roman city, which was re-built and re-used in the following centuries. Very little *in situ* data was retrieved relating to the period between ca. A.D. 600-1400 during these excavations; however, our knowledge of the later periods has been expanded somewhat. Continued work in Beit Ras should provide a more complete picture of the nature of the occupation of this important ancient site.

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THE NORTHEAST 'ARABA ARCHAEOLOGICAL RECONNAISSANCE SURVEY, 1985:

by
F. L. Koucky and B. McDonald

The Northeast 'Araba Archaeological Reconnaissance Survey was in the field from May 26-June 4, 1985. The survey team consisted of Dr. F. L. Koucky, director, College of Wooster, Wooster, Ohio, two of his students, namely J. M. Ferguson and E. C. Lapp, and Dr. B. MacDonald, St. Francis Xavier University, Antigonish, Nova Scotia. Dr. Zeidoun Al Muḥeisen served as representative of the Department of Antiquities of Jordan. While in the field, the team stayed for three days at Sheriff Nasser Camp, Wadi Fidan and for the remainder of the time at Khuneizira, one of the camps of the Jordan Valley Authority in the northeastern 'Araba. The project was licenced by the Department of Antiquities of Jordan under the Directorship of Dr. Adnan Hadidi. Funding was provided by the College of Wooster.

The purpose of the survey was to acquire a first-hand knowledge of the area and to assess the feasibility of carrying out an intensive and systematic survey of the same area. The ten days in the field acquainted the team members with the area and led them to the conclusion that a much more intensive and systematic survey of the area is badly needed.

The area investigated is part of the Great Rift Valley which extends from Turkey in the north to Mozambique in the south. The Wadi 'Araba is that portion of the Rift Valley which leads from the Dead Sea to the Gulf of Aqaba. It was the northeastern segment of the 'Araba or the area between eṣ-Ṣāfi and the Wadi Fidān that was investigated (Map: Northeast 'Araba). Geologically, the area surveyed may be divided into two segments: 1) the Ghor from eṣ-Ṣāfi south to the Wadi Khuneizir; and 2) from the northern edge of the escarpment overlooking the Ghor as far south as the Wadi Fidān. The survey team spent its time almost equally between these two areas.

Before beginning the survey the team members were aware of the work done in the area by previous explorers. Musil visited the area in 1898 and 1902,; Frank and Glueck explored almost the same area in 1932 and 1934 respectively; Rast and Schaub visited three sites in the area in 1973; and King searched for Byzantine and Islamic sites in the Ghor in 1983. All of these surveys were of a purposive nature and all the sites visited were highly obtrusive. An intensive and systematic survey of the area has never been carried out and is badly needed.

During the survey 26 sites were visited: 11 of these sites are located in the Ghor; the remainder are on the plateau and associated wadis to the south of the Ghor. Approximately half of the sites visited were known previous to the survey. Materials collected at the sites visited included slags, querns, one gaming stone, sherds and lithics. The sherds collected span the period from the Chalcolithic through to the modern period. The lithic materials were much more abundant in the southern segment of the area surveyed. An examination of high elevations is necessary for the discovery of early lithic materials in the Ghor.

The present intention is to return to the area in 1986 and 1987 to carry out two seasons of work. One season will survey the Ghor from eṣ-Ṣāfi to the Wadi Khuneizir while the second season will treat the area to the south as far as the Wadi Fidān.

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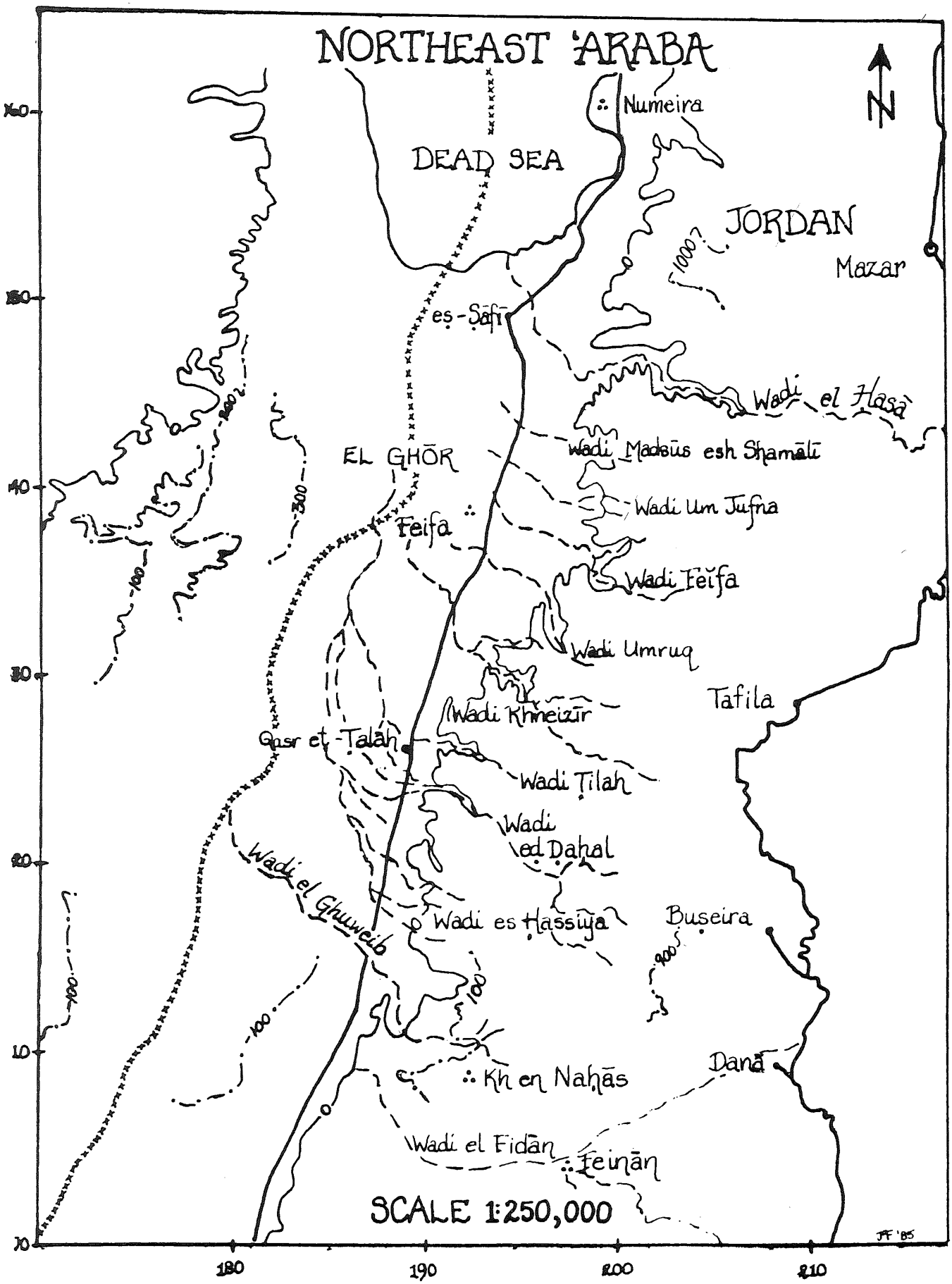
NORTHEAST 'ARABA
N
Numeira
DEAD SEA
JORDAN
Mazar
es-Safi
Wadi el Hasa
EL GHOR
Wadi Madsus esh Shamali
Wadi Um Jufna
Feifa
Wadi Feifa
Wadi Umruq
Tafila
Wadi Khneizir
Qasr et-Talah
Wadi Tilah
Wadi ed Dahal
Wadi el Ghuweib
Wadi es Hassiya
Buseira
Dana
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SYMPOSIUM ON PETRA & THE CARAVAN CITIES

by
F. Zayadine

Thanks to financial support from UNESCO, the Department of Antiquities was enabled to organize a symposium at Petra from September 23-28, 1985, in cooperation with the Iconographic Lexicon of Classical Mythology (LIMC). As was outlined by its General Secretary, Professor Lilly Kahil, this Foundation has for a number of years been active in bringing together an exhaustive documentation on the full range of Greco-Roman divinities which is to be published in seven volumes. Three magnificently illustrated volumes have already appeared from Artemis Verlag in Zürich.

His Royal Highness Crown Prince Hassan was the patron of this scholarly gathering and his inaugural address impressed the audience with his extensive knowledge of Nabatean civilization.

The overall theme of the symposium was "The Local Identity of the Caravan Cities and Hellenistic and Roman Impact on Cultic Representation." This general theme included 4 sub-themes:

1- Cult Building and Sculpture
2- Tombs and Funeral Iconography
3- Mythological Painting and Mosaics
4- Representation of Deities on Coins.

By proposing this subject to oriental scholars my objective was to rejuvenate the old theme of caravan cities treated in 1932 by Rostovtzeff, but in a new perspective, that of religious iconography. In studying the representation of the divinities, the participants demonstrated how these cities, which had been created by caravan traffic and inhabited by a majority of Arabs, reacted to Hellenistic and Roman influences in order to create the images of their divinities. The chronological range of researches extended from the 4th century before our era to the 4th century A.D. However some of the papers presented went beyond this chronological limit. For example Professor Iannis Sakallarakis, the director of the Herakleion Museum, Crete, presented a paper on the ivories discovered in the grotto of Ida in Crete and demonstrated Syro-Phoenician influences on them. Professor Saleh Hamarneh of the University of Jordan also gave a paper which dealt with the iconography of Arab idols in the pre-Islamic epoch. The phenomena of acculturation and international exchanges were at the centre of the scientific discussion.

It is certainly not possible in this short note to summarize the presentations of thirty specialists coming from 17 different countries, including a number of Arab countries. We will have to be satisfied with indicating that the caravan cities of Petra, Palmyra, Hatra as well as the caravan cities of Central Arabia, Hegra, Qaryat al Fau and Teima had an important place in the scholarly communications. Dr. Margaret Lyttelton, known for her studies on Hellenistic baroque art presented an excellent study of the Khazneh sculptures, which she places as early as the time of Arteas Philhellene (87-62 B.C.). Even if one is not in agreement with this dating, one cannot fail to be struck by the force of her arguments for assigning the most beautiful monument in Petra to the time of the Nabataean kings. While G.W. Bowersock and Tran Tam Tihn dealt with the iconography of Dusares, Ph. Hammond attempted to show that the goddess of the Winged Lions Temple at Petra must be related to the cult of Isis and its iconography created on the model of the Egyptian goddess. Two statuettes found in the temple do represent the mourning Isis. However the betylic relief with the inscription "goddess of Ḥayyan son of Nybat" is of south-Arabian origin and is related to the representation of al-'Uzza, as I noted in *ADAJ*, 23 (1979), pp. 194-197. The riches of a popular religious iconography were presented by the papers of P. Parr and Ingemarie Parlasca on the terra-cotta figurines found at Petra. In my own communication I have shown the importance of

the cult of the god(ess) Aktab-Kutbä, the Assyrian Nabu and the Hermes-Mercury of the Greeks and the Romans, as well as his (her) different iconographic representations.

Palmyra occupied an important place in the iconographic researches thanks to the papers of K. Parlasca on "Roman Elements in the Funerary Art of Palmyra" and of A. Bounni on "The Sanctuary of Nabu at Palmyra". A serendipitous blend between the Syrian, Roman and Hellenistic traditions emerged. However one of the most interesting themes was that of "The Supreme God of Palmyra", brilliantly treated by J. Starcky. The evolution of the religion of this caravan city towards belief in a single unique god is a revealing experience of the path leading the human spirit towards monotheism.

Participants in the Symposium were extremely interested in and impressed by the excavations conduted in Saudi Arabia at Qaryat al-Fau in the Nejd by Professor A. Ansari of King Saud University in Riyadh. It is astonishing to find bronze statuettes of Egyptian-Roman deities which had been transported to this desert commercial center by caravaneers. This is a world which is now opening to archaeology and ongoing research is promising.

In his report on "The God Aššrbel at Hatra", B. Agoula, an Iraqi scholar, treated the iconography of this deity in the caravan city of Hatra, which had been influenced by Parhian Iran.

E. Will presented a synthesis on "Seats of Gods, altars and shrines in Semitic sanctuaries of Hellenistic and Roman times". According to him, the *adyton* of the Roman temples in Syria is a variant of the *motab* (platform) of the Nabataean temples at Petra, W. Ramm and Kh. Dharih. In Lebanon, the *cippus,* a central pillar provided with niches, was probably created in Baalbeck-Heliopolis, while the *naiskoi* or small shrines, well known at Amrit, Tyrus, Sidon and the Punic world are probably of Egyptian origin. As a conclusion, Will states that the monuments under discussions are not of bedouin origin and cannot be linked with the caravan cities. He considers the Syrian area as the centre of these cultic monuments. However, in the opinion of the writer, the *motab* which provides a podium for the sacred baetyl is an Arabian creation since it is well attested in South-Arabia as early as the 5th century B.C. In the same sphere of ideas, J.-M. Dentzer demonstrated in his paper the connection between the Greco-Roman *naiski* of the Hauran and the *qubbah* or domed tent.

Although not directly related to the Caravan Cities, the report of M. Fantar on the funeral monuments of Tunisia from the 4th to the 2nd century B.C., showed the similarities between the funeral architecture and iconography in the Punic and Oriental world. It was also most interesting to find in Classical Greece aniconic steles, which can be paralled by the Nabataean *nefesh* as demonstrated by N. Moutsopoulos of the University of Salonique. Other funeral monuments of 'Palmyrenian' origin in Rumania were presented by E. Condurachi. To sum up the cultural ties between the East and West, N. Yalouris presented the Symposium with a brilliant study on the "Mythological connections between Greece and Near Western Asia".

A field trip to the site of Udhruh, east of Petra was led by A. Killick, a participant in the Symposium, who had also presented a paper on his recent excavations. Another field trip was also organised to the Nabataean site of Kh. Dharih in W. Hasa under the guidance of F. Villeneuve who had also lectured on his recent discoveries.

This brief summary shows the great interest of the communications which were often followed by enthusiastic discussions. In the opinion of all the participants, this Symposium was a great success thanks to the variety and importance of the themes discussed. It indicated clearly how in all cases the caravan cities were not only centre of commerce and trade but were above all foci of diffusion and cultural exchange.

It is hoped that the Department of Antiquities will be able to publish the proceedings in the near future.

F. Zayadine

Tell es-Sa'idiyeh: Excavations on the Tell, 1964-1966, by James B. Pritchard. University Museum Monograph 60, University of Pennsylvania, Philadelphia, 1985. 88pp. 5 tables, Frontispiece, 3 text figures, 189 figures.

One of the most prominent archaeological sites in the central Jordan Valley is Tell es-Sa'diyeh. It is a large double mound situated immediately south of the Wadi Kufrinjeh, 1.8 km. east of the River Jordan (map reference 20461861). The Tell covers an area of about 75 dunums (=25 acres) and stands at a height of 42 m. above the plain of the Ghor.

Excavations at Tell es-Sa'idiyeh in 1964 conducted by the University of Pennsylvania under the direction of Professor James B. Pritchard demonstrated the great importance of the site. On the lower western mound, the excavation of an extensive cemetery of Late Bronze-Iron Age I transitional date produced a rich and highly significant corpus of material, representative of a phase during which most sites west of the river show a break in occupation. The final report on the cemetery was published in the University Museum Monograph No. 41, University of Pennsylvania, Philadelphia, 1980 (see *ADAJ,* volume XXIV, 1980, p. 213).

This monograph presents the evidence for important architectural remains and the associated artifacts of the Hellenistic and Persian periods which were revealed on the higher eastern mound. A square building of massive proportions assigned to Stratum III is believed by the excavator to have been built primarily for defense and that it belongs to the Persian period. On the north slope of the Tell, a monumental stone staircase was found which had been the means by which the occupants of the 12th century B.C. Iron Age city had obtained water from the spring at the mound's base. The later phases of this Iron Age city (7th-century B.C.) were exposed in a large trench on the north-west side of the upper tell. Here were found four phases of well-built houses and workshops, carefully planned along streets and valleyways.

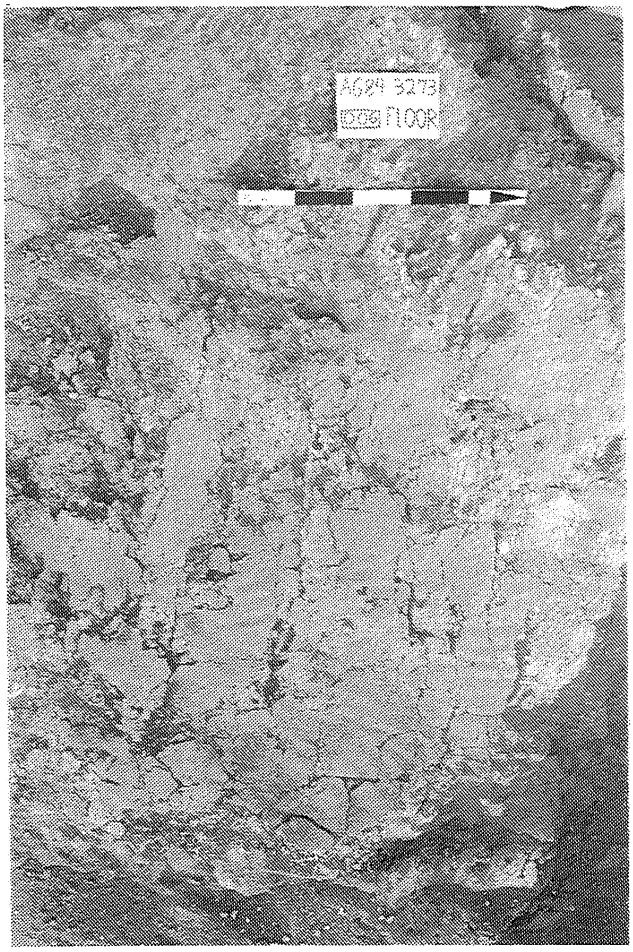
As to the question concerning the previous attempts at attaching a biblical name to the modern site of Tell es-Sa'idiyeh, the excavator concludes: "The arguments that have been adduced for the identification of Tell es-Sa'idiyeh with places mentioned in the Bible rest too much upon uncertain and emended texts to provide us with any high degree of confidence. At the present stage of archaeological work in the area, and at Tell es-Sa'idiyeh in particular, any conclusions about the ancient names of the site must of necessity remain hypothetical."

The University of Pennsylvania excavations at Tell es-Sa'idiyeh were terminated in 1967 on account of the Arab-Israeli War in June of that year.

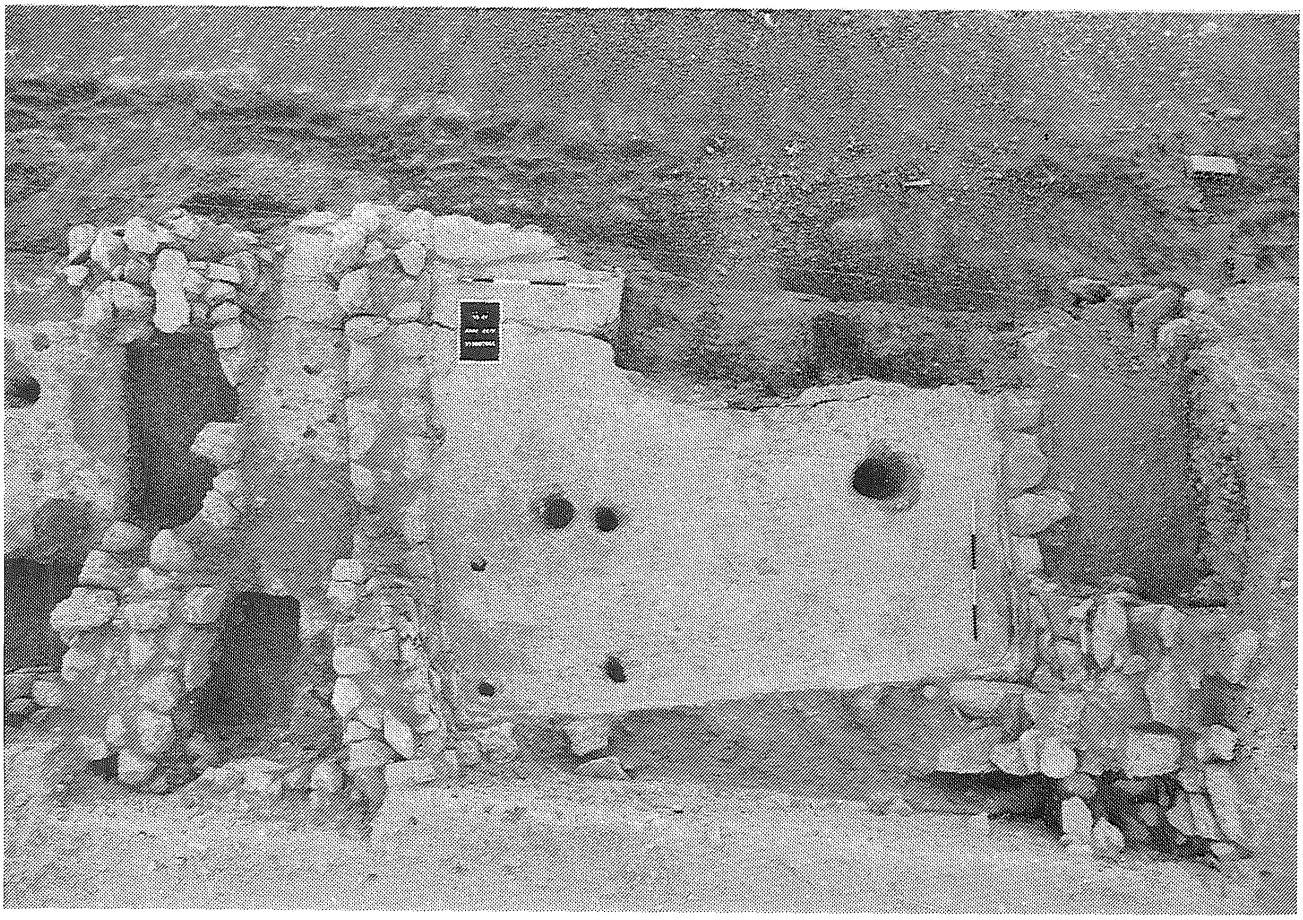
Adnan Hadidi

PLATES

1: Overhead view of the 15-meter architectural complex in the South Field, 'Ain Ghazal. North is to the left. (Photo: Curt Blair).



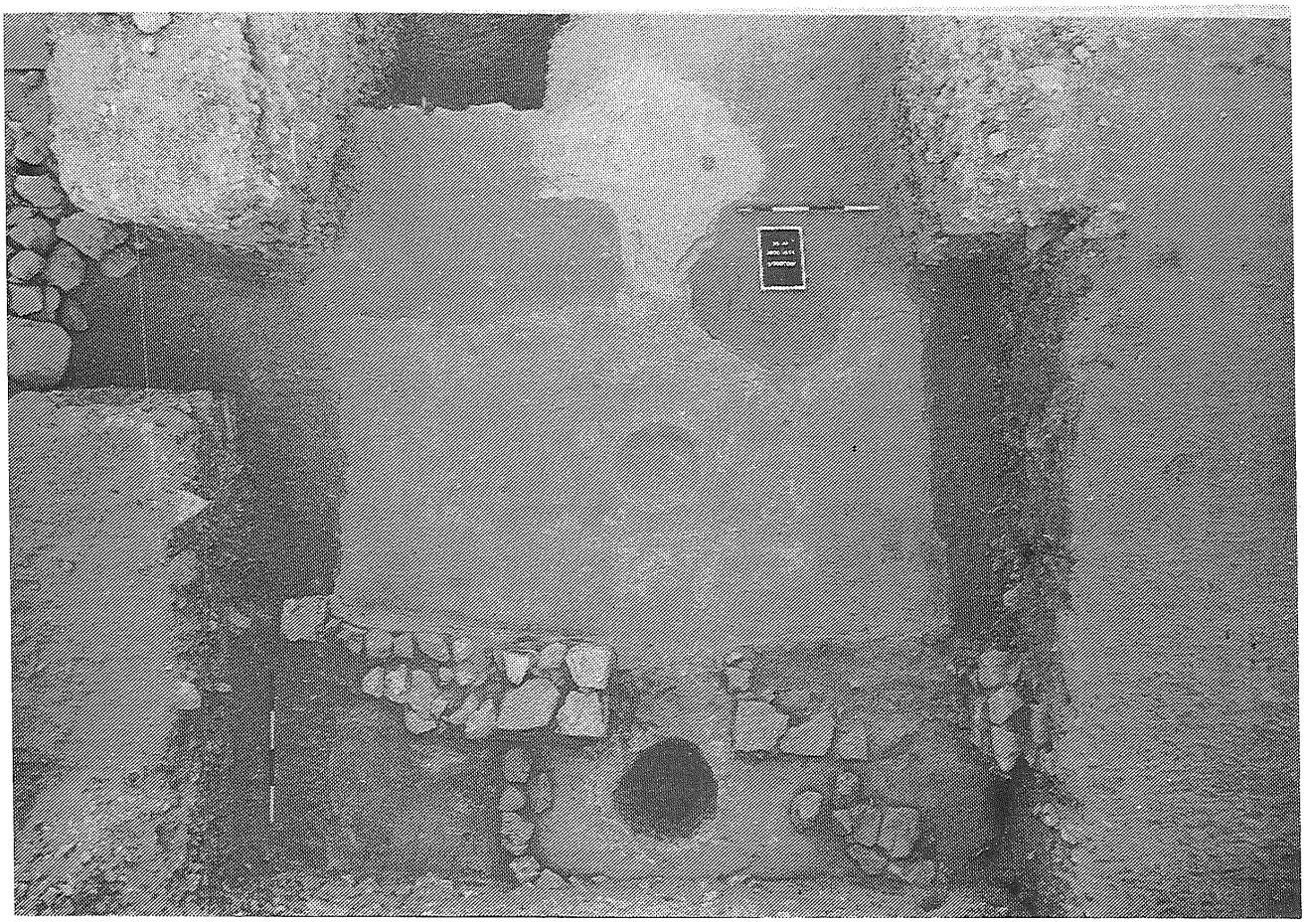
2: Painted designs on a house floor in Sq. 3273. (Photo: Curt Blair).



1: House in Sqs 3079/3080. Note the wall erected on top of the plaster floor (to the left), reducing the room size. (Photo: Curt Blair).

2: House in Sqs 3083/3283. A blocked doorway occurs at upper left. (Photo: Curt Blair).

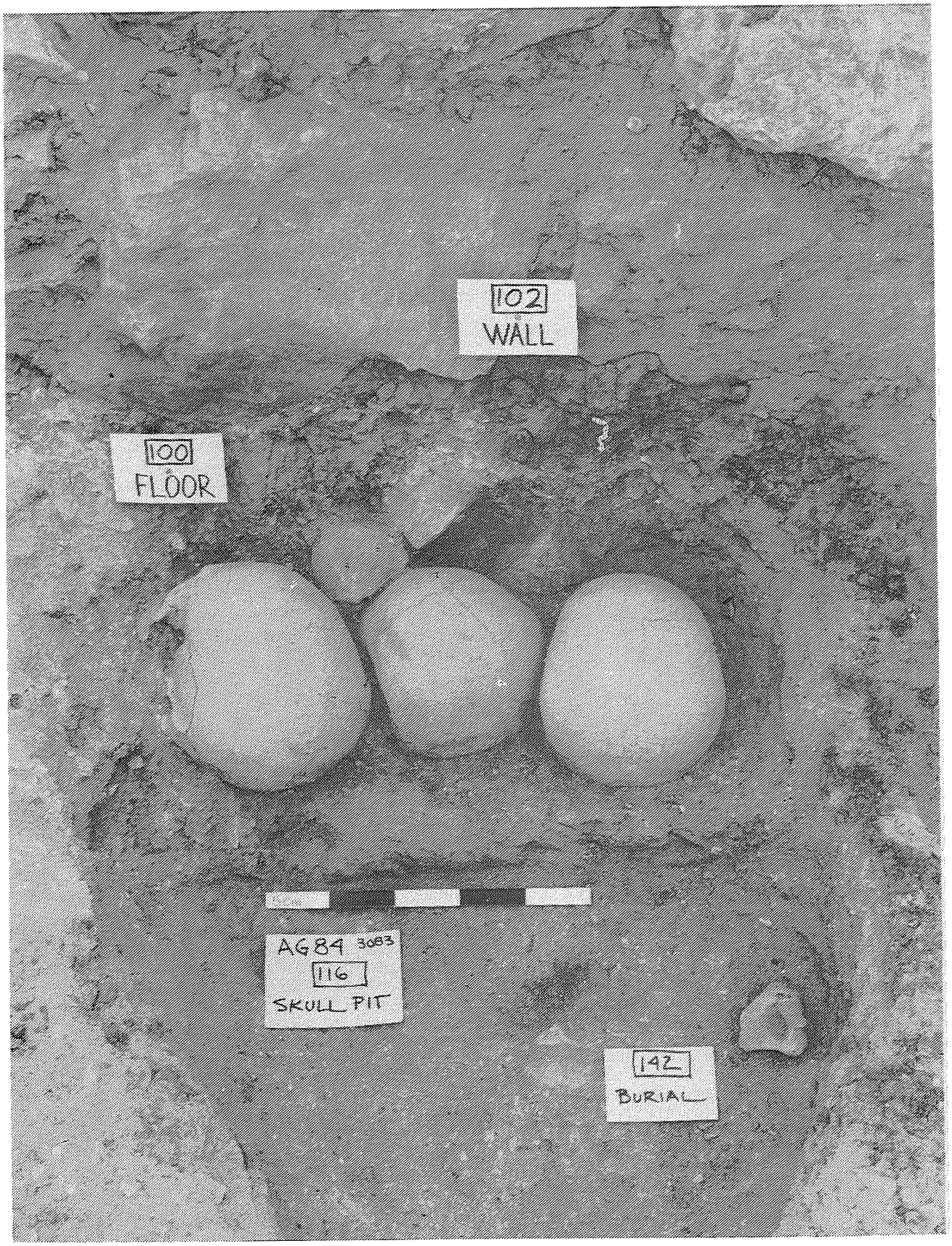
1: House in Sq 3082. Note the semicircular screen of stones erected in front of the doorway at top. (Photo: Curt Blair).



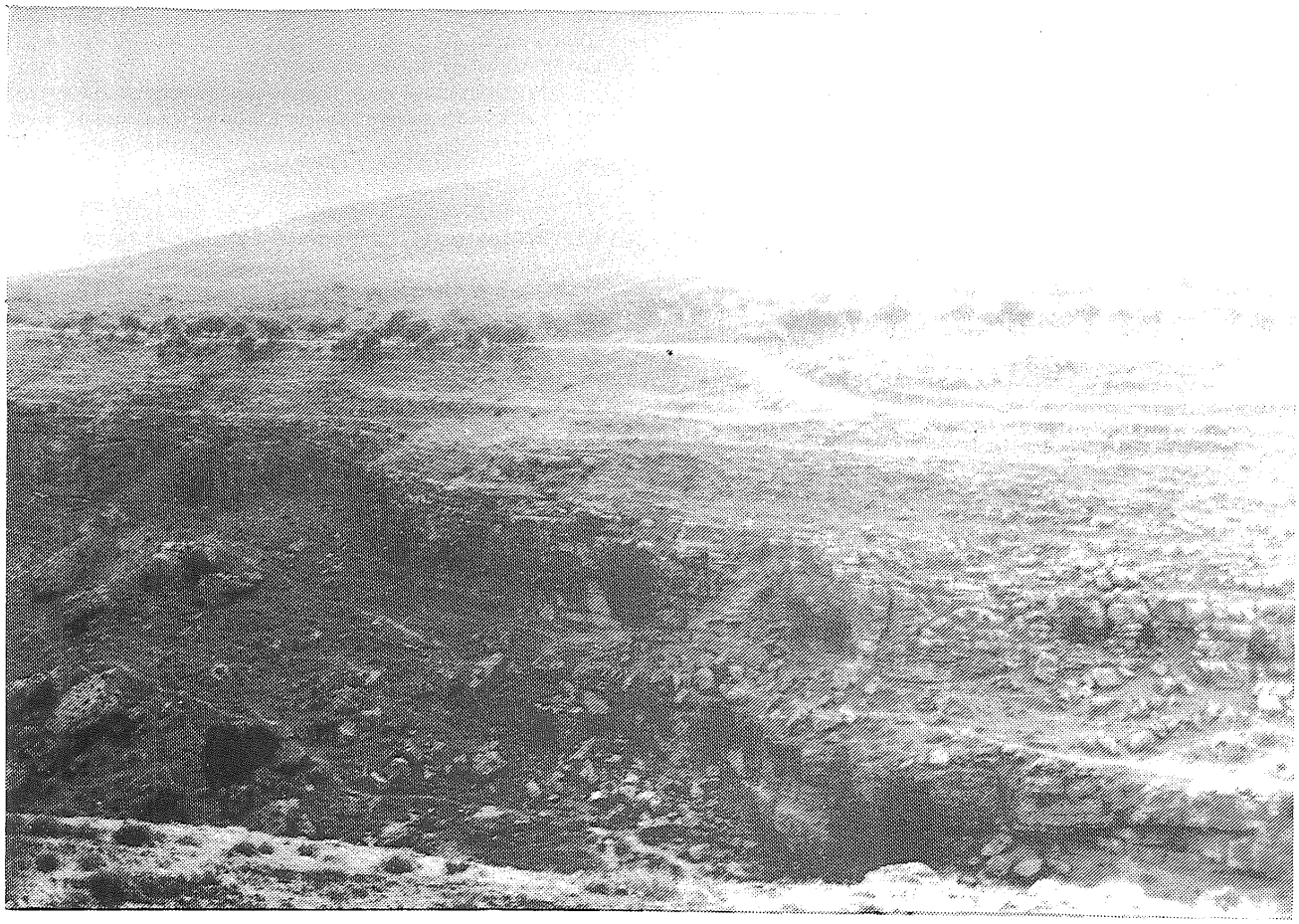
2: House in Sqs 3073/3273. At lower left is a single row of stones set on the floor which set apart the area to the left as a storage area for legumes and barley. The central doorway at the bottom was later blocked. (Photo: Curt Blair).

1: Two cattle figurines pierced with flint bladelets, from house in Sqs 3083/3283. (Photo: Curt Blair).

2: Bos metacarpals at bottom of plastered storage feature in house in Sq. 3082. (Photo: Curt Blair).

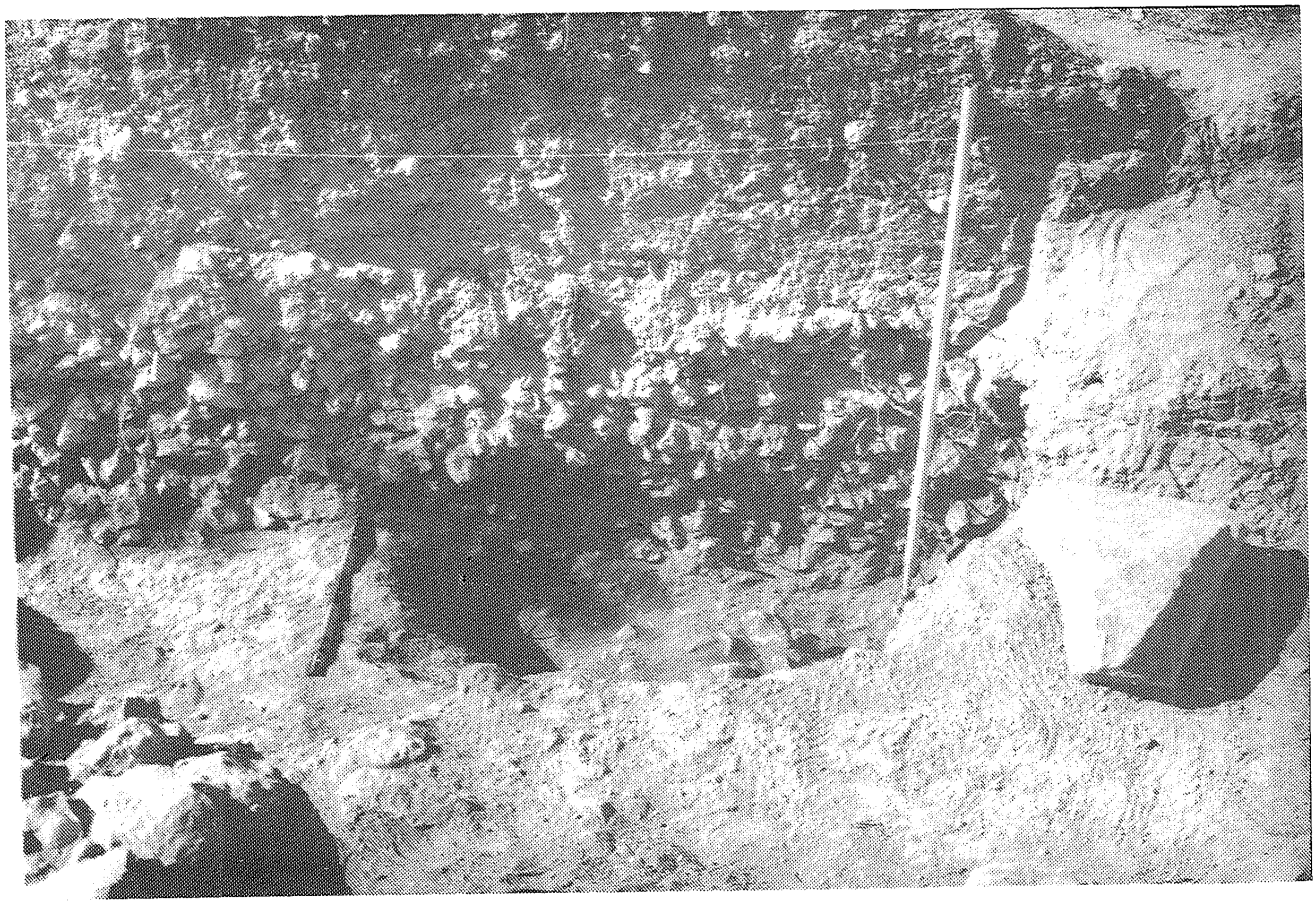


Cache of three skulls buried beneath house floor in Sqs 3083/3283. (Photo: Curt Blair).



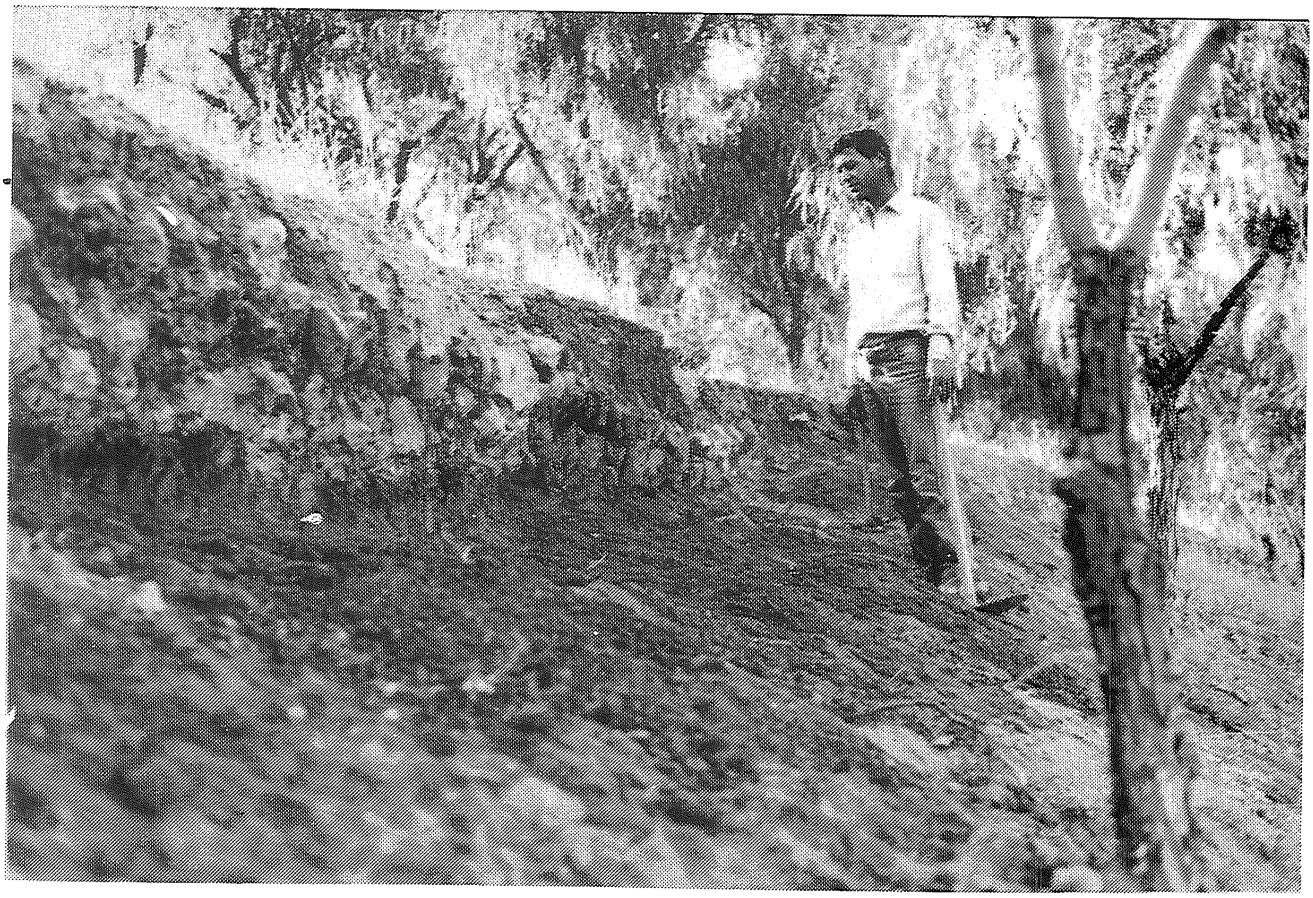
1. Caves in wadi er- Rumman- Looking East.

2. General view of the eastern cut of Sweileh-Jerash road- Looking East.

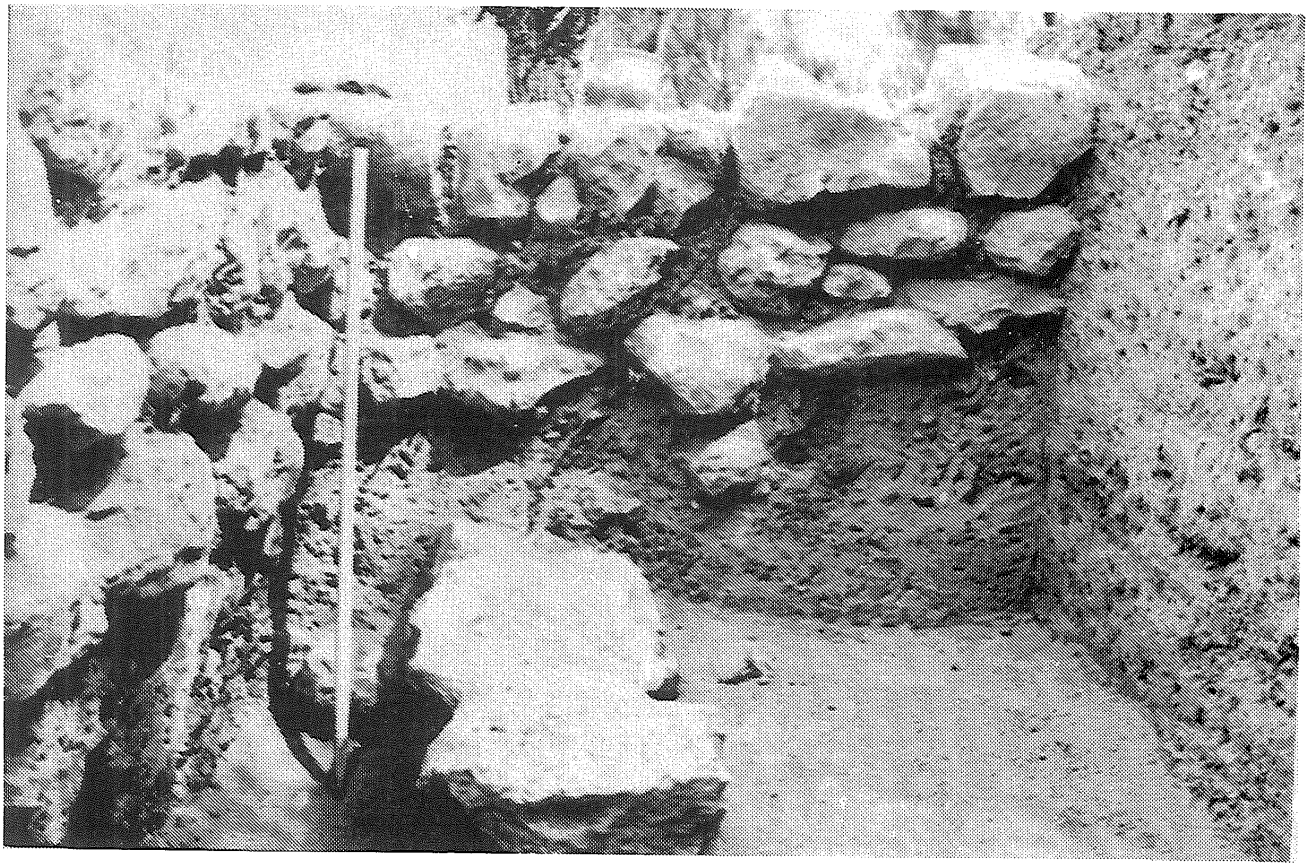


1. Late Neolithic pit (Area D III 5).

2. Eastern balk of A III 5.

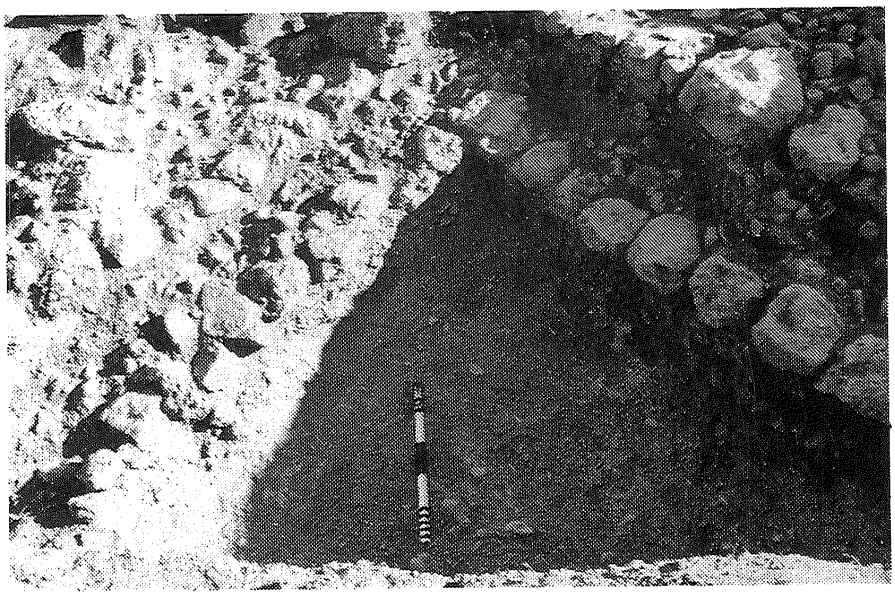


1. Late Neolithic I Wall (Area A).



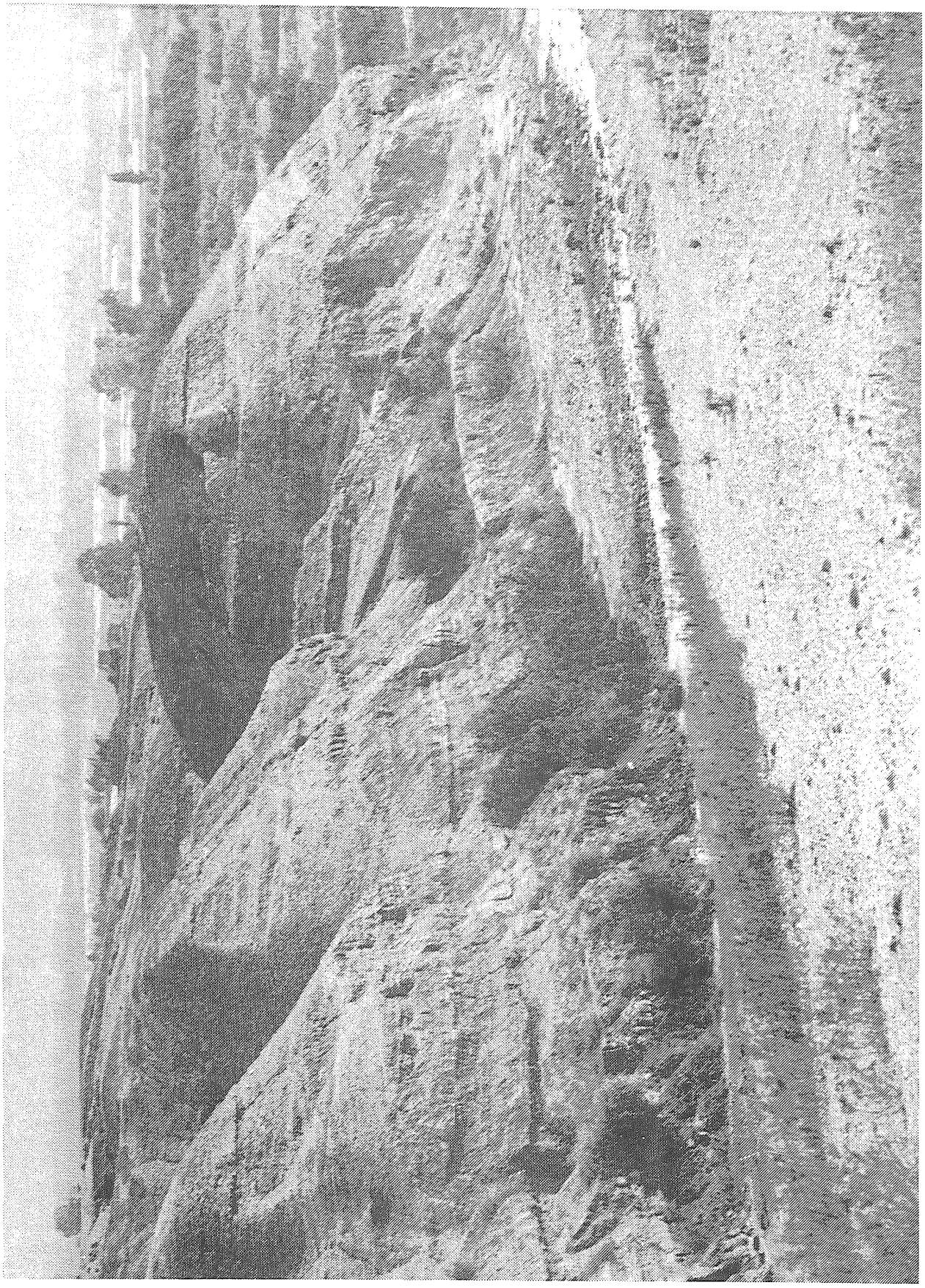
2. Late Neolithic I floor.

1. Re-used late Neolithic I wall (squ. D III 5).

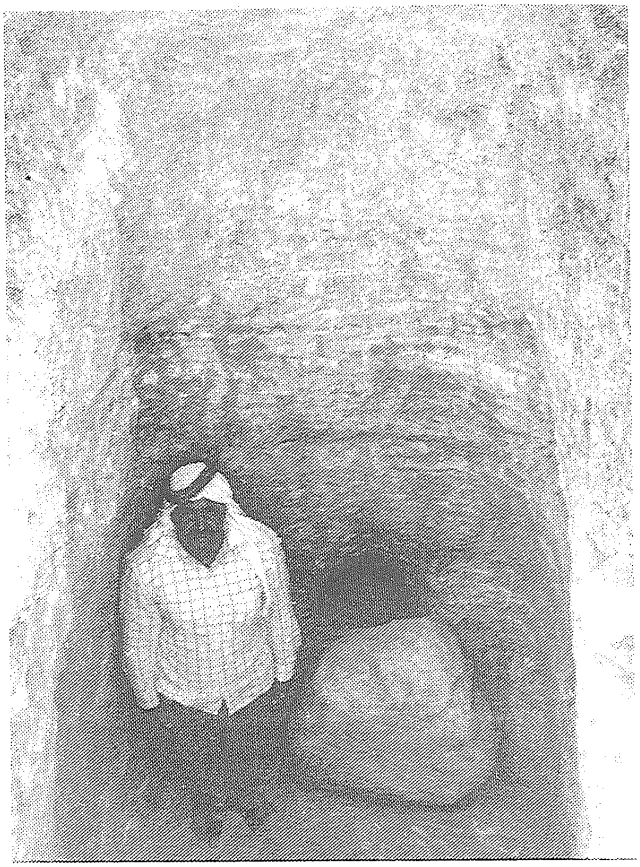


2. Early Bronze I structure (squ. D III 4).

3. Early Bronze I cup-holes (D III 5).



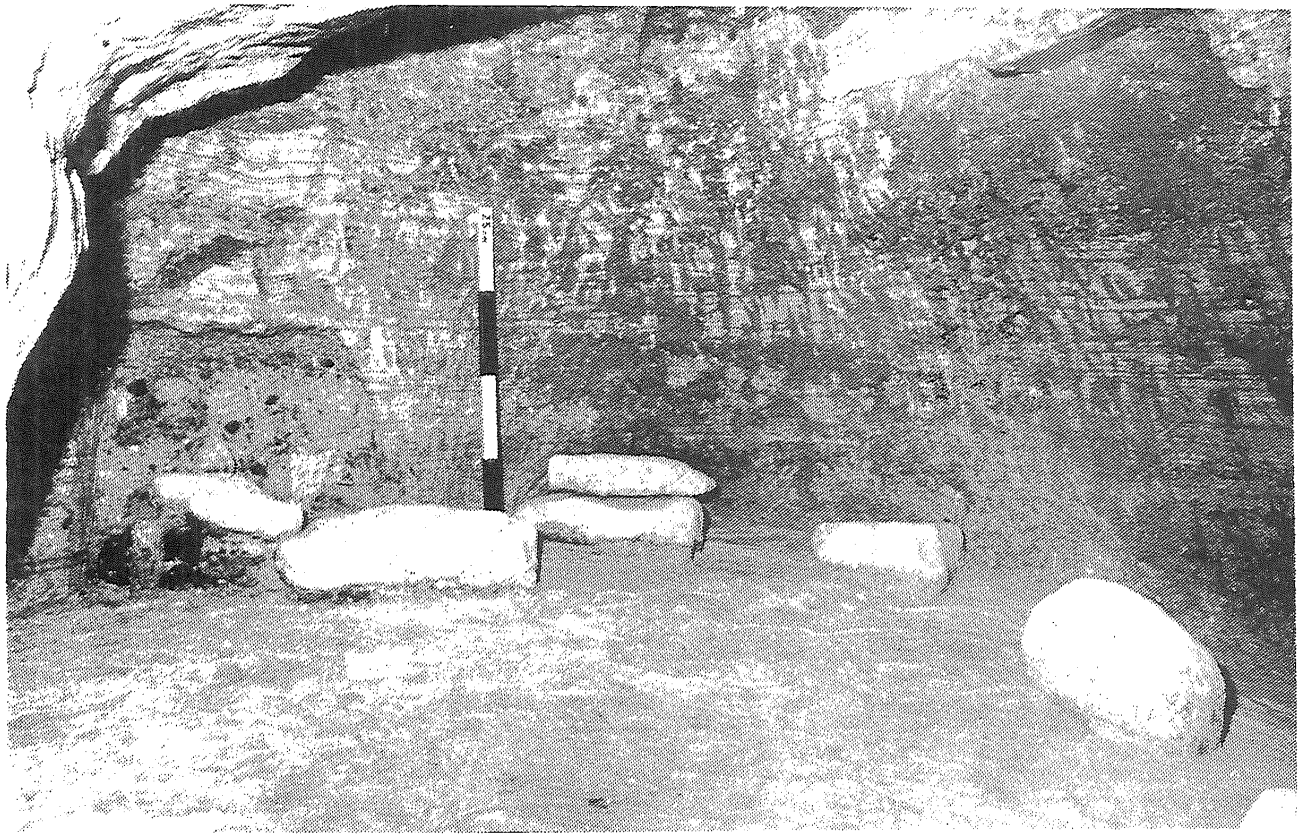
View from bed of Zarqa, looking north over part of cemetery area. Hill 4 is on the right, showing tombs NE10, 11, 12, 13, 14 and 18.



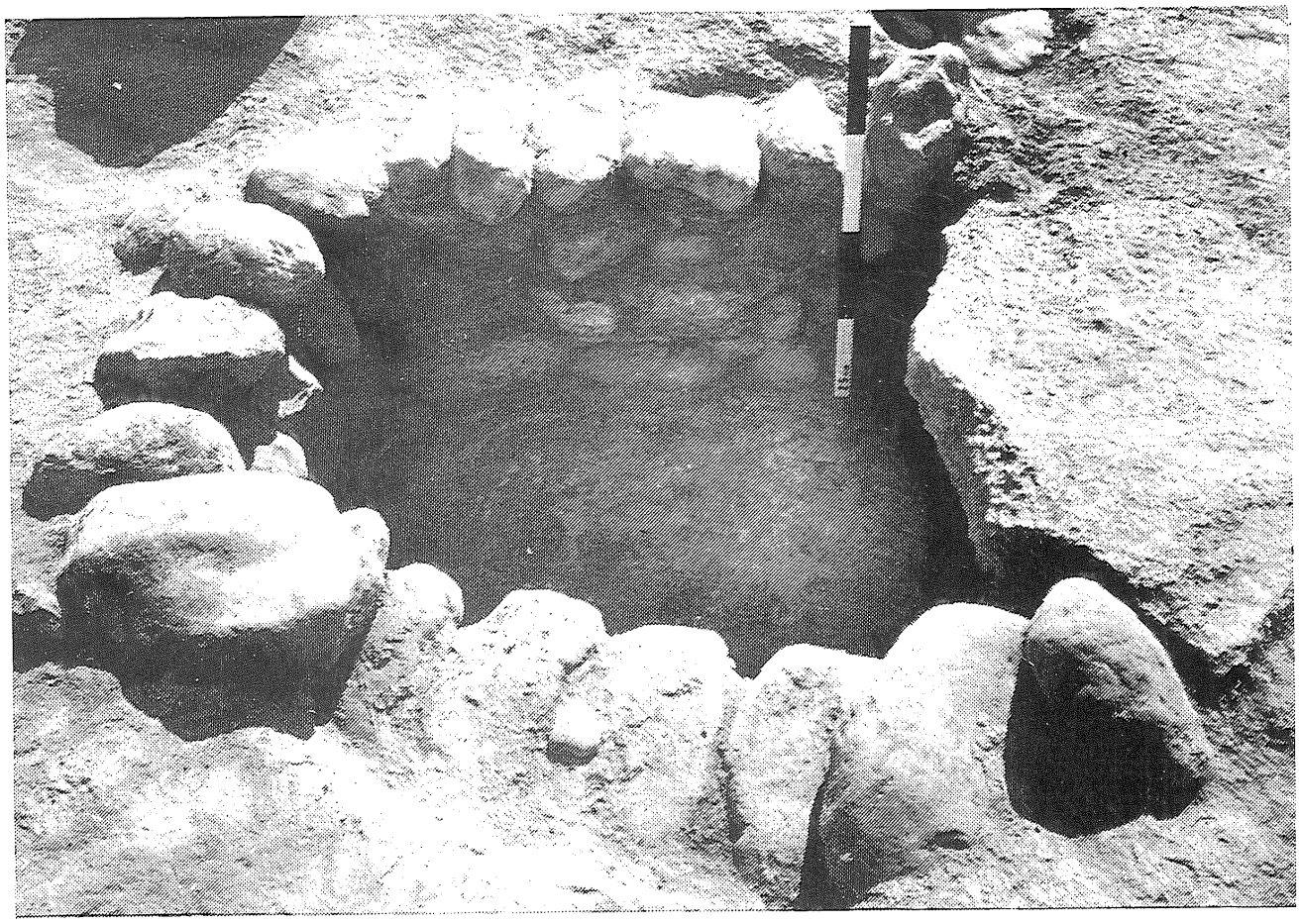
1: Tomb NE9 showing shaft and small entrance.

2: Tomb NE2, of which only the eroded chamber was preserved.

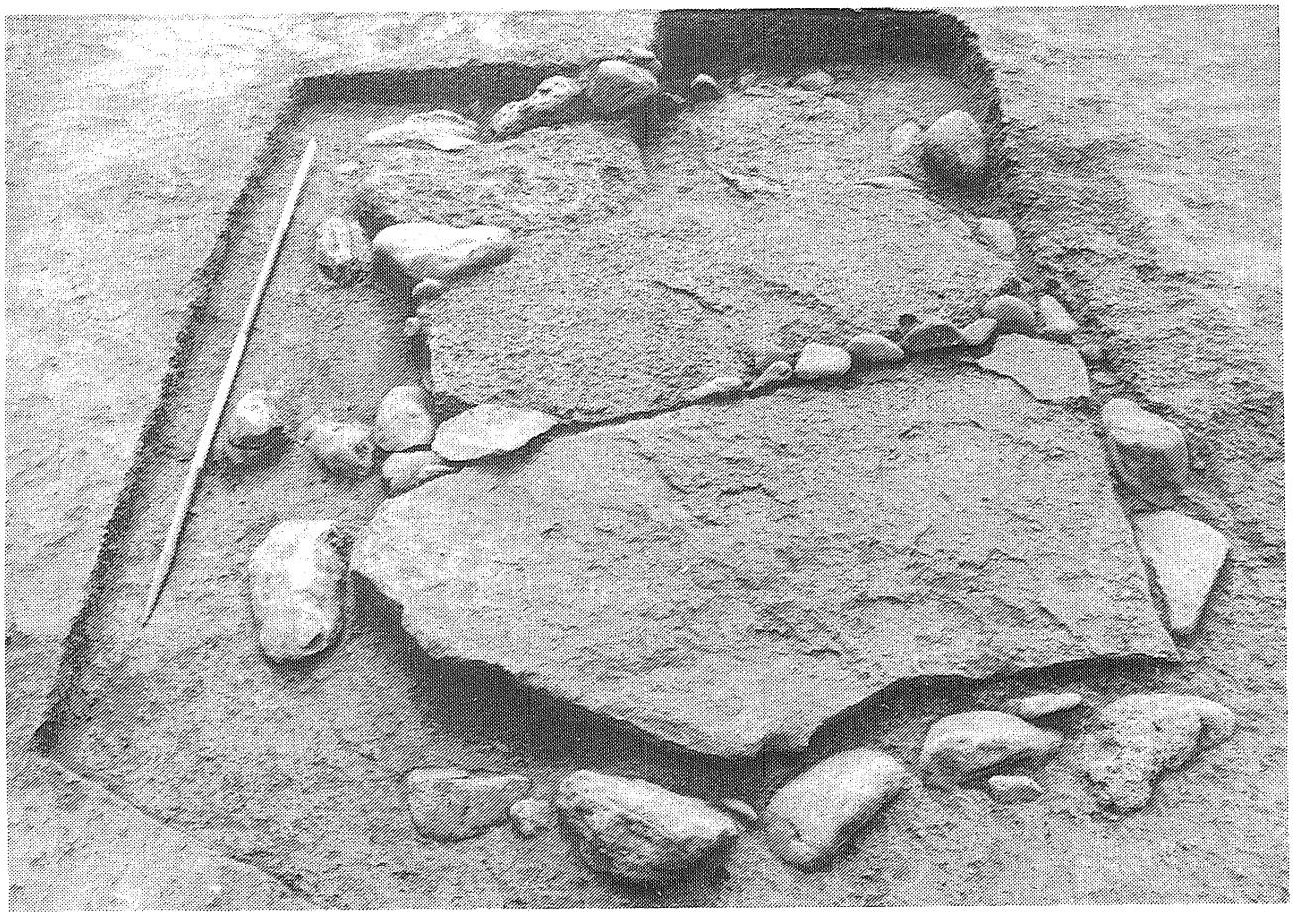
1: First entrance to Tomb SE2 showing use of mud-brick to correct irregularity and nature of crushed marl packing.



2: Interior of Tomb SE2 showing blocking stones from first entrance arranged to create smaller internal chamber for second usage of the tomb. Note second phase entrance at rear left.



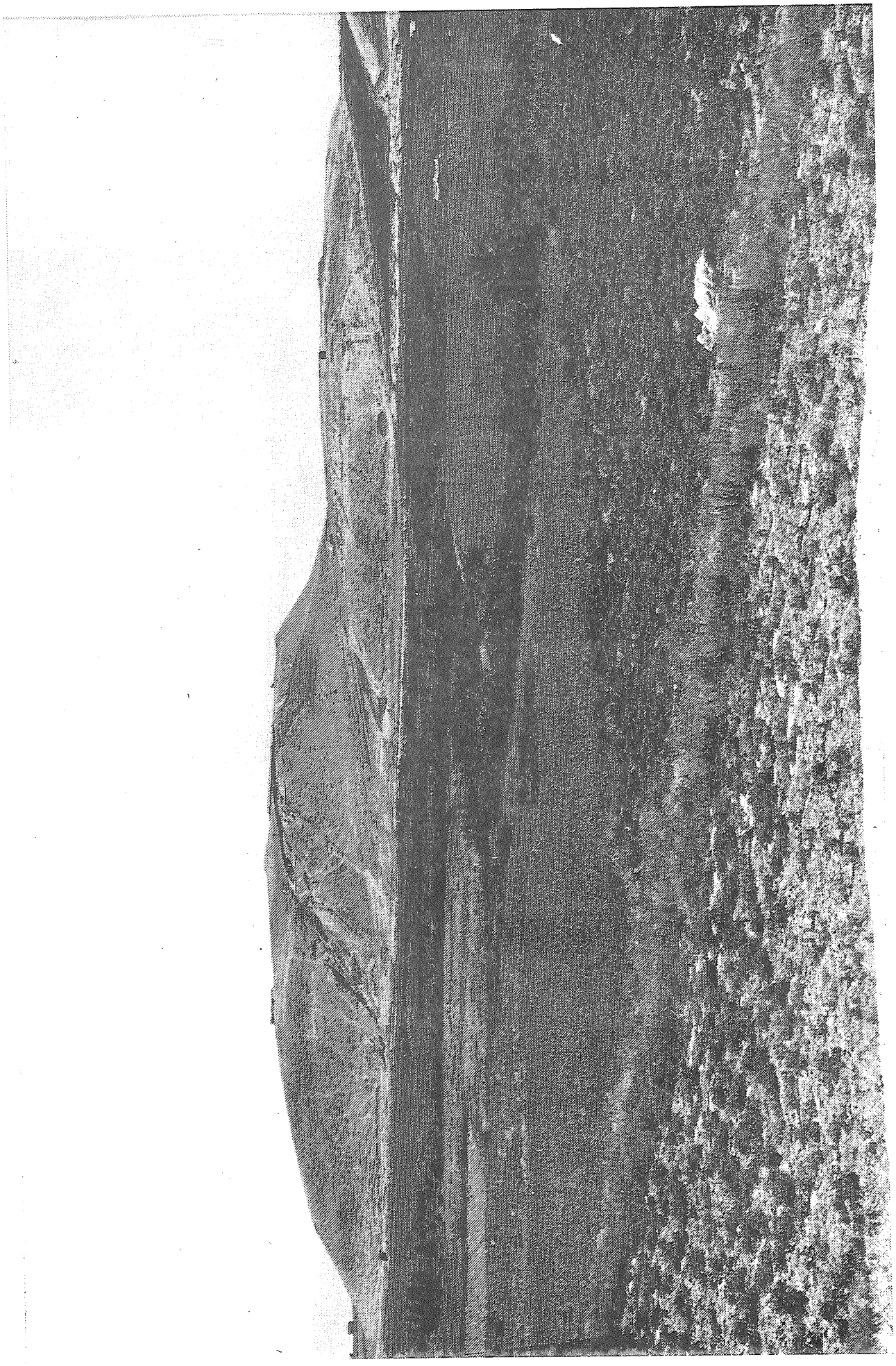
1: Grave NE8 after completion of excavation.



2: Grave SE14 before removal of capstones.

1: Early Bronze I deposit in Tomb NE22.

2: "Leben cup" in mouth of loop-handled amphoriskos (Tomb SE2).

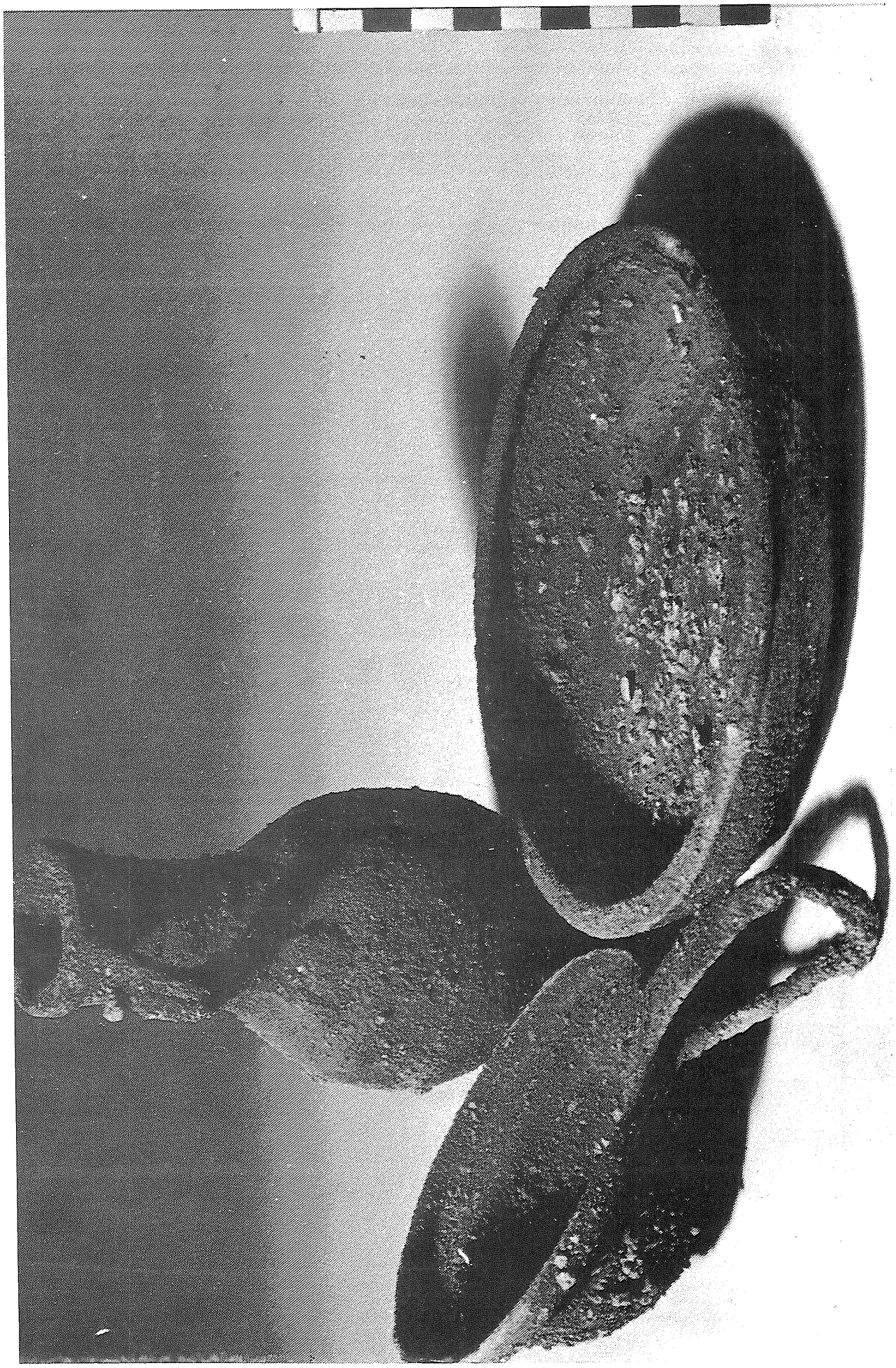


View of Tell es-Sa'idiyeh from the north.

View of Area AA from the east showing streets and buildings of Stratum IV. Partly exposed by the Pennsylvania expedition and partly exposed in 1985.

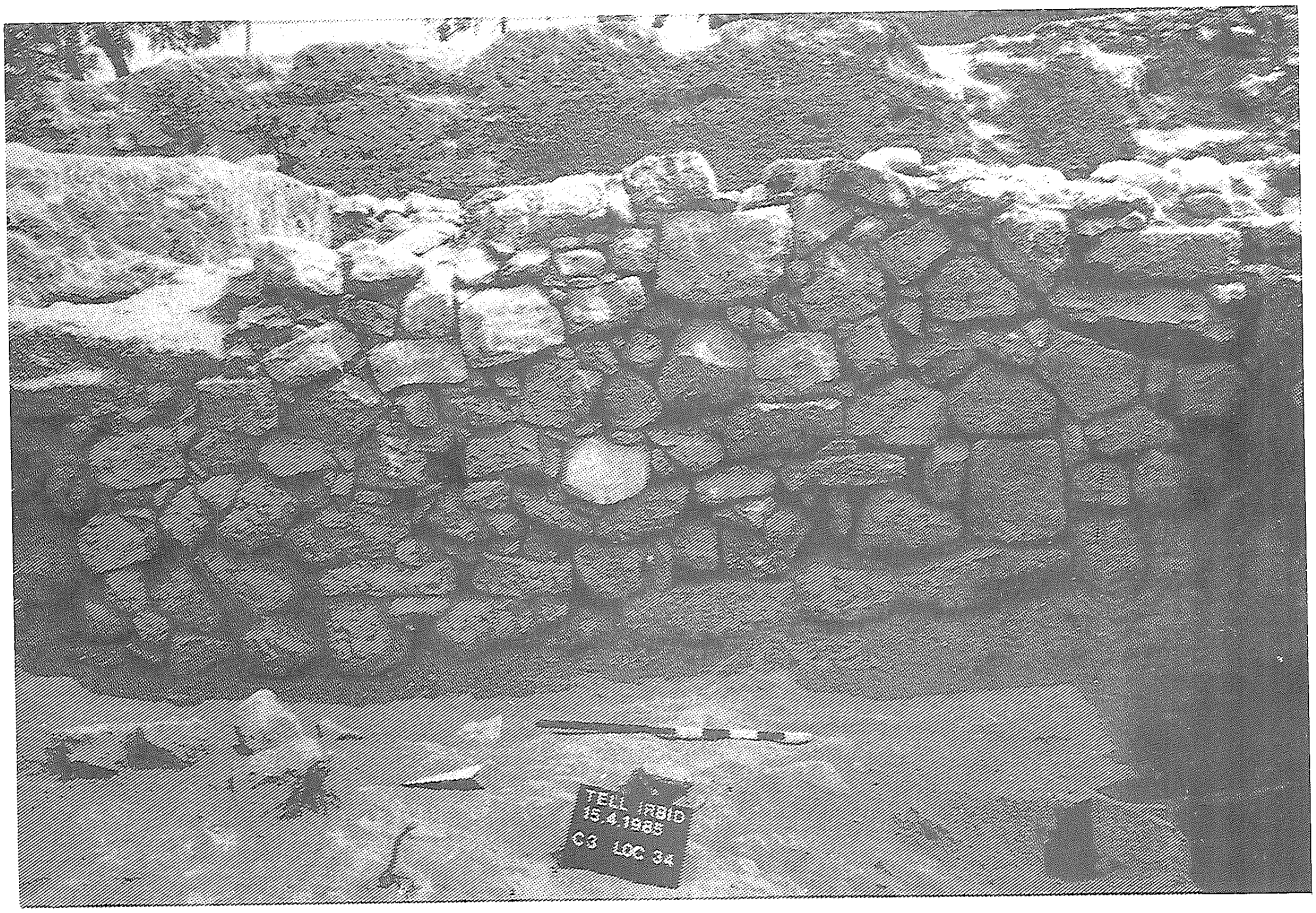
Grave 27, the burial of a young girl aged 5-6 years old. Note the bronze fibula close to the face and the bronze weaving spindle near to the scale.

Deposit in Grave 32, showing the bronze wine set *in situ*.



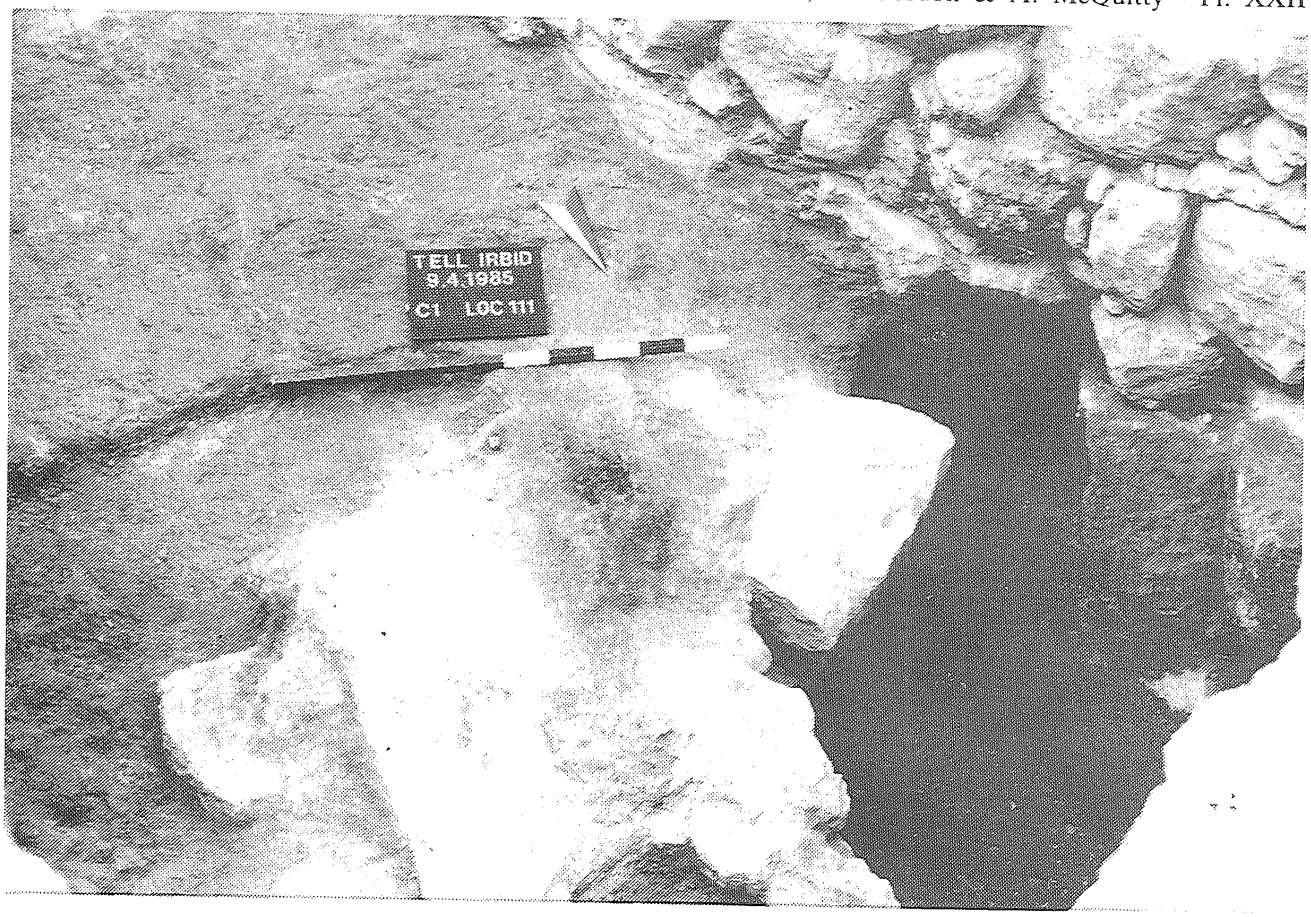
Bronze Wine Set from Grave 32.

Area DD from the south-west showing Early Bronze Age pottery on the burnt floor surface.

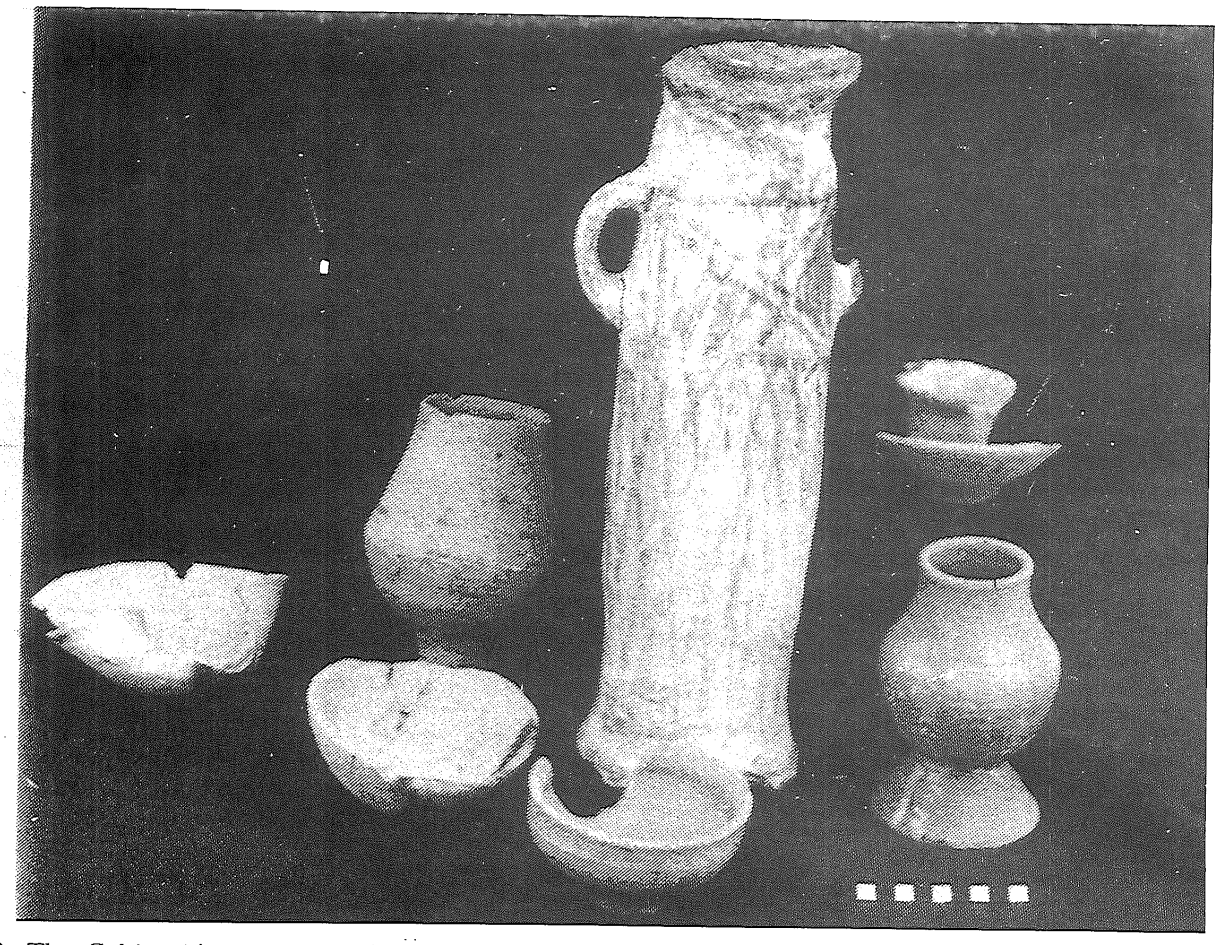


1: Tell Irbid, Wall. View: East.
This is the face of Wall 1.

2: Tell Irbid, Wall 2. View: East
The top of Wall 2 is visible with the truncated mud-brick behind the metre stick.



1: View of the dung storage bin found on Tell Irbid.

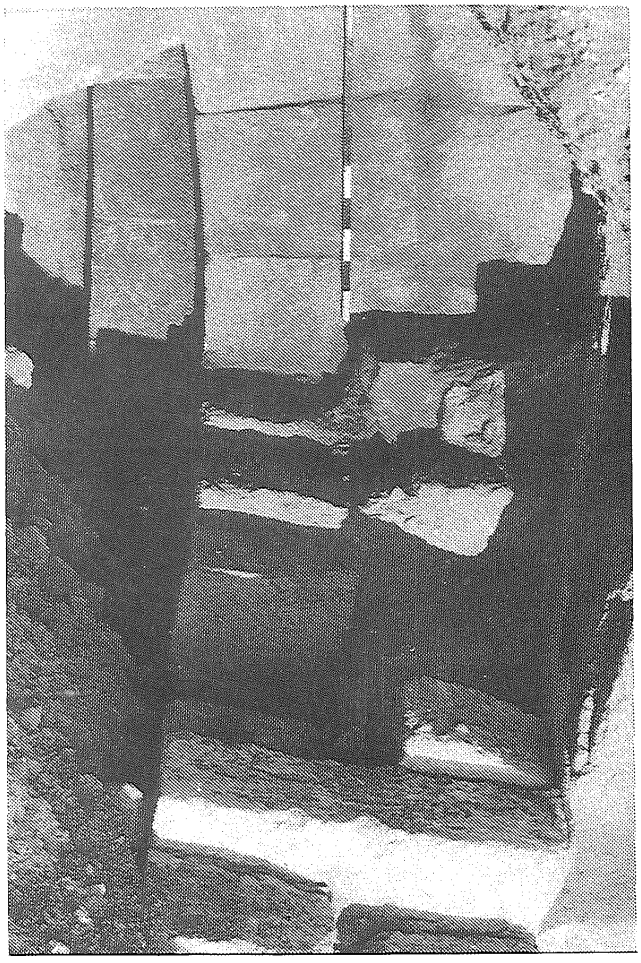


2: The Cultic objects excavated at Tell Irbid.

1: The storage vessels as they were being excavated.

2: View of Vault 6 in Beit Ras, looking south.
The tessellated pavement is visible in the foreground.

1: The facade of Vault 1, looking south. In the foreground, the outside tessellated pavement and delimiting wall are visible.



2: The excavated portion of the water installation.

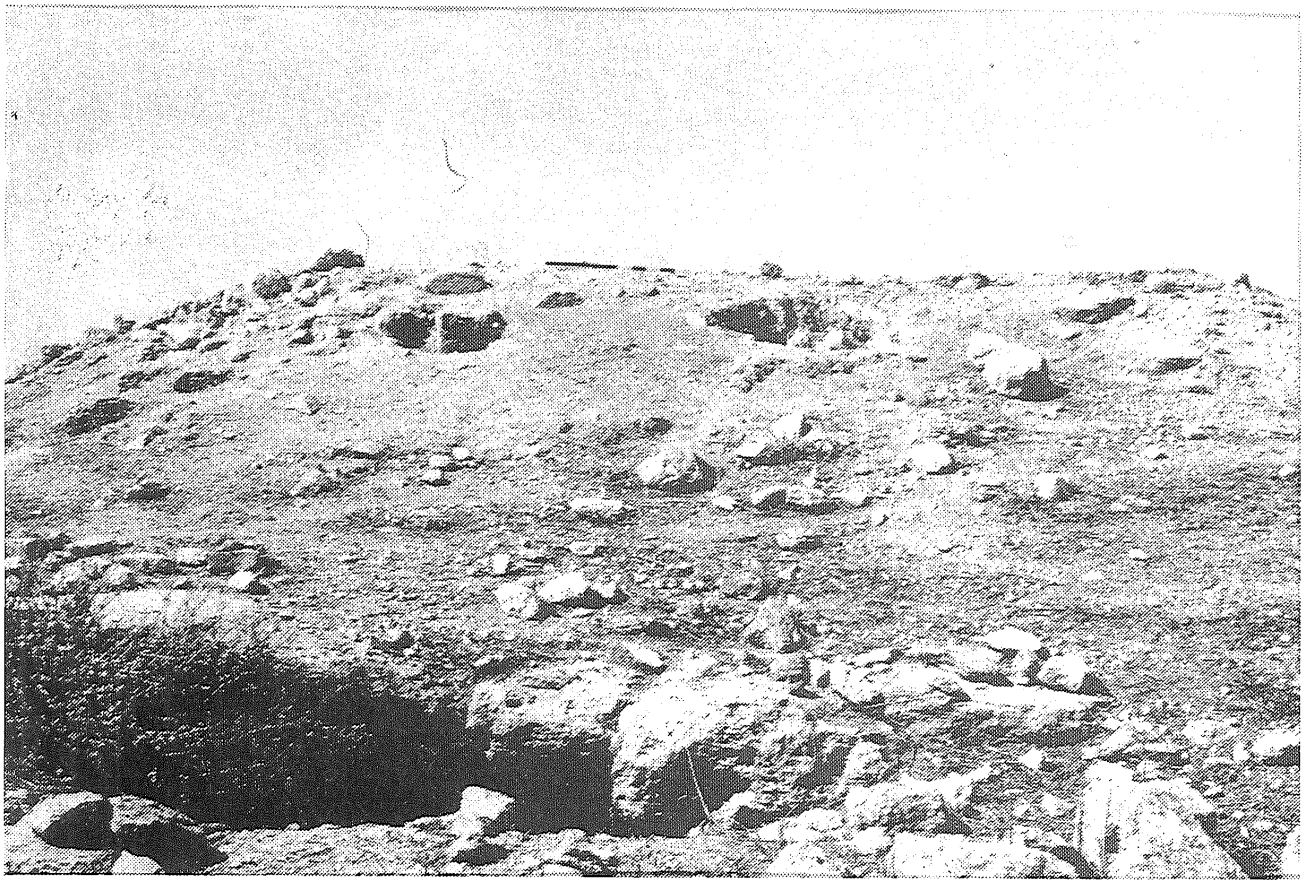
1: Dolmen-like tomb at Sweīmeh (view east)

2: "Cultic" Stone Slab with cup holes and grooves (view east).

1: Section B: Road north of Dimnah turning to Yarūt (View North).

2: Section C: Embankment of road into Wādī Jarra (view northwest).

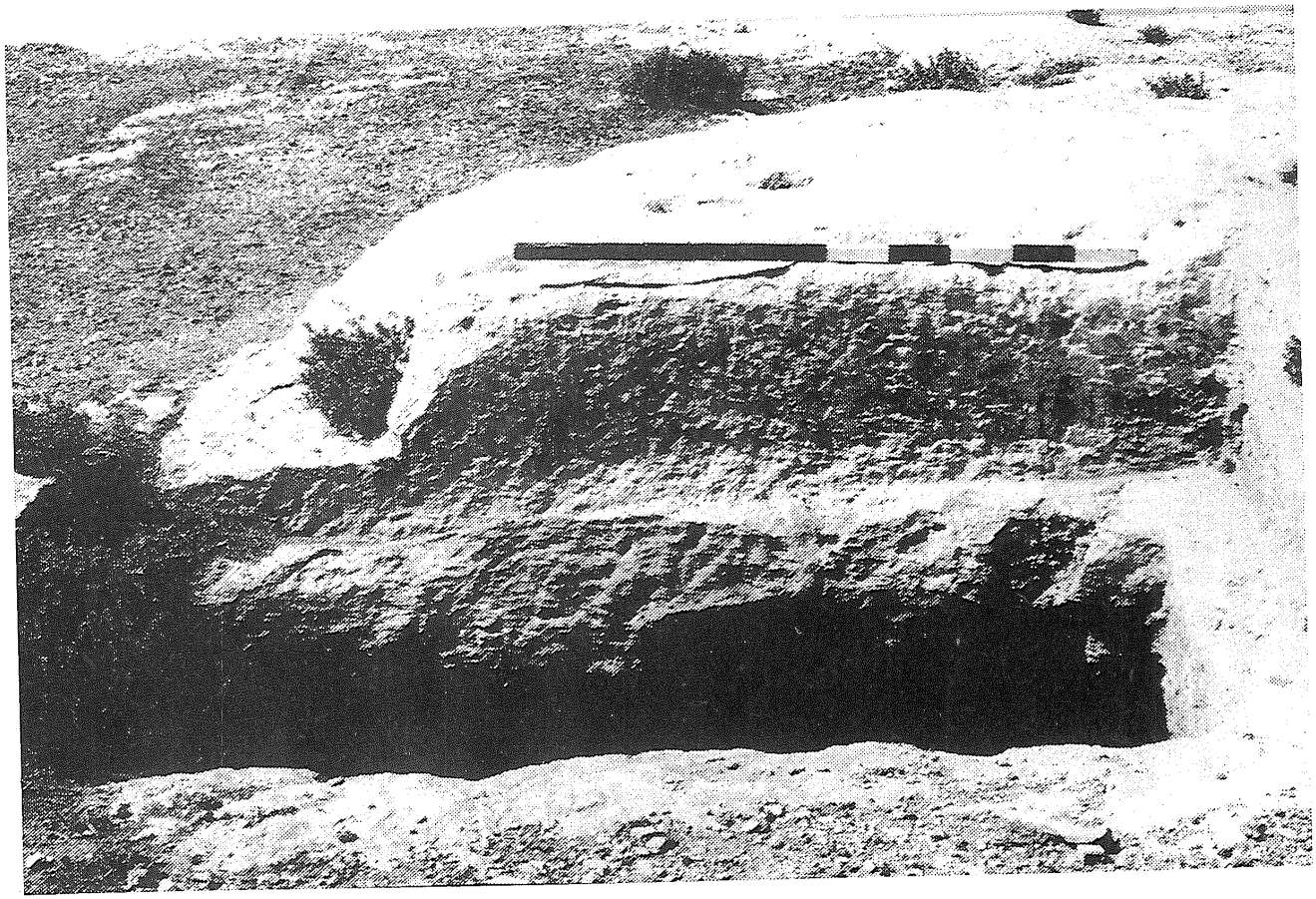
1: Section D: Roadway going to Wādī esh-Shuqeiq (view north).



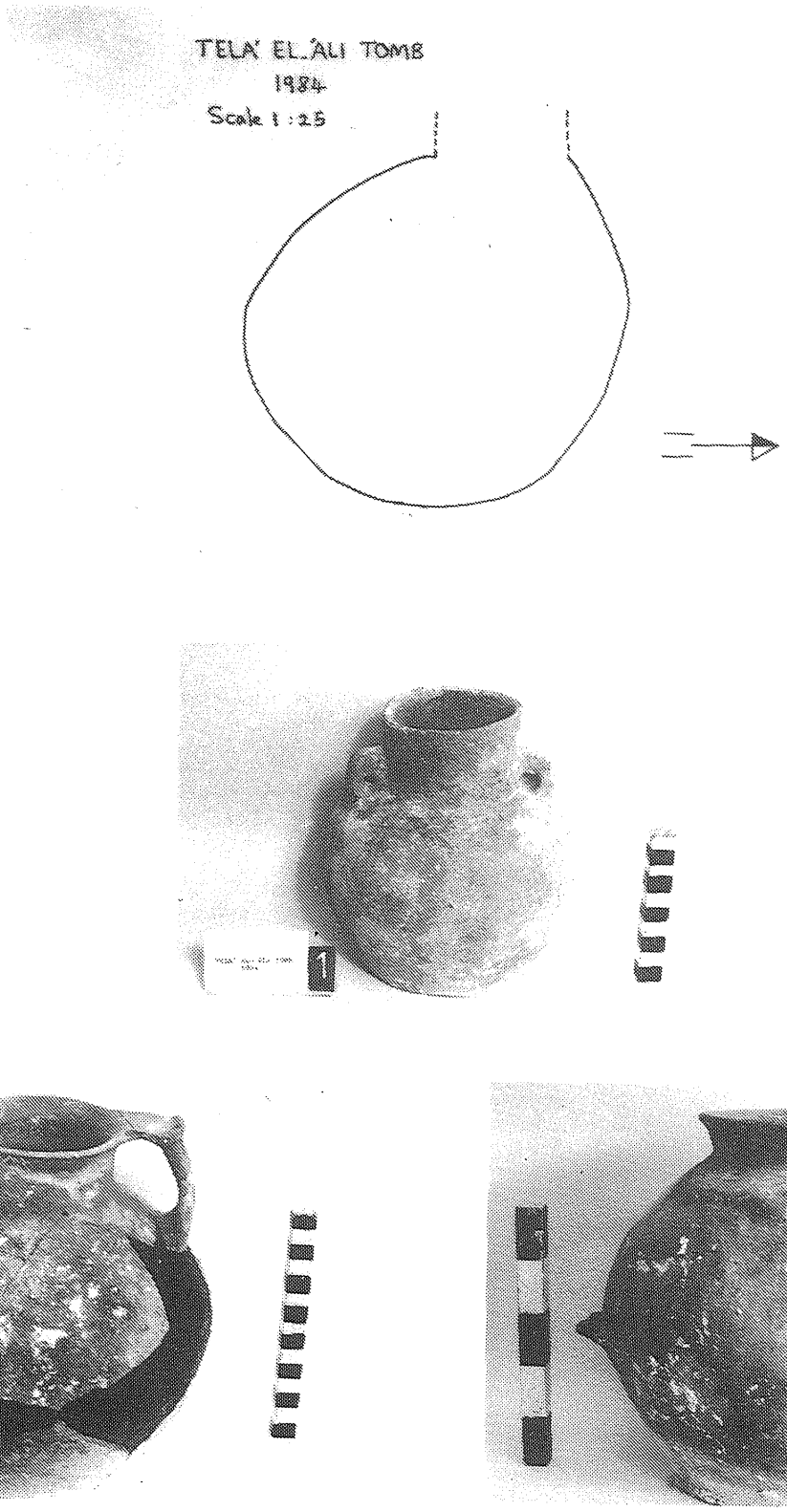
1: Structure A.

2: Cistern and adjacent drinking trough.

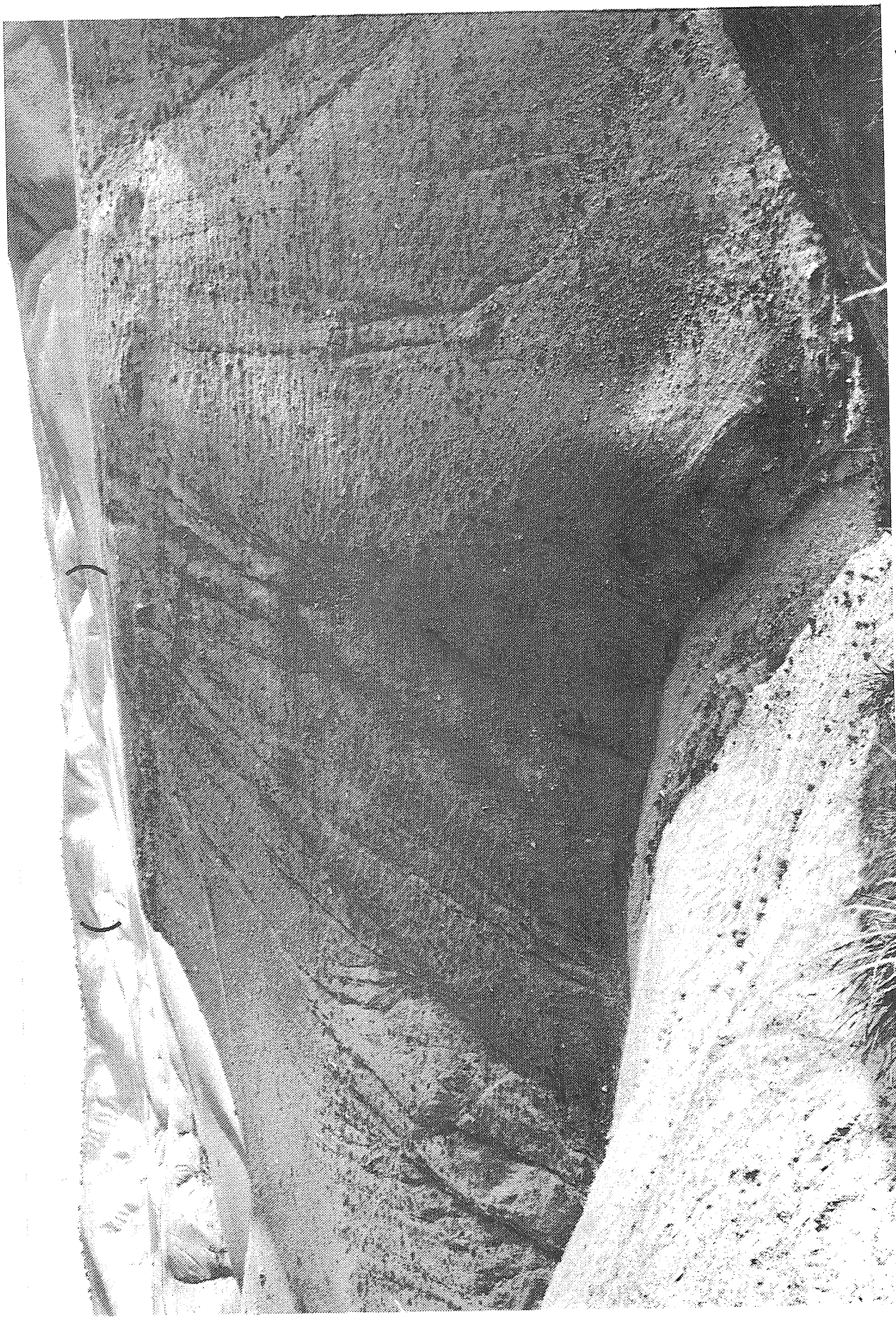
1: Water channel leading to cistern.



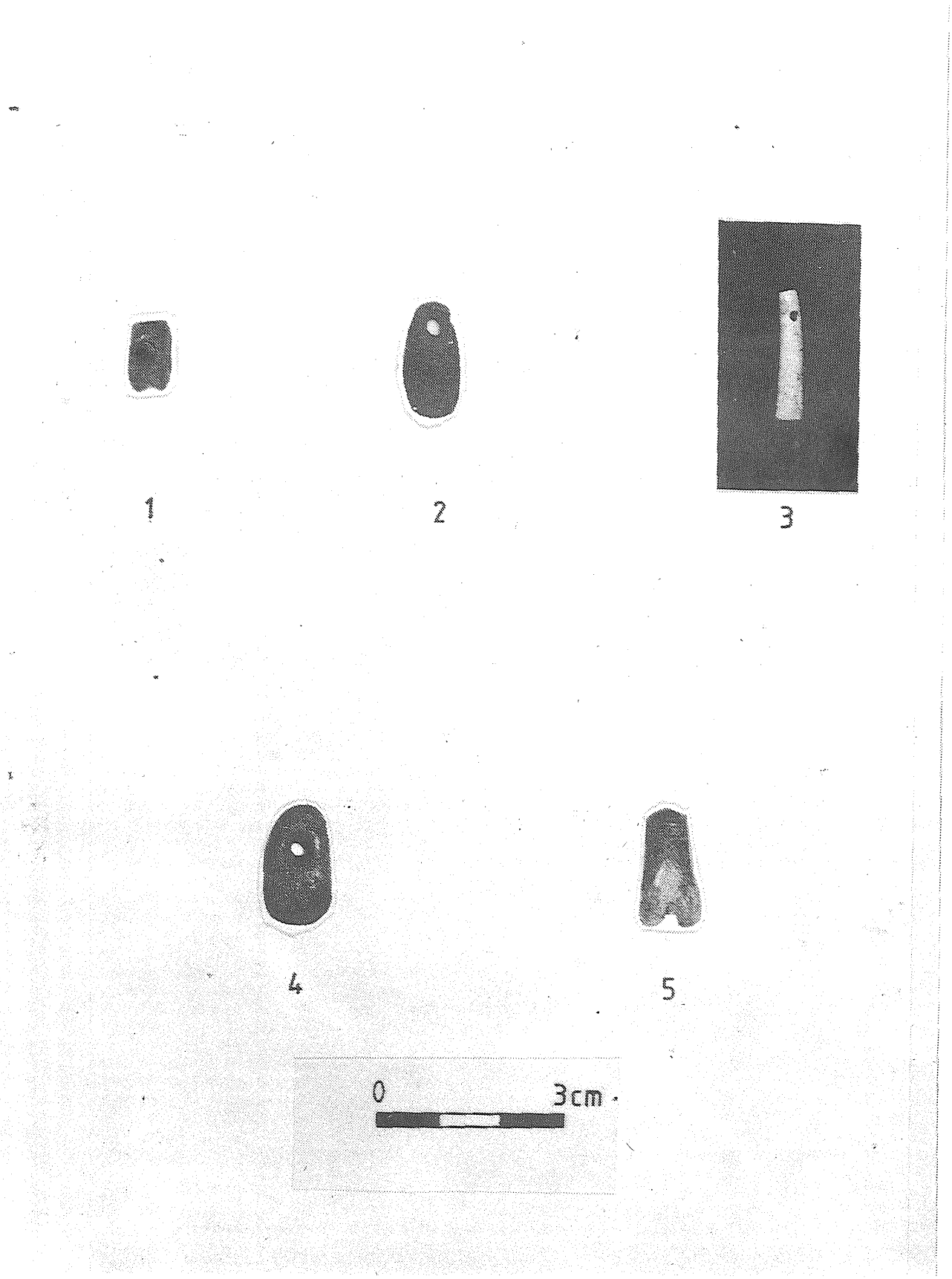
2: Byzantine shaft grave.



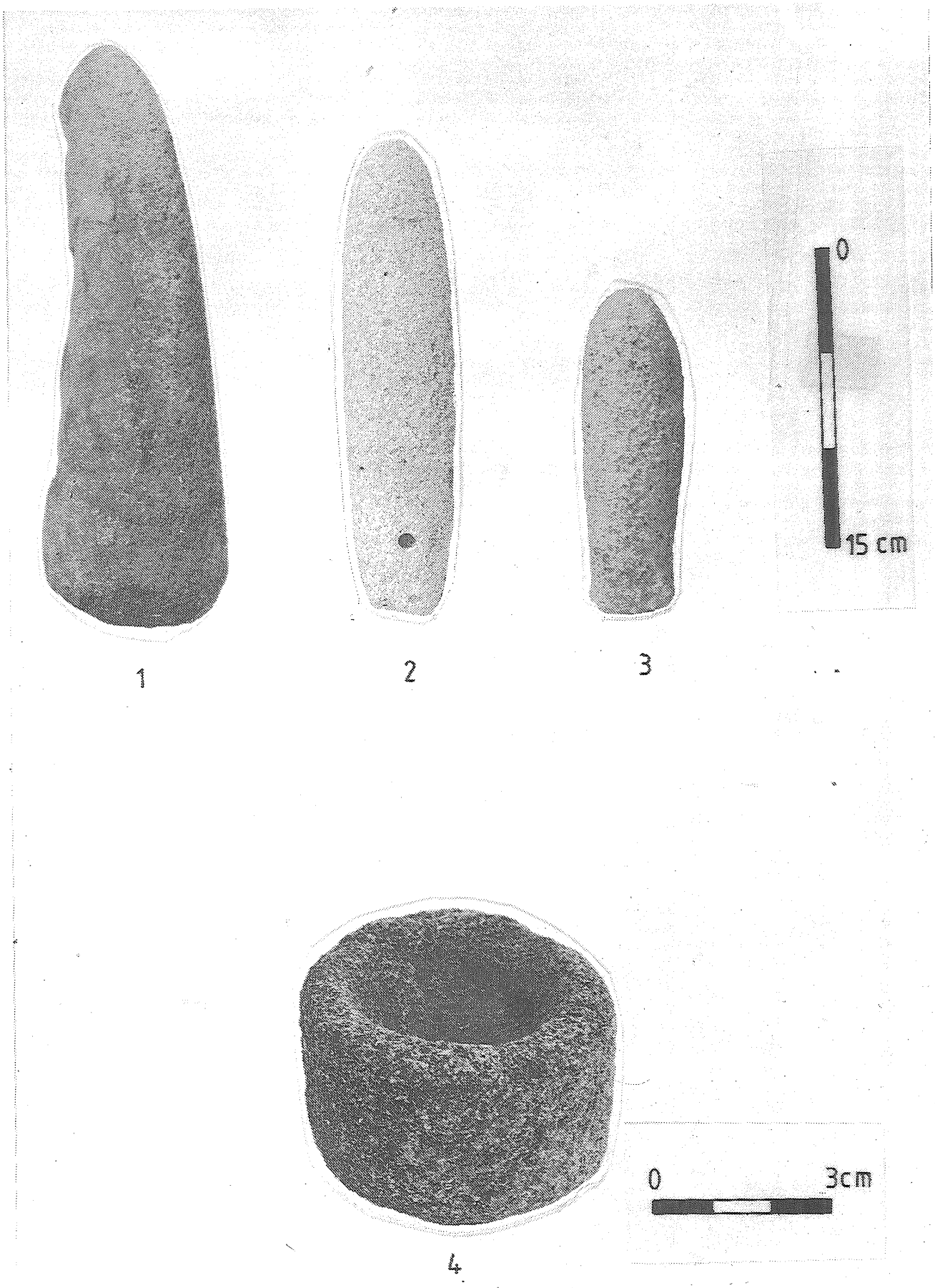
Plan and Pottery of Tela' el-'Ali Tomb.



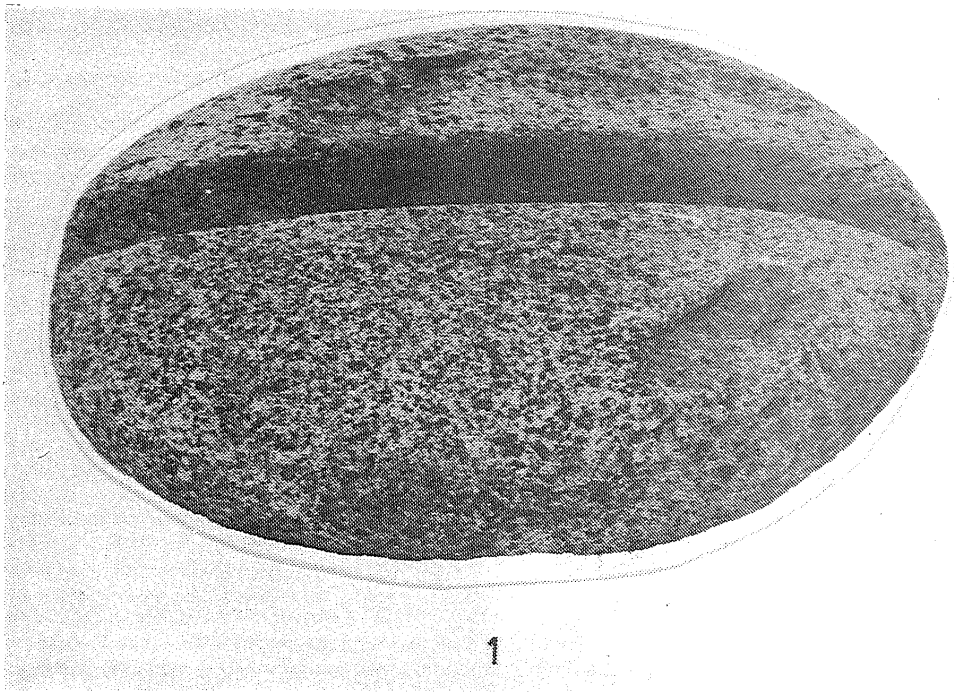
View east to the remnant valley fill in the Wadi Ḥammeh. The Natufian site is situated at the north end of the ridge (to left). The distance between the brackets, which indicate the estimated extent of the site, is ca. 80 metres.



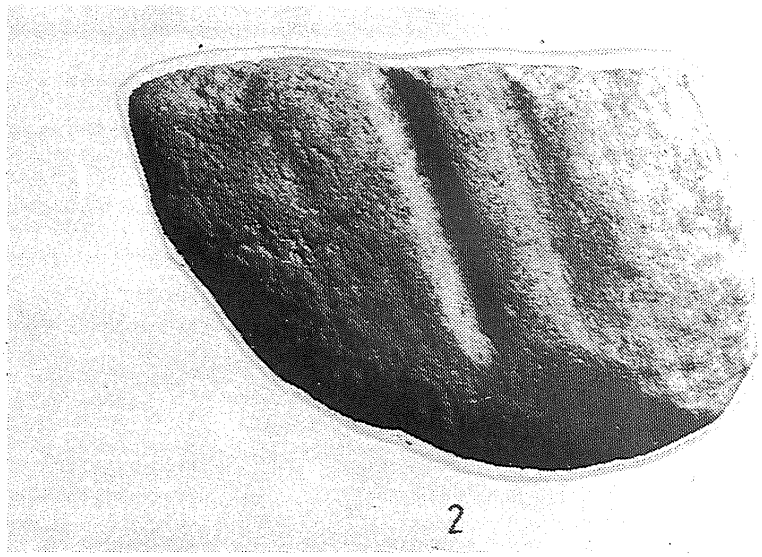
1. Bone bead made on *Gazella* phalanx.
2. Bone pendant.
3. Drilled *Dentalium* shell.
4. Schist pendant.
5. Worked *Gazella* phalanx.



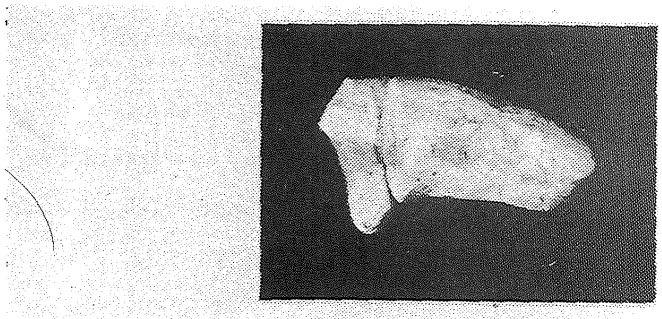
1-3. Basalt pestles.
4. Miniature basalt bowl.



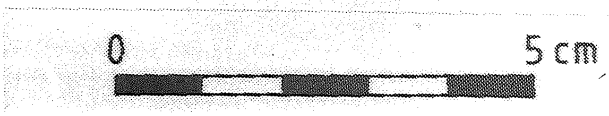
1



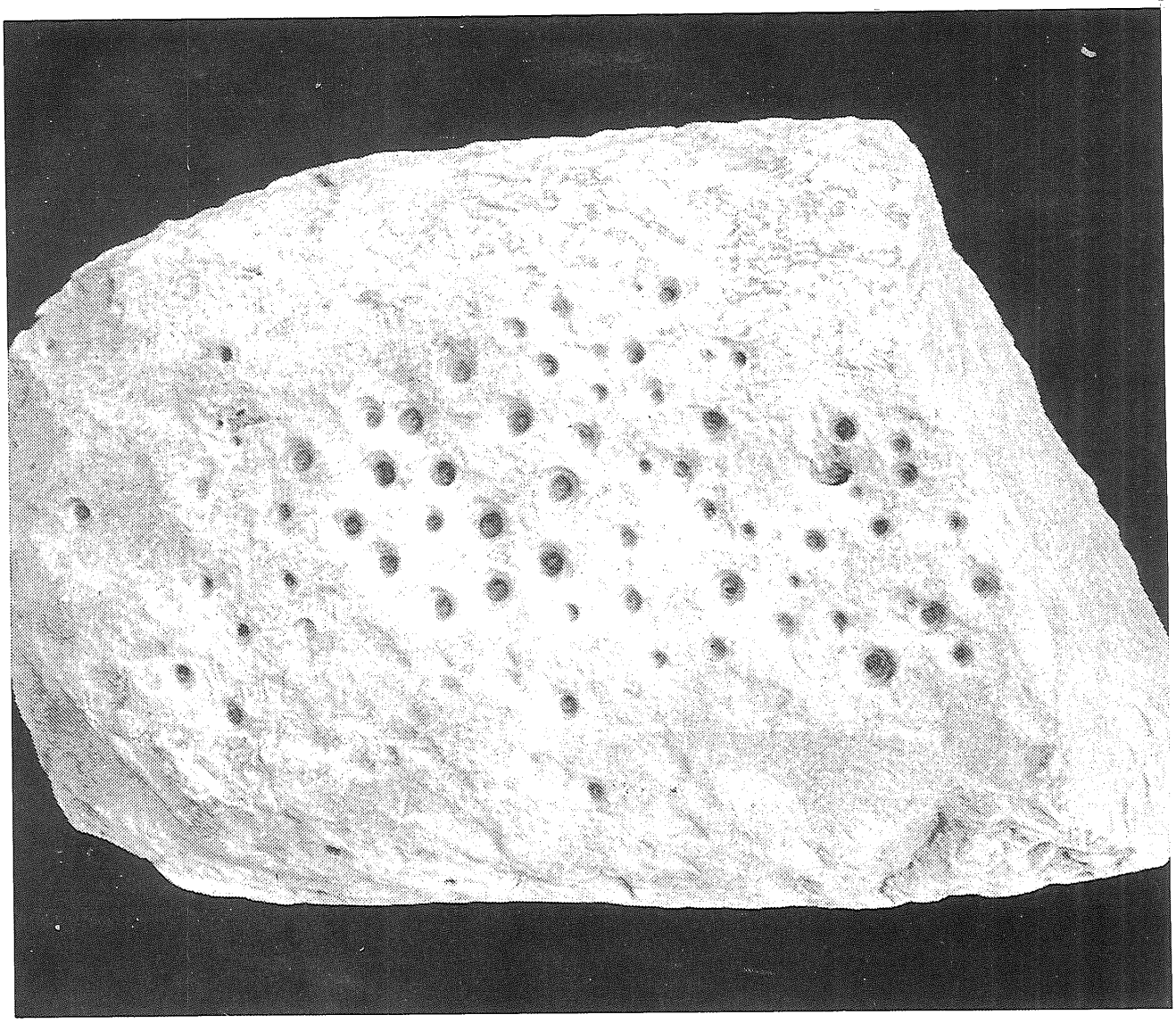
2



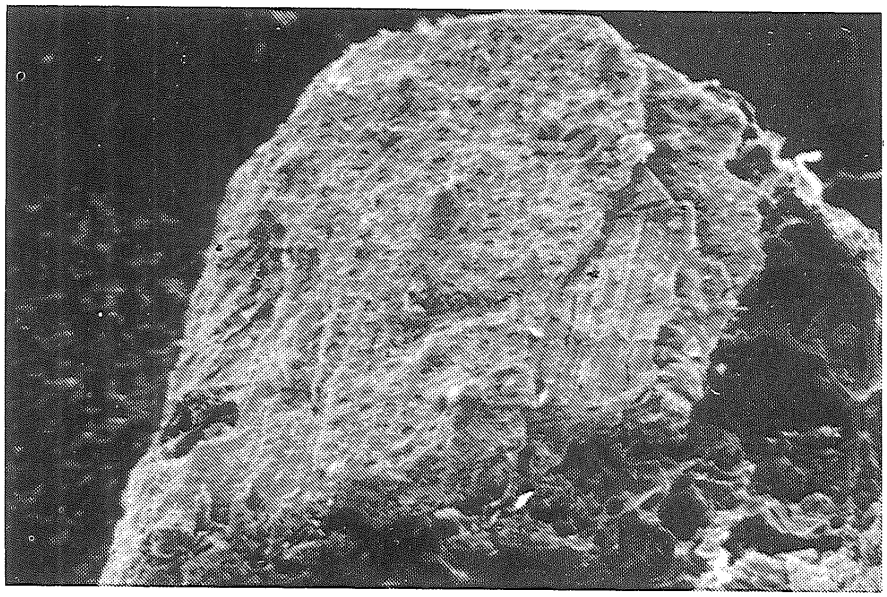
3



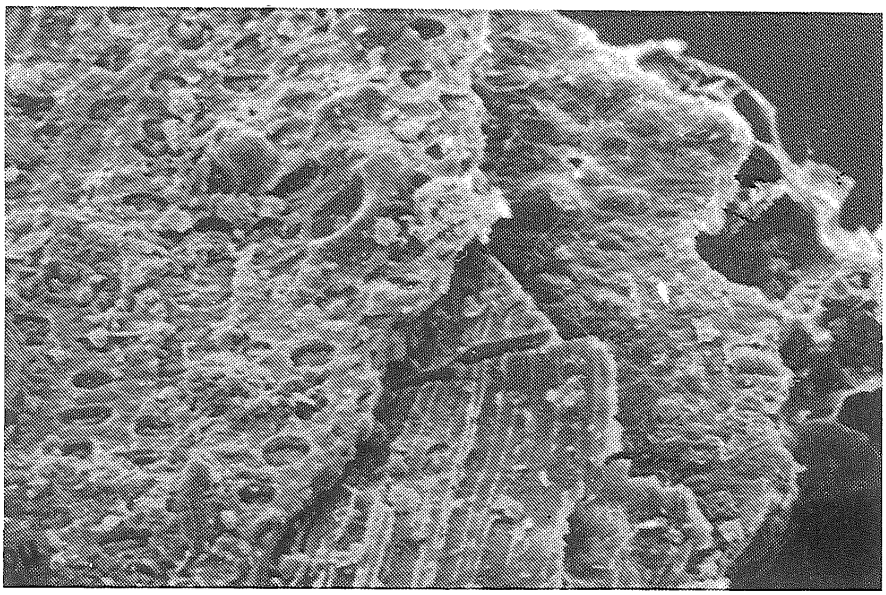
1. Grooved limestone plaque.
2. Sharpening stone made on limestone piece.
3. Figurine fragment of indeterminate material.



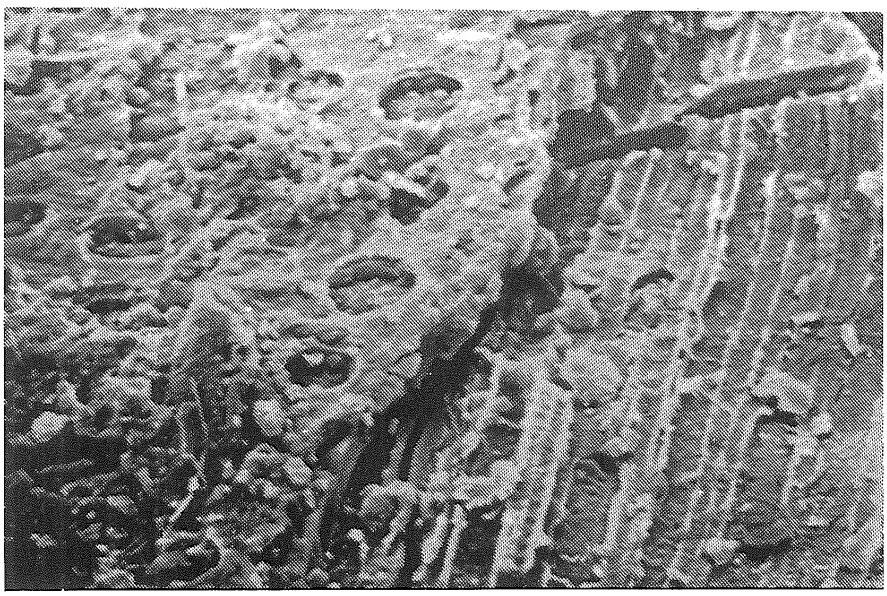
Limestone piece with multiple drilled holes.



1. 'Species X' - 'body' fragment from XX D+3.4b showing the two layers of the seed coat. Magnification x 200.

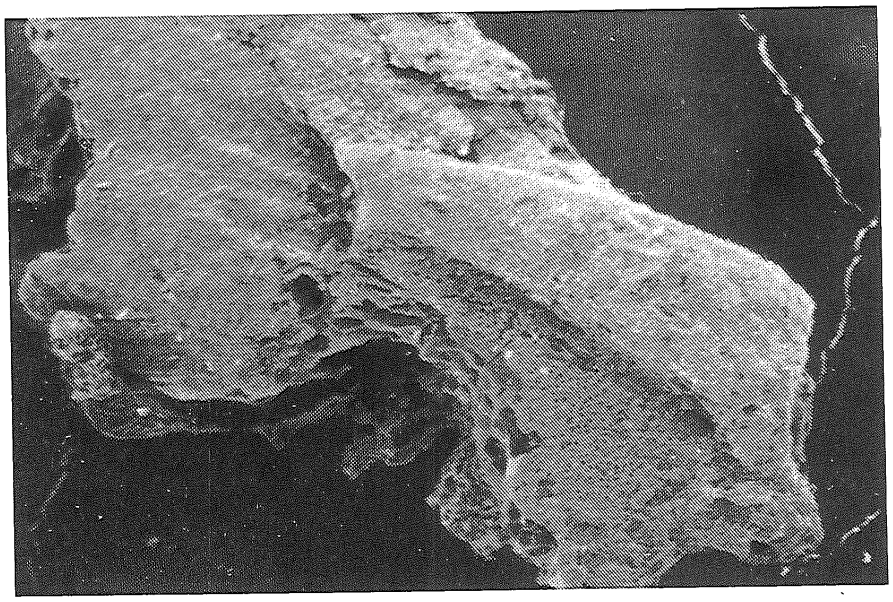


2. The same fragment in greater detail. Magnification x 500.

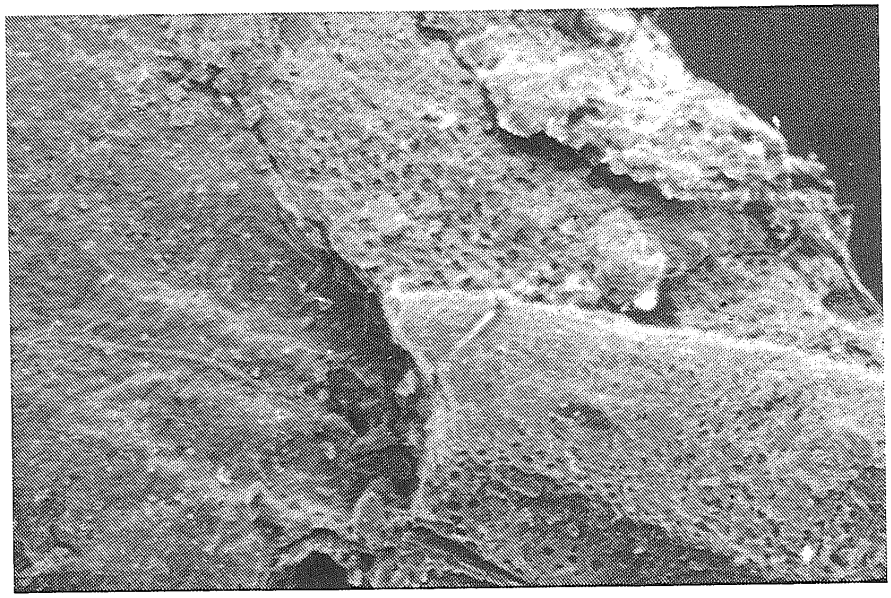


3. Detail of the two layers showing the pattern of circular cavities and the underlying layers of parallel ridges. Magnification x 1000.

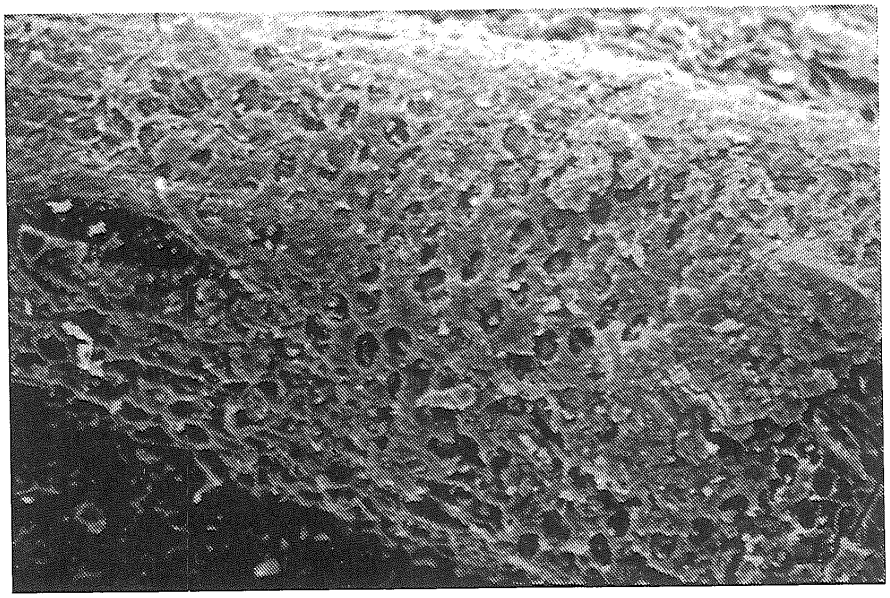
Scanning electron microscope photographs.



1. 'Species X'-basal fragment from XX D+3.4b showing the lateral appendage on one side of the seed. Magnification x 100.

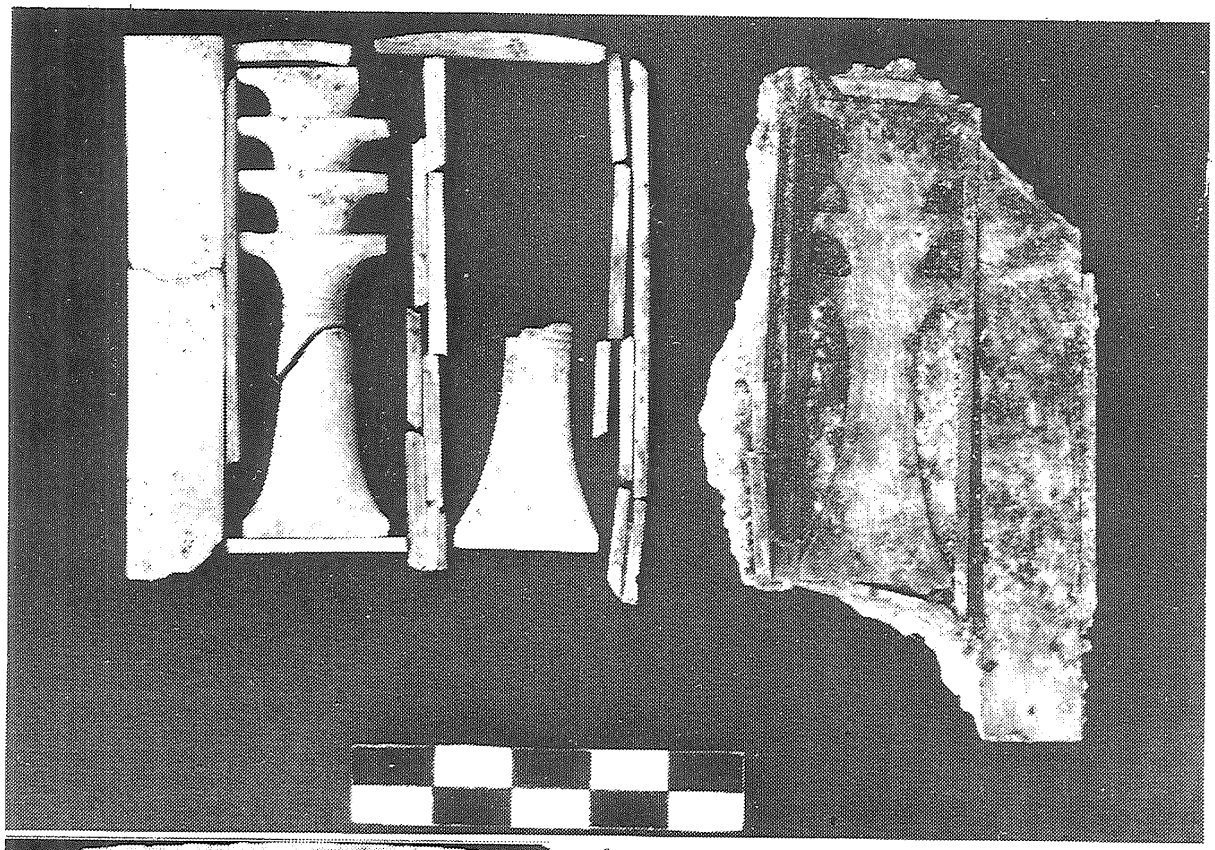


2. The same fragment showing the layer of circular cavities overlying the appendage. Magnification x 200.

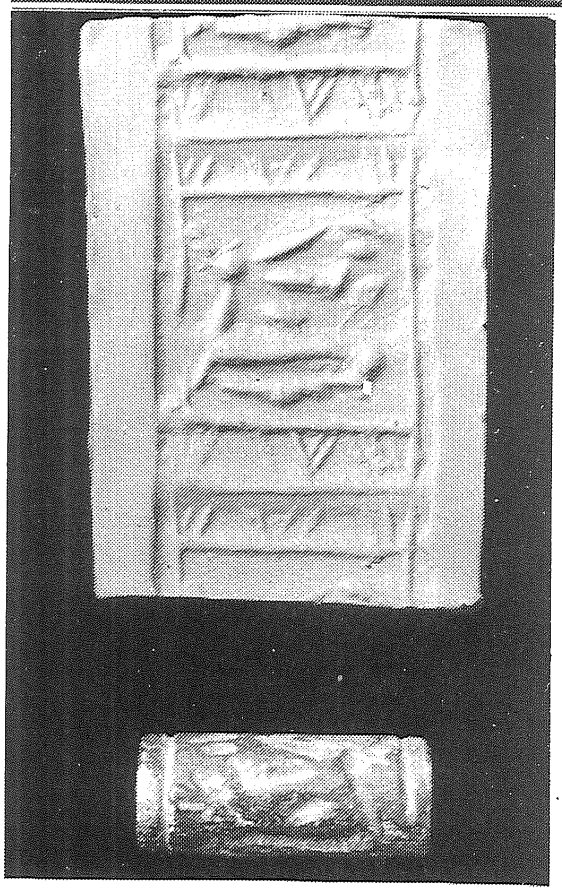


3. Detail of the surface of the appendage. Magnification x 500.

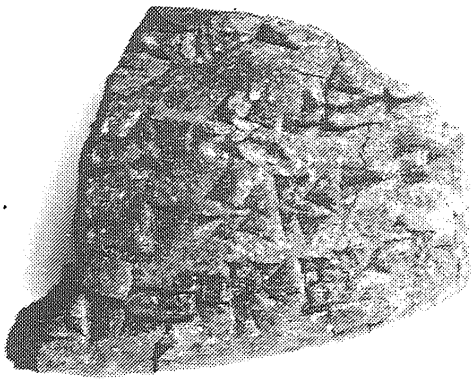
Scanning electron microscope photographs.

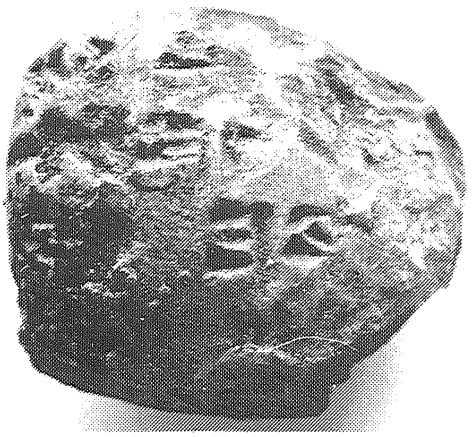


1



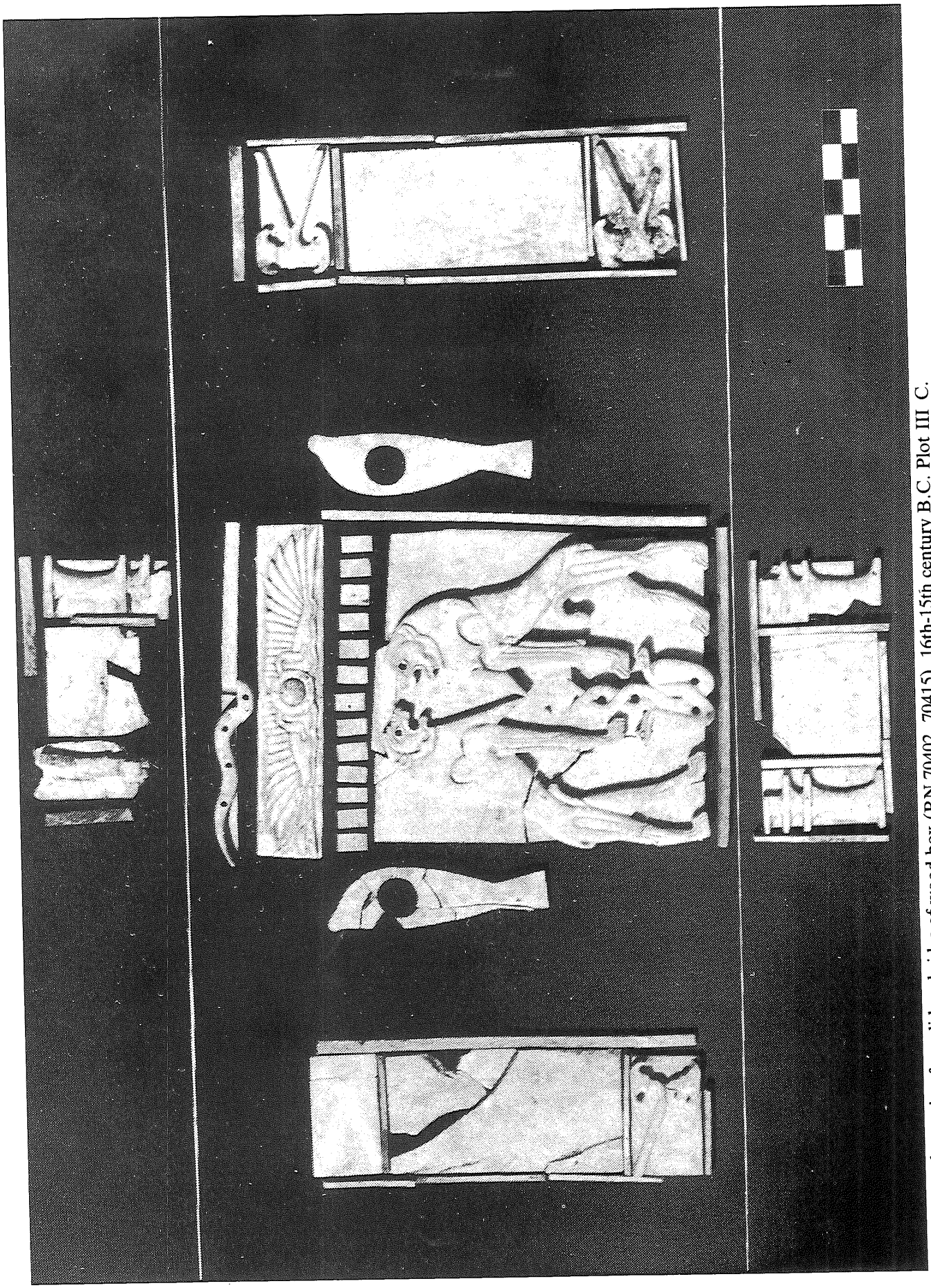
2



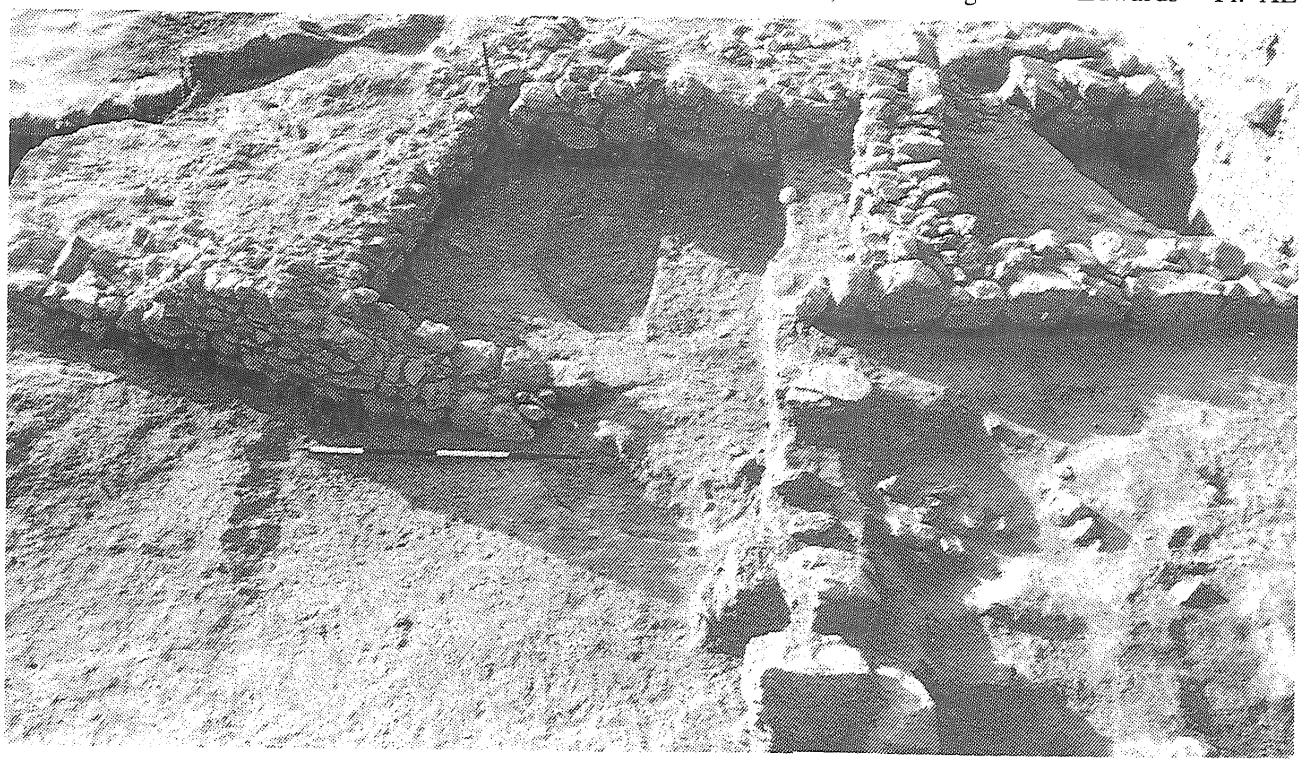


3

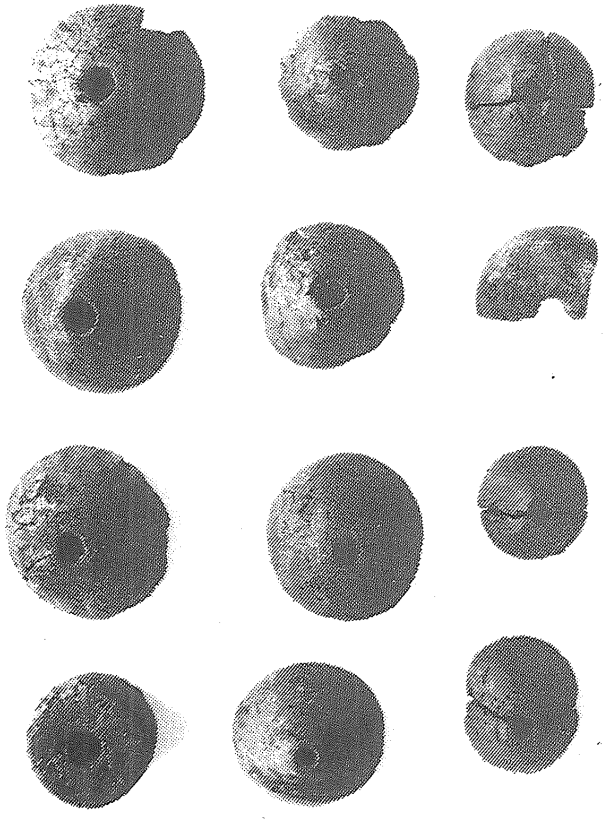
1. Ivory decoration from wood container (RN 70416). 16th-15th century B.C. Plot III C.
2. Mitannian "Common Style" Cylinder Seal and impression (RN 70037). Length 2.6 cms. Plot III F.
3. Cuneiform tablet fragments. Top: RN 70418, 3.0 x 2.3 cms; Bottom: RN 70417, 2.9 x 2.5 cms. Plot III C. 16th-15th Century B.C.



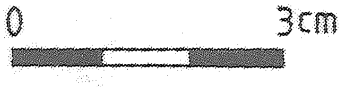
Ivory decoration from lid and sides of wood box (RN 70402, 70415). 16th-15th century B.C. Plot III C.



1



2



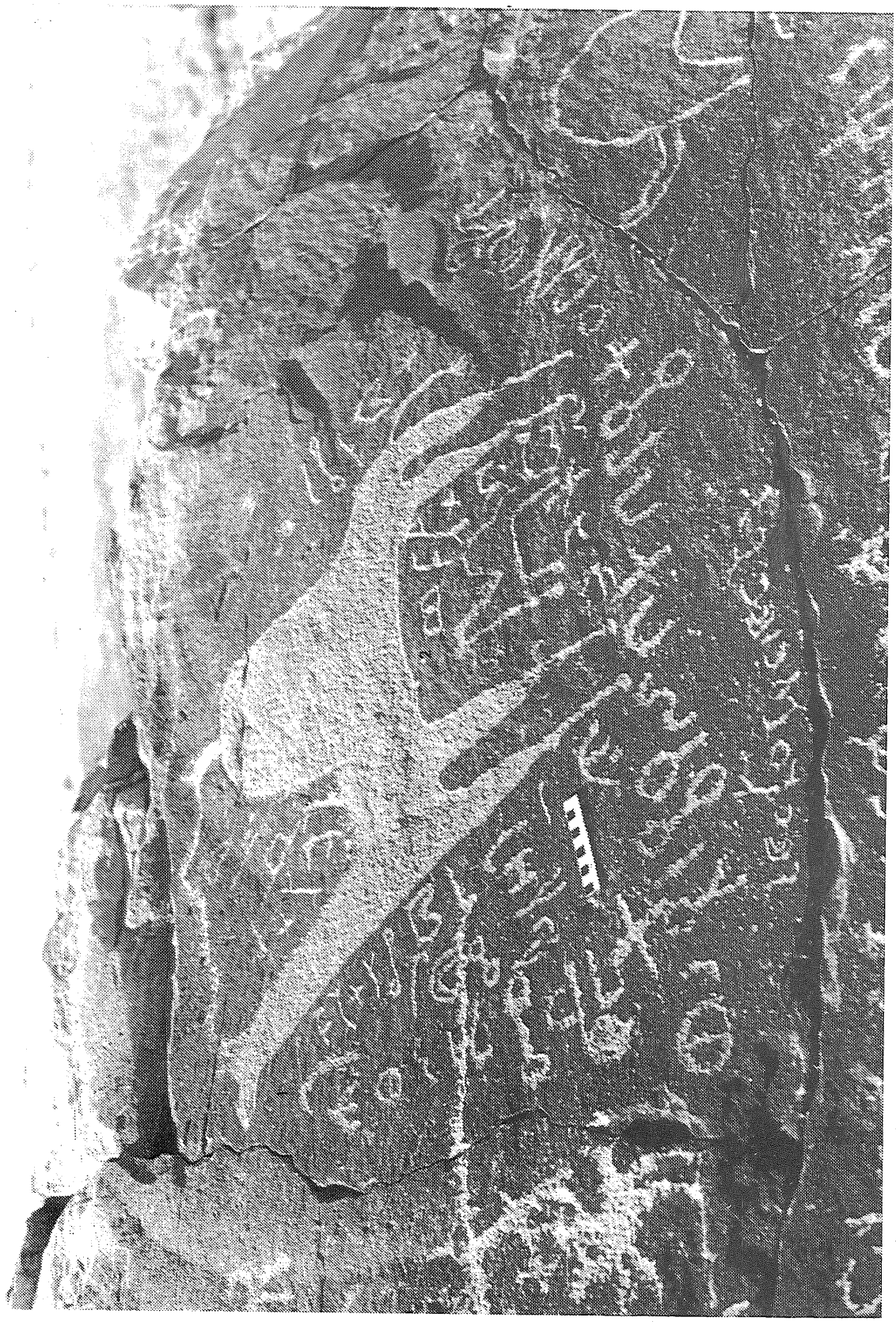
3

1. Plot III N. Domestic architecture of phase III (left) and phase II (right).
2. Carbonized spindle whorls (RN 70340). Early Iron Age. Plot IVE.
3. Clay stamp seal (RN 70341) and impression. Plot IV E.

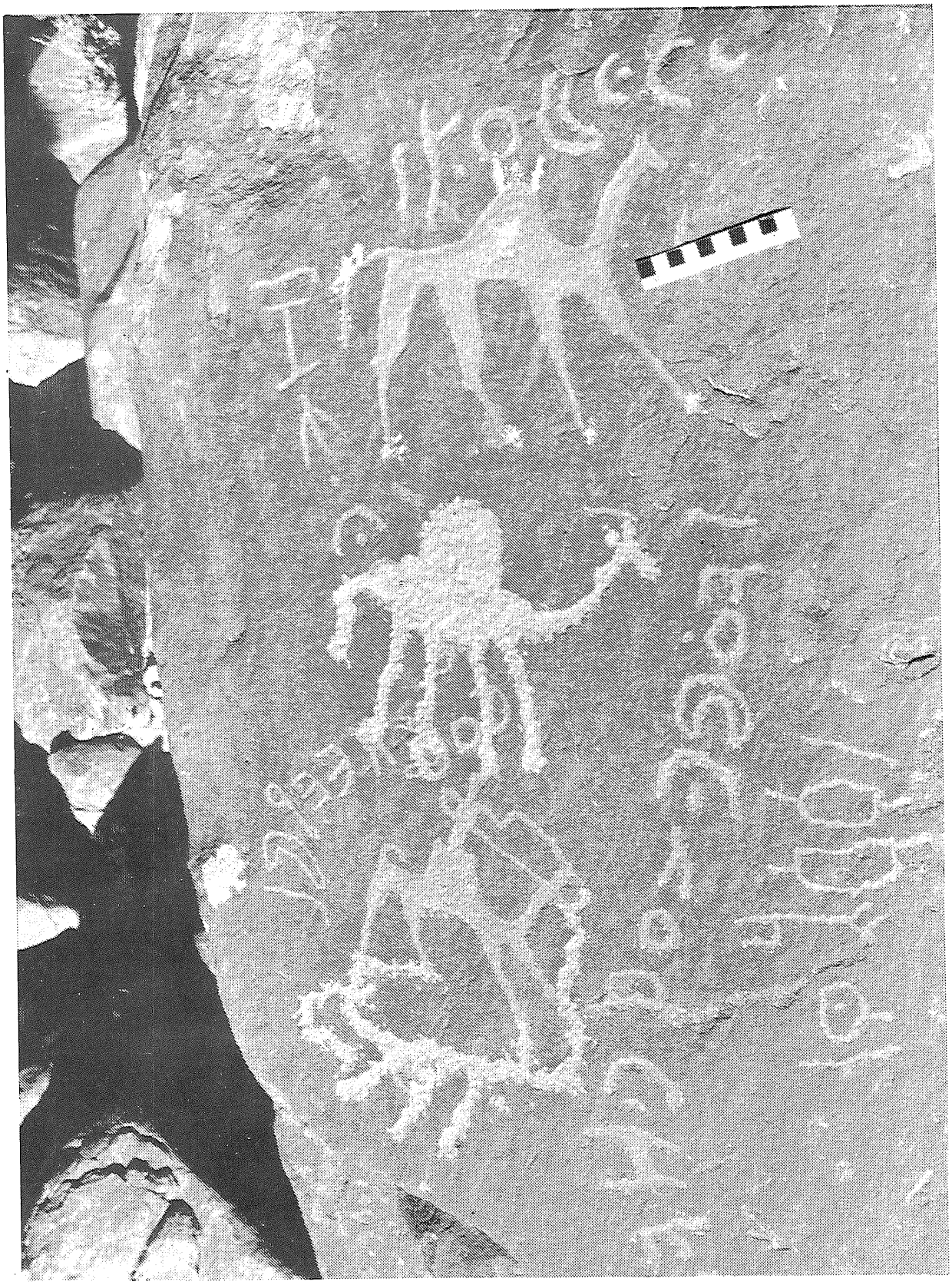
Ceramic "cult-stand" (RN 72064). Early Iron Age. Plot IV E.

Ceramic "cult-stand" (RN 72066); front and corner of rim with modelled head. Early Iron Age. Plot IV E.

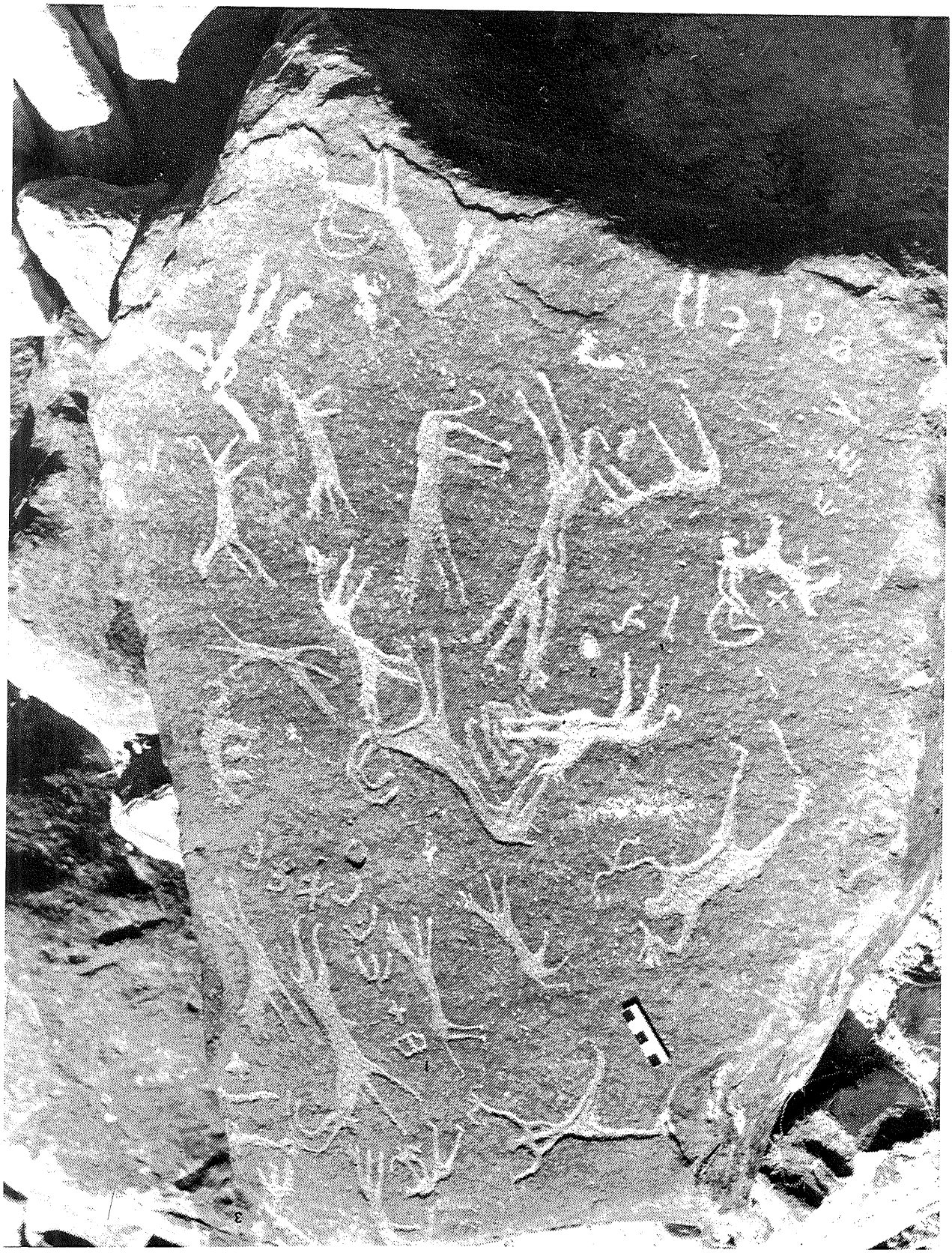
North Arabian Hunting Scene AM83/37/22.



North Arabian (Thamudic) Inscription and Drawing AM85/100/12.

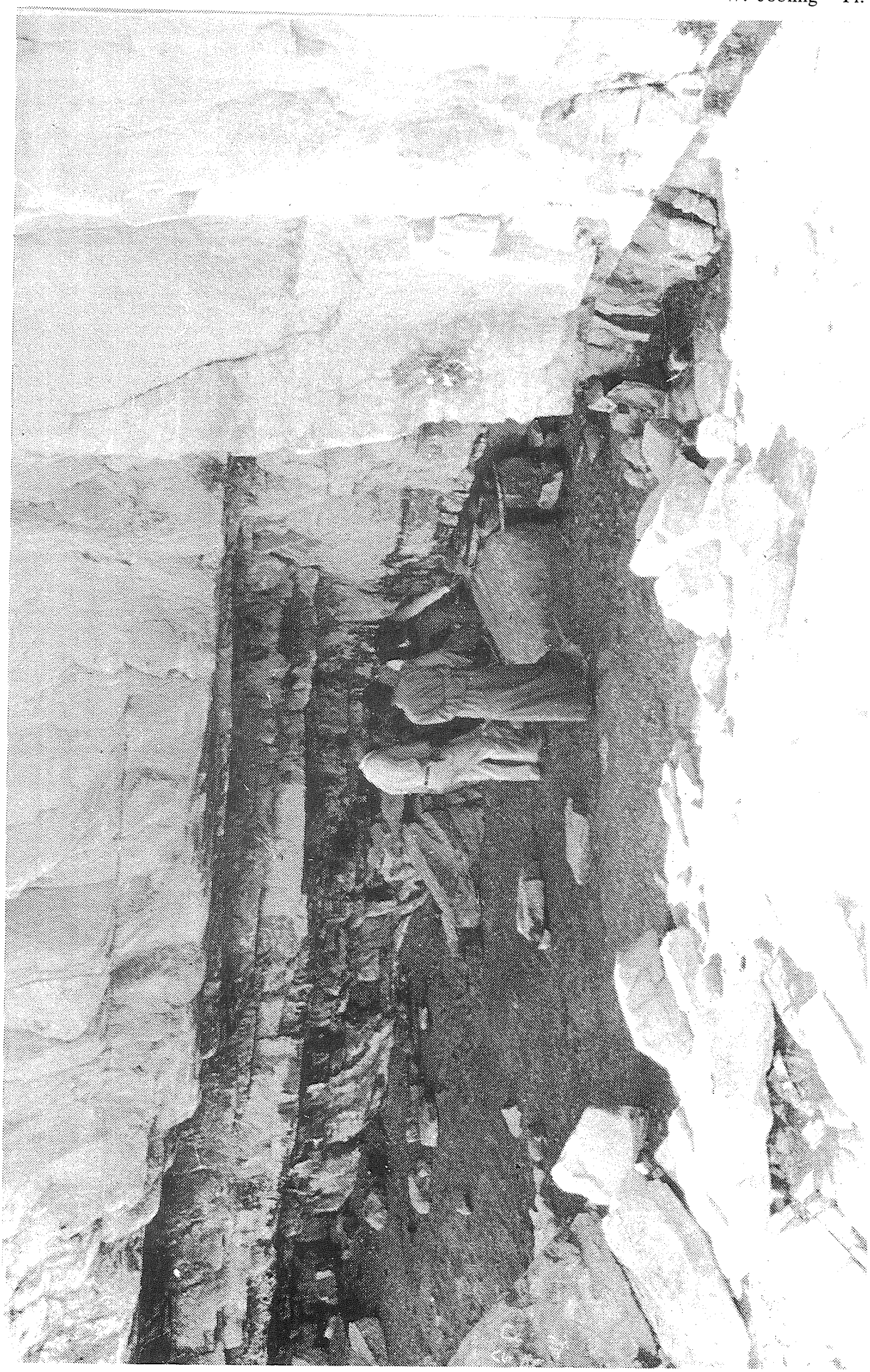


North Arabian (Thamudic) Inscription and Drawing AM85/99/1.



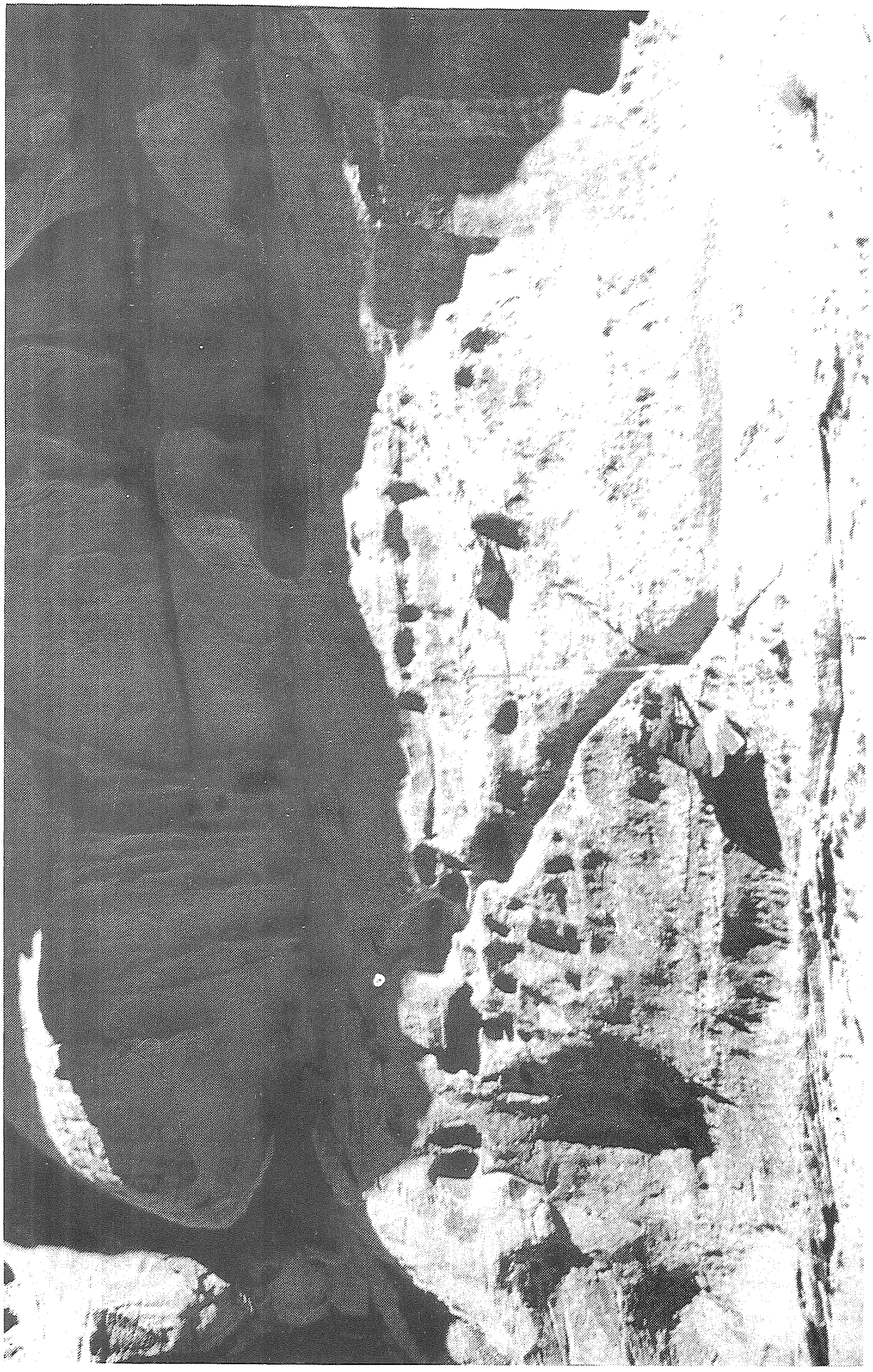
North Arabian Hunting Scene AM85/93/25.

North Arabian Hunting Scene AM85/83/15.

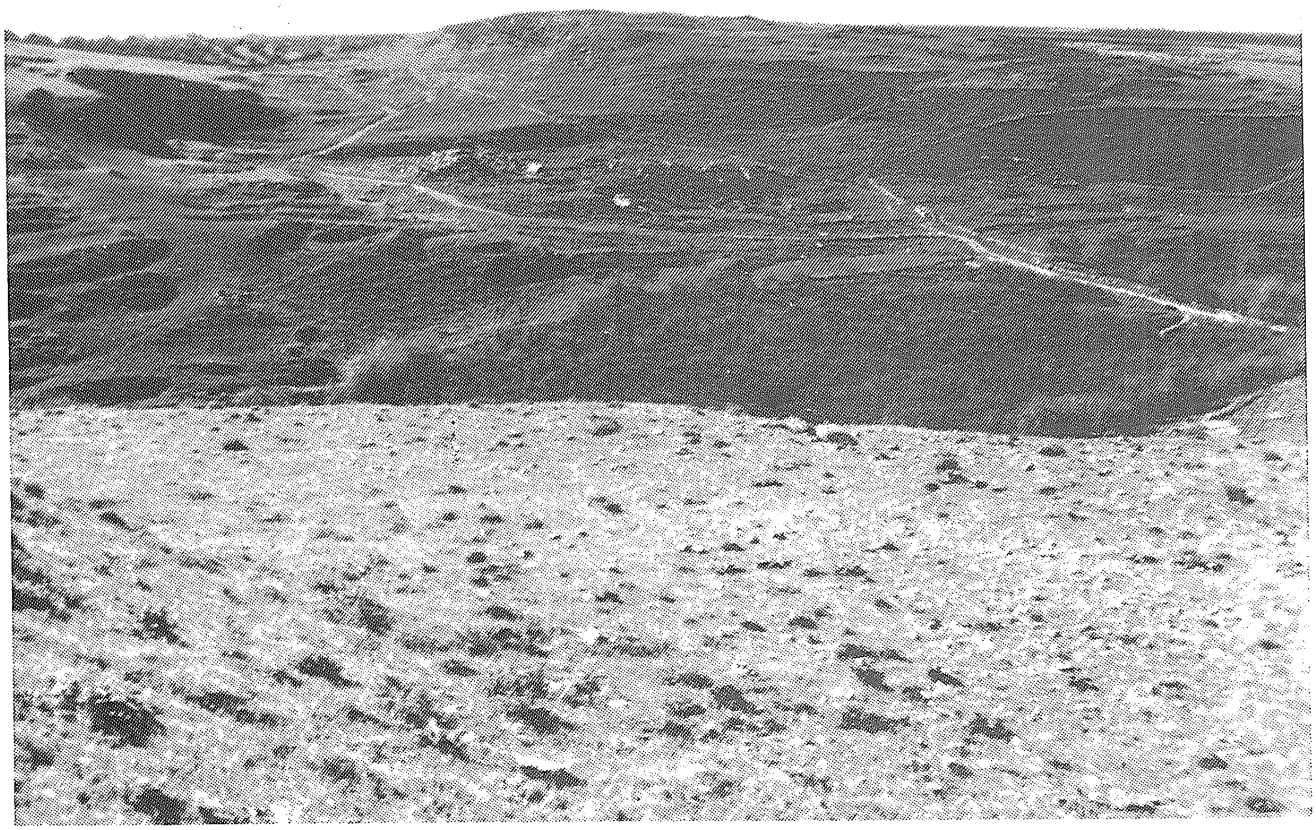


Qaṭṭar Ḥafīr

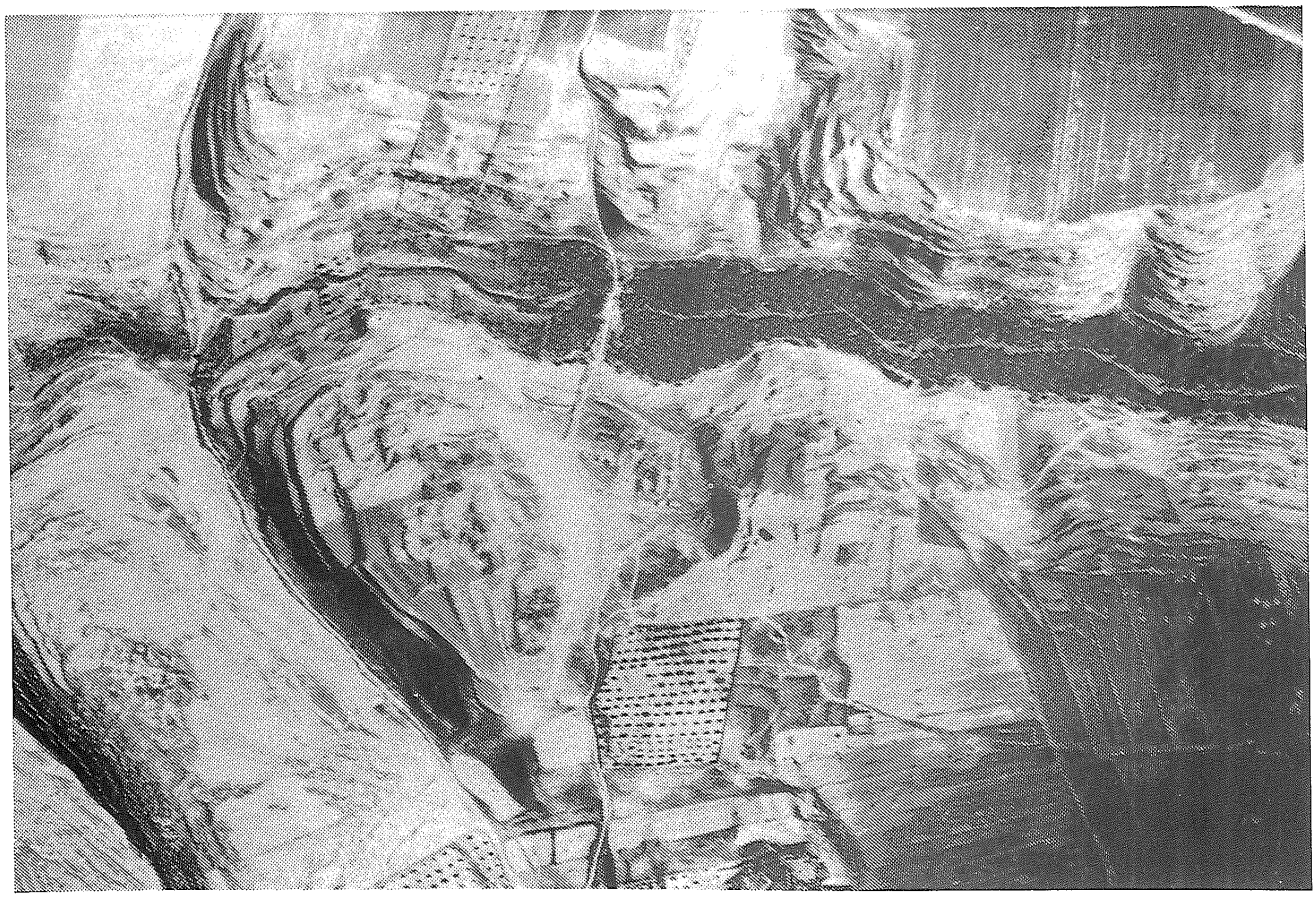
Tell el Kharaza Nabataean Dam.



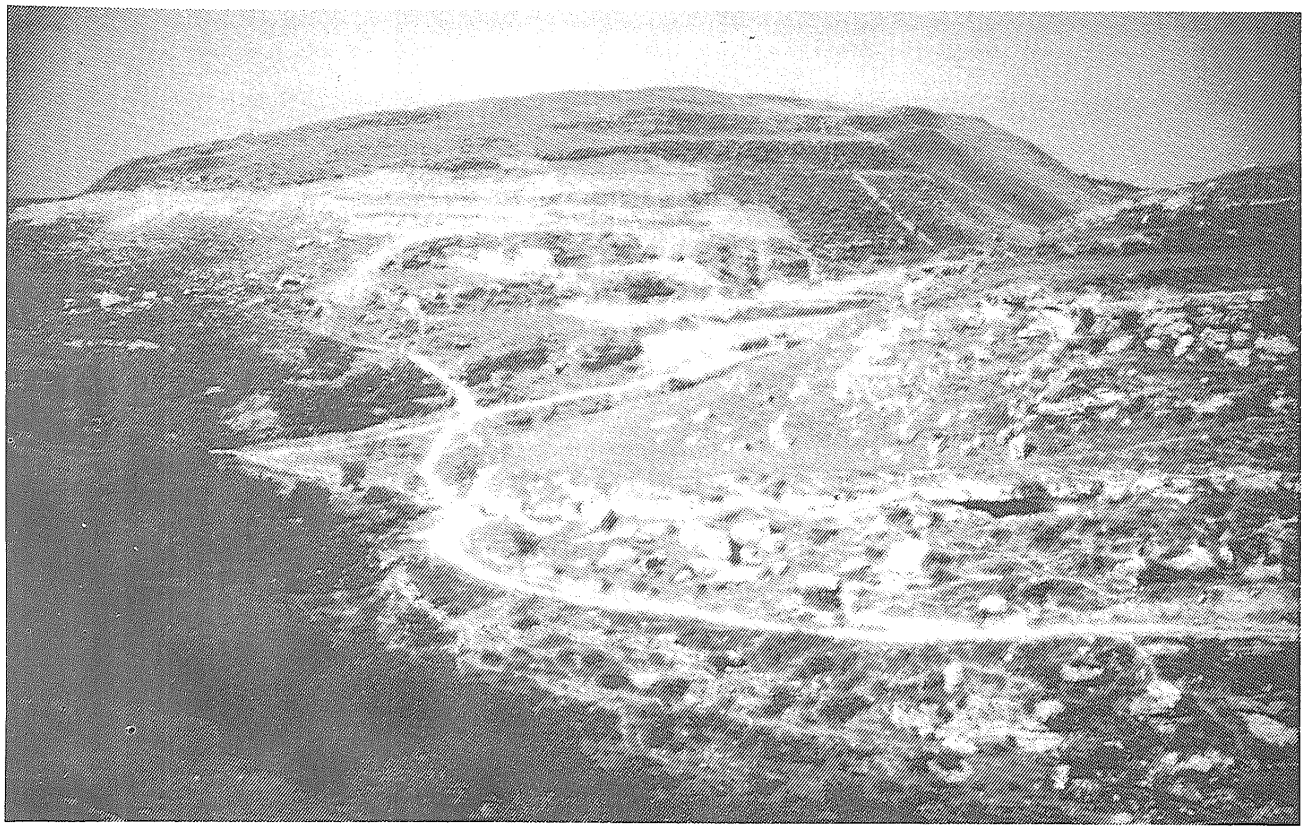
Tell el Kharaza Nabataean Water Channels.



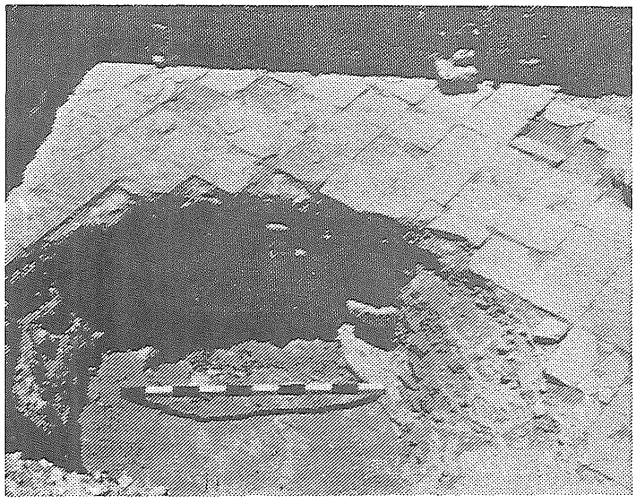
1:The site of Abila of the Decapolis. Left-Khirbet Umm el'Amad with Theater Cavea in the Middle Ground; Right- Tell Abila.



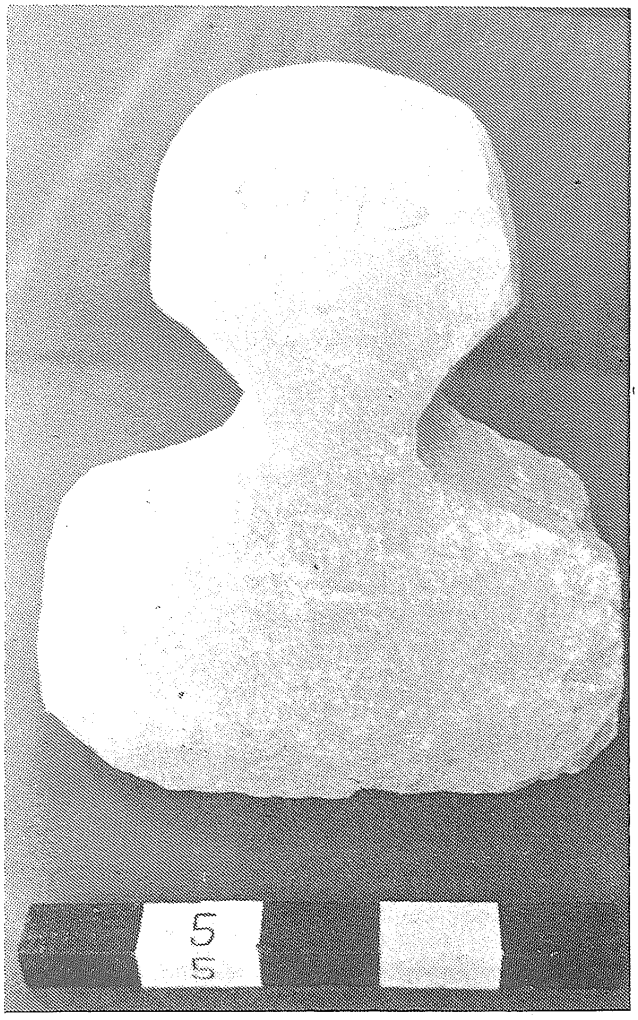
2: Aerial view of Abila of the Decapolis. To the left-Middle Tell Abila; to the Right- Theater Cavea and Khirbet Umm el'Amad.



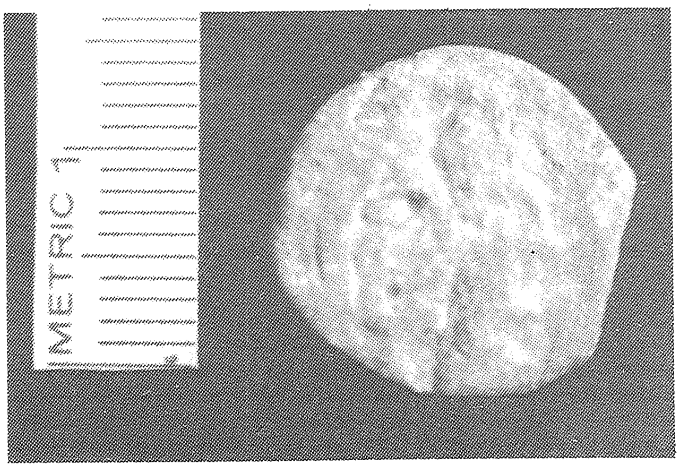
1: North City wall exposed on the slope terracing- Looking southeast to Tell Abila.



2: Area D4, Robber's Pit.



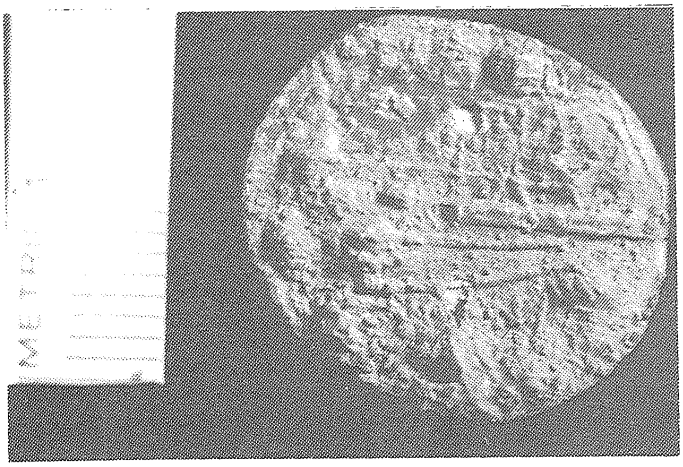
3: Limestone Bust from Tomb K1.



1 obverse

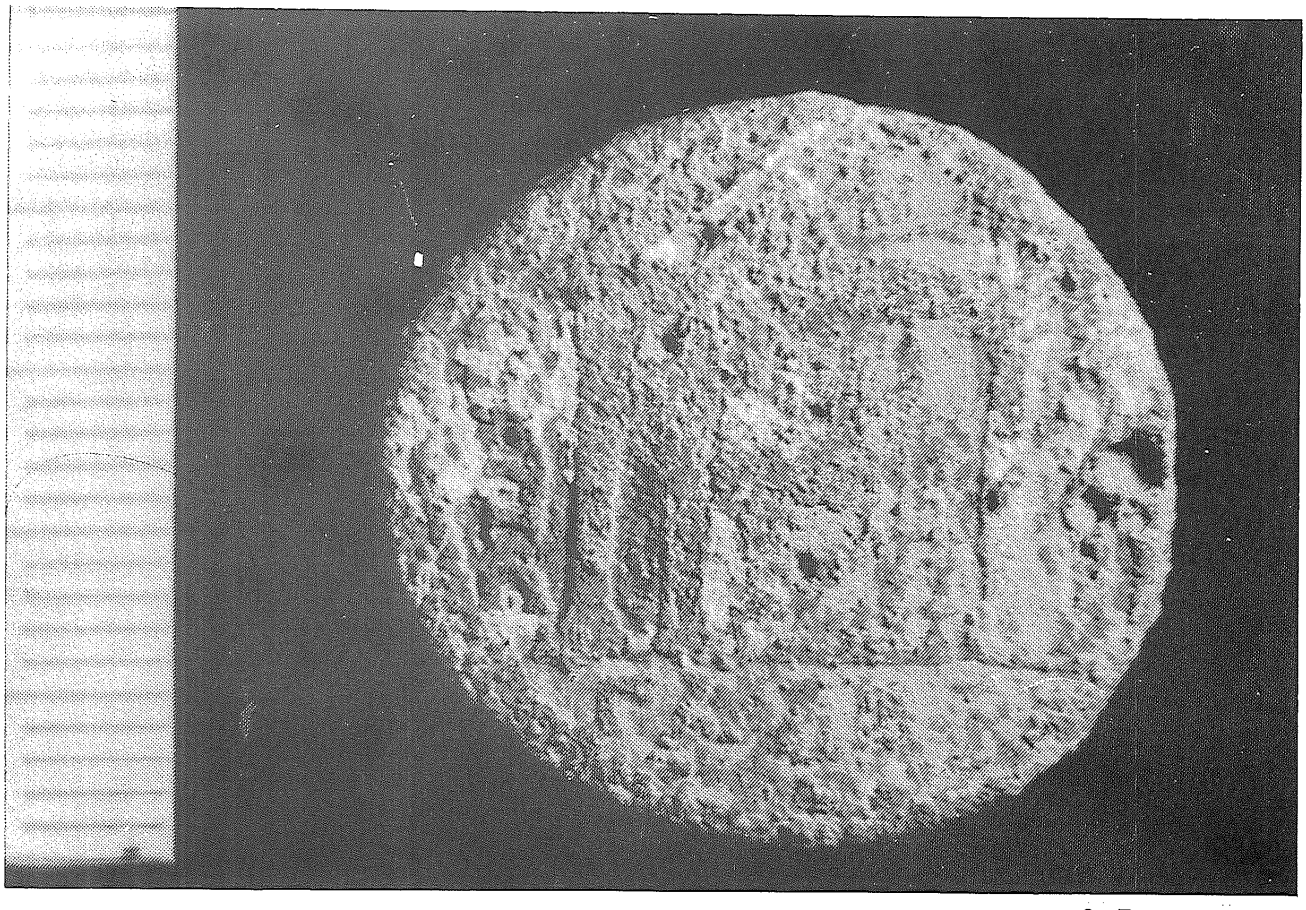
2. Reverse.

1: 174, F1, Unstratified Nabataean Bronze coin, Aretas IV, 9 B.C. - A.D. 40.



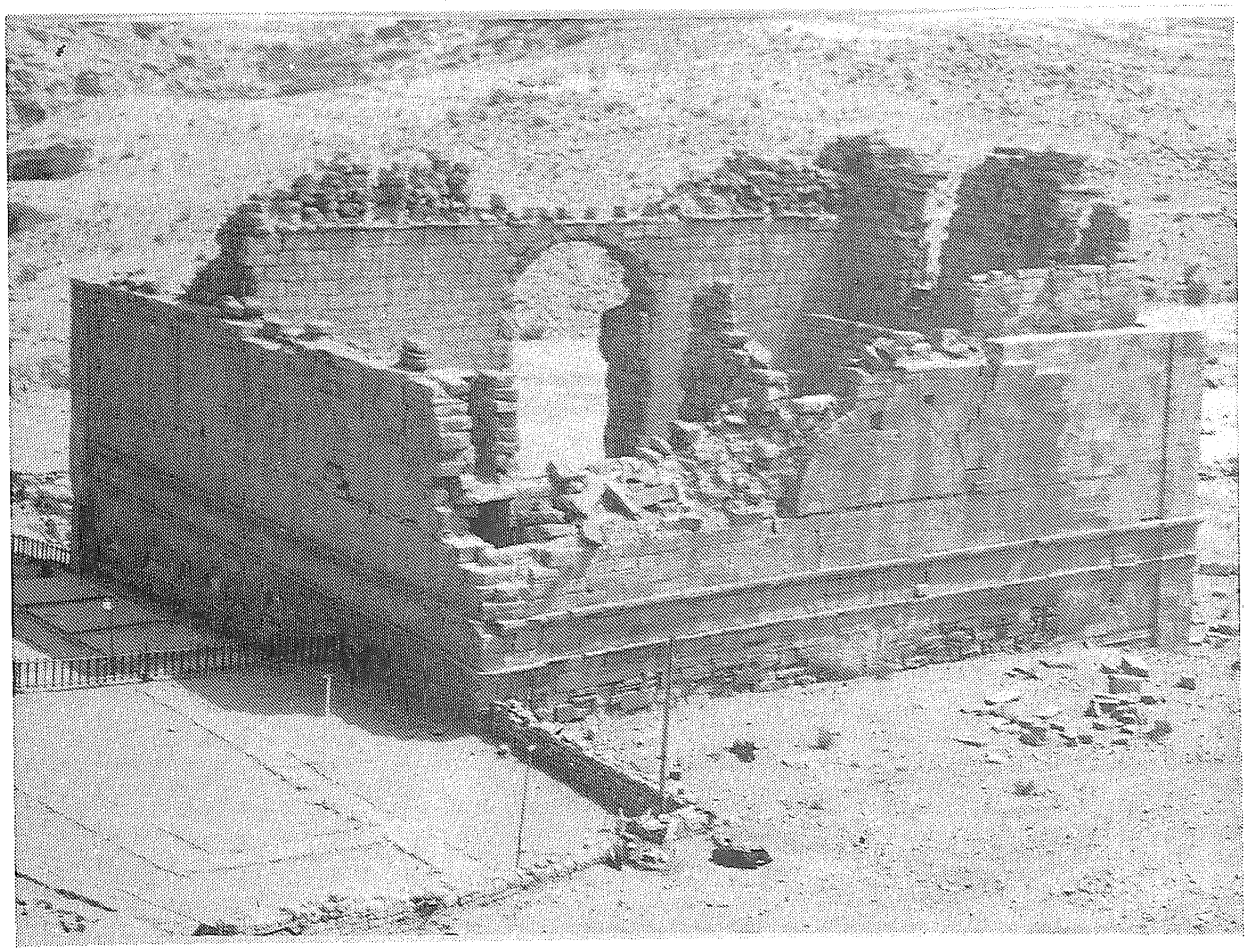
2: 132, A2, 2037. Stern of a galley, and Inscription, 155-154 B.C. Reverse.

1. Obverse

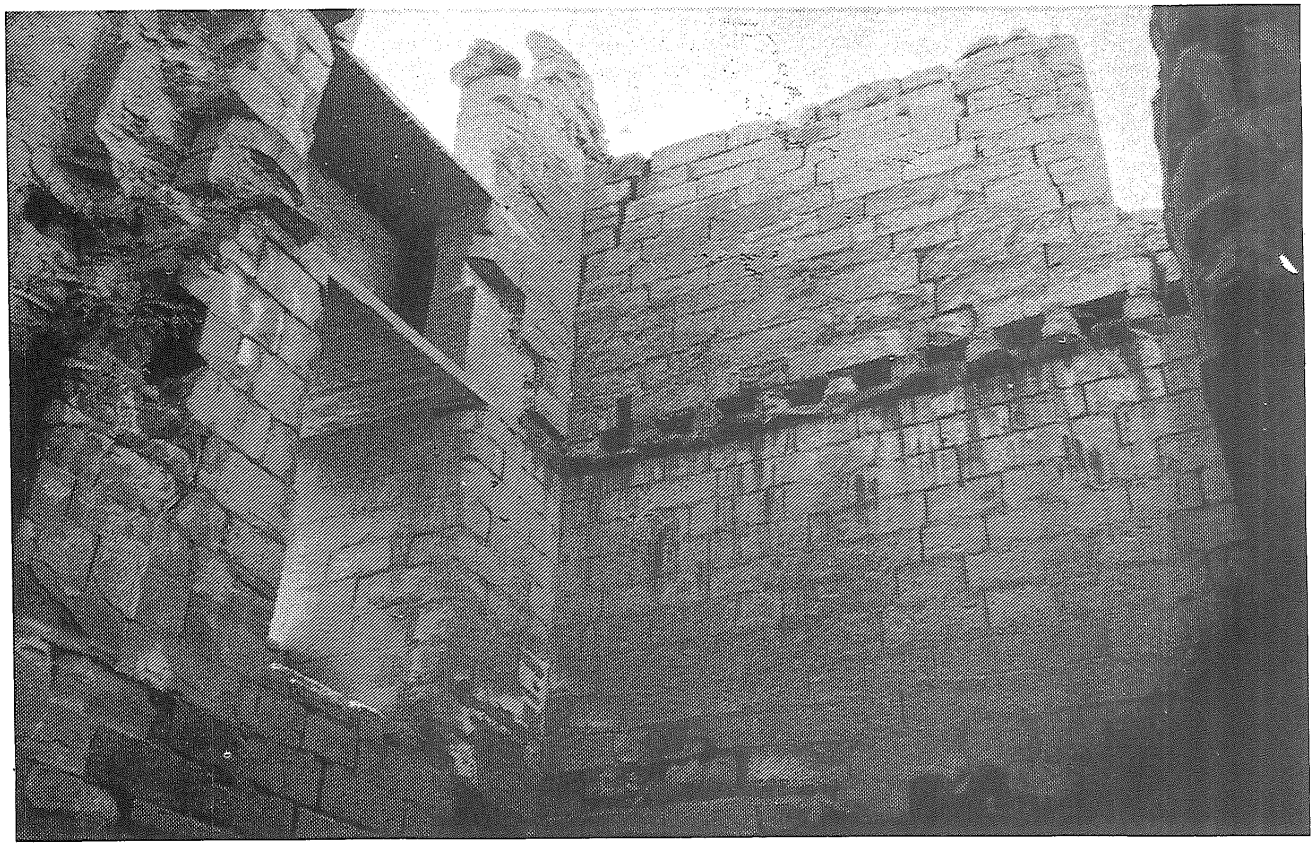


2. Reverse.

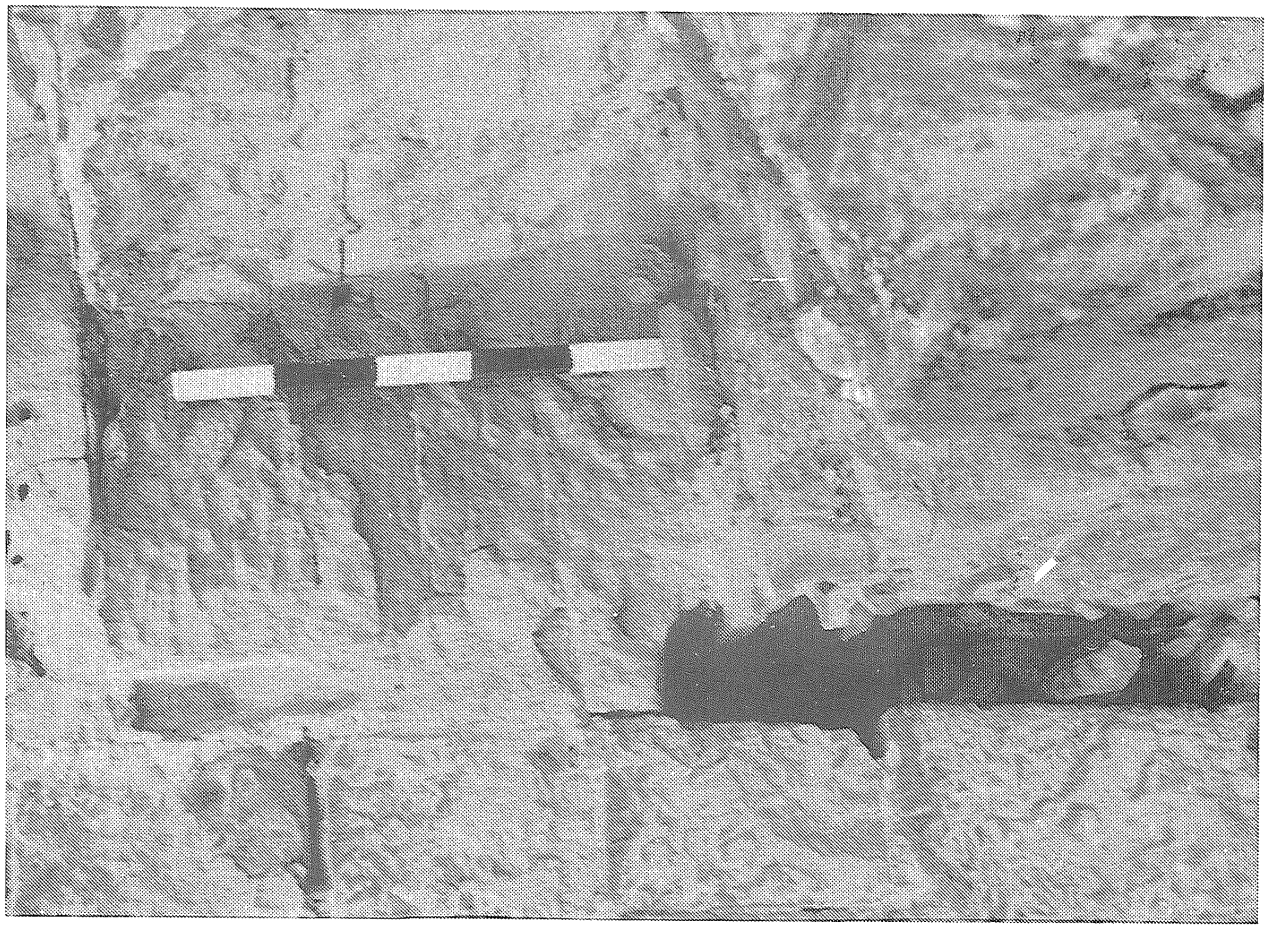
1,2: 105 Tell Abila, Unstratified. Coin of Gadara of the Decapolis. Reign of Elagabalus, A.D. 218-222.

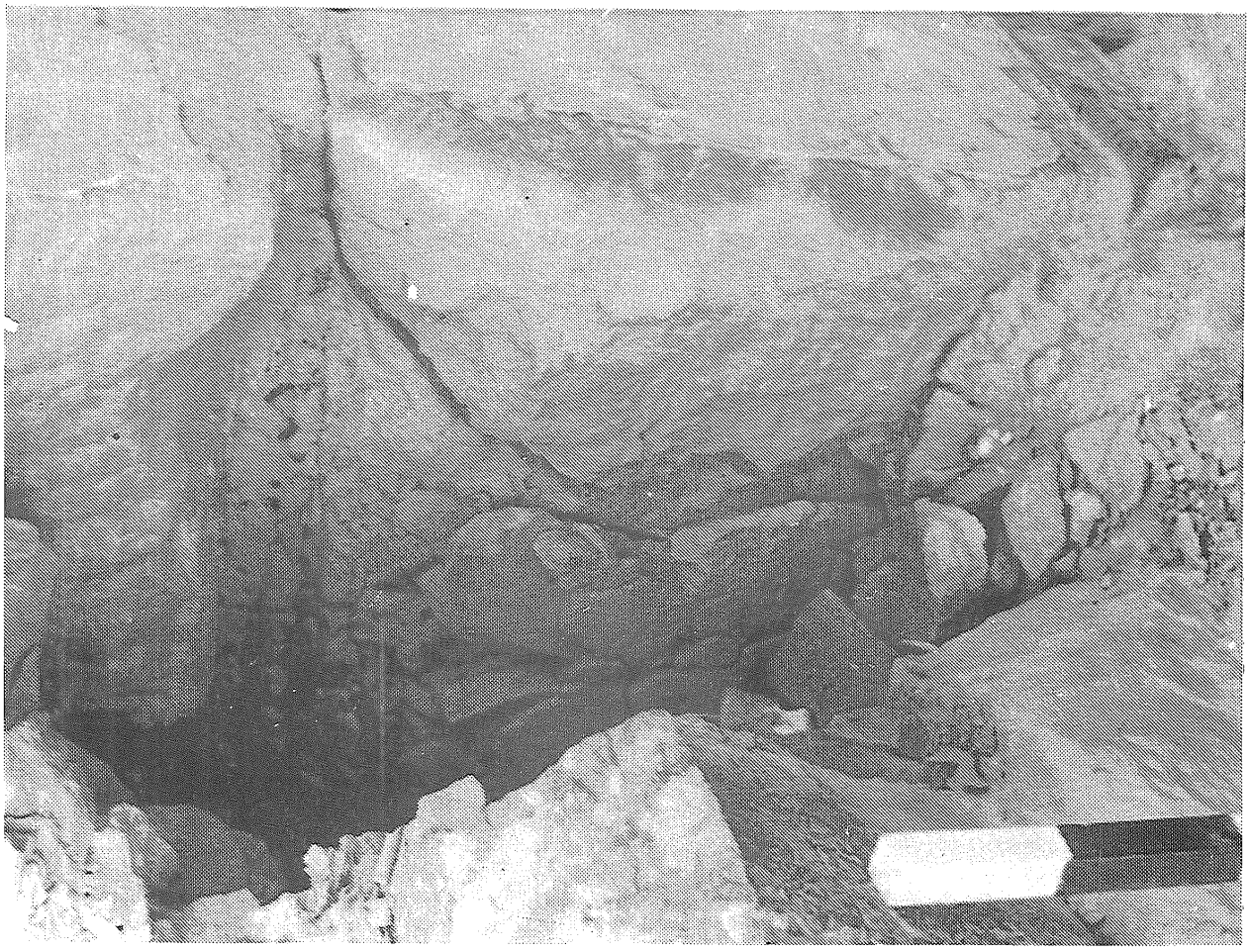


1. General view of Qasr el Bint, looking N-E.



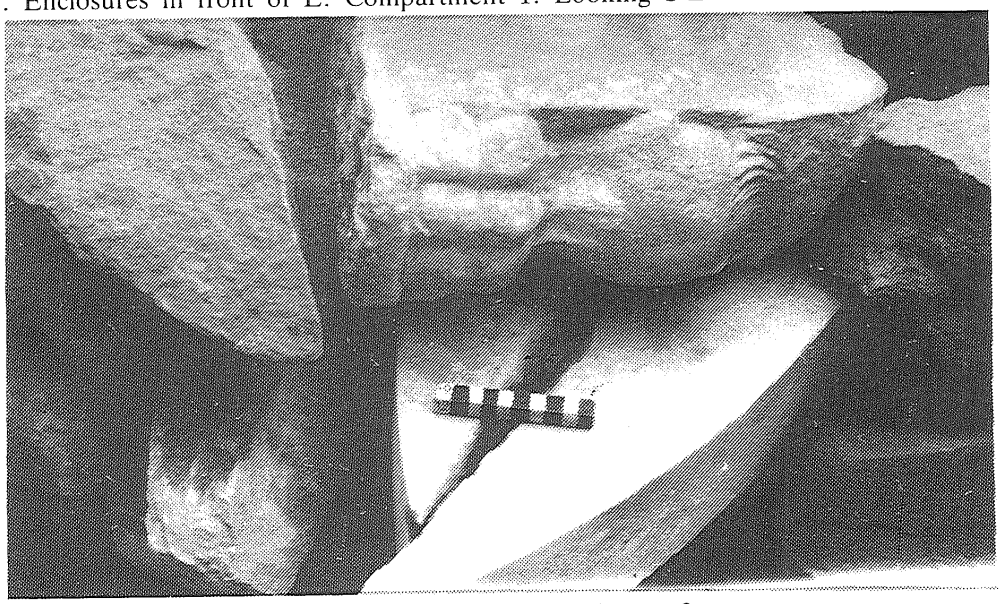
2. Interior of Compartment 1, showing roof-beam emplacements. Looking S-E.





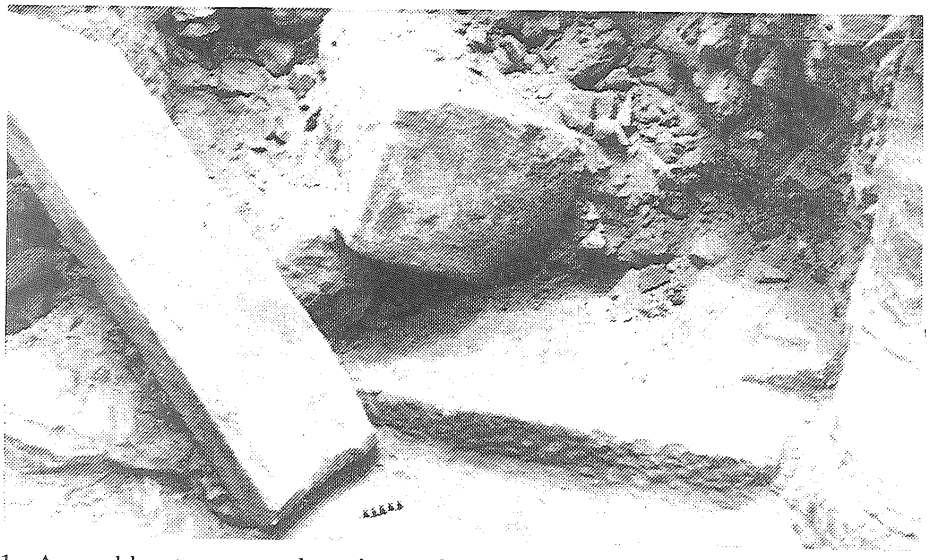
1-2. : N. & S. cavities for beam lodgement in E. wall 2.

1. Enclosures in front of E. Compartment 1. Looking S-E.

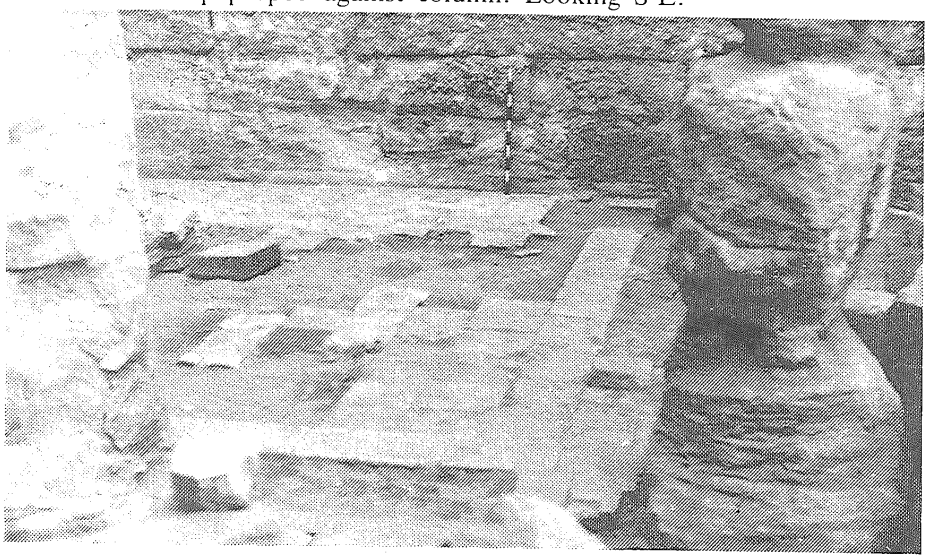


2. Lion's paw and marble revetment built in enclosure 2.

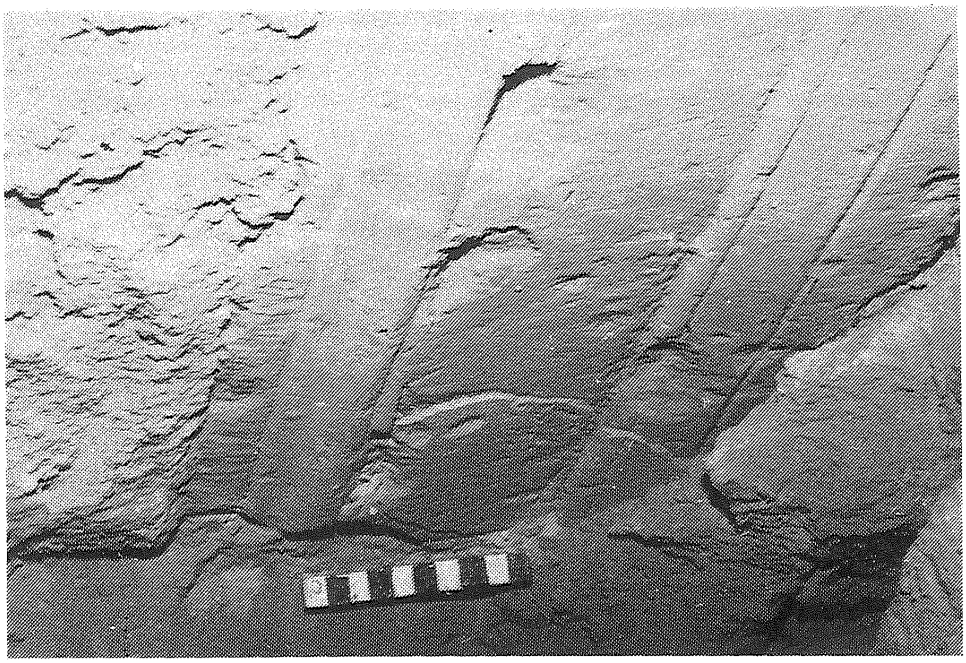
3. Enclosure 3; notice a fragment of marble shaft built across: Looking S-E.



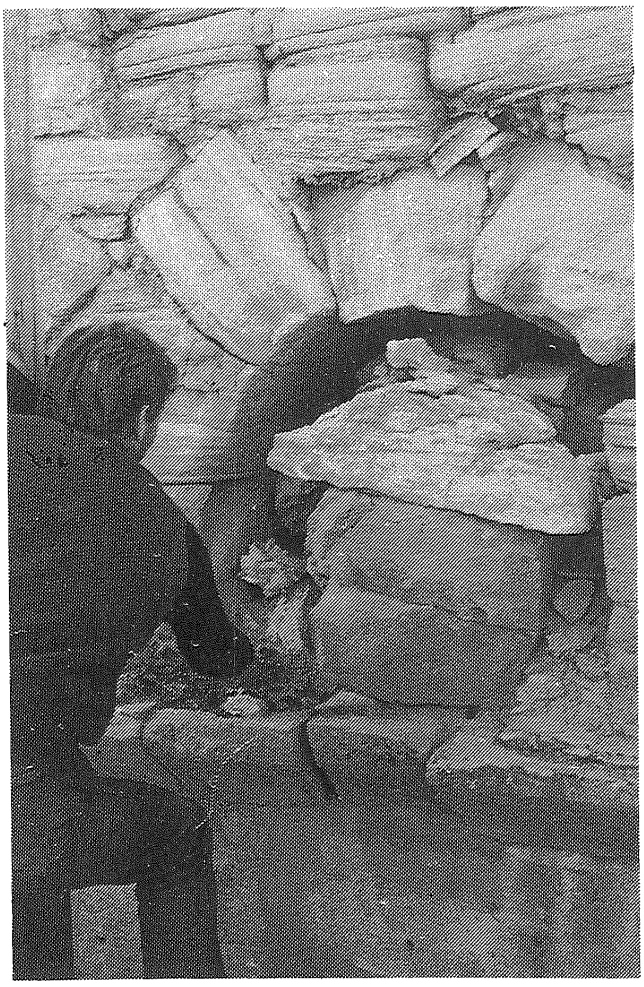
1. A marble step proped against column. Looking S-E.

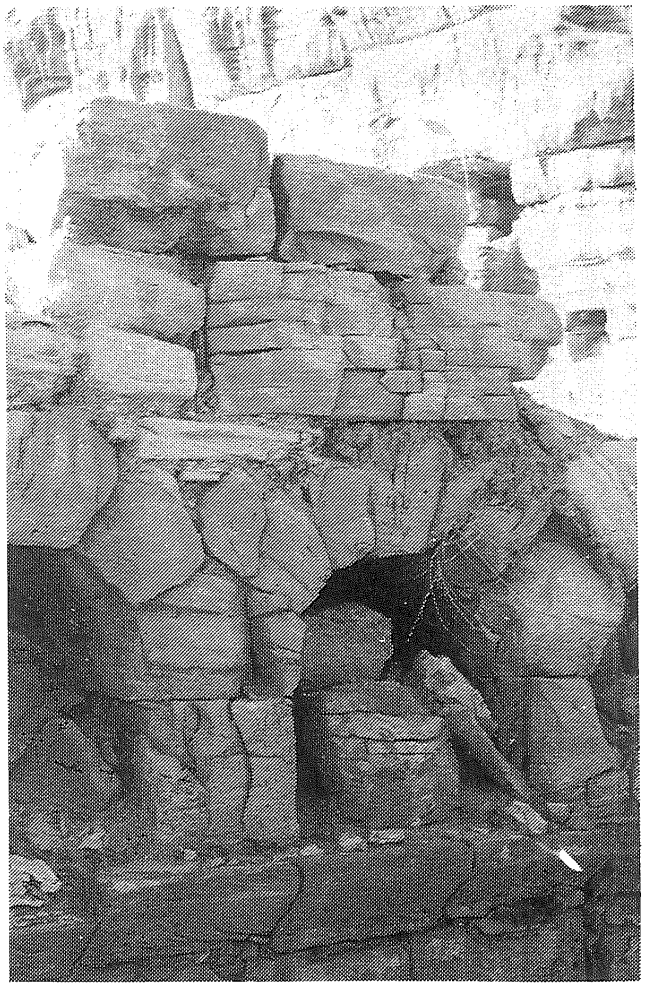


2-3. Marble pavement in Compartment 1.

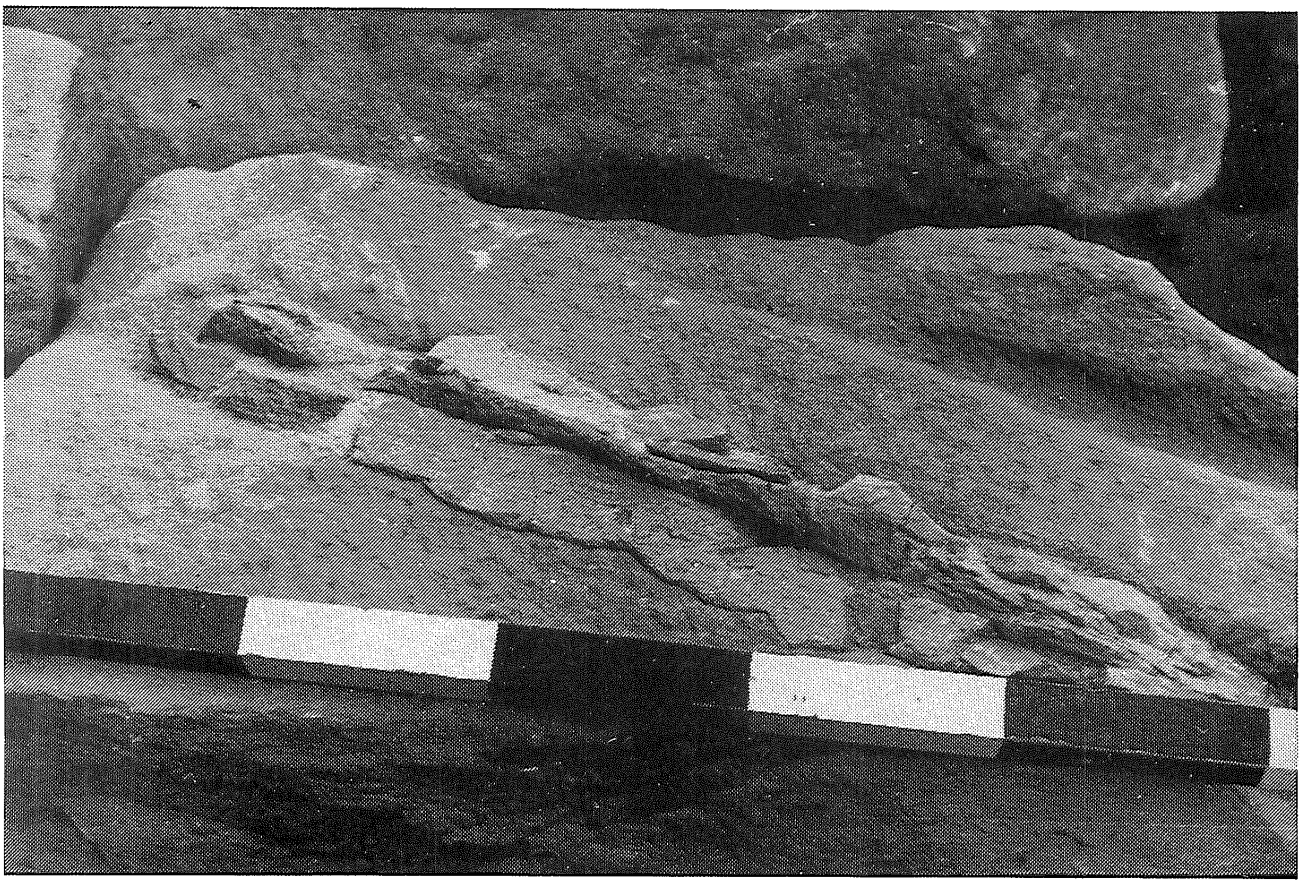


1. Moulded cornice engaged in N. Wall of stairway.





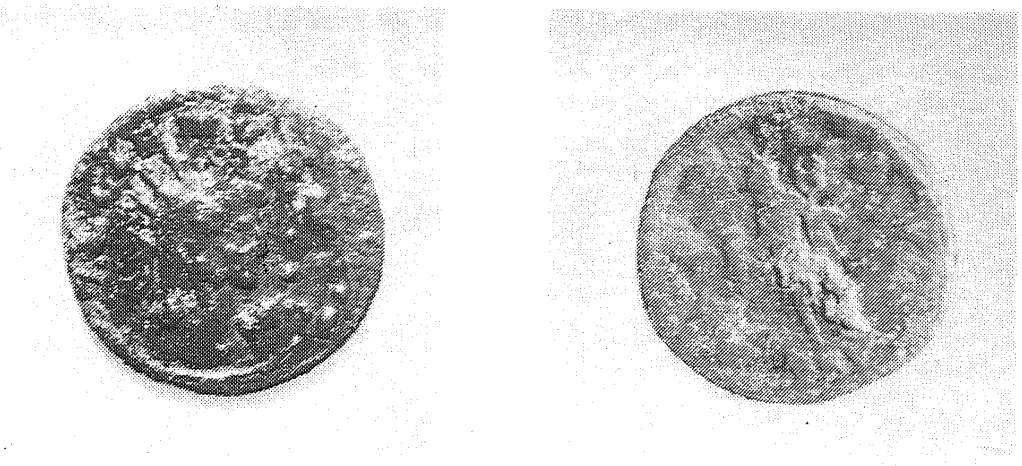
2-3. F. Larché taking measures of beam lodgements in N. Wall of *pronaos*. Looking S.



1. Stone block with fixed-in roof-tiles.

2. Stairway on west side of main gateway. Looking S-W.

1-4: Lion's stands collected in Compartment 1.

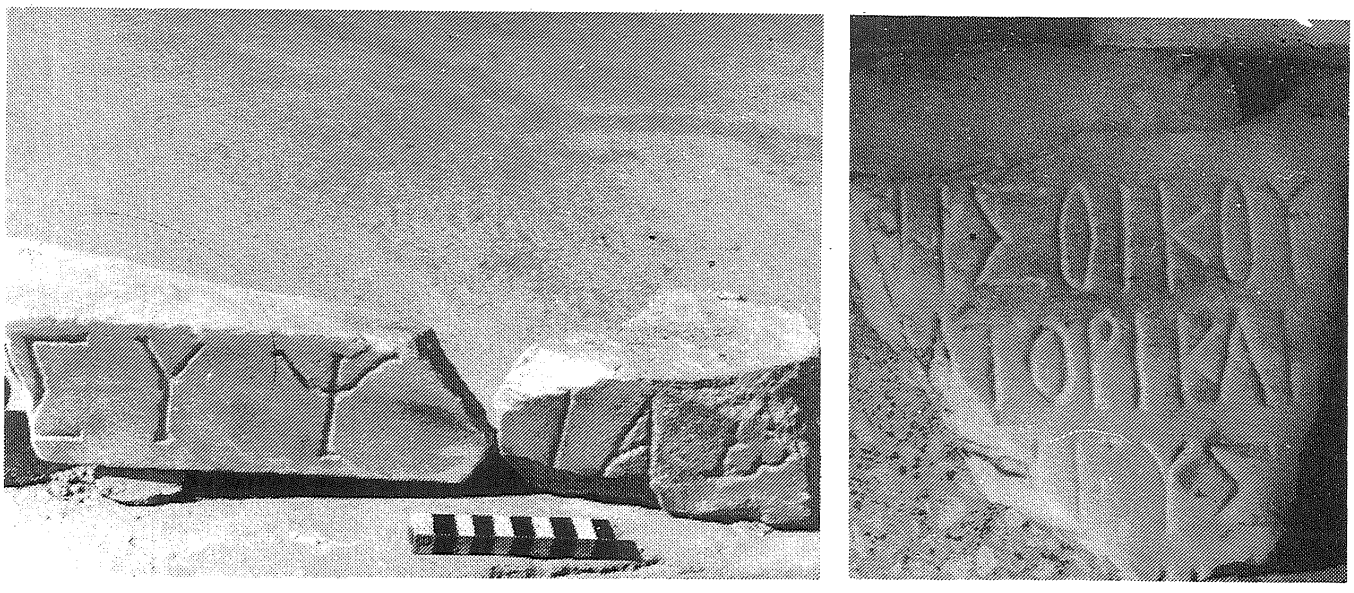


1 obverse

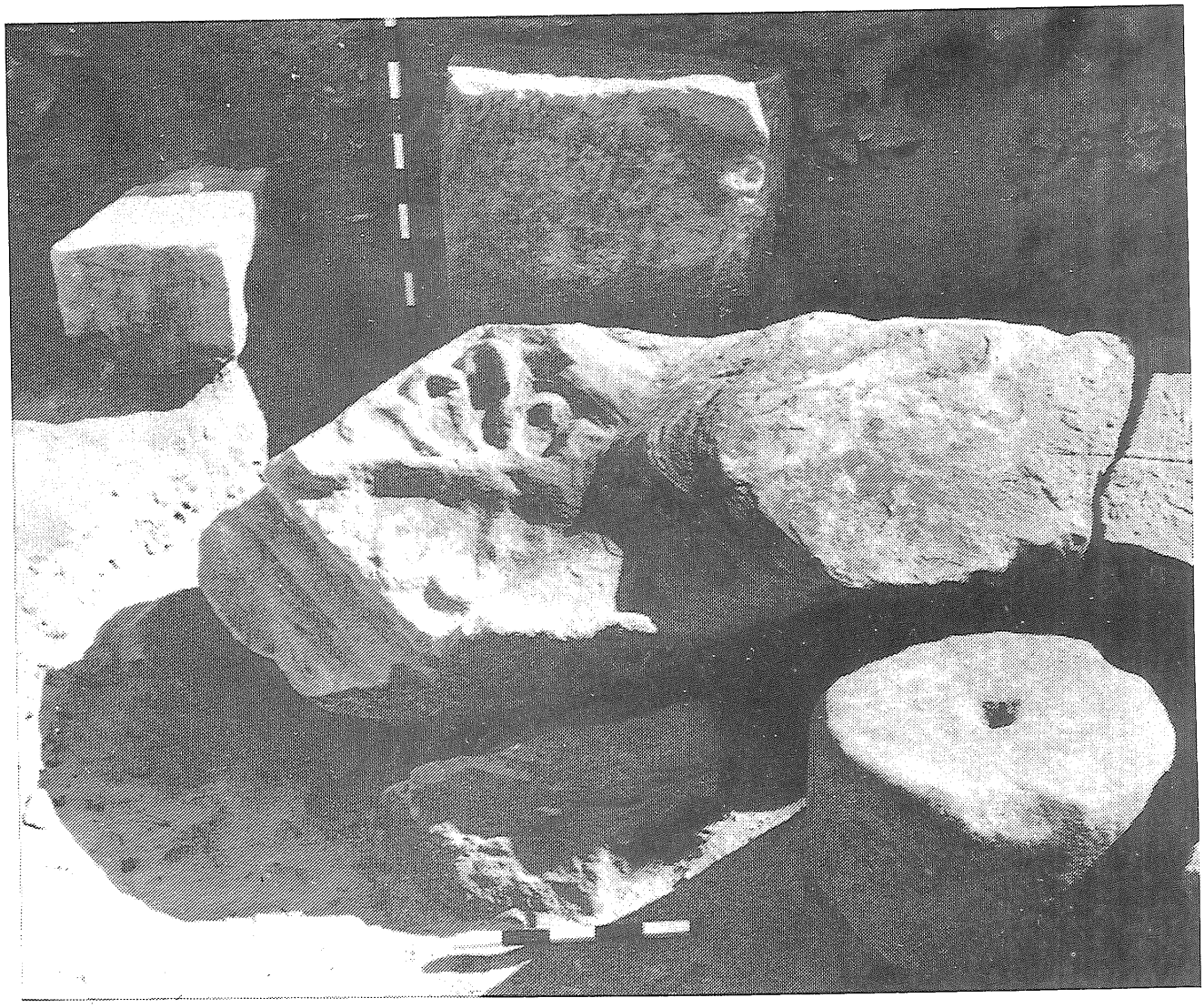
2. Reverse.

1. Bronze coin of Gallienus.

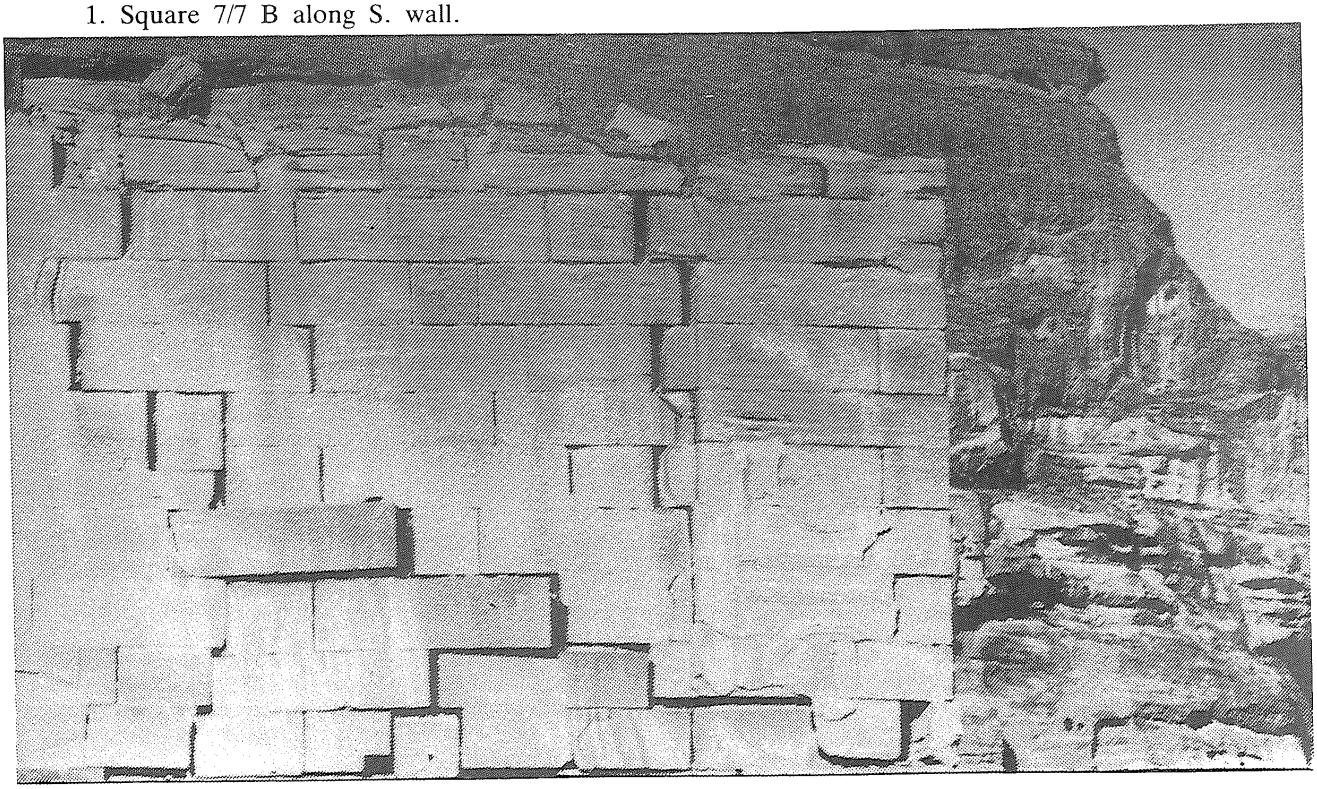
2. Fragmentary Roman Lamp.



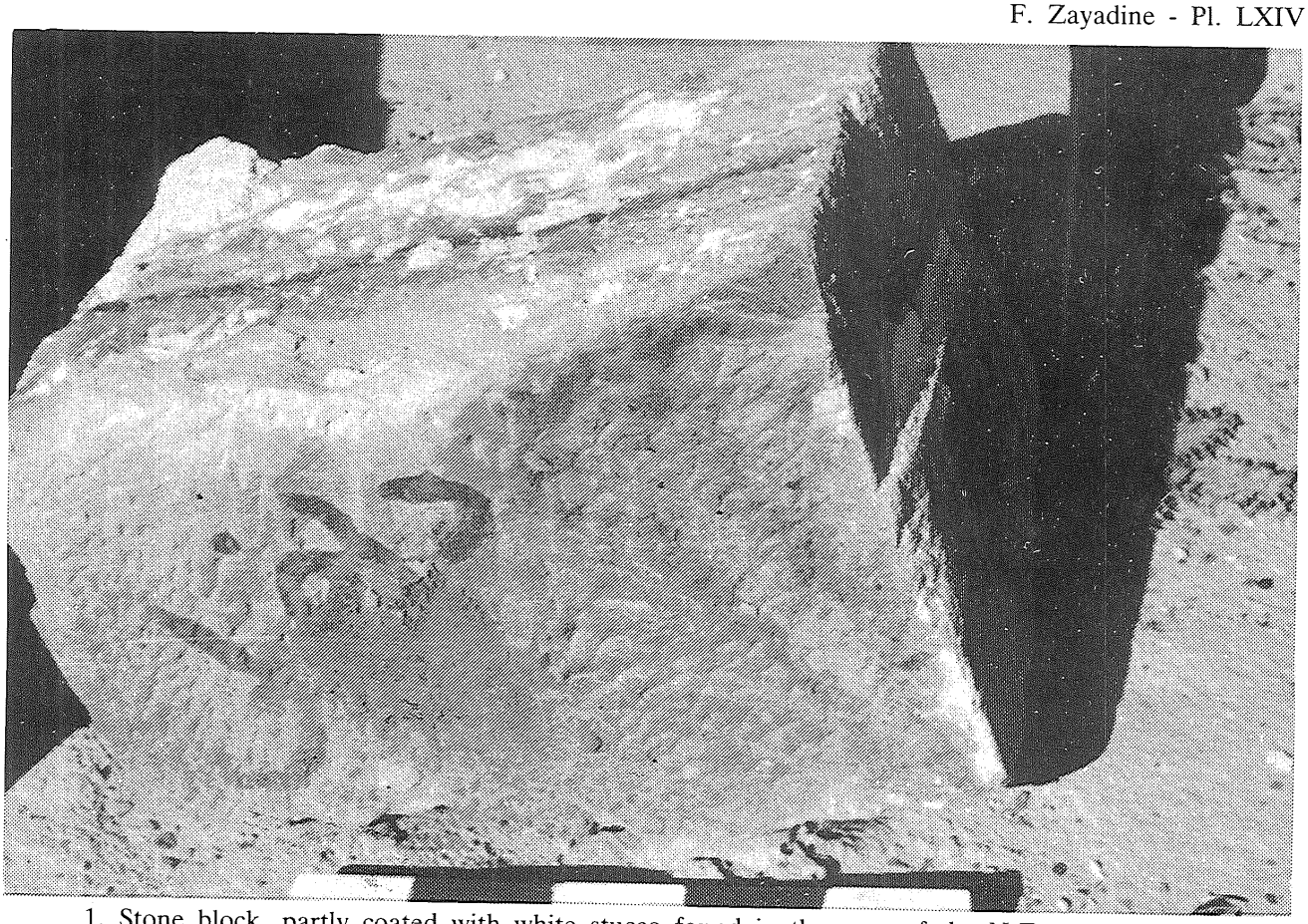
3-4. Two fragmentary Greek inscriptions from Compartment 1.



1. Square 7/7 B along S. wall.

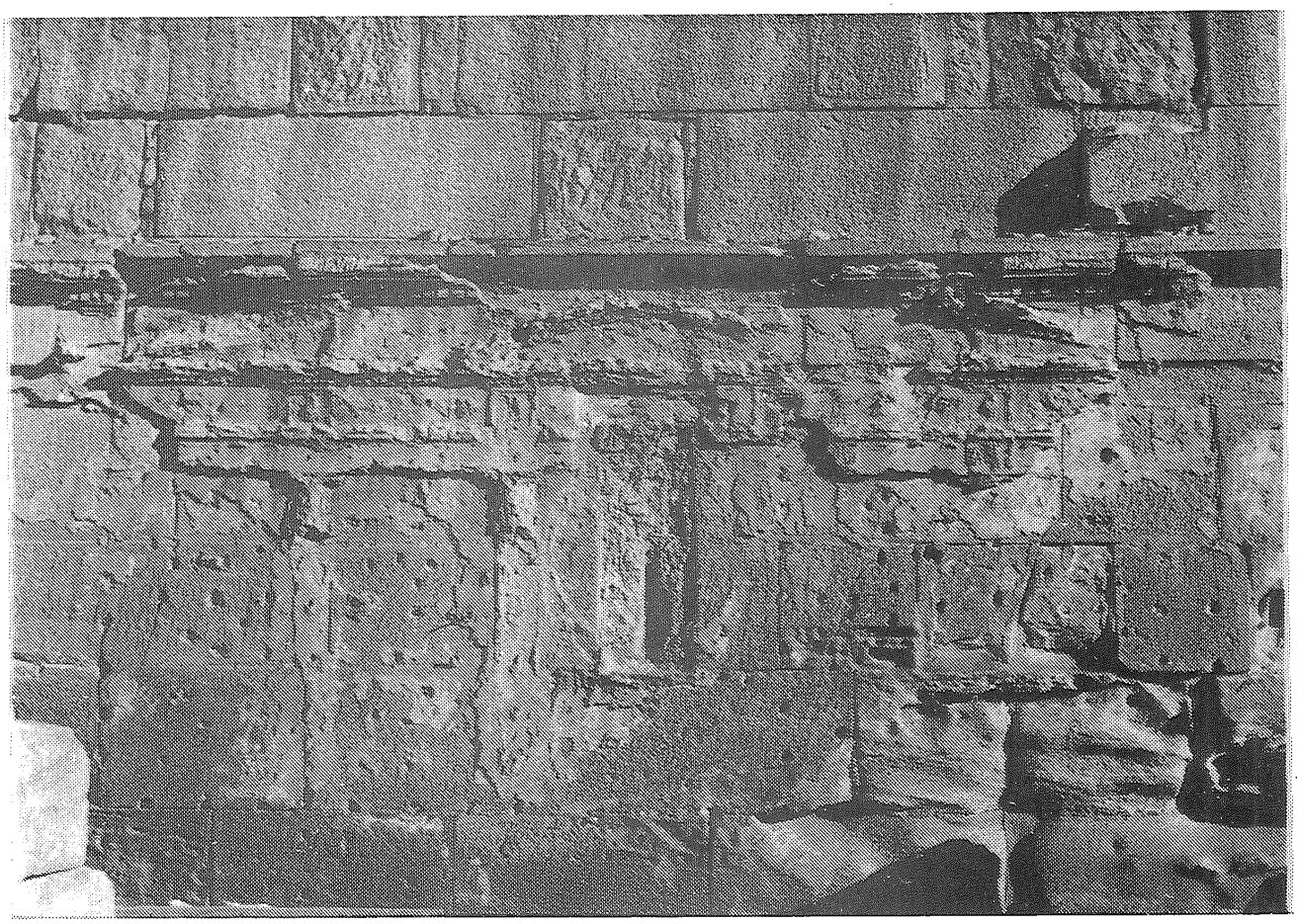


2. N-E. Anta of Qasr el Bint.

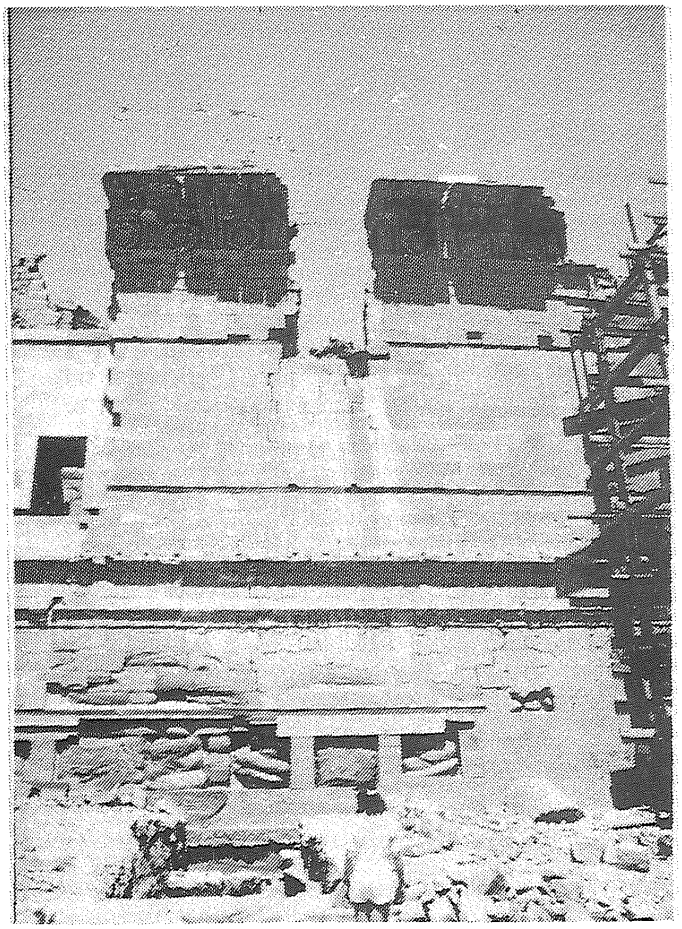


1. Stone block, partly coated with white stucco found in the core of the N-E *anta*.

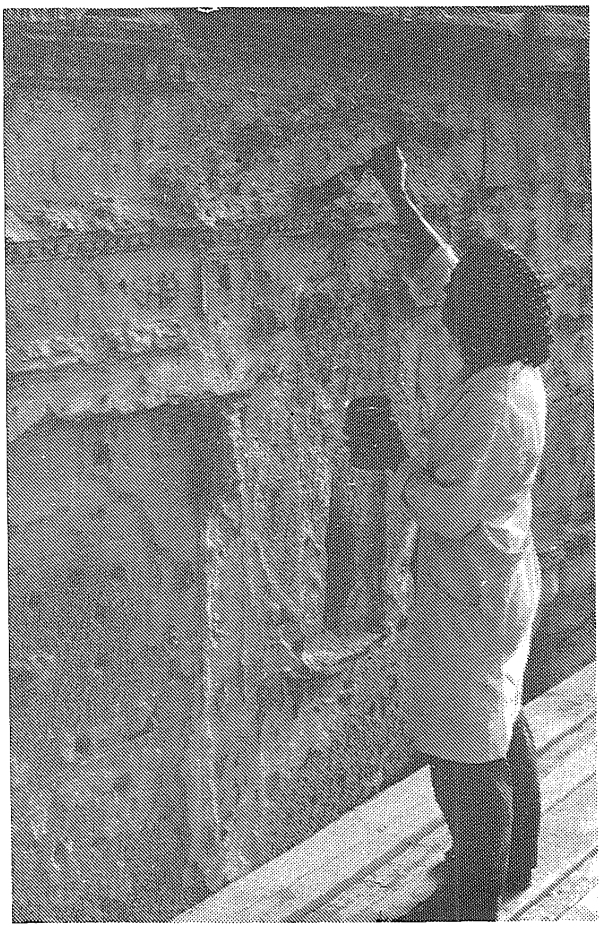
2. Wood wedges discovered under the stones of N-E. *anta*.



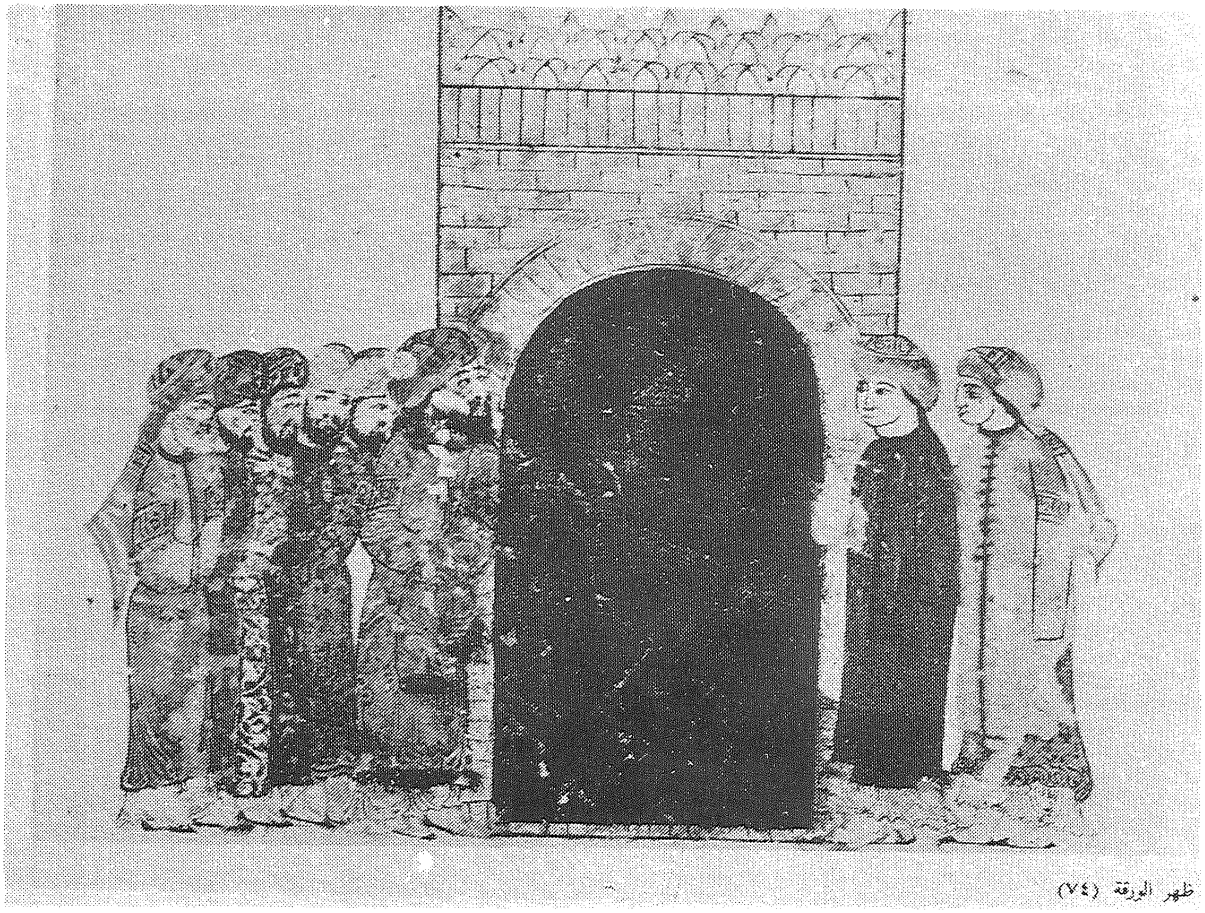
1. Architectural stucco on S. wall.



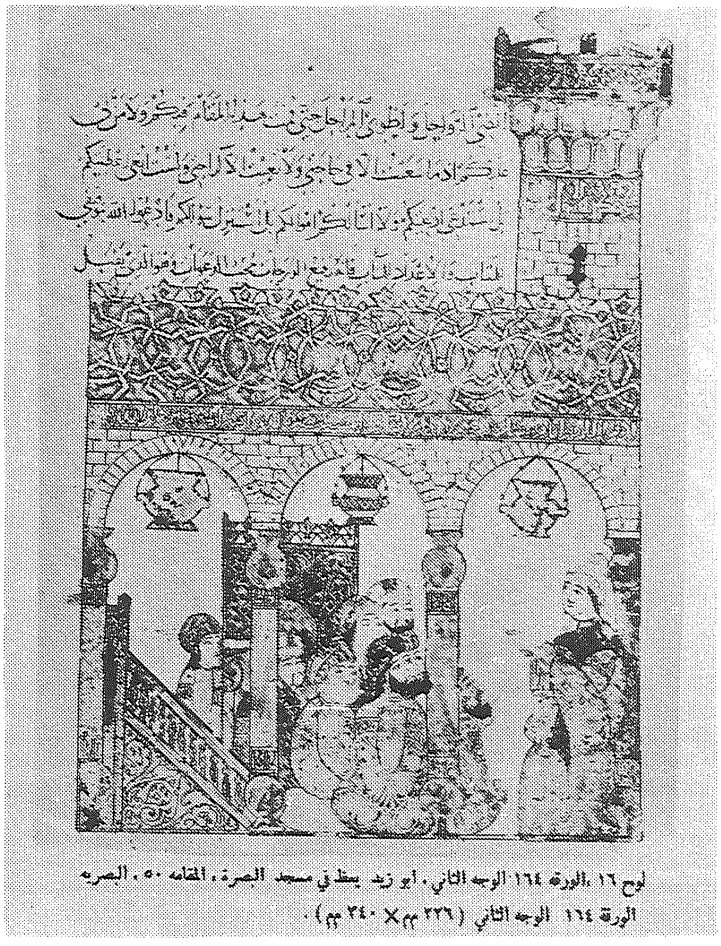
2. Qasr el-Bint East wall.



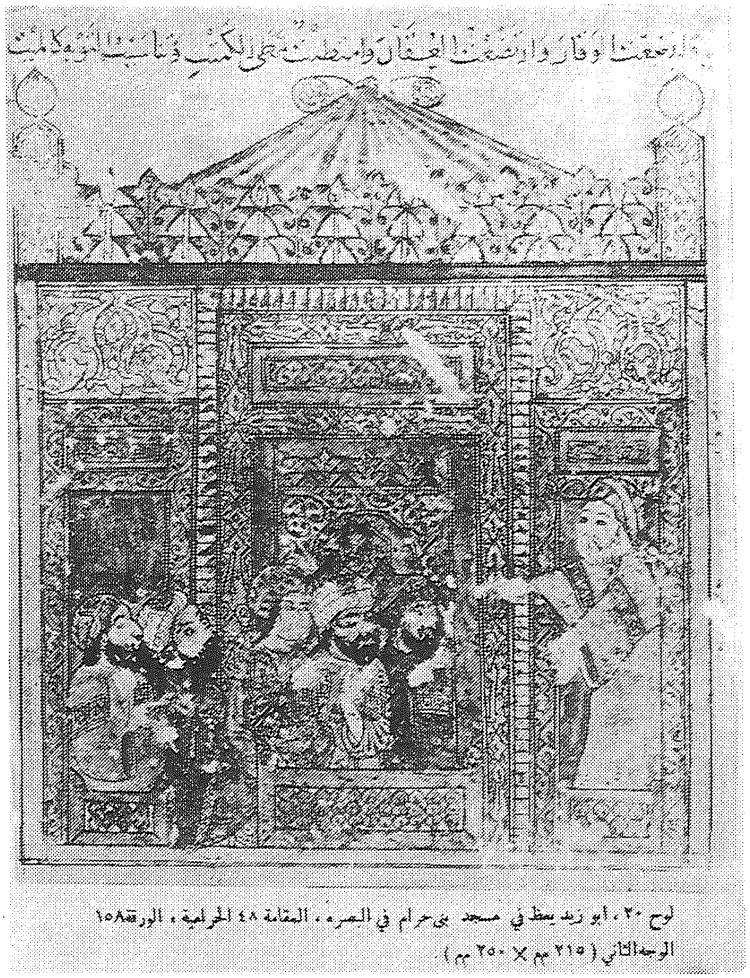
3. Miss M. Barret at work on the stucco consolidation.



1: Al-Basra Mosque, from the Inside. "Hariri Manuscript."

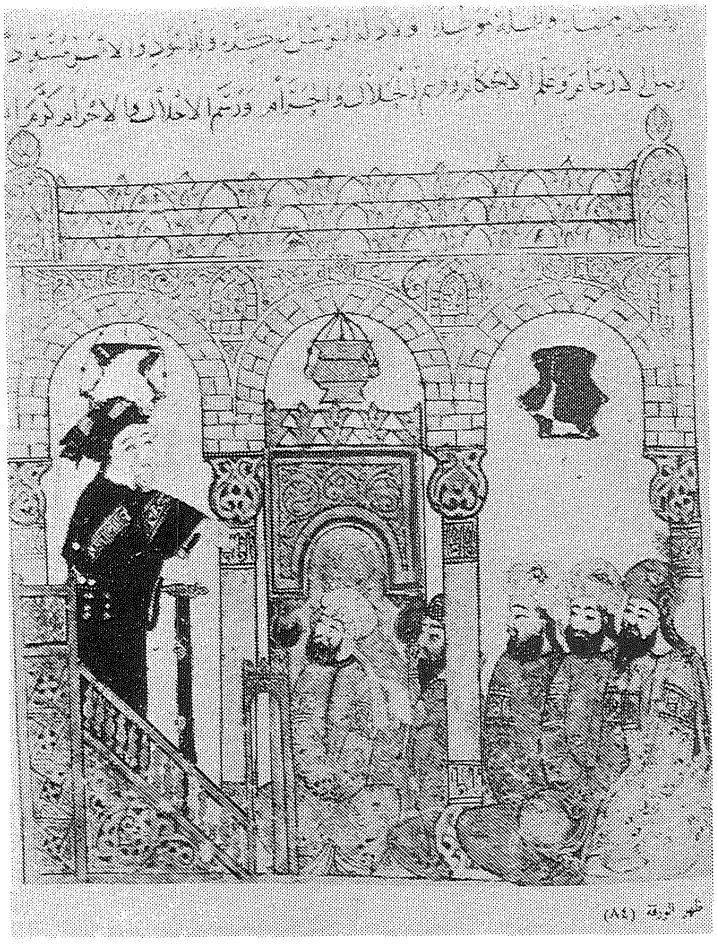


2: Al-Basra Mosque - The Facade "Hariri Manuscript."



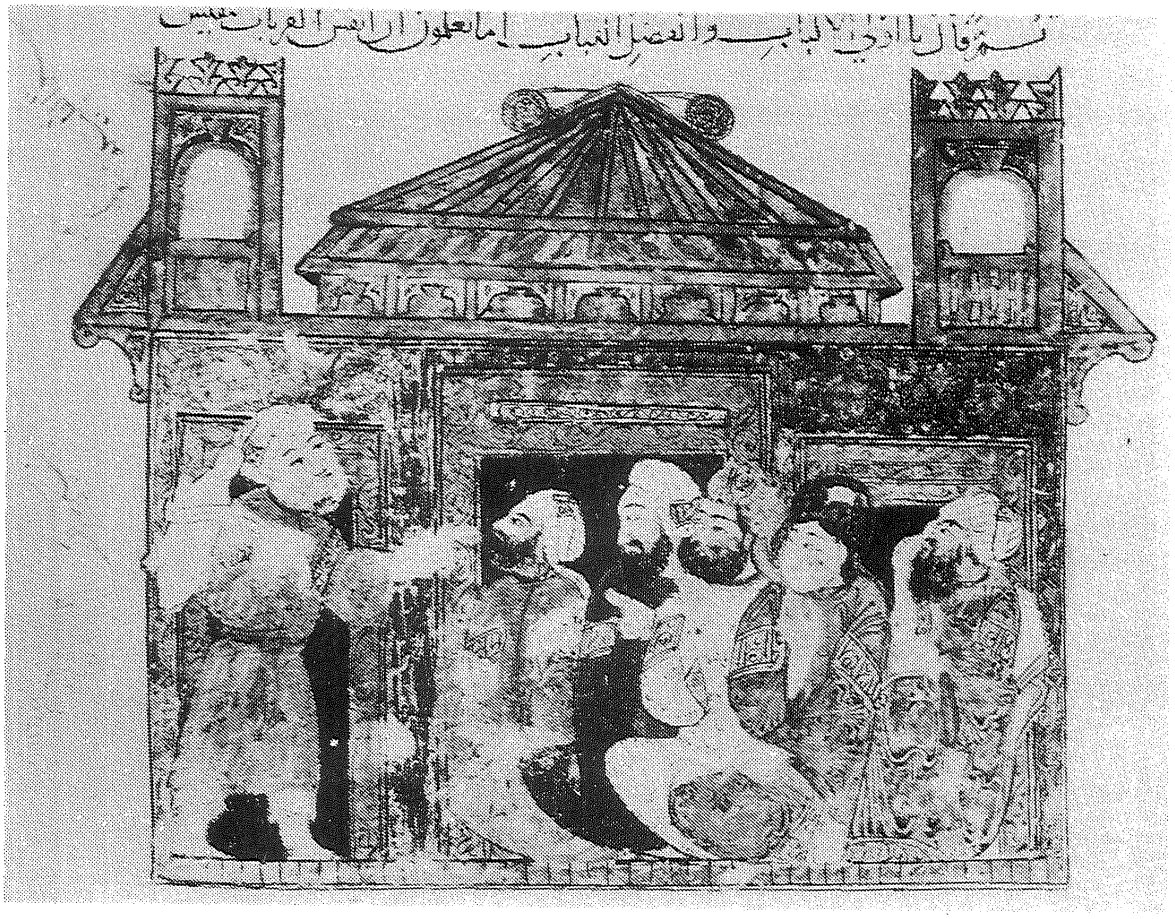
لوح ٣٠ ، أبو زيد يعظ في مسجد بي حرام في البصرة ، المقامة ٤٨ الحرامية ، الورقة ١٥٨ الوجه الثاني (٢١٥ مم × ٢٥٠ مم) .

1: Al-Basra Mosque - The Large Dome "Hariri Manuscript."

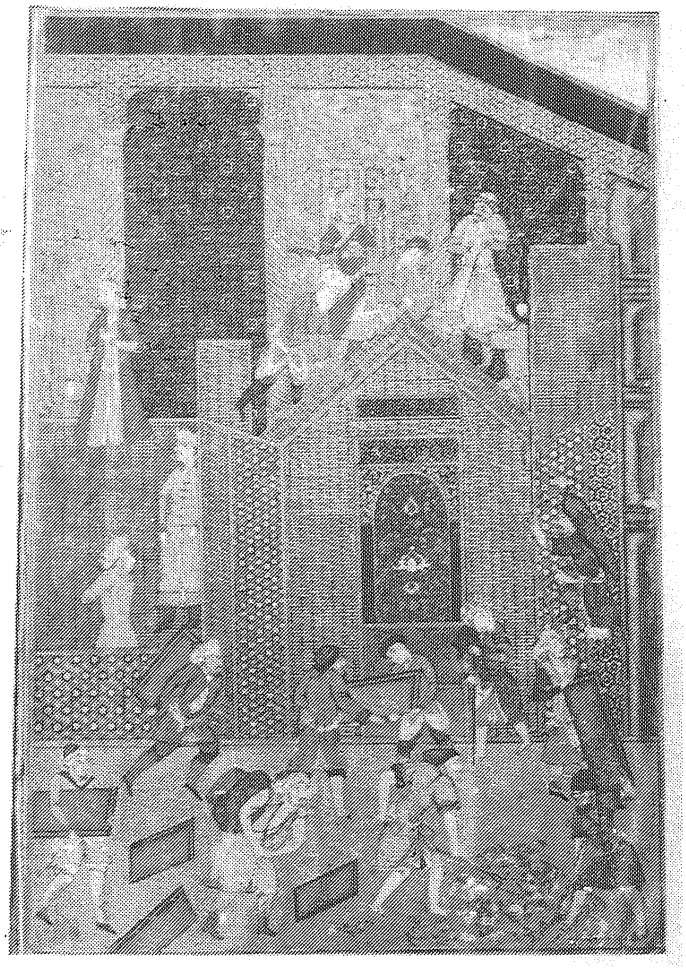


ظهر الورقة (٨٤)

2: Samarkand Mosque, from the inside. "Hariri Manuscript."



1: Samarkand Mosque. The Dome and Minaret. "Hariri Manuscript."



2: A Mosque being constructed "Timurid School."