

THE HASHEMITE KINGDOM OF JORDAN

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of JORDAN**

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Deadline for Submission of Articles is November 1st of each year, and to be mailed to the following address:

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To avoid misleading of orthography, Arabic words and Archaeological site names of Jordan used in an article in another language should appear in Arabic; transcribed with diacritical signs and transliterated in terms of spelling according to the Tradition of the Archaeological Maps of Jordan.
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 1. Albright, W.F. *The Jordan Valley in the Bronze Age*, *AASOR* 6 (1924), p. 18-24.
11. *Abbreviations*: for abbreviations used in the bibliography, see: F.D. Homès-Fredericq & J.B. Henessy: *Archaeology of Jordan, I. Bibliography*. Akkadica supplementum III. 1986, p.11-15. Peeters, Leuven.

Do not abbreviate archaeological terms. Do not abbreviate archaeological time periods when they stand alone, e.g. Late Bronze Age.
12. *Chronology of Jordan*: for Chronology of Jordan, see: F.D. Homès-Fredericq & J.B. Henessy: *Archaeology of Jordan, I. Bibliography*. Akkadica supplementum III. 1986, p.10. Peeters, Leuven.
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IN MEMORIAM
CRYSTAL-M. BENNETT O. B. E., D. Litt., F. S. A.

Crystal Bennett was born in the Channel Islands in Southern England in 1918, but was educated at a Bristol Convent and at Bristol University where she studied English. She worked for the Ministry of Supply through the 1939-1945 war and then in 1954 took a Postgraduate Diploma in Archaeology of the Roman Provinces and later a Diploma in Palestinian Archaeology at the Institute of Archaeology in London. Meanwhile she directed two small scale excavations on Roman sites in the South of England. In winter 1957 she joined the final season of Kathleen Kenyon's excavations at Jericho and the following year Peter Parr's dig in the Katute area of Petra. It was here that her appetite for Near Eastern Archaeology developed and she spent the following 26 years working in Jordan and the West Bank.

During 1958 she began her own soundings at the Edomite settlement on the summit of Umm el-Biyara, one of the huge rock formations in the centre of Petra. This work continued in 1960 and 1963 and revealed a domestic settlement dating to the eighth and seventh centuries B.C. which had been finally destroyed by fire. One of the most interesting finds was a clay seal stamped with the Royal symbol of 'Qos-gabr, King of Edom' dating to about 670 B.C. During the following years she undertook excavations at two further Edomite sites, at Ṭawilan near Wadi Musa and at Buṣeirah south of Ṭafileh. Ṭawilan was excavated between 1968-1970 and in 1982, revealing a domestic farming settlement. Here, during her last season, she found a cuneiform tablet which appears to have been a livestock contract drawn up in Harran in north Syria. This was the first cuneiform tablet to be found in Jordan. She also found a very impressive hoard of late sixth or early fifth century B.C. jewellery. The second site, Buseirah (probably biblical Bozrah), was excavated between 1971-1974 and in 1980, with work focussing on the town defences and central citadel.



In 1970, whilst working on her Edomite sites, Crystal was appointed as Director of the British School of Archaeology in Jerusalem. Since 1967 the School had been in Israeli occupied territory and excavations had become impossible west of the Jordan River. However, during her period in office, a very successful architectural survey was undertaken of the Mamluk buildings of the Old City of Jerusalem led by a team of British architects.

In 1975, the Department of Antiquities in Amman invited Crystal to take charge of rescue excavations on the Amman Citadel, in the area where it was planned to build a new museum. Crystal continued this work over five long seasons (1975-9) exposing a complex of Byzantine and Umayyad residential structures. The results of this work and her Edomite projects were published in a series of reports in *The Annual of the Department of Antiquities of Jordan, Levant, Palestine Exploration Quarterly* and *Revue Biblique*.

It was in 1975 that Crystal began renting the house opposite the University of Jordan, which was later to become the home of the British Institute at Amman for

Archaeology and History. Through the 1970s it became more and more difficult to undertake excavations in Jordan or other Arab countries from the British School of Archaeology in Jerusalem, and consequently Kathleen Kenyon, Crystal Bennett and others campaigned to establish a separate British Archaeological Institute in Amman. This finally received approval from the British Academy in 1978 and the Institute was formally opened in 1980. Crystal became its Director and retired from the

position in November 1983.

Sadly, Crystal suffered from ill health whilst in Amman and this continued during her retirement in Cyprus and England. She died on 12 August 1987 at her home in Bruton, Somerset, leaving an only son, Simon. Her unique brand of personal and professional friendship and support have ensured that she will always be remembered by those who she came into contact with, both inside and outside archaeology.

PRELIMINARY REPORT ON THE FOURTH (1985) SEASON OF PREHISTORIC AND PALAEOENVIRONMENTAL INVESTIGATIONS IN THE AZRAQ BASIN

by

A. Garrard, C. Hunt, A. Betts and B. Byrd

Introduction

Between the 20th September and 20th November 1985 the author undertook a fourth season of prehistoric and palaeo-environmental investigations in the Azraq Basin of eastern Jordan. The author is very grateful to Dr. Adnan Hadidi (Director-General of the Dept. of Antiquities) for providing the necessary permits, to the staff of the Royal Society for the Conservation of Nature for the use of their facilities at Shaumari, to the sponsoring bodies (the British Institute at Amman for Archaeology and History, the British Academy, the British Museum, the National Geographic Society and the Palestine Exploration Fund) for their funding of the project, and to the sixteen personnel who helped in the field. These included Alison Betts (London) who is studying the Neolithic artifacts, Christopher Hunt (Sheffield) who is studying the sediments and pollen, and Ghassan Ramahi who acted as Representative for the Dept. of Antiquities. Other specialists, who will be involved in later stages of processing, include Brian Byrd (Tucson) Upper & Epipalaeolithic artifacts, Lorraine Copeland (London) Lower & Middle Palaeolithic artifacts, Gordon Hillman and Susan Colledge (London) plant remains, the author and Rebecca Montague (British Institute at Amman) animal remains, Stephen Bourke (London) human remains and the Oxford Radiocarbon Laboratory.

The Azraq Project was begun in 1975 in order to investigate the history of environment, settlement and subsistence in the Jordanian Desert through the late Pleistocene and early Holocene: the time when animal and plant husbandry and sedentism was developing in western, more fertile areas.

During the first two field seasons (1975, 1982), archaeological and geological reconnaissance was conducted around

the central springs and in a range of environments in the outer tributary wadis (Garrard *et al.* 1975, 1977, 1985a, 1985b). During the third season (1984), soundings were made at five sites in the Wadi el-Jilāt, a tributary of Wadi ed-Dabi' and Qa' el-Azraq, lying 55 km. to the south-west of the Azraq oasis. The sites concerned were of late Upper Palaeolithic, Epipalaeolithic and Pre-Pottery Neolithic B date (Garrard *et al.* 1984, 1986). During the fourth season (1985), soundings were made at a further ten sites, in the Wadi el-Jilāt, and near Qasr 'Uwaynid, 'Ain el-Bayḍa and Azraq esh-Shishan in the central basin. These sites were of Lower & Middle Palaeolithic, Epipalaeolithic, Neolithic and Roman date.

At most of the sites, soundings were limited to one or two 2 × 2 m. trenches, and all the occupational deposits were coarse sieved through a 5 mm. mesh, washed in an earth flusher to remove charcoal, and then wet sieved through a 1.5 mm. sieve. This allowed the adequate collection of microlithic tools, shell and stone beads, small bone tools and microfaunal and floral remains, as well as larger artifacts and bones.

In addition to the archaeological work, Christopher Hunt undertook a geological study of the site sections and of sequences in the tributary wadis and central basin. The results of these investigations have considerably expanded and in some cases altered our understanding of the environmental history of the Basin and so I will begin by outlining these.

Results of Geological Investigations

An initial geological reconnaissance was made by Paul Harvey (Cambridge) in the 1982 season. However this was prior

to the excavation and also before the availability of large scale aerial photographs. During the 1985 season, Christopher Hunt made a more detailed study, focussing on the sections of two brine pits in the central playa (Qa' el-Azraq), on archaeological exposures in the Azraq marshes, Wadi el 'Uwaynid and in Wadi el-Jilāt, and on natural exposures in the three areas. Geological reconnaissance was also conducted in Wadis Rattama, 'Enoqiyya, Rājil, Kharraneh and Dabi', and at Qa' el-'Umari and Feidat ed-Dihikiya. Samples from all these localities were collected for sedimentological and palynological analysis.

Preliminary results indicate that the Azraq playa/ lake did not change much in area during the late Glacial and Holocene, although at times the water body was more permanent and at others more transient than at present. Our earlier suggestion that it expanded temporarily into a very large lake (Garrard *et al.* 1984, 1985a, b), appears to be incorrect. What had been interpreted as lacustrine limestones and evaporites during the 1982 seasons, have now been identified as carbonate and gypsum caliches. These would have precipitated out in the upper sediment horizons as a result of leaching and evaporation under arid conditions.

The overall environmental chronology for the late Glacial and Holocene now seems to be as follows: During a phase of the Upper Palaeolithic, soils formed in various localities in the Basin. The site of Jilāt 9, with a C14 date of $21,150 \pm 400$ b.p. (OxA 519), is located on the surface of such a soil. There was possibly a subsequent arid phase during which aeolian silts collected in Wadis Jilāt, Kharraneh and 'Uwaynid. This period seems likely to have coincided with the Glacial maximum in Europe, but the only site we have found which may date to this period is Azraq 17 in the central marshes. During a later period, there appears to have been a renewed phase of soil formation with widespread probably steppic vegetation. A number of Epipalaeolithic sites have been sounded which are stratified in this soil, including 'Uwaynid 14 and 18 and the first two

phases of Jilāt 6 (we await C14 dates from these sites). Subsequently, and certainly by the late Epipalaeolithic of Azraq 18 and the upper phase of Jilāt 6 (post 12,000 b.p.), there was renewed dessication. By the Neolithic, as is represented at Jilāt 7, 23, 24 and Azraq 30, 31 (post 9,000 b.p), climatic conditions had become similar to those of today, although vegetation has considerably degraded since that time as a result of over-grazing and ploughing in marginal areas.

Results of Excavations

Soundings were made at ten sites during the 1985 season; at C Spring or Azraq 21 (late Lower or early Middle Palaeolithic), Azraq 17 (Early Epipalaeolithic), 'Uwaynid 14, 18 (mid-Epipalaeolithic), Azraq 18 (late Epipalaeolithic), Azraq 31 (late Pre-Pottery or early Pottery Neolithic), Azraq 30, Jilāt 23, 24 (Burin Neolithic), and at the ?Roman wall surrounding Biraket Qeissiyeh east of Azraq es-Shishan (see Figs. 1-5).

Azraq 21, C Spring.

The late Lower or early Middle Palaeolithic site at C Spring was discovered by the Baker-Harza Company (1958) during the excavation of canals south of Azraq esh-Shishan in 1956. Owing to political circumstances as well as flooding, no careful excavation was possible at the time, but the site was visited by Diana Kirkbride and later by Frank Zeuner. Both wrote reports, but these were mislaid for many years. A large number of artifacts and bones were collected and the latter were studied by Juliet Clutton-Brock (1970). The species included *Dicerorhinus* sp., *Equus hemionus*, *Equus hydruntinus*, *Camelus dromedarius*, *Alcelaphus* sp., *Boselephas* sp. (?) and *Bovini*, indicating a steppic environment. The flints, like the reports, were mislaid until recently, but are now being studied by Lorraine Copeland and Francis Hours. The discovery of the reports has allowed us to reidentify the location of C Spring and during the 1985 season a 3x3m. trench was excavated about 30m. east of

the original findspot (see Figs. 2,5). It was not possible to reexcavate alongside the original trench, because the area has recently been bulldozed for fish ponds.

Excavations were made to a depth of 3.5 m. and the following levels were found:-

1. The top 0.9-1.5 m. consisted of aeolian silts, similar to those collecting in the area today. There was secondary carbonate induration at the base of this horizon and a Pre-Pottery Neolithic B arrowhead was found in this level.
2. 0.4-1.0 m. of grey-brown clay with an unconformity at the base. Several backed bladelets were found in this sediment indicating an Epipalaeolithic age (20-10,000 b.p.).
3. At c. 2 m. depth there was a major unconformity in the sequence and the surface of the underlying sediment was covered with 5-10 cm. of cream coloured sand.
4. Beneath the unconformity there was a further 0.8-1.0 m. of grey-brown clay containing a number of small but undiagnostic flint flakes.
5. At a depth of 2.85-2.95 m. the clay gave way to a blue-grey silt. In this we found a number of unabraded late Lower/ Middle Palaeolithic bifaces, levallois flakes and debitage. The silt also contained poorly preserved animal bones and bovid teeth.
6. At c. 3.10-3.20 m. depth we found a 10-20 cm. thick layer of unabraded late Lower/early Middle Palaeolithic bifaces, levallois flakes, cores, and debitage in a matrix of blue-grey silt. In lenses beneath were further artifacts in a yellow-grey silt.
7. Underlying the artifact horizon was a culturally sterile rolled flint pebble fluvial channel fill. We stopped excavation at 3.5 m for safety reasons and because the gravel was saturated with water.

The rediscovery of C Spring is important as although Lower and Middle Palaeolithic industries are widespread in the Ba-

sin, it is very rare to find a potentially *in situ* site. The only other possible example is 'Ain el-Assad (Azraq 1 — see Fig. 5) which was also found during canal digging by the Baker-Harza Company (1958). However, recent excavations aimed at re-locating the source of this material have been unsuccessful (Rollefson 1982).

Azraq 17

Azraq 17 was located during the 1975 reconnaissance of the Azraq area (Garrard *et al.* 1977) and was thought from surface collections to be of Early Epipalaeolithic date. Geomorphological evidence from Wadis Jilāt, Kharraneh and 'Uwaynid, as well as from other area of the Near East, suggest that this was a dry episode.

The site itself is located on an island within the present marshes (Biraket Qeissiyeh) east of Azraq esh-Shishan (see Figs. 2,5). Two trenches were begun, but in the case of the first (Sq. 1-6) the occupation appeared to be very superficial or entirely deflated, and in the case of the second (Sq. 9-15) an extremely hard calcrete prevented deep excavation. A superficial examination of the industry from Sq. 7-15 supports the idea of an early Epipalaeolithic date, but the industry from Sq. 1-16 is likely to be mid Epipalaeolithic. Small quantities of bone and charcoal were obtained from Sq. 7-15 so we hope to obtain a C14 date for the earlier industry.

'Uwaynid 14 and 18

These two mid-Epipalaeolithic sites were discovered in 1982 (Garrard *et al.* 1985a) eroding from the base of terrace remnants at the confluence of the Wadis 'Uwaynid and Janāb, immediately southwest of Qaṣr 'Uwaynid (see Figs. 2,4). At the time, it was thought that they underlay lacustrine sediments belonging to a late Glacial expansion of the Azraq lake. However, as a result of excavating two trenches in each of the sites during the 1985 season, it is now clear that the so called lacustrine deposits are in fact fluvial silts and sands which have been heavily indurated with carbonates and gypsums forming caliches.

The archaeological material is contained in aeolian silts of c. 50 cm. depth in which soil profiles have developed. The soils indicate more humid conditions than the present with continuous probably stepic vegetational cover. This is similar to the sedimentary environment in the lower two phases at Jilāt 6. Subsequently, there was renewed aeolian aggradation and then fluvial deposits spread across the site. Later there was heavy carbonate and gypsum induration suggesting arid conditions. Finally, after further fluvial deposition the Wadis 'Uwaynid and Janab incised to their present beds leaving the sites in isolated terrace deposits.

At 'Uwaynid 14 and 18 a number of superimposed archaeological horizons were found. At 'Uwaynid 14, the archaeological material consisted of three very distinct knapping floors separated by sterile deposits. At 'Uwaynid 18 the archaeological horizons were much thicker and large quantities of gazelle and wild ass bones were found in addition to artifacts. Hearths were discovered in both sites and it is hoped that these will yield C14 dates. At 'Uwaynid 18 one of the hearths was surrounded by large numbers of basalt pebbles which may have been used for cooking purposes.

Azraq 18

The late Epipalaeolithic site of Azraq 18 was found during the 1975 survey amongst the silt dunes immediately south of the Azraq marshes (Garrard *et al.* 1977). It is located adjacent to a small but perennial spring and within 0.5 km. of the present Qa' el-Azraq (see Figs. 2,5). Surface artifacts were evident over an area of 2,200 Sq. m. and a single trench of 6 Sq.m. revealed 30 cm. of archaeological deposits. These were contained in aeolian sites/ sands heavily indurated with carbonates.

In addition to flints and marine shell beads, the occupational deposits were rich in wild cattle, gazelle and ass bones and amongst these was a complete cattle horn core placed in an arched position in the

ground. Also, the disarticulated and very crushed remains of between five and seven human skeletons were found. These were not contained in any obvious burial pit and if such had existed it had been disturbed by later occupation.

Azraq 31

The late Pre-Pottery or early Pottery Neolithic site of Azraq 31 (c. 8,000 b.p.) is located on a calcrete shelf amongst silt dunes on the edge of the present Qa' el-Azraq. It is also within 0.5 km. of the Azraq marshes (see Figs. 2,5). The surface spread of artifacts covers c. 4,350 Sq. m. and samples collected in 1982 were described in Garrard *et al.* 1985a.

During the 1985 season, three soundings were made, two in the centre of the site and one on the perimeter of the calcrete shelf. Sq. 1-4 yielded c. 40 cm. of *in situ* archaeological deposits in a matrix of aeolian silt/fine sand overlying the calcrete bedrock. In the basal deposits were a series of superimposed hearths, one of which contained heat cracked pebbles, which may have been used for cooking. Higher in the sequence was a pavement of angular calcrete pebbles.

The second trench Sq. 5-8, 14 contained 50-60 cm. of archaeological deposits overlying a sterile sand. The upper levels lacked distinctive features but at the base of the archaeological sequence was a one course stone wall of rough calcrete blocks and two graves, one dissecting the other. Both contained well preserved articulated human skeletons, but no grave goods. The earlier burial was cut above its pelvis, but appeared to be lying flat on its back. The second was lying on its side with its hands flexed under its skull.

In addition to flint artifacts, a small number of ground and carved stone objects were found including beads and a palette. Many of the stone beads were made from green *Dab'a* marble, whose source lies beyond the Wadi el-Jilāt, 65 km. to the south-west of Azraq. There were also a large number of marine shell beads. Bone

and charcoal was well preserved in spite of the saline conditions. Amongst the bones were a large number of gazelle and a smaller number of wild cattle, ass, hare and bird specimens. In addition, there were a small number of sheep or goat bones. Since these species do not occur in the Epipalaeolithic sites and the local ecology would probably have been unsuitable for wild sheep and goat, it seems likely that they were introduced by man. They therefore represent the earliest evidence for domestic animals in the region. The Pre-Pottery Neolithic B site of Jilāt 7 which was C14 dated to $8,810 \pm 110$ b.p. (OxA 526) and $8,520 \pm 110$ b.p. (OxA 527) contained no ovicaprids although probable cultivated barley has been identified. Two possible sheep phalanges were found in a Burin Neolithic site at Jebel Naja in the Basalt Desert, but this occupation has been C14 dated to c. 7,500 b.p. (Garrard in Betts 1985, Betts p.c.).

Azraq 30

'Desert kites' have been observed by many of the archaeologists working in the Basalt Desert of eastern Jordan and on the basis of ethnographic records and rock drawings it is generally agreed that they were used for catching gazelle and other large herbivores. Alison Betts (1984) has surveyed a large number and found Pre-Pottery Neolithic B and Burin Neolithic artifacts adjacent to several suggesting that some at least date back to between 9 and 7,000 b.p. Because of their large size and the sparsity of soil cover, no one has tried excavating in a desert kite to obtain more archaeological information on their function and date. During the 1985 season, we made two small soundings in one of the hides and the corral of a kite found in 1982. The kite is located on a basalt flow 3.5 km. to the south-east of 'Ain el-Bayda on the north-east side of Qa'el-Azraq ($32^{\circ}29' \times 35^{\circ}27'$). Unfortunately neither sounding provided conclusive dating material, although a sparse burin industry was found on the surface of aeolian silts alongside the corral wall.

Jilāt 23 and 24

During the 1930s Waechter *et al.* (1938) located and partially excavated six Neolithic sites in the Wadi el-Jilāt, which lies on the present steppe/desert boundary, 55 km. to the south-west of Azraq (see Figs. 1, 2). At each of these a scatter of artifacts and stone structures was apparent at the surface. In 1982 a fresh survey was made of these sites and one (Jilāt 7 - see Fig. 3) appeared to have a Pre-Pottery Neolithic B industry, two others (Jilāt 23, 24) burin based industries and the other three (Jilāt 13, 25, 26) a mixture of the two. In 1984, two soundings were excavated amongst the structures of the Pre-Pottery Neolithic site and a rich flint and ground stone assemblage was found as well as bone and charcoal. As was mentioned above, the animal bones were of local probably wild species whilst the charcoal included cultivated barley. C14 dates of c. 8,500 and 8,700 b.p. were obtained on wood charcoal.

During the 1985 season two of the burin sites were sounded in the hope of obtaining dates for this industry and information on the subsistence and culture of the manufacturers. The only date we have for this material is c. 7,500 b.p. from Jebel Naja in the Basalt Desert of eastern Jordan (see above).

Both the burin sites had stone circles emerging from their surface. In the case of Jilāt 24, this was a double walled structure of c. 4m. diameter and at Jilāt 23 it was a much larger enclosure of c. 20 m. diameter with a smaller circle of c. 4 m. diameter inside. In both cases the structures were built from limestone slabs placed on end. Two trenches were excavated at Jilāt 24 and three at Jilāt 23, but apart from giving more information on the architectural features, neither gave any more clue to the function or date of these sites.

Roman Wall around Biraket Qeissyeh.

A number of archaeologists including Kennedy (1982, p. 96-107) have noticed a well built buttressed wall of probable Roman date surrounding the main springs at

Azraq esh-Shishan. This wall encompasses an area of c. 10 dunums /0.1 sq. km. There is also a second much longer wall running out from the first, which can be traced for c. 3 km. along the southern and eastern sides of the marsh and for a short distance along the northern side. If this wall completely enclosed the marsh it would have encompassed an area of c. 6.5 sq. km.

During the 1985 season a slot trench was cut on either side of the long wall, at its south-eastern corner, where it runs close to the present qa' / playa (see Fig. 5). The purpose was to obtain information on its function and on the local environment at the time of its construction. At the excavation site the wall was c. 1.55 m. wide and 0.65 m. high and had a semi-circular buttress of c. 0.55 m. radius on its outside. It was built of basalt ashlar enclosing a rubble and cement fill. The ashlar stood upon a foundation of basalt rubble and gravel, but was only standing one course high. Elsewhere up to four courses of stone were noted. The foundation trench which was 0.40 m. deep and 2.05 m. wide was cut into the qa' / playa sediments.

Kennedy and others have suggested that the wall may have served to separate the fresh water of the marshes from the saline water of the qa', however the sedimentation record on either side of the wall does not support this hypothesis. Qa' sedi-

ments seem to have been collecting uniformly on both sides of the wall up until fairly recently. From this very limited sounding it therefore seems more likely that the wall was built as an estate boundary rather than for any hydrological purpose. Unfortunately no dating material was obtained for its construction.

During the 1984 and 1985 seasons soundings have been made at fifteen sites in the Azraq Basin ranging in date from Lower/Middle Palaeolithic to Roman. The main focus has however been on the period relevant to the beginnings of settled life and farming in more fertile areas — the Epipalaeolithic and Neolithic. It is hoped from these excavations, as well as from the reconnaissance work of 1975 and 1982, that we will be able to build up a detailed picture of the major developments in human technology, settlement patterns and subsistence on the north Jordanian plateau, and of its relationship to the main changes in environment, climate, landforms, fauna and flora. Over the next two years a number of specialists (see introduction) will be involved in analysing the finds and preparing them for more detailed publication.

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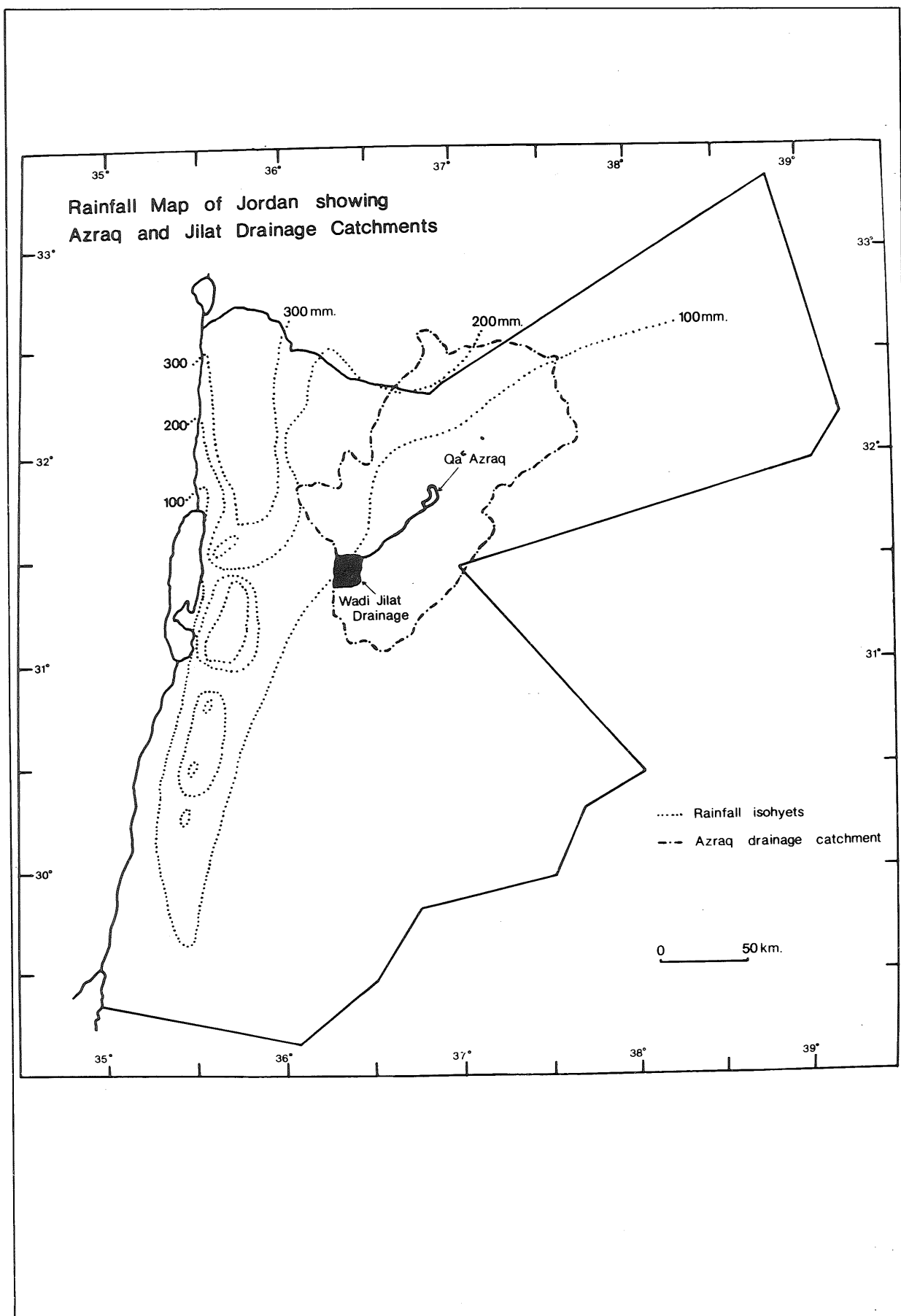


Fig. 1

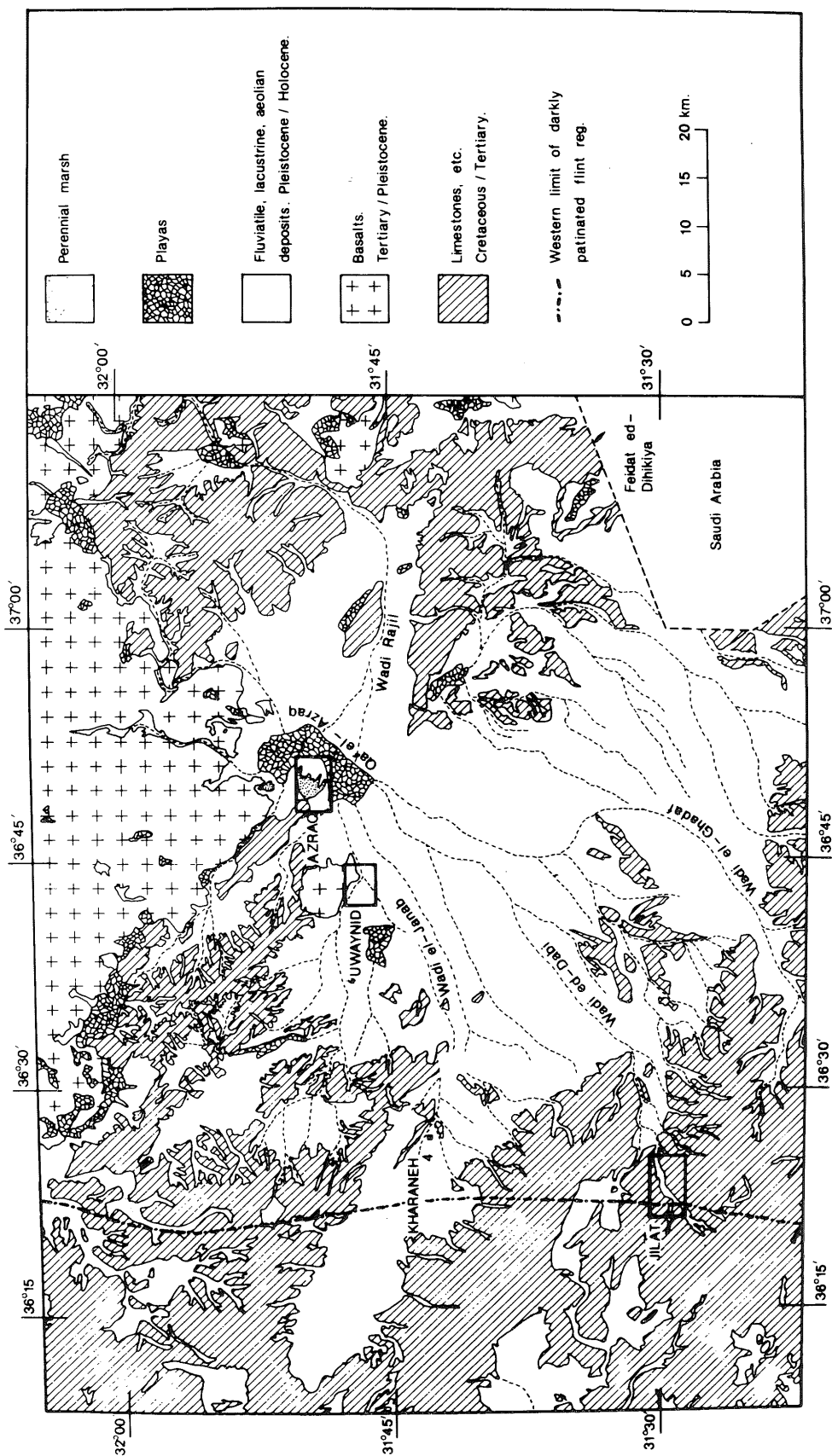


Fig. 2

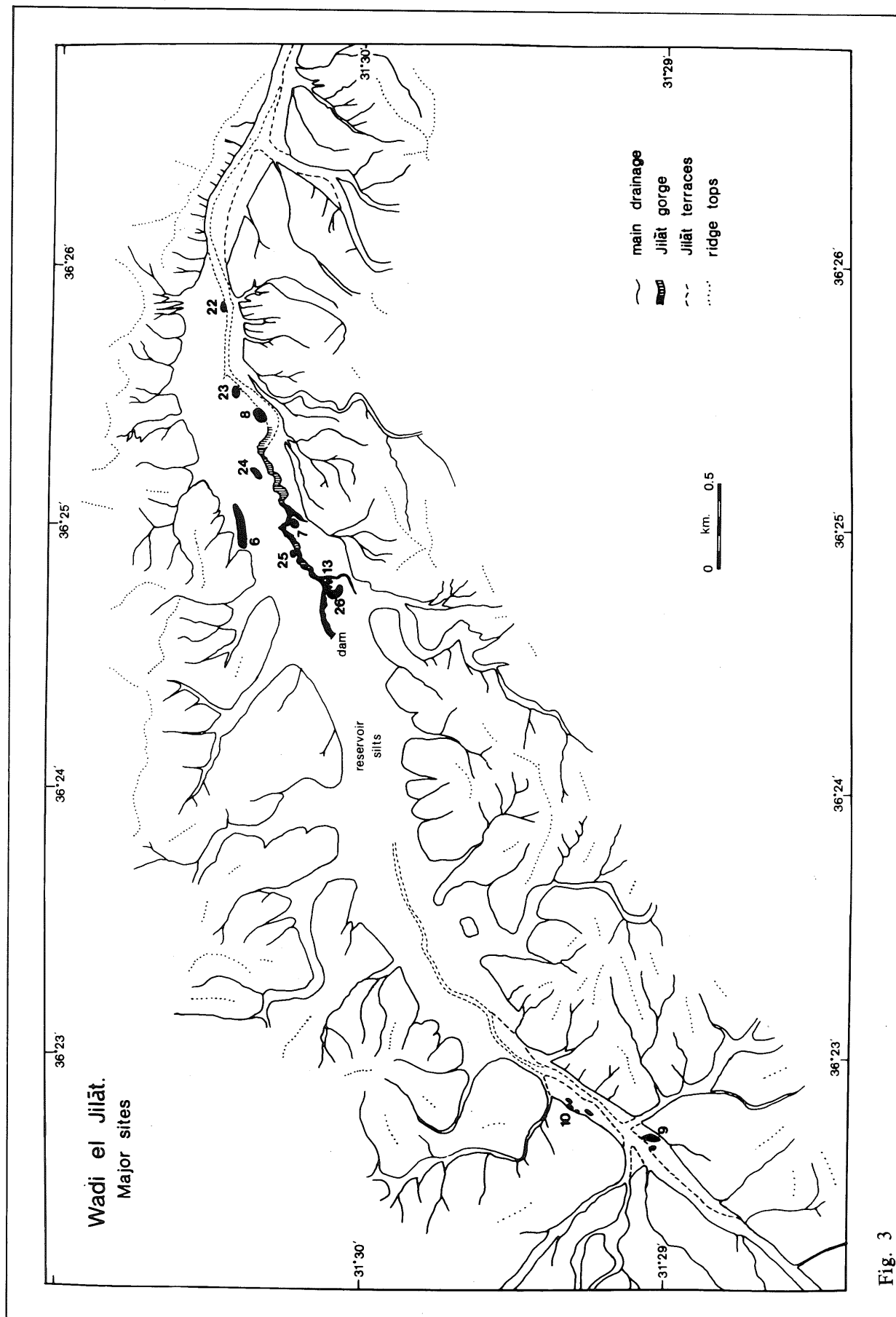


Fig. 3

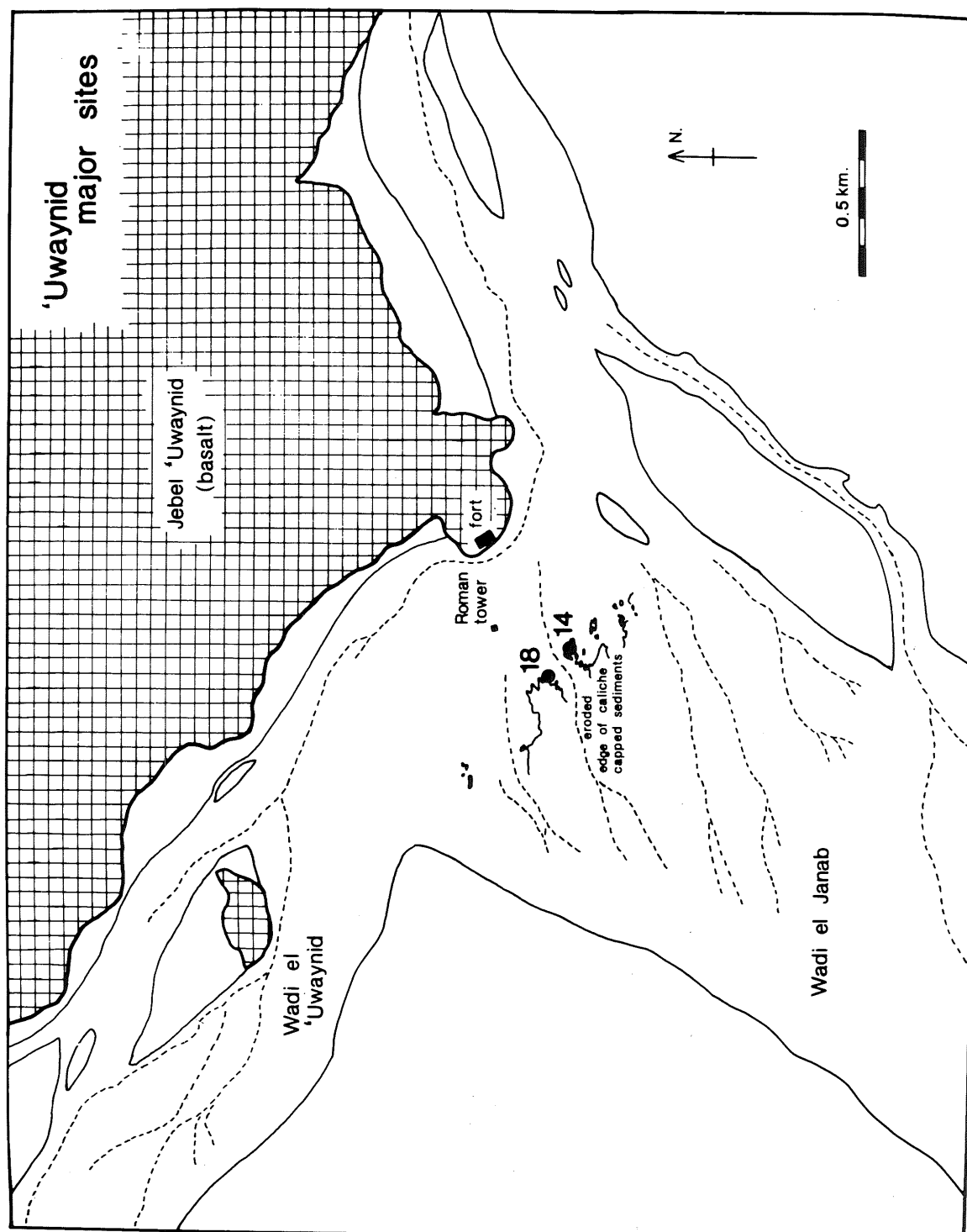


Fig. 4

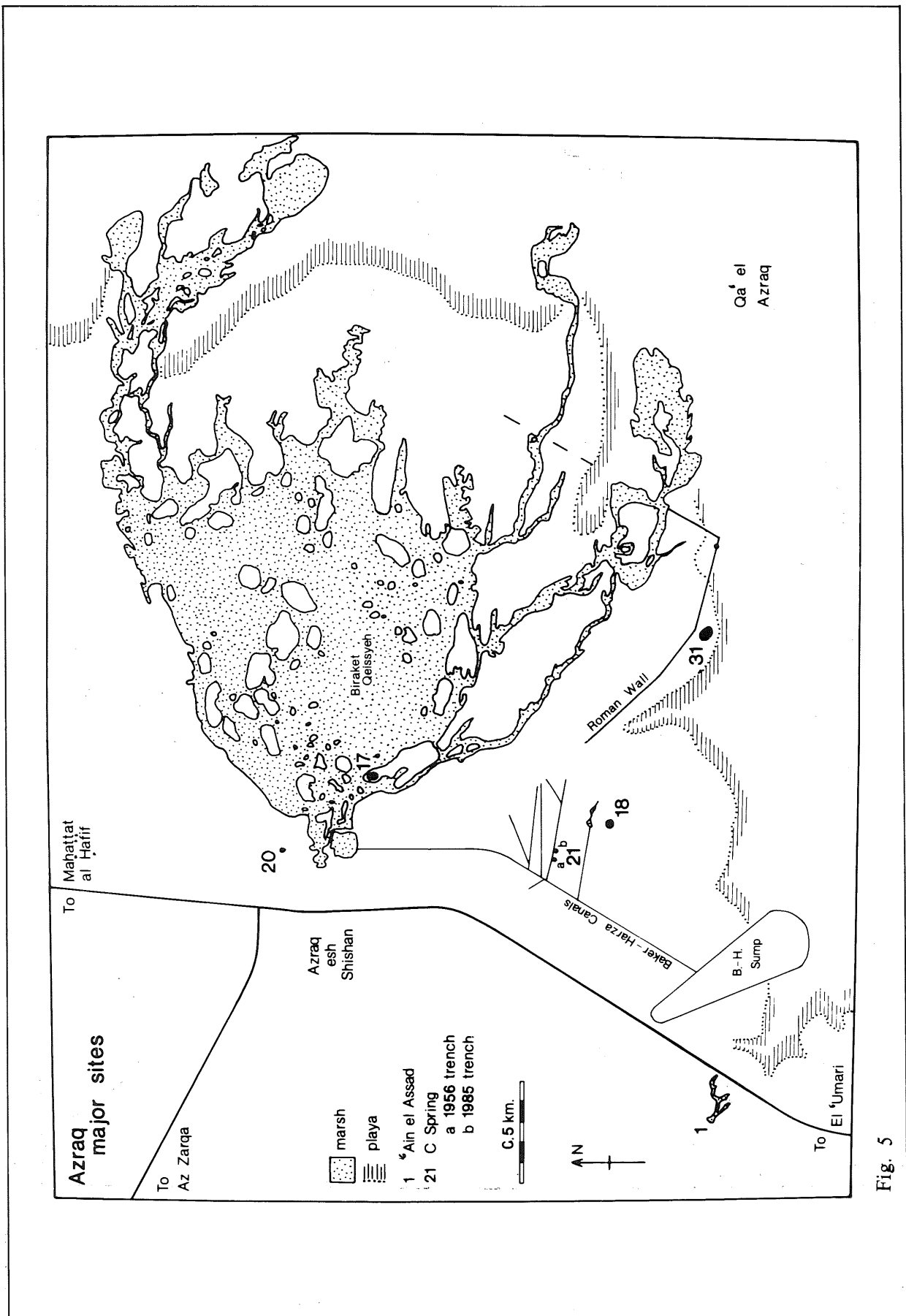


Fig. 5

PALEOLITHIC SITE PLACEMENT IN THE WADI ḤASA, WEST-CENTRAL JORDAN

by
G. A. Clark, N. R. Coinman and
J. M. Lindly

Introduction

From 1979 to 1983, Burton MacDonald of St. Francis Xavier University conducted an archaeological survey of the south bank of the Wadi el-Ḥasa drainage system in west-central Jordan. The survey encompassed the entire 70 km length of the wadi from its source near the Qa'el-Jinz to where it empties into the Dead Sea depression near Aṣ-Ṣafi (Fig. 1). Some 1074 sites were identified ranging in time from the Lower Paleolithic to the end of the Ottoman Empire; 542 of these were classified as Lower, Middle, Upper and Epipaleolithic and as Prepottery Neolithic, with various bracketing categories and subdivisions. The sites discussed here comprise a 41% sample (222 of 542) of the more reliable 'lithic period' survey collections. Assessments of reliability are based on marked proportional dominance of stone artifact types considered diagnostic of particular time-stratigraphic units by survey members.

At MacDonald's invitation, we analyzed the 'early' (i.e., lithic period) survey data. We sought (1) to make a preliminary descriptive statement about site size and distribution patterns over the paleolithic-to-aceramic neolithic time interval, and (2) to compare Wadi el-Ḥasa data with those from contemporary surveys in the better studied Avdat/Aqev area (C Negev highlands) and the Ras en-Naqab Basin (S Jordan Plateau) (Marks & Freidel 1977, Henry 1982). This essay summarizes major research conclusions from our analyses of the survey material, and is a condensed version of a longer, more detailed work (Coinman et al. 1986). Here we emphasize patterns characteristic of the wadi as a whole, essentially ignoring those found in its tributary drainages.

Although the survey was fairly systematic, MacDonald's efforts were not directed primarily at the lithic periods of interest here, nor were sampling designs employed to insure data sets representative of particular temporal or cultural periods, nor of topographic subdivisions of the environment. Subjective assessments were made about the reliability of the samples collected, however, which allows for some confidence in the information which serves as the basis for this discussion.

Evaluation of the survey data consisted of examining the temporal and spatial distribution of 'early' (i.e., lithic) sites by eight tributary drainage systems and areas and by the Wadi el-Ḥasa as a whole (Fig. 1). We looked at site area data by time and culture-stratigraphic unit affiliation and elevational variability in site location both within and across tributary drainages. The objective of these pattern searches was to determine whether temporal trends existed in the data, and to see whether patterns of association among environmental and topographic variables, site sizes and densities could be detected that might have meaning in behavioral terms. Identifying settlement-subsistence systems which corresponded to the various subdivisions of the paleolithic, epipaleolithic and aceramic neolithic allowed us to make tentative comparisons with models developed by Binford (1980), Marks and Freidel (1977) and Henry (1982, n.d.).

The data were organized by the seven time-stratigraphic analytical units used to structure the survey research. These were (1) the Lower/Middle Paleolithic (undifferentiated), (2) the Middle Paleolithic, (3) the Middle/Upper Paleolithic (combined), (4) the Upper Paleolithic, (5) the Upper/Epipaleolithic (combined), (6) the

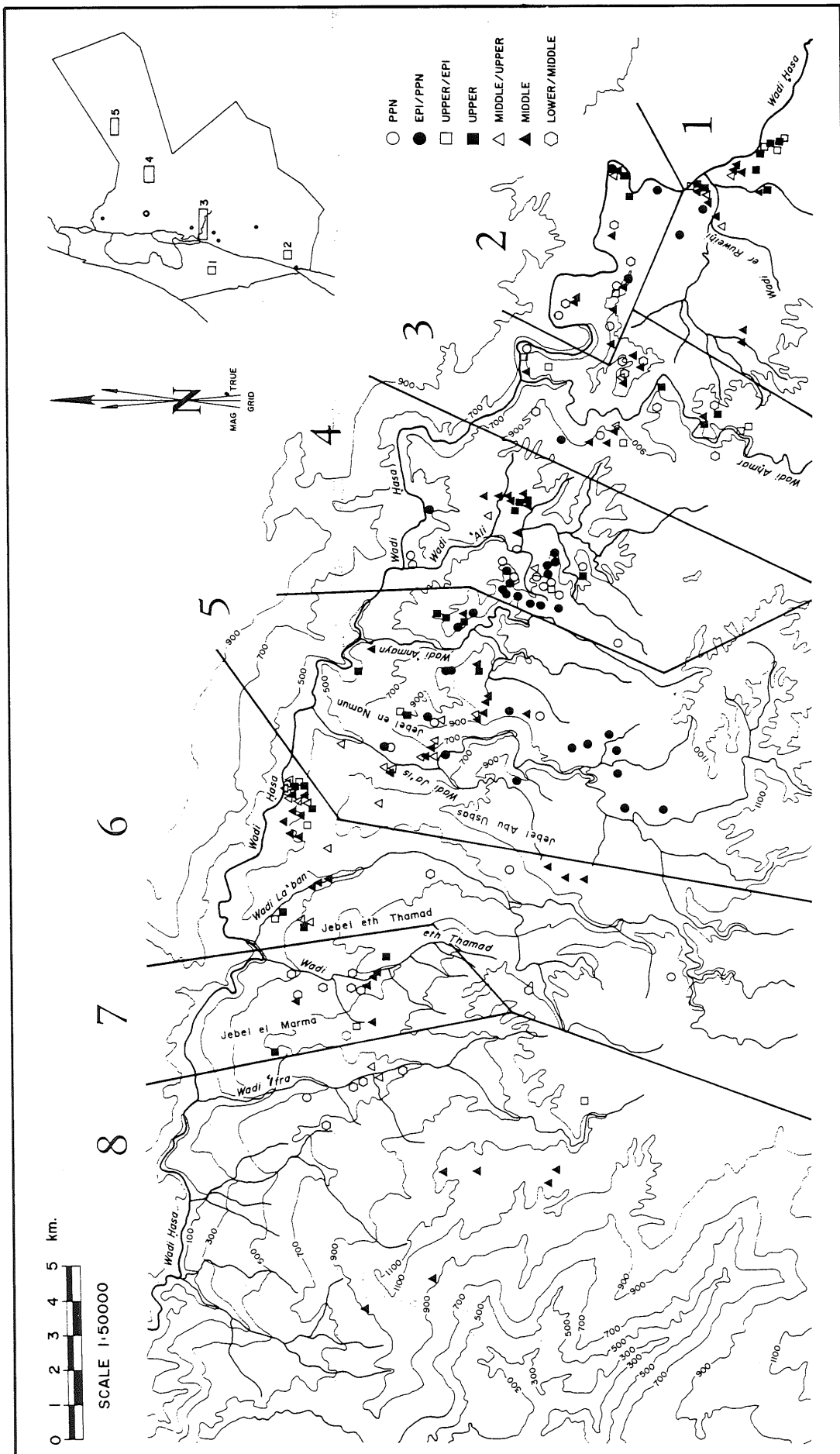


Fig. 1 Distribution of sites by culture/stratigraphic unit along the S bank of Wadi el-Ḥasa, west-central Jordan (base map courtesy of Burton MacDonald). The large numbers on the map indicate major tributary drainages of the Ḥasa: (1) Wadis Abu er-Riwaq/er-Ruweishi, (2) the Wadi Ḥasa lowlands, (3) Wadi Aḥmar, (4) Wadi 'Ali, (5) Wadis 'Anmayn/Ja'is, (6) Wadi el-La'ban, (7) Wadi eth-Thamad, (8) Wadi 'Ifra. The small numbers on the key indicate major paleolithic survey projects: (1) Avdat/Aqev area, C Negev highlands (Marks), (2) Wadi Ḥisma/S Jordan Plateau (Henry), (3) S bank of the Wadi Ḥasa (MacDonald), (4) Al-Azraq Basin (Garrard), (5) Black Desert (Betts). Major Jordanian cities and towns are indicated by dots.

Epipaleolithic/Prepottery Neolithic (combined) and (7) the Prepottery Neolithic (PPN). Except for the Upper Paleolithic collections, which were studied independently by Clark in 1983 (Clark et al. n.d.), site classifications are those of the original survey team.

Transitional Sites

As might be expected in the case of surface collections of ancient lithic materials, these analytical categories are only rather crude temporal and developmental indicators (although it should also be noted that the survey included personnel with much prior experience in recognizing and classifying Levantine Middle, Upper and Epipaleolithic assemblages). A particular deficiency of the survey data is that it is impossible to distinguish between assemblages that are (1) truly 'transitional' (e.g., in the sense of Boker Tachtit, where a continuous record of change in an excavated assemblage documents the transition between 'Middle' Paleolithic reduction strategies, dominated by Levallois technology, and those of the early 'Upper' Paleolithic, with single platform blade cores - Marks 1983a), and those that are (2) 'mixed' or 'combined' (i.e., where collections are do-

minated by tool types believed to be diagnostic of two adjacent time-stratigraphic units). It is important to be able to recognise 'transitional' assemblages since they constitute 'breakpoints' in the technological subsystem that might signal changes in other aspects of human adaptation (e.g., changes in the settlement, subsistence subsystems). However, at present, 'transitions' are extremely difficult to identify even with more adequate excavated samples. To try to detect them in the Hasa survey data would detract from any credibility that the study might have.

In our view, the results presented here reflect typical 'early' (i.e., lithic period) survey data. They are preliminary in nature and limited in respect to detailed information on particular sites. Directed recovery of excavation data, underway since Fall 1984, will be needed to support or refute initial assessments of temporal and 'cultural' assignments and site characteristics. These are critical factors to keep in mind when temporal resolution is poor and long-term geological processes have acted to produce the 'coarse-grained' archaeological surface record observed and described by the survey (see MacDonald n.d. for the definitive work on the survey).

IDENTIFYING SETTLEMENT PATTERNS

Most hunter-gatherer settlement pattern studies have been directed towards understanding a group's adaptive relationships with (usually economic) aspects of the environment. It is assumed that hunter-gatherer adaptive strategies incorporated loci beyond a residential camp, and that variability in site size and function of contemporaneous sites might shed light on the organisation of a settlement system. The challenge in settlement pattern studies, especially those relying on survey data, is to define discrete settlement systems by establishing simultaneously site function, contemporaneity and interpretable patterns of association.

In default of unambiguous site functional data from the Hasa survey, site size would probably be the next best potential indicator of function (since we can control for geological disturbance to a certain extent). Because there is some indication of bimodal site distributions in elevational zones, it is possible that correlations exist between site size and elevation that can be directly related to behavior in meaningful and interpretable ways. Elevation could be strongly correlated with site function, and an examination of site size would be a preliminary step toward identifying site function associated with altitudinal variability.

Ideal Models

Simple, iconic models can express different kinds and degrees of relationship between site size and elevation (Fig. 2). These ideal models can be represented graphically by bivariate scatterplots exhibiting strong correlations along either one (Fig. 2, Models C-F) or two axes of variability (Fig. 2, Models A, B). The relationship between the two variables — site size and elevation — is different in each of the models. In Models A and B, two dichotomous relationships are present. In Model A, small sites are located at high elevations with larger sites at lower elevations; the reverse is true for Model B. In Models C-F, only one of the two variables is dichoto-

mous — either elevation (Models C, D) or site size (Models E, F). For example, elevation is not a determining factor in Models E and F, while it does vary in Models C and D. Intersite variability is a function of size differences in Models E and F but is not a factor in Models C and D. Differentiation in site size and/or elevation is assumed to be the result of differences in site placement strategies which are themselves determined by differences in residential mobility requirements, the nature and extent of the seasonal round, time-sequenced differences in resource availability and the extent to which 'logistical'-type resource procurement (Binford 1980) was practiced.

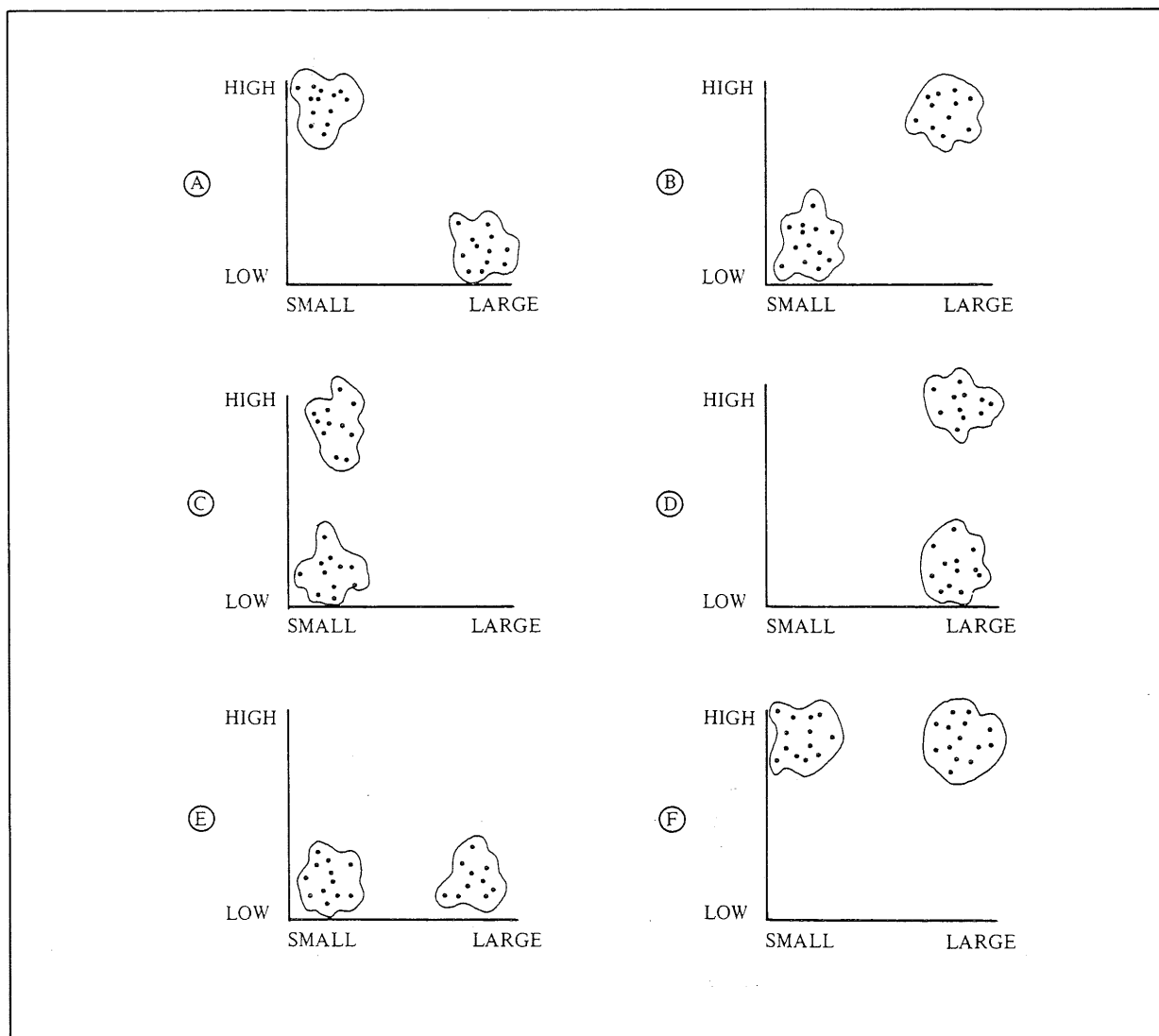


Fig. 2 Six ideal models expressing dichotomous relationships between site size and elevation.

Some expectations of the Binford and Marks Models

A comparison of the 'ideal' models with the general hunter-gatherer settlement models of Binford (1980, 1982), and the regional Levantine models of Marks and Freidel (1977, Marks 1981, 1983a) indicates that, in a topographically-differentiated environment such as the H̥asa drainage, the illustrations (Fig. 2) express the range of systematic relationships possible between settlement locations and the environment. While elevation *per se* is not a significant factor in Binford's 'forager-collector' (1980) and site placement (1982) models (based on San Bushman and Nunamiut Eskimo groups in less topographically differentiated environments), elevational zonation is a significant determinant of site type location in the Central Negev Highlands (Marks 1981, 1983a) and on the rim of the South Jordan Plateau (Henry 1982, n.d.). In both areas, elevational variability is marked as a result of dissecting wadi systems.

In Marks and Freidel's (1977) 'radiating' settlement pattern for Early Mousterian sites in the central Negev, 'markedly different site types (have been identified) that are differentially distributed within a restricted geographic area' (Marks 1981, 1983a). Assuming contemporaneity, Models A and B would illustrate this kind of intersite variability if the sites were differentially distributed according to elevation. The larger sites would correspond to their relatively sedentary residential basecamps, while the smaller sites would represent a range of procurement and processing activities orchestrated from the residential sites. The maintenance of a radiating settlement system is argued to be directly correlated with optimal climatic conditions in the southern Levant (Marks 1981, 1983a; Goldberg 1981, Horowitz 1976, 1979) which allowed for an 'economic strategy based on local, area-intensive exploitation' (Marks 1983a:91). Base camp size and consistent intrasite spatial patterning in artifact types and densities and in the locations of features have indicated either a tendency toward sedentism or 'very consis-

tent and briefly spaced reoccupations' (Marks 1983a:91).

Models A and B would also fit Binford's description of logistically-organized collectors in an altitudinally differentiated environment where relief would influence or even determine the locations of residential bases, field camps, stations and caches (Binford 1980). The latter three site types would be small and, like the smaller sites in the Negev, would be associated with specialized or 'target' resources. If the environment lacked significant altitudinal variability and was otherwise undifferentiated, Models E and F would be equally appropriate to both the radiating settlement pattern postulated for the Negev and the logistically organized collectors hypothesized by Binford. However only in the easternmost 5-10 km of the H̥asa itself would this latter situation occur.

In the Binford typology, 'foragers' are contrasted with 'collectors'. Foragers use high residential mobility to 'map-on' to resources through encounter-type procurement strategies (Binford 1980:5-10). Sites created by the activities of foragers tend to be smaller and less differentiated than those of collectors. We might expect to see site patterning like that illustrated in Models C and D where sites are generally the same size but an elevational continuum is involved (which might represent 'mapping-on' to seasonally available resources). Upper Paleolithic sites in the central Negev studied by Marks and his colleagues (Marks 1976, 1977, 1983c) are described as part of a much larger 'circulating' settlement system which might have encompassed much of the southern Levant. These sites are relatively small (*cf.* above), exhibit little intersite variability in size relative to those of the Middle Paleolithic, and seem to resemble rather closely the 'forager' sites characterized by Binford (1980, 1982). As part of a larger system, the exploitation of scheduled resources through high residential mobility produces, in Marks' view, generally similar small sites and redundant site patterning. Models C and D can be interpreted to represent a

foraging or circulating pattern produced by frequent, 'intra-seasonal' residential moves among elevational zones. The scale for interpreting the model is flexible to accommodate either a small system in a topographically-varied environment or a large one involving a continuum in site location in which relief is only relatively differentiated.

Some Expectations of the Henry Model

Henry's (1979, 1982, n.d.; Henry et al. 1983) research on the South Jordan Plateau has provided a local land use model that emphasizes transhumance or seasonal movement between different elevations. A transhumant strategy allows for scheduling of resource procurement via residential mobility as different seasonal resources become available in different elevational zones. Henry (n.d.) considers the transhumant model, based partly on contemporary Bedouin land use practices, to be useful in describing seasonal movement of foragers in the topographically-varied Ras en-Naqab/Wadi Hisma region on the edge of the South Jordan Plateau (1979, 1982; Henry et al. 1983). Transhumance of this kind is thought to have been an adaptive strategy of very great antiquity in the area. Four distinct versions of the model are presented (for the Middle and Upper Paleolithic, Epipaleolithic and Chalcolithic) that depict seasonal movement between the piedmont and the lowlands — movements that affected local group size, composition and activity patterns somewhat differently in each of these four major chronological periods. Archaeological confirmation of the model is based on variability in site size and exposure, artifact density and the permanency, number and diversity of features (Henry n.d.).

During the Middle, Upper and Epipaleolithic, grossly similar patterns of transhumance are thought to have prevailed although there are differences of degree among the three periods. The Middle and Upper Paleolithic configurations indicate larger, more permanent winter sites located at relatively low elevations — the residential bases of aggregate groups. During

the summer, these groups dispersed to more transitory encampments at higher elevations in the piedmont. The Epipaleolithic pattern is similar in kind to that of the earlier periods, but large winter aggregation sites are located at lower elevations than previously, along the flanks of the Wadi Hisma. Summer occupation of the piedmont continues as before, with a dispersed population making temporary use of a series of small, low-density, limited activity stations with relatively specialised toolkits. This configuration is thought to be associated with wetter, cooler climatic conditions than those that prevailed during the Upper Paleolithic.

The Chalcolithic sees a complete reversal of the preexisting pattern, with large, open-air winter aggregation sites now located in high piedmont environments and small, shallow, ephemeral summer sites located at low elevations along the Wadi Hisma valley walls. The former are characterised by rich and diverse artifact assemblages, midden deposits (implying a degree of sedentism and/or cyclical reoccupation), pottery and architectural features. The latter have impoverished inventories mainly comprising a narrow range of flint artifacts. Henry remarks that the Chalcolithic data closely resemble those of modern (but traditional) land use practices, and imply a degree of dependence on pastoral subsistence activities, supplemented by hunting and gathering (Henry 1982, n.d.).

WADI EL-HASA SITE AREA DATA

Mean site area data in the Hasa indicated a partial trend from large to small sites over time, a pattern partly anticipated because of the probable effects of deflation on (esp.) Lower, Middle and Upper Paleolithic sites. These units have the highest mean areas (7207, 4229, 3584 m² respectively). The major exception is the Epi/PPN combined sample, with a mean of only 752 m², the smallest in the series. All of the statistics associated with the Epi/PPN sample indicate more uniformity in site size than is characteristic of any other time/stratigraphic unit (Table 1).

When (the more reliable) medians are inspected, however, evidence for a trend breaks down. Although the highest median area (2800 m²) is again associated with the Lower/Middle Paleolithic, the Middle, Middle/Upper and Upper Paleolithic medians form a block (800, 975 and 1100 m²) as do those for the Upper/Epipaleolithic and the Prepottery Neolithic (1500, 1650 m²). The median area for the Epi/PPN is again very low (400 m²). The most variable units are the Middle and Upper Paleolithic (Table 1). The modal site size is 'small' (<2500 m²). When area data are arrayed by size classes, it is perhaps significant that all the combined samples (Lower/Middle, Middle/Upper, Upper/Epipaleolithic) have a greater-than-expected number of sites in the 5000-7500 m² category. The fact that they are anomalous in this regard at least lends some credibility to the original classifications of these survey data. One might expect assemblages that bracket time/stratigraphic unit boundaries to be distinct from those of periods of relative stasis.

WADI EL-HASA SITE ELEVATION DATA

In some contrast with the area data, Hasa site elevations exhibit no global trends with most values being quite similar to one another (Table 2). Exceptions are the Middle/Upper Paleolithic, when sites

tended to be located at substantially lower elevations than during the rest of the sequence, and the Epi/PPN, when they were somewhat higher than average. The unanticipated thing about the site elevation data was the demonstration that three distinct kinds of patterns existed: (1) a bimodal symmetrical distribution characteristic of the Lower/Middle and Middle/Upper Paleolithic combined samples, with site clusters at 5-700 and 9-1100 meters, (2) an essentially unimodal symmetrical distribution typical of the Middle, Upper and Upper/Epipaleolithic, with sites concentrated in the 7-900 meter band, and (3) a unimodal asymmetrical configuration characteristic of the Epi/PPN and PPN periods, with the major mode at 9-1100 meters (Fig. 3).

Elevation Data within Tributary Drainages

In some fundamental sense, site elevation data from the individual tributary drainages could be more meaningful than the global data just presented because the profile of equilibrium of the Hasa is fairly marked, and there is (and probably always has been) a substantial topographic gradient from west to east ultimately determined by the nature of underlying geological structures (Bender 1974). When the survey area is partitioned into tributary drainages, a number of important variations in site elevation become apparent.

TABLE 1
Descriptive Statistics for Site Area by Time Periods

Periods	N	Max	Min	Mean	Med	Range	St. Dev.	St. Err.	95 % Confidence	
									-S	+S
PPN	22	15000	16	2773	1650	14984	3552	757	1199	4348
EPI/PPN	35	3600	16	752	400	3584	908	154	440	1064
UP/EPI	18	15000	36	2510	1500	14964	3545	836	747	4273
UPPER	30	48000	25	3584	1100	47975	8748	1597	318	6851
MID/UP	28	35000	75	3038	975	34925	6766	1279	414	5662
MIDDLE	66	43750	12	4229	800	43738	9082	1118	1996	6462
LOW/MID	23	30000	25	7207	2800	29975	9689	2020	3016	11397
ALL	222	48000	12	3468	900	47988	7381	495	2492	4445

TABLE 2

Descriptive Statistics for Site Elevations by Time Periods

Periods	N	Max	Min	Mean	Med	Range	St. Dev.	St. Err.	95 % Confidence	
									-S	+S
PPN	22	1,198	540	844	915	658	165	35	771	918
EPI/PPN	35	1062	515	905	930	547	117	20	864	945
UP/EPI	18	1175	390	797	816	785	188	44	704	891
UPPER	30	965	385	773	803	580	164	30	712	834
MID/UP	28	950	440	680	642	510	176	33	612	748
MIDDLE	66	1200	440	816	866	760	192	24	769	863
LOW/MID	23	1100	515	792	816	585	152	32	726	857
ALL	222	1200	385	806	856	815	178	12	782	829

As one moves from east to west, site elevation patterns tend to become increasingly bimodal as the Ḥasa drainages itself becomes more deeply entrenched. This trend does not continue uninterrupted, however, as the westernmost tributary wadis (eth-Thamad, 'Ifra), although deeply dissected, are characterized by unimodal (eth-Thamad) and very weakly bimodal ('Ifra) distributions. Figure 4 is a series of histograms of site elevation data for the tributary drainages. It illustrates the relative concentration of sites between 800 and 900 m in the drainage of the Wadis er-Ruweḥi and Abu er-Riwaq (Drainage 1) towards progressively bimodal distributions in the Wadi 'Ali through the Wadi el-La'ban (Drainages 4-6) (and to some extent in the Wadi 'Ifra [Drainage 8]). Elevational ranges in the western, dissected part of the wadi are more extreme. The solid line in Figure 4 indicates the elevation of the actual course of the Ḥasa and shows site elevation relative to the wadi bed itself. The dashed line indicates the maximum elevations in each of the tributary wadis. The histograms illustrate actual site locations within each drainage relative to the range of possible locations, as well as to the seasonal water resources in the Ḥasa floodplain.

Mean elevations for each drainage were also computed for comparative purposes. These statistics indicate that the Wadis eth-Thamad and 'Ifra (Drainages 6,7) have the lowest means (589, 694 m

respectively), although they also have the greatest potential for elevational variability in site location. Site locations in these wadis favoured lower elevations nearer the Ḥasa, while the Wadis Aḥmar, 'Ali and Ja'is (Drainages 3-5) have a larger proportion of sites at upper elevations and only a few sites close to the Ḥasa floodplain (means are 885, 881 and 837 m respectively). The dichotomous pattern of site elevations in these wadis, and in the adjacent Wadi el-La'ban (Drainage 6), seems to be a significant datum, suggesting the possibility of seasonal movement and/or major temporal differences in site locations within (and possibly across) these adjacent drainages (3-6). Site locations may have varied over time in response to climatic changes affecting elevationally-determined belts of springs and vegetation associations. Topographic factors such as steep gradients and canyons found in parts of some drainages (esp. in the Wadis 'Ali, 'Anmayn and Ja'is) might have precluded site locations at some elevations, but in others (e.g., the Wadi el-La'ban and at the eastern end of el-Ḥasa) no topographic features are evident that could be invoked to explain the absence of sites at certain (esp. intermediate) elevations (see Coinman et al. 1986 for further discussion of within-drainage elevation data).

BIVARIATE COMPARISONS

When size and elevation are considered together, and time is ignored, the 'mid-

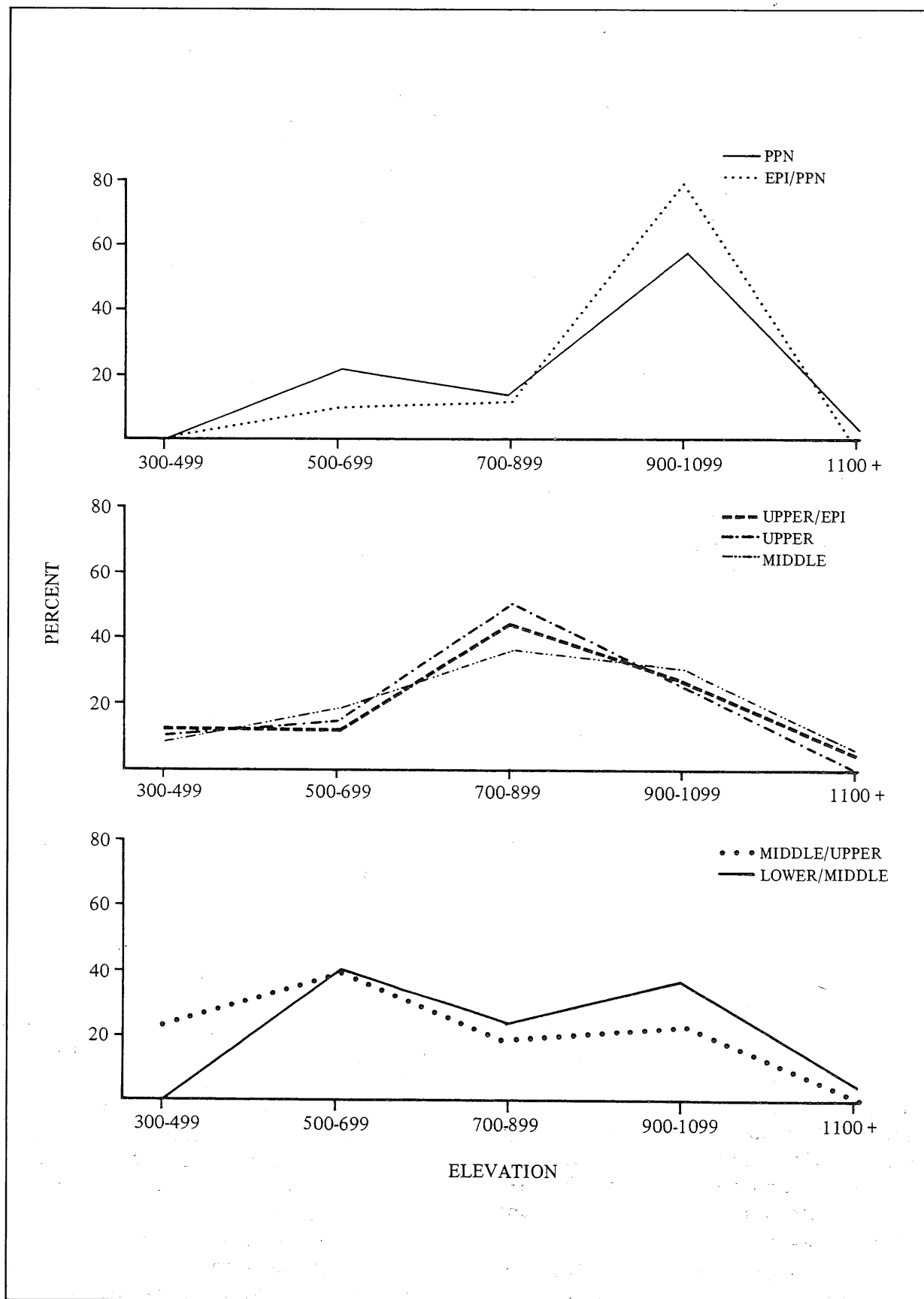


Fig. 3 Global site elevation distributions by time period. The graphs show the percentage of sites represented in each of five class intervals. Graphs of similar shape are grouped together.

dle' drainages (where relief is most marked) exhibit two contrasting patterns. In the Wadis Aḥmar and 'Ali (Drainages 3,4), the pattern most closely resembles Model F. There are many small sites and a few large ones concentrated at higher elevations. The size distribution is bimodal, but there is little differentiation in terms of elevation (although there are a few 'low' sites in both drainages). The Wadis 'Anmayn/Ja'is and el-La'ban (Drainages 5,6) show a Model C type configuration with a bimodal distribution of mainly small sites at high and low elevations.

The global bivariate scatterplots and their centroids indicated that the Middle, Upper, Upper/Epipaleolithic and PPN samples were all fairly similar to one another, being characterized by a predominance of fairly small sites at medium to high elevations (Figs. 5,6). The Lower/Middle, Middle/Upper and Epi/PPN samples were anomalous with respect to the central grouping and also different from one another.

The Lower/Middle Paleolithic sample was distinct in that site areas ranged along a continuum from small to very large. Since many of these sites are deflated to various degrees (MacDonald et al. 1983), some very large sites are perhaps to be expected. The fact that they are not concentrated at higher elevations seems to contradict assertions that the oldest sites in the Ḥasa drainage tend to be found on *cuestas* and ridge crests (MacDonald et al. 1983). The Middle/Upper Paleolithic sample was characterized by a predominance of fairly small sites distributed from very low to high elevations. This unit was remarkable for a virtual absence of very large sites. The Epi/PPN combined sample had large numbers of very small sites, no medium or large sites, and a strong tendency for sites to be concentrated at higher elevations than previously.

These results indicate that Wadi el-Ḥasa experienced three major shifts in settlement, and by implication adaptation, during the time intervals corresponding to the Lower/Middle, Middle/Upper and Epi/PPN transitions, when site size and

elevation diverged from those which had been typical of most of the paleolithic and early neolithic. Interestingly, the Upper/Epipaleolithic sample does not deviate from the Upper Paleolithic configuration to any significant degree, implying a continuity of adaptation whatever the differences in the stone tool inventories might mean.

COMPARISONS WITH OTHER LEVANTINE MODELS

How do the Ḥasa data square with expectations under the Marks/Freidel and Henry models? Table 3 is a synopsis of the paleoclimatic sequence for the Late Pleistocene of the central Negev. It also summarizes Marks' observations about settlement pattern characteristics during the various culture/stratigraphic intervals (Clark 1984). Radiating patterns, with good site size differentiation, typify the Middle Paleolithic in the central Negev, whereas circulating patterns with smaller, more uniform sites, are characteristic of the Upper Paleolithic. The Ḥasa data resemble those of the central Negev in that a radiating pattern with good size differentiation is indicated for the Lower/Middle Paleolithic. However, the Middle and Upper Paleolithic in the Ḥasa are both characterized by relative uniformity in site size, while in the Negev this pattern is indicated only for the Upper Paleolithic. The Middle/Upper Paleolithic transition in the Negev marks the shift from a radiating to a circulating pattern, correlated with increased desiccation, and declines in site size, intersite variability and evidence of sedentism. The Middle/Upper Paleolithic combined sample (for it is not really a 'transition') in the Ḥasa shows mainly small, and only a single very large site — essentially an Upper Paleolithic configuration in Marks' terms. The Ḥasa Epi/PPN sample, with no large or medium-sized sites, actually conforms best to Marks' definition of a circulating pattern, at least insofar as 'fit' can be determined from the poorer-quality Ḥasa survey material. In the Negev, a circulating pattern is thought by some to be documented for the Late Natufian, whereas the Early Natufian might represent a brief return to a

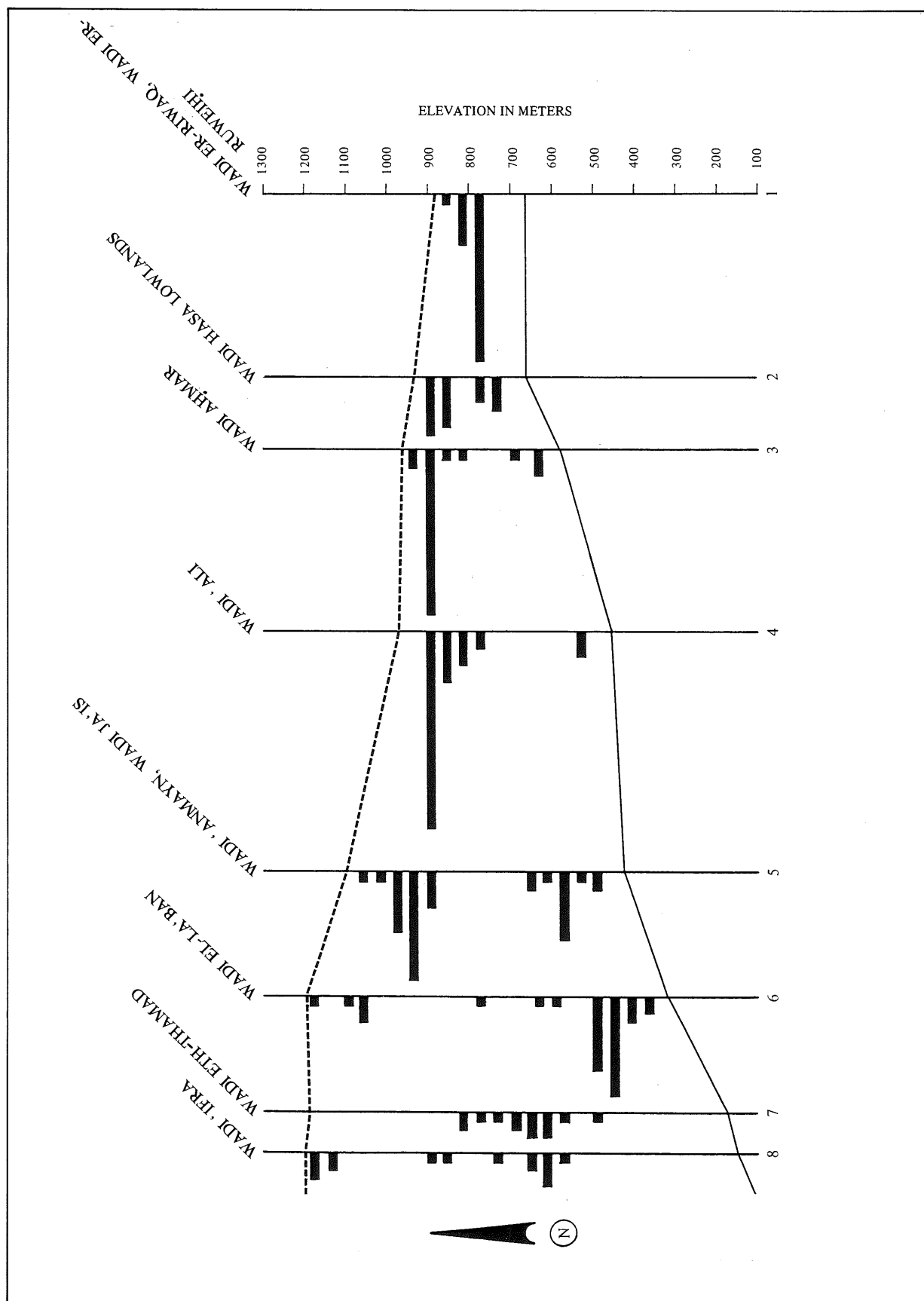


Fig. 4 Histograms of site elevations by tributary drainages with minimum and maximum elevations indicated for each drainage.

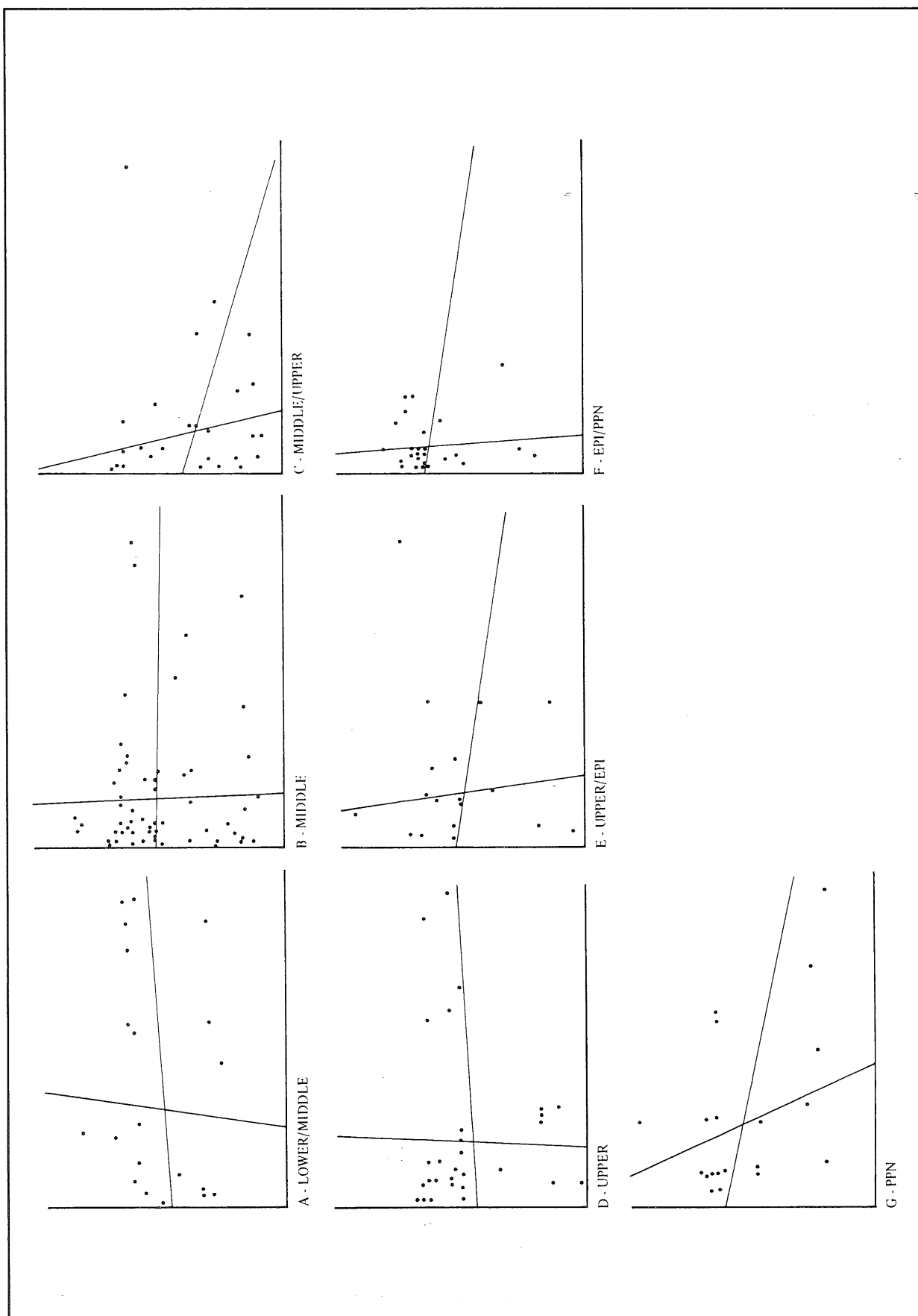


Fig. 5 Global scatterplots of site size and elevation for (a) the Lower/Middle, (b) Middle, (c) Middle/Upper and (d) Upper Paleolithic; (e) Upper/Epipaleolithic, (f) Epipaleolithic-Prepottery Neolithic, (g) Pre-pottery Neolithic.

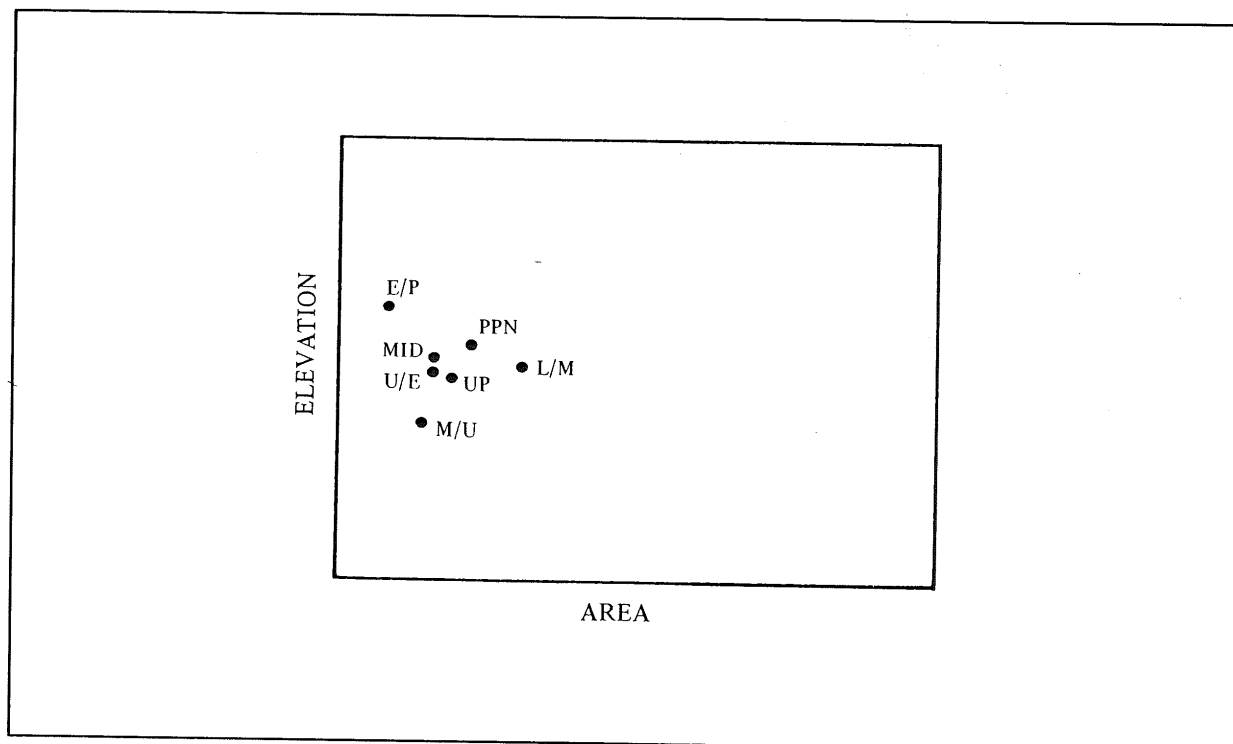


Fig. 6 Group centroids for culture/stratigraphic units (from Fig. 5).

radiating pattern correlated with a brief wetter episode after about 14000 BP (Horowitz 1976, 1979).

Henry's model of paleolithic seasonal transhumance juxtaposes (1) large, semi-sedentary, winter aggregation sites with diverse assemblages located at low elevations with (2) small, limited activity stations with restricted assemblages at high elevations occupied during the summer months by small dispersed groups comprising segments of the larger entities represented by the winter camps. The Chalcolithic saw an apparent reversal of this pattern, linked to the effective implementation of pastoral domestication economies. The 'modal' Ḥasa settlement pattern found during the Middle and Upper Paleolithic, and during the Prepottery Neolithic, indeed tends to replicate Henry's paleolithic model since it exhibits a predominance of fairly small sites at moderate-to-high elevations (the summer camps in the Henry model). While there are large, low sites during the Middle Paleolithic and the Prepottery Neolithic, the Ḥasa data tend to have the largest sites located at 'intermediate' to 'high' elevations, a possible response to the fact that the altitudinal gradient of the Ḥasa drainage system is not so marked as that of

Henry's study area.

None of the combined assemblages fit either of Henry's models very well, but for different reasons. The Lower/Middle Paleolithic lacks a clear dichotomy in site size and elevation. The Middle/Upper and Upper/Epipaleolithic samples are both characterized by a single very large, very high site, the remainder being relatively small and continuously distributed across the elevational range. The Epi/PPN sample lacks large sites altogether; most Epi/PPN sites are high and small. Chalcolithic sites recorded by the Ḥasa survey were not included in this study, but it seems fair to say that nothing resembling Henry's Chalcolithic model (large, high winter sites; small low summer sites) showed up in the various pattern searches undertaken for this essay. If the Chalcolithic pattern is indeed one linked to pastoralism, as Henry suggests, its absence in sites predating the appearance of domestication economies is perhaps to be expected.

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TABLE 3.

TENTATIVE PALAEOCLIMATIC SEQUENCE FOR THE LATE PLEISTOCENE
OF THE CENTRAL NEGEV
(FROM GOLDBERG 1973, 1979, 1981; HOROWITZ 1976, 1979)

ARCHAEOLOGICAL UNITS	SEDIMENTOLOGICAL & VEGETATIONAL CHARACTERISTICS*	AVDAT/AQEV SITES†	MACROCLIMATIC TRENDS	MARKS' (1981, 1983) SETTLEMENT PATTERN CHARACTERISTICS
<p>EPIPALEOLITHIC-EARLY NATUFIAN [ca. 17,000 - 13,000 BP]</p>	<p>periodic very slightly more humid oscillations 17-12,000 BP followed by contradictory evidence: drier conditions post-13,000 BP indicated by the sediments (Goldberg 1981); wetter conditions post-14,000 BP by the pollen (Horowitz 1979); by the late Natufian (ca. 10,500 BP) a drier climate as indicated by pollen data from Rosh Zin (D-16)</p>	<p>D-5, Rosh Zin (D-16) D-101, Ein Aqev (D-31)</p>	<p>DRYING SOMEWHAT WETTER</p>	<p>climatic evidence equivocal; possible brief return to radiating configuration during the early Natufian, followed by circulating pattern in the late Natufian</p>
<p>UPPER-EPIPALEOLITHIC TRANSITION [23-22,000 - 15,000 BP]</p>	<p>continuation of drying trend with arboreal fraction 7% (D-34), then 3% (D-31); NAP indicates slightly wetter conditions than present; erosion beginning ca. 23,000 BP becomes marked after ca. 15,000 BP; formation of colluvial silt lenses after ca. 18,000 BP; maximum aridity ca. 16-15,000 BP</p>	<p>Ein Aqev (D-31) D-34</p>	<p>DRYING</p>	<p>circulating pattern with no significant intersite variability (i.e., more difficult to distinguish between base camps, limited activity stations); repeated reoccupation of sites (but without spatial consistency in activity area placement); more mobile settlement/subsistence system tied to increased importance in scheduling in resource procurement in a more arid environment than during the Middle Paleolithic</p>
<p>UPPER PALEOLITHIC [ca. 45,000 - 20,000 BP]</p>	<p>complex sedimentary sequence with continued alluviation characterised by the accumulation of coarse, then fine terrace gravels, sands (until ca. 27,000 BP), then silts, clayey colluvium (until ca. 20,000 BP); decline in runoff energetics over time; climate somewhat more humid (and considerably more humid 32,000-27,000 BP) until ca. 27,000 BP, when a trend toward greater aridity begins; 16% AP at D-22, D-27; climatic belts 150-200 km S of present locations</p>	<p>D-22, D-27a,b D-100 D-34</p>	<p>DRYING WETTER DRYING</p>	<p>shift to circulating pattern with trend toward increased dessication; decline in site size, intersite variability and evidence of sedentism</p>
<p>MIDDLE-UPPER PALEOLITHIC TRANSITION [ca. 47,000 - ca. 45,000 BP]</p>	<p>new cycle of alluviation with formation of terraces up to 15 m thick; somewhat drier than previously with 17% AP at D-101; NAP much the same as early Mousterian</p>	<p>D-101</p>	<p>DRY BRIEFLY SOMEWHAT WETTER?</p>	<p>radiating settlement/subsistence system with base camps characterised by high artifact density, stratified deposits and the formation of middens, spatially-consistent tool kits; a relatively sedentary pattern or, alternatively, a pattern of reoccupation at regular intervals; logistical strategy possible due to optimal climatic conditions vis a vis the Upper Paleolithic</p>
<p>LATER MOUSTERIAN [ca. 65,000 - ca. 45,000 BP]</p>	<p>drying trend; erosion (wadi downcutting with destruction of many early Mousterian sites), consequently few sedimentary traps for later Mousterian industries</p>		<p>DRYING</p>	
<p>EARLY MOUSTERIAN [90,000 + - ca. 65,000 BP]</p>	<p>wet; formation of gravel terraces and travertines in springs; 25% AP at D-35; channel aggradation followed by colluviation; climatic belts 200-250 km S of present locations</p>	<p>D-35, D-15</p>	<p>WET</p>	

* should be read from bottom to top

† sites not in stratigraphic order within archaeological units

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THE 1985 SEASON AT 'AIN GHAZAL: PRELIMINARY REPORT

by

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Alan H. Simmons

Introduction

In the final days of the 1984 season of excavation at 'Ain Ghazal,¹ two pits were discovered in the Central Field that contained molded fragments of plaster similar in many ways to the cache of human statuary recovered from the site in 1983². Due to the lateness in the season of these discoveries, it was not possible to remove the contents of the pits in 1984; both pits were protected securely and arrangements were made to conduct an emergency rescue excavation in June and July of 1985³.

The excavations in 1985 focused on two trenches of quite different sizes. The first in Sq 3081 was quite small and entailed principally the removal of sterile fill in and around a pit containing the molded plaster fragments exposed in 1984. As a consequence, no cultural information other than the plaster material itself was recovered.

The second trench was more formidable in its dimensions and the variety of its cultural contents. While work was under way by the conservator on the small pit in Sq 3081, a trench measuring approximately 3.0 × 1.5 m was opened in Sq 3282 just to the northwest (Fig. 1) in order to expose the larger statuary cache. Eventually this trench sampled more than 3.2 m of deposits down to sterile basal clay, exposing approximately 1.2-1.4 m of Yarmoukian occupations in the upper part of the sequence and nearly 2.0 m of PPN habitational

episodes in the lower part (Fig. 2). As work progressed on the statuary cache in Sq 3282, the trench was expanded another 2.0 m towards the west to increase the exposure of the Yarmoukian levels. Altogether, the Yarmoukian material recovered in 1985 derived from a maximum area of about 3.5 × 3 m to an average depth of approximately 1.3 m. The PPN excavations sampled a maximum of about 3.0 × 2.0 m (at the bottom of the bulldozer section) with an average thickness of about 2.0 m. The volume of sediments is thus nearly 13.7 m³ for the Yarmoukian period and 12m³ for the PPN layers.

The Statuary Remains

As had been strongly suspected when the pits were discovered in 1984, the fieldwork in 1985 confirmed that both features contained important new evidence of PPNB plaster human statuary. Each collection is described below, although the recovery methods used to remove the statuary in both cases allowed for little detailed examination in the field.

The Statue Head (Sq 3081)

A small depression with dimensions of ca. 40 × 30 × 20 cm had been excavated into sterile basal clay, and in the center of this pit a single plaster human statue head had been placed face-down and covered with a fill of fine clay with inclusions of small fragments of chalk and yellowish

1. Rollefson and Simmons 1985a.

2. Rollefson 1983.

3. The 'Ain Ghazal Archaeological Project, co-sponsored by the Institute of Archaeology and Anthropology of Yarmouk University, received funding from the National Geographic Society (USA); the Department of Antiquities of Jordan; Alia, the Royal Jordanian Airlines; and the Cobb Institute of Archaeo-

logy at Mississippi State University (USA). The staff consisted of the two co-directors; St. John Simpson and Marcia Donaldson (Senior Field Staff); Emsaytif Suleiman (Department of Antiquities Inspector); Ilse Köhler-Rollefson and Ellen McAdam (Senior Laboratory Staff); Lynn Grant (conservator); and Curt Blair (photographer and archaeological assistant).

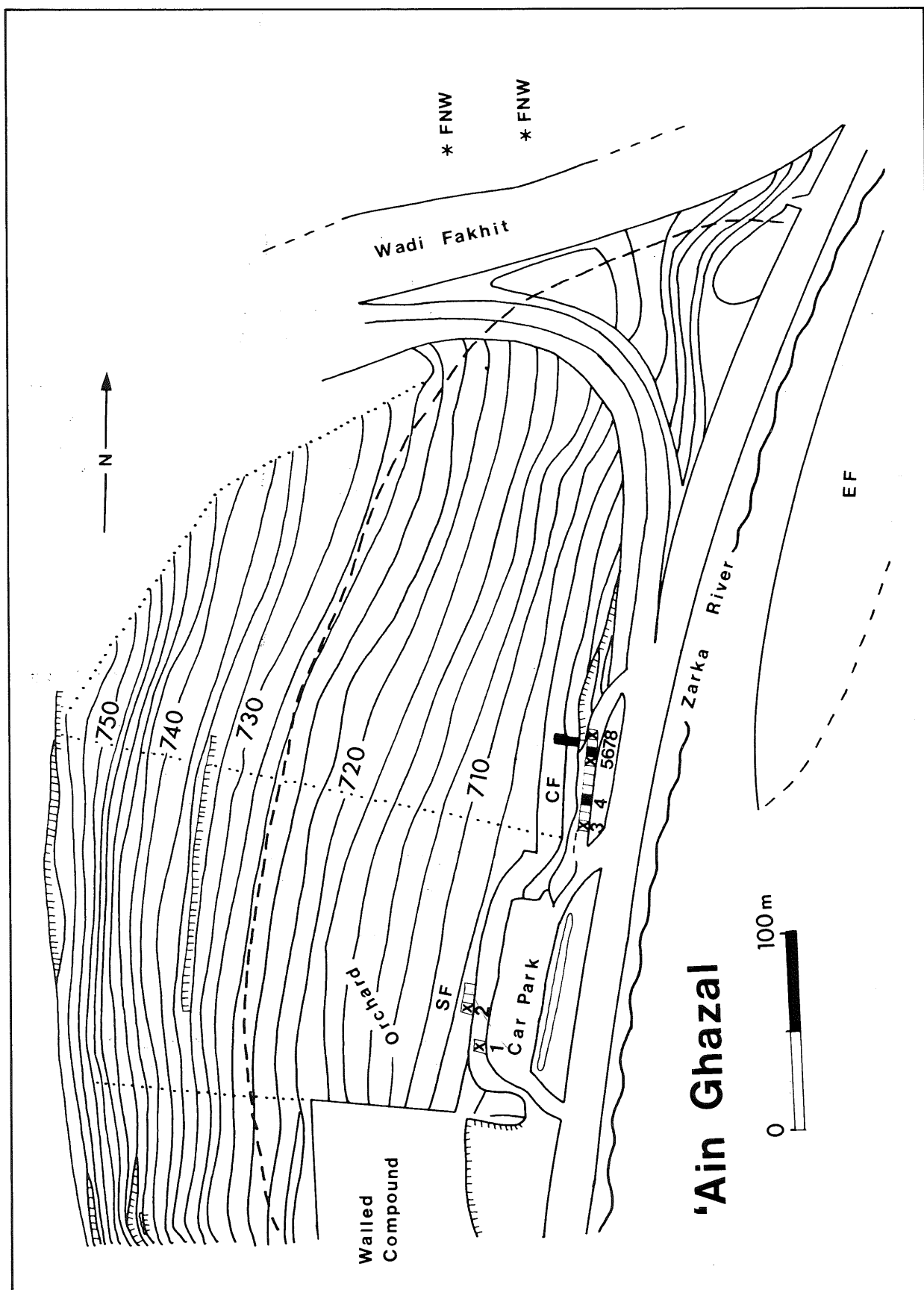


Fig. 1. 'Ain Ghazal site map showing the location of the South Field (SF), Central Field (CF), East Field (EF), and Far Northwest (FNW) sections of the site. Numbered excavation squares show the location of radiocarbon samples referred to in Table 6: 1-Sq 4048; 2-Sq 4452; 3-Sq 3273; 4-Sq 3076; 5-Sq 3080; 6-Sq 3081; 7-Sq 3282; 8-Sq 3083. (Drawing: Deborah Fridell).

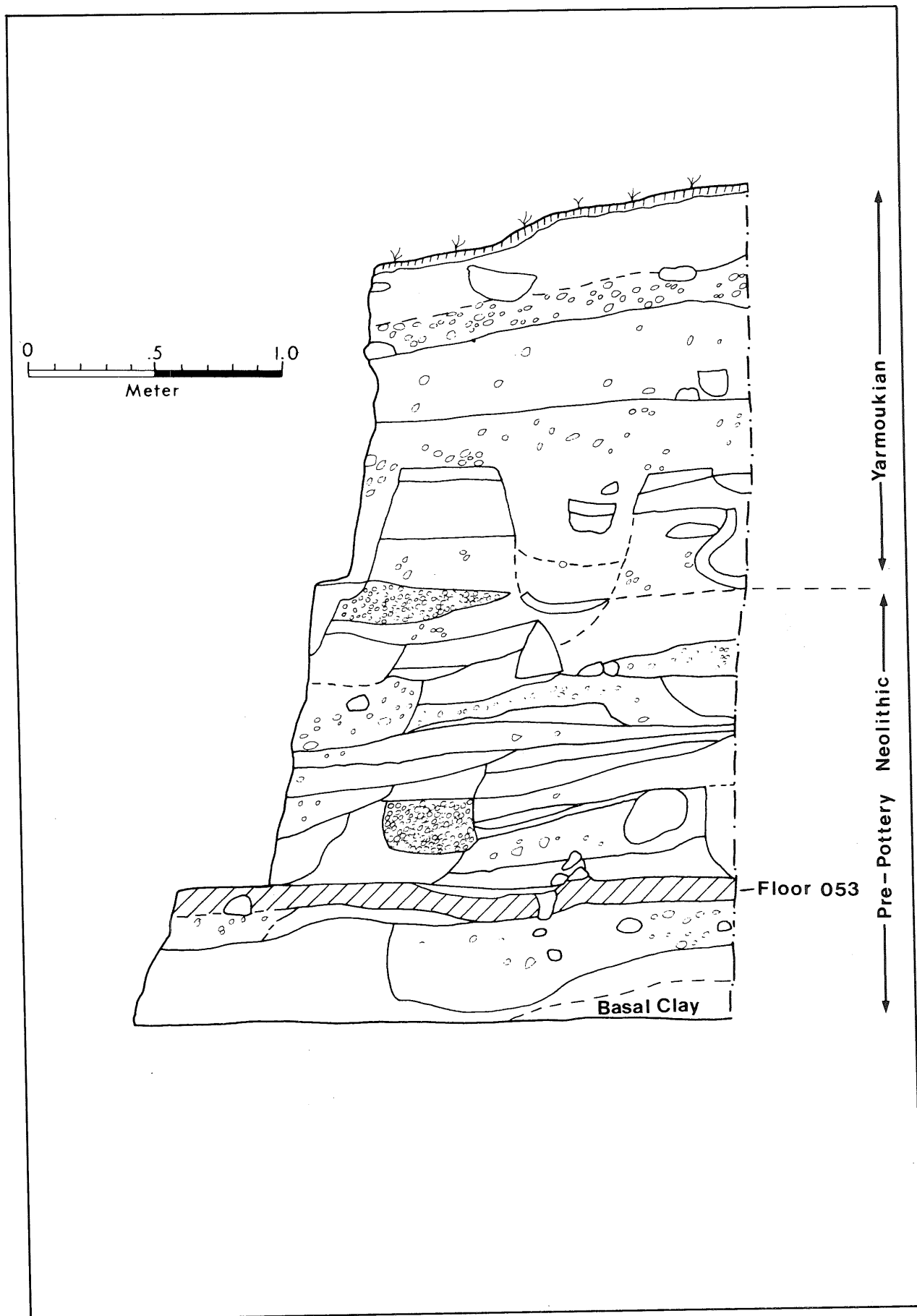


Fig. 2. Stratigraphic sequence in south baulk of Sq. 3282. The statuary pit cut through Floor 053 near the bottom of the section. (D. Fridell).

floor plaster. This interment was later covered by redeposited clay that eventually became compacted, characterized as a stable surface for an unknown period of time. Several stages of domestic building construction occurred subsequently. From the contents of a stone-lined pit stratigraphically later than the statuary deposit, an abundant charcoal sample yielded a date of 7100 \pm 80 b.c. (see below), indicating that the statue head was of an even older age. To our knowledge, this makes the 'Ain Ghazal specimen the oldest known statuary in the Near East, almost 1,000 years earlier than the date suggested for the material from Jericho⁴.

Due to the weight of successive deposits above the pit, the hollow statue head collapsed into itself. Several *in situ* fragments suggest that the original ear-to-ear diameter measured approximately 20-25 cm, which would be within the range of the dimensions for heads in the statuary cache from 1983. Other similarities with the 1983 material are revealed by corded impressions on the interior surface, indicating a similar method of construction⁵, and the molded ear fragment (left side?) is also similar in treatment⁶. Bitumen eyeliner surrounded one eye that still retained a thin circular disc of bitumen representing the iris, features also noted among the 1983 statuary cache. But there were also some distinctive features: the nose of the head from Sq 3081 appears to be less stylized and more detailed in its modelling, and the entire exterior surface of the head appears to have been 'washed' with a dilute suspension of a red pigment, giving the whole sculpture a characteristic pinkish hue not seen in the 1983 objects.

The Large Cache of Statuary

The second statuary cache was located

beneath approximately 2.5 m of cultural deposits in Sq 3282 (Figs. 1 and 2). While its position deep in the section required extensive time to expose and prepare the objects for removal, it also afforded the opportunity to obtain a complete stratigraphic sequence of occupations for this part of 'Ain Ghazal.

Like its counterpart in 1983, this collection of plaster statues and busts was placed carefully in two tiers in a large pit (*ca.* 1.5 \times 1.0 m) that had cut through the floor of an abandoned house. The upper layer had evidently been exposed some time later in view of the relatively poor condition of preservation: the statuary was badly cracked, and the surfaces had developed a deep gray colour as the result of the presence of an overlying and even intermingling ashy deposit. The southeastern corner of the cache was badly damaged in antiquity due to an intrusive pit, and the disturbance to this part of the statuary group was further aggravated by bulldozers that cut through the outer edge of the pit.

In-field conservation efforts concentrated on the recovery of loose statuary fragments; the removal of unstable rubbly components in the pit that may have caused additional damage during the transportation of the cache to the laboratory; and on the consolidation of exposed but relatively intact figures. Less of the pit contents was exposed compared to the 1983 cache, and thus less information is available at this time. Nevertheless, several points can be made that show both shared and distinctive features between the two major statuary collections.

The 1985 group was rigidly aligned along a NE-SW axis, with heads oriented to the SW end of the pit⁷. Busts and statues were mingled together in the cache from Sq 3282, not in separate groups as was the

4. Kenyon gave a date of 6250 B.C. for the end of the PPNB sequence at Jericho (Kenyon 1957: 74), and her notes suggest that Garstang's statuary must have dated to this part of the sequence (Kenyon 1981: 268; Garstang 1935:1936). However, subsequent radiocarbon dates for Jericho have tended to confuse the absolute chronology to

some degree (Kenyon 1971: 332; 1981: 502-504), although it still appears that the Jericho statuary probably dates to the second half of the 7th millennium.

5. Rollefson 1983: 30.

6. See K. Tubb in Rollefson *et al.* n.d.

7. Compare Rollefson 1983: 30 and Fig. 1.

case in 1983. Because of the damage incurred to the upper layer, it was not always possible to distinguish busts and statues, but a minimum of seven figures could be detected; how many more may have occupied the SE part of the pit could not be estimated in the field (Pl. I, 1). The lower layer of statuary, which was in an excellent state of preservation, required less preparatory work, so little is known of the composition of this tier beyond the unmistakable outlines of at least four more busts or statues (Pl. I, 2).

The method of statue and bust manufacture appears to be congruent with the figures of the 1983 group⁸, but details concerning cosmetic treatment of the faces and other areas of the bodies are very scanty. The presence of bitumen eyeliner was noticed on several faces in the upper tier, but the presence of green diopside powder on the lower eyeliner segment did not appear to be characteristic of the 1985 statuary⁹. One iris was visible, and initial impressions suggest it may be more angular in shape than the circular irises of the 1983 cache; on the other hand, this may simply represent a post-depositional distortion of this plastic feature. A small bust face from near the NE end of the cache appears to share the distinctive "pink wash" visible on the single head from Sq 3081.

Although it is clear that the large cache from 1985 is from a later stratigraphic context than the single head from Sq 3081, the temporal relationship of both to the 1983 group of statues and busts is difficult to determine at the present time. Charcoal samples from Sqs 3282 and 3076 should provide absolute dates in the near future, but for now it appears probable that both large groups come from the early to middle part of the 7th millennium. In any event, it is evident now that a highly sophisticated system of ritual and religion was developed at a very early part of 'Ain Ghazal's history, and that this tradition continued to

play a major role in the daily and seasonal lives of the community for a considerable amount of time.

Other Artifact Samples

The fieldwork in 1985 produced another formidable collection of artifacts and other archaeological information despite the small scale of labor invested during the season. At the present time preliminary analysis of the data is still under way, so only a small amount of interpretation can be relayed.

Chipped Stone Artifacts

We have estimated that as many as 25,000-30,000 chipped stone artifacts were collected in 1985, and of this amount just more than 10,000 have been sorted into major artifact classes (Table 1) and classified according to major tool types (Table 2). For the PPN layers, the analyzed material represents samples from 33 of the 81 excavation loci (40.7% of the PPN samples). (It should be noted here that a particularly dense "chipping floor", noticeably rich in debitage but poor in tools, was found near the bottom of the PPN sequence, this locus has not yet been examined). For the Yarmoukian artifacts, 14 of the 39 early ceramic loci (35.9%) have been sampled so far.

The figures for the PPN loci in Table 1 compare favorably with the results of the analysis of the 1984 artifacts from the Central Field¹⁰, especially in terms of the blade:flake ratio. Cores were more numerous in the 1985 season, and tools were nearly twice as frequent as in the 1984 collections. Among the Yarmoukian artifacts, blades are substantially underrepresented in the 1985 sample compared to the Yarmoukian layers in the South Field¹¹, although this may reflect sample bias in what has been examined so far and/or in the small area investigated in 1985.

Among the tools that have been classi-

8. Rollefson 1983: 30-32.

9. See Note 6.

10. Rollefson and Simmons 1985b: Tables 1

and 2.

11. Phases S-I and S-II in Tables 1 and 2, Rollefson and Simmons 1985b.

Table 1. Absolute and relative frequencies of chipped stone artifact classes from the 1985 excavations at 'Ain Ghazal (analyzed samples only).

Class	PPN			Yarmoukian			Ex Situ
	<i>n</i>	%	%'	<i>n</i>	%	%'	<i>n</i>
Blades	1290	45.9	52.0	425	27.8	31.7	823
Bladelets	133	4.7		77	5.0		135
Flakes	1189	42.3	48.0	915	59.9	68.3	1386
C. T. E. *	89	3.2		23	1.5		58
Burin Spalls	63	2.2		15	1.0		18
Other Flakes	9	0.3		6	0.4		12
Cores	38	1.4		66	4.3		89
(Tools)	(397)	(14.1)		(154)	(10.1)		(424)
Subtotals	2811	100.0		1527	99.9		2521
Microflakes	303	(8.3)		317	(12.0)		611
Debris	528	(14.5)		793	(30.0)		1251
Paleolithic	4	(0.1)		7	(0.3)		8
Totals	3646			2644			4391

* C. T. E. refers to core trimming elements.

fied (Figs. 3-5), the 1985 PPN samples agree well with the Central Field tools from 1984¹², although burins and notches are somewhat less frequent at the expense of projectile points and knives. Among the burins, simple types (especially transverse burins) continue to dominate this tool class significantly (Table 3). For the Yarmoukian period, burins and truncations are less frequent than among the S-I and S-II phases in the South Field, although large projectile points, scrapers, and bifacial tools are relatively more numerous. Yarmoukian burins continue to be characterized by complex and truncation types in distinct contrast to PPN burin configurations.

It will be recalled that in the South Field excavations in 1984, Phase S-III represented an aceramic Neolithic series of occupations that differed sharply in a variety of important ways with PPNB cultural material, including chipped stone arti-

cats. In the analysis of the 1985 samples such distinctions have not emerged, even though the uppermost PPN strata have been reasonably well sampled. It is suspected that the absolutely small area of the late PPN sequence investigated in 1985 (less than 6 m²) may have contributed to this lack of resolution.

Groundstone Artifacts

The distribution of groundstone artifacts is presented in Table 4 and little additional comment is required here other than to note the absolute rarity of such artifacts in either the PPN or Yarmoukian layers.

Small Finds

Table 5 lists small finds and other artifacts recovered during the 1985 season. A variety of bone tools was present in the

12. Cf. Rollefson and Simmons 1985b: Table 4.

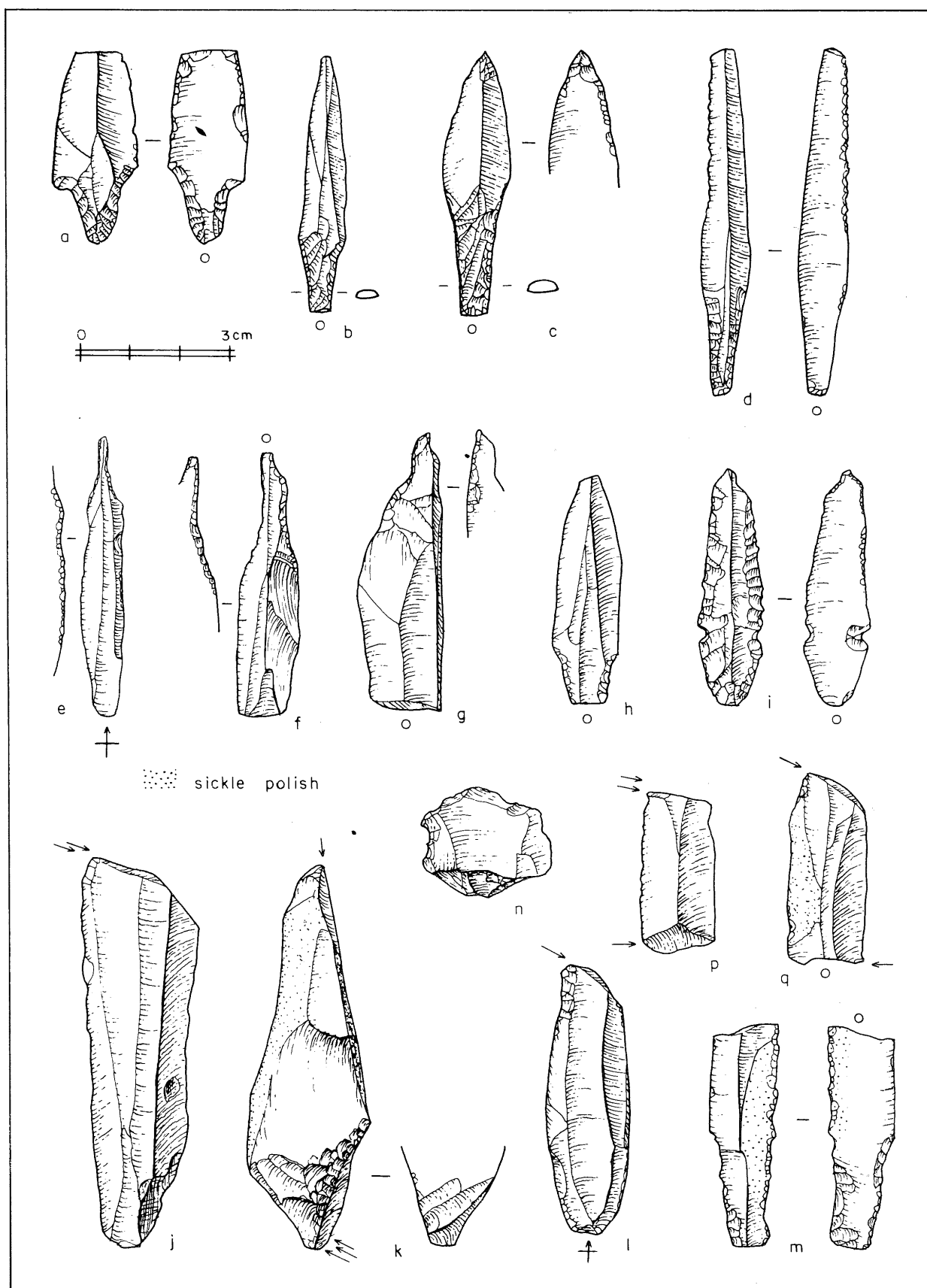


Fig. 3. PPN artifacts from 'Ain Ghazal, 1985. a-c, h-i) projectile points; d) tanged microdenticulate "saw"; e-f) drills; g) borer; j, l, p-q) transverse burins; k) opposed burin; m) tanged sickle blade; n) wedge. (Drawing: Brian Byrd).

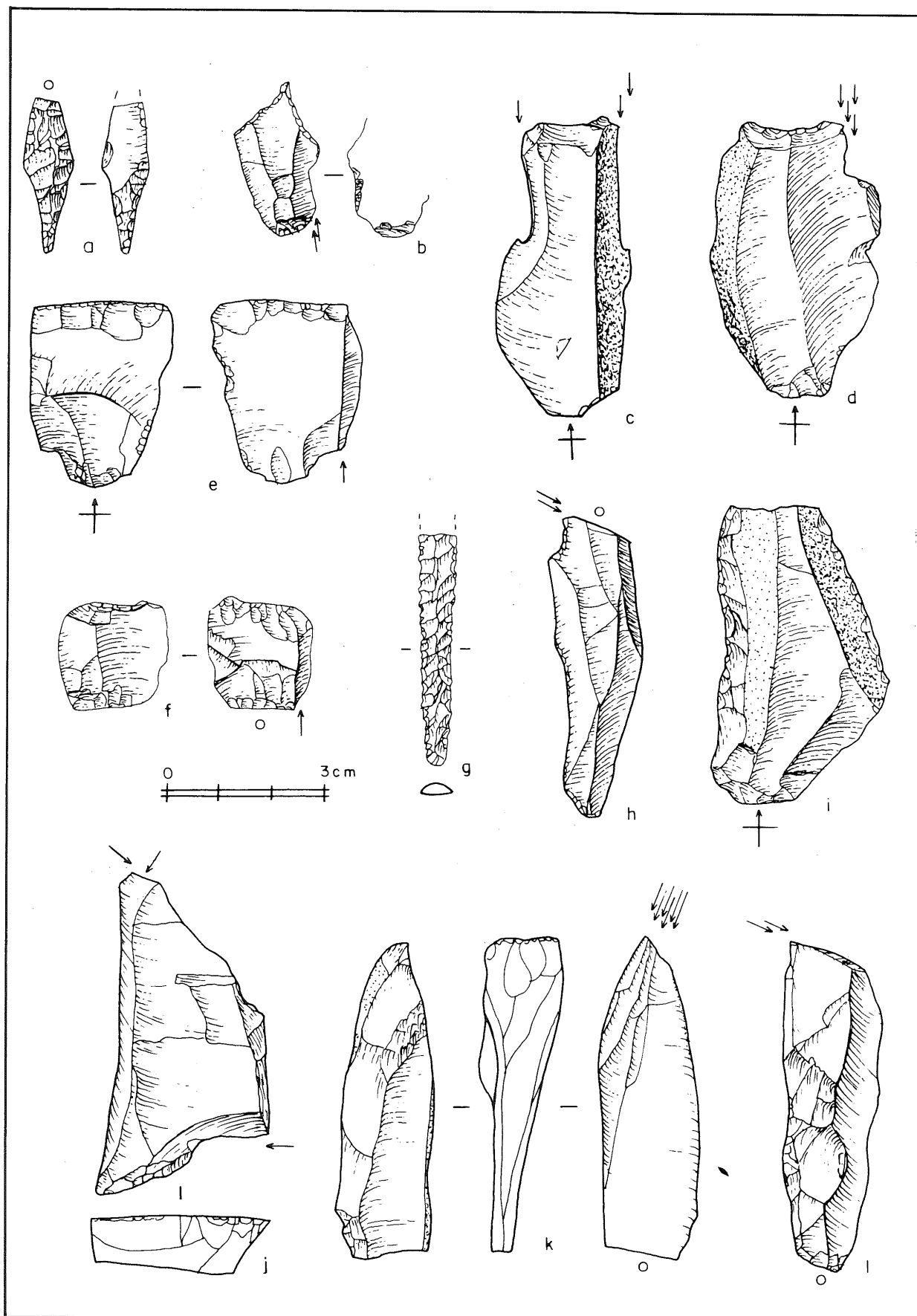


Fig. 4. Flint artifacts from 'Ain Ghazal 1985. a) arrowhead; b) borer; c-d) burins on truncations; e-f) wedges; g) microdenticulated "saw" with slight sheen; h, l) transverse burins; i) sidescraper; j) opposed burin; k) "other" burin. PPN: g-l; Yarmoukian: a-f. (B. Byrd).

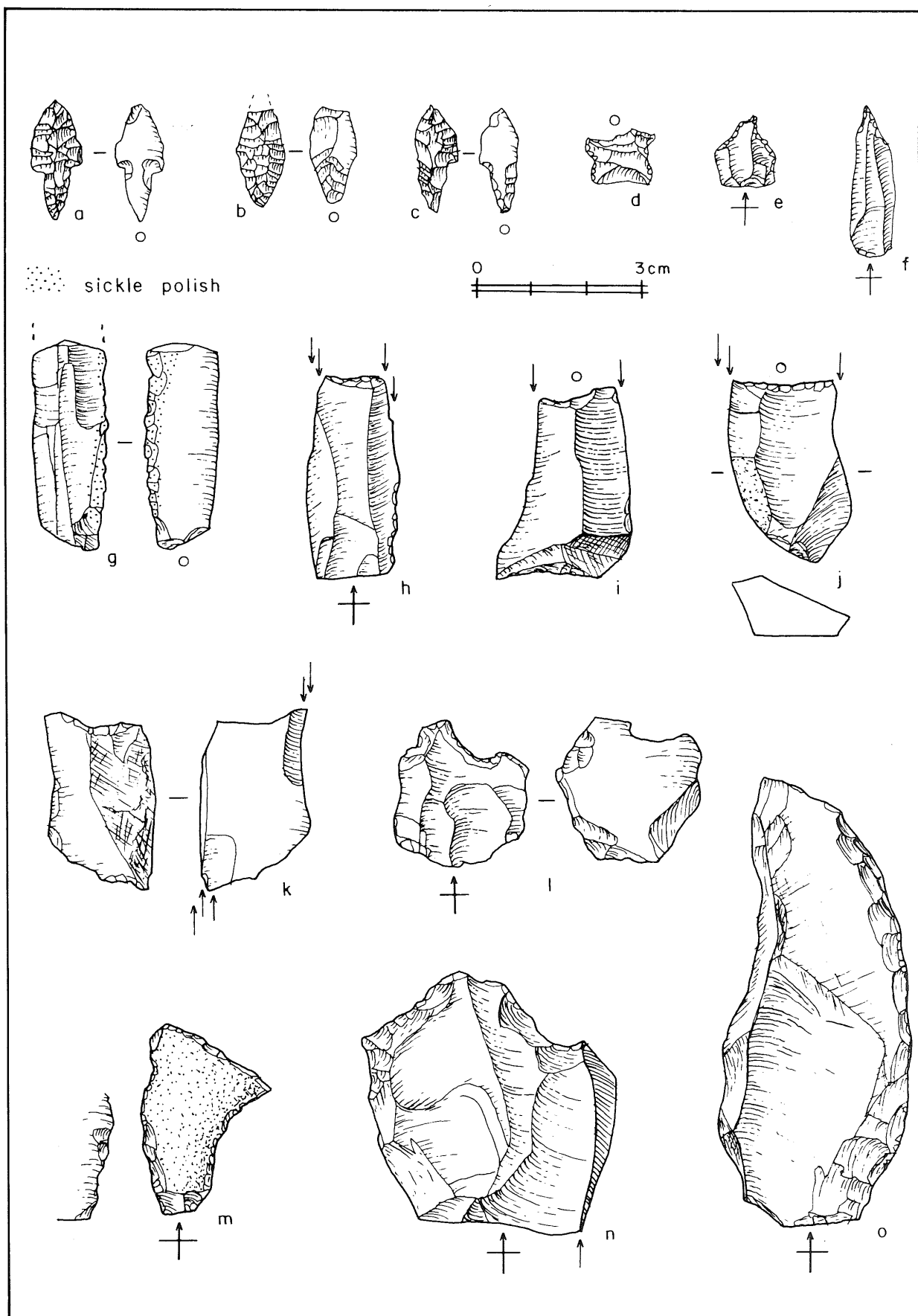


Fig. 5. Yarmoukian artifacts from 'Ain Ghazal 1985. a-c) arrowheads; d-f) borers; g) truncated sickle blade; h-k) truncation burins; l) wedge; m) cortical scraper; n) "other" (sidescraper + notch + burins); o) sidescraper. (B. Byrd).

Table 2. Absolute and relative frequencies of tool types from the analyzed samples of the 1985 excavations at 'Ain Ghazal

<i>Tool Type</i>	<i>PPN</i>		<i>Yarmoukian</i>		<i>Ex Situ</i>
	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>
Spear Points	20	6.2	5	4.0	12
Arrowheads	-	0.0	4	3.2	3
Sickles	29	9.1	3	2.4	10
Burins (all types)	122	38.1	31	25.0	111
Truncations	12	3.8	3	2.4	22
Scrapers (all types)	18	5.6	14	11.3	61
Denticulates	21	6.6	9	7.3	22
Notches	21	6.6	13	10.5	25
Perforators/ Awls/ Drills	22	6.9	16	12.9	31
Bifacial tools	22	6.9	15	12.1	24
Knives	14	4.4	4	3.2	8
Backed Blades	6	1.9	5	4.0	7
Tanged Blades	4	1.2	-	0.0	2
Other	9	2.8	2	1.6	4
Subtotals	320	100.1	124	99.9	342
Retouched Blades	12	(3.6)	2	(1.6)	11
Retouched Flakes	-	(0.0)	-	(0.0)	4
Subtotals	332		126		357
Utilized Blades	38	(9.6)	4	(2.6)	18
Utilized Flakes	8	(2.0)	7	(4.5)	21
Indeterminate	19	(4.8)	17	(11.0)	28
Totals	397		154		424

PPN layers although such implements were decidedly rare in Yarmoukian contexts, similar to the situation in the Central and South Field samples in 1984.

Although small clay animal figurines were few in the sediments excavated in 1985, human figurines were well represented in the PPN deposits. One of these is a small standing figure from the fill surrounding the statuary cache in Sq 3283 (Pl. II,1). The face has been badly damaged, as has the chest and abdomen, but it appears to be a person of indeterminate sex in a slightly stooped posture with both arms placed behind the back either in a relaxed attitude or to support some ill-

defined load. Another figurine, broken across the chest, appears to be a robust male (Pl. II,2) with well-developed shoulder and pectoral muscles. The delicately modelled head shows details of the brow, nose, and jawline, and the eyes at one time may have been inset with some other material.

Finally, another figurine is pervaded with pathos (Pl. II,3): lying on its back with the right arm and hand placed over the abdomen, this individual appears to reflect a moment of extreme grief in the attitude of its raised head comforted by the left hand wrapped across the face. Whatever may have been the painful inspiration cap-

Table 3. Absolute and relative frequencies of burin types (above) and burin classes (below) among the analyzed samples from the 1985 excavations at 'Ain Ghazal.

<i>Type</i>	<i>PPN</i>		<i>Yarmoukian</i>	
	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Simple	3	2.5	1	3.2
Angle	2	1.6	1	3.2
Transverse	64	52.5	4	12.9
On Break	7	5.7	-	0.0
Straight Dihedral	3	2.5	-	0.0
Canted Dihedral	8	6.6	7	22.6
Core	1	0.8	-	0.0
Double	5	4.1	4	12.9
Opposed	14	11.5	4	12.9
Concave Truncation	2	1.6	4	12.9
Convex Truncation	3	2.5	2	6.5
Oblique Truncation	2	1.6	-	0.0
Combination	3	2.5	1	3.2
Indeterminate	5	4.1	3	9.7
Totals	122	100.1	31	100.0

					<i>X</i> ²
Simple Burins	77	65.8	6	21.4	.001
Complex Burins	33	28.2	16	57.1	.01
Truncation Burins	7	6.0	6	21.4	.02
Totals	117	100.0	28	99.9	

tured in this remarkable object will never be known, but it is powerful testimony to the emotional range of early Neolithic artists.

For the other small finds listed in Table 5, little is noteworthy in comparison to earlier seasons at 'Ain Ghazal except to mention that small geometric objects of clay were rare as were jewelry pieces and shell.

Architecture

Except for occasional fragments of plaster flooring in the upper parts of the PPN sequence, the only substantial architecture in Sq 3282 was the house through which the statuary pit had been dug. The excava-

tion trench located the north, west, and south walls of the western portion of the structure, but how much had been destroyed to the east by bulldozers is not determinable. The area preserved within the remaining section was approximately 5 m (NS) by 1.9 m (EW) in extent. The construction techniques appeared to be standard PPNB in character, with walls of stone and a floor of lime plaster polished and bearing sketchy evidence of red ochre paint. Two and possibly three large postholes (each larger than 40 cm in diameter) evidently supported roof beams, while at least five smaller postholes may have contained secondary structural members. No evidence of an interior hearth was found in this room, but if one had existed, it was

Table 4. Groundstone artifacts from the 1985 excavations at 'Ain Ghazal

	PPN	Yarmoukian	Ex Situ
<i>Artifact Class</i>	<i>n</i>	<i>n</i>	<i>n</i>
Muller, basalt	2	-	6
Muller, other stone	-	2	2
Quern	2	-	-
"Stone Bowl" mortar	-	2	-
Pestle, basalt	-	-	1
Pestle, miniature	-	1	-
Burnishing stone	1	1	1
Spindle whorl	-	-	1
Stone weight	1	1	-
Perforated stone	1	1 ^a	1
Grooved stone	1 ^b	-	1 ^b
Incised stone	-	1	-
"Worked stone"	-	1	-
Basalt fragments	-	-	2

a: basalt

b: "shaft straightener"

probably destroyed by the statuary pit. The poor condition of the plaster floor reflects a relatively long period of exposure to weathering, indicating that the building had been abandoned long before the statuary was placed beneath the floor.

In nearby Sq 3285 (10 m to the north of Sq 3282), remnants of a house severely damaged by bulldozers were exposed in the section, and the fill in this structure was cleared down to the floor. Constructed immediately on top of sterile basal clay (and thus somewhat earlier in date than the house in Sq 3282), the north, west, and south walls enclosed a space 3.5 m (NS) by 1.5 (maximum EW) in which a replastered floor remained. In the NW corner of the room a small Late Acheulian biface leaned against the wall. Typical of PPNB architecture, the floor surface reflected a singular style of decoration. The central stretch of the floor was covered with repeated red "commas" applied using a finger-painting method; the northernmost reaches of the floor were too badly eroded to detect any designs, but near the SW corner of the

room was a small red ellipse (*ca.* 60 × 30 cm) of solid red color surrounded by an area of smudges and irregular patches of red paint.

The Yarmoukian layers in Sq 3282 contained abundant evidence of architecture, and it all indicates that these later inhabitants stayed at 'Ain Ghazal in relatively flimsy, temporary structures. Several examples of semi-subterranean pit dwellings were uncovered, some with interior storage features (one of which had "beehive" contours) and possible interior partitions associated with puddled mud floors. One structure included a poorly preserved plaster-lined pit that may have been an interior hearth. No structure was completely exposed, so it is not possible to estimate the size of these shelters with any accuracy, but one appeared to extend at least 3 m in maximum dimension. Although more detailed analysis is necessary to understand the Yarmoukian situation more clearly, the general picture appears to be consistent with periodic, perhaps seasonal visits to 'Ain Ghazal, perhaps in con-

Table 5. List of small finds from the 1985 excavations at 'Ain Ghazal.

	<i>PPN</i>	<i>Yarmoukian</i>	<i>Ex Situ</i>
	<i>n</i>	<i>n</i>	<i>n</i>
<i>Bone Tools</i>			
Spatulas	3	1	5
Awls	8	1	3
Needle/Pin	1	-	-
Incised bone fragment	-	-	1
Worked fragment	3	1	-
<i>Clay Objects</i>			
Human figurine	5	-	-
Equid (?) figurine	-	1	-
Unidentified animal	1	-	1
Sphere	3	1	1
Spindle whorl	-	1	-
Potsherd (sun dried)	1	-	-
Molded fragment	3	1	1
Reed-impressed fragment	1	-	-
<i>Jewelry</i>			
"Bracelet"/Circular pendant	1	2	8
Greenstone bead	1	-	-
"Blackstone" bead	1 ^a	-	-
Fossil bead	1 ^b	-	-
Greenstone fragment (worked)	-	-	1 ^c
Carnelian fragment	-	1 ^d	-
<i>Other</i>			
White ware fragment	-	1	-
Sweetclam shell	1	-	-
Cockle shell	-	1	-
Unidentified shell	1	-	1
Fine-grained greenstone	-	-	1

a: Burned, identification difficult

b: Blastoid-like

c: Malachite?

d: Unworked chunk

junction with the annual rounds associated with nomadic pastoralism¹³.

Radiocarbon Dates

We have recently received a series of 14 radiocarbon dates for samples from the Central and South Field excavations in

1984 that provide a firm basis for interpreting the earlier history of the occupation of 'Ain Ghazal (Table 6).

The dates from the Central Field (Sqs 3273 through 3083) reveal that the village was established about 7250 b.c. and maintained a long period of subsequent development. By about 6500 b.c. the village sud-

13. Cf. Köhler-Rollefson *et al.* n.d.

Table 6. Radiocarbon dates from samples excavated in 1984 at 'Ain Ghazal (cf. Fig. 1)

<i>Sample</i>	<i>Square</i>	<i>Local Phase*</i>	<i>Years b. c.</i>	<i>Comments</i>
GrN-12959	3076	I/II	7050 \pm 90	Older than the 1983 statuary cache
GrN-12960	3080	III	7080 \pm 80	
GrN-12961	3080	II	6980 \pm 60	
GrN-12962	3080	I	6730 \pm 190	Inverted, too young, note \pm range
GrN-12963	3081	IV	7020 \pm 80	
GrN-12964	3081	IV	7020 \pm 80	
GrN-12965	3081	III	7100 \pm 80	Inverted, but \pm overlaps other samples.
GrN-12966	3083	VI	7250 \pm 110	Large \pm overlaps earlier samples in this square
GrN-12967	3083	IV	6980 \pm 80	Later than the skull cache
GrN-12968	3083	III	7020 \pm 110	Overlaps with \pm of other samples in this square
GrN-12969	3273	VII	6860 \pm 80	
GrN-12970	3273	V	6700 \pm 200	Inverted, but \pm overlaps with other samples in this square
GrN-12971	4048	-	6510 \pm 90	Earliest evidence of occupation in South Field
GrN-12972	4452	-	6215 \pm 50	Base of 15-m building

* N.B.: "Local Phase" refers to the phase within each of the excavation squares and is not necessarily equivalent to the phases seen in other excavation units.

denly increased in size, based on the sample from just above sterile basal clay in Sq 4048 in the SW corner of the car park (Fig. 1). Population continued to increase during the later part of the 7th millennium, and by 6200 b.c. the construction of the 15-m building had begun in the South Field as shown by the date from a log at the base of the structure (Sq 4452). This date also provides a *terminus post quem* for the emergence of the final PPN development (the "PPNC") at 'Ain Ghazal contained in the occupational series above the floor of the 15-m complex¹⁴.

Several other radiocarbon samples are still being processed at the University of Arizona NSF Linear Accelerator Facility,

including two samples from PPNC contexts and one sample from the East Field test trenches. When the results are finally made available, the chronological framework for this important cultural development at 'Ain Ghazal will be established. In addition, bone samples from Yarmoukian contexts have been submitted for radiometric dating which should fix the events of these developments on a more secure temporal foundation.

Concluding Remarks

Four excavation seasons at 'Ain Ghazal (1982-1985) have produced a staggering wealth of archaeological information.

14. Rollefson and Simmons 1985a.

The impact of all this material on the interpretation of crucial Neolithic socioeconomic and sociocultural developments has already been shown to be dramatic, but so far only a minute amount of the information has been analyzed in depth. In order to understand the critical evolution in more detail and to make more meaningful comparisons with contemporary trends in the region, it is time to call a temporary halt to the acquisition of additional raw data and to begin the intensive analysis of what has already been painstakingly accumulated. It is the intention of the 'Ain Ghazal Archaeological Project to devote the

next two years or more to laboratory research of the archaeological samples in preparation for the first volume of the 'Ain Ghazal site report. We intend to resume full scale field operations as early as 1988.

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SECOND SEASON OF EXCAVATIONS AT JEBEL ABU THAWWAB (ER-RUMMAN) , 1985

PRELIMINARY REPORT

by
Zeidan Kafafi

Introduction

The Institute of Archaeology and Anthropology of Yarmouk University conducted a second season of rescue excavations at Jebel Abu Thawwab (er-Rumman), located fourteen kilometres north of Şuweileh and twenty kilometres south of Jerash (Fig. 1). The work started on June 1st, 1985, and lasted six weeks until July 15th, under the direction of the author. In addition to the excavation operations, a survey of the area, headed by Dr. Axel Knauf and Dr. Robert Gordon of the Institute of Archaeology and Anthropology, Yarmouk University, was undertaken. A separate preliminary report is being prepared on this survey.

Work was conducted in three major areas of the site (Fig. 2), designated: A, C, and D. The areas were chosen because of the occupational evidence exposed during the first season of excavations in 1984; and, the widening of the main road between Amman and Jerash. Excavations were concentrated on both sides of the Amman-Jerash road in order to obtain more information about the site before it could be further removed by the road work. Two areas (A and D) were opened during 1984; work in Area C started this season.

The Excavation

A. Area A

Most of our work was concentrated in this area since, in 1984, a fifteen metre wall had been found and was associated with evidence of the "Yarmoukian Culture". A total of seven squares: A II 6, A II 7, A III 6, A III 7, A IV 3, A IV 4, and A IV 5 were excavated totalling 100 m². We finished the work started last season in square A III 6. Excavation of A II 6 was necessitated to uncover the rest of the cir-

cular structure formed in A III 7. But this square was again limited due to the roadcut and subsequent erosion which had occurred. It measured 2.20 m. from north-west to north-east, and 2.25 m. from north-east to south-east. Virgin soil was reached throughout the square without finding structures such as a wall or a floor. While other squares nearby had such features, none appear to have been present in A II 6. After trimming the western baulk cut by the bulldozer, square A II 7, measuring ca. 4.0 m. east-west by 5.0 m. north-south, was excavated. Excavation in this square was limited; however, more data concerning the Early Bronze occupation was retrieved. The south half of square A III 7 was partially excavated. A half of a circular building was found and extended to both the south-east and south-west. More excavation will be done in the coming seasons in this square (Pl. III, 1).

Squares A IV 3, A IV 4, and A IV 5 were placed to the east of the long wall found in 1984 to see if there were buildings in conjunction with this wall. Square A IV 3 was opened with the knowledge that the above mentioned wall would be found. This was already known from the bulldozing operations created by the road cut, and by our work in 1984.

Work continued from the 1984 season in square A IV 4. The major find was a large north-south wall in the western section of the square, measuring fifteen metres. It dated to the Late Neolithic I, and was re-used in the Early Bronze I period.

Because of the nature of the Late Neolithic (Yarmoukian) occupation at Jebel Abu Thawwab, and the density of the material culture remains of this period, squares A IV 4, A III 5 and A III 6 were opened. In square A III 5, an extension of the Early Bronze I east-west wall from square A IV 4

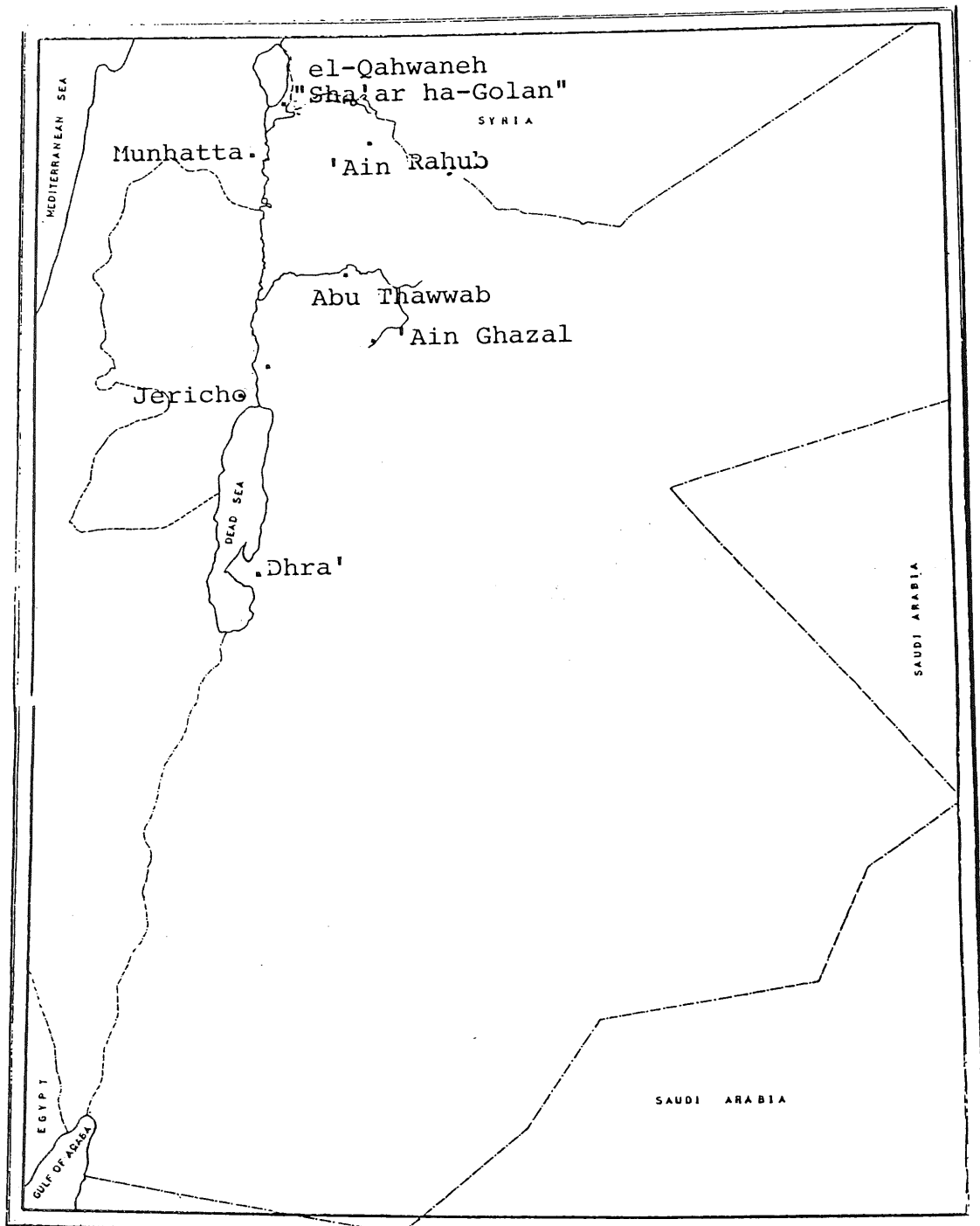


Fig. 1. Map showing Jebel Abu Thawwab location.

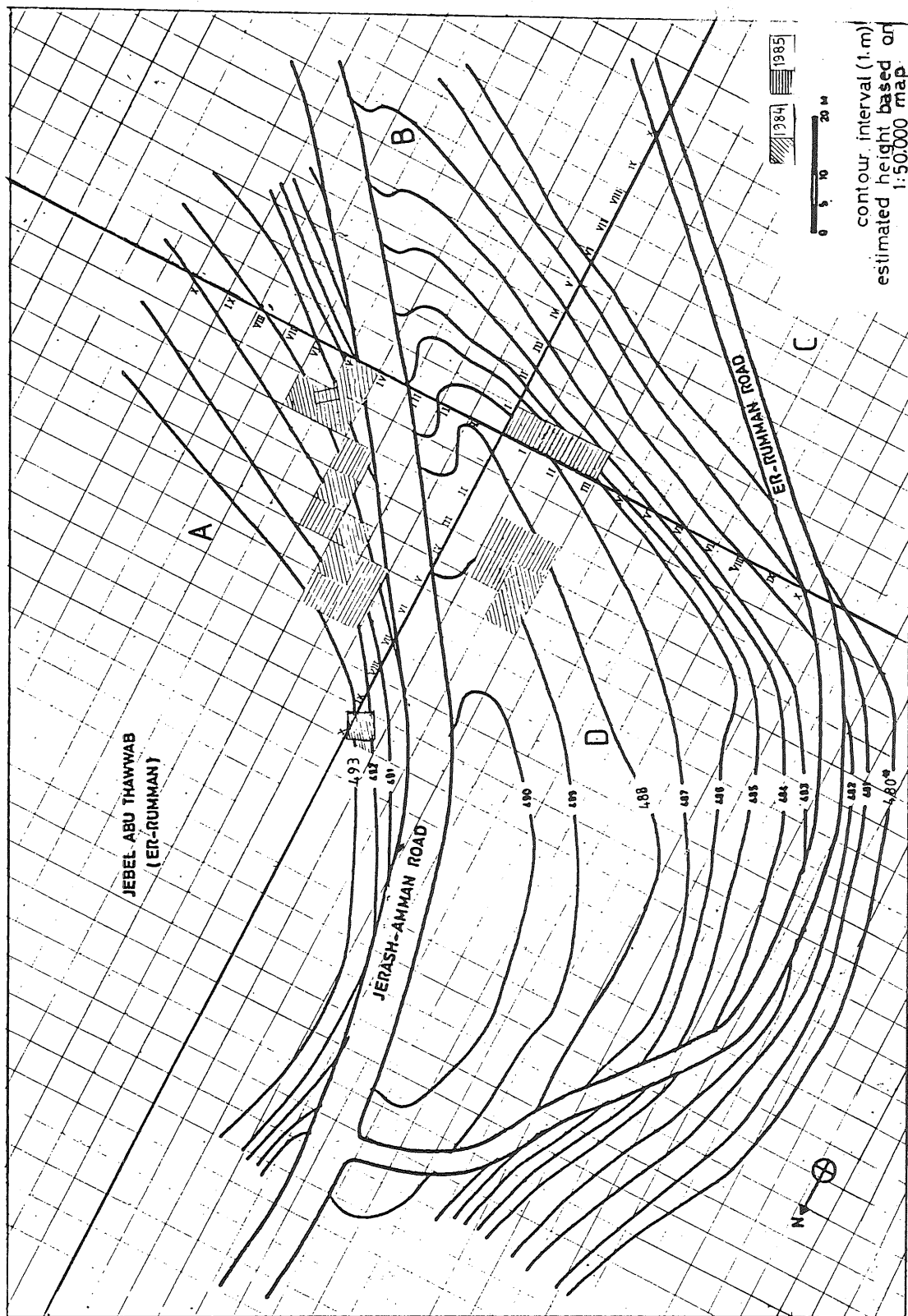


Fig. 2. Contour map with Areas A, B, C, and D.

was found, and Late Neolithic 1 (Yarmoukian) floors, hearths, and pits. Here, four hard-packed earth floors from the Late Neolithic 1 were found, and the earliest was located directly over virgin soil.

B. Area C

Excavations were started in Area C during this season; squares C I 1, C II 1, and C III 1 were opened. The reasons for excavating in Area C were the following:

1. to obtain more information about the Early Bronze occupation of this area; and,

2. to investigate whether or not this higher section of the site consisted of fortifications for the early settlement.

After the removal of the topsoil from these squares, a (D) shaped fill of small and medium sized stones was uncovered. This layer was located to the north of the above mentioned wall (P1. III, 2).

In square C I 1, as in all the area, a cobblestone layer sloped from the north to the south. Most of the southern section was covered with these stones. In order to clarify the function and the date of this layer, a probe trench was excavated in the northern part of the square. The excavated pottery sherds were field identified as a mixture of sherds from the Late Neolithic 1, Early Bronze I, Roman, and Byzantine periods. It is probable that the Roman and Byzantine sherds were washed from the top of the mountain down to this site. The probe trench was excavated down to a depth of 1.30 m., where bedrock was reached.

Square C II 1 did not add more data than that from square C I 1. A continuation of the cobblestone layer found in square C I 1 was recognized. Also, a mixture of Late Neolithic 1, Early Bronze I, Roman, and Byzantine pottery sherds was found, and again, was a result of wash.

Although the upper levels of square C III 1 showed the same results as squares C

I 1, and C II 1, a pure Late Neolithic 1 occupation level was uncovered on the western side. Two circular structures were excavated, in addition to a dark grey layer. In this layer flint tools and pottery objects pointed to the Yarmoukian Period.

C. Area D

Area D consisted of five squares; D II 3, D II 4, D III 3, D III 4, and D III 5. In the first season of excavation, squares D III 4 and D III 5 produced Early Bronze I architectural remains. These consisted of a rectangular room with a benched courtyard.¹ Thus, to uncover the rest of the building and to understand it better, squares D II 3, and D II 4 were opened.

In square D II 3, bedrock was reached at the depth of about 1.50 m. under a red soil layer which was virgin soil. The uppermost layer showed Early Bronze I architecture and artefacts. Just above the bedrock, Late Neolithic 1 (Yarmoukian) artefacts and architectural remains were excavated.²

It seems clear that, in many cases, the Early Bronze I period people destroyed, but in some cases, reused the Yarmoukian buildings. In square D III 3, the stratigraphic profile points to the fact that the Early Bronze I settlers of Jebel Abu Thawwab removed the Yarmoukian remains from the north-east corner of the square and deposited them in the southern half. After that, they built their own structures above this levelling layer. Bedrock was reached at the depth of about three metres at the south-west corner of the square, and at less than one metre in other parts of it (Fig. 3). Even though a few Byzantine sherds were found here, no evidence of settlement from this period was recognized.

After uncovering a portion of a round building in square D II 3, part of which extended into D II 4 (since most of it had been missed by the road cut between Şweileh and Jerash, and instead of eliminating more archaeological evidence from this part of the site), square D II 4 was opened. Evidence of Early Bronze I and Late Neoli-

¹ Z. Kafafi, *Jebel Abu Thawwab (er-Rumman)*, a preliminary report of the first season of ex-

cavation. *ADAJ* XXIX, (1985), p. 31-41.

² *Ibid*

- 1) surface
- 2) locus 1 very small stones
dark brown soil 10 YR $\frac{4}{3}$
- 3) locus 17 soft soil without stone
10 YR $\frac{5}{4}$
- 4) locus 21 its soil 2.5 Y $\frac{6}{2}$
few small stones in the layer
- 5) locus 22 many medium stones
2.5 Y $\frac{5}{2}$
- 6) locus 27 many medium stones
10 YR $\frac{4}{4}$ very soft soil
- 7) locus 28 its soil 7.5 YR $\frac{4}{4}$
- 8) locus 13 between the wall
its similar to locus 1
- 9) locus 18 its soil 10 YR $\frac{5}{3}$
soft in digging
- 10) locus 29 its soil 2.5 Y $\frac{7}{4}$
some medium stones
and big stone
- 11) locus 30 7.5 YR $\frac{4}{4}$ no stones
hard in digging

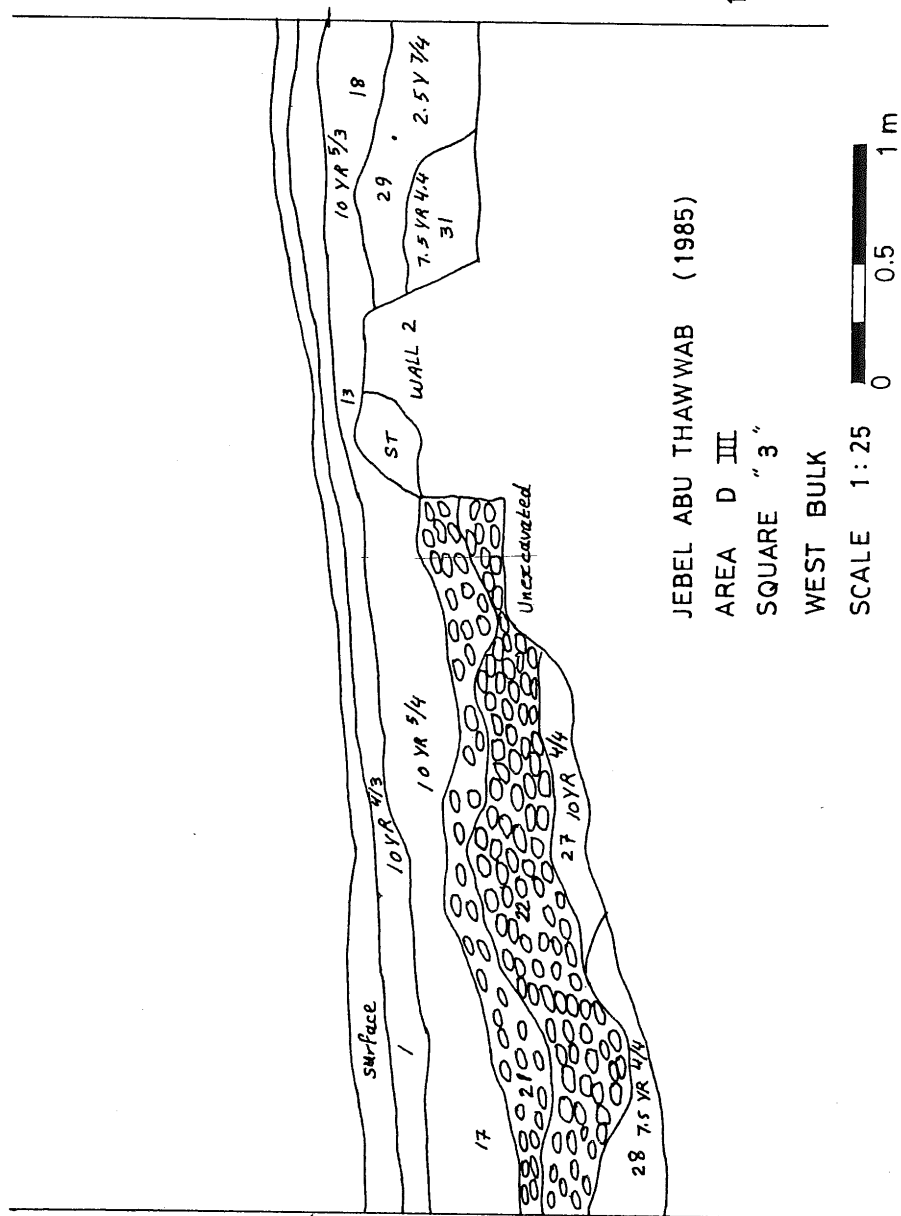


Fig. 3. D III 3 baulk drawing.

thic 1 was found, and the bedrock was reached, as in other squares. The aims for excavating D II 4 were achieved after the rest of the circular building, part of which was in D II 3, was uncovered, and the extension of the Early Bronze I structure in square D II 4 was found.

Conclusions

As was reported in the first season,³ Late Neolithic 1 (Yarmoukian) and Early Bronze I were the major occupations represented at Jebel Abu Thawwab. The excavations continued to show that no occupation of the Chalcolithic Period existed. In addition to this, a few Roman and Byzantine pottery sherds were excavated at several places on the site. A mixed fill of small-sized stones was found all over the area and was considered to represent an unoccupied deposit which separated the two occupational levels.

A. Phase II (Late Neolithic 1)

All excavated areas produced pure occupational remains of the Late Neolithic 1 (Yarmoukian) period. The uncovered architectural buildings associated with this phase were rooms built of stone.⁴ These are either rounded or rectangular in shape, though the rounded ones are the dominant type (Pl. III, 1). Hard-packed earth floors are associated with these buildings, and in some cases cobblestone floors are represented, such as in square D II 3. Hearths were also found, as in square A IV 5. In addition to the above mentioned architectural remains, storage pits were found. These were circular and dug into the virgin soil and measure up to about one metre in diameter and range between 0.50 m. and 1.50 m. in depth.⁵

In terms of its repertoire of artefacts, the Jebel Abu Thawwab Neolithic pottery assemblage is characterized by the following types of ware: 1. coarse tempered plain ware, 2. fine ware (very few were found),

3. red painted slipped ware, 4. incised with herring-bone incisions, 5. red painted with parallel incisions. Though the pottery vessels were apparently relatively low-fired, a good oxidation atmosphere was maintained. This was shown by the rarity of the grey cored vessels. The inclusions showed a wide variation in both grit type and size; however, straw and limestone grits were used as temper. It appeared that the red-painted slip for decorating was popular during the Late Neolithic 1 period. In very few cases, the vessels were burnished by hand. In general, the slip is relatively thin and ranges in color from red, light red, to dusky red.

The decorative motifs include horizontal incised lines, with incised herring-bone patterns in between (Pl. IV, 1). On the other hand, red painted decoration with irregular lines is recognizable on some of the vessels, especially the small ones. Notched decorations are very rare. Discussion of the form repertoire must be withheld until further analysis is completed. The recognizable pottery forms are the simple bowls, cups, hole-mouth and globular jars (Figs. 4-5). Those have ledge, knob, and loop handles, and flat, rounded, and flat-ring bases.

The technology and typology of the chipped stone industry from Abu Thawwab resembles that of assemblages of Late Neolithic 1 sites in Palestine (Giv'at Haparsa) and Lebanon (Byblos). Arrowheads and sickle blades were plentiful; the arrowheads were tanged and had shoulders or wings and a thin point (Pl. IV, 2). The sickle blades were deeply denticulated and had gloss. The absence of axes and chisels is noteworthy in the Abu Thawwab flint tool assemblage; scrapers and pointed tools were well represented, indicating the community was an agriculturally based one.

Small Late Neolithic 1 finds consisted of bone awls and shells of Mediterranean origin. Human, animal and symbolic figurines were found. A great number of

³ *Ibid*

⁴ Z. Kafafi, Late Neolithic architecture from Jebel Abu Thawwab, Jordan, *Paléorient*,

11/1 (1985), p. 125-127.

⁵ *Ibid*.

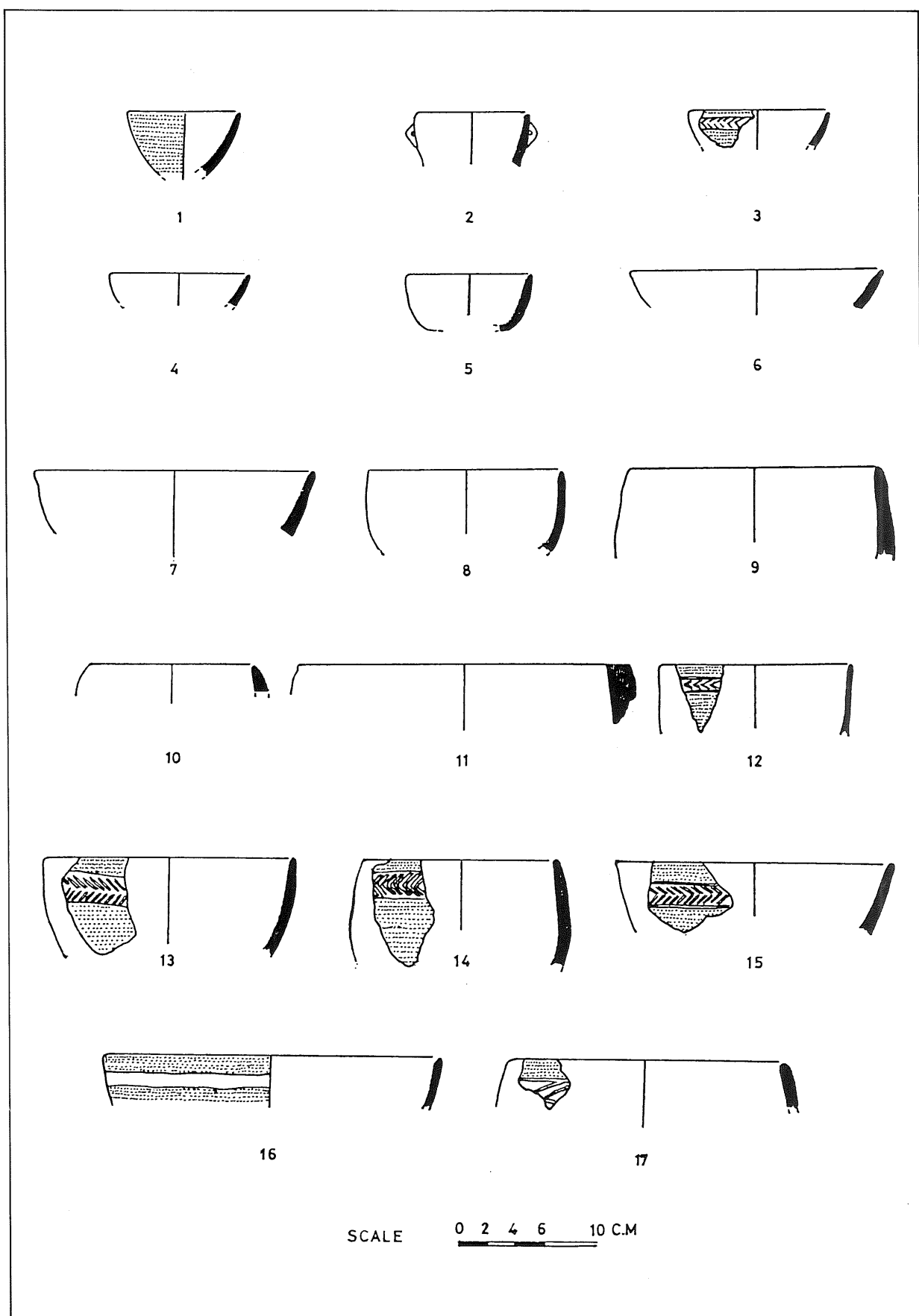


Fig. 4. Pottery cups and bowls.

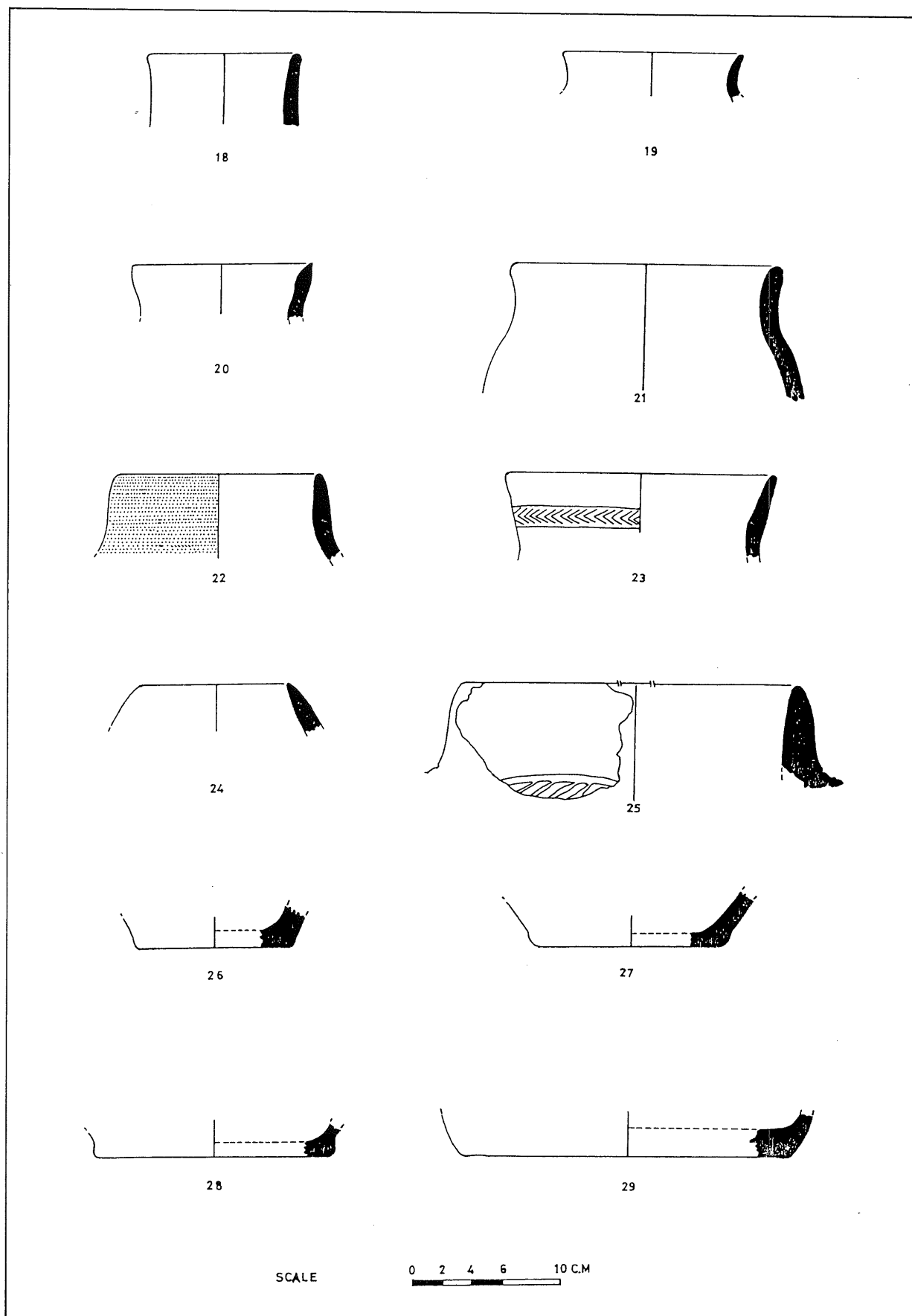


Fig. 5. Jars.

ground stone utensils and vessels were found, most of which were in a fragmentary state of preservation.

Botanical⁶ and faunal⁷ samples were collected at the site. The results of the preliminary analysis of the botanical samples show that the predominant crop plant was *Lens culinaris*, commonly known as lentil. *Pisum sativum* (field pea), *Hordeum distichum* (two row barley), and *Triticum sp.* (wheat) were also cultivated. *Pistacia sp.* (pistachio) and *Amygdalus sp.* (almond) could have been gathered on purpose in the surrounding forests. Further investigations may give us more information about the botanical and faunal aspects of life.

B. Phase I (Early Bronze Age I)

Archaeological remains of Phase I, which is identified with Early Bronze I (ca. 3200-3000 BC), were found in the top strata all over the excavated areas at Jebel Abu Thawwab. Structures related to this period were encountered in Areas A and D. In Area A, Squares A IV 4, and A IV 5, a wall built of two rows of unhewn stones was found directly over a Late Neolithic 1 wall. This wall forms a right angle with another to the east, thus it may be that these walls formed part of a large room.

The most significant building of the Early Bronze I period excavated at Jebel Abu Thawwab, was a rectangular building with benches uncovered in Area D during the first season. This season the rest of the courtyard walls were uncovered. In addition to these, in Square D II 3, more walls were found, but since they are directed to the unexcavated areas, we can not give a clear picture of them. Plastered floors connected with those walls were found.

The pottery vessels and sherds found in the 1985 season are of the same types as those found in 1984. The forms recognized within the assemblage consist mostly of hole-mouth jars and bowls. These were painted with criss-cross lines and parallel

bands. Also, plain, grey burnished and red slipped wares were excavated. Further study of the Early Bronze I pottery repertoire of Abu Thawwab is presently being done. In the 1985 season C14 samples were collected and sent to Holland, the results of which should be available soon.

Jebel Abu Thawwab is one of the few Yarmoukian sites discovered in Jordan during the last few years. 'Ain Ghazal and 'Ain Rahub being the others. What distinguishes Abu Thawwab is its size and the quantity of material culture remains recovered from the excavations. Abu Thawwab was a large farming village of the period and was surrounded, as shown by a recent survey, by contemporary farming villages. Further excavation and survey in the Jebel Abu Thawwab region should help to clarify the nature of Late Neolithic 1 occupation in this part of Jordan.

Acknowledgements

The team members of the excavation (Fig. 6) were: Mr. Nabil el-Qadi, Research Assistant at the Institute of Archaeology and Anthropology, who served as chief archaeologist; Mr. Reinder Neef of Groningen Rijkuniversiteit Biologisch-Archaeologisch Instituut, as paleobotanist; Mrs. Ciony C. Metz, camp director; students in the M.A. program of the Institute: Deif- Allah 'Oeidat, Mohammad 'Essam- 'El-ai, Wajih Karasneh, Jum'a Kreyem, Mohammad Rousan, Ibrahim Zo'bi, and Ms. Hanna Mismar; and, a group of sixteen American exchange students: Karen Arnold, Michael Cooperson, Daniel J. Holub, Jerry D. Lyon, Christine Sieben, Robin Surratt, Jeffrey S. Sutton, Lori Billings, Timothy Harrison, Leesteffy Jenkins, Nickolas Morris, Andrea Olsen, Stephen Perkins, Gerard Rimel, Julie Taylor and Craig Wanink. Other members of the team were Abu Ramadan, cook; Abu Othman and Abu 'Emad, Yarmouk University drivers.

The members of the team are very

⁶ Mr. Reinder Neef has undertaken the analysis of the botanical remains from Abu Thawwab, and has provided us with the information

given above.

⁷ Dr. Ilse Kohler is now studying the bone remains.



Fig. 6. Jebel Abu Thawwab 1985 season team.

thankful for the interest shown by the public of Jordan and abroad. Special thanks are due to Prof. Dr. Adnan Badran (former President, Yarmouk University), Prof. Dr. Moawiyah Ibrahim (Director, Institute of Archaeology and Anthropology), and Prof. Dr. Adnan Hadidi, (Director-General of the Department of Antiquities of Jordan) for their continuous support of this project. The staff is also grateful to Dr. James A. Sauer (President), American Schools for Oriental Research, Dr. David McCreery (Director, ACOR) and Mr. D.

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TELL ESH-SHUNA NORTH 1985: A PRELIMINARY REPORT

by

Carrie Gustavson-Gaube

Tell esh-Shuna North is located on the east rim of the northern Jordan Valley, along the Wadi al-'Arab. During the 1984 campaign, a roughly continuous though gradually changing occupational sequence was exposed which spanned the transition from the later Chalcolithic into the Early Bronze I¹. At the end of the 1984 campaign, we also had evidence of the Shuna North sequence continuing down into the rather controversial, earlier Chalcolithic/PNB.

The second (and final) campaign of the Joint University of Tübingen/Deutsche Forschungsgemeinschaft and the University of Yarmouk excavations at Tell esh-Shuna North was conducted between February 23rd and April 11th, 1985². Due to rather industrious bulldozing activities, the Shuna North bus stop presented us with an excellent opportunity for salvage excavations in the form of a 'made-to-order' step-trench towards the more central area of the ancient mound. During the 1984 campaign three adjoining 5x5m squares were excavated, yielding a combined total of 73 strata. As the major objective for re-investigating Tell esh-Shuna North was to

produce a well-stratified outline of the site's occupational sequence³, during the 1985 campaign we continued to excavate squares EI-EIII in order to increase the exposure of the middle and lower portion of the sequence (see Fig. 1)⁴. During the 1985 campaign, square EI was brought down to the natural alluvial deposit revealing a 4.3m depth of occupation (the late medieval/post-1967 overlay excluded) and giving a total of 109 strata (see Figs. 2-5, strata 114-7).

Alongside the main trench, we are also attempting to reconstruct the environmental sequence of Shuna North. Two 1m² sondages were excavated directly against the north balk of squares EI and EII (=EI-S and EII-S). All material was sieved (4mm and 1mm) with a 10% sample saved for flotation⁵. Supplementing the environmental sondages all ash deposits and deposits with a high concentration of carbonized material were collected for possible C14 dating and/or flotation.

On the basis of the preliminary analysis only, I am hesitant to assign levels to the reconstructable sequence. Shuna North

1. Rf. Gustavson-Gaube, *ADAJ* 29 (1985) pp. 43-87

2. I would like to take this opportunity to give my special thanks to Prof. W. Röllig, our sponsor, to Prof. M. Ibrahim and the Institute of Archaeology and Anthropology, Yarmouk University, for the loan of the Beit er-Shadat house, and again to Prof. Ibrahim and Prof. S. Mittman for their generosity in loaning us the equipment of the Tell el-Mughayyir. I would also like to thank our team — Douglas Baird, Hekmet Ta'ani, Reinhard Eisner, Beate Siewert and our Shuna North workmen, for their commitment to the project and their patience and special understanding of a bus stop excavation which, as the town does not yet have a cinema, was not unlike performing in the Shuna North Theatrical Revue. Finally, I would like to thank the children of Shuna

North who, though at times extremely trying, enthusiastically increased our work force threefold.

3. Publication of the previous work at the site conducted under the Point IV Archaeological Survey of Lankester Harding are: de Contenson, *ADAJ* 4/5 (1960) pp. 12-98; *MUSJ* 37 (1960/1961) pp. 57-75; *RB* 68 (1961) pp. 546-556; Mellaart, *ADAJ* 6/7 (1962) pp. 126-157, site 15.

4. Substantial destruction (Mamluk/modern) of the upper portion of the sequence precluded further investigation of the EB I.

5. The analysis is now being conducted by R. Neef, Biologische-Archaeologisch Instituut, Groningen. Faunal analysis is being done by Dr. H.-P. Uerpamann, Institut für Urgeschichte, Tübingen.

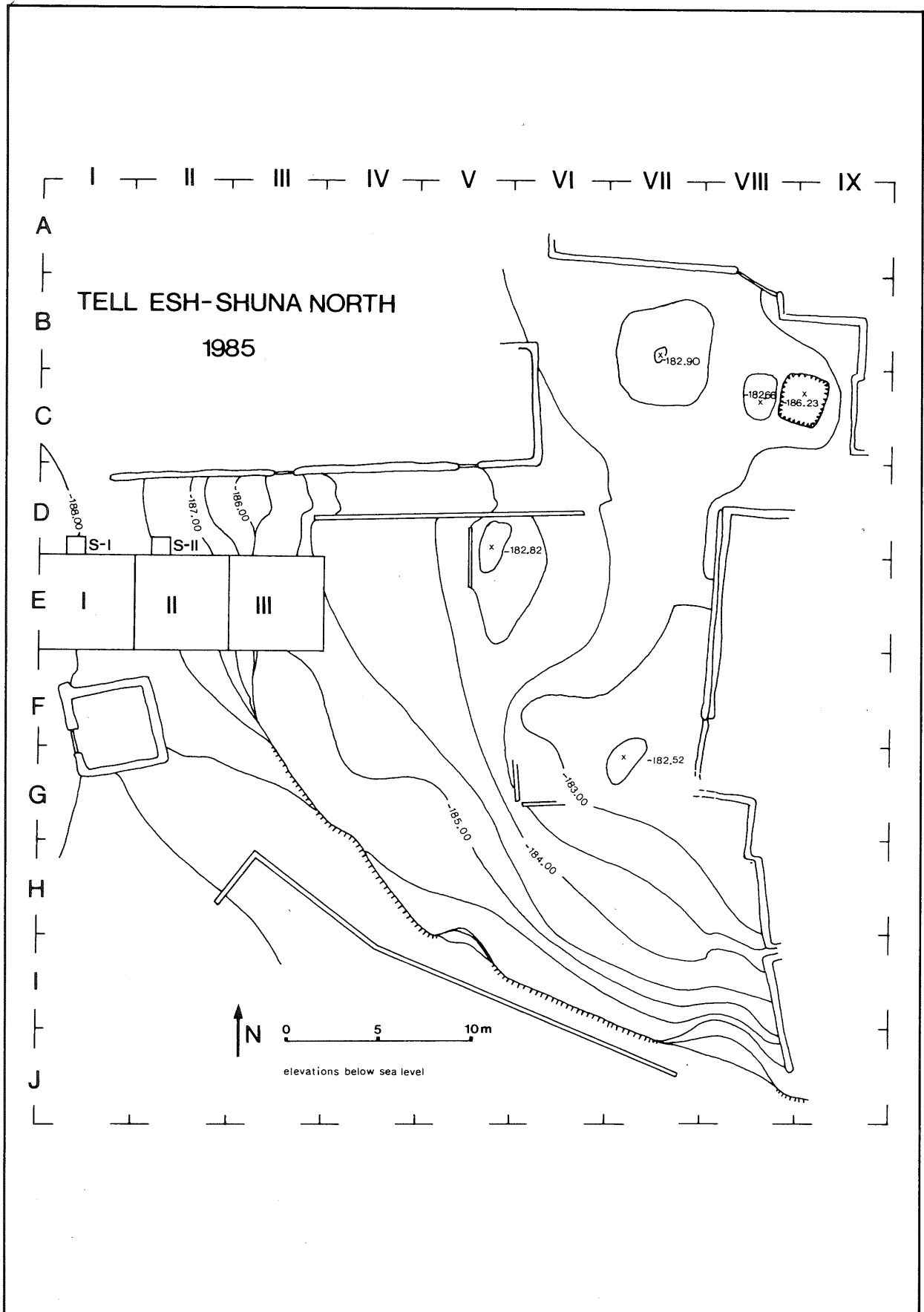


Fig. 1

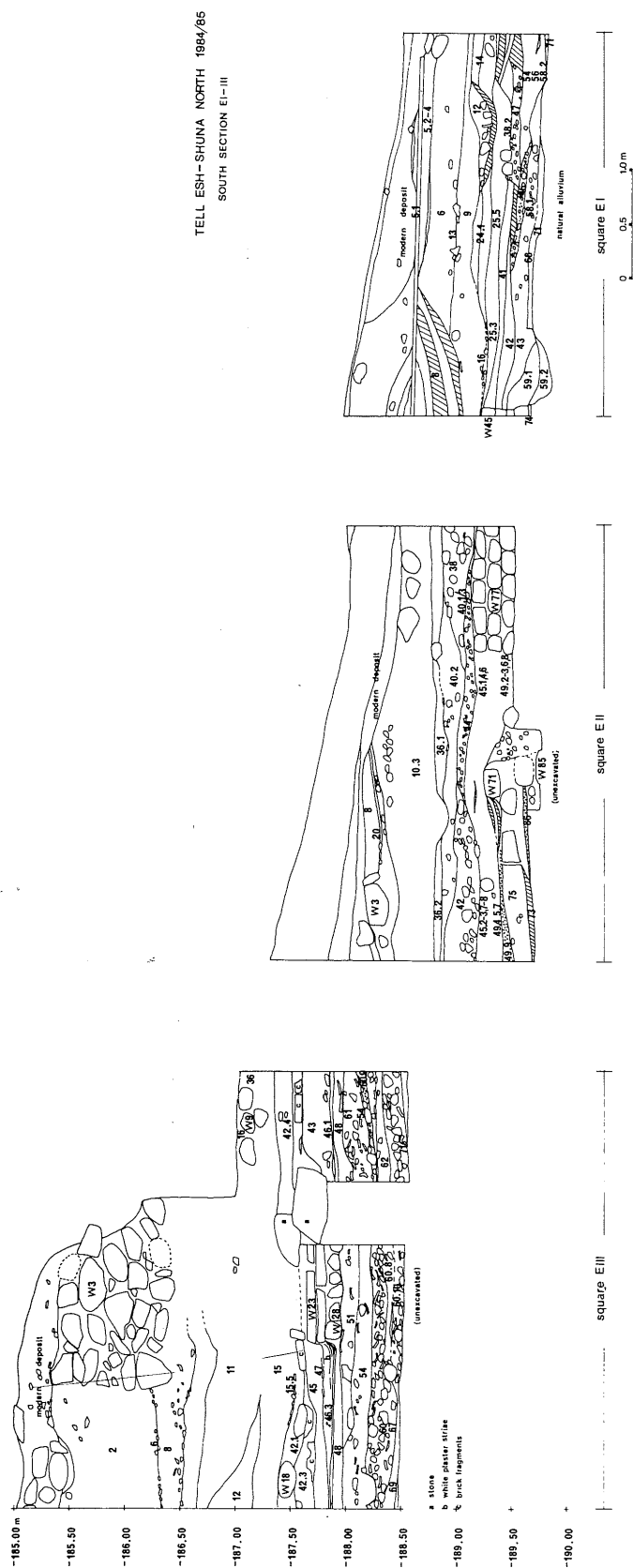


Fig. 3

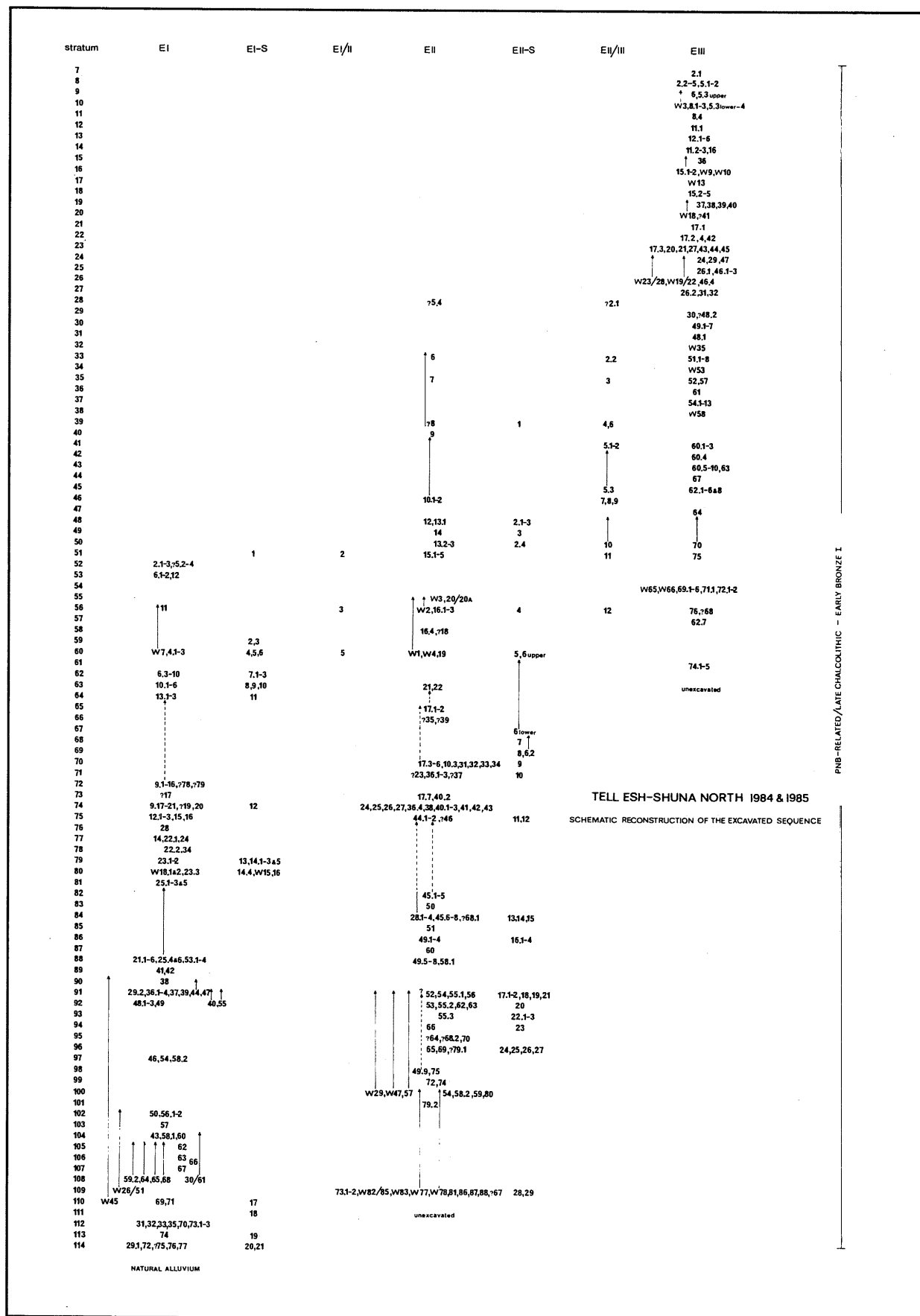


Fig. 4

has presented us with three basic artifact assemblages in which the craft traditions of the earlier are continued into the later, though the popularity of given artifact types appear in basically reverse proportion from the lower to the upper strata. Within the ceramic assemblage, four distinct wares are introduced into the otherwise ongoing though gradually changing local tradition. In terms of the preserved architectural remains, two distinct traditions of brick-making can be observed, one characteristic of the lower part of the sequence, one of the upper, though the use of a stone foundation appears to have been based upon individual inclination throughout. If we decided to divide the sequence based on this change in building techniques, then we must disregard the ceramic development. When the builders decided to change their brick size, the potters did not feel obliged, at that point, to change their pottery styles or preferences, nor the inhabitants to secure a market in non-locally produced wares. On the other hand, if we use ceramics as a guide-line, where, precisely, do we draw our lines in a development which did not yield to abrupt changes. Or, what would be the significance of basing our level designations on the introduction and subsequent discontinuation of a small percentage of non-locally made wares which, with the exception of the grey polished wares introduced towards the middle of the sequence, appeared to have had little impact on the local traditions. Thus, until the final analysis of all the artifact assemblages is completed, we will discuss the Shuna North sequence in terms of strata with a provisional 'phase' division, postponing the assignment of levels to the final report.

Towards the end of the last season, we reduced the area of excavation in squares EII and EIII to the northern half of each square. In square EI, excavations were reduced to two probe trenches along the nor-

thern and western balks⁶. As we continued to excavate in the same three squares this season, there will be an overlap in the description of the occupational sequence with that previously published⁷.

The earliest occupation of Shuna North is evidenced by a series of large to small pits cut into the natural sand and gravel alluvium exposed in square EI, suggesting possible habitation of the site with associated dwellings lying outside our area of excavation (stratum 114). Pit 76 in the northeast corner of EI was given special attention in its construction. This pit is rather large and seemingly regular with a reconstructed internal diameter of 1.55m. Around its perimeter, a shallow scoop was dug, the pit then bound with a circular ring of pebbles. Though the reason for this special treatment remains unclear, it does evidence a certain amount of care and labor which one would not expect in simple garbage pits or camp-fire hollows. South of this pit, two apparent post-holes were dug, 1.7m apart, suggesting a temporary outdoor work activities shed or possibly a lean-to protecting stored goods from weathering. For whatever purpose this area was used, it was soon abandoned, with rain-washed mud deposits filling the shallow depressions of the natural alluvium (stratum 113). Even during this accumulation, however, it is possible that the site, as a whole, was not 'abandoned' as evidenced in the presence of sherds, bone and flints in the rain-washed deposits (though this material may also have belonged to the earlier stratum 114 occupation). It would appear that the accumulation of stratum 113 did not take very long as the succeeding strata 112-111 again present an outdoor area dug with pits. With stratum 109, the whole character of square EI changes from that of a rather amorphous outdoor area to a more rigorously planned series of courtyards possibly associated with the

6. Lowest elevations reached: EIII north -187.76m (locus 30); south -187.10m (locus 15.1); EII north -189.33m (locus 28.4), south -188.55 (locus 10.3); EI north probe -189.41m (locus 9.18), west

probe -189.52m (locus 9.21).

7. For descriptions of loci excavated last season, see 1984 preliminary report. NB. Correction of 1984/1985 north section: elevation range -185.00m to -190.00m

multi-phase dwelling of square EII to the east (strata 110-88)⁸. Interestingly, square EI retains its basic courtyard function throughout its preserved history.

Wall W45, the western enclosing wall of the EII complex, was built directly upon the rain-washed deposits of stratum 112. The ashy occupational debris intermixed with brick fragments (stratum 110), backed against the lowest course of wall W45, appears to represent the accumulated debris left by its builders. We also have evidence of a rather humble east/west courtyard wall W26/51 abutting the lowest course of wall W45, demonstrating the contemporaneity of the earliest courtyard phase with the earliest floors of rooms III-V in EII (strata 109-105). Although constantly undergoing repair and alteration, we have two basic courtyard complexes: strata 109-102 and strata 92-89.

Initially, a series of thin plaster floors (locus 68) were laid in the southern half of EI, south of wall W26/51, suggesting a roofed porch or small, temporary room. A small rectangular clay pad or platform (*ca.* 0.5 N/Sx0.4m) was built along the south face of wall W26/51 and a shallow pit was dug into the southeast corner of the square. The presence of red ochre flecks in the plaster floor matrix suggests that this area may have been used in preparing the red plaster for floor EII 81 of room V. Contemporary with room 68 to the south, pebble surface 30/61 was laid north of the courtyard wall. North of this pebble surface are a series of successive, overlapping mud- and clay-plastered surfaces (loci 62-63 & 67). While the northern courtyard area retained its basic character, the southern area was completely altered. Cut into the thin accumulation of occupation debris overlying surface 68 (stratum 104) are the poorly preserved remains of what may have been two interlocking, semi-circular bins (locus 57), not dissimilar to the irregular, interlocking conical storage

bins and/or chicken roosts observable in the traditional village courtyards today (see Fig. 7).

At a point approximately contemporary with or possibly succeeding the middle phase alteration of the EII complex, the courtyard dividing wall was dismantled and the double courtyard replaced by one in which outdoor activities were carried out in a single, larger area west of wall W45. The exposed area of the later courtyard series in square EI became one of rather intensive activity, although the original purpose to which the individual courtyard features were put remains unclear (strata 92-91).

In the southwest corner of EI, a deep, bell-shaped pit (locus 36) was dug with a (partially exposed) oval clay bin- or basin-like feature constructed at its base. This feature was later sealed with mud-brick rubble. East of this pit are the fragmentary remains of a pebbled surface (locus 47) bound to the northeast by the shallow foundation scoop for the small, rectangular bench or possible work platform of locus 40. North of locus 40, separated by a small plastered surface (locus 44), are the remains of two overlapping 'installations' (loci 37/39 & 48), possibly the very poorly preserved bases of storage bins, functionally replacing the preceding bins of locus 57, stratum 103. Both features are constructed of well-packed brick rubble on cobbled foundation; locus 37/39 with a preserved L-shape contour, locus 48 with a more rectangular one. Both features are bound to the west by a possibly functionally related sandy clay and pebble surface (locus 55). The care witnessed in the construction of the bases of these features suggest a storage bin function in which the goods stored must be kept dry.

The partial exposure of a multi-room house, contemporary with the EI courtyard series, was revealed in square EII to the east. Similar to the courtyards, the EII house is constantly undergoing alteration

8. No direct access between the EI courtyards and the EII dwelling was revealed in the excavated area. Although contemporary, the relationship between the two is unclear.

Either the access lies in the unexcavated EI/II balk or to the north of the sondage, or the courtyards belong to a neighboring dwelling.

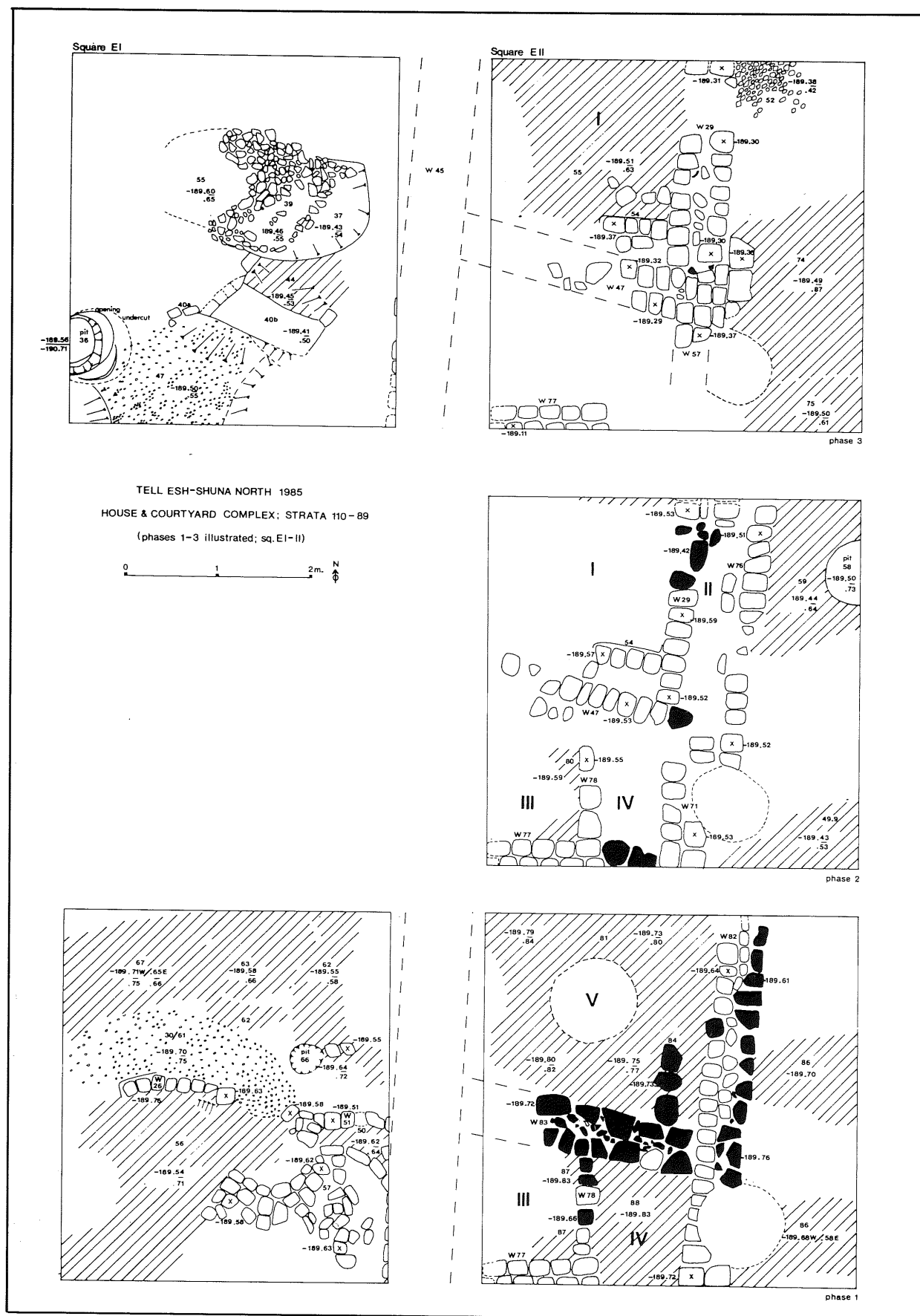


Fig. 7

though the basic plan is retained throughout (strata 109-91). The EII house consists of a large room in the northwest quadrant of the square (room I/V) with two adjoining smaller rooms to the south in the early and middle phases (rooms III-IV, stratum 109-97), later replaced by a single room or small courtyard (strata 94-91).

During the earliest excavated phase (stratum 109), a large room was exposed in the northwest quadrant of EII (room V), bound by walls EI W45, EII W82/85 and W83 with associated floor 81 (Fig. 6). Two smaller rooms were constructed to the south (rooms III & IV), bound by walls EI W45, EII W77, W78 and W82/85 with associated floors 87 and 88. It appears as though this house was built by the entire family, each insisting on their preferred construction technique. The adjoining walls were built of either multiple rows of the typical loaf-shaped mud-brick (walls EI W45 & EII W77), a ?dismantled brick super-structure on stone foundations (W83), a mud-brick wall with rubble fill and an exterior stone facing (W82/85) or a completely mixed single row wall of stone, mud- and burnt-brick (W78, see Fig. 7). Though heavily eroded, floor 81 of room V was, at least at one point, red-plastered. A small bench or ?storage platform (locus 84) was built against wall W82/85 in the southeast corner of the room.

During the middle phase (stratum 100), the dimensions of the northwest quadrant room were reduced (room I), bound by walls EI W45, EII W29 and W47 with a possible passage-way or ?store room to the east (room II, see Fig. 7). The need for a corner bench or platform was retained, though the bench (locus 54) was turned 90° and built against wall W47. In contrast to the earlier phase, the walls were all built of the typical loaf-shaped mud-brick, either in a single row (walls W29, W47, W76 & W78) or multiple rows (walls EI W45 & EII W77). A row of stones, possibly dividing or enclosing room IV to the south, was revealed along the south balk. With the exception of very poorly preserved floor 80, no middle phase floors were

preserved in the EII exposure.

Perhaps due to the rather flimsy construction of its interior walls, the middle phase dwelling was dismantled (with the exception of walls EI W45 & EII W77). Room I was filled with sand and gravel (stratum 96), apparently to create a more stable foundation layer for the succeeding late phase floors and the new enclosing walls were built of a double row of mud-brick. The room I late phase floors (strata 94-91) were continually worn and patched, producing a thick lens of heavily interwoven, horizontal striae of ash, plaster and laminated brown to greyish-brown soil. The southeast corner bench of the middle phase (locus 54) was retained. Just north of the wall W29 threshold in the small EII-S sondage, a small hearth, later capped with stone, was exposed (locus EII-S 17/21). Along the east end of wall W47 and the east face of wall W29, an exterior mud-brick bench or possibly supporting buttress was built (locus 56). To the south of room I, the early and middle phase small rooms were dismantled, replaced by either a single, larger room or interior courtyard enclosed by walls EI W45, EII W77 & ?W57 (no associated floor(s) preserved).

Throughout all phases, a second outdoor area was located east of the house. During the early and middle phases, successive sand and pebble lenses were laid down (loci 86 & 59, the latter with associated pit 58). During the late phase, the area east of wall W29 threshold was cobbled (locus 52). To the southeast, possibly contemporary with the late phase dwelling, are a circular pit (locus 72) and a shallow scoop or depression filled with clay (?settling basin, locus 75), later covered with gravel (locus 49.9).

In the smaller, traditional villages today, one can witness similar alterations, additions and divisions of houses based on the growth or separation of the extended family. Such a scenario can easily be applied to this early Shuna North complex. Although the preserved remains of such an evolution are often unintelligible, the need or continual adjustments to meet the

changing requirements of a family today is perhaps not that dissimilar to those of the inhabitants of ancient Shuna.

With the end of the final phase of the EII house and contemporary EI courtyard, all building activity ceases in this area of the tell, the house falls into disrepair (strata 88-86) with squares EI and EII then assuming the function of a vacant lot (strata 85-82). Even during this fill accumulation, however, there is haphazard evidence of activities on or near the site — a small pit is dug (locus 60) and several sand lenses of clearly definable though irregular outline were deposited (loci 51 & 50).

Roughly contemporary with the upper fill accumulation in square EII, building activities are resumed in the northwest corner of square EI (stratum 80). Double row, loaf-shaped mud-brick walls W18.1 & 2 enclose the southeast corner of a room with a sunken plastered floor (locus EI 23.3/EI-S 16) and a U-shaped corner bin formed by wall EI-S W15 (see Fig 2, EI north section). Cut into by walls W18.1 & 2 are the ashy occupational deposits of stratum 81. Evidenced in the north section, the eroded top of wall W45 may still have been visible when the stratum 80 house was built.

The EI house may have been standing, either still inhabited or gradually allowed to fall into disrepair, when the southern half of square EI and square EII were adapted for use as an extensive outdoor work area characterized by a series of gravel and cobbled pavements with a variety of associated pits and burning installations (strata 76-74). The earliest evidence of this transformation is represented by shallow pit EI 28, possibly a settling basin for mud or clay mortar, cut into the upper deposits of stratum 76. Roughly contemporary with to slightly later than pit 28, gravel pavement 15/16 was laid and fire pit 12 was built. To the east in square EII, gravel pavement 44, with its associated ash pit 46, was laid, both pavements (EI 15/16 & EII 44) directly overlying standing wall fragments EI W45 and EII W77. In the small exposure of EII-S along the northern

balk, evidence of a third fragment of gravel paving appears (locus EII-S 11/12, stratum 75). In the succeeding stratum 74, this outdoor work area is reduced to square EII where a cobbled pavement was laid over surface 44 (combined loci 25, 38 & 42); square EI then assuming the function of a vacant lot. Associated with the EII pavement are a number of small to medium-size clay-lined pits (loci 24, 26 & 27) and a long, burnt clay trough (combined locus 41/43). Following a shallow, intervening fill accumulation (stratum 73) in the lower depressions of stratum 74 cobbled pavements, a thick clay ?surface (locus 36) was laid over the southern half of EII (stratum 71). To the north in EII-S, a second plastered surface (locus 10) is evidenced, though its relation to the more southern surface 36 is unclear and its limited exposure precludes interpretation. The intervening area, apparently destroyed or simply left open, gradually filled with the early deposits of the succeeding strata 70-66. Scattered through the lower depths of this fill deposit are several ash lenses (loci 23 & 37), possibly contemporary with to slightly later than the two surfaces to the north and south.

During the continued fill accumulation of succeeding strata 70-66, both squares lie unused though evidence of activity on or near the site may be seen in the presence of small ash lenses and pits scattered throughout the fill (loci EII ?23, ?37, 35 & 39 and EII-S 7-8). Roughly contemporary with the later fill accumulation of square EII, square EI reassumes its traditional courtyard function where a series of two, partially interwoven cobbled pavements were laid down (strata 65-64). The north balk apparently represented the northern boundary of the uppermost pavement as a multi-layered plastered floor (EI-S 8-10) appeared in the EI-S sondage, contemporary with pavement EI 10. Though at a slightly lower elevation, several poorly preserved plaster and cobbling fragments (loci EII 21-22) were also found to the east, overlying the preceding fill deposit in square EII. At this point, all building activity shifts to square EII in the east.

Unfortunately, in dealing with a small exposure, unsolvable riddles become a plague. In the middle of the Shuna North sequence (stratum 60-54), at a point when the black polished Esdraelon wares are introduced into the local ceramic repertoire, we have a series of buildings which, in flirting with the patience of the archaeologist, are only partially exposed, heavily destroyed and do not share a common section.

As concerns square EII, the earliest of these buildings is represented by stone foundation wall fragments W1 and W4 with associated floor 19 in the northwest quadrant (stratum 60), all exposed during the 1984 campaign⁹. Contemporary outdoor activities to the west are represented by an extensive ash lens (loci EI 4 & EI-S 4) deposited/accumulated over a fragmentary plaster surface (evidenced only in EI-S loci 5-6), heavily pierced with ?stake holes. Wall EII 4 is then dismantled and floor 19 overlaid by floor 16 (stratum 56) which now extends throughout the northern half of the square. In the northwest corner of square EII, a pebble foundation or levelling layer (locus 16.4) was laid, possibly to correct for more extensive wearing of the underlying floor in a possible threshold area. Shortly after the dismantling of the wall W4, stone foundation wall W3 and associated plaster floors 20 and 20A (stratum 55? = plaster floor fragment EIII 68) were laid, floor 20 overlapping floor 16 with stone foundation wall W2 constructed over the interface. Architecturally, we now have beaten earth surface 16 to the north of walls W1 and W2, both east/west walls in the center of EII though not in alignment, with contemporary plastered floors 20 and 20A in the southeast quadrant and extending into the east balk (see Fig. 6). To the west in square EI, north/south stone foundation wall W7, perpendicular to EII wall W1, enclosed floors 16 and 19 with a possible threshold leading to outdoor pebbled surface EI 11 which abuts the west face of the wall. The stone foundations of walls W1

and W2 were still standing during the ash accumulation of stratum 51 (the locus 15 ash extending over the preserved north face of wall W1) and the fill accumulation of pit 12/13, strata 50-41, dug into locus 15. Stratum 51 evidences the first appearance of the Esdraelon wares in square EII.

Enter square III. Roughly contemporary with the nice compact sequence of square EII are the partially-exposed remains of two curvilinear or possibly circular rooms (stratum 54). Stone foundation wall W65 in the northwest quadrant of the square represents the approximate one-quarter exposure of a conceivably round structure with a reconstructed internal diameter of four meters. No evidence for the continuation of this curvilinear wall was preserved to the west in square EII. Possible associated floors or surfaces enclosed within the wall to the west were destroyed by pit 70 of strata 50-48, the eastern extension of square EII pit 12/13 which was cut directly against the west face of the wall. A heavily eroded cobbled pavement, locus 72, abutting the east face of wall W65, and garbage dump 69 evidence an associated outdoor courtyard area to the east. Curvilinear stone foundation wall W66, perpendicular to wall W65 along the north balk, encloses a room with a white plastered floor evidenced only in the north balk. Architecturally, we have a possible circular structure of four meters internal diameter, function undeterminable, with an adjacent curvilinear room with an associated white plastered floor and a courtyard to the northeast and east respectively. At least the stone foundations of wall W65 were still standing during the fill accumulation of pit EII 12/13 - EIII 70. The Esdraelon wares formed part of the artifact assemblage of courtyard loci 69 and 72, stratum 54.

Independently, the architecture of squares EII and EIII form compact, reasonably understandable units. The problem arises in attempting to understand the relationship of the respective units with the intervening EII/EIII balk.

9. In this elevation range, the southwest quadrant of the square is represented by a heavily disturbed fill layer, overlaid by the

modern fill deposit; the combined deposit excavated as locus 8.2-3.

Recorded clearly in the northern section where the EII/EIII balk was partially excavated, circular wall W65 was constructed at a higher elevation than surface EII 16 though preserved surface 16, possibly cut by pit EII 12/13 - EIII 70, ends 75 cm. west of the wall. According to the north section, the construction of wall W65 would theoretically post-date that time when surface 16 was still in use. The ceramic evidence aguments this interpretation. The EIII complex represented by walls W65 and W66 are clearly associated with the addition of Esdraelon wares to the local ceramic repertoire. In the artifact assemblage of floor 16, Esdraelon wares are absent, first appearing in the stratigraphic sequence when the EII complex fell into disrepair.

On the other hand, wall W65 slopes downward from north to south, the southern extension of this wall lying in the same elevation range of east/west wall EII W2, suggesting that at least one of these walls was standing when the other was constructed (if, in fact, they are independent). Also, the southern curve of wall W65 and the point where wall EII W2 enters the EII/EIII balk are perfectly aligned. Unfortunately, plaster floor 20A, clear in the EII east section, did not extend into EIII where it could have been stratigraphically placed in relationship to the courtyard of loci 72 and 69. And to toss in the devil's advocate, is it possible that the ceramic evidence is misleading and the inhabitants of the EII complex simply did not choose to leave Esdraelon ware sherds lying around on their floors?

This argument for the contemporaneity of walls EII W2 and EIII W65, however, leaves us with a peculiar architectural picture. The little square room in the northwest quadrant of EII, enclosed by walls W1, W4 and EI W7, was replaced by a roughly apsidal enclosure (?courtyard/?animal enclosure) sprouting rooms along its exterior (i.e., the room of floor 20 enclosed by wall W3, the enigmatic room of floor 20A to the south, and the room, also with a white plastered floor, enclosed by wall W66 to the northeast). The southeast courtyard cobbling of locus EIII 72 extends

into the east face of the EII/EIII balk at -188.29m. to -188.36m., the plaster floor of EII 20A into the west face at -188.17m. to -188.30m., suggesting that the outdoor cobbled surface was replaced by an indoor plastered one now totally destroyed in EIII with the possible exception of plaster fragment EIII 68 (-188.24m.).

Without the excavation of the southern half of the EII/EIII balk, the precise relationship of the EIII curvilinear complex to the EII rectilinear one will remain undefined. It is clear, however, whether one accepts the interpretation of two independent, successive complexes or the continued alteration and rebuilding of a single complex, their construction and subsequent disabandonment fall within a relatively short period of time.

As the EIII complex of stratum 54 fell into disrepair, building activities cease in squares EII and EIII, the succeeding deposit characterized by a large ash lens (stratum 51) extending throughout the northern half of square EII into the northwest corner of EIII, later cut by a large shallow pit (strata 50-48). Walls EIII W65 and EII W1 and W2 were used to bound this pit to the east and south respectively. Overlying the pit accumulation in square EII are the shallow, patchy ash deposits of stratum 46.

The stone foundation walls of EIII W65 and W66 were still standing when the first of the strata 43-41 cobbled pavements was laid (loci EIII 60.1-5 & EII/III 5) with associated pits of loci EIII 60.6-10 and 63. Three major re-cobbling phases with the overlying occupational debris were identified though the pavements were partially interwoven suggesting patch-work repair of a single pavement which was continually in use. These pavements were exposed throughout square EIII with partial preservation in the EII/III balk.

Stone foundation wall W58 of stratum 38, diagonally bisecting the northeast corner of square EIII, was constructed directly on the uppermost cobbled pavement. The associated stratum 37 occupational debris accumulated against the southwest face of the wall. An interior room with a plastered floor is visible only in the northeast corner

of the north and east balks. Stratum 37 is destroyed to the west in square EII¹⁰.

Between the succeeding stratum 36 and the structure of strata 26-24, the architectural evidence left by the inhabitants of Shuna North is extremely fragmentary. Built directly on a thick clayey lense (stratum 35), overlying the stratum 37 occupational deposits in the northwest quadrant, are the fragmentary remains of a single row east/west stone foundation wall (W53) with associated plaster floor patches. As the succeeding stratum 33/31 deposits accumulated over this destroyed structure, a second east/west double row stone foundation wall was built in the north-east quadrant (again fragmentary preservation, no associated flooring). Surface 30/?48.2 was laid upon the interwoven fill lenses of strata 33/31 and may have been roughly contemporary with pit 49 which cuts from the upper surface of the latter.

Strata 26-24 revealed three rooms of what must have been a rather substantial multi-room building built of large, flat mud-bricks (*ca.* 40-50 × 60-70 × 8 cm.) laid in a header-stretcher pattern on stone foundations (building partially exposed in 1984). Rooms I and II to the north and southwest were white-plastered, the latter also revealing a secondary beaten earth floor. Room/courtyard III to the south-east underwent a three phase alteration. During the earliest and latest phases, the room was white-plastered (locus 46.4 and the plaster striae visible in the south balk, see Fig. 3); in between, the room was apparently used as a kitchen. During this phase, a clay floor was laid and at least two ovens were built along the south face of the wall W19/W22 (loci 46.3 & 26.1 respectively).

Overlying the stratum 23 building collapse and subsequent 'fill' accumulation of

strata 22-21 are the remains of stone foundation wall W18 exposed along the EIII east balk. A small circular stone structure (locus 37), open (or possibly destroyed) to the west, was constructed at the same time as the wall and is bonded to it. To the west are plaster floor fragments (locus 41.1), partially overlaid by a thin ash scatter (locus 38.2). Associated with this surface are two small clay-lined pits (loci 39 & 40) used to support large standing vessels¹¹. Overlying the ash and plaster fragments were scattered patches of straw or reed silicate impressions (parallel impressions, no mat patterns observable) suggesting that the work area of strata 20-19 was provisionally roofed. The succeeding strata 18 fill accumulation top the 1985 sequence.

The ceramic sequence revealed during the 1984 and 1985 excavations of Shuna North show a clear distinction between the lower (late Chalcolithic/PNB-related) and upper (EB I) strata, however, no clear break in the sequence of locally-produced wares could be observed in the sample chosen for preliminary analysis¹². For purposes of tracing the changes from the earlier to later strata, however, a provisional three phase division will be referred to¹³:

'early' phase	strata 114-55	corresponding to the preference for the red-painted wares;
'middle' phase	strata 56-23	corresponding to the introduction of the black polished wares and a preference for the red-slipped and rope-decorated wares,
'late' phase	strata 22-7	a continuation of the former tradition, discontinu-

10. The correlation of locus EIII 30 with locus EII 5.4, published in the 1984 preliminary report, is questionable. Both loci are similar in composition (i.e., sand and gravel surface, with poorly preserved overlying plaster fragments in locus EIII 30), however, a direct connection between the two could no longer be identified as we cleaned back the

north section in 1985.

11. The base of vessel 38.1, of which only the base and body sherds are preserved, was *in situ* in pit 40, the flat bottom inverted conical profile of the pit matching that of the vessel base. A single body sherd was found embedded into the side wall of pit 39 to the south.

ation of the black polished wares with concomitant introduction of the band-slipped wares.

Throughout the sequence, the pottery is handmade with many vessels fashioned on a turn-disk with 'slow wheel' finishing. The production of ceramic vessels on a fast wheel appears only at the top of the sequence (strata 22-7) and then very rarely. With few exceptions, the fabrics are coarse and crumbly, the sherd fracture jagged. The basic fabric color ranges from pink, pinkish-white and grey to a very pale brown (see Appendix A for a more detailed account of fabric and surface color). Observed in the 1985 sample, the potters were rather indifferent in firing their wares: grey to black coring is common, reduced and grey-clouded surfaces as well as color variation ranging from a reddish-brown to a yellowish-red of the basic red slip and paint are not uncommon.

The most characteristic aspects of the Shuna North pottery, however, are the very coarse pastes used in its production and the poor adherence qualities of its slips and paints. Throughout the sequence, the potters added heavy concentrations of wadi sands, crushed quartz, calcite, lime and/or basalt. Though the potters varied their tempering techniques throughout time, this variation lay in the preference for given tempering combinations and not in a clear-cut series of adopted then discarded experiments.

The most typical fabric of the Shuna 'early' phase (strata 114-55) is characterized by the addition of very coarsely crush-

ed or ground grit, with a completely mixed range of grit type and size, in relatively 'light' concentration. This tempering method, however, continually reappears throughout the sequence, its later use confirmed by its appearance in the more typical later phase vessel forms.

The most typical later Shuna fabric (strata 54-7) is characterized by the presence of a relatively heavy concentration of a coarse sand temper, possibly due to poor levigation techniques, mixed with lighter concentrations of coarser grit. As with the earlier tempering method, this fabric was also used during the 'early' phase but was not a popular tradition. Alternative later phase methods include a relatively fine sand temper, in heavy concentration and a mixed grit temper with a heavy concentration of added crushed lime and calcite flakes, typical of the holemouth pot series.

Secondary methods used throughout include a predominantly coarse basalt-tempered ware and a relatively fine sandy fabric mixed with small to medium size grit tempering. The addition of crushed or powdered lime was used throughout. With the exception of the additional calcite-tempered fabric, there appears to be no particular correlation between fabric and associated tempering method with individual vessel forms.

The basic local ceramic repertoire is characterized by three overlapping pottery traditions of coarse red-painted, red-slipped and plain wares. The addition of applied and/or impressed/incised rope-like bands to a wide variety of vessel forms within all three traditions, though representing less than 5% of the total sherd

12. The following loci have been used for the 1985 preliminary analysis:

Surfaces: EI 16.1, 23.3, 30, 46, 47, 55, 61, 62, 67 & 68
EII 36.3-4, 38, 42, 44, 52, 62, 63, 80, 81 & 87
EIII 38.2, 41.1, 46, 47, 60.1-5, 68 & 72

Features: EI 12.3, 37.2 & 39.2
EII 41

Pits: EI 29.1, 31-33, 36, 59.2, 65, 70, 73, 75, 76 & 78
EIII 40, 49 & 60.6-10

Occupatio- EI 25.1-3 & 5, 56 & 60
nal debris/ EII 53

Garbage EIII 37, 43 & 73
lenses

Ash EII 37, 43 & 73
lenses:

Sealed fills EI 21
EII 45/49 & 70

13. This three-phase division is provisional and based only on the ceramic sample used for preliminary analysis. I strongly suspect further sub-division of the 'early' phase when the analysis of all artifact assemblages is completed.

count, also forms a distinctive feature of the Shuna North pottery assemblage. Though each of these traditions are continued throughout the sequence, the preference of certain traditions or combinations thereof vary (see below).

The application of red slip to the vessel was a popular decorative technique throughout the sequence. The slips were usually thick, often patterned with minute crack striae, ranging in color from red to reddish-yellow. The combination of a thick engobe applied to a very coarse fabric will result in uneven shrinkage during the drying and firing processes, thus the poor adherence quality of the slips. Although the Shuna potters did not succeed in improving their slipping techniques, they were not hesitant in applying their slips to various pots of every major type they produced.

During the earlier part of the sequence, the sloppy application of red paint, apparently using the same engobe as the slips, was a popular decorative technique. As no reconstructable vessel forms were preserved, we can only glimpse the intentions of the potters. Painted decoration was applied to a wide range of vessel forms¹⁴. During the later part of the sequence, this rather carefree application of red paint became more regularized into a multiple, parallel line or band motif (see ceramic type 82).

On many vessels, whether plain, slipped or painted, a rope-like band was applied onto or incised/impressed into the exterior surface. Although no complete vessel

forms were preserved, these rope-like bands were usually used to decorate the vessel rim or shoulder¹⁵. Modification or experimentation within a general pattern of continuity is again expressed in this decorative technique. Although certain application techniques were preferred towards the beginning or end of the sequence, the intended effect was retained throughout¹⁶.

The range of vessel forms is illustrated below (see Figs. 8-19). Presentation of the vessel forms has been organized on the basis of type. Due to the continuation of many forms into the succeeding phase or phases, chronological distinctions were not made (see Appendix A and Fig. 4 for the chronological distribution per type within the sequence)¹⁷.

Although the Shuna North potters appeared to have gradually modified their repertoire in response to changing local preferences and intermittent outside stimulation, at no point in the preserved occupational history of the site do the older craft traditions abruptly cease. As new elements are adapted into the local repertoire, the older traditions lingered on.

Based on the combined sample used for the 1984 and 1985 preliminary reports, 23% of the ceramic types continued to be produced throughout the excavated sequence. Of the total number of ceramic types (137), 17% appear only in the 'early' phase whereas 34% of the total number of ceramic types begin in this phase and continue in use into the succeeding phase or phases.

14. Vessel types 4, 7, 11-14, 19, 48, 50-52, 54-55, 57-58, 68-69, 88 & 92-93, see also types 78-81.

15. Vessel types 14-19, 26-27, 30, 35, 37-38, 52-53, 62, 73, 85a, 87, 88a & 93, see also ceramic types 83-89.

16. Type 1: ?thumb impressed, single or double row, Figs. 14b, 15-16, 83; stratigraphic range 92-30.

Type 2: finger impressed, single or double row, Figs. 30a, 53, 84; stratigraphic range 43-37.

Type 3: vertical or slightly oblique incised lines, Figs. 14d, 19, 85; stratigraphic range 60-30.

Type 4: ?fingernail impressed, Figs. 37b-c, 86; stratigraphic range 43-37.

Type 5: simple applied band (not illustrated); stratigraphic range 88-37 (EII 49.5 & EIII 54.9).

Type 6: applied band, finger impressed, Figs. 52, 68a, 87; stratigraphic range 105-9.

Type 7: applied band with diagonal impressions, single or double row, Figs. 17-18, 30b, 52a-d, 88; stratigraphic range 107-37.

Type 8: applied band, pinched, Fig. 89, stratum 37.

Type 9: punctate decoration, single or double row, Figs. 14a, 26-27, 35, 37a, 38, 71b; stratigraphic range 56-37.

17. NB. The 1985 excavations concentrated on the 'early' and 'middle' phases. For late phase forms, see the 1984 preliminary report.

Phase I (Chalco/PNB-related)Phase II (Chalco/Eadraelon)Phase III (Early EB I)

85/1 85/10 85/4+84/14a 85/12

85/13 85/20+84/13 85/32

85/55 85/66 85/67 85/90

85/107-109 85/110-114 84/11

84/69 84/146 84/24 84/44 84/47

84/51 84/57 84/58 84/64

85/3 85/5 85/14 85/16 85/17

85/18 85/19 85/22 85/23

85/24 85/25 85/26 85/27 85/47

85/53 85/59 85/60 85/62 85/63

85/64 85/70 85/75 85/76 85/77

85/84 85/86 85/89 85/94

85/92-93 85/95 85/96 85/98

85/99 85/102 85/103 85/104

85/115-118+84/71-76 84/8

84/22 84/52 84/86 84/92

85/4 85/56+84/27 85/57 85/79

85/71+84/60 85/2 85/80+84/91

85/28-29 85/6 85/8 85/53

85/65 85/68+84/65-67 85/79

85/21+84/17

85/37,43,46-47+84/29-31

85/119 85/97 85/120 84/2

84/7+85/95 84/10 84/12 84/15

84/20+85/18 84/21+85/30-31

84/53 84/55 84/59 84/62+85/

74 84/68+85/69 84/79+85/87

84/84+85/85 85/83 85/88 84/88

85/98+84/82b-d 85/81+84/82a

84/89 84/23-26+85/48-52&54

84/54+85/58 84/33-36+85/33-36

84/37-38 84/39-40 84/16+85/21

84/83

85/4 85/56+84/27 85/57 85/79

85/71-84/60 85/2 85/80+84/91

85/28-29 85/6 85/8 85/53

85/65 85/68+84/65-67 85/79

85/21+84/17

85/37,43&46-47+84/29-31

85/119 85/97 85/120 84/2

84/7+85/95 84/10 84/12 84/15

84/20+85/18 84/21+85/30-31

84/53 84/55 84/59 84/62+85/

74 84/68+85/69 84/79+85/87

84/84-85/85 85/83 85/88 84/88

85/98+84/82b-d 85/81+84/82a

84/89 84/23-26+85/48-52&54

84/54+85/58 84/33-36+85/33-36

84/37-38 84/39-40

.....

85/91+84/80 84/9 84/73 84/85

85/82+84/81 84/90+85/82

84/56+85/59a 84/87 85/121

84/41-43+85/44-45 85/73+84/61

85/37,43,46-47+84/29-31

85/119 85/97 85/120 84/2

84/7+85/95 84/10 84/12 84/15

84/20+85/18 84/21+85/30-31

84/53 84/55 84/59 84/62+85/

74 84/68+85/69 84/79+85/87

84/84+85/85 85/83 85/88 84/88

85/98+84/82b-d 85/81+84/82a

84/89 84/23-26+85/48-52&54

84/54+85/58 84/33-36+85/33-36

84/37-38 84/39-40 84/16+85/21

84/83

85/91+84/80 84/9 84/73 84/85

85/82+84/81 84/90+85/82

84/56+85/59a 84/87 85/121

84/41-43+85/44-45 85/73+84/61

84/1 84/3 84/6 84/16 84/18

84/19 84/45-46&48-49 84/50

84/76-78 84/93 84/32

With the appearance of the black polished Esdraelon wares in strata 54, provisionally marking the beginning of the second or 'middle' phase, 67% of the 'early' assemblage ceramic types continue in use. On the other hand, during the 'middle' phase, the Shuna potters began to deviate from the long standing norms and experimented with altering the more traditional vessel forms and surface finishes: 41% of the total number of ceramic types are introduced during this phase.

Our third or 'late' phase is defined primarily by the discontinuation of the Esdraelon wares and the appearance of the band-slipped wares (each representing less than 1% of the respective 'middle' and 'late' phase sherd counts) into the ongoing though gradually changing local tradition. The third phase, however, is problematic. Our EB I sample is small, the preserved contexts were, with few exceptions, overlapping fill lenses interspersed with stone foundation wall fragments, and the preservation of the sherds extremely poor. Given these limitations, one can still detect the element of continuity expressed in 40% of the middle phase types which continue to be used and produced in the upper third of the sequence.

Interwoven within this clear pattern of continuity is a complimentary pattern of continual change and modification. This can clearly be traced in several of the more common vessel forms and major decorative techniques. The apparent multi-purpose bag-form pots (types 48-56) are the preferred form at the beginning of the Shuna North sequence. The simple holemouth pots (types 32-36) which, with the addition of a thickened rim later become the predominant cooking pot type, were also produced but formed only a minor element in the household inventory. Throughout this development, the production of these vessels did not remain static. The smaller, slightly finer-tempered bag-form pots (types 48-50, 52-55), typical of the earlier part of the sequence, were gradually replaced by a series of pots, clearly derived from the former tradition, though with larger dimensions and generally made with a slightly coarser paste (types 51 & 56). The

hole-mouth pots also underwent a series of modifications. To the basic holemouth pot form with a simple pinched rim produced during the earlier phase, the later potters added a variety of thickened rims (types 37-47). The 'middle' phase potters experimented with sharply profiling this rim (types 44-45) and applying a wash which appears to have been brushed on rather than the traditional thick, fugitive slip, however, these practices were not continued by their successors during the 'late' phase.

How the potters decorated their wares also reflect this pattern of gradual change and modification. Four major decorative schemes were used by the Shuna potters: simple red-painted decoration, in the upper strata replaced by a multiple parallel line or band motif, red-slip and rope-like bands applied and/or incised/impressed on the vessel surface. Based on the 1985 excavated sample, in the 'early' phase, simple red painted decoration was the preferred decorative technique, representing 21% of the 'early' phase sherd count. Red-slipped wares (including the possible firing variant reddish-brown and yellowish-red slips) represent 17% of the sherd total; the rope decorated wares less than 1%. During the 'middle' phase, the use of red slip increases, now representing 38% of the 'middle' phase sherd total with the use of applied and/or incised/impressed rope-like bands now increasing to 4%. Simple painted decoration basically falls out of fashion (representing only 1.5%) and the multiple parallel band motif is now introduced. That the painting style typical of the earlier assemblage continues to be produced can be seen in the sloppy application of red paint, usually a horizontal band(s) motif, on vessel forms and pastes more typical of this later phase. The production and popularity of the given decorative techniques established during the 'middle' phase are continued into the final. Based on the 1984 'late' phase sherd count, red slip was applied to *ca.* 37% of the vessels, rope-like bands to *ca.* 1%. Painted decoration of the multiple parallel band motif remains rare (less than 0.5%).

Parallel to the coarse ware tradition is a subsidiary tradition of finer 'medium-coarse' wares which, with the addition of small high loop-handled cups/?juglets (ceramic type 97), represent a slightly finer version of their coarse ware counterparts. Three basic fabrics were identified: a dark reddish-yellow, fine grit- or sand-tempered ware (types 92-93, possibly representing a single vessel); a light red, fine grit- and chaff-tempered ware (ceramic types 94-99); and a white- or pink-surfaced, fine grit- or sand-tempered ware (types 100-106). All fabrics are soft and although many vessels were also burnished, the slips adhered poorly. Throughout the sequence, these medium-coarse wares formed only a minor part of the household inventory and the repertoire of preserved forms is small. Based on the 1985 sherd count, these wares comprised less than 0.5 % of the 'early' phase assemblage, 4 % of the 'middle' phase. The production of these slightly finer vessels continued into the 'late' phase (see 1984 preliminary report, ceramic types 1-9)¹⁸.

The Shuna North sequence is also distinguished by the introduction and subsequent discontinuation of three non-locally produced wares: a very rare geometric painted ware (strata 112-92, ceramic types 107-109), 'dark-face slipped and burnished' ware (strata 112-92, ceramic types 110-114) which represent 0.1 % of the 'early' phase sherd count, and the polished black and yellowish-red Esdraelon wares which, though representing only 1 % of the 'middle' phase sherd count, appear to have greatly stimulated local production

(strata 54-23, ceramic types 115-118).

Typical throughout the entire Shuna North sequence is the paucity of small finds: the inhabitants were clearly not in the habit of casually tossing out their valuables. Bone tools are rare and limited to a small variety of points or awls and a single 'spatula'. Ground stone basalt vessels are also very rare with a limited repertoire of fragmentary simple bowls or basins. Simple basalt mortars, grinding stones, hammer-stones, pebbles, a ?whetstone and several pierced circular 'whorls' or weights complete the list of ground stone utensils. The category of clay figurines is represented by a single headless quadraped which does little to excite the imagination.

In general chronological terms, the preserved Shuna North sequence spans the 4th millennium B.C. The pottery of the 'early' phase has clear affinities to the Jericho PNB. On the other hand, the clear continuity in ceramic production into the succeeding phase as well as the contemporary flint assemblage argue for a relatively late manifestation of this general cultural assemblage which must be contemporary, in part, with the Ghassul to the south. The introduction of the Esdraelon wares into the middle of the sequence place this phase in the middle to late 4th millennium. The preserved EB I which tops the Shuna North sequence must belong to the early development of that tradition.

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18. The preservation of these soft, relatively thin-walled vessels was extremely poor and extracting the sherds from the soil during excavation problematic. Combined with the problem of disintegration during the washing

process, one suspects higher relative percentages and a wider range of vessel forms. These wares, however, clearly played a minor role in the potter's repertoire.

APPENDIX A: Catalogue of ceramic types

Types 1-91 = Coarse ware

Types 92-106 = Medium-coarse ware

Types 107-109 = Geometric painted ware

Types 110-114 = Dark-face Slipped and Burnished ware

Types 115-118 = 'Esdraelon' ware

Type	Locus	Color fabric (same) surface		Surface Treatment	Alternatives	Other occurrences
Fig. 8						
1	EI 21.1		10YR7-6/2	Ø		
2a	EIII 69.3		5YR4/1	Ø smoke-blackened ext/int rim	red slip int	EIII 69.1&3
2b	EIII 60.5		5YR5-4/1	Ø		
2c	EI 21/1		5YR6-5/1	Ø smoke-blackened ext/int rim		
3a	EIII 49.1		10YR5/1-2	Ø smoke-blackened ext/int rim		
3b	EIII 54.5	5YR7/3-4	7.5YR5-4/6	fugitive red slip ext/int		
3c	EIII 54.6	10YR7-6/1	10R5/8	fugitive red slip ext/int		
4a	EI 25.2	10YR6/1	10YR6-5/2	red paint 5YR 5/4	red slip +/- int rim band	EI 16.1 EII 45.8 49.3
4b	EI 53.4	10YR7/2-3	7.5YR8/2	Ø wet-smoothed		
4c	EI 25.4	10R8/3	2.5YR5/6	well-adhering red slip		
		2.5Y6/0		ext/int		
4d	EII 44.2	7.5YR7-6/4	5YR7-6/6	Ø (rough finish)		
4e	EII 45.8	7.5YR8/2	10R5/4-6	fugitive red ?slip/?paint ext		
4f	EI 16.1	7.5YR7/2	10R5/8	fugitive red slip ext/int		
4g	EII 45.6	7.5YR8/4		reddish-brown paint 2.5YR5/4		
				ext/int, wet-smoothed		
4h	EII 36.1	5YR8/3	7.5YR8/2	Ø (rough finish)		
		7.5YR6-7/0				
5	EIII 54.2	5YR7/4	1YR6/6	fugitive red slip ext/int		
		2.5YR5-4/0				
6a	EIII 54.10	7.5YR8/2	10R5-6/8	fugitive red slip ext	predom. red slip ext/int ext only, reddish-yellow slip ext, Ø	EII 42.1 EIII 49.1-3 54.7 69.5 72.1
		10YR5/1				
6b	EIII 69.3	10YR6-5/2	5YR6/4	red slip ext/int		
6c	EII 44.1	7.5YR8-7/4	10R5-4/8	fugitive red slip ext/int rim		
6d	EIII 49.2	5YR8/4	10R6/8	fugitive red slip ext		
		5YR5/1				
7	EI 21.5	10YR8/2	2.5YR5/6	red ?slip ext/int (eroded)		
		2.5Y5/0				
8a	EIII 60.5	10YR8-7/2	2.5YR6-5/6	fugitive red slip ext/int slightly reduced	red slip ext/int ext only, Ø	EI 53.3 EII 49.3
8b	EII 49	7.5YR8/2	2.5YR6-5/6	fugitive red slip ext/int rim		
		10YR7/2				
8c	EI 53.3	7.5YR7/2	10YR8/2	Ø wet-smoothed		
9	EIII 60.4	10YR8/2- 6/1	10YR8/2	coarsely made, possible traces of eroded red ?slip		

Fig. 9:

10	EII 36.1	7.5YR8-7/4, 6-4/0	Ø, very coarse, unevenly fired		
11a	EII 44.1	10YR8/2	10R5/6-8, 4/8	fugitive red slip ext/int rim	red slip ext +/- int rim EI 21.2
11b	EII 70.1	7.5YR8/2-4	10R5/6, 4/8	fugitive red ?paint ext/int rim	same EII 49.3

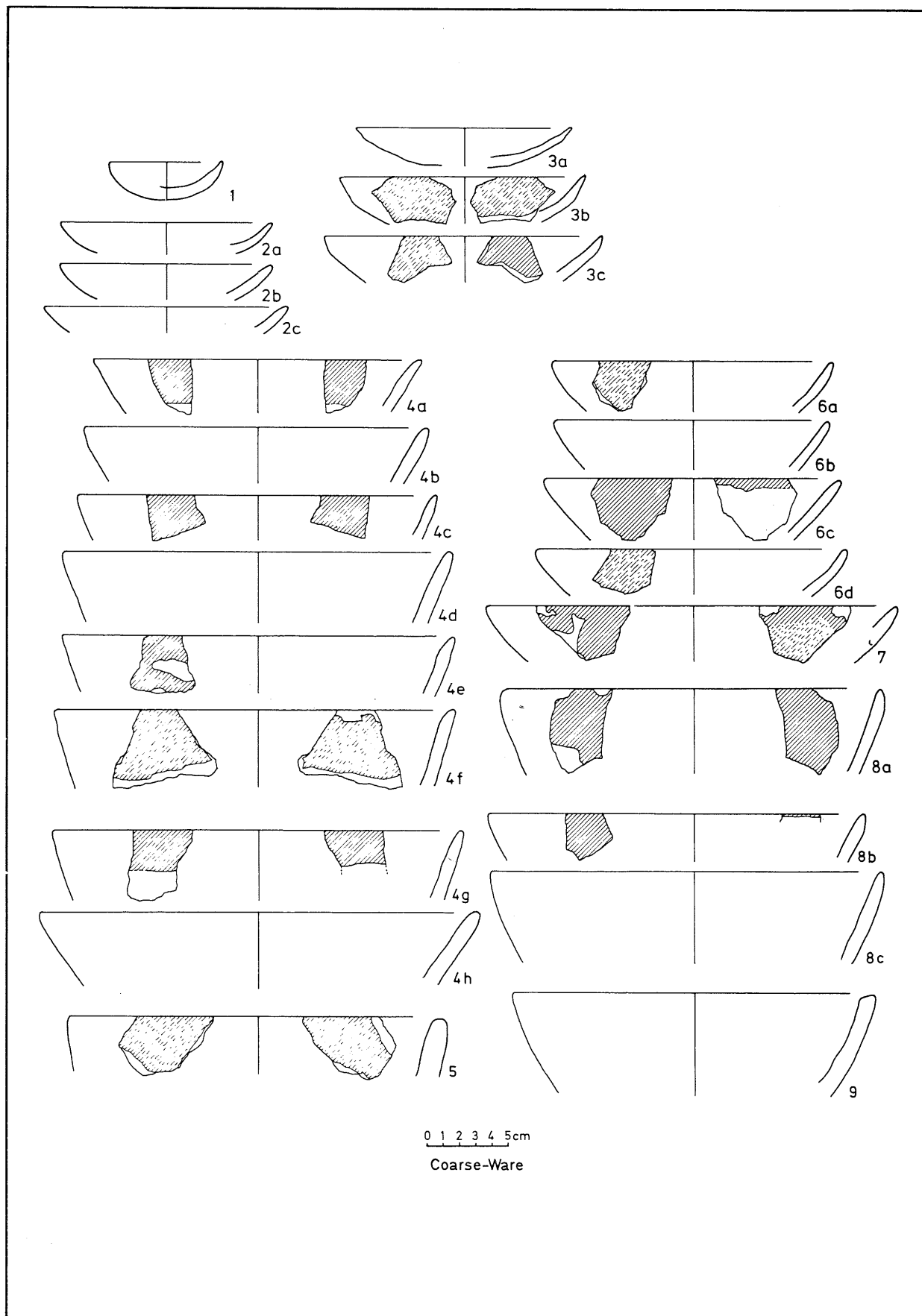


Fig. 8

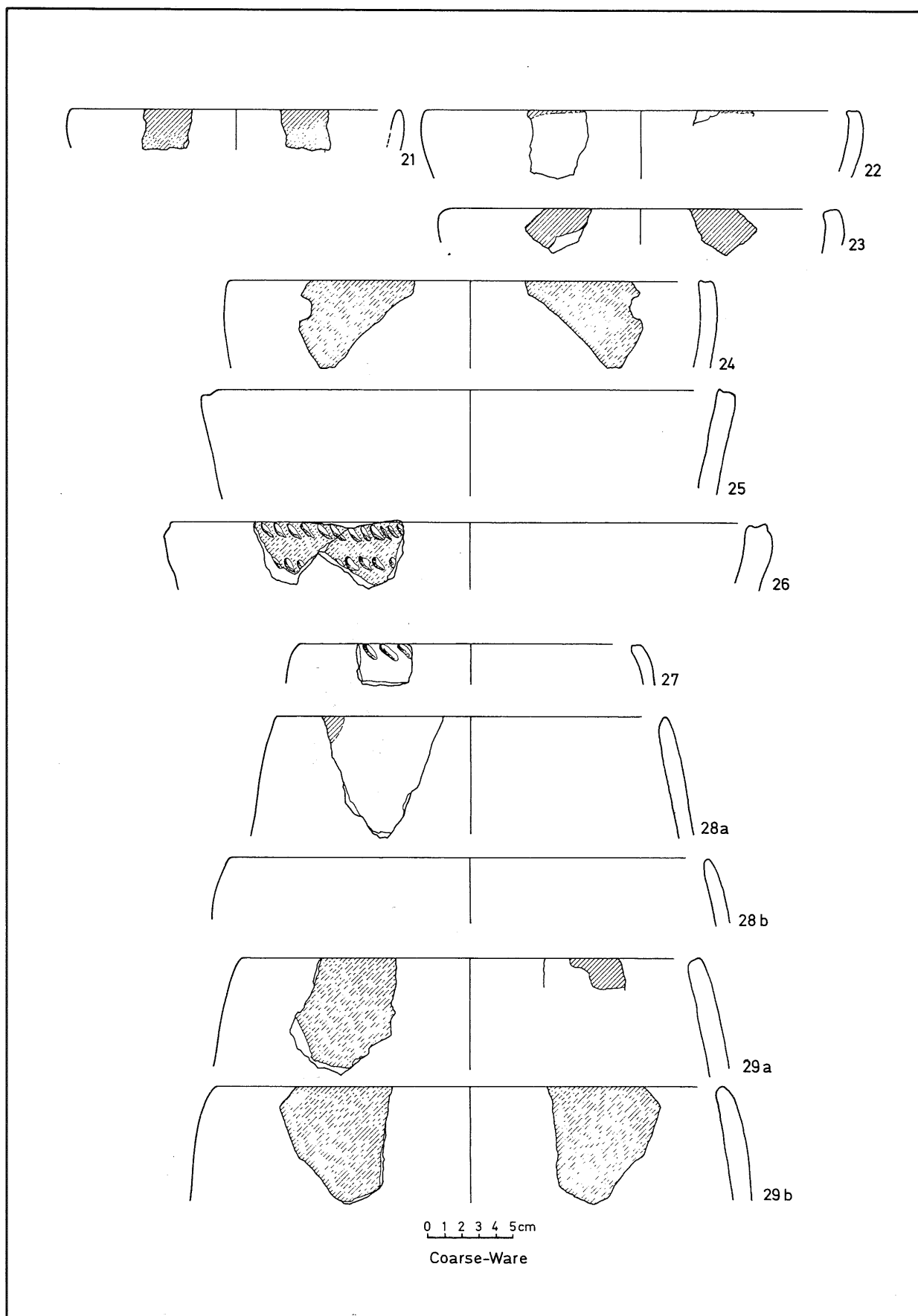


Fig. 10

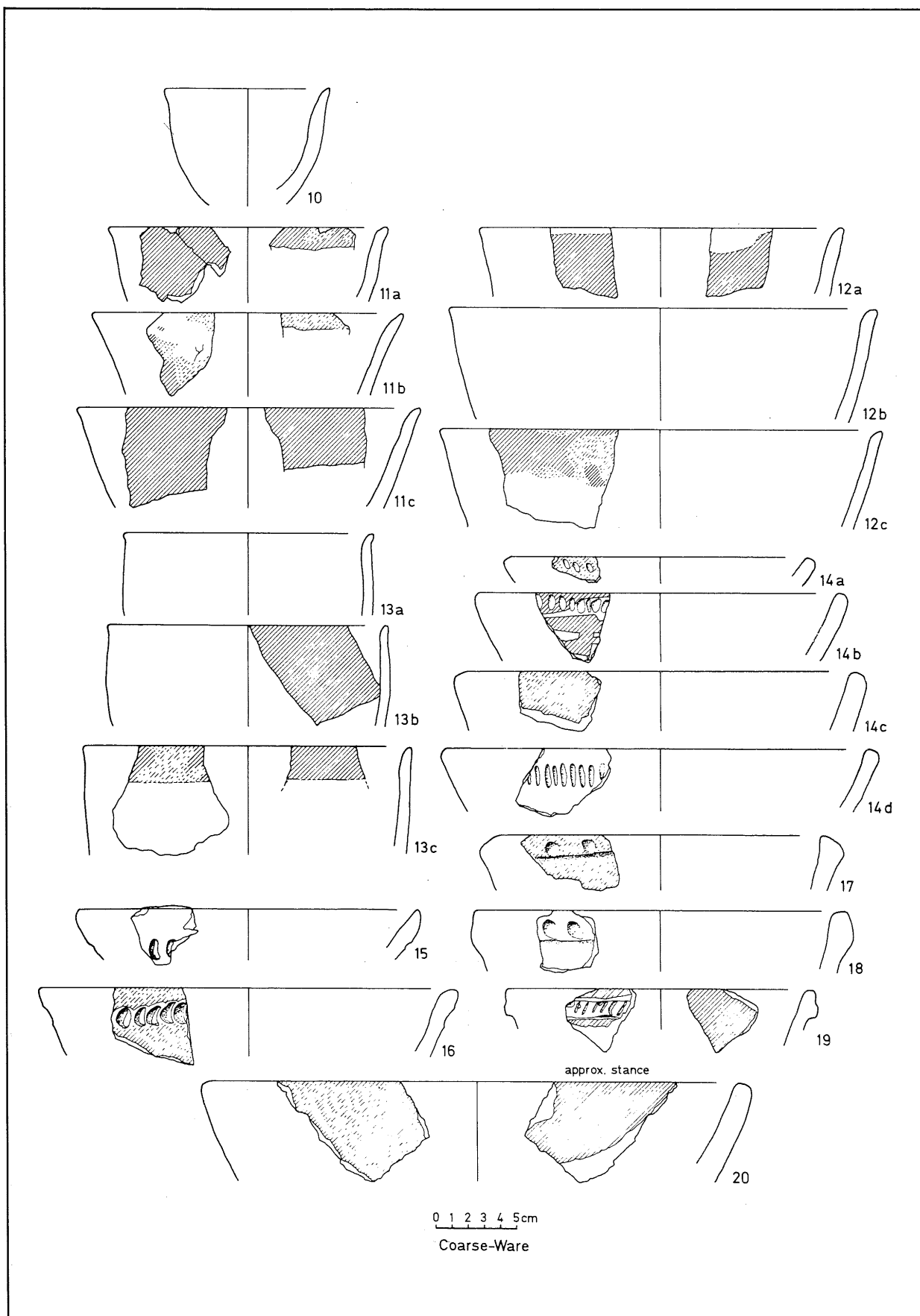


Fig. 9

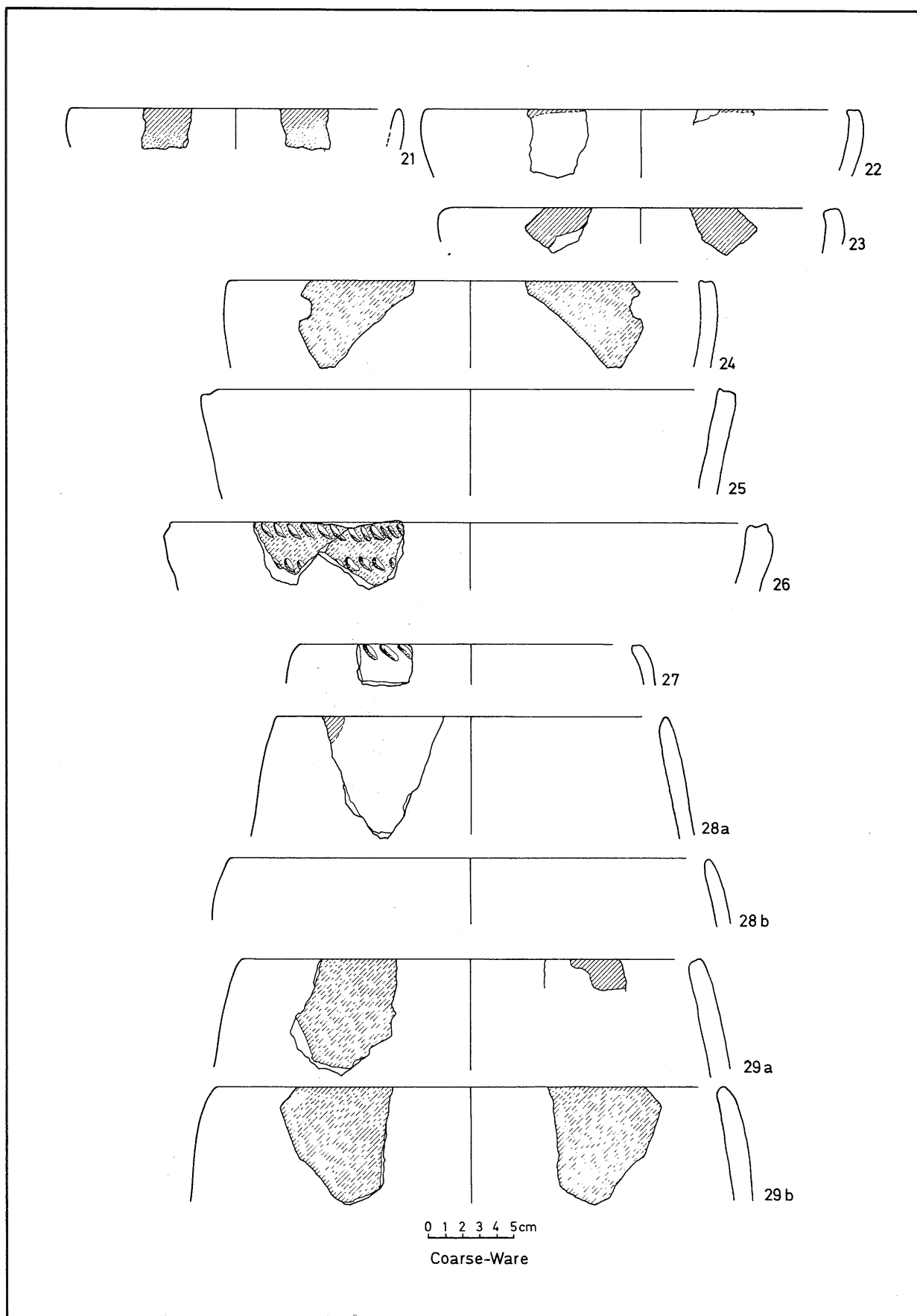


Fig. 10

Fig. 11:

30a	EIII 60.1	7.5YR8/4	10YR8-7/4	Ø wet-smoothed impressed band type 2		
30b	EIII 54.3	7.5YR8/2	10R6/4	fugitive red slip ext/?int		
			2.5YR6/6			
31a	EIII 60.4	10YR7/3	2.5YR5/6	fugitive red slip ext/int		
		5YR7/4,5/1				
31b	EIII 60.1	7.5YR7/4	5YR7-6/6	fugitive reddish-yellow slip ext/int	fugitive & well- adhering red or reddish-yellow slip ext/int +/- rim	EI 21.4 25.6 56.1 EI 51.1 55.2
32a	EII 49	7.5YR8/2-4	2.5YR5/4-6	fugitive red slip ext/int rim		
32b	EII 45.4	7.5YR8/4	10R5/6	fugitive red slip ext/int rim		
32c	EI 76.1	5YR7-6/6	10R5-4/8	fugitive red slip ext/int rim		
33a	EIII 54.2	5YR6/1	7.5YR8-7/2	Ø	fugitive red slip ext, Ø	EIII 54.2&7 54.7 60.2 69.1 69.3
33b	EII 36.2	7.5YR8-7/2	5YR6/3,5/2	Ø lightly reduced ext		
33c	EI 47.1	10YR7/2-3	2.5YR6/6	fugitive red slip ext		
			5YR6/6			
33d	EIII 60.2	7.5YR8/2	7.5YR8/2-4	Ø		
		7.5YR6-5/0				
34	EIII 54.5	7.5YR8/2-4	10R5/6	red slip ext/int		
35	EIII 69.3	7.5YR6/6	7.5YR8/4	Ø wet-smoothed		
		10YR6/1		punctate deco. type 9		
36	EI 78.1	7.5YR7/2	2.5YR5/4-6	fugitive red slip ext/int rim		

Fig. 12:

37a	EII-S 4.1	7.5YR8/4	5YR5/1-2	Ø smoke-blackened punctate deco. type 9		
		10YR6-5/1				
37b	EIII 60.4	7.5YR7-6/4	7.5YR7/4	Ø incised band type 4		
37c	EIII 60.2	2.5YR6/6	5YR7/6	Ø wet-smoothed ext incised band type 4		
37d	EIII 60.4	10YR6/1	7.5YR8/2	Ø well-smoothed ext	same	EIII 54.2
		7.5YR7/2,4/0				
37e	EIII 54.10	10YR6-4/1	7.5YR7/2	Ø smoke-blackened wet-smoothed		
			10YR5-6/1			
37f	EIII 60.4	7.5YR8/2	7.5YR6/4,7/2	Ø smoke-blackened ext		
		10YR6/2				
38	EIII 60.8	7.5YR8/4	7.5YR8/4	Ø wet-smoothed punctate deco. type 9		
		10YR5/1				
39a	EIII 54.2	7.5YR7/2	7.5YR8/2	Ø wet-smoothed ext	predom. Ø, fugitive red slip ext	EIII 49.5 54.2&3 54.6&10 60.2&3 60.4&5 60.7 69.1&3 69.5
39b	EIII 54.5	5YR6/6	2.5YR5/8,6/6	fugitive red slip ext/int rim		
		10YR5/1				
39c	EIII 60.5	7.5YR8/4	10YR8-7/2	Ø (rough finish)		
		10YR4/1				
39d	EIII 60.4	7.5YR8/4	7.5YR7-6/2	Ø wet-smoothed ext		
		10YR4/1				
39e	EIII 60.2	7.5YR8/4	7.5YR7/4	Ø (rough finish)		
		7.5YR5/0	10YR8/2			

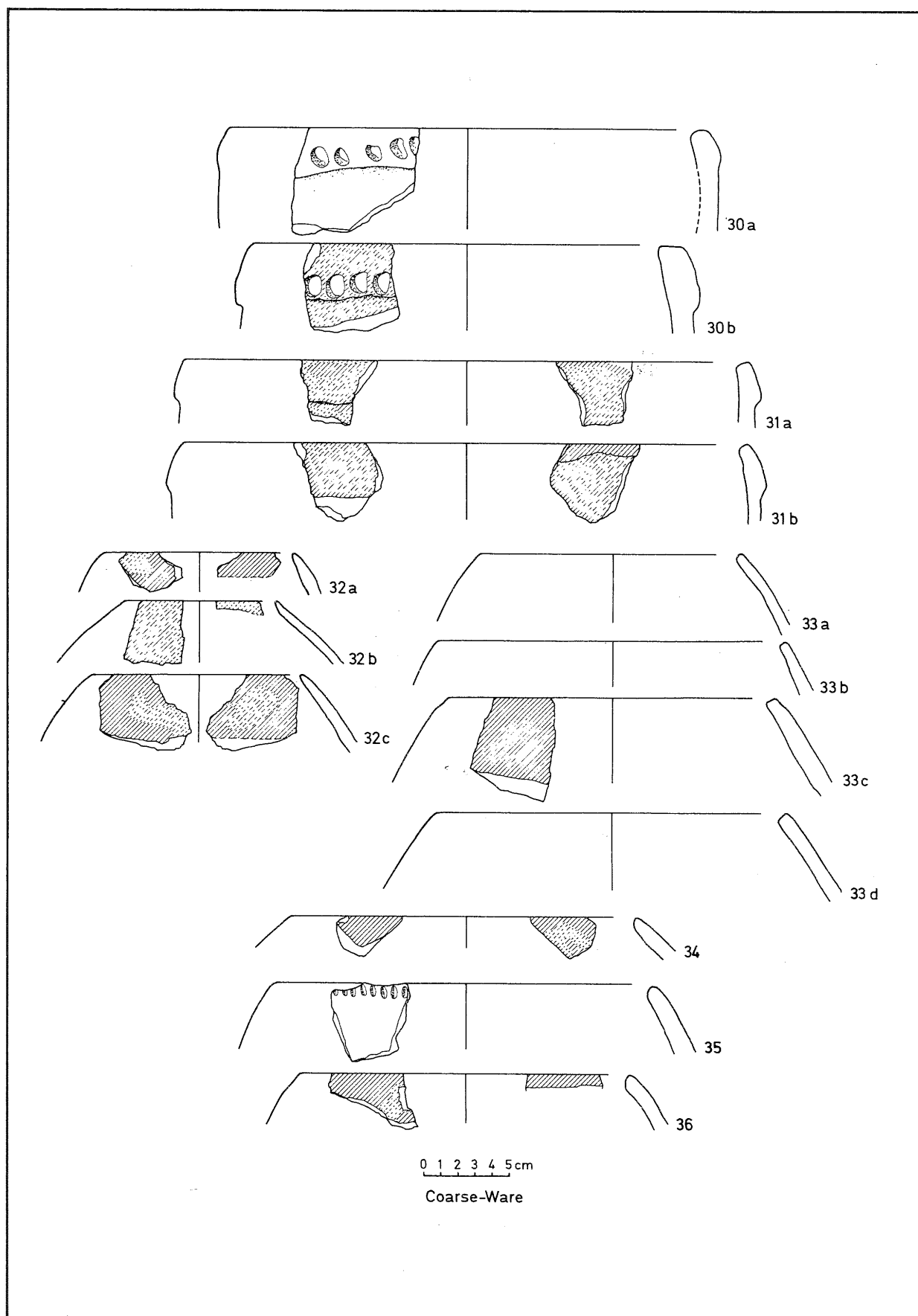


Fig. 11

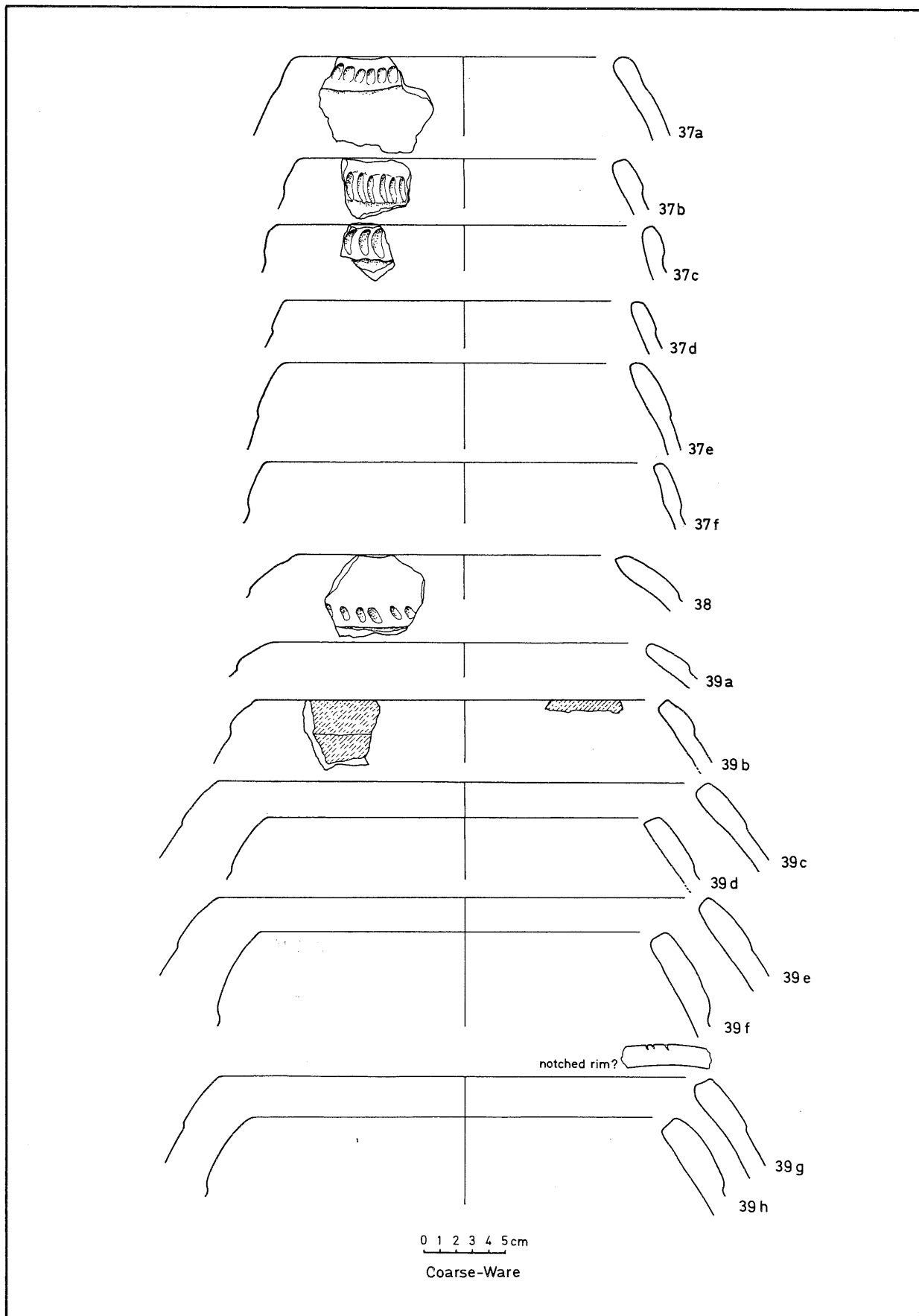


Fig. 12

39f	EIII 60.5	7.5YR7/4 10YR5/1	7.5YR7/4	Ø
39g	EIII 54.2	7.5YR8/4	10YR7/2 5YR6/2	Ø wet-smoothed ext ?notched rim
39h	EIII 60.4	7.5YR7/4 7.5YR5/0 10R6/1	7.5YR8/2	Ø wet-smoothed ext/int rim

Fig. 13:

40a	EIII 60.5	7.5YR8/6 10YR4-3/1	7.5YR8/1	Ø wet-smoothed ext	predom. Ø, fugitive red or reddish-yellow ext	EIII 46.1 49.3 54.2&5 54.7 60.1-5 69.3
40b	EIII 54.5	7.5YR7/4 7.5YR4/0	7.5YR8/4	Ø wet-smoothed ext		
41	EIII 60.4	7.5YR7/4 10YR4/1	7.5YR6/4	fugitive light brown slip ext burnished on upper surface		
42	EIII 54.7	10YR7/2-3 10YR5/1	5YR6/6	fugitive reddish-yellow slip ext/int rim	predom. Ø fugitive red slip ext	EIII 54.2&10 60.4-5
43	EIII 60.3	10R4/1	10YR7-6/2	Ø		
44a	EIII 60.7	7.5YR7-6/4	10R5/6-8	fugitive red slip ext/int rim		
44b	EIII 60.5	7.5YR8/2 10R6/1	7.5YR7/6	fugitive reddish-yellow slip ext/int rim		
45	EIII 60.5	7.5YR7/4 10YR4/1	7.5YR8-7/4	Ø		
46	EIII 60.1	10YR8/2	7.5YR8/2-4, 7/4	Ø		
47	EIII 54.2	7.5YR7/4 10YR5/1	7.5YR7/4	Ø		

Fig. 14:

48a	EI 73.2	5YR7/2,5/1		red paint ext rim/int rim 10R5-6/6		
48b	EI 25.5	10YR6-5/1	2.5YR4/2-4	red slip ext/int, reduced	reddish-yellow slip ext	EI 39.2
48c	EII 45.7	7.5YR8/2-4 2.5Y6/0	7.5YR8/2-4	fugitive red paint ext rim/int rim 10R5/8		
48d	EII 44.1	7.5YR8-7/2		fugitive red paint ext rim/ int rim 10R6/8		
48e	EI 21.2	5YR7-6/3		red paint ext 7.5R5/8-10R 3/6 / red slip int		
48f	EII 55.1	7.5YR8/4	10R5/6-8	red ?slip ext/red paint int		
48g	EII 45.6	7.5YR8/2 5YR8/4	7.5YR8/4	Ø wet-smoothed ext		
48h	EII 45.6	7.5YR8/2 10YR8/2	7.5YR8/4	red ?paint/?slip ext/int rim		
49	EII 67.1	7.5YR7/2	5YR7/3 10YR8/2	Ø wet-smoothed ext, slow- wheel finish on rim		
50a	EI 53.3	5YR6/4-6	10R5/6,6/4	red ?slip/?paint ext	red slip ext +/-rim, Ø, red ?paint ext	EI 13.3 16.1 33.1 35.1 51.2 67.1 EII 45.8 49.5 58.1 70.1
50b	EII 49	5YR7/3-4	10R5-4/6	red paint ext/int rim		

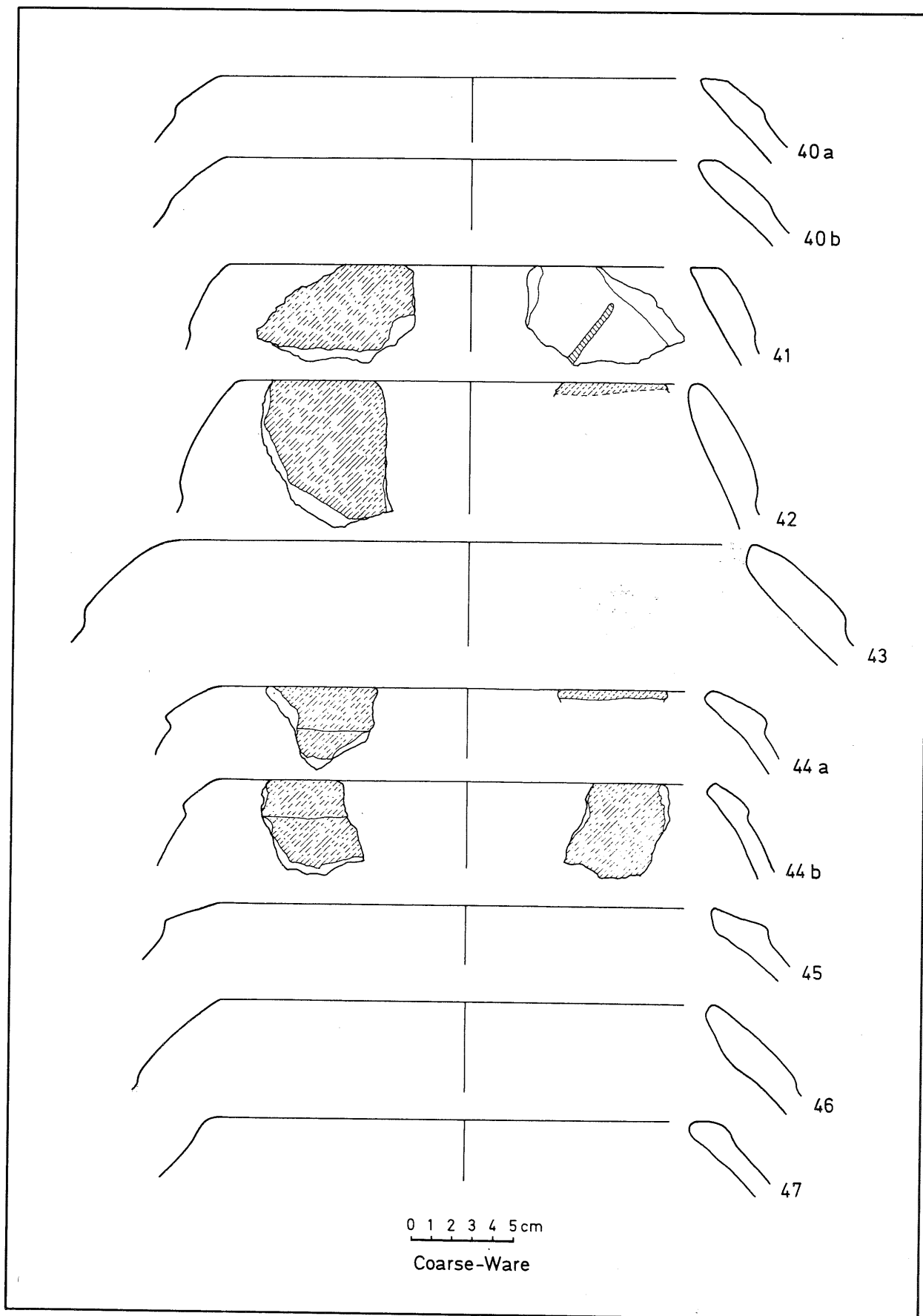


Fig. 13

51a	EI 53.3	10YR6/1, 7/2	10YR8/2	Ø wet-smoothed ext	Ø, +red painted band on int rim, red slip ext +/- int rim, red paint ext	EI 21.5 25.5 53.1&3 56.2 67.1 73.1 75.1 EII 42.1 44.1 45.4-5&8 49.3,5-6 73.1 EIII 49.4 54.2,4-5 60.2,3-5 60.7 69.5
51b	EII 81.1	7.5YR7/2-4	10YR8/2	Ø wet-smoothed		
51c	EI 21.3	10YR7/3	7.5YR7/2	originally red slip ext/int, subsequently recovered with slurry prior firing		
51d	EIII 60.4	7.5YR8-7/4	7.5YR8/4	Ø		
51e	EII 45.7	10YR5/1 5YR7/3, 6-5/0	7.5YR8/4	fugitive red paint 10R5/8		
51f	EIII 49.5	7.5YR8/4	10YR6/1-2,7/2 7.5YR5/0 5YR7/4,8/4	Ø wet-smoothed ext, reduced		
Fig. 15:						
52a	EI 67.1	7.5YR6/2	10YR8/2	Ø wet-smoothed impressed band type 1		
52b	EI 25.4	10YR8/2	2.5YR6-5/8	fugitive red slip ext/int rim applied & impressed band 7	red slip + band types 6&7	EI 21.3 62.1
52c	EII 45.4	7.5YR8/4	7.5YR8/4	Ø wet-smoothed		
52d	EIII 60.7	7.5YR8-7/1 7.5YR7/4	7.5YR8/4	applied & impressed band 7 Ø applied & impressed band 7		
52e	EII 49.3	10YR8/2		red paint ext rim/int rim 10R6/4-6 applied & impressed band 6		
53	EIII 60.4	5YR6/2,4/4	2.5YR5-4/4	red slip ext/int rim impressed band type 2		
54a	EII 70.1	10YR7/1, 8/2	10YR7/1 7.5YR5-4/0	Ø wet-smoothed, smoke- blackened ext		
54b	EII 62.1	7.5YR8/4		reddish-brown paint ext/int rim 10R5-3/2 & 7.5R6-5/8		
55	EII 55.2	10YR6/2		red paint ext/int rim 10R6-5/6,5-4/3		
56a	EII 45.8	5YR7/4	10YR8/2	fugitive red paint ext 10R4/8	fugitive red or reddish-yellow slip ext/int rim, Ø	EII 36.2 EIII 54.2&4 60.1&4 60.5&7 69.1
56b	EIII 54.2	5YR7/4 7.5YR8/4		fugitive red slip ext/int rim		
56c	EIII 60.10	7.5YR7/2-4	2.5YR6-5/8	fugitive red ext/int rim		
56d	EIII 54.4	5YR7/4	10R6/8,5/6	fugitive red ?slip ext/int rim		
56e	EIII 54.1	10YR8-7/2	7.5YR7/6	fugitive reddish-yellow slip ext/int rim		
56f	EIII 49.2	10YR7-6/1	7.5YR7/6	fugitive reddish-yellow slip ext/int rim		
56g	EIII 54.4	7.5YR8-7/2	7.5YR8-7/4	Ø		

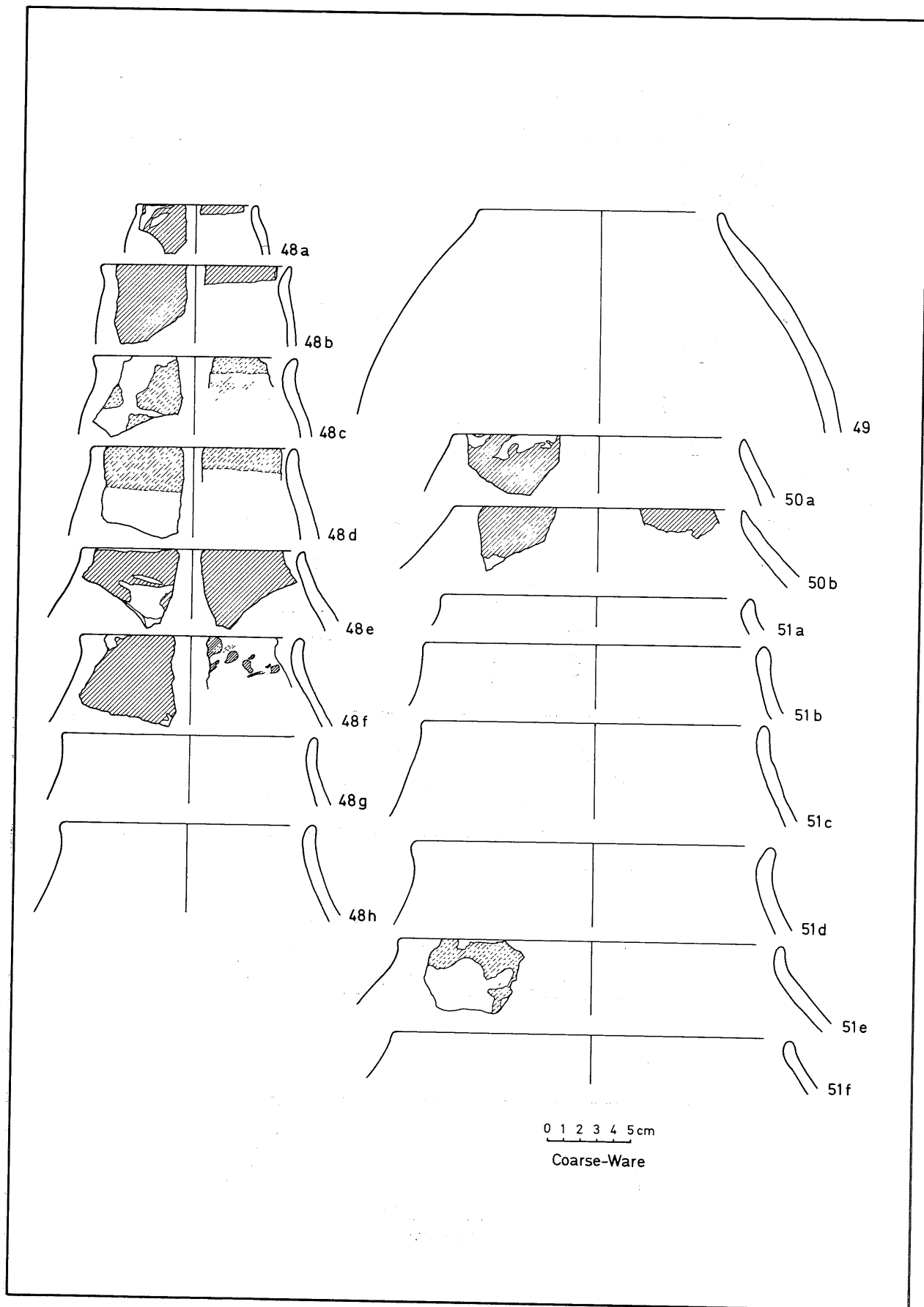


Fig. 14

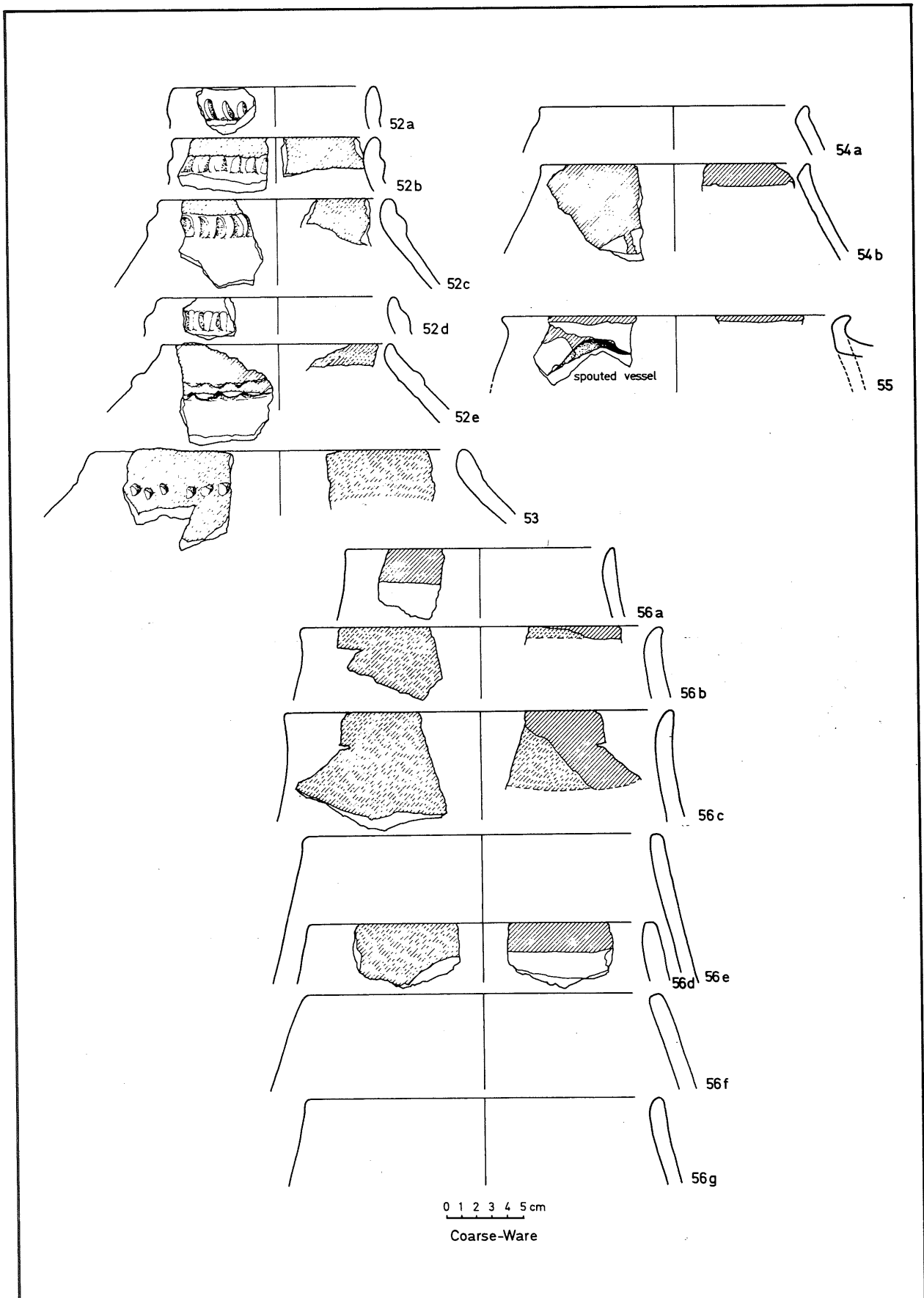


Fig. 15

Fig. 16:

57a	EIII 49.2	10R6/8 7.5YR6/4 10R6/8	10R5/6	red slip ext/?int		
57b	EII 36.3	7.5YR8/4 10YR6-5/1	2.5YR6/6-8	red ?slip/?paint ext	red slip ext	EII 36.1
57c	EI 25.1	5YR7/4	10R5-4/6 5YR7/4	fugitive red slip ext/?int rim		
58a	EI 47.1	7.5YR8/2-4 2.5YR5/0	10R6/8	red paint ext/int rim	predom. Ø, red slip ext/int collar	EII 36.1 42.1 EIII 49.2 54.2&7 60.1-2 60.5 69.4 72.2
58b	EIII 54.4	7.5YR8-7/2 7.5YR3/0 10YR5/1	2.5YR6-5/8	fugitive red slip ext/?int		
58c	EIII 60.1	2.5YR6/6	10R5/8	fugitive red slip ext		
58d	EIII 69.3	7.5YR7/4		Ø, wet-smoothed, traces of red ?paint on collar		
58e	EII 73.1	7.5YR7/2 10YR6/1	2.5YR5/6	red slip ext/int collar		
58f	EIII 60.4	7.5YR8/4		fugitive red ?slip/?paint around rim		
58g	EIII 60.7	5YR7/6		Ø wet-smoothed ext		
58h	EIII 54.2	5YR7/6,6/4	7.5YR7-8/4	Ø wet-smoothed		
59a	EIII 54.2	7.5YR7-6/2 7.5YR8/4	10R5-4/8	fugitive red slip ext		
59b	EIII 54.8	5YR7/4	10R5/8	fugitive red slip ext		
60a	EIII 54.6	10YR7/2 7.5YR8/4	10R5-4/8	fugitive red slip ext/int collar		
60b	EIII 49.4 60.3	7.5YR7/2-4	10R5-4/8	fugitive red slip ext/int collar		
61	EIII 60.3	7.5YR6/4	7.5YR7/4 5YR7/6	red ?slip (eroded) ext		
62	EIII 49.2	7.5YR4/0	2.5YR5/6	fugitive red slip ext/int rim		
63	EIII 60.4	5YR7/4 7.5YR7/2	2.5YR6/6-8	incised band type 3 red slip ext/int rim		
64	EIII 60.10	7.5YR8/4 7.5YR5-4/0	2.5YR5/6	fugitive red slip ext/int neck		
65a	EI 67.1	10YR7/3	2.5YR6-5/6	red slip ext/int rim		
65b	EIII 54.5	7.5YR8/4	2.5YR5-4/4	red slip ext/int neck		
66	EII 45.6	10YR6/2	5YR5-4/6	fugitive red slip ext/int neck lightly reduced		
67	EII 49.2	7.5YR8/2	7.5YR6/4, 5/2-4	Ø wet-smoothed ext		

Fig. 17:

68a	EI 21.1	5YR8/3-4	5YR8/1,4, 7/4-6	red paint ext 10R5/8 applied & impressed band 6	red paint ext	flat profile: EI 21.5 35.1 67.1 70.1 73.2-3 EII 45.2,4&6 49 round profile: EI 38.1 44.1 55.1 EIII 60.4
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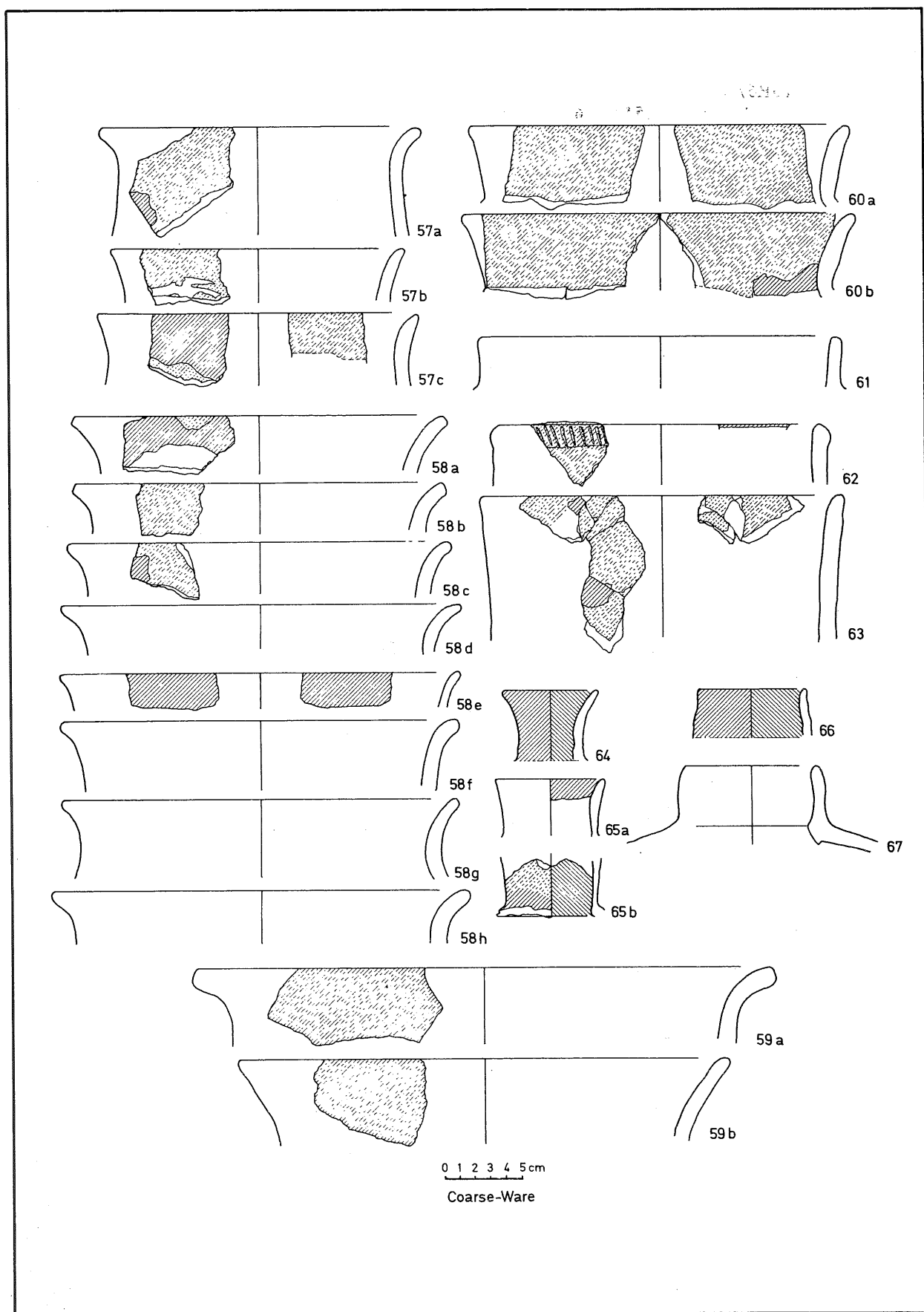


Fig. 16

68b	EII 49.1	7.5YR8/2	fugitive red paint ext 10R5/6	
68c	EIII 69.6	7.5YR8/4 10R5-4/8 10YR7/2	fugitive red slip ext	
68d	EI 73.3	7.5YR8/2-4,7/0	bitonal red paint ext 10R8/4,4/4/red paint int 10R5/8	
68e	EI 56.1	10YR7-6/1 10YR6/1,8/2	fugitive red paint ext 2.5YR5/6	
69a	EIII 49.5	10YR8/2-3 10YR7/4	red paint ext 2.5YR6-5/6	predom. Ø, red EI 21.1,3&5 to reddish-yellow 25.1,3-5 slip ext, red 30.1 paint ext 31.1 33.1 35.1 46.1 47.1 53.3 56.1 61.1 73.2-3 EII 38.1 42.1 45.2,4-5, 7-8 49 49.1-3&5 55.2 64.2 70.1 EIII 49.3,5&6 54.5&7 54.10 60.2,4&5 69.1
69b	EI 32.1	10YR5/1 10YR7/1	reduced red paint ext 7.5R4/6 - 10R4/2-3	
69c	EI 36.2	7.5YR7/4 7.5YR7/4 5YR7/6	Ø	
70	EIII 60.1	5YR5-6/1 5YR7/3	Ø central thumb impression	
71a	EIII 72.2	10YR6/3 10R4/3,3/1-3	fugitive red slip ext reduced Ø	variant: large pierced ledge handles (cf. 1984 Fig. 63) EI 12.3 EII 36.3 EIII 54.10 60.4 EIII 54.8
71b	EIII 60.2	10YR7/2 2.5YR5/8	fugitive red slip ext punctate decoration type 9	red slip
72	EI 53.3	7.5YR5/2 5YR8/4 2.5YR6/4 7.5YR8/2 5YR7/4	Ø	
73	EIII 69.4	7.5YR6/4 2.5YR5-4/6 10YR5-4/1	fugitive red slip ext	fugitive red slip EIII 49.4 ext, EIII 54.4 + 60.4,5&7 incised band 3, Ø 69.7 fugitive red slip, EII 45.4 Ø EIII 49.5 54.1-2 54.4-5&7 60.1-5&7 69.3&6 72.2
74a	EIII 49.3	10YR7/3, 7.5YR6/6 5/1	fugitive reddish-yellow slip ext	

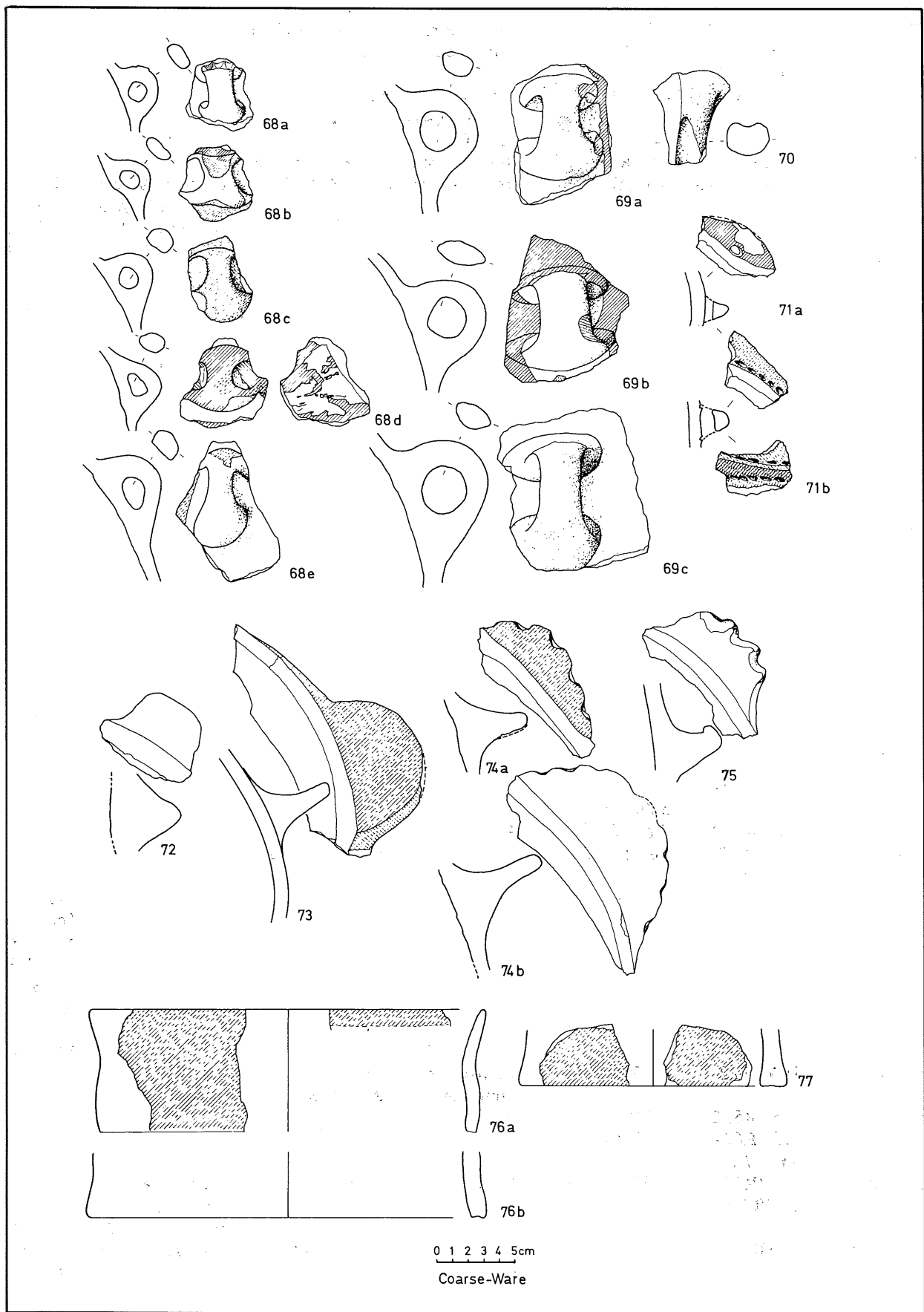


Fig. 17

74b	EIII 60.4	7.5YR6/6	10YR8/2 7.5YR8/4	Ø wet-smoothed ext	
75	EI-S 6.1	2.5YR6/6	5YR7/6 7.5YR7/4	Ø wet-smoothed ext	
76a	EIII 54.2	7.5YR8-7/2	2.5YR6/6-8	fugitive red slip ext/?int rim	
76b	EIII 60.2		10YR7/2	?fugitive red slip ext/int	
77	EIII 60.5	7.5YR8-7/2	10R5/8	fugitive red slip ext/int	
Fig. 18:					
78a	EI 36.2	10YR4/1	10YR8/2-3	red paint ext 5YR6/6	refer to text
78b	EI 73.3		7.5YR8/2	wet-smoothed & smoke-blackened red paint ext 10R5-4/8, ext	
78c	EI 39.2	7.5YR8/2	7.5YR8-7/4	base 2.5YR6/4-6, wet-smoothed red paint ext 2.5YR5/6-8, 4/8	
78d	EI 73.2	5YR7/2	10YR8/2	wet-smoothed red paint ext	
78e	EI 61.1		10YR8/2	10R5/4-2.5YR5/6	
78f	EII 49.4	7.5YR8/2	10YR8/1	fugitive red paint ext 10R5/6	
78g	EI 56.1	7.5YR8/2	7.5YR8/4	red paint ext 2.5YR5/6-8	
78h	EII 45.4		7.5YR8/2	red paint ext/fugitive red slip int 10R5-4/6	
78i	EIII 54.2	7.5YR8/4	7.5YR8/4	red paint ext 10R5/4, 4/8	
78j	EI 25.4	7.5YR8/2-4	10YR8/2	wet-smoothed ext/int reddish-yellow paint ext 5YR6/6	
78k	EI 73.2	10YR7/3	7.5YR8/2	fugitive red paint ext 2.5YR5/6	
79a	EI 73.1	7.5YR7/4	7.5YR8-7/4	red paint ext 10R6/8, 5/6	
79b	EII 49.3	7.5YR8/2	7.5YR7/2-4	wet-smoothed red paint ext 10R4-3/3	refer to text
79c	EI 78.1	7.5YR7/4	7.5YR7-8/4	red paint (thick application) 10R4/3 over red paint (thin application) 2.5YR6/6, 5/4-6	
80a	EI 25.2	10YR7/1	7.5YR8/2	ext/int rim red paint (thick application) 7.5R5/6, 4/2 over red paint	
80b	EI 35.1	7.5YR8/2	7.5YR8/2	(thin application) 7.5R6-5/6	
80c	EII 49	7.5YR7/2-4	7.5YR8-7/1	fugitive red paint ext 10R4/6-8	refer to text
80d	EII 45.3	7.5YR8-7/4	10YR8/2	fugitive bitonal red paint ext	
81a	EIII 60.2	10YR7/4	2.5YR5/4-6	7.5R5/8 upper band	
81b	EII 49.5	7.5YR7/2	7.5YR8/2	2.5YR6/6 lower band	
81c	EIII 69.5	7.5YR7/4	7.5YR7/4	fugitive red paint ext 2.5YR5/6	
82a	EII-S 2.1	5YR7/3	5YR7/3	smoke-blackened	
82b	EIII 60.4	7.5YR8/4	5YR8/3	fugitive red paint ext 2.5YR5/8	
82c	EIII 54.2	5YR7/4-6	5YR8/3-4	fugitive red paint ext 2.5YR5/6	refer to text
82d	EIII 60.2	7.5YR8/2	7.5YR8/4	fugitive red slip ext 10R5/6	
82e	EII-S 2.3	7.5YR7/4	7.5YR8/4	red paint int 10R4/4	
		10YR5/1		Ø ext/red paint int 2.5YR6/6	
				reduced slip ext 7.5R2/2/	
				red paint int 7.5R5-4/6	
				red paint ext 7.5R5/6, 10R5-4/6	refer to text
				2.5YR6/8	
				fugitive red paint ext 10R8/4	
				red paint ext 10R4/8, 7.5R4/8	
				red paint ext 2.5YR5-4/6	
				red paint ext 7.5R6-5/6	

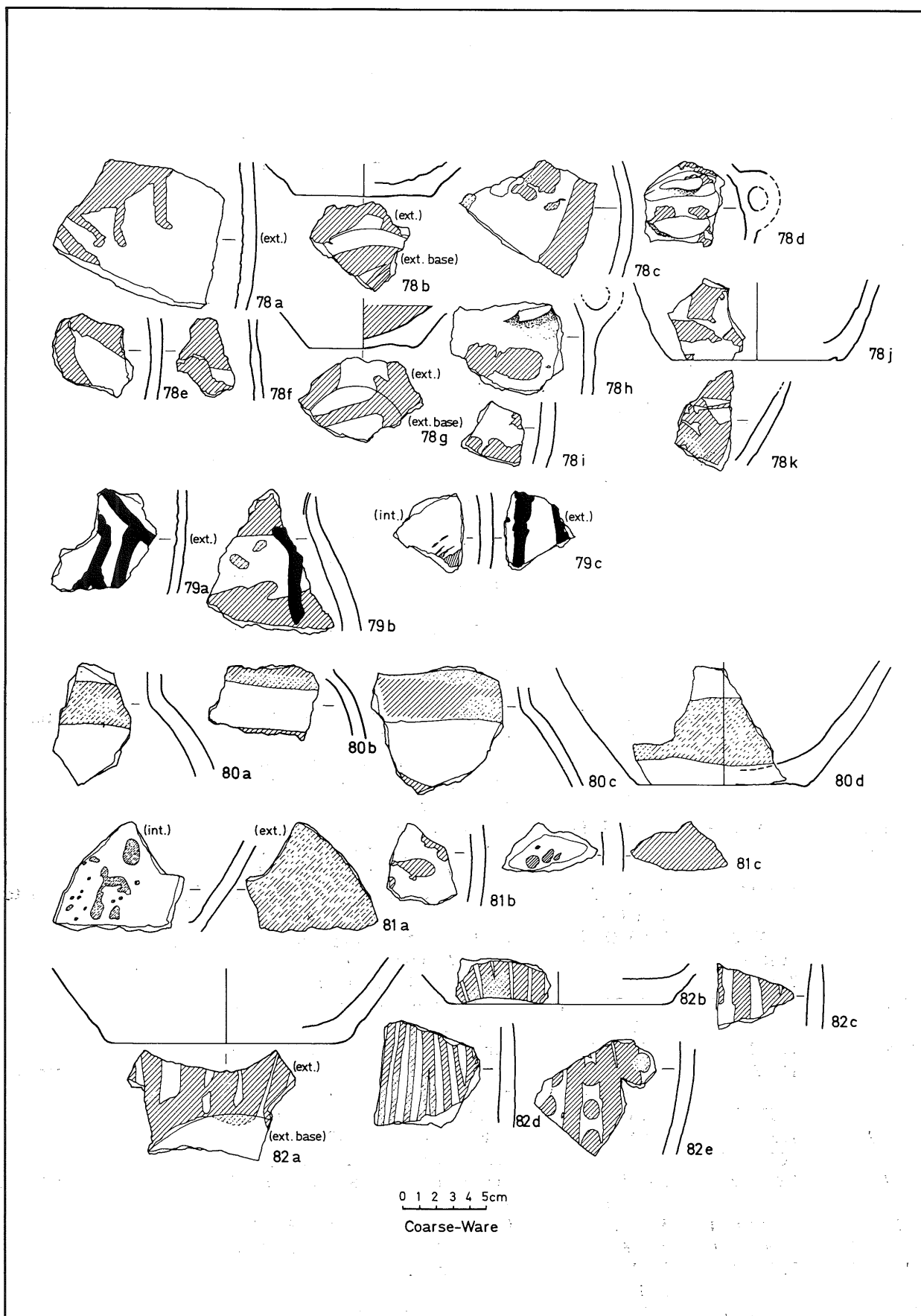


Fig. 18

Fig. 19:

83a	EII 60.2	10YR7/3, 6/1	10R6/4-6	fugitive red slip ext impressed band type 1	predom. fugitive red slip ext, fugitive reddish- yellow slip ext, Ø	EI 16.1 30.1 47.1 55.1 EII 36.3 EIII 49.1-2 49.4-5 54.1-6 54.8-10 61.1-5, 7-9 69.1&3 69.5-6&9
83b	EII 47.2	7.5YR7/2-4	2.5YR6/6	fugitive red slip ext impressed band type 1		
83c	EIII 49.2	10YR7/3	7.5YR8/2 5YR8/4	Ø impressed band type 1		
83d	EIII 60.4	7.5YR7-6/4	5YR6/4	fugitive light reddish- brown slip ext impressed band type 1		
84a	EIII 60.7	7.5YR6/4 7.5YR7/2	2.5YR6/8	fugitive red slip ext impressed band type 2	predom. fugitive red slip, Ø	EIII 54.1-2&9 60.1-5
84b	EIII 60.5	7.5YR7/4 5YR7/4	7.5YR4/8,5/6	fugitive red slip ext impressed band type 2		
85a	EIII 60.2	10YR7-6/1	7.5YR8/4	Ø incised band type 3	fugitive red slip ext, red paint ext, Ø	EI-S 2.1 EIII 54.2&10 60.2&5 69.3&6
85b	EIII 60.5	5YR7/4,4/1	5YR8/3 7.5YR8/4	Ø incised band type 3	Ø, fugitive red slip ext, red paint ext/slip int	EIII 49.2&4 54.5,7&10 60.1-2 60.4-5 69.6
85c	EIII 60.4	7.5YR8/2 10YR6-5/1	2.5YR6/8	red slip ext incised band type 3		
85d	EIII 60.5	7.5YR7/4	10R4/4	fugitive red slip ext incised band type 3		
85e	EIII 60.5	10YR7/4	7.5YR8/4	Ø wet-smoothed incised band type 3		
86a	EIII 60.4	7.5YR7/4 10YR5-4/1	10R6/8	fugitive red slip impressed band type 4	predom. Ø fugitive red slip ext	EIII 54.2,8&10 60.2&4-5 60.8 69.3
86b	EIII 69.6	7.5YR6/4	10YR7/3-4	Ø wet-smoothed impressed band type 4		
86c	EIII 54.2	7.5YR7/4 10YR4/1	7.5YR7/4	Ø wet-smoothed impressed band type 4	fugitive red slip ext, Ø	EIII 54.6&8 54.10 60.2&5 69.3
87a	EII 55.3	5YR8/3		red paint int/ext impressed band type 6	red slip or paint ext	EI 21.1&3 25.1 53.3 62.1 EII 36.3 49.3
87b	EIII 38.2	7.5YR8-7/4	10R6/8	fugitive red slip ext/int impressed band type 6	fugitive red slip Ø	EII 45.6 55.2 EIII 54.3

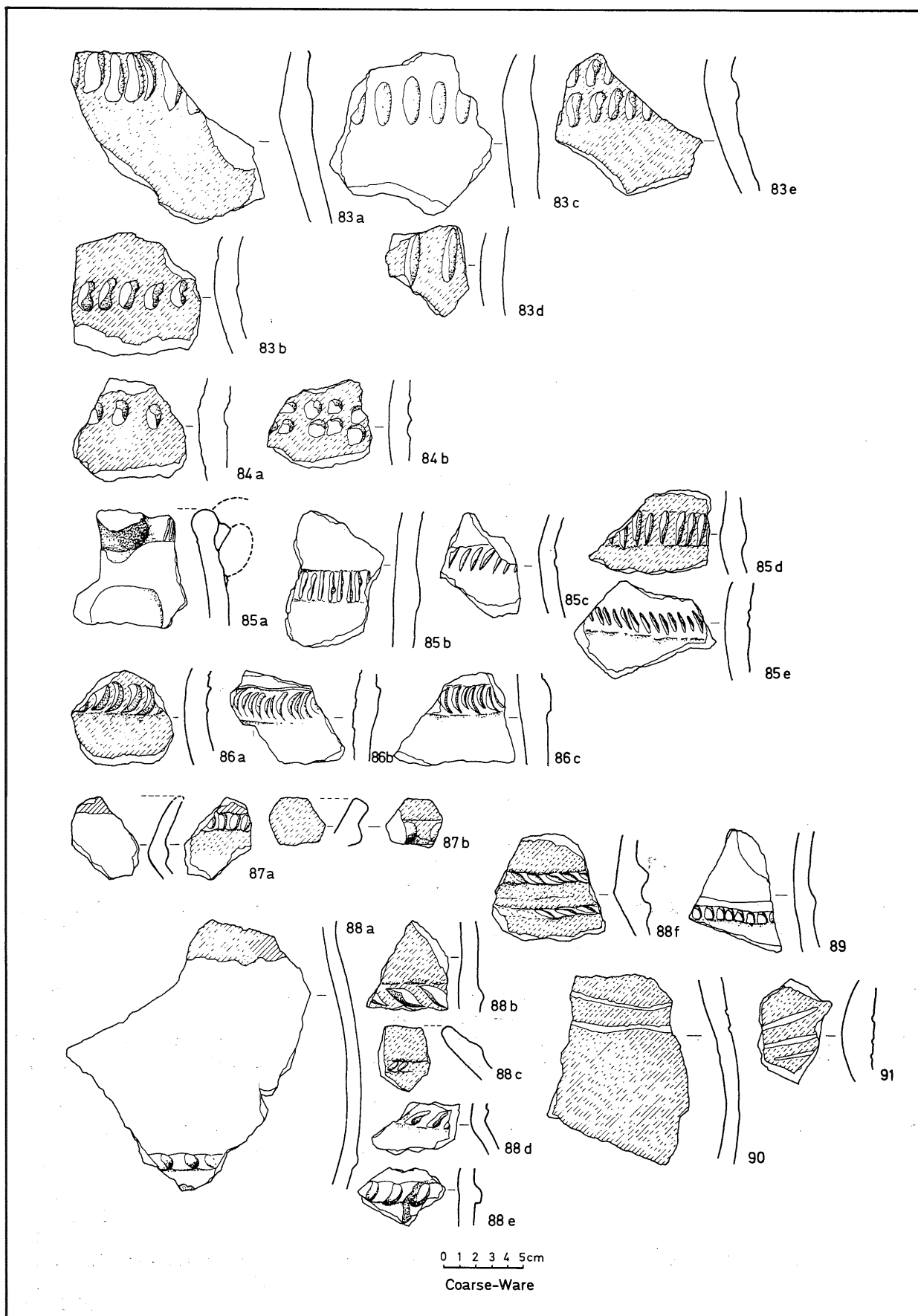
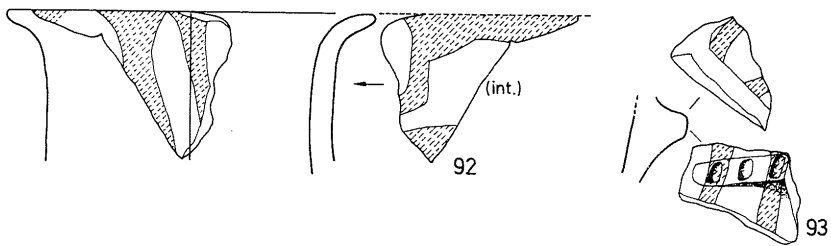


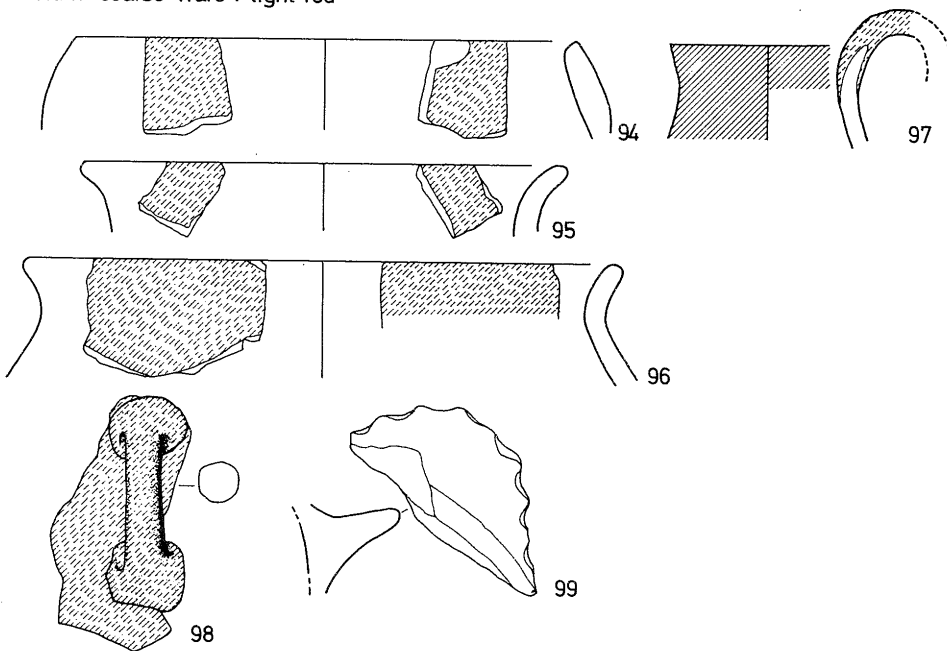
Fig. 19

88a	EI 39.2	10YR8-7/3 7.5YR6/0	7.5YR8/2-4, 6/4	fugitive red paint 2.5YR4/4 impressed band type 7	Ø, fugitive red slip or paint ext	EI 25.4 39.2 62.1 67.1 EII 45.4 49 49.3&5 EIII 54.2-3 60.2, 5&7 69.3
88b	EIII 69.4	10YR8/2, 6/1	2.5YR6/4	fugitive red slip ext impressed band type 7		
88c	EIII 69.3	5YR6/6	2.5YR6/8	fugitive red slip ext impressed band type 7		
88d	EI 16.1	7.5YR8/4	5YR8/4	Ø wet-smoothed ext impressed band type 7		
88e	EII 49.2	10R5/1	5YR8-7/4	red paint ext 10R6/8 impressed band type 7		
88f	EIII 60.3	10YR6/4	2.5YR4/8	fugitive red slip ext/int impressed band type 7		
89	EIII 54.2	10YR6/3 2.5YR2-3/0	5YR7/6	?fugitive red slip ext applied & impressed band 8		
90	EI 36.4	10YR8-7/1 5YR4/1	2.5YR4-3/4	fugitive red slip ext string impressed after application of slip		
91	EIII 54.2	5YR7/2-3	2.5YR6/6	fugitive red slip, incised		
Fig. 20:						
92	EIII 54.3	5YR5/6	5YR6/6	fugitive red paint ext/int 10R4/6 wet-smoothed	same	EIII 54.5
93	EIII 54.4	5YR5/6	5YR6/6	fugitive red paint ext 10R4/6 wet-smoothed		
94	EIII 49.3	5YR7/4	10R4/8	fugitive red slip ext/int		
95	EIII 54.2	2.5YR6/6	7.5R6/6	fugitive red slip ext/ interior collar	fugitive red slip +/- coarse burnish ext/int collar	EIII 49.2 54.2&4 60.1&10
96	EIII 60.10	2.5YR6/6-8 10YR5/1-2	7.5YR4/6	fugitive red slip ext/ int collar + ?burnish		
97	EIII 60.10	5YR7/4 10YR7/1	10R4/6-8	red slip + burnish ext/int rim	red slip +/- burnish ext	cup/juglet fragments: EIII 54.5 60.3&10 69.6 handle fragments: EI 25.5 EIII 54.4-5 69.3-4&6 EIII 54.4&9 60.3-4 handle fragment with flattened oval section: EIII 54.1&2 EIII 54.3 60.2
98	EIII 60.3	5YR7/6 7.5YR8/2	7.5R3/8	fugitive red slip ext	red slip +/- burnish ext	
99	EIII 54.3	2.5YR6/6	7.5R5-4/6	fugitive red slip ext	same	
100a	EIII 54.2	10YR7/1	10R6/6-8	fugitive red slip ext/int		
100b	EIII 60.10	7.5YR7/4	5YR7/4	fugitive pink slip ext/int		
100c	EI 25.5	7.5YR8/4	10R6/6, 5/8	fugitive red slip ext/int		
101	EIII 60.1	7.5YR6/2-4	2.5YR5/8	fugitive red slip ext/int		
102	EIII 54.1	10YR7/3	10R4/8	fugitive red slip ext/int		

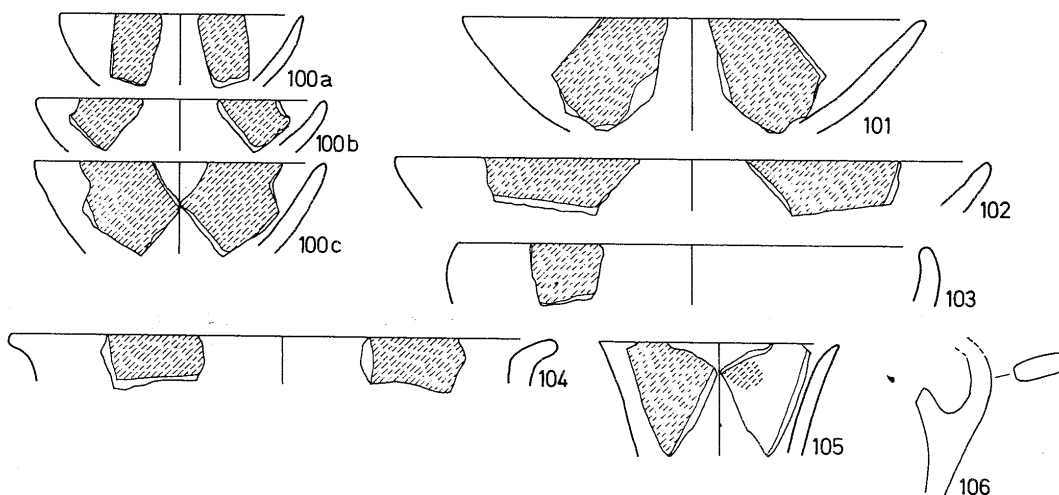
Medium-coarse Ware : dark reddish-yellow



Medium-coarse Ware : light red



Medium-coarse Ware : white / pink-surfaced



0 1 2 3 4 5cm

Medium-coarse Ware

Fig. 20

103	EIII 60.3	5YR6/6	10R6/8	fugitive red slip ext		
104	EIII 54.2	7.5YR6/4	2.5YR4/8	red slip & burnish ext/ int collar	same	EIII 54.6
105	EIII 69.1	10YR7/3	ca. 10R4/8	fugitive red slip ext/?int		
106	EIII 60.4	5YR6/4	2.5YR5/8	fugitive red slip & burnish ext	red slip +/- burnish ext	EIII 49.2&4 54.4 60.3&5 60.10 wavy ledge handle, not illus. EIII 60.4
Fig. 21:						
107	EI 43.1	7.5YR7/4	5YR8/4	geometric painted, black 5YR2/2		
108	EI 56.1		7.5YR8/2	geometric painted, red 10R5/4		
109	EI 73.1	7.5YR8/4	5YR8/4	geometric painted, black 5YR4-3/1	same	EI 28.1
110a	EI 29.2	10YR5/1	5YR5/6-8	yellowish-red slip & burnish, fine temper	same	EI 25.1
110b	EI 45.3	5YR6-5/1	2.5YR2/0,5/6	red-black mottled slip & burnish ext/int, fine temper		
111a	EI 25.4	7.5YR8/2	5YR6/5-6 2.5YR5/8 2.5YR4/2	reddish-yellow slip & burnish ext/int, fine temper		
111b	EI 53.3	7.5YR8/2	10R3/3-4	dark reddish-grey mottled slip & burnish ext/int, fine temper	same	EI 21.3
111c	EII 64.2	7.5YR5-4/0 5YR5/1	4/4-8,3/1 2.5YR3/2,3/6 5/8	dark reddish-brown mottled slip & burnish ext/int, coarse temper		
111d	EI 25.3	7.5YR8-7/2	5YR5/4,4/6, 4/1,5/2	dark grey to reddish-brown mottled slip & burnish ext/int, fine temper		
112a	EII 42.1	5YR7/4	5YR3/2,3-4/4	dark reddish-brown mottled slip & burnish ext/int rim, fine temper		
112b	EI W18	10YR5/1	5YR2/1,3/2-4	black to dark reddish-brown mottled slip & burnish ext/int rim coarse temper		
113	EII 40.3	7.5YR6/4	5YR4/2,3/1, 5-4/4	dark grey to dark reddish-grey ext/reddish-brown mottled int slip & burnish (ext/int rim), incised decoration, coarse temper		
114a	EI 25.4	10YR4/1	5YR2/0	black slip & burnish ext/int fine temper		
114b	EII 81.1	5YR5/1	5YR2/1	black slip & burnish ext/int coarse temper		
114c	EI 25.4	10YR7/2, 5-4/1	5YR3/2,5/6 2.5YR6/6 5YR2/2	dark reddish-brown to reddish- yellow mottled slip & burnish ext/int rim, fine temper		
115a	EIII 49.2	10YR4/1	2.5YR6/8	light red burnish ext/int	same	EIII 54.9 60.2-4
115b	EIII 60.2	10YR5/1	7.5YR2/0	black burnish ext/int		
116a	EIII 60.10	10YR4/1	5YR4/1	black burnish ext/int rim	same	EIII 54.2-5 60.2,4&5 69.1,3&5
116b	EIII 60.2	10YR3-2/1	5YR2/1	black burnish ext/int rim		
116c	EIII 49.5	5YR6/4 10YR3/1	10R2/1	black burnish ext/int rim		

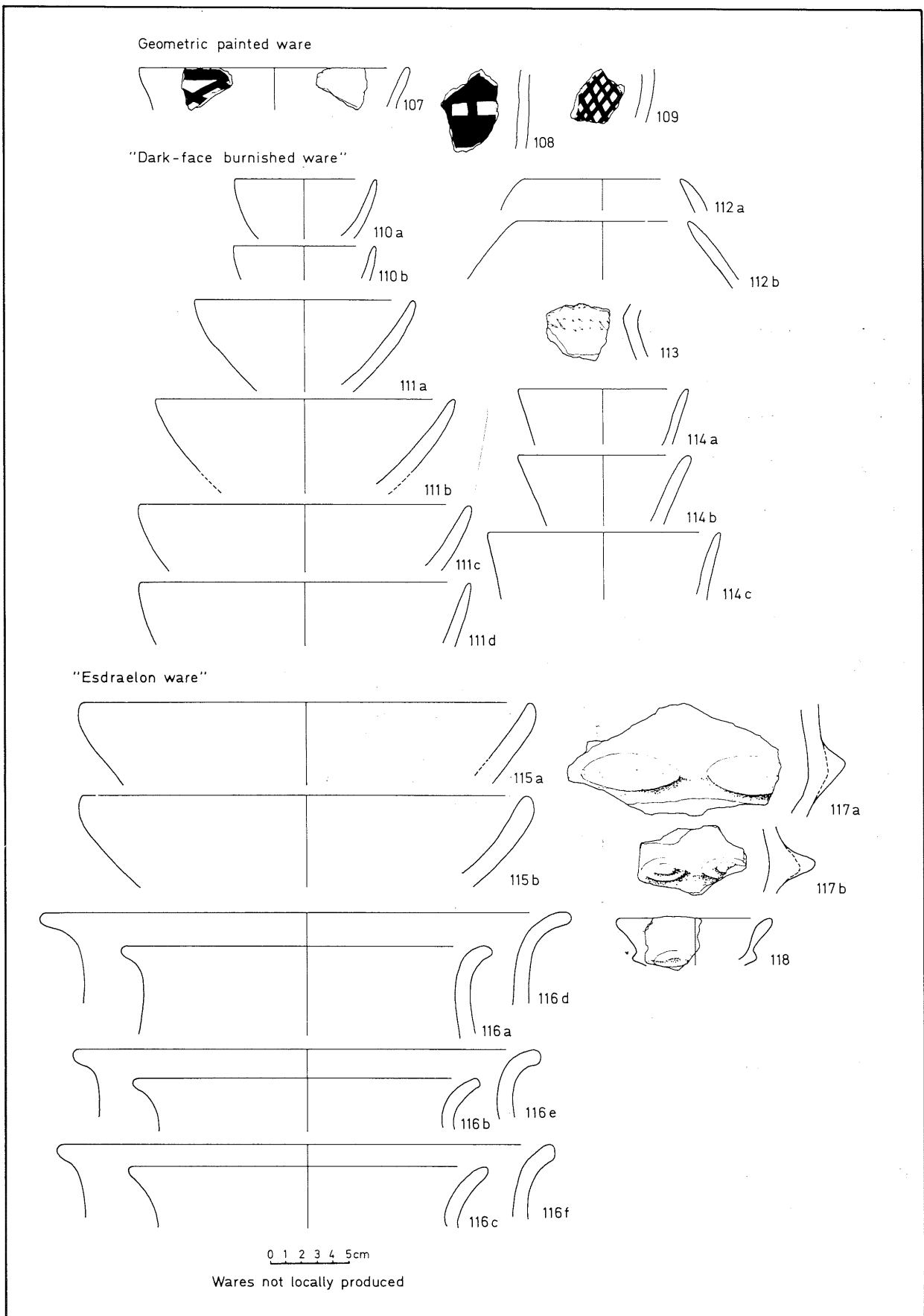


Fig. 21

116d EIII 54.2	10YR4/1, 6/3	10YR3/2	black burnish ext/int rim		
116e EIII 60.4	10YR5/2	5YR2/2	black burnish ext/int rim		
116f EIII 60.2	10YR5/1	(eroded)	(eroded)		
117a EIII 60.1	10YR5/3, 4/1	5YR4-3/2	black burnish ext/int	same	knob handles: EIII 49.4 54.2-3&5 54.6,8&9 60.1-2, 60.4-7 69.4&10
117b EIII 54.2	10YR5/1	10YR2/1	black burnish ext/int		
118 EIII 69.6	10YR5/1	10YR6/1-2,5/1	(eroded)	black burnish ext/int	EIII 54.2-4 60.5



TELL ES-SA'IDIYEH 1986: INTERIM REPORT OF THE SECOND SEASON OF EXCAVATIONS

by

Jonathan N. Tubb

The large double mound of Tell es-Sa'idiyeh, which lies on the south side of the Wadi Kufranjeh, about 1.8 km east of the River Jordan, was first substantially excavated in the 1960's by a University of Pennsylvania expedition under the directorship of James Pritchard (see Pritchard 1980 and 1985 for final reports). In 1985, a short six-week season of excavations was conducted by the writer on behalf of the British Museum in order to assess the potential of the site for further research (see Tubb 1985). The encouraging results indicated that Tell es-Sa'idiyeh could well serve as a major reference site providing a wealth of information relating to the chronology, demography, historical geography and archaeo-economy of the central Jordan Valley. In consequence, a more extensive excavation season took place between mid-March and late May 1986.

As in the previous season, the excavations were directed by the writer, with Peter Dorrell of the Institute of Archaeology, London, as Associate Director. The staff of the 1986 season consisted of Ann Bomann (Egypt Exploration Society) — draughtsman and area supervisor AA, Rupert Chapman (Palestine Exploration Fund) — area supervisor EE, Sarah Collins (University of Liverpool) — area supervisor DD, Penelope Fisher (British Museum) — Conservator, Sa'ad al-Hadidi (Department of Antiquities, Salt) — Departmental Representative and area supervisor FF, Alan Hills (British Museum) — Photographer, Christopher Kirby (University of Birmingham) — area supervisor AA, Joy McCorriston (Institute of Archaeology, London) — Palaeobotanist and area supervisor AA, Louise Martin (Institute of Archaeology, London) — osteologist and area supervisor BB, Constantine Politis (Institute of Archaeology, London) — senior archaeologist AA, Barbara Pritzkat (U.C.L.A.) — surveyor, and Dianne Rowan (University of

Liverpool) — area supervisor BB. Bedri Hassan al-Maḍi served as camp manager and the staff was completed by Sheikh Sadiq, an ex-Jericho technical worker. The expedition was joined for the first six weeks by Richard Hills who assisted with the excavation of FF and for two weeks by Brian Tremain (British Museum) and Vivienne Tremain (National Maritime Museum) who together undertook the production of a video recording of the excavations in progress.

Thanks are due to the Department of Antiquities of Jordan and in particular to its Director General, Dr. Adnan Hadidi for his continued enthusiastic support for the project. The Tell es-Sa'idiyeh excavations are sponsored and funded by the British Museum with additional generous sponsorship from Alia, the Royal Jordanian Airline, and Aramex International.

Results Of The 1986 Season

Five excavation areas were worked in 1986; three of them, area AA on the upper tell and areas BB and DD on the lower tell, were continued from the previous season. Area EE on the west slope of the upper tell and Area FF on the north side of the low mound were begun in 1986 (see Fig. 1 for location of the excavated areas and their relationship to those excavated by the Pennsylvania expedition).

Excavations on the Upper Tell

Area AA

Area AA, situated in the south-east corner of Pritchard's large trench of the 1960's, was begun in 1985 as a continuation of his stratigraphic sequence through the Iron Age levels of the upper tell. It was planned originally as an 11 m. square, divided into four 5 m. squares with 1 m. reduction baulks between. At the time when AA was initiated, it was not appreciated

that this particular corner had not been excavated down to Pritchard's lowest stratum (VII - ca. 825-790 BC), nor indeed that at the termination of his 1967 season, this area had not been reduced to a single coherent stratum. As a result, much of the 1985 season was concerned with the definition of residual deposits related to stratum VI, and the further isolation of stratum VII. Little could be adduced concerning stratum VI which existed only as heavily eroded and fragmentary wall stubs, damaged as a result of their previous exposure, but a reasonably coherent plan of stratum VII was obtained which conforms closely in character and layout to that excavated by Pritchard further to the north and described in his preliminary reports. Similar thin-walled, rather poorly constructed buildings arranged along streets and alleyways were encountered, and the general picture gained is one of industrial rather than domestic usage (see Tubb 1985, Pl. XVI). The division into VIIA and VIIB as suggested by Pritchard was also confirmed, these two sub-phases being more in the nature of partial rebuilds, refloorings and additions than of architecturally discrete levels. It appears, too, that there were later modifications to the upper sub-phase (VIIA), and it may prove necessary to subdivide stratum VII further into VIIB, VIIA lower and VIIA upper.

With the publication of Pritchard's final tell report (1985) it became clear that the part of the trench in which AA is situated, although almost completely cleared to stratum VI and partially exposed to stratum VII, was neither recorded nor planned, the recording of both strata VI and VII terminating some four metres north of area AA. At the start of the 1986 season, therefore, it was necessary to extend area AA by adding a further 5 m. square to the north east (AA 500) in order to obtain an overlap which will enable the 1985 plan of stratum VII to be linked to that published by Pritchard. It is also hoped that a continuous section will be obtained by means of this extension. As in the previous season, the extension first required the cutting back of Pritchard's heavily eroded east section by nearly 1.5 m. Again, this was

performed as a stratigraphic check of the sequence and produced confirmation of the upper phasing. A large pit of stratum IV was found and samples of the fill were taken for flotation. Stratum V was largely removed by this pit but stratum VI was found intact in the section cutting. In the main area of 500, Pritchard's excavation had completely removed VI and had ceased at the isolation of stratum VIIA which was represented by the remains of an east-west running wall and patches of an associated cobble paving. Below, in VIIB, was found the earlier phase of the east-west wall, this time associated with a beaten earth floor covered with ash and substantial quantities of pottery. The ash clearly derived from a *tannûr* found on the west side of 500 against the wall.

Elsewhere in AA, the final completion of stratum VII was achieved with the removal of the 1985 baulks and the further excavation of AA 400 which had been left unfinished from the previous season. These operations brought to light two walls which further elucidate the plan of the stratum and also two installations in the corner of AA 400, one of which appears to be a type of bath (Pl. V). It is deeply cut into the remains of strata VIII and IX and takes the form of a roughly square mud-brick lined basin (1.5 m. \times 1.4 m.) floored with finely laid square mud-brick slabs. The preserved kerb stands about 35 cm above the base. In the north-west corner there is a drain hole which extends some 30 cm below the floor of the installation. A bronze bracelet and an iron blade were found on the floor of this installation.

In the main area of AA (100, 200, 300, 400) excavation in 1986 proceeded through strata VIII, IX, X and XI and finished with the isolation of stratum XII and the complete excavation of one of its rooms.

Stratum VIII was partially uncovered in 1985 in one small area of AA 100. It seems to represent not a tangible architectural phase but rather a phase of human activity, almost certainly industrial in nature. Its principle characteristic is of a thick (30-50 cm) deposit of intensely col-

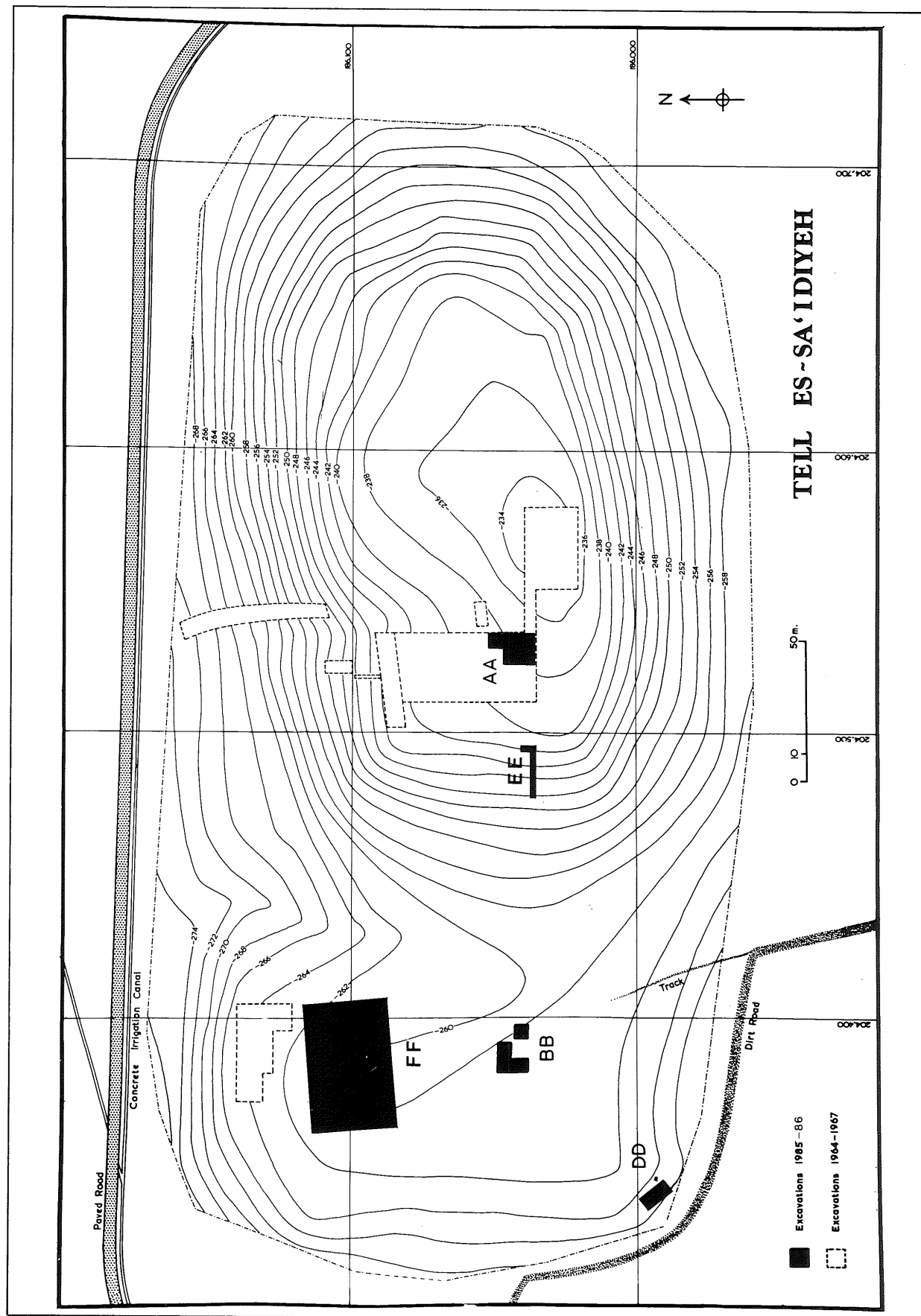


Fig. 1 Plan of the site showing areas excavated in 1985-86 in relation to those of Pritchard's expedition.

oured, layered material (blue, yellow, pink and predominantly white) resting on a thin (1-2 cm) brownish black burnt layer. As noted in the previous report it does not rest on any true surface but instead on a layer of natural reddish silt of variable thickness which covered the remains of stratum IX. In other words it is apparent that stratum IX was abandoned for a period of time (not however destroyed) and the weathered and eroded remains became covered in silt. It is over this silt that the stratum VIII deposit lay, rising over the wall stubs and falling into the more densely silted hollows and depressions. It seems probable that the lowermost black layer resulted from the burning off of the vegetation which had grown over the abandoned area.

The deposit of stratum VIII must surely be seen as the residue of some industrial activity, and the predominance of white in its colouration is suggestive of a lime-related process. In the south-west corner of AA (in 400) a single wall, solidly built of several courses of stone, topped with mud-brick, had been deeply cut through strata IX and X and this proved to be directly associated with the stratum VIII deposit and must be considered as the retaining wall of the process. The area in front (to the east) had also been cut out to produce a roughly level surface. In this region, the deposit was more intensely coloured orange and at its base were found substantial quantities of carbonized timber. Samples of the stratum VIII deposit have been collected for examination and it is hoped that the results of the analyses will shed light on the nature of the industry being practiced.

As mentioned above, stratum IX was sealed by a layer of silting representing a phase of abandonment between it and stratum VIII. Beneath the silt, the weathered and eroded remains of stratum IX were isolated and consisted on the west side of AA (100 and 400) of part of an insubstantial but apparently large building with walls barely 80cm wide. These were preserved to a height of 10-15 cm and were seen to be founded on irregularly layed stone foundations. The orientation of the walls differed

from that of stratum VII by a factor of some 30 degrees. On the east side of AA (200 and 300) two successive courtyard levels associated with this building were excavated, the upper paved with small pebbles and the lower with larger cobbles (Pl. VI, 1). On the south side of the upper courtyard a drain or channel ran in an approximately east-west direction. There was slight evidence that the stratum IX floors had been plastered but they were completely disrupted by subsequent erosion.

Stratum IX was preceded by stratum X without any break and the same division of building on the west and courtyard on the east was found in the lower stratum. However, the floors of the building in X were far more substantial, being composed of beautifully laid flat stones. The walls of X had largely been robbed out and some of the paving stones had been used as foundations for the stratum IX walls. The stratum X courtyard is almost identical to that of stratum IX (lower), paved with large cobbles. IX and X are based on identical plans and should perhaps be more correctly considered as two phases of the same stratum. A preliminary examination of the pottery from stratum X would place it within the 10th century BC.

Underneath the cobble pavings of stratum X, far more substantial walls belonging to stratum XI were revealed. These had largely been removed by the laying of the cobbles, but sufficient remained in AA 100 and 400 to show that they were wider, composed of mud-brick laid over two well layed courses of foundation stones. The orientation of the walls is similar to that of stratum X but the line was slightly different. Only fragments of floors were preserved, but enough to show that they were well made and composed of white plaster over a yellow bedding. Again, an associated stratum XI courtyard was found in the eastern part of AA. There is no evidence for a break between strata XI and X and the pottery from XI would seem also to fit into the early 10th century BC.

Stratum XII has only been isolated in one locus of AA (AA 100), where the ero-

ded tops of substantial walls have been uncovered. It was into these eroded walls that the foundations of stratum XI were cut. Below a layer of fill associated with the construction layer of stratum XI, the entire locus of AA 100 was covered with burnt destruction debris — black ashy deposits, carbonized wood and intensely burnt mud-brick collapse. As the walls of stratum XII were defined it was clear that their faces had been charred black. One small room, measuring only 1.5m. × 1.5m., presumably a store room, had been cleared to floor level showing that the stratum XII walls are standing to a height of at least 1.7m. (Pl. VI, 2). The walls themselves are more substantial than any encountered in the strata above being 1.5m. thick, and their orientation is also different — almost precisely north-south and east-west. The fill of the excavated room is composed of burnt wood, pottery and brick, and above the clay floor was found a dense deposit of broken pottery vessels.

The pottery from stratum XII is identical with that from the destruction debris of the casemate wall system (see below) and belongs to the early part of Iron I (12th century BC). It is therefore clear, that in this area at least, stratum XII was destroyed and that there was a break in occupation before the construction of stratum XI.

Area EE

Area EE was begun in 1986 as a 1m. × 20m. trench running down the west slope of the upper tell and was intended to investigate the defence systems of the site. Erosion and wash on this side of the mound has been considerable and little could be discerned in the top 30cm, especially in the east end of the trench. A number of wall foundations were encountered but since their associated surfaces had been eroded away, little can be said as to their date: in any event their small widths make it unlikely that any of these were defensive in function. Below this eroded and disturbed layer, the trench was dominated by a massive deposit of collapsed mud-brick, containing sections of walling often bearing as many as six bonded bricks. On clear-

ance of this tumble and extension of the area northwards, the plan of an extremely large mud-brick casemate defensive wall system was revealed (Pl. VII, 1). To date, the inner face of the outer wall and three cross-walls have been isolated, the inner wall lying at some distance beyond the eastern limit of the area. The outer face of the outer wall has not been established with any degree of certainty and will require further investigation next season. It is at least 5 m. thick but external slope terracing may account for some of this width. The cross-walls are 1.1m. wide and the spacing between them decreases south-north (more than 2m., 2m., 1.5m.) producing a series of long narrow casemates. The decreasing widths of the casemates as they move northwards suggest that the wall is approaching a gateway which could, perhaps, correspond with the present depression which can be observed on the central west slope about 10m. north of the present limit of EE. All of the walls are well built of orange-red mud-bricks of average size 42cm × 25cm × 11cm.

The casemate system was built over an earlier, apparently solid, mud-brick wall, the width of which has not yet been established, but is over 2.6m. and is also clearly defensive in nature. The bricks of this earlier wall are greenish in colour and slightly larger. There is no evidence that this wall was destroyed: its eroded top was roughly levelled and provided, in the two northernmost excavated casemates a construction base. In the southernmost casemate, where, for some reason, the earlier wall does not extend, the interior space was instead filled with large boulders (approximately 60cm in diameter) bringing up the level to that of the top of the earlier green wall in the other two casemates.

The casemate system was destroyed, or at least was caught up in a major destruction. The lowest filling of the casemates consists of burnt black ashy material overlaid with mud-brick collapse. The intensity of burning has caused the lower courses of cross-walls to be fired hard in places or burnt out in others. Pottery from the burnt debris provides a provisional date for the

destruction, and a preliminary reading suggests a date early in Iron I, perhaps contemporary with stratum XII in AA.

No later defensive wall was found in this area following the destruction of the casemate system. Certainly there was no evidence for the city walls which Pritchard found on the north side possibly related to strata V and VII (Pritchard 1985, p. 77). Indeed, there was slight evidence for non-defensive occupation above the casemate system in this area in the form of a *tannûr* and a small stretch of associated surface. Although little pottery was recovered here, it is suggestive of the early 8th century BC, perhaps contemporary with stratum VI.

Excavations on the Lower Tell

Area BB

Area BB, located on the south-central side of the low mound, was begun in 1985 with the original intention of examining the Early Bronze Age occupation of the lower tell. Excavations revealed however that this area had been used intensively as a cemetery in the LBII-Iron I transitional period (*ca.* 1250-1100 BC), the graves having been cut into the 30-40cm silt deposit which overlies the Early Bronze Age occupation and partly into this occupation itself. In 1985, two 5m. squares (BB 200 and 400) were opened, and altogether forty burials were excavated or revealed (see Tubb 1985).

In the 1986 season, two further squares were opened (BB 100 and 600) and a further seventy graves were excavated. In addition, one grave was excavated in area DD and two in area FF. Further the graves which were revealed but not excavated in 1985 and those graves which were only partially cleared, were all completed in 1986 (Tubb 1985, graves 3, 7, 26, 34, 35, 36 and 39).

In general, the graves excavated in 1986 followed the same pattern as those of 1985 in terms of their construction, their grave goods and the degree of their disturbance and intercutting. One or two new types were found however, and some inter-

esting details were observed. Two examples of a rather extraordinary practice were encountered (graves 43 and 45) in which the head of the deceased was placed inside a store jar (broken off at the shoulder) whilst the remainder of the body is simply covered with loose sherds or stones (Pl. VII, 2). Grave 76 consisted of a stone-lined pit into which were set two large pithoi placed shoulder to shoulder, the necks having been removed. The junction of the pithoi was disguised with pieces of another smaller store jar. The burial itself included the remains of at least one adult, one child with associated bronze earring and a collection of disarticulated bones.

As in 1985 three types of practice were encountered: primary, secondary and derived secondary, the last referring to the reburial of parts of skeletons disturbed during the course of later grave cutting. Although this phenomenon had been noted previously, an interesting observation can now be added which is of a recurrent pattern in these derived secondary burials of the deliberate placement of the skull over two, frequently crossed, long bones.

Finds were similar in nature to those of the previous season. A greater variety of pottery was found however, including bowls, craters, small store jars and imitation Mycenaean vessels - stirrup jars, lentoid flasks and pilgrim flasks. Bronze bangles were frequently found, used either as anklets or bracelets. Often these bronzes preserved in their corrosion products vestiges of the textiles which had covered the deceased: this same feature was also observed on two large toggle pins from graves 86 and 157. Necklaces of shell, frit, stone and carnelian beads were found in many of the graves. The richest deposit in grave 46 contained in addition to nineteen pottery vessels, a bronze bowl, a bronze dagger, a small curved bronze knife, a necklace of carnelian and stone beads, an alabaster chalice and three bone combs (Pl. VIII). An interesting feature was observed in 1986 in that many of the jugs and juglets placed in the graves seem to have been deliberately broken at their mouths, presumably as part of some symbolic ritual (Pl. IX).

Pritchard found in his cemetery excavations further to the north (graves 101-144¹) examples of funerary jars (type 53 - a roughly finished vessel with a hole in its base) placed at the feet of the deceased presumably for pouring libations (Pritchard 1980, p. 7-8). Although no such jars were found in 1986, the large bowl placed inverted over the feet of the body in grave 70 had a deliberately made hole in its base and a similar function would therefore seem to be indicated.

All of the graves excavated in 1986 belong to the same period as those previously examined, that is to the LBII-Iron I transitional period (13th-12th centuries BC). It is interesting to observe that whilst many of the graves recorded in the previous season contain both bronze and iron objects side by side, the deeper lying graves excavated in 1986 contain no items of iron.

The fairly abrupt termination in the usage of the cemetery in the 12th century BC can now perhaps be explained as being related to the destruction of stratum XII (AA) and the casemate wall (EE) (see above).

By the end of the 1986 season most of the graves had been removed and substantial remains of Early Bronze occupation were isolated as residual "pinnacles" in all of the squares of BB - fragments of cobble pavings, floors and walls, often foundational only. It is important to note that in several places the kerbs of mud-brick lined graves, especially those in BB 200 were placed directly over the lines of the pre-existing EBA walls, indicating that the degree of silting of the low mound at the end of the Late Bronze Age was considerably less than at present and was indeed insufficient to completely disguise the remnants of the EBA occupation.

Although excavation of this occupation will have to await future seasons, it is already clear that the final phase of EBA occupation was violently destroyed. Remains of burnt walls with heavy deposits of ash

and burnt mud-brick debris against their faces have been found in all areas. In this respect it is interesting to observe, too, that some of the graves lined with mud-brick used not only newly-made slabs but also incorporated suitable EBA bricks which had been fired extremely hard in the destruction. Piles of almost rock hard burnt mud-brick debris were also used as grave coverings and markers.

From the observed stratigraphy (sides of deeply cut graves) and from the small amount of pottery recovered so far, it seems almost certain that this destruction is identical in date to that seen in area DD (below) and should be placed towards the end of EBII.

Area DD

In 1985, a small excavation in area DD on the south west slope of the lower tell revealed part of EBII building which had been destroyed and which seemed to represent the final phase of occupation of this part of the low mound. In 1986 the area was expanded to the north, east and south in an attempt to recover more of the plan. To the east (DD 200) graves of the cemetery were revealed (Grave 50 was completely excavated) and operations here were brought to a close. To the north and south however, despite the inevitable erosion that this side of the tell has suffered, more of the plan of the destroyed building was uncovered. Interestingly, in the northern extension (DD 300), between the dense layer of mud-brick detritus (301.1) and the occupation surface associated with the building, there seems to have been a later, somewhat ephemeral, phase of occupation unassociated with any architectural feature and representing, perhaps, a squatter or camp-fire habitation in the burnt ruins.

The building itself is not yet completely isolated to the north, but to date consists of a rectangular room (2.3m. × 3.8m.) to the south and a somewhat larger one to the

1. In order to ensure a logical numbering for the graves of the cemetery, numbers 1-100 and 145

onwards have been allocated to graves excavated by the current expedition.

north. There is only one phase of construction and it is clear that the two rooms which do not apparently connect laterally, were conceived of as part of one integral building. The interior of the southern room was largely excavated in the previous season, but the remaining walls on the east and south sides have now been added. As anticipated, the south-west corner of the building has been lost through erosion. On the west side, the north-south common wall of both the northern and southern rooms (also uncovered this season) was terraced on the slope of the mound.

The northern room has a wide entrance way on the west side which is approached by a series of three steps terraced on the slope: a large circular flat stone set on the uppermost step flanks the entranceway and bore a four-spouted painted lamp. In the centre of the entranceway was found a roughly square mud-brick installation on which were placed two further four-spouted lamps. These highly unusual lamps, which must be seen as the earliest examples so far recorded of the type which becomes familiar in EBIV, suggest, perhaps, a function for the building other than purely domestic and it may not be premature to postulate some type of shrine. In this respect it is worth drawing attention to a series of post holes found on the uppermost step immediately in front of the square installation (Pl. X).

The construction of the steps is interesting, for when they were removed it was observed that they were composed not of mud-brick but of pisé. They were made over a series of wooden formers, the fugitive, white fibrous traces of which were clearly visible. These in turn had been placed over a dense hard-core fill of broken pottery sherds. This pottery proved to be largely consistent in date with that excavated from the floors of the building and is similarly late EBII. It would seem, therefore, that no great period of time elapsed between the construction of the building and its destruction.

As a similar series of events has now been confirmed in area BB; destruction, followed by squatter occupation, followed

by abandonment (see above), stratum numbers have been assigned to the phases of Early Bronze Age occupation of the lower tell. Stratum L1 refers to the post-destruction ephemeral occupation and L2 to the latest building phase represented by the so-called 'shrine'.

Towards the end of the 1986 season, the stratum L2 building, described above, was removed. Excavation beneath, revealed the well-made foundations of the walls which had been set into shallow and quite narrow foundation trenches. The floor surfaces had been laid over a levelling fill, approximately 15cm deep and this in turn had been placed over a hard-packed construction surface.

Below the stratum L2 construction surface, the remains of stratum L3 were excavated. Although clearance of this stratum has not yet been completed, remains of two buildings have been isolated, separated by a stretch of cobbled street, associated on its southern side with a drain. The walls of the buildings appear to be eroded, and it is clear that they were deliberately levelled for the construction of stratum L2. In the area of the later steps, bricks had been knocked off one of the stratum L3 walls and were left to lie amidst the sherd hard-core make-up. There is no evidence to suggest that stratum L3 was destroyed: the small area of floor so far uncovered in the northern building is remarkably clean with very few sherds. Although little directly associated pottery has been recovered from stratum L3, it would appear to differ little in date from that of stratum L2. (See Pl. XI, 1 for general view of stratum L3.)

Area FF

Both Glueck (1951, p.292) and Pritchard (1985, p.1) had made reference to the foundations of a large building on the north side of the lower mound. In 1985 a surface sherding implied that this building was probably of Byzantine date and it was decided in 1986 to examine more closely the remains in order to establish more precisely the date and function of the building. The area encompassed by the building has

been termed FF.

The excavation here took the form of a general clearance of the walls in order to recover the complete plan, and selective soundings in order to elucidate problematic areas and to reveal any intact associated surfaces. In the event, it was soon established that the remains are purely foundational, all surfaces having been eroded, ploughed or robbed out. A more intensive surface survey was therefore undertaken. Since late period material is only found in the vicinity of the ruins and nowhere else on the site, the latest material from the surface collection provides an effective dating for the building. This date is now seen to be early in the Islamic period, perhaps in the 7th-8th centuries AD.

The plan resulting from the clearance of the walls (Pl. XI,2) shows two distinct elements, a rectangular building (18m. \times 5m.) set in the south-west corner of a larger rectangular enclosure (40m. \times 30m.). The whole complex is orientated almost due east-west.

As mentioned above, all of the walls of the south-west building and the enclosure are represented by their foundations only. These are surprisingly deep, *ca.* 1.0m., and are composed of small rocks and cobbles, some 20-30cm in diameter, tight packed and with vertical faces. No traces of foundation trenches could be discerned and it was concluded that these had been vertical sided and of the same width as the walls. Above the foundations, at more or less ground level, ran a line of much heavier boulders (40-50cm in diameter) infilled and backed by smaller boulders to the width of the wall.

The south-west building has two doorways, one in the middle of its western wall and the other towards the centre of the northern wall: both suggest single rather than double doors. The sills of the two doors indicate that the internal floor level of the building must have been very close to the present ground surface.

There is some evidence to suggest that the enclosure was built slightly later than the south-west building since its walls, al-

though equally straight, are out of alignment. The north-west corner of the enclosure has not been found, possibly due to heavy erosion on this side of the mound. Several internal walls have been detected within the enclosure but have not yet been fully defined. Only one entranceway has been found, in the south wall, some 4m. east of the south-west building. A stretch of lower and flatter stones here suggests an entranceway about 4m. wide: too wide, that is, to be spanned by ordinary gates.

The function of the building remains obscure but the best suggestion is perhaps that it was a type of *khan*. This proposal is supported by an observation made during a visit to the River Jordan, immediately west of the site. At this point there was seen to be a firm ford across the river and the remains of what could have been causeway piers. The crossing is immediately opposite a wadi connecting to the Nablus region, and, therefore, a *khan* at Tell es-Sa'idiyeh would provide a very reasonable staging post for caravans passing to the West Bank.

Concluding Remarks

The 1986 season has yielded results which enable some general remarks to be made about the history of occupation of Tell es-Sa'idiyeh.

It appears that EBII was the most extensive period with occupation of both the lower and upper tells. No traces of defensive walls have been found at any point on the low mound, and it seems that this part of the settlement, at least, was undefended. Such a situation surely implies a period of relative peace and stability. This view is reinforced by the results of a limited survey in the region west of the low mound where several small settlements were located (single houses or farms), all associated with EBII pottery.

Towards the end of EBII, the site was destroyed and no further habitation occurred on the lower tell. To what extent occupation of the upper tell continued after this destruction is impossible to say, but certainly by the end of the Late Bronze Age

there was a strongly fortified settlement represented by stratum XII in AA and the casemate wall system in EE. It seems probable that the staircase water system excavated by Pritchard belongs also to this phase of occupation. The picture of a tightly nucleated settlement, living through a period of great insecurity is developed still further by reference to the cemetery of the lower tell which is fully contemporary with this occupation and exhibits such a high intensity of burials within a relatively short period of time. Stratum XII was clearly destroyed around the middle of the 12th century BC and this date corresponds to the termination of the usage of the cemetery.

Following the destruction and the subsequent abandonment of stratum XII, the character of the upper tell occupation changes in Iron II. In all of the areas examined, both by Pritchard and more recently, its nature seems to be industrial rather than domestic. There is little evidence for

strong defensive walls (if at all), and the lower tell is no longer used for burials. Together, these facts bring serious doubt on the question as to whether Tell es-Sa'idiyeh was a habitation centre at all during the Iron II period: instead, it could be suggested that it was an industrial centre where people worked but did not live.

No further clues have been found as to the identification of the site, but one factor may be relevant in future discussions. As mentioned above (see FF), there is a firm ford of the River Jordan immediately to the west of the site. On the east bank above the ford is found a low tell with Iron I-II pottery on the surface. It seems likely therefore that there was an important crossing of the Jordan at this point, a fact which may have implications relating to the historical geography of this region.

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Appendix - List of Graves Excavated in 1986

The following is purely a working inventory of the graves excavated or examined in 1986 and is not intended as a final statement.

3. BB 400 Pit, burial covered by store jar sherds. Single articulated. W-E. *Finds* T3:1 Jar, T3:2 Iron bracelet. The store jar sherds are from several vessels and no complete profiles were reconstructable.
22. BB 100 Partially mud-brick lined pit. Single articulated. W-E. No associated finds.
34. BB 400 Mud-brick lined pit. Single articulated. W-E. *Finds* T34:1 Bronze bowl, T34:2 Painted pilgrim flask, T34:3 Iron dagger. Scatter of ovicaprid bones overlying skeleton.
35. BB 400 Jar burial in mud-brick and stone lined pit. *Finds* T35:1 Bronze bangle.
36. BB 400 Mud-brick lined pit. Single articulated. W-E. *Finds* T36:1 Pyxis.
38. Mistake in numbering = T35
- 39A. BB 200 Second phase of pit use. Partially mud-brick and store jar sherd lined. Disarticulated bones. No associated finds.
- 39B. BB 200 First phase of pit. Store jar burial. Disarticulated. No associated finds.
41. BB 200 Pit burial marked by stones and with a mud-brick floor. Disarticulated. *Finds* T41:1 Loop handled amphora, T41:2 Black bead.
42. BB 200 Mud-brick lined pit. Not completely excavated. *Finds* T42:1 Store jar.
43. BB 400 Pit burial. Single articulated juvenile. SW-NE. Head and upper part of torso contained within store jar; rest of body in east baulk. No associated finds.
44. BB 200 Pit burial. Single articulated. E-W. *Finds* T44:1 Bronze pin, T44:2 Bronze anklet.
45. BB 400 Pit, partially bounded by stones. Single articulated. S-W. Head and torso contained within store jar. Rest of body covered with sherds. *Finds* T45:1 Cowrie shell bead, T45:2 Spindle whorl, T45:3 Carnelian bead.
46. BB 200 Rectangular pit grave with inner clay kerb. Single articulated. W-E. *Finds* T46:1 Store jar, T46:2 Bowl, T46:3 Stand, T46:4 Dipper juglet, T46:5 Bowl, T46:6 Bowl, T46:7 Pilgrim flask, T46:8 Lentoid flask, T46:9 Stirrup jar, T46:10 Bronze bowl, T46:11 Bronze dagger, T46:12 Lamp, T46:13 Ivory combs, T46:14 Necklace, T46:15 Bowl, T46:16 Bronze knife, T46:17 Bone spindle, T46:18 Lamp, T46:19 Comb, T46:20 Comb fragment, T46:21 Small jar, T46:22 Stirrup jar, T46:23 Lentoid flask, T46:24 Stirrup jar, T46:25 Stirrup jar, T46:26 Stirrup jar, T46:27 Alabaster jar.
- 47A. BB 400 Pit partially bounded with mud-brick. Single articulated. E-W. *Finds* T47A:1 Bronze pin, T47A:2 Bronze toe ring.
- 47B. BB 400 Pit? Single articulated: only legs uncovered (torso in west baulk), feet missing - possibly cut by 47A. W-E. No associated finds.
- 47C. BB 400 Pit? Single articulated: only legs uncovered (torso in west baulk), feet missing - possibly cut by 47A. W-E. Possibly contemporary with 47B. No associated finds.
- 47D. BB 400 Pit. Disturbed collection of long bones and a mandible. No associated finds.
48. BB 600 Pit, partially bound by mud-brick and stones. Single articulated. W-E. *Finds* T48:1 Scarab.
49. BB 600 Pit. Partially articulated. SW-NE. *Finds* T49:1 Painted jug,

- T49:2 Bowl, T49:3 Store jar, T49:4 Pilgrim flask.
50. DD 200 Pit. Single articulated. SW-NE. No associated finds.
 51. BB 600 Pit. Single articulated juvenile. W-E. *Finds* T51:1 Bronze anklet, T51:2 Beads, T51:3 Bronze anklet, T51:4 Bronze bracelet, T51:5 Beads (necklace), T51:6 Bronze earring.
 52. BB 100 Pit in baulk. Articulated infant covered by inverted bowl. W-E. *Finds* T52:1 Bowl.
 53. BB 200 Pit. Single articulated juvenile. W-E. *Finds* T53:1 Bronze earring, T53:2 Jug.
 54. BB 200 Pit? Mandible in baulk - not fully excavated. *Finds* T54:1 Pyxis.
 55. BB 600 Pit? Disarticulated. Not fully excavated. No associated finds.
 56. BB 100 Pit. Single articulated. E-W. *Finds* T56:1 Bronze bracelets.
 57. BB 100 Pit. Isolated skull. No associated finds.
 58. BB 400 Pit. Two isolated skulls - one adult, one juvenile, very disturbed. No associated finds.
 59. BB 600 Pit. Single articulated juvenile. W-E. *Finds* T59:1 Bowl.
 - 60A. BB 200 Pit partially mud-brick and stone lined. Single articulated. W-E. No associated finds.
 - 60B. BB 200 Pit. Disturbed by 60A and 60C - only skull and one long bone remaining. *Finds* T60B:1 Lamp, T60B:2 Bowl, T60B:3 Jar, T60B:4 Pyxis, T60B:5 Bone blade.
 - 60C. BB 200 Pit, partially mud-brick and stone lined. Single articulated. W-E. Contemporary with 60A. No associated finds.
 - 61A. BB 600 Pit. Single articulated, cut by 61B. W-E. *Finds* T61A:1 Juglet, T61A:2 Iron bracelet, T61A:3 Shell bead, T61A:4 Silver earring.
 - 61B. BB 600 Pit, partially mud-brick lined and floored. Disturbed remains. No associated finds.
 62. BB 600 Pit? Single articulated. W-E. No associated finds.
 63. BB 400 Jar burial set into pit. Disarticulated infant. W-E. *Finds* T63:1 Store jar, T63:2 Carnelian beads, T63:3 White beads, T63:4 Bronze bangle, T63:5 Bronze bangle, T63:6 Bronze bangle, T63:7 Bronze bangle.
 64. Mistake in numbering - 64 = 155.
 65. BB 200 Pit. Single articulated juvenile. W-E. *Finds* T65:1 Scarab, T65:2 Scarab, T65:3 Scarab, T65:4 Scarab, T65:5 Scarab, T65:6 Scarab, T65:7 Beads, T65:8 Jug.
 66. BB 400 Pit. Single articulated cut by T45. W-E. *Finds* T66:1 Bowl, T66:2 Pyxis, T66:3 Beads.
 67. BB 400 Jar burial, very disturbed. Sparse remains. No associated finds.
 68. BB 200 Pit covered by stone wall (uncovered in 1985). Single articulated. W-E. No associated finds.
 69. BB 200 Pit cut into fill of 46. Single articulated. W-E. No associated finds.
 70. BB 400 Pit marked by stones. Single articulated — only legs uncovered (rest in east baulk). E-W. *Finds* T70:1 Bowl.
 71. BB 600 Pit? Very disturbed. No associated finds.
 72. BB 400 Pit, partially mud-brick lined with a stone marker. Single articulated. W-E. *Finds* T72:1 Bronze frag.
 73. BB 100 Pit. Single disturbed, cutting 52. *Finds* T73:1 Bowl.
 74. BB 100 Pit. Disarticulated infant buried within a bowl. *Finds* T74:1 Bowl, T74:2 Beads.
 75. FF Pit. Single articulated. W-E. *Finds* T75:1 Jug, T75:2 Iron bracelet, T75:3 Iron bracelet, T75:4 Bronze earring, T75:5 Pyxis, T75:6 Juglet (fragmentary), T75:7 Glass bead.
 76. BB 400 Double pithos burial set in pit. Burial contains one partially articulated adult (B), one disarticulated infant (A) overlying chest of B, and

- three additional skulls (C,D and E) with jumble of bones. Orientation of B: W-E. *Finds* T76A:1 Bronze earring, T76:2 Pyxis.
77. BB 600 Pit. Single articulated lying below 49. W-E. No associated finds.
 78. BB 200 Pit. Very disturbed, *Finds* T78:1 Jar.
 79. BB 200 Pit, partially mud-brick and pebble lined. Two skulls and scatter of bones. No associated finds.
 80. BB 200 Pit? Scatter of bones. *Finds* T80:1 Bone button, T80:2 Dipper juglet, T80:3 Dipper juglet.
 81. BB 200 Pit disturbed by 69. Scatter of bones possibly extending into baulk. No associated finds.
 82. BB 600 Pit within 48. Disarticulated skull and long bones. No associated finds.
 83. BB 100 Pit, mud-brick lined and stone marker on east side. Single articulated. E-W. No associated finds.
 84. BB 400 Pit? Disturbed, skull and few bones possibly cut by 76. W-E. No associated finds.
 85. BB 400 Pit with stones on east side. Skull and long bones. No associated finds.
 86. BB 400 Pit partially bounded with mud-brick. Very disturbed, three skulls, pelvis, ribs and long bones. Not fully excavated. *Finds* T86:1 Bronze pin.
 87. BB 400 Pit? Very disturbed, three skulls and scatter of long bones. *Finds* T87:1 Pyxis.
 88. BB 200 Pit, partially bounded by stones with store jar inside. Sparse remains. *Finds* T88:1 Store jar.
 89. BB 400 Pit. Secondary burial: skull and carefully arranged long bones. W-E. *Finds* T89:1 Jug, T89:2 Pyxis.
 90. BB 100 Pit cut into mud-brick wall. Disturbed, three skulls (A,B,C). *Finds* T90:1 Jug, T90:2 Beads, T90:3 Stamp seal.
 91. BB 200 Pit, brick lined with dressed stone marker at east side and cut into 46 fill. Single articulated. E-W. *Finds* T91:1 Bronze bowl (held between teeth), T91:2 Iron arrow-head, T91:3 Iron objects, T91:4 Silver earring, T91:5 Silver earring.
 92. BB 100 Pit with store jar sherd marker. Single disturbed — feet only rest in baulk. *Finds* T92:1 Bronze anklet, T92:2 Bronze anklet.
 - 93A. BB 600 Pit. Single articulated — Pelvis and legs only, rest in baulk. E-W. *Finds* T93A:1 Alabaster lid, T93A:2 Stone whorl.
 - 93B. BB 600 Pit. Single articulated — lower leg and foot only, rest in baulk. E-W. No associated finds.
 - 93C. BB 600 Pit. Single articulated — pelvis and leg, rest in section. E-W. No associated finds.
 - 93D. BB 600 Pit. One lower leg, rest in baulk. E-W. No associated finds.
 94. BB 200 Pit with stone markers cut by robber trench. Single articulated covered by jumble of numerous bones. W-E. No associated finds.
 95. BB 200 Pit, possibly marked by stones, cut by robber trench. Single articulated. W-E. No associated finds.
 - 96A. BB 600 Pit. Single articulated juvenile covered by a krater. N-S. No associated finds.
 - 96B. BB 600 Pit. Very disturbed, few long bones. No associated finds.
 - 96C. BB 600 Pit. Single articulated extending into baulk. W-E. No associated finds.
 97. BB 200 Pit with mud-brick floor (EB). Disturbed. Possibly continuation of 41. No associated finds.
 98. BB 200 Pit? Disturbed, scatter of bones. No associated finds.
 99. BB 200 Pit, partially mud-brick lined. Single articulated. E-W. *Finds* T99:1 Bowl.
 146. BB 400 Pit? Isolated skull. *Finds* T146:1 Alabaster pyxis, T146:2 Bowl.

147. BB 600 Store Jar with overlying mud-brick slab. Sparse remains. No associated finds.
148. BB 400 Store jar burial. Single disarticulated infant. *Finds* 148:1 Dipper juglet.
149. BB 400 Pit with stone lining (partly EB) and with EB destruction rubble fill. Single articulated — skull and upper torso only, rest in baulk. W-E. *Finds* T149:1 Lamp, T149:2 Sherds of bowl, T149:3 Jar, T149:4 Abydos juglet.
150. BB 200 Pit, mud-brick and stone lined. Single articulated - skull and upper torso only, rest in baulk. W-E. No associated finds.
151. BB 400 Double store jar burial. Single disarticulated infant, skull and long bones. No associated finds.
152. BB 200 Pit, partially mud-brick lined. Single articulated juvenile, skull and upper torso only, rest in section. W-E. *Finds* T152:1 Pilgrim flask, T152:2 Beads.
- 153A BB 400 Pit with stone markers. Single articulated. W-E. No associated finds.
- 153BBB 400 Pit. Directly underlying 153A. Single articulated. W-E. *Finds* T153B:1 Bronze bracelet, T153B:2 Six bronze rings, T153B:3 One and a half bronze rings, T153B:4 Beads, T153B:5 Juglet.
154. BB 400 Pit with stone marker. Single articulated, legs only, rest in baulk. W-E. No associated finds.
155. FF Store jar. No bones. No associated finds.
156. BB 100 Pit. Store jar burial. Single disarticulated infant, skull and a few bones only. *Finds* T156:1 Beads.
157. BB 600 Pit with mud-brick and stone covering. Single articulated. W-E. *Finds* T157:1 Bronze pin, T157:2 Pyxis.
7. BB 400 Pit. Single articulated covered with store jar sherds. E-W. *Finds* T7:1 Juglet (fragmentary).
- 7A. BB 400 Infant ribs overlying pelvic area of 7 - may be extending into baulk. E-W. No associated finds.

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EXCAVATIONS AT DEIR 'ALLA, SEASON 1984

by

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Introduction

The excavations on the main tell of Deir 'Alla (Central Jordan Valley) were carried out from January 29 until May 5 1984, and were a continuation of the small scale activities during the last months of 1982. A relatively long period was devoted to this new season and the team was larger than usual. The excavations were carried out jointly by the Department of Antiquities, Yarmouk University and Leiden University, Holland.

For the aims of the project and for the more recent work done on the site, we refer to the preliminary reports in *ADAJ* XXII (1977/78), pp. 57-80, *ADAJ* XXIII (1979), pp. 41-50, and *ADAJ* XXVII (1983), pp. 577-585.

The aim of this season's fieldwork was to continue the excavations in the area measuring 15 x 30m at the top of the tell, comprising squares B/A, B, C5,6,7,8,9, 10, except for B/C5 (excavated in 1967 and 1976). B/D6 was added this season (see plan drawing, Fig. 1).

The main purpose of digging in this area has been, and still is, to extend the excavations of the settlement of phase M, where plaster inscriptions (Bala'am texts) were found in 1967, in order to gain more information about the character of the settlement. A considerable amount has been accomplished this season. Information about the phasing system may be found in *ADAJ* XXII p. 64. Descriptions of the phases excavated so far may be found in *ADAJ* XXII pp. 71-73, XXIII pp. 42-50, and XXVII pp. 579-585. The section drawing of Fig. 2, along the E-W axis of the excavated area, shows several deposits of the different phases.

Hardly any deposit of phases I-V had been left, and therefore they were not excavated this season. Slightly more deposits of phases V/VI and VI were removed.

Again some more work was done on phases VII and VIII, although most of the digging was done on phase IX.

In the following paragraphs we will add some of the information gained this season to the picture of the phases encountered from top to bottom, from phase I through IX.

Phases I-V

Nothing of the Early Islamic graveyard (phase I) was found this season. Phase II was touched only in the huge pit in square B/A10 (S. part). In this square the bottom of the northern side of the pit was reached at a depth of 3.20m, which is identical with the lower level of the phase IX settlement deposits at this spot. However, the N edge of the pit bottom did not yield any positive information about the use of this rough sided pit. Perhaps it was just made to use the removed soil as fertilizer for the fields in cultivation. The pit was filled in again with a mixture of debris: mudbrick fragments were often found and some specific objects could be isolated (e.g. loomweights), clearly not in their functional context.

No deposits of phases III and IV were excavated, and very little of phase V (ca. 500 B.C.), namely pit B/B9.44, with an isolated loomweight, typical of the phase.

Phase V/VI

This phase covers the accumulating and digging activities after the destruction of the buildings of phase VI, and before the construction of the walls of phase V. The remains of the destroyed buildings of phase VI are rather thin (hardly ever more than 50cms, except in B/C10), which in this case means that quite a bit of erosion had occurred before the site was used again on this spot. This new use is mainly visible as courtyard layers, up to about 50cms thick, in the area excavated (see previous re-

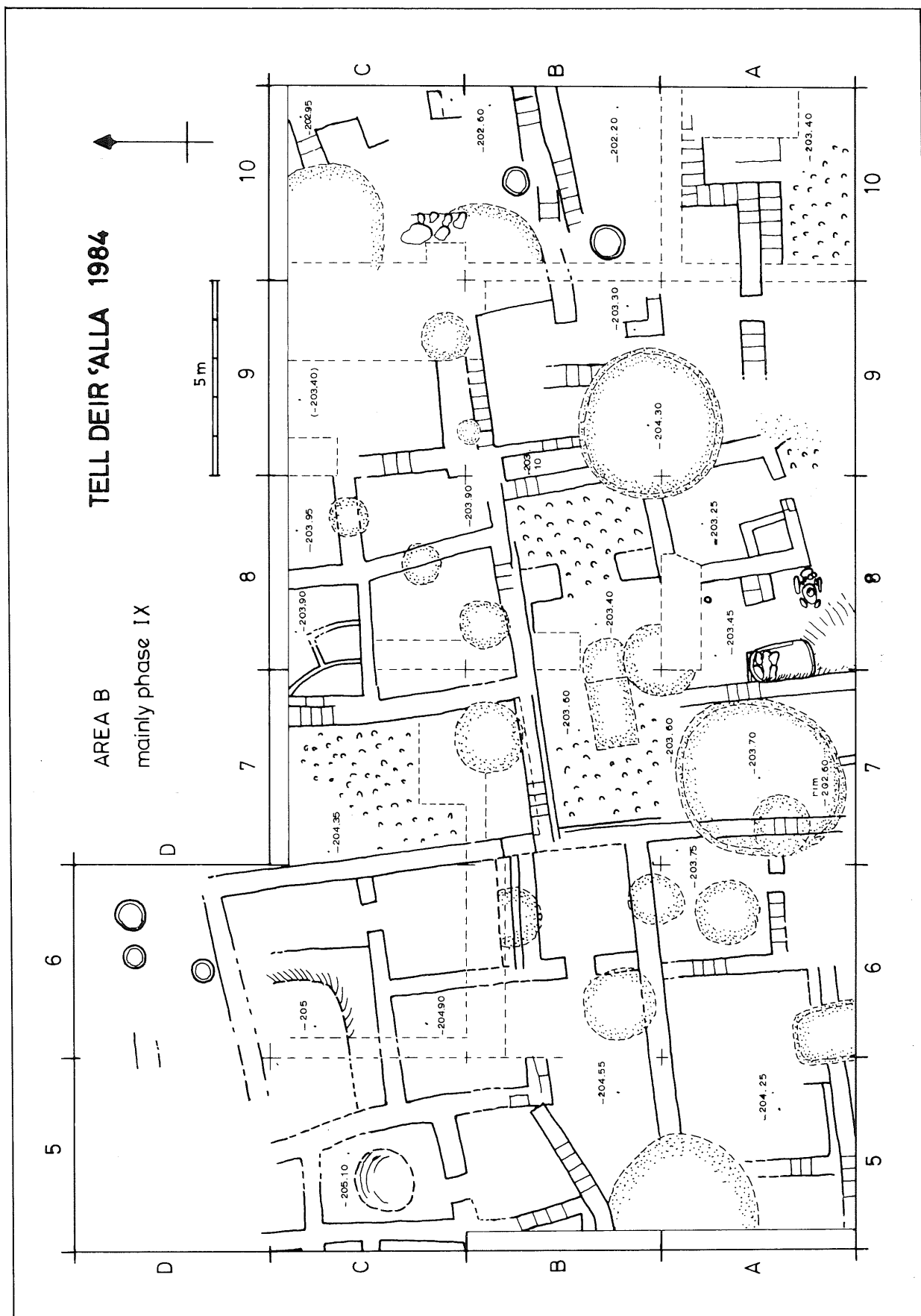


Fig. 1 Plan, mainly Phase IX (M)

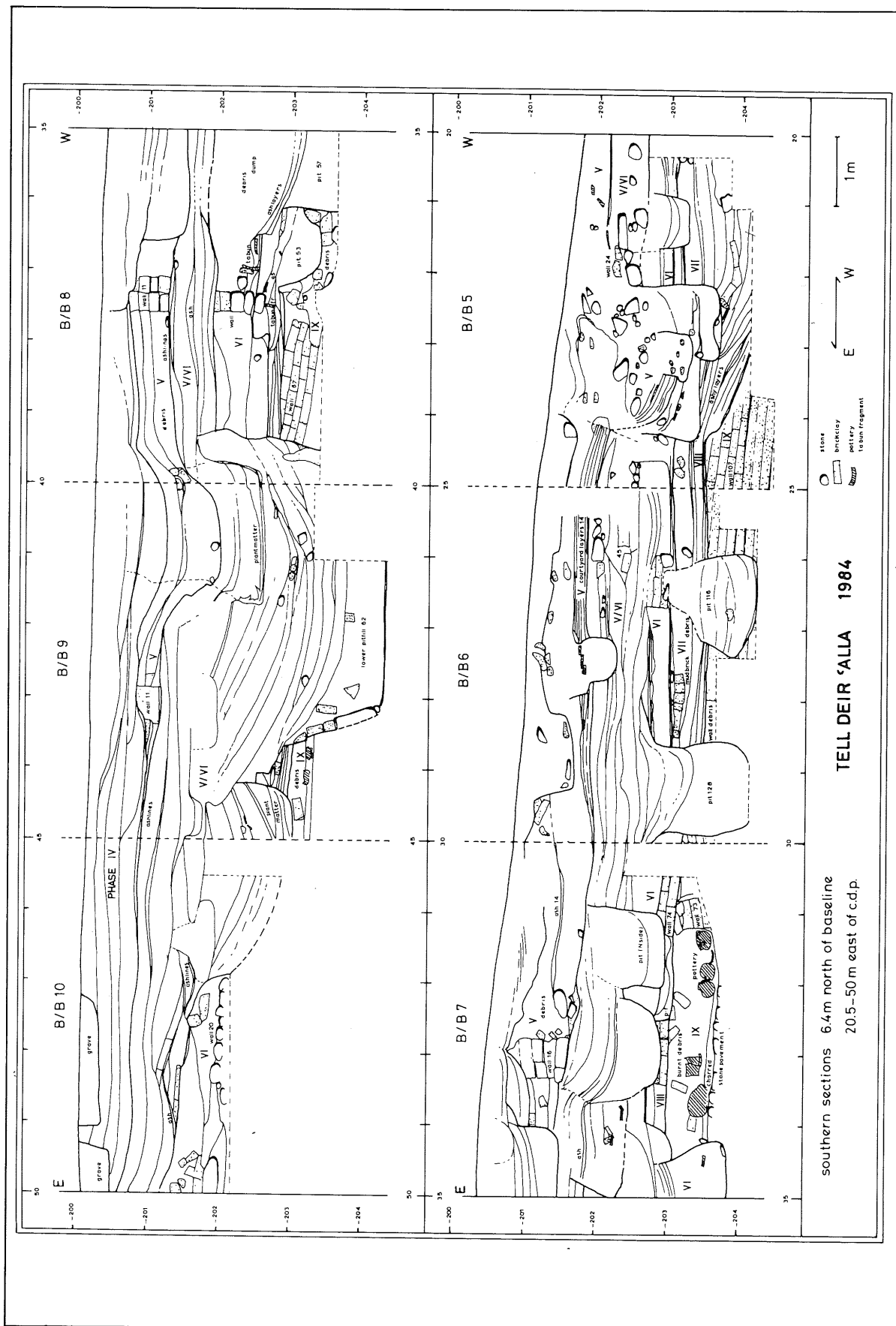


Fig. 2 Section through Phases I-IX

ports). Pits, particularly of the small bell-shaped type, occur especially in the later part of this period (*cf.* the report in *ADAJ* XXVII pp. 579f; these pits are dealt with under phase V).

Most conspicuous are two large circular pits with a diameter of *ca.* 4-5.5 m (from bottom to top) and a depth still left down to about 2m at places (quite a bit of the fill had already been removed in previous seasons, *cf.* e.g. *ADAJ* XXIII p. 46). They were found mainly in squares B/A7 and B/B9, at a distance of *ca.* 5m from each other. The sides of the pits are reinforced, and constructed with a row of vertically standing large unworked stones at the bottom with smaller stones on top (together *ca.* 70cms high). On top of these stones, mudbricks (*ca.* 30×50×12cms) had been put vertically and horizontally on their sides, and several of them have been found collapsed into the lower part of the fill in the pit. The lowest accumulation on the bottom or floor of the pits consists of a thin layer (*ca.* 1cm in the case of B/B9) of mainly whitish plant remains. On top of this, parts of the collapsed mudbrick lining of the pit were deposited, together with some stones and other debris; silt lines, resulting from standing water are clear as well, mixed with all kinds of wash and dump layers. Among the different layers of debris and wash several objects of different stratigraphical origin have been found, such as fragments of animal figurines and loomweights of different shapes. Close to the bottom a small limestone/marble "pedestal" (reg. no. 2899, B/B9.62, see Pl. XIII, 1) and a smashed decanter were found among other objects. The plant material at the bottom may have been the result of abundant plant growth in a pit which would easily retain some extra water after its original function had ceased to exist, or the result of plant storage. There is no clear positive indication of a function for the pits, nor is it clear whether the area was covered.

It is necessary to mention a few other pits; they were probably not contemporaneous with the large ones. These pits were excavated when removing the remains of

the baulks. Some examples with finds worth mentioning are: B/A6.127 with a golden earring (reg. no. 2790, see Pl. XIII, 2; a type from the Persian period); B/A10.22 with a decorated bone pendant (incomplete, reg. no. 2825); B/B5.100; B/B8.47 with a fragment of an iron sickle blade; and B/C10.42 with a possible piece of a house model (reg. no. 2900, see Pl. XIII, 3). The courtyards yielded several objects as well, for example a black scaraboid seal in B/A7.14 (reg. no. 2889), the half-circular bow of a bronze fibula (reg. no. DA'85-55) from B/C9.38, a wash layer from phase VI. This type of fibula (*cf.* Stronach's typology in *Iraq* XXI, pp. 18ff) is rare at Deir 'Alla, though found earlier in phases VI and V/VI. Mention should be made of the exceptionally long example of the "Irano-Scythian" arrowhead found in B/B5.32 (reg. no. 2803).

Phase VI

Plan drawings of phase VI in *ADAJ*, XXII p.72 and XXIII p.47 show the scanty remains of buildings, which have to be dated to around the end of the 8th century B.C. (see *ADAJ* XXVII p. 581). Although some more walls were discovered later on, the plan still has many lacunae due to the removal of large amounts of burnt debris by later inhabitants when digging their pits, as well as by erosion. This season it became clear that, before the construction of the apparently rather massive buildings had started, quite a bit of levelling had occurred especially in the B/A&B7-10 area. Hardly anything of the supposed deposits of phases VII and VIII were left there, as opposed to the area further to the WNW. Some features found this season may now be mentioned. All the walls of this phase have been constructed with a base of unworked stones. It is remarkable that the NS wall in B/C10 had stones at the W outer face of its base only. The E face had mudbricks instead, based on a layer of reed (see Pl. XIV, 2). The use of reed alone as a foundation for mudbrick walls is quite common at Deir 'Alla: it has been recorded in phases V, VIII and IX as well.

Another feature is the 'tawabeen'.

Several had been placed in a pit or depression in the surface. The outside of the baked clay *tabun* had sometimes been covered with a 2 or 3 cm thick layer of mud — apparently with the intention of keeping the heat in. One example shows the use of these ovens for cooking: a cooking pot had fallen into it (B/B8.51, see Pl. XIV,1). Some of the objects found are: the lower part of a potter's wheel (reg. no. 2907, from B/A6.160, see Pl. XV,1) which was not complete when found, but it is possible that the wheel-part had been in use during phase VI. Experiments with this type of wheel — mostly made of basalt, but this one is very hard whitish stone — showed the possibility of throwing pottery on it, and in fact phase VI has pottery made in this way. Other objects include several pestles, generally of basalt, but one of sandstone, as well as loomweights and an iron arrowhead.

Phases VII and VIII

At this stage of study it is useful to distinguish phases VII and VIII again (cf. *ADAJ* XXVII p. 583). Phase VIII can be described as consisting of the remains of walls in squares B/C6, 7 and 8, and some scattered remains in B/A5, 6 and B/B6, 7; with some roof and wall debris (unburnt) especially in B/C7; some brick-lined pits (e.g. in B/A5,6), and some courtyard deposits in e.g. B/C8. Phase VII is represented by courtyard deposits and pits only, but in B/A6, in an area of ca. 1.5 × 6m, mudbricks measuring ca. 50 × 37 × 15cms have been placed almost vertically on their short edge (deposit no. 116), and filled a surface depression together with dumped mudbrick material. The function of these tightly fitting mudbricks is not certain; their tops are shaved off (presumably by erosion) to form a flat surface on which some ashy courtyard materials had accumulated, and on which a wall of phase VI was constructed later on.

The more than 1m thick walls of VIII with their reed foundation had been sited directly on top of the debris of phase IX, but some levelling of the slightly sloping top of the debris and wash layers of IX had

taken place; quite a bit of IX had been removed in B/C7, 8 (see *ADAJ* XXVII p. 583). The courtyard deposits of VIII further E of these walls are at a level higher by more than 50cms; no buildings have been found further E or SE. During the existence of VIII, a large pit of diameter 4-5m was dug further W (half of it was uncovered in squares B/A & B5). It was partly filled with burnt mudbrick material when still hot; probably there was an oven further to the west. Elsewhere some '*ta-wabeen*' are to be connected with phase VII or possibly VIII, e.g. in squares B/B10 and B/A10.

The courtyard and wash layers of VII are on a rather well levelled surface. It is often difficult to distinguish between VIII and VII courtyard deposits. Therefore it is also sometimes difficult to attribute the pits found to one of them. This means some uncertainty concerning the phase attribution of objects found in the courtyard and wash deposits and pits. Some of these finds are: several objects made of iron, such as leaf-shaped arrowheads (e.g. from B/A9.34, a VIII courtyard deposit; also a similar arrowhead in bronze was found in B/B5.112), a small axe (B.A5.207, reg. no. 2830), a chisel (B/C7.40, reg. no. 2815), a knife (in VII courtyard deposits), and the bow of a fibula (in B/A8.56) — the second iron fibula found so far at Deir 'Alla. Also worth mentioning is a black burnished 'dipper juglet' from the brick-lined pit B/A6.133 (reg. no. 2877), and some sherds with a sign incised before firing the pot (one of the two is reg. no. 2792, from B/A7.40; see Pl. XV,2), found on the surface of VIII. Quite a number of animal bones were lying there too, including the lower jaws of cows. Interesting also is a fragment of a limestone 'cosmetic palette' of a type more often encountered in Palestine/Transjordan (reg. no. 2801, from B/B7.63; see Pl. XV,3); an almost identical type was found at Tawilan, (reg. no. 488; see fig. 4 in H.O. Thompson, 'Iron Age Cosmetic Palettes', *ADAJ* XVI, 1971, pp. 61-70).

Phase IX

The excavation of phase IX (= Iron

Age phase M of the definitive Deir 'Alla publications) started in the 1960s, especially in 1967. That season an area of about 400 m² of this phase was uncovered to the SE of the step trench excavated by Franken on the N slope of the tell some years earlier (*cf.* the elevation map of the site in *ADAJ* XXII, 1977-78, p. 58). A small part of these excavations (square EE300) has been published in J. Hoftijzer and G. van der Kooij, *Aramaic Texts from Deir 'Alla*, Leiden 1976, in connection with the plaster inscriptions. Some further digging in EE300 (now labelled B/C5) was done in 1976, supplying a clearer picture of the immediate stratigraphic context of this plaster (see *ADAJ* XXII pp. 60-71). In the programme for extending the excavations of this phase further to the SE (at the E top of the tell), small parts were excavated in 1979 (*ADAJ* XXIII pp. 48-50) and 1982 (*ADAJ* XXVII pp. 583f). In 1984 the excavations of phase IX took place on a larger scale, adding another 450 m² to the area excavated. More than 20 'rooms' were discovered and added to those found in 1967 (see plan Fig. 1; Pl. XII shows a vertical photograph of a large part of the area, made near the end of the season by the Yarmouk University photographer Henry Cowherd with his camera attached to the top of a high pole). Some rooms, especially in the E part of the area, have not yet been excavated down to their floors. Less of the accumulated deposits of IX were left than had been expected. Digging activities during later periods (e.g. phase V/VI) had removed some of the IX deposits and levelling for phase VIII, and probably phase VI had also destroyed remains of IX which was built in a slightly terraced way (see the levels of floors indicated in plan Fig. 1). Sometimes nothing or only a few decimeters were left of the walls and debris, but often about half a meter and in the NW part walls more than one meter high were found.

Some aspects of the remains are briefly discussed below.

Architecture

Fig. 1 is a preliminary plan of the ar-

chitectural remains found this season, including those remains partly unearthed in previous seasons. The 1967 excavations lay further to the W/NW; only the remains in square B/C5 excavated at that time are included in this drawing. Pl. XII also shows about half of the digging area. Some of the wall fragments drawn in the E part of the area cannot yet be definitely attributed to phase IX — they may belong to X.

The mudbricks of the walls had been placed directly on the surface; no stone foundation was made, but a layer of reed was used instead (a reed foundation was also used for walls of phases VIII and V and partly VI). The mudbricks used mostly measured 47 x 11 x 35cms, but several walls were made of a slightly larger type; other slight differences do occur as well. Almost all the walls were only as thick as the length of a brick, some even as thin as a brick's width. The material used for most of the bricks came from the banded clay beds of the low natural hills nearby, but often different clay/mud was used for bricks employed in one wall (e.g. the EW wall B/B6.127 had three layers of grey and three of ochre coloured bricks; *cf.* also *ADAJ* XXII p. 65). Stones and bricks were only used for square platform-like structures made at some walls, facing each other (e.g. in squares B/A & B8). The function of these structures is not known but in one case a basin-like construction was made on top of the structure (see below). Most of the rooms/spaces enclosed by walls measure *ca.* 3 x 3.5m, but some are up to 10m in length. Half of them had a solid roof (roof debris found on the floor), but at least two of the other spaces had been covered by reed matting (in squares B/C6 and B/C7). The connections between the walls dividing spaces are not always clear, because doorways have not always been recognisably preserved, perhaps because of the low level of the wall stumps left. In any case courtyards or alleys between the 'house complexes' form a small part of the plan (in squares B/D6 and possibly B/C7) in the area excavated. Several rooms, roofed and unroofed, have floors paved with unworked small boulders

(ca. 25cms diameter), with whitish clay plaster filling the holes in between. The small space, originally covered with reed matting, which gave access to the plastered wall with the Bala'am inscriptions (squares B/C5 & 6, cf. *ADAJ* XXII pp. 65f and *ADAJ* XXIII pp. 48f), had a 'bench' on the S and E sides, and maybe on the N side as well, with a shallow depression sloping towards the plastered wall in between; (see Pl. XVI, 2 which shows the remains of the mat as fallen on this 'floor'). At five other spots the same type of ca. 7mm thick lime plaster has been found, embedded in wall debris, nowhere still attached to a wall fragment (the rooms are in squares B/A5, B/A8 - each side of the NS wall -, B/C6 and B/C7, also covered with reed). In each case the amount of plaster exposed covers a surface of about $1/2 \text{ m}^2$, but in several rooms much of the original plaster may have been burnt. None of the plaster fragments had any writing or drawing visible on the surface. If this was the original case it also has to be concluded that the smooth plaster, including that with the inscriptions, had not been applied with the specific purpose of being inscribed. Several of the rooms have very thin (ca. 15cms) clay plastered brick walls, dividing the room into different compartments (very clear in B/C8), apparently for storage purposes.

The walls of the rooms were not very solidly constructed. Right angles between connected walls were not employed very often. On the other hand, the finishing off of several of the walls and floors has been done with special care. Several of the walls show repair or even rebuilding, and roof collapse during the use of the rooms, giving a new, higher floor, has been noticed at places as well.

The final destruction of the complete building complex occurred suddenly, and was, according to data found in 1967 (long EW cracks stopping at the lower edge of the debris of phase IX), caused by earthquakes. In most places fire had broken out as well, causing severe burning of the roofs and wall faces, as well as of the contents of the rooms concerned.

The Installations

The 'tawabeen' in B/D6 are to be connected with phase IX, but most of their stratigraphical context had already been excavated in 1967. The size of two of these ovens is exceptionally small (the diameters at their base are ca. 40, 50, as opposed to 75cms for the third one).

Most conspicuous are two installations uncovered in the W room in square B/A8. One is a kind of basin constructed against the W wall, partly on the floor and partly on one of the low platforms mentioned above. It had been made *in situ* from the broken body section of a large jar, the rather low sides being constructed of straw-mixed 'clay' (now fired, size about 90 x 130cms; see Pl. XVII, 2). A small juglet (reg. no. 2867) was found at its base, but this does not explain its function; some store jars were found standing by the basin, and many loomweights and a lot of carbonised plant material (including wheat) were found in a slight depression in the floor to the S of it. At the opposite wall the other installation was set partly in the floor: a large stone, with a hole for grinding in its rather flat top surface (see Pl. XVII, 1). To the E some more stones had been laid to extend the flat surface, which was surrounded by a row of small flat vertically standing stones, so as to separate it from the surroundings (this complex measures ca. 95 x 70cms). A jug, a store jar and two craters were standing very close to it. The burnt wheat found nearby suggests a mortar for pounding wheat, but any other kind of material could have been ground in this installation.

A large amount of charred wood was found on the plastered stone floor of E room in square B/B8 (for part of it see Pl. XVI, 2). The amount represents more wood than could come from a roof, and suggests some kind of furniture or installation there. Although some joints of beams now visible are certainly original, it is not yet certain what the original constructions looked like. The wood remains are being analysed, and two of the groups of beams have been preserved by glueing the soil with the charcoal on cloth.

The Objects

A large number of moveable artefacts have been found, especially pottery and loomweights, as well as stone objects, and small artefacts of metal and bone. Some of these objects are mentioned below, without discussing their relations inside rooms for this report.

Complete *pottery*, though often broken by the destruction of the buildings, was found in almost all of the rooms. High concentrations are found in the S room of square B/B5, the SE room of B/C6, the NW room in B/C8, the NE room in B/A6, the S part of the room in B/B8 and the W and S parts of the rooms in B/A8; smaller groups were found elsewhere. A small selection of pottery shapes is shown in Figs. 3 & 4. None of the different collections of pottery mentioned had one type of pot only (e.g. store jars). All of the larger groups had (storage) jars, as well as jugs; several had one or two cooking pots (B/C6, B/C7, B/B5, B/A6). Others had numbers of craters (B/A6 and B/B7 — see Pl. XVIII, 1 in particular). Bowls occurred in the B/A8 and B/C8 groups (in B/A6 and B/B7 the “strainer” type on three legs). Plates were also rare (B/C6, B/B8, with little other pottery, and B/A8) and only one lamp was found (B/C8). Many of the type shapes of the pottery can be found W of the Jordan as well, dating from the Iron Age II (especially B) period.

Loomweights have been found in five large groups (about 30 weights each, sometimes more) and several smaller ones. The large groups were found in rooms in B/C6 (SE), B/C8 (NW), B/A6 (NE), B/A8 (SW corner and SE part), often among pottery and carbonised plant material. Most of these weights had been fired during the destruction, but some are still unfired. The groups show quite a variation in shape. For example, the group from B/C8 (already illustrated in *ADAJ* XXVII, Pl. CXXXII, 2) has seven types, six of which are circular with a hole perpendicular to the circle, and one is conical in shape, with a somewhat rounded base and a horizontal hole (this type occurs once or twice in the larger groups). It is interesting to note that more

or less the same set of shape types has been recorded from Tell Qasile (see B. Maisler, *IEJ* I, 1950, Pl. 39B). This season again several of the loomweights (mainly those from B/C6 and B/C8) were found with pieces of string/thread still in the holes. This material has to be further analysed, but their existence makes it most probable that the weights will indeed have to be connected with weaving or making mats.

Different sorts of objects made of *stone* have been found on the floors and in the debris of this phase. Examples are grinding stones, found in a position that indicates their use during phase IX. The few lower grinding stones found were made of sandstone or basalt, and almost all the upper ones were made of sandstone. They were found in different rooms: several in B/C6 (different spots), B/C7 (N part), B/B5 (SE part), and B/A8 in different places. Also quite a number of pestles (see Pl. XIX, 2) were uncovered, mainly made of basalt, but some are hardly worked pebbles. Some of the pestles were found on floors in B/A8 (NE room) and B/B5 (SE room). Several pebbles have been found with a high polish on several sides, and sometimes with other types of wearing. Their precise use is uncertain, but they too were found on the floors of the rooms in e.g. B/A8 and B/B5. Several other types of objects made of stone have been found, e.g. alabaster spindle-whorls in the E room in B/B5. There were some rather small fragments of basalt bowls (mortars) as well, which were most probably no longer in use at the end of phase IX. However, one basalt bowl on three interconnected high feet was incomplete, but still in use: the object was found in a working area of the W room in B/A8, and extra traces of wearing are visible at the centre of what was left of the bowl's bottom. The shape of the bowl (Pl. XIX, 1) is close to that of the type illustrated by Buchholz in Fig. 20d in his “Steinerne Dreifussschalen des ägäischen Kulturkreises und ihre Beziehungen zum Osten” in *Jahrbuch des Deutschen Archäologische Instituts* 78, 1963, pp. 1-77.

Almost all the *metal* objects found are

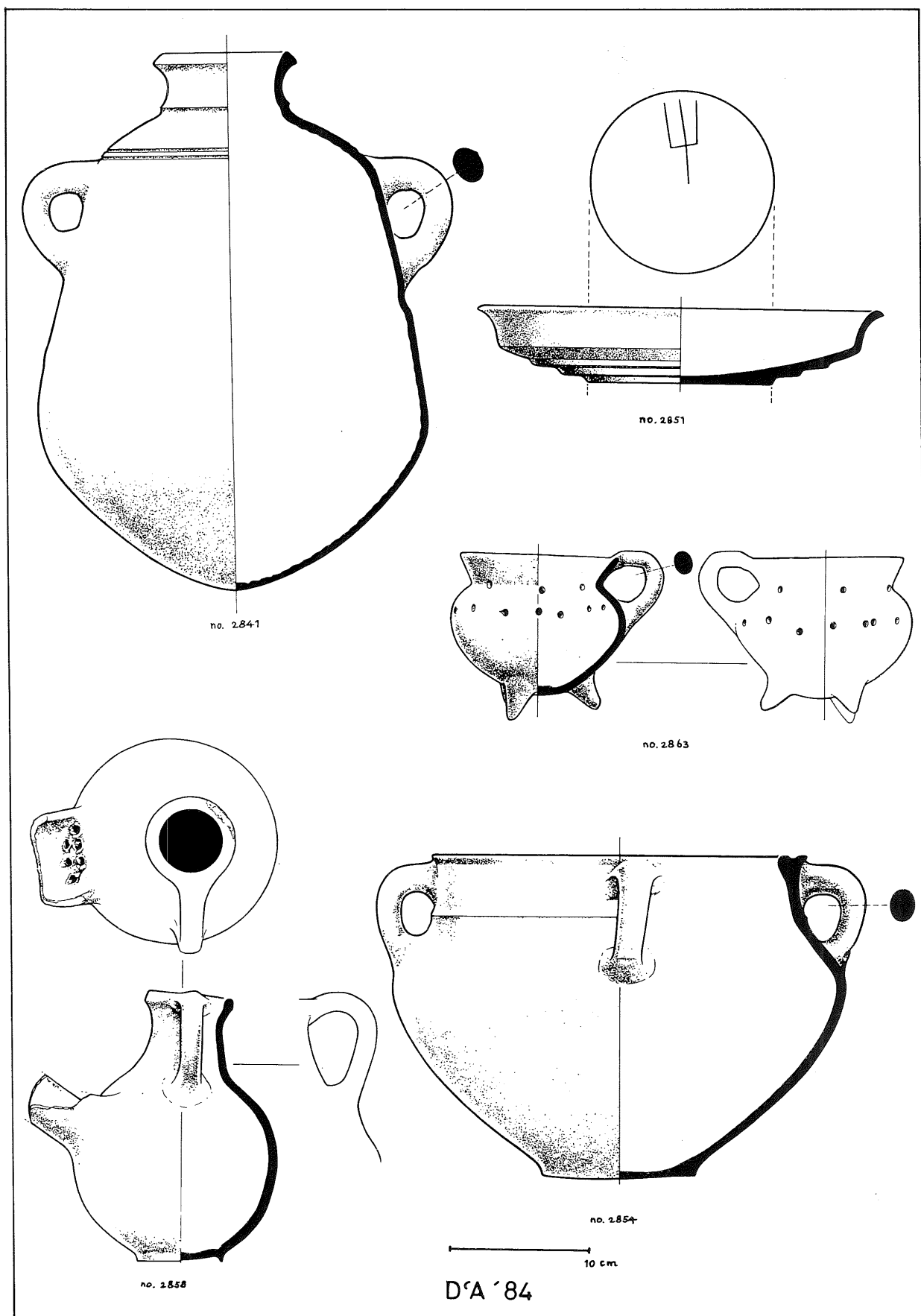


Fig. 3 Pottery from Phase IX (a) (drawings Hugo de Reede)

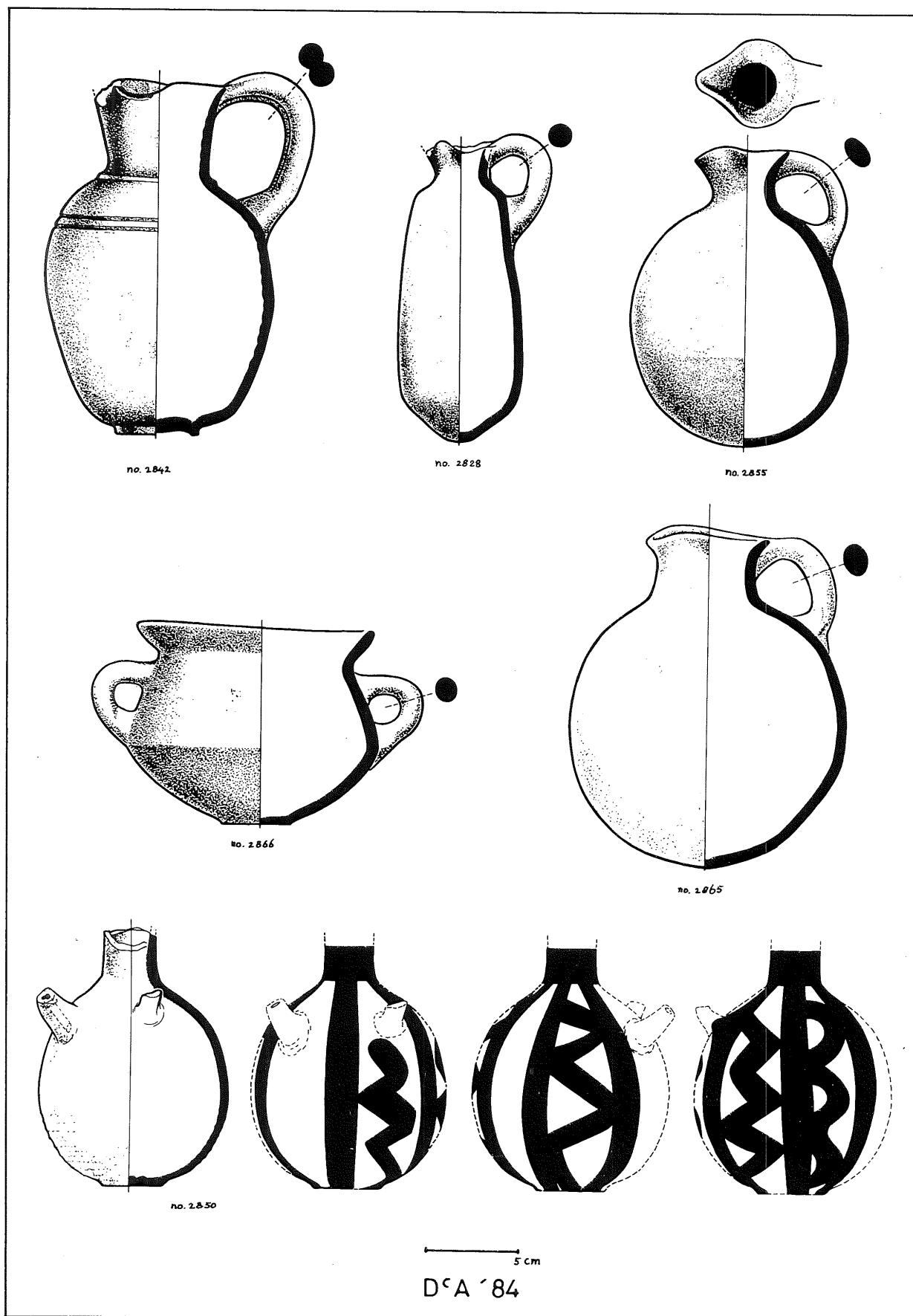


Fig. 4 Pottery from Phase IX (b) (drawings Hugo de Reede)

made of iron. They include seven leaf-shaped arrowheads, four of which were found in the W and NE rooms in B/A8. Several objects of *bone* are preserved rather well. This season again some examples of the flat oblong pointed and polished bone tool were found (see Pl. XIX, 3), some are fragmentary, but the others were apparently ready for use. Of the objects rarely found earlier are small tubes made of bone; three single tubes were found (Pl. XX, 1 shows one of them), plus one double tube (perhaps made of ivory), with incised decoration and filled with black material. This double tube, stored in a jug found in the S end of the room in B/B7 (see Pl. XX, 2), is clearly a *kohl* tube like those found elsewhere in Palestine, (though rarely, see examples in E. Stern, *Material Culture of the Land of the Bible in the Persian Period 538-332 BC*, 1982, p. 269 note 18). *Kohl* tubes are quite common in Egypt throughout a long period (communication G. van den Boorn, Leiden). Also the discovery of small bone or ivory panels (Pl. XX, 3) found on the stone-paved floor in B/B7 is quite exceptional. The surface of the panels was decorated densely with small drilled holes, each surrounded by two small concentric circles.

Two other artefacts, of Egyptian origin, are: a small game piece, perhaps made of *faience*, but painted white (reg. no. 2794), and a *faience* wadjet eye (reg. no. 2890). Both were found in mixed debris, so perhaps have to be taken as isolated objects not specifically connected with the culture of phase IX.

Apart from the artefacts a large amount of *biological remains* have been found. This includes small animal bones, e.g. from the floor of the room in B/C7, and a burnt but complete large antler of the Mesopotamian Fallow Deer, placed against the W wall of the NE room in B/A8 (Pl. XXI, 1). In 1979 and 1982 two other antlers of the same type were found in the SE room in B/C6 and the E room in B/B6. The use of the antlers in this context is still obscure, and the study of the animal bones has not yet proceeded far enough to know if more remains of this animal have been

found.

Large quantities of carbonised plant material have been found on room floors, inside jars and jugs and in debris and wash layers. The botanists Mr. R. Neef and Professor W. van Zeist were able to give some preliminary results of their studies. A large variety of seeds was found, for example those of flax (apparently for the production of linseed oil), barley, wheat, lentils, bitter vetch and olives. Grapes were found together with cummin in a jug with a sieved mouth in the S B/B7 room. (For previous results of the study of botanical material, see W. van Zeist and J.A.H. Heeres, *Paleobotanical studies of Deir 'Allā, Jordan*, in *Paléorient* 1, 1973, pp. 21-37).

Conclusions concerning Phase IX

Quite a lot of information about the culture of phase IX (M) has been found. A careful study of the remains has to follow. At this early stage of investigation it is difficult to get a clear picture, yet the following may be tentatively said.

The group of rooms/houses do not show a purely domestic function. The deducible number of weaving installations makes this improbable, as does the number and variety of pots in so many of the rooms. A combination of trade and living quarters is conceivable. No clear indication of a sanctuary or religious connotation is found, although the religious plaster texts found in 1967 may suggest this (no further inscriptions have been found this season), and although the "bench" room with this inscription at one end, could be interpreted as such. On the other hand, it is still possible that the quarters excavated so far belonged to a central sanctuary complex, with the deduced trading activities being part of it. However, it is also possible that the quarters belonged to a village or small town community (city walls have not been found, but it is sure that the edges of the settlement have been eroded away).

The people living and working in the rooms had rather poorly built, though well finished, brick houses. On the other hand, their pottery and other objects show some

very special items. As far as cultural relations are concerned, it is clear that many of the artefacts are rather widely spread, though sometimes rare, in the S Levant during parts of Iron Age II.

A date for the destruction of phase IX is indicated by C¹⁴ analyses of carbonised seed and leaf material from the burnt debris: sample GrN 5633 gave 2690 \pm 60 BP and GrN 8119 gave 2590 \pm 70 BP, both when calibrated indicate a date of 770-880 B.C. This information has been published before, but it should be added here that this rough date has been statistically corroborated by C¹⁴ datings of older (phase L) and later (phase VI) deposits. Additional C¹⁴ tests will be made.

Concluding Remarks.

1. Some interesting objects found during surface cleaning and on the top of the tell, should be mentioned here:
 - an incomplete painted figurine carrying an unidentified object in front of her breasts (reg. no. 2791, from B/C10, post phase VII; see Pl. XXI, 2);
 - two Egyptian scarab seals, one painted dark red in the lower relief surfaces, bearing the name of Thotmes III (reg. no. 2810), and the other with a green colour in the lower surfaces and lines (reg. no. 2894). Pl. XXI,3 shows both of them.
2. The excavation of phase IX in the area under exploration is not yet finished, especially in the E part. This work has to be done next season, which is planned to be during the first three months of 1987. Apart from that, it is necessary in order to understand the architecture of IX, to somewhat extend the digging area. In addition, to get more information about phases VIII, VI and V, it seems that the best results should be obtained by continuing the dig towards the N slope (in this way the unexcavated parts would be less vulnerable to eroding forces as well), and further W of B/A & B5. It also seems worthwhile to continue ex-

cavating the trial trench in area D, to the S of the highest excavations (see *ADAJ* XXII p. 72, excavated in 1978, and meant for the exploration of phase M).

3. All the biological material isolated has been shipped to the Biological-Archaeological Institute of the University of Groningen. Previously found biological samples are being studied there as well. The flora remains are being studied by Prof. van Zeist and Mr. Neef; the fauna remains by Dr. Clason and Mr. Buitenhuis. The metal artefacts and metal samples found are, as before, to be analysed and conserved by Mr. Mosk, Mr. Mol and Mr. Stambolov of the Central Laboratory for Objects of Science and Art in Amsterdam. The very fragile *kohl* tube will be conserved there too.
4. The registered objects from the Deir 'Alla excavations, stored in the Archaeological Museum in Amman (not those exhibited there or in es-Salt), were transported to the Deir 'Alla Station for Archaeological Studies (cf. *ADAJ* XXVII p. 577). From these objects a small exhibition on the history and excavations of Deir 'Alla has been provisionally set up. Eventually this will become a site exhibition including archaeological as well as geographical and biological information in order to bring the archaeological results to the attention not only of colleagues but also of students and other interested visitors.

Acknowledgements

The work of the Joint Expedition would not have been possible without the full support and interest of Dr. Adnan Hadidi, Director General of the Department of Antiquities in Amman, Dr. Adnan Badran, former President of Yarmouk University, and Dr. Henk J. Franken, Head of the Department of Archaeology of Palestine and its Surroundings at the University of Leiden. It is a pleasure for us to mention here our gratitude to them. The finances and equipment for the expedition came

from the three institutions involved and some additional equipment was put at our disposal by the Netherlands Organization for the Advancement of Pure Research (ZWO).

The team consisted of Jordanian and Dutch members, connected with the Department of Antiquities, Yarmouk University and Leiden University respectively. The directors were Dr. Moawiyah M. Ibrahim and Dr. Gerrit van der Kooij. Field supervisors were: Dr. Guido van den Boorn (*LU*, sq. B/B5), Miss Margaretha Folmer (*LU*, sq. B/A6), Mr. Fuad Moh. Ilhorani (*DAJ*, assistant, sq. B/C10), Mr. Emsatif Suleiman Emsatif (*DAJ*, sqs B/A7 & B/B7), Mr. Moḥammed Jamra (*DAJ/YU*, sqs B/B9 & 10), Dr. Zeidan Kafafi (*YU*, sqs B/C8, 9 & 10), Mr. Nabil el-Qadi (*YU*, B/A8 & B/B8), Mr. Ali Nazmi Saidi (*DAJ*, B/A9 & 10), Dr. Margreet L. Steiner (*LU*, B/C6, 7 & B/D6), Miss Monique Vilders (*LU*, sqs B/A5 & B/B6). Three other members were part-time field assistants: Mr. Moḥammed 'Abdel-Raḥman Othman, Fuad 'Abdel-Raḥim 'Awad and 'Abdel-Karim Ghassab (all *DAJ*). Other staff members of the team were Mrs. M. Louise Dumas for housekeeping and the administration of finds, Mr. Hubert de Haas (photography), Mr. Hugo de Reede (draughtsman) — all from Holland —, and Mr. Fayez Ṭarawneh (*YU*) for surveying and restoration. The botanists Mr. Reinder

Neef and Dr. Willem van Zeist from Groningen, Holland were included in the team during six and two weeks respectively for sampling plant material. We are grateful to Henry Cowherd (*YU*) for making vertical photographs with his special equipment. Of much importance in the camp was the chief cook Abu Ramadan.

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PRELIMINARY REPORT ON THE SOUTHERN HAURAN SURVEY, 1985

by

D.L. Kennedy, H.I. MacAdam & D.N. Riley

INTRODUCTION

Following on a preliminary reconnaissance in May, 1984, a joint survey organized by the Department of History and Archaeology, American University of Beirut, and the Department of Ancient History and Classical Archaeology, University of Sheffield, undertook a first season of fieldwork in June, 1985.¹

The Survey Area

The boundaries of our survey were the village of Şabha in the west and that of Deir el-Qinn 42 km. to the east. The northern and southern limits were the Syrian/Jordanian border and the Tapline road (10-25 km. apart). This comprises an area of some 650 sq. km. in north central Jordan. The major settlement in this region, our home base for the survey, and the main focus of our attention throughout the fieldwork, is the ancient/modern village of Um el-Quttein.

The survey area (Fig. 1) is in the centre of the lava lands straddling the border territory between Syria and Jordan. Much of the region is strewn with volcanic rocks, and basalt is the primary building stone. The soil is light and sandy but potentially

fertile and, where cleared of its boulder covering can, has and is being farmed. Rainfall is slight (a little over 150 mm) but sufficient most years to support a cereal crop. The land, however, slopes from NNE to SSW by some 250 m with the sharpest incline noticeable in the north. Since this continues the slope of the region contiguous with Jebel el-Druze in southern Syria, it offers the opportunity to channel and conserve the waters of the often considerable winter and spring rains.²

Until recently it was possible for surface water collected in that way to support the settled population (*ca.* 3,000) of Um el-Quttein. Now, after several years of reduced rainfall, the population there and in the neighbouring village depend largely on the water piped in from the Azraq oasis some 60 km. southeast. The traditional water collection and filtration system has been allowed to deteriorate. Consequently the village reservoirs are often empty or contain only a trickle of run-off water which is used exclusively for watering the numerous flocks of sheep and goats common to the region. The southern, boulder-strewn region, though criss-crossed by tracks, has no more than an occasional isolated building, only a few of which are

1. The team consisted of David Kennedy (co-director: archaeology and epigraphy), Henry MacAdam (co-director: epigraphy), Philip Freeman (archaeology), Ian Robinson (surveying), Derrick Riley (aerial photographic interpretation), James Wilson (ceramics, liaison); we also benefitted from the advice of Rob Falkner (ceramics). The British Institute at Amman provided much of the field equipment and the loan of its Landrover. For this, and for his friendly advice and characteristic hospitality, we are indebted to the Director of the Institute, Dr. Andrew Garrard. For granting permission and organizing our accommodation at Um el-Quttein, and for lending his kind support and assistance, we are happy to record our thanks to Dr. Adnan Hadidi, Director General of Antiquities of Jordan. Finally we must thank

the people of Um el-Quttein who treated us with touching courtesy and great hospitality. The Director of the local school made over two of its classrooms for our use; the teacher of English, Mufleh Rahal, was an invaluable source of advice and assistance; the Commander and personnel of the nearby police post were helpful and generous. Financial support was shared. Sheffield: the British Institute at Amman for Archaeology and History, the Craven Committee (T.W. Green Fund), Hugh Last and Donald Atkinson Fund, and the Meyerstein Fund; Beirut: The Arts and Sciences Research Committee and the University Research Board.

2. See most conveniently S. Helms, *Jawa*, 1981, p.146, Fig. 65 for rainfall and land configuration in the region.

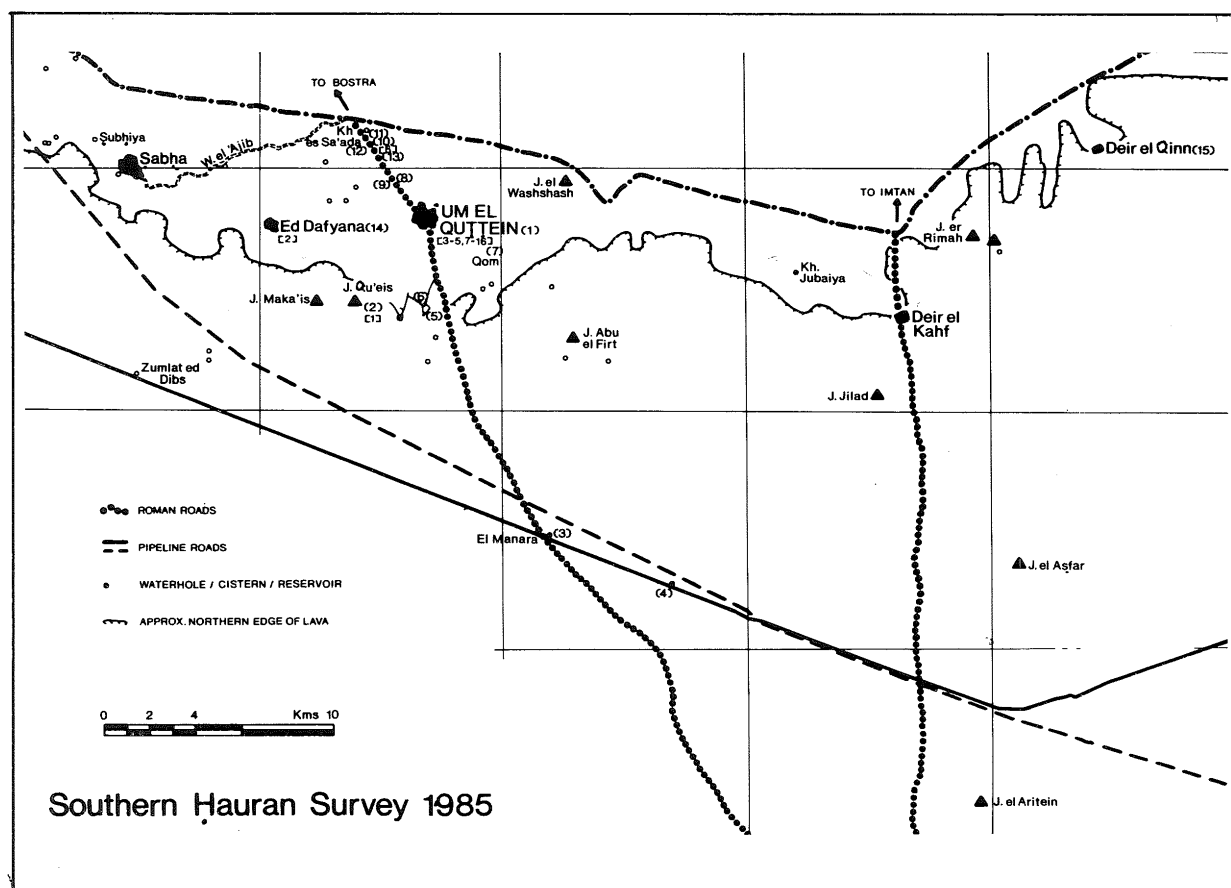


Fig. 1 Southern Hauran Survey 1985: survey area and sites examined.

farms. These were usually associated with water sources: *ghadirs* in wadi courses or depressions, and cisterns; occasionally we noted an open, made reservoir. It is worth noting that many volcanic "bubbles", i.e. hollows in the volcanic rock formed by pockets of air, provide ready-made water collection basins wherever the natural slope of a hillside leads into them.

The modern settlements are peopled almost exclusively by former bedouins, no longer nomadic, with a small admixture of Druze families. Many of the latter are now second or third-generation descendants of families who moved into the Jordanian Hauran from southern Syria during the disturbances in the early Mandate period. Apart from the few professional people in the villages, all of the inhabitants depend for their livelihood on the produce of their flocks and their crops of wheat and barley. Individual families often hold pieces of arable land in two or more areas around their village; animals are grazed exten-

sively on stubble or the sparse natural growth of the open range land some kilometers in any direction from the villages.

Selection of the Survey Area

Ancient remains are to be found throughout the Hauran, most obviously the ruins of villages and towns occupied by local Arabs who set up their inscriptions in Nabataean and Greek. From the fourth century on their houses and funerary inscriptions demonstrate clearly the influence of Christianity: incised crosses are a common motif on both. Churches, chapels, monasteries and convents are also common and some villages the size of Um el-Quttein and even smaller could boast one or more of each. Some villagers lived in extremely well-built houses, two or more storeys high. Most important of these settlements is Um el-Jemal 25 km. west of Quttein. The largest of these ancient towns, it has numerous well-preserved buildings; the current programme of excavation has con-

firmed occupation from Nabataean through Umayyad times and possibly beyond.³ The site of the ancient town is no longer occupied, but the inhabitants of the nearby modern village recently have begun to farm the surrounding land much more intensely. The consequence of that is the almost total disappearance of any traces of ancient land use.

Um el-Quttein is about half the size of Um el-Jemal, and was the second largest of the ancient towns in the Jordanian Hauran (Pl. XXII, 1). Its distance from the *Via Nova Traiana* in antiquity, and its remoteness from Amman in modern times, has made it less accessible to visitors and scholars, respectively. The Princeton Expedition made Quttein its camp in late December, 1904, noting that Dussaud and Macler had previously visited the site in 1901. Nelson Glueck visited it in 1937; Sir Aurel Stein passed through in March, 1939; Gerald Harding was there in the mid-1950s. The site was visited briefly by Siegfried Mittmann in 1966, and more recently by Geoffrey King in 1981. All of the above without exception visited other sites in the area. Additional evidence can be found in the pages of accounts written by casual travelers and amateur archaeologists.⁴

Despite the considerable size of the ancient town (now almost completely encapsulated by the modern settlement), it must be emphasized that Quttein itself and its satellite villages in the area, are poorly preserved when compared with the extant remains of Jemal. The nucleus of the modern village (which dates back only to 1929) sits astride the ancient town; indeed, the

earlier modern settlers lived in many of the ancient buildings, and some of their descendants still do. The Druze who had once exercised proprietorial rights there were removed to Syria in the early Mandate period. They literally took much of the town with them; several of today's inhabitants reported how former villagers recalled the Druze demolishing some of the finer buildings for the superior masonry therein and then carting it away to build their new villages in Syria: this was especially true of al-Mugheyar, slightly more than 5 km. away. The considerable ruins reported and photographed by the Princeton Expedition, including tall towers, large churches and even a sizeable monastery, are now difficult to locate. Indeed, we could not confidently identify the site of *any* of the towers. The Princeton Expedition did publish a plan of the monastery/convent, a plan of three churches (but no chapels) and a detailed plan of one major house consisting of two distinct storeys. No other buildings then extant were planned, and no complete, overall plan of the site was drawn (as had been done for Jemal and Bostra). This, then, has become a primary objective: to preserve by means of accurate plans and drawings the visible remains of ancient structures among the extensive ruins and modern superstructures, and to plot these individual structures on an overall site plan. This is now a very good time to initiate such a project. Many families who originally lived in and among the ancient houses have since moved into modern, cement-block dwellings on the periphery of the village. Thus exploration and planning can proceed with a minimum of distur-

3. B. DeVries, "Research at Umm el-Jimal: 1972-1977", *BA* 42 (1979), p.49-56; *idem*, "The Umm el-Jimal Project: 1972-1977", *ADAJ* 26 (1982), p.97-116.

4. *PAES*, II.A.2, p.137-42; III.A.2, p.116-21; R. Dassund and F. Macler, *Rapport sur une mission scientifique dans les régions désertiques de la Syrie moyenne*, Paris, 1903, p.434; S. Gregory and D.L. Kennedy, (eds.), *Sir Aurel Stein's Limes Report*, Oxford (BAR, S272), 1985, p.259ff; N. Glueck, *Explorations in Eastern Palestine, IV*, *AASOR*, p.25-8 (1951), p.24f; G.L.

Harding, *Antiquities of Jordan*, Guildford, 1959, p.148; S. Mittmann, *Beiträge zur Siedlungs- und Territorialgeschichte des Nördlichen Ostjordanlandes*, Wiesbaden, 1970, p.201-7; G. King, 'Preliminary report on a survey of Byzantine and Islamic sites in Jordan, 1980' *ADAJ*, 26 (1982), p.94; Gerald Harding's unpublished field notes, now on file in the Jordanian Department of Antiquities, throw further light on the site. Most useful of the 'amateur' archaeologists was L.W.B. Rees, 'The Transjordan Desert' *Antiquity*, III (1929), p.398.

bance to the present inhabitants.

The second, and in many ways rather more important, objective is to undertake an integrated, multi-period study of the town, its satellite villages and hamlets, the road network and the economic basis of the communities in the region. Clearly the datable evidence from the site points to the Nabataean, Roman and early Islamic periods as the high-tide mark of continuous settlement and prosperity with a noticeable break in habitation between the Abbasid age and the First World War. Nevertheless, the presence of flints, surface pottery of earlier and later periods and the "kites" in some outlying fields are all indicative that human habitation of the area was for a longer period than the more striking surface remains indicate. A test trench or sondage within the village would establish some clear stratification and do much to clarify the sequence of ceramics so far collected. It would also help to clarify the chronology of some undated buildings and allow a comparative chronology of occupation with other sites in the area, e.g. Um el-Jemal and Khirbet es-Samra.

The availability of aerial photographs taken during and after the Second World War is an additional and very important factor in our survey. Despite the poor quality of some, the major features of the landscape as it was in the early days of resettlement are evident, especially around Quttein. There is the prospect that the currently decayed field systems identifiable on the photos were planned in antiquity. They might yet be located on the ground, and perhaps dated in relation to the nearby and equally ancient road systems. The preliminary results of such an investigation are set forth in part III below.

The ancient name of Um el-Quttein is not known, and the same may be said for the sites of Deir el-Kahf, Deir el-Qinn, Dafyana, Şabha and even Um el-Jemal itself. Epigraphy may ultimately provide the answer to this.

II. THE VILLAGE AND ITS SURROUNDING AREA

The Plan of the Town

At Um el-Quttein itself a start was made in producing for the first time a plan of the ancient remains. With the assistance of an aerial photograph it was possible to locate the large complex of buildings which Butler had termed both a monastery and convent. The King survey had failed to identify it, since only the outline of the ancient buildings remains. Most of the churches and chapels previously reported were noted, and several previously unidentified buildings were traced (Pl. XXII, 2). The task is far from easy: modern rebuilding by Druze workmen not only utilized the available ancient building material and often the shells of ancient structures, but the construction techniques employed closely followed the ancient patterns. In some instances it is virtually impossible to differentiate between ancient and modern from superficial examination alone, and the skills of a professional architect will be needed to make the distinction. Those undertaking the recent excavations at Um el-Jemal made the very same observation.⁵

The Roman Fort

An important new discovery is that of a probable Roman fort underlying a portion of the modern town. Previous visitors had remarked on the then broad "depression" which ran from east to west and divided the town into northern and southern sectors. The smaller, northern area, just south of the largest reservoir, displays a more regular outline than the southern sector. Both the Princeton team and later Aurel Stein remarked on the traces of walls. Close scrutiny of an aerial photograph revealed most of the outline of a rectangle (ca. 156 × 120m.) which can still be traced in many places on the ground (Pl. XXIII, 1). Excavations would be necessary to settle the matter but the shape and size, the possible "rounded" corners and the probable open-

5. DeVries, *op. cit.* (1982), p. 105.

ings in the middle of each short side and about a third of the way along the long sides are highly suggestive (Pl. XXII,1). The area enclosed is some 4.5 acres/1.86 ha. and if our supposition is correct this would represent one of the larger forts in Roman Arabia. Excluding the much larger "legionary" fortresses at Lejjun (11.4 acres/4.6 ha.) and Udhruh (9.8 acres/3.96 ha.), only the *castrum* at Humeima (7.3 acres/2.95 ha.) and the newly discovered but enigmatic military site at Um Ubtulah (ca. 32 acres/13 ha.) are larger;⁶ that at Da'ajaniya is a little smaller (2.47 acres/1 ha.). Most of the well-known Roman forts in Jordan are late in date — Severan or later — and are relatively small: Qasr el-Hallabat (0.14 ha.), Qasr Bshir (0.26 ha.), Qasr el-Azraq (0.57 ha.), Qasr el-Ba'ig (0.16 ha.), Deir el-Kahf (0.38 ha.), Khirbet el-Fityan (0.52 ha.), Qasr Useikhn (0.05 ha.), Qasr 'Uweinid (0.20 ha.).⁷

On the basis of the evidence set out above for the presence of a fort at Quttein we might add that the location of the town on a major trade artery between southern Syria and the Wadi Sirhan, its strategic location between the *Via Nova Traiana* and the Severan predecessor of the *Strata Diocletiana*, and the traces of a made Roman road obviously linking Quttein and Bostra add additional weight to the hypothesis that a fortified garrison was stationed here soon, if not immediately, after the annexation of the Nabataean kingdom. We also note that nearby Um el-Jemal, although a caravan city, was garrisoned and the *burqus* of A.D. 372 surely had an antecedent.

At Quttein the military area seems to have become a civilian settlement (perhaps in the peaceful fifth and sixth centuries), and the later buildings actually straddled the walls of the former fort. If the *cohort* we have identified as *III Augusta Thracum equitata* (see below) was responsible for the dedicatory Latin inscription, it is also worth noting that the block on which the text was inscribed was found, re-used, in a church/monastery (Pl. XXII,2) in the north-west corner of this possible *castrum*. A fort of this size is quite suitable for housing a part-mounted *cohort* such as that attested, and the inscribed block itself is too large and heavy to have been moved very far from its original position.⁸

Epigraphy

Within Quttein twelve previously unpublished inscriptions (some fragmentary) were found and recorded: four are Nabataean, seven Greek and one is a bi-lingual Nabataean-Greek. All but one are funerary and undated; the exception is a complete building inscription in Greek dated to A.D. 265 precisely. Of the fourteen inscriptions published by the Princeton survey only two were located; of the three reported by Stein we saw two; and of the eight recorded by Mittmann (who saw one of those read by Stein but not published until much later) we noted four.

The Latin military text published originally by Dunand and revised by Mittmann (see above) was examined again. We have argued elsewhere for a new and corrected reading of the numeral: the unit in question is not the *cohors I* but, probably, the

6. Um Ubtulah is one element of a fortification system surveyed by B. MacDonald, *Classical Views* n.s. 3 (1984), p.219-234. None of these forts described by him appears to be Roman in origin, but were most likely re-occupied by troops outstationed for shorter or longer times. Likewise the Roman plan of the legionary "camp" at Bostra has not yet been identified, though stamped military roof tiles have been found in and near the large (ca. 400 m²) area outside the northern wall of the city which is thought to be the camp. The legionary camp (if ever there

was such) at Aqaba has never been identified.

7. The fort at Diyatkeh (*PAES*, II.A.5, p.340-342) in the eastern foothills of the Jebel Druze in southern Syria fits the pattern of its Jordanian counterparts.

8. The military unit in question is attested in Syria in A.D. 88 and again in 156/157, i.e. before and after the creation of Provincia Arabia. If it is the unit connected with the Quttein fort, the fort most likely antedates its transfer back to Syria.

cohors III Augusta Thracum equitata.⁹ Two other Latin inscriptions were recorded in the survey area. One, a broken building inscription (undated) was found amongst the ruins at the summit of Jebal Qu'eis (4 kms. south-west of Quttein) and records a *Vexillatio leg(ionis) III Cyr(enaicae)* (Pl. XXIII, 2). The other is the text on part of a milestone drum found to the north-west of Quttein and datable to *ca.* A.D. 300¹⁰

The Roman Road

The presence of milestones amongst the ruins of Um el-Quttein had long ago indicated a road or roads in the vicinity. Quttein lies on the most direct route from the Roman provincial capital, Bostra to the Azraq Oasis. Quttein was thus the first major stop on an important caravan route which led from southern Syria via the Wadi Sirhan into the interior of the Arabian Peninsula and eventually to the Persian Gulf. The Roman road directly north from Azraq to Imtan via Deir el-Kahf was long known to have been joined by this age-old road, locally regarded as Roman, coming to el-Azraq from Bostra and Quttein. An inscription from el-Azraq now confirms this latter Roman road, naming Bostra and an intermediate post (Basienisa — but not to be identified with Quttein, see below) and giving the mileage from each to Azraq.

The survey examined the areas south-east and north-west of Quttein for likely traces of this road. In the south-east some outlines of what was probably just a cleared track (characteristic of desert roads) was followed ten km. to el-Manara (Basienisa) just north of the Tapline road. No milestones were discovered along this stretch. El-Manara itself is certainly Roman (see below) and provides a useful clue on the ground to the use of this "road" in the Roman period. North-west of Quttein we expected to find much the same situation. By contrast, the Roman road in this sector,

previously unreported, is unmistakably clear. Several hundred metres of the boulder foundation of a road some 6 m. wide and running broadly parallel to the modern track were discovered, measured and photographed (Pl. XXIV, 1). In appearance it is identical to the remains of the *Via Nova Traiana*, long stretches of which are visible just west of Um el-Jemal and these too some 5.5—6 m. wide. Positive proof that the road was constructed in Roman times was provided by the discovery of the milestone noted above, found lying quite near the road about two Roman miles north-west of Quttein. The presence of a made road running south-east of Bostra at least as far as Quttein testifies to the importance of the latter in the later Roman period.

Brief searches were made to the north-east, east and west of Quttein for any evidence of the "roads" which must have linked the village to its neighbouring communities in the Roman era. No milestones, nor anything certainly ancient was found. An equally brief search was made for traces of the *Strata Diocletiana* just north of Deir el-Kahf, and this also proved unsuccessful. Both areas will be re-examined in a future season.

Survey of Nearby Sites

In addition to examination of the remains at Um el-Quttein and a preliminary assessment of its water supply system (two large reservoirs and a score of roofed cisterns of various sizes, some obviously ancient), we examined ancient remains at 14 sites in the survey area. Most of these were in the vicinity of Quttein, as shown on the map. They ranged from "kites" south of Quttein (5) and a prehistoric settlement site to the east (6) to the much more substantial remains at Deir el-Qinn (15) and Deir el-Kahf (16), both military sites on the north-eastern edge of the area; Dafyana (14), three kms. west of Quttein boasts substantial remains of private homes dat-

9. D.L. Kennedy and H.I. MacAdam, "Latin Inscriptions from Jordan, 1985", *ZPE* (1986), p. 231-6.

10. Both of these, and an additional fragment of a Latin inscription from Qaşr el-Azraq, are published in the article announced in note 9 above.

ing to the Roman era and yielded another Greek stele; Khirbet es-Sa'ada (11) is a much damaged site just south of the Syrian border, the extensive ruins of which (broadly contemporary with Quttein) appear to have served as a stone quarry over the centuries.

In the south, following the Roman road toward Azraq, a brief visit was made to el-Manara (3). A scatter of masoned blocks and a re-used (now abandoned) but obviously ancient *birket* (water tank) are all that is to be seen of the small Roman military post known from two Latin inscriptions. From these the name of the site, *Basienisa*, is derived; it seems to have been the object of building work in A.D. 334 — the provision of a *receptaculum aquarum*.

Finally, we were fortunate to establish good relationships with the local inhabitants, who shared their homes with us and allowed us to observe (and sometimes to participate in) activities then in progress. Since the harvest (wheat and barley) was then underway, we learned much about the farming practices in that locality, partly traditional and partly modern. These observations of the living village should help us understand better the life of that same town in the first eight centuries A.D.

III. ANCIENT FIELDS NEAR UM EL-QUTTEIN

Travellers in the Southern Hauran in the earlier years of the present century reported very extensive remains of fields, which they considered to be ancient.¹¹ The clearance of land for modern cultivation has resulted in the disappearance of most of these traces of former agriculture, but it is probable that patches of ancient fields still survive in many places. This report summarises the results of a preliminary examination of the remains of this type near Um el-Quttein.

Two sets of air photographs were used to guide work in the field, a series at a

scale of about 1/30,000, taken by the Royal Air Force in 1946, which covers all the land in this region, and two photographs at a scale of about 1/10,000, taken by Hunting Air Survey in 1953, which cover an area near the village and to the south. The Hunting photographs are much more satisfactory than those by the Royal Air Force because of their better definition. Since these photographs were taken at a time when less land was in cultivation than at present, it was thought that many of the field boundaries they show might be ancient.

Objectives and Method of Survey

The first objective of field work was to locate the 'desert kites' south of the village, which were shown on the photographs, and some presumed ancient fields near them. The walls of a large kite were found without much difficulty, and near it was a small patch of fields which corresponded with those on the Hunting survey. It was noticed that the stones in the walls of the kite were light grey because of their covering of lichen. These walls were almost certainly ancient, perhaps prehistoric. The stones bordering the presumed ancient fields were of a similar appearance, but most recent fields, that is, those not shown by the Hunting photograph (Pl. XXV), were bounded mainly by piled stones, with little or no lichen covering; they appeared to have been built fairly recently. The colour of the stones thus gave a rough and ready method of separating old and new walls or piles of stones, though it could give no indication of the age of the old walls.

The presumed ancient fields are of two types: narrow parallel strips, with a length to width ratio of at least 5 to 1, and approximately rectangular fields, with a length to width ratio between 1 to 1 and 3 to 1 approximately. Many of the modern fields are also planned in parallel strips, which is a possible source of confusion in the interpretation of the air photographs.

11. *PAES*, I, *passim*; Rees, *op. cit.*, p. 398; cf. D.L. Kennedy, *Explorations on the Roman*

Frontier in North East Jordan, 1982, Oxford (BAR S134), p. 331-5.

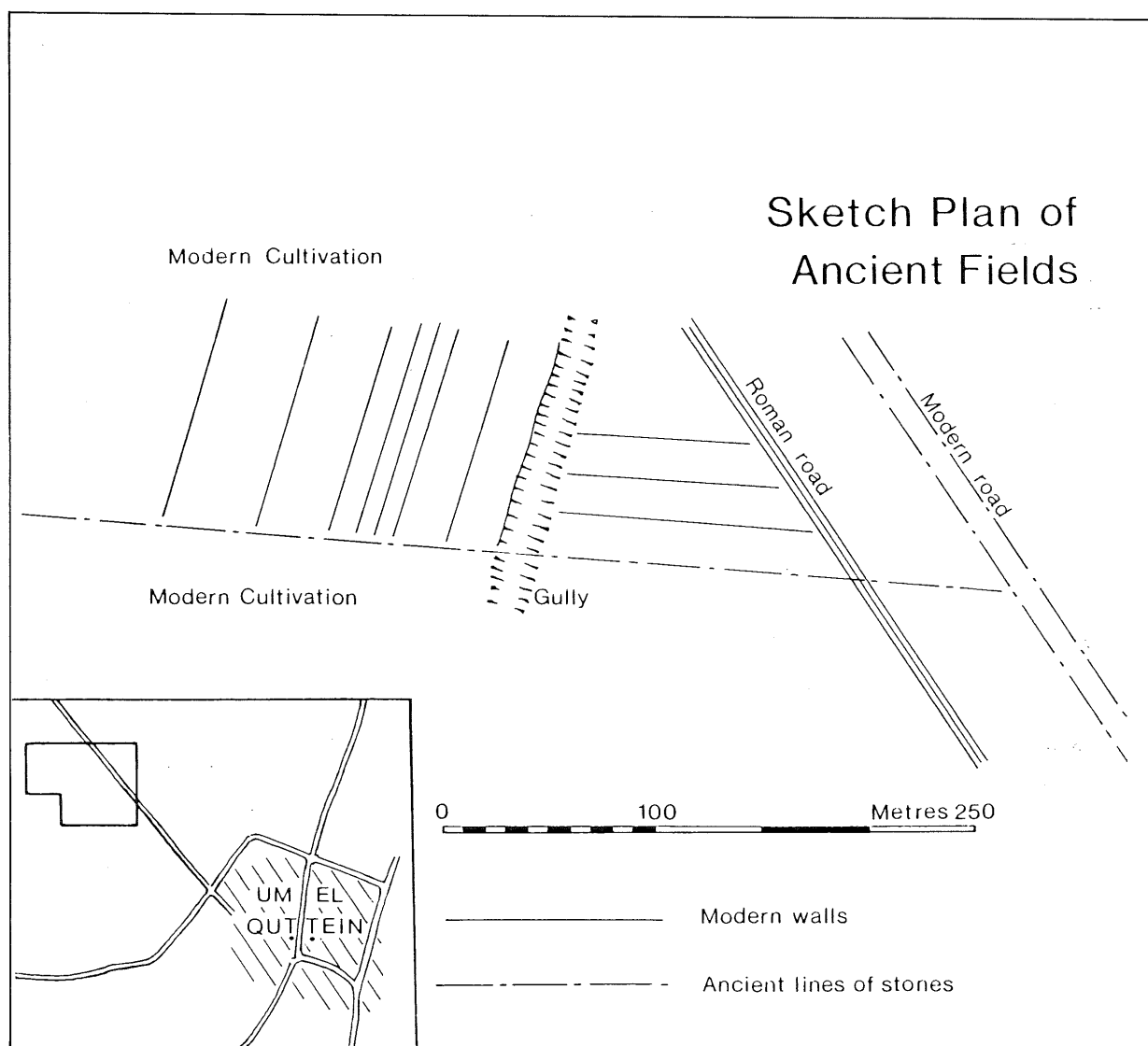


Fig. 2 Southern Ḥaurān Survey 1985: sketch plan of ancient fields to north-west of Um el- Qutṭein.

Table 1 Widths of ancient strip fields near Um el Qutṭein. Measurements in metres taken from centres of the stony banks which bounded the strips.

<i>Width</i>	<i>No. of strips</i>
Under 10 m.	3
From 10 to 14 m.	10
From 15 to 19 m.	5
From 20 to 24 m.	2
From 25 to 29 m.	1
From 30 to 34 m.	1
From 35 to 39 m.	1
From 40 to 44 m.	1
From 45 to 49 m.	1
Over 49 m.	1

The narrow strip fields were given more attention than the rectangular fields, because the latter were not recognised as ancient until the end of our stay.

Patches of fields which could be classed as ancient with a fair degree of certainty were found at three places: about 3.5 km. south, about 3 km. west (Pl. XXIV, 2) and about 1 km. north west of the village. The widths of 22 strips were measured (see Table 1). Eleven proved to be from 9 to 11 m. wide and the remainder varied over a range of widths from 13 to 50 m.

The soil near Um el-Quttein contains many rocks and large stones, which must be removed before it can be ploughed. The modern farmers pile stones at the edges of the fields and, in some cases, also in central heaps. The ancient farmers also must have had to clear their land in this way. It was therefore surprising to find that the surface of the ancient fields is now covered with almost as many rocks and stones (see Pl. XXIV, 2) as the patches of land in a virgin condition, which had no signs of either ancient or modern cultivation. The ancient fields could not have been cultivated in the state in which they are now found, and, in fact, the piles of stones along the edges of ancient fields and the central heaps in some of them were evidently the results of ancient clearance. It is probable that there has been a considerable loss of soil, amounting perhaps to about 30 cm., which has exposed stones formerly buried below the surface. This is a matter worthy of further examination, because if the loss of soil is continuing, the long term effects will be serious. Wind action may have carried away this soil at times when it was dry and had been loosened by the trampling of

sheep and goats.

The second main objective was to find evidence of the date of the ancient fields. This is not an easy thing to do, unless they can be shown to be associated with a dateable structure, such as an ancient farm or other construction. The relationship of the fields with Roman roads was thought to be the most likely source of information, and possible roads were therefore followed to the east, south, west, north west and north of Um el-Quttein. Only on the north west was Roman work in a road identified with certainty (above), the massive foundations, 6.5 m. wide at the site shown on Fig. 2, of the road leading to Buṣra (Bosra). Its stones were light grey with their covering of lichen. A patch of ancient fields adjoined this road at a point about 1 km. from the village. Their boundaries were not aligned on the road, as might have been expected if it had been in existence before the fields were made, but met it at an angle of about 40° (see plan). It is therefore possible that the fields here were already in existence when the road was built. It may be conjectured that the origin of these fields was in the early Roman or Nabataean periods, though this may be straining the evidence. In general, there is no reason to doubt that the fields were cultivated by the ancient inhabitants of Um el-Quttein, and went out of use after the village was deserted, but this could not be proved.

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**PRELIMINARY REPORT ON THE UNIVERSITY OF SYDNEY'S
SEVENTH SEASON OF EXCAVATIONS AT PELLA (ṬABAQAT FAḤL) IN 1985**

by

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A. G. Walmsley and P. M. Watson¹

Introduction

The University of Sydney's seventh season at Pella (Ṭabaqat Faḥl) commenced on the 15th December 1984 and continued until February 1985. Staff totalled twenty-nine as follows: Dr. Anthony McNicoll (director), Lady Margaret Wheeler (in charge of early ceramic cataloguing), Dr. Bernard Knapp (Australian post-doctoral research fellow), Dr. Phillip Macumber (geomorphologist), Dr. Christopher Browne (paleopathologist), Mr. Ian Edwards (ceramic technologist and draughtsman), Misses Kathryn Eriksson, Leanda Randle and Sue Thorpe (draughtswomen), Ms. Noel Siver (conservator), Mr. J. Hanbury-Tenison (site director), Mr. Stephen Bourke (osteologist and small finds cataloguing), Mr. A. G. Walmsley and Ms. Susan Bassett (cataloguing Islamic ceramics and site supervisors), Ms. Pamela Watson and Miss Fiona Richards (cataloguing Byzantine ceramics and site supervisors), Miss Leah McKenzie (cataloguing Hellenistic and Roman ceramics), Miss Christine Winzor (cataloguing early ceramics), Miss Margaret O'Hea (glass cataloguing), Miss Sue Colledge (archaeobotanist), Ms. Torla Evans (photographer), Mrs. Maree Browne (small finds cataloguing), Messrs Phillip Edwards, Ian Biggs, Hugh Beames, and Jon Hosking (site supervisors), Mr 'Omar Ersheidat, representing the Department of Antiquities (in charge of tomb excavation), Mr. Badri Maḍi (foreman) and Mr. H. Abu Raḥmi (cook). Sixty

local labourers were hired.

The excavations are funded by the Australian Research Grants Scheme, the Australian National Gallery, and the University of Sydney. Smaller grants were received from the University of Queensland, the Australian Institute of Archaeology and from anonymous donors. To all these go our thanks.

As usual, the Jordanian Department of Antiquities provided much logistic support. To its Director, Dr. 'Adnan Hadidi, and his staff go our deep thanks for their continued interest and encouragement.

The aims of the 1985 season were:

1. To continue the excavation of the outstanding Natufian site in the Wadi Ḥammeh (WH 27).
2. The excavation of numerous E.B. IV tombs at the mouth of the Wadi Ḥammeh (Area XXXI).
3. To complete the excavation of the terminal Late Bronze and Early Iron Age deposits in the 'deep cut' trenches IIIN, IIIP and IVE.
4. To continue the excavation of the Hellenistic and Roman deposits in XXIIIA.
5. To complete the excavation of the Late Hellenistic or Early Roman citadel (?) wall on Tell Ḥuṣn (Area XI).
6. To locate and excavate tombs of Roman date in Area VI.
7. To complete the excavation of the East Church (Area V).

1. [Editorial Note by A. G. W]. This report is, in part, taken from on-site notes written by Anthony McNicoll at the end of the 1985 season (labelled A. W. McN.). Because of Tony's terminal illness, during which time he devoted his efforts to writing and editing 'Pella in Jordan 2', he was unable to

revise and expand his parts of this report; nevertheless they stand as a concise and lively comment on the season's work. The detailed sections by Edwards, Hosking, Macumber, Watson and Walmsley were added during the course of 1985.

8. Excavations on a small scale of Byzantine and Abbasid structures in Areas IV and XXIX respectively.
9. To continue geomorphological, ceramic technological, archaeobotanical, osteological and palaeopathological studies.
10. To complete the examination and drawing of material back-logged from earlier seasons - a pressing problem.

A major undertaking before the commencement of the season was the rebuild-

ing of the verandah of the dighouse, the cost of which was met by the Sydney team and a generous grant from the Department of Antiquities. The construction work was supervised by Alan Walmsley with his customary skill; the new verandah is a great advance on the previous one, and its enclosed space has considerably improved both the working and living conditions of the house staff.

(A. W. McN.)

THE WADI HAMMEH

Environmental Reconstruction of the Wadi Hammeh Region in the Late Pleistocene

Introduction

Wadi Hammeh and Wadi Himar are lateral streams flowing down either side of a former single enlarged ancestral Wadi Hammeh which in Late Pleistocene times flowed into Lake Lisan then occupying the Jordan Rift Valley.

Geology and Geomorphology

The Wadi Hammeh valley is backfilled by a conglomeratic sequence — the Wadi Hammeh Conglomerates (Macumber, in *PJ* 2 Appendix 2) — consisting of chert pebble beds, interbedded red-brown clays and, nearer the Rift Valley, calcareous silts. The conglomerates can be traced out onto the Rift Valley where they merge with pebble and boulder deposits representing ancient shorelines of Lake Lisan. Backfilling of Wadi Hammeh is seen as at least partly due to lake level rises in response to climatic fluctuations. The final drying up of Lake Lisan resulted in a rapid fall in base levels and a concomitant incision of the valley fill sequence to form the present day topography with the development of the deeply incised Wadi Hammeh and Wadi Himar. The conglomerates remain as a ridge running down the centre of the ancestral valley with the wadis flowing lateral on either side along the boundary between the

conglomerates and Tertiary-Cretaceous units which form the valley sides. Radiocarbon dates from the archaeological excavations towards the top of the valley fill sequences indicate this final incision, and therefore the drying of Lake Lisan, took place soon after *ca.* 12,000 years B.P.

On approaching the junction of the two wadis, the ridge broadens into a narrow plateau, known as the Plateau, which in turn falls to a saddle before finally terminating in a small low butte, or the Knob.

On approaching the mouth of the ancestral valley, the conglomerates are overlain by and partly merge into a limestone unit — the Knob Calcsiltites (see Macumber, in *PJ* 2 Appendix 2) — consisting of calcareous silts and tufa. These sediments are essentially detrital and contain plant fragments and a freshwater fauna of *Melanopsis praemorsa*. At their furthest upstream occurrence on the plateau between the two wadis, the limestones are about 4.5m thick but rapidly thicken on passing downstream towards the Rift Valley to be 30-40m. thick in places. Here the upper units of the conglomerates are replaced by limestone in a lateral facies change. The lower conglomerates remain; however the red clay cement is replaced by a buff to light gray calcareous cement.

In places the limestone is separated

from the conglomerates by a thin dark brown clay sequence — the Black Clay (Macumber, in *PJ 2* Appendix 2) — as occurs at Area XX where it contains the Kebaran site Wadi Hammeh 26 dated at *ca.* 19,500 years B.P.

Site Distribution and Environmental Reconstruction

Chert artifacts are scattered throughout the entire vertical sequence of the Wadi Hammeh Conglomerates where they are exposed in the walls of the Wadi Hammeh and Wadi Hımar. For instance five pebble bands underlying a 10m. thick calcareous sequence on the 'Knob' at the junction of the two wadis contain a number of rolled artifacts, while others were found throughout the conglomeratic sequence passing down to the valley bottom. Similar material frequently occurs upvalley for several kilometers. On the basis of the presence of Epi-Palaeolithic industries dated at between *ca.* 12,000 and 19,000 years B.P. in sediments overlying the conglomerates, it is likely that the Wadi Hammeh conglomerates and the industries contained within them span the period at least back to the Middle Palaeolithic. This is also suggested by the typology of the artifacts.

Kebaran sites are found in the Black Clay unit underlying limestones on the nearby plateau where the major Natufian site Wadi Hammeh 27 (Edwards 1984) occurs on a thin clay unit immediately overlying the limestone cap.

Within the Knob Calcsiltites a number of *in situ* sites occur downvalley of the Plateau, with a concentration of sites close to the Rift Valley at Area XXXI. These include the Wadi Hammeh 31 site regarded tentatively as Kebaran, and a further nearby site, Wadi Hammeh 32, tentatively regarded as Upper Palaeolithic (radiocarbon dating of shell material may provide additional back-up for age determinations of these sites). The concentration of sites virtually overlooking the Rift Valley is readily understood given the presence of the fresh-water Lake Lisan at this time.

The facies change from conglomerates

to limestone on passing down the Wadi Hammeh reflects the passage from a valley fill sedimentary environment towards a riftside setting where chemically derived sedimentary sequences dominate. The diachronicity of this sequence is seen in the presence of the Kebaran site of Wadi Hammeh 26 within the Black Clay beneath the limestones at the Plateau (Area XX) while downstream another Kebaran site (Wadi Hammeh 31) occurs within the limestone sequence lying at levels above that of the Black Clay.

Similarly the facies variation on passing vertically upwards from a conglomerate to a black clay to a limestone is seen as indicating a gradual replacement of the high energy valley environment to a low energy environment in response to a gradual rise in base levels during an expansion of Lake Lisan just prior to its final demise. At the same time the position of carbonate deposition has slowly moved up the Hammeh Valley, gradually covering the conglomerates as lake levels rose.

Radiocarbon dates straddling the limestone sequence obtained from the Kebaran site in the Black Clay and from the Natufian site above the limestone show the limestone at its uppermost limits beneath the Plateau ranges from between *ca.* 19,500 and 12,000 years B.P. These dates suggest that the highest water levels reached by Lake Lisan occurred immediately before its final major drying phase (Macumber *PJ 2* Appendix 2).

The facies variations in the lower Wadi Hammeh during Palaeolithic times indicate a lake margin setting with marsh-estuarine conditions in the lower wadi passing upstream into a fluvial setting. This environment when coupled with the presence of a nearby hot spring provided an ideal occupational setting buffered from the vagaries of climatic fluctuations. It was especially the case in Epi-Palaeolithic times when Lake Lisan levels were at their highest prior to drying soon after 12,000 years B.P.

(P.G.M.)

The Excavations in the Wadi Hammeh

Introduction

During the 1984/85 Pella season excavations at the Natufian site Wadi Hammeh 27 were carried into their third year, and investigations were also made into three newly-discovered stratified sites of the late Pleistocene. These include a Kebaran site (Wadi Hammeh 31) and an underlying Upper Palaeolithic site (Wadi Hammeh 32), discovered in Area XXXI on the south terrace of the Wadi Hammeh near its mouth, as a result of excavations of the Early Bronze IV cemetery located in that area. An additional small Kebaran occurrence, Wadi Hammeh 33, located fifty meters down-valley from the previously reported Kebaran site Wadi Hammeh 26 (Edwards, in MacNicoll *et al.* 1984) was discovered and sampled².

Wadi Hammeh 31 (Kebaran) and Wadi Hammeh 32 (Upper Palaeolithic)

The sites are located near the top of the terrace cut by the Wadi Hammeh where it debouches into the Jordan Valley (*ca.* 200 metres b.s.l.). The clay unit containing Wadi Hammeh 32 outcrops in a number of spots over the top of the south terrace of the Wadi Hammeh. Due to the presence of an E.B. IV cemetery here (see below), the site is also visible in section in the walls of several shaft tombs.

Given the sporadic nature of the exposures, site area is difficult to determine. A minimum area of 6,000 square metres can be judged from the boundaries of the preserved terraces. Although flaked stone can be readily picked up on the surface, 0.25 cubic metres of *in situ* matrix were sieved in order to provide comparative samples to the other sites tested.

Debitage consists mainly of flakes and blades (Table 1). The few bladelets outnumber the blades, yet a good proportion of the broken blades were clearly derived

from blades rather than small bladelets. With such few elements collected it is difficult to make much of frequencies, but one clear difference between Wadi Hammeh 32 and the overlying nucleated site Wadi Hammeh 31 is the lack of small size-fraction material in the former. The absence of flakes under 2 cm. and the small number of chips results in the low artefact density at Wadi Hammeh 32 (516 pieces/cubic metre) compared to the high density at Wadi Hammeh 31 (6,750 pieces/cubic metre). This contrast is due to the more extensive deflation of Wadi Hammeh 32, which accounts for the large and diffuse nature of the site.

Blanks used in making the small tool sample are mainly blades (8/14), the remainder being chunks, flakes and one bladelet. Besides this lone bladelet tool (an obliquely-truncated backed bladelet), retouched tools comprise a variety of truncation burins, dihedral burins, and a burin on natural surface; there is also a small but varied group of scrapers which includes endscrapers, a sidescraper, and a steep carinated scraper.

Some metres up-valley from this site, where the overlying calcisiltite unit has not been truncated by erosion, Wadi Hammeh 31 occurs in section at a point where a tomb dromos has been dug into the cliff. The site is a flaked chert concentration estimated at *ca.* 25 square metres in area. A total of 0.1 cubic metres of the calcereous matrix was dry-sieved and later washed and dissolved in dilute acid.

Debitage frequencies show an orientation to bladelet production and cores are almost exclusively of the single platform type (Table 1). Intensive bladelet utilisation is seen in the retouched tool sample which consists entirely of non-geometric microliths and a few notched pieces. The majority of the microliths (N=31) are broken backed bladelets, plus a few straight-

2. Thanks are due to J.J. Gowlett for providing the services of the Oxford Radiocarbon Accelerator unit, A.N. Garrard for faunal analysis and D.S. Reese for molluscan identifications. Specialist staff of the

University of Sydney Pella team who worked at Wadi Hammeh 27 in 1984/85 included S.J. Bourke, S.M. Colledge and P.G. Macumber.

Table 1: Lithic debris, debitage and retouched tool totals.

	<i>WH 27*</i>		<i>WH 31</i>	<i>WH 32</i>	<i>WH 33</i>
	<i>N</i>	<i>%</i>	<i>N</i>	<i>N</i>	<i>N</i>
<i>Debris</i>					
Chunks	11,133	27.0	4	3	3
Chips	29,699	72.1	122	13	5
(Misc.)	368	0.9	-	-	-
Sub-total	41,200	100.0	126	16	8
<i>Debitage</i>					
Flakes	20,211	69.8	140	45	16
Blades	7,702	26.6	354	36	18
Core-trimming elements	282	1.0	5	7	1
Burin spalls	468	1.6	-	-	-
Microburins	42	0.1	3	-	-
Cores	260	0.9	16	11	5
Sub-total	28,965	100.0	518	99	40
<i>Retouched Tools</i>					
Scrapers	117	5.3	-	4	-
Multiple tools	10	0.4	-	-	-
Burins	544	24.6	-	9	1
Retouched & backed blades	54	2.4	-	-	-
Truncations	39	1.8	-	-	-
Microliths	629	28.4	27	1	1
Geometric microliths	359	16.2	-	-	-
Notches & denticulates	300	13.5	4	-	-
Various	163	7.4	-	-	-
Sub-total	2215	100.0	31	14	2
Total	72,380		675	129	50

* For site Wadi Hammeh 27 (WH 27) Debris and Debitage totals are for plot XX D, Natufian Phase I; Retouched Tools totals are for plots XX D and XX F, Natufian Phase I.

truncated backed bladelets, a bitruncated backed bladelet and a obliquely-truncated backed bladelet. Like Wadi Hammeh 26, the backed bladelets are gracile, with a mean maximum width of 5.05 millimetres and a range of 4.25-6.75 millimetres.

Wadi Hammeh 31 is similar to Wadi Hammeh 26 (dated 19,500 +/- 600 b.p.) in terms of site size, lithic technology and tool typology, and is regarded as an early Kebaran site. It is stratified over a site (Wadi Hammeh 32), which in view of its stratigraphic proximity to Wadi Hammeh 31, its lack of bladelets, and the types of scrapers and burins present, is characterised as a late Upper Palaeolithic site.

Wadi Hammeh 33 (Kebaran)

In the course of geological prospecting in the dark grey clay unit in which Wadi Hammeh 26 occurs, some fifty metres further down-valley from that site, P.G. Macumber discovered a concentration of lithics and bone fragments. Although the volume of matrix and number of artefacts extracted were small, (ca. 0.01 cubic metres), the density of artefacts retrieved is equivalent to that of Wadi Hammeh 26. Lithic debris and many debitage types occur, as well as blade and bladelet cores despite the low total artefact numbers (Table 1). The only two tools collected were a dihedral burin and a Helwan bladelet. The debitage and the burin seem allied to the Kebaran flaked stone industry of Wadi Hammeh 26 from the point of view of the type of chert used as the nature of the cores, core reduction and the thin, laminar debitage products. The greyish Helwan bladelet is almost certainly a deflated product of the overlying Natufian site Wadi Hammeh 27, since in this area silty wash from above obscures to varying degrees the section from which the collection was retrieved. Six animal bone fragments, including parts of a mammalian ulna and a *Cervus elaphus* phalanx, indicate that the site represents more than a knapping station.

The significance of this site is not so much in the diagnostic value of the artefacts obtained from it, as in its position fifty metres downstream from Wadi Hammeh

26. Varied strands of evidence suggest that this latter nucleated site is *in situ* (Edwards in McNicoll *et al.* 1984). It is unlikely that Wadi Hammeh 33 is solely derived from material washed from Wadi Hammeh 26, rather it seems to represent a broadly contemporary occupation.

The intensity of repeated occupations by small Kebaran groups in the well-watered Wadi Hammeh can then be conceived as having given rise to an archaeological landscape in which a mosaic accretion of small, nucleated camp sites is highly visible amidst a background scatter of artefacts produced by a combination of off-site activities and deflation.

Wadi Hammeh 27 (Early Natufian)

Investigations at Wadi Hammeh 27 have been continuing for the past three Pella seasons (Edwards, in McNicoll *et al.* 1984; Edwards & Colledge, in Potts *et al.* 1985; Edwards in *PJ* 2). At present the area under excavation totals just under 200 square metres in area, or about ten per cent of the minimum estimated site size.

The latest occupation phase at the site, Natufian Phase I, has been the object of attention in the area excavations, while two earlier occupation phases have been discovered in a sondage in plot XX F. Discussion of the earlier phases will be kept brief in this report since analyses of their materials are less advanced than for Natufian Phase I.

Two large stone structural complexes and a number of smaller stone features have so far been uncovered in Natufian Phase I. (All features discussed below are illustrated in the plans and sections of Fig. 1).

The northerly structure was originally encountered as the 7.9 metre arc of wall 1 in plot XX F. Surviving up to two courses and a maximum height of 0.55 metres, the wall is for the most part dry-built from limestone rubble. Towards the middle of the exposed stretch, several of the basal stones are set into a raised hump of clay well-mixed with pebbles.

In the neighbouring plot XX E, the

WADI HAMMEH 27 (AREA XX)

Early Natufian

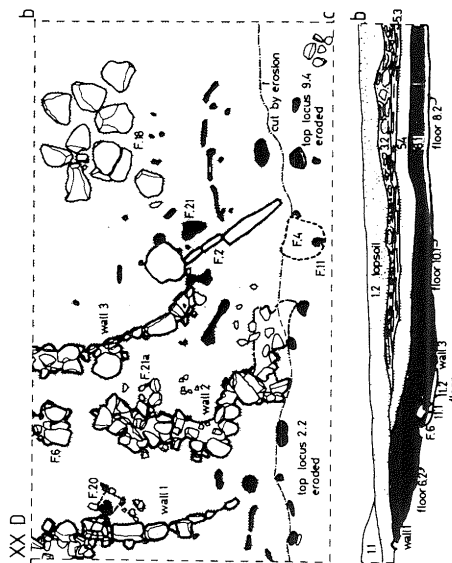
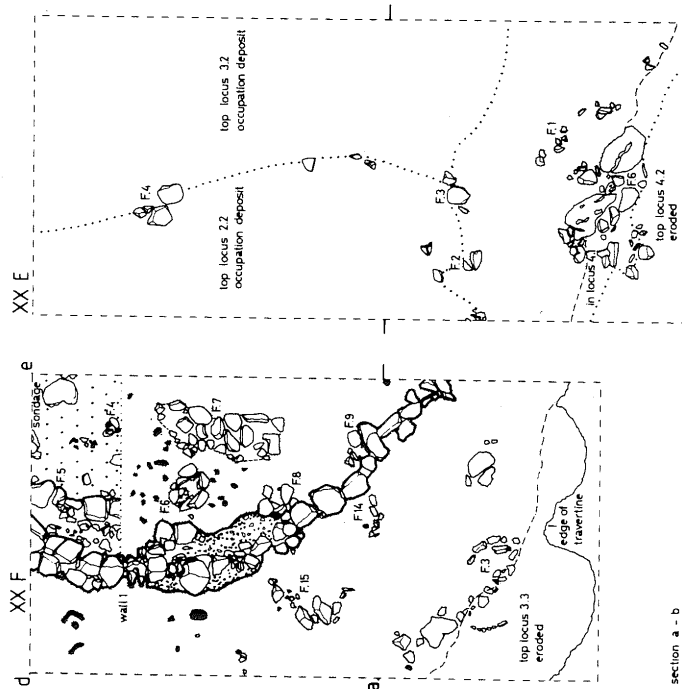
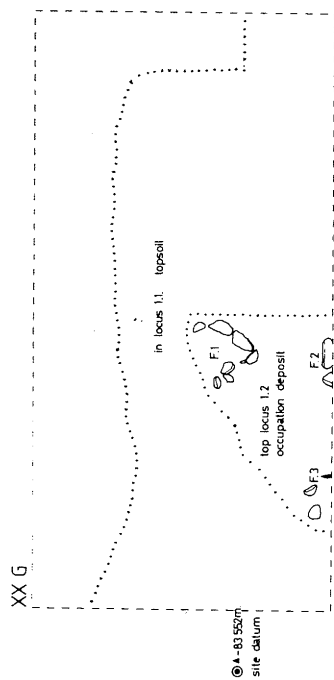


Fig. 1. Plan and sections of Wadi Hammeh 27. Areas excavated to the Natufian Phase I floors are indicated by dot-shading. Areas left white in plots XXE and XXG indicate incomplete excavations in Phase I.

projected curve of wall 1 is marked by several discontinuous clumps of stone (F.2, F.3 and F.4 in plot XX E). At least in the region between F.2 and F.3 it can be seen that the exterior or westerly floor continues up to this curve but then descends abruptly beneath an occupation fill on the inside of the structure. Pending complete clearance it appears that the structure is elliptical, oriented north-east to south-west, with major and minor axes of nine metres and six metres respectively.

Complete clearance to the Phase I floors in plot XX D has revealed portion of a more elaborate structure, composed of three concentric walls (1-3) which circumscribe a central group of boulders (F.18). The westerly surviving arm of wall 3 consisted of three oblong calcareous siltstone slabs set on edge and supported by a rubble backing. The south face of each one was engraved with a repetitive array of quadricentric motifs (Edwards 1984).

The method of wall construction was to lay large basal stones against a pre-cut step and then to pile up smaller stones to make the upper courses. Consequently there are drops of about 30 cms from the exterior surfaces to the interior ones (section a-b). In plot XX D this technique has resulted in the creation of three mini-terraces running from north to south.

Accelerator dates have been obtained from carbonised seeds retrieved from layer 8.1, directly overlying the Phase 1 floors in plot XX D:

OxA-393 11,920 +/- 150 b.p. (Humic acids from seeds)

OxA-394 12,200 +/- 160 b.p. (Charred seeds)

OxA-507 11,950 +/- 160 b.p. (Charred seeds)

Performing a chi-squared test on the pooled mean of these dates, according to the method of Ward and Watson (1978, p.19-31) gives a value less than the tabulated value for two degrees of freedom at the 0.05 level, indicating that the dates are statistically indistinguishable.

A number of smaller stone features are associated with both structures. Stone arcs are laid on the exterior of the XX F structure (F.3, F.14 and F.15 in plot XX F; and probably F.1 in plot XX G), and on its interior a stone platform (F.7) and three stone rings occur (F.6, F.8 and F.9). A stone ring (F.21a) was also built against wall 2 in plot XX D.

The sondage sunk into the south-east corner of plot XX F has revealed two earlier occupation phases, both of which feature stone constructions (section d-e).

Natufian Phase II consists so far of a section of stone wall (F.5) which follows the curvature of wall 1 in Phase 1³. This wall is associated with floor 2.5 on which is seated a stone ring topped by a limestone mortar (F.4). Floors 2.6 and 2.6a of the earliest Phase III consist of a densely-packed green clay, into which is set another stone ring. Outcrops of travertine are visible in this Phase III floor, indicating that the occupation surface was built up through tramping of material into the travertine unit underlying the site. If so, Natufian Phase III should represent the basal occupation layer in the site.

Large quantities of lithics have been found in all areas examined, but particularly from the interiors of both large structures. The majority is debris consisting of raw chunks of chert, and chips, or percussion shatter products (Table 1). Debitage consists mainly of flakes, smaller numbers of bladelets, and low frequencies of core rejuvenation elements. Many flakes are large, but cores are nearly exclusively exhausted remnants of small bladelet cores, which in many cases would be more accurately described as "micro-flake" cores. Single platform (faceted and unfaceted) types predominate, followed by change of orientation cores, and lesser numbers of multiple platform cores which are sometimes worked down to a globular shape.

Table 2 provides information on retouched tools catalogued so far from Natufian Phase I levels in plots XX D and XX F.

3. In a previous report (Edwards & Collidge 1985), it was suggested that F.5 may be the base for wall 1.

In fact this feature now appears to be part of an earlier building of Natufian Phase II.

Table 2 : Retouched tool list for Wadi Hammeh 27, plots XX D and XX F, Natufian Phase I.

	<i>Plot XX D</i>		<i>Plot XX F</i>		<i>Total</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<i>Scrapers</i>						
Endscraper on chunk	4		1		5	
Endscraper on flake	13		14		27	
Endscraper on retouched flake	3		3		6	
Transversal endscraper	1		1		2	
Endscraper on blade	3		3		6	
Endscraper with notch	-		1		1	
Double endscraper	-		1		1	
Thumbnail scraper	2		-		2	
Rounded scraper on chunk	1		-		1	
Rounded scraper on flake	8		17		25	
Circular scraper	3		1		4	
Sidescraper	1		-		1	
Nosed scraper, thick	6		4		10	
Broad carinated scraper on chunk	4		5		9	
Broad carinated scraper on thick flake	-		6		6	
Broad carinated scraper on blade	-		1		1	
Narrow carinated scraper	2		1		3	
Micro-carinated scraper	1		2		3	
Nucleiform scraper	1		1		2	
Double mixed scraper	1		-		1	
Broken scraper	-		1		1	
Sub-total	54	4.4	63	6.3	117	5.3
<i>Multiple Tools</i>						
Burin/Scraper	-	-	10	1.0	10	0.5
<i>Burins</i>						
Dihedral burin	27		28		55	
Offset dihedral burin	11		9		20	
Dihedral angled burin	26		-		26	
Double dihedral burin	2		3		5	
Burin on natural surface	48		74		122	
Double burin on natural surface	1		-		1	
Burin on straight truncation	24		33		57	
Burin on oblique truncation	41		54		95	

	<i>Plot XX D</i>		<i>Plot XX F</i>		<i>Total</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
Burin on concave truncation	21		25		46	
Burin on convex truncation	28		40		68	
Double burin on truncation	1		14		15	
Transverse burin on lateral retouch	4		1		5	
Nucleiform burin	9		3		12	
Ventral burin	6		1		7	
Double mixed burin	5		5		10	
Sub-total	254	20.9	290	29.0	544	24.5
<i>Blades</i>						
Blade partly retouched on one edge	2		1		3	
Blade completely retouched on one edge	1		-		1	
Blade retouched on both edges	-		3		3	
Inverse retouched blade	6		2		8	
Alternately retouched blade	1		2		3	
Blade with alternating retouch	-		1		1	
Backed blade	-		9		9	
Curved backed blade	1		1		2	
Helwan-retouched blade	6		9		15	
Obliquely-truncated backed blade	-		1		1	
Straight bi-truncated blade	1		-		1	
Broken retouched blade	4		1		5	
Blade with silica sheen, unretouched	2		-		2	
Sub-total	24	2.0	30	3.0	54	2.4
<i>Truncations</i>						
Truncated piece	29		9		38	
Bi-truncated piece	-		1		1	
Sub-total	29	2.4	10	1.0	39	1.8

Microliths

	<i>Plot XX D</i>	<i>Plot XX F</i>	<i>Total</i>
	<i>N</i>	<i>%</i>	<i>N</i>
			<i>%</i>
			<i>N%</i>
Partially retouched bladelet	8	12	20
Completely retouched bladelet	11	17	28
Pointed retouched bladelet	4	1	5
Bladelet retouched on both edges	1	3	4
Alternately retouched bladelet	6	3	9
Bladelet with alternating retouch	4	7	11
Inverse bladelet	80	39	119
Helwan bladelet	167	129	296
Helwan-truncated bladelet	2	2	4
Broken retouched bladelet	13	11	24
Completely backed bladelet	11	9	20
Curved backed bladelet	10	-	10
Narrow curved pointed backed bladelet	2	-	2
Obliquely-truncated bladelet	5	-	5
Obliquely truncated retouched bladelet	-	2	2
Obliquely truncated backed bladelet	-	2	2
Straight-truncated bladelet	5	1	6
Straight-truncated retouched bladelet	2	1	3
Straight-truncated backed bladelet	5	-	5
Straight bi-truncated retouched bladelet	2	-	2
Straight bi-truncated backed bladelet	6	1	7
Convex-truncated bladelet	2	-	2
Convex-truncated backed bladelet	1	1	2
Convex bi-truncated bladelet	1	-	1
Various backed bladelets	-	1	1
Broken backed bladelets	28	11	39
Sub-total	376	31.0	253
		25.3	629
			28.4

	<i>Plot XX D</i>		<i>Plot XX F</i>		<i>Total</i>	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N%</i>	
<i>Geometric Microliths</i>						
Isosceles triangle	1		1		2	
Rectangle	1		-		1	
Helwan rectangle	-		1		1	
Trapeze	4		2		6	
Lunate	43		26		69	
Helwan lunate	179		101		280	
<hr/>						
Sub-total	228	18.8	131	13.1	359	16.2
<hr/>						

Notches & Denticulates

Piece with small notch	11		12		23	
Piece with large notch	28		32		60	
Piece with notches	68		46		114	
Denticulated piece	48		55		103	
<hr/>						
Sub-total	155	12.7	145	14.5	300	13.5
<hr/>						

Various Tools

Scaled piece	10		4		14	
Retouched flake	22		28		50	
Helwan-retouched flake	2		1		3	
Backed flake	7		1		8	
Drill	11		12		23	
Borer	21		8		29	
Pick	4		7		11	
Biface	1		1		2	
Battered piece	8		5		13	
Varia	9		1		10	
<hr/>						
Sub-total	95	7.8	68	6.8	163	7.4
<hr/>						
Total	1215	100.0	1000	100.0	2215	100.0

Table 3. Wadi Hammeh 27. Basalt tools of Natufian Phase I.
[C. =complete, F. =fragment].

	<i>XX D</i>		<i>XX E</i>		<i>XX F</i>		<i>XX G</i>		<i>Total</i>	
	<i>C.</i>	<i>F.</i>	<i>C.</i>	<i>F.</i>	<i>C.</i>	<i>F.</i>	<i>C.</i>	<i>F.</i>	<i>C.</i>	<i>F.</i>
Mortar	-	1	-	1	-	-	-	-	-	2
Pestle	3	9	2	-	6	6	-	-	11	15
Grinding stone	6	2	-	-	4	1	1	-	11	3
Hammerstone	2	1	-	-	-	2	-	-	2	3
Bowl	1	16	-	1	-	5	-	-	1	22
Miniature bowl	2	2	-	1	-	2	-	-	2	5
Plate	-	-	-	1	2	1	-	-	2	2
Grooved plaque	-	1	-	-	-	1	-	-	-	2
Total	14	32	2	4	12	18	1	-	29	54

Table 4. Wadi Hammeh 27. Limestone tools of Natufian Phase I.

	<i>XX D</i>		<i>XX E</i>		<i>XX F</i>		<i>XX G</i>		<i>Total</i>	
	<i>C.</i>	<i>F.</i>	<i>C.</i>	<i>F.</i>	<i>C.</i>	<i>F.</i>	<i>C.</i>	<i>F.</i>	<i>C.</i>	<i>F.</i>
Mortar	-	-	-	-	1	-	-	-	1	-
Pestle	-	-	-	-	-	1	-	-	-	1
Grinding stone	2	-	-	-	-	-	-	-	2	-
Hammerstone	2	-	-	-	3	2	-	-	5	2
Anvil	-	1	-	-	-	-	-	-	-	1
Shaft straightener	-	-	-	-	-	1	-	-	-	1
Miniature bowl	-	-	-	1	1	1	-	-	1	2
Plate	-	-	-	1	-	2	1	-	1	3
Incised plaque	1	-	-	-	1	-	-	-	2	-
Incised pebble	-	-	-	-	2	-	1	-	3	-
Incised piece	-	5	-	-	-	-	-	-	-	5
Total	5	6	-	2	8	7	3	-	15	15

Table 5. Wadi Hammeh 27. Bone tools of Natufian Phase I.

	<i>XX D</i>		<i>XX E</i>		<i>XX F</i>		<i>XX G</i>		<i>Total</i>	
	<i>C.</i>	<i>F.</i>	<i>C.</i>	<i>F.</i>	<i>C.</i>	<i>F.</i>	<i>C.</i>	<i>F.</i>	<i>C.</i>	<i>F.</i>
Point	4	21	-	1	2	41	-	-	6	63
“Gorget”	-	2	-	-	-	-	-	-	-	2
Bead	7	-	2	-	8	-	-	-	17	-
Bead in preparation	-	5	-	2	-	2	-	-	-	9
Pendant	4	1	-	1	2	6	-	-	6	8
Sickle haft	-	-	1	-	4	5	-	-	5	5
Total	15	29	3	4	16	54	-	-	34	87

Retouched tool frequencies, compared to total lithics numbers from both plots, are similarly low; 1.70 per cent for XX D and 1.79 per cent for XX F. A wide variety of scrapers on blades, flakes and chunks occur. Burins are particularly numerous and consist of a range of truncation types, dihedral types, multiple mixed burins, and burins made on a natural edge. Scrapers and burins are predominantly made on flake blanks. From the point of view of size a dichotomy exists between these flake tools and the many small tools made on bladelet blanks. Blade tools are few.

Helwan-retouched and inverse-retouched bladelets dominate the microlith category. Various other combinations of truncations and retouch modes are applied to bladelets. Geometric microliths consist mainly of lunates, where Helwan-retouched lunates account for 80 per cent of the total lunate sample (N=349). A smaller number of massive tools such as choppers, picks, bifaces and denticulates are made on cobbles and chunks.

Tallies of all basalt and limestone artefacts catalogued from Phase I are given in tables 3 and 4. Most common amongst the ground basalt artefacts are pestles and grindstones. These types recur less commonly in limestone, in which material there are also larger numbers of incised and drilled artefacts of uncertain use. Several small plaques and limestone chunks are incised with complex geometric motifs.

A diverse bone tool industry known mostly from fragmentary examples has been recovered (Table 5). Most common are bone points; ornaments include tubular bone beads, beads made on gazelle podial elements, and pierced pendants. The major artefactual find of the 1984/85 season was the discovery of five virtually complete bone sickle hafts (Fig. 2), along with five haft fragments which were associated with the XXF structure in Natufian Phase I. (More haft fragments were also found in the earlier phases). The complete specimens range in style from narrow, straight hafts to broad scimitar-shaped ones. They all have central hafting slots with V-shaped sections, which range from two millimetres (Fig. 2.3) to six millimetres wide

(Fig. 2.1). The width of the hafting groove is not always positively correlated with the absolute size of the artefact.

Poorly preserved faunal remains have nevertheless yielded a diverse taxonomic list which includes large and small mammals, birds, reptiles, crustaceans and molluscs (the following list includes all phases of the site): *Equus* sp., *Sus scrofa*, *Bos primigenius*, *Ovis/Capra* sp., *Capra* sp., *Gazella* sp., *Cervus elaphus*, *Dama mesopotamica*, *Capreolus capreolus*, *Canis lupus*, *Vulpes vulpes*, *Felis* sp., *Lepus capensis*, *Aves*, *Testudo* sp., *Potamon potamon*, *Dentalium vulgare* and *Melanopsis praemorsa*.

Botanical samples have been recovered each season by flotation (again the following includes all phases): *Quercus* sp., *Hordeum spontaneum*, *Chenopodium* sp., *Bromus* sp., *Echinochloa* sp., *Stipa* sp., *Cuscuta* sp., *Trifolium* sp., *Dodder* sp., and specimens of the families *Caryophyllaceae*, *Cruciferae* and *Leguminosae*. Two groups of seeds which await definite identifications resemble seeds of the genera *Avena* sp. and *Aegilops* sp. (pers. comm. S.M. Colledge 1985).

During the 1984/85 season human bones were noticed eroding from Natufian occupation deposits exposed in the westerly cliff face of the site. A rescue operation was promptly carried out which succeeded in salvaging the remaining contents of an eroded pit burial (Bourke in *PJ* 2 Appendix 3). Bone scatters representing at least three mature individuals had been laid in a small pit cut into the travertine. Skulls and various long bones were intermingled and some of the bones had been rubbed with red ochre, indicating that previously exposed bones of a number of individuals had been buried. Grave goods included two large chunks of red ochre, and a dentalium necklace made up of 27 fragments, which was found bunched under one of the mandibles.

Several human bone fragments have also been found in the occupation fill of plot XX D. These number a patella, part of an infant femur and a burnt cranial fragment.

(P.C.E.)

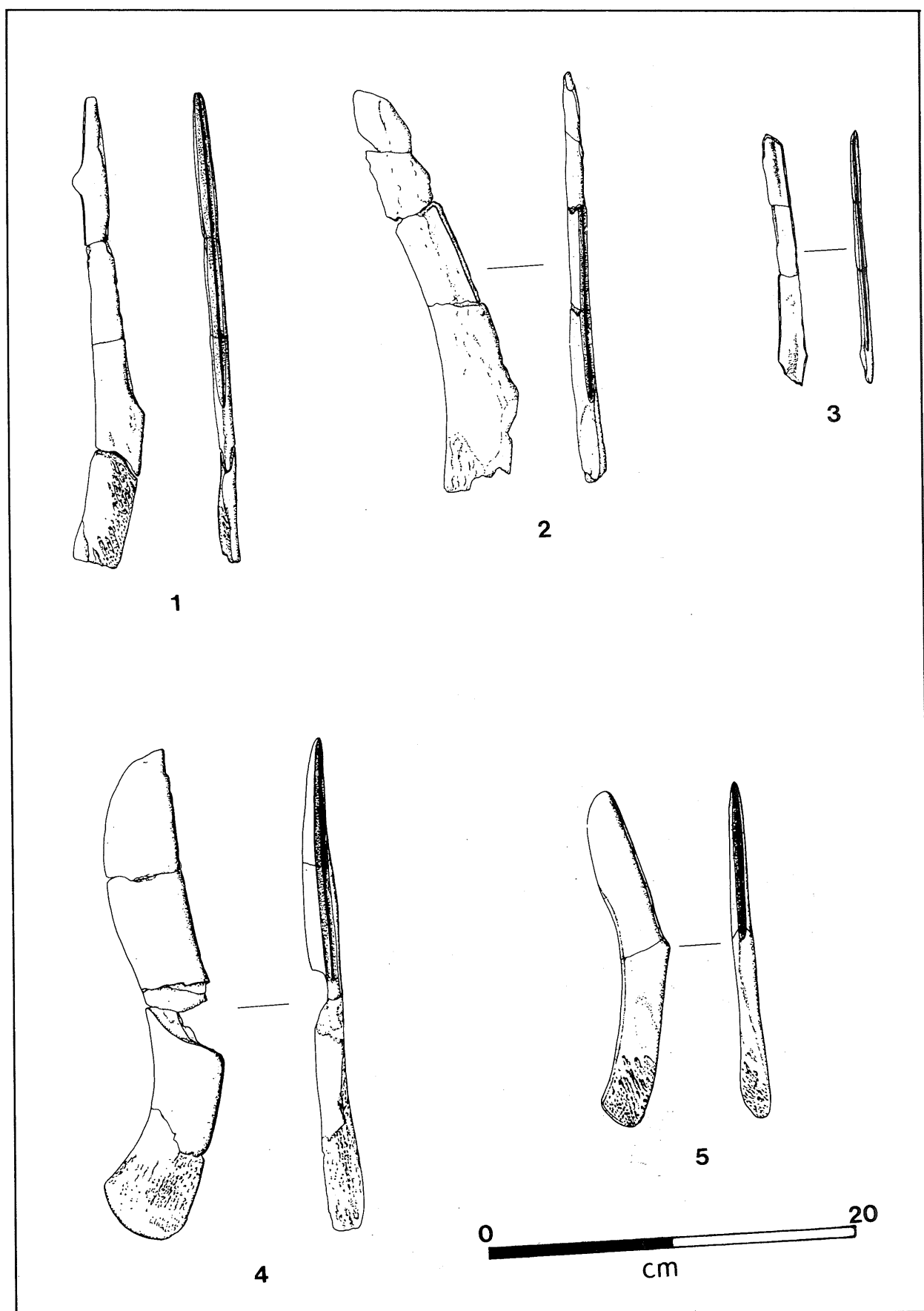


Fig. 2. Bone sickle hafts from Natufian Phase I, Wadi Hammeh 27.

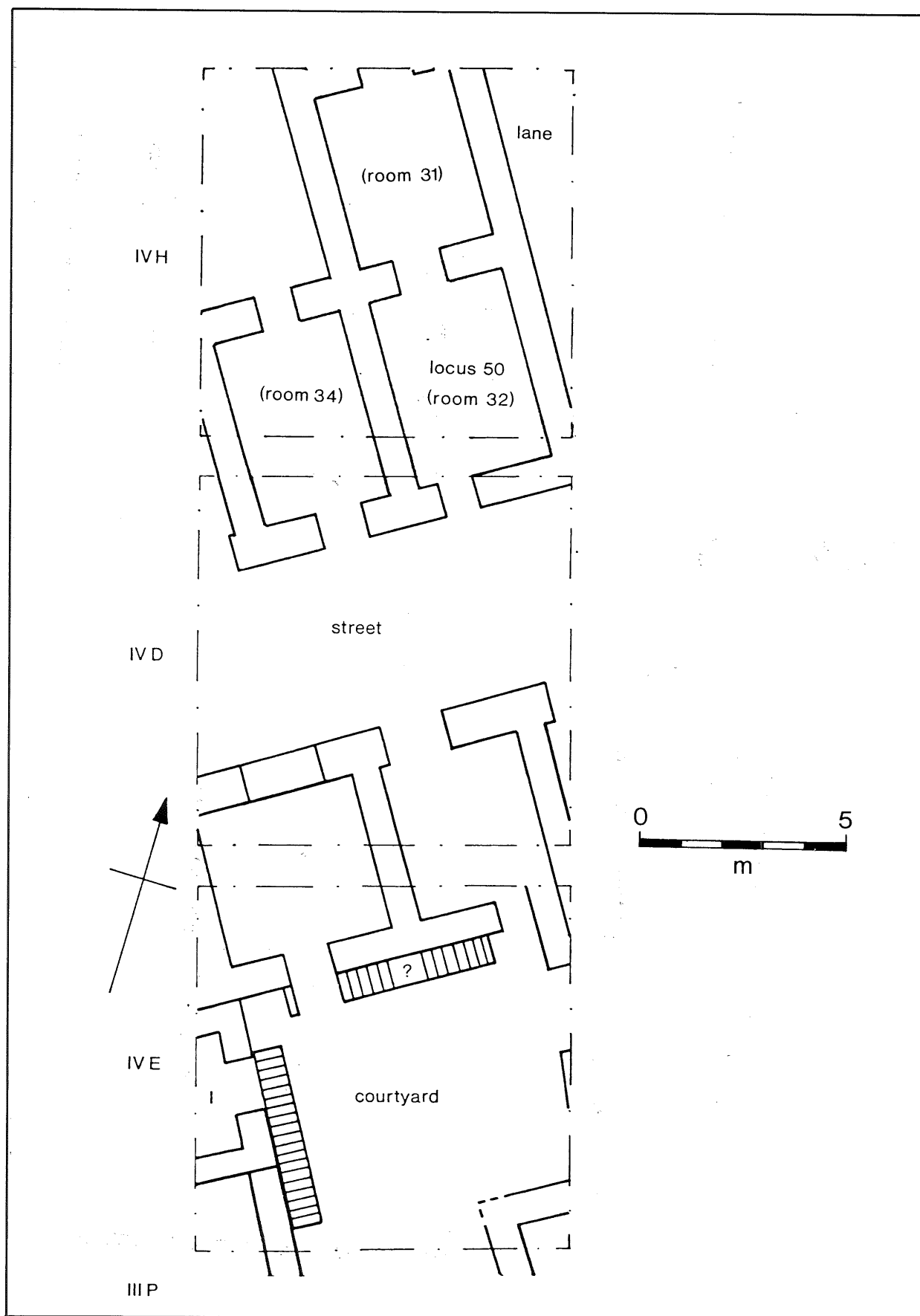


Fig. 3. Schematic plan of Area IV plots H, D, and E in the Byzantine Period (late Sixth/early Seventh Centuries A.D.).

THE E. B. IV TOMBS IN THE WADI HAMMAH (AREA XXXI)

An important part of the 1985 season's work was the excavation of numerous EB IV tombs in the Wadi Hammeh. Although these were noted in the Petocz-Villiers survey of 1982, the increased activity of tomb robbing in the immediate area posed a grave threat.

The tombs were of three basic types:

- 1) bell-shaped pit tombs,
- 2) dromos tombs,
- 3) shaft tombs.

The most common form of E. B. tombs in Area XXXI are simple bell-shaped pits

close to the surface. Some contained no pots, others had more than forty. Most, however, contained less than ten. The two examples of dromos tombs found in this cemetery are entered by a passage from the west; they contained no pottery. The one shaft tomb excavated also produced pottery.

All of the excavated tombs were severely affected by wash and silting, and as a result the burials were in very poor condition.⁴

(A. W. McN.)

The Iron Age and Terminal Late Bronze Age

Deposits dating from these periods were removed from plots IVE, IIIP and IIIN. All three presented considerable problems because of both human and natural damage — e.g. pits, gullies, and foundation trenches — to the strata being excavated. In brief, the plots produced evidence of the following.

Plot IV E

Damage to the Early Iron and terminal Late Bronze Age deposits was caused by a large Late Iron Age gully or depression cutting through the trench from east to west. Occasional fragments of Iron Age houses survived; in the western sector of the trench in particular a dogleg alleyway divided two rooms with intact floors. In general the stone footings of the walls were roughly built and narrow with mud-brick superstructures. Below the Early Iron strata, walls of the final phase of the Late Bronze Age appeared. These in turn had been damaged by the Late Iron Age gully,

but the surviving stone footings and paving indicate a larger room (which extended into III P) than those of the succeeding period.

Plot III P.

Here the 1985 excavations began with the removal of a limited area of Byzantine deposits (6th Century A.D.). Below these deposits a series of complex Hellenistic strata were uncovered. Unfortunately the Byzantine buildings had entirely destroyed any contemporary occupation surfaces with these strata. Thus the Hellenistic phase in III P consisted solely of wash levels in gullies into which were sunk deep footings of stout stone walls. Material from the gullies and foundation trenches included Eastern Sigillata A, moulded grey ware, imported amphora ware, local storage jar ware. This pottery points to a construction date in the late 2nd or 1st Century B.C. In the S.E. corner of III P a Late Roman period pit over 6m deep produced a wealth of Roman pottery, mainly of the 3rd Century A.D., and

4. A detailed report on the tombs and their contents is planned for the next Preliminary Report. See also *PJ* 2, ch. 3.

a considerable number of small finds, including a gaming die and a bone or ivory flute.

Plot III N.

This trench was reopened for a brief period to finish off the excavation of the transitional L.B.-E.I. phase left incom-

plete last year. Although a complex of pits cut from the Late Iron Age phase makes correlation of floors and surfaces extremely difficult, the phase appears now to be successfully isolated.

(A.W.McN.)

AREA V, THE EAST CHURCH

Excavation of the East Church was completed on 18 Feb 1985. The digging was concentrated at the eastern end of the basilica, where the overburden was up to 5 m. deep. Although the church was extensively robbed in antiquity and finally destroyed in the earthquake of 747 A.D., a full plan has now been recovered with sufficient evidence to allow a reconstruction of the church in its heyday.

The Church: Its Layout and Decoration

The 1985 excavations confirmed, amended and refined the overall plan and decoration of the church as proposed in the preliminary publication (*ADAJ* XXIX 1985). The plan is basilical with a projecting semicircular central nave and inscribed apses. The northern and southern walls each had two doors.

The eastern end of the church, which stands to a maximum height of 4.50m. without a trace of springing for the hemidomes, is interesting in that it was provided with five glazed and iron-barred windows — one each in the north and south apses and three in the central apse. These were arcuated.

The sanctuary, raised 0.40m. above the body of the church, projected further into the nave than the aisles. Along its edge ran a marble screen, finely carved in relief and with floral and Greek key motifs. This chancel screen, apparently a part of the original furnishings, survived, possibly in a damaged state until the final destruction in the mid-8th Century. Within the southwest angle of the nave sanctuary traces of five holes probably indicate the

site of the aurore. The altar, of which no trace remains, presumably stood above the reliquary. Around the eastern wall of the central apse was the sunthronon, a bench *ca.* 1.00m. high with three narrow steps; at its central point were three deeper steps leading to a raised seat.

The decoration of the walls and hemidomes is now reasonably clear. The sunthronon and the walls of the whole church had a veneer of rectangular panels alternatively of white and purple marble with some black slate. Above the veneer was painted plaster, with decorations of geometric architectural and sub-floral motifs in green, yellow, red and black on white ground — non-figurative subjects be it noted. This plaster rose to the top of the walls and presumably to the springing of the hemidomes. The best preserved sector of plaster came from a voussoir of the north aisle east doorway — three panels, one with a leaf/palm design, one from which the design was lost, and one with a **column base and shaft**. In the hemidomes were mosaics of coloured glass and stone tesserae; these were probably figured. Among the colours gold, light green and blue are glass, pink and red, white and black are stone (mainly marble).

The aisle floors were paved in opus sectile with a reticulated pattern of marble and a roseate (haematitic) limestone tiles, while on the floor of the nave were rectangular slabs of marble. In the sanctuary the apses were paved with a radiating fan pattern of tiles; the remainder had a pattern of roundels with eight-point stars.

During the 1985 season three capitals with crosses were unearthed, each one dif-

ferent. The sanctuary reveal plaster capitals evidently merited crosses, as did the capitals at the NW and SW corners of the nave sanctuary.

Elements of the sanctuary show signs of reworking or restoration. Portions of the screen were apparently recemented and the bases of two of the columns have been chipped away and set up on a crude pedestal to give them the requisite height to bear the column shafts (both these occurrences may indicate either the reuse of classical bases and column shafts or of a remodeling of the sanctuary).

It remains uncertain how the roof of the church was constructed and supported. The absence of voussoir blocks from along the stylobates indicates only that the colonnades were trabeated in the final phase; however for aesthetic reasons it seems unlikely that the original slender (0.50 m diameter) columns would have supported an arcade. An architrave seems more probable. It was suggested in *PJ 1* (1982, p. 114) that the stumpy columns found beside the stylobate bases had originally belonged to a clerestorey colonnade. This remains a possibility: proof still lacks. Without this knowledge it is an open question whether the tiled roof was broken above the stylobates to continue at a lower level above the aisles or whether the roof had a continuous, unbroken slope from the roof tree to the north and south walls.

The church was well-lit with natural light at the east end. The windows, later blocked, were glazed and barred. The glazing consisted of large rectangular panes of clear green tinged glass. All the fragments of window glass were extremely small; the larger reconstructed piece indicates that the individual panes were greater than 0.18 sq. metres. Since no lead was found (although this useful metal may have been robbed out after the abandonment of the church), it is possible that the panes were fitted into wooden frames, which were dowelled into the sills, jambs and lintels of the windows. The windows were barred inside the glass with a stout iron grill consisting of two upright and four horizontal bars.

The evidence for windows in the south, north and west walls is tenuous. Only the lintel by the west door in the north wall gives a hint that the building might have had windows in the long walls. The effect, one suspects, would have been similar to the northern Syrian churches. On the lintel the horizontal fasciae turn upwards at the east end as if to frame a window. Against this, it seems unlikely that a window would have been located so close to the doorway so that the east jamb would have served both doorway and window.

Chronology

The major events relating to the church — construction, floruit, robbing, reconstruction and destruction — are clear. However the chronology and precise sequence of vicissitudes which the East Church underwent remain less than certain. The following is thus tentative (see *PJ 2* ch. 8 for a more detailed study of the church's chronology).

1) It was suggested in the first interim report (*PJ 1* 1982, p. 119) that the church was probably constructed in the late 5th Century A.D. The bases for this suggestion was the style of the pilaster capitals on the responds and the nave to aisles width ratio. In 1985 further broad indications of date were gleaned from coin finds. In the groove into which the sanctuary screen had been set was found a hoard of fifteen minims. Six more were scattered nearby. All are extremely worn, and preliminary cleaning has not enabled identification. However, size and fabric suggest a 5th Century date. The purpose of depositing a small number of low-value bronze coins is uncertain, but it is probable that, since minims were replaced by the reformed currency of Anastasius from 498 on for a decade or two, this hoard would have been deposited at latest by 525 A.D. The possibility of a total rebuilding of the sanctuary must be considered, but no stratigraphic evidence for it has been found, nor is there any ceramic, glass or other evidence from the deposits in Area V for occupation before the late 6th Century A.D. In other words, the minims constitute the earliest broadly dat-

able Christian period material with a *t. a. q.* of ca. 525 A.D. The suggested date of the last quarter of the 5th Century thus remains, in my view, most likely for the construction of the church.

2) It is unclear how long the church remained in use in its full splendour. At some point major structural elements, such as the roof, rooftiles and the main order of columns and the fittings — tiles, wall slabs and sanctuary furnishings — were stripped from it. Before this event there may or may not have been a collapse, either by earthquake or by the hand of man. Again, the dating evidence is tenuous and unclear. Interpretable pottery directly related to this event was not found, but outside the west door of the south wall in a small sondage a deposit which contained sweepings from the church — window glass, pottery and fragmentary glass utensils — was found. The pottery appears to date to the late 6th Century or perhaps the early 7th Century A.D.; therefore the cleaning of the church after the collapse (or stripping) probably occurred between about 575 and 625 A.D.

Support for this proposition may be adduced from the group of four folles found in the mixed soil and cement between the cement base of the south apse floor and the cement which held the veneer slabs of the west face of the sanctuary. These coins were probably lost in the robbing of the church and sealed within the second phase surface. The coins are all of Justin II (565-578 A.D.) and date to his first (567/8), third (567/8), sixth (570/1) and twelfth (577/8) regnal years. A fifth follis of Justin II was found in the body of the church. (The only other post-reform coin from Area V is a half-follis of Justin I or Justinian).

Among the identifiable Byzantine post-reform coins at Pella the preponderance of coins of Justin II is marked. The same phenomenon has been observed at Jerash (S. Bassett pers. comm.). It appears likely that the three Byzantine provinces of Palestina received large quantities of copper coins from the mints of Nicomedia and Constantinople during the reign of Justin II, and it is probable, judging by the comparatively

low numbers of his immediate successors' coins that these coins circulated for a long time. The presence of Justin II folles in the apparent infilling of the second phase floor is thus only vague indication of the date of reconstruction.

It seems unlikely that the church would have been robbed out or stripped in the period of Christian control. In the improbable event of the basilica being desanctified, the reliquary would surely have been removed. The two events, then, which may be associated with the despoiling are:

1. The Persian/Sasanian incursion of 614 A.D.
2. The aftermath of the Islamic conquest (A.H. 13/635 A.D.) and the eclipse of Christianity's politico-economic primacy in the Pella district.

The former may have caused destruction, but is unlikely to have given rise to the systematic removal of such elements as the wall veneer and floor tiles and slabs, let alone the columns. It is more probable that the stripping may relate to the Islamic political domination over a Christian population with a declining social status, which in order to meet the poll- and land-tax obligations may have been compelled to remove and sell the firmments and furnishings and original marble columns. On historical grounds it is probable that this event would have occurred in the second half of the 7th Century or first half of the 8th. An alternative explanation for the stripping of the church is simply the decay of Christianity at Pella. But the preservation *in situ* of the reliquary until the destruction argues strongly against this.

The stripping of the church preceded or was preceded by a major collapse or demolition. Obviously to remove the original columns would have entailed the demolition — or succeeded the collapse — of the whole superstructure of the building (i.e. roof and putative clerestory). Since the floortiles were preserved as originally laid in few places (particularly along the south wall), it seems probable that the debris of the demolition/collapse overlay the original floor so deeply in places that it was impossible to remove the tiles easily.

3) Reconstruction. The major structural aspect of the reconstruction was the use of stumpy limestone columns about 2m high, possibly originally part of an upper (clerestorey) colonade, on the original ground floor bases. The positions in which these column shafts fell in the final destruction show clearly that they were actually placed on the marble bases. The effect must have been aesthetically appalling, and the combined base-shaft-capital height of less than 3m, along with the absence of large quantities of tiles in the nave, make it unlikely that the central part of the church was roofed at this period. Presumably the sanctuary with its hemidomes was still roofed, and the quantity and location of roof tiles recovered suggests that the aisles at least were roofed.

Other major efforts to restore the church included the laying of a simple orange packed mud floor over the cement basis of the original flooring; the blocking

of the east end windows; and in all probability the blocking of the eastern doors in the north and south walls and the western door in the south wall. Finally, the repaving of most of the area around the reliquary container dates to this phase of restoration, as does the retiling of the eastern side of the atrium. It remains impossible to date this event precisely: our only indications are the pottery and the coins. The former is sporadic and generally not diagnostic; what can be dated is late 7th and 8th Century. The coins only provide a rough *terminus post quem*.

4) Destruction. Again there is no precise chronological information for the final destruction of the church. However the extent of the disaster and the subsequent total abandonment parallels the dated devastation of the Pella settlement in the late Umayyad period and in all probability dates to 747 A.D.

(A. W. McN.)

AREA XI B

A 12 × 12m. trench high on the north-eastern slope of Tell el-Husn was reopened in 1985 with the aim of excavating to the footings of the putative Hellenistic-Roman citadel wall, and of revealing a longer stretch of the wall on the west. The first aim was achieved in a small area: the wall was not as deeply founded as had been hoped, and the strata in front of the wall (the northern, down-slope side) had been badly disturbed by the collapse and wash.

In view of the small area excavated to the natural pebbles of the tell (3 × 1.50m) the chronology of XIB must be considered tentative. The wall may have been built in the 1st Century A.D. to judge by fragments of Herodian lamps and 1st Century A.D.

pottery. However, a considerable number of mould-made glass fragments and sherds of 1st Century B.C. indicate late Hellenistic-Early Roman activity in the vicinity — possibly related to the structure in XI A.

The western extension of XI B was closed early in the new year to enable staff to catalogue the pottery backlog. Although the continuation of the wall in eastern XIB was at that stage not exposed, a rubble-built wall appeared to have been constructed along its line, with a surface to the south. The deposits in this trench contained material of the 1st Century B.C. and 1st Century A.D.

(A. W. McN.)

ROMAN AND LATE ROMAN REMAINS

Three weeks of excavation in plot XXIIIA produced our first stratified occupation levels of the Late Roman period. A small rectangular structure with stone

walls underlay the Byzantine occupation. Potsherds indicated a date in the late 3rd Century. This evidence confirms the presence of Late Roman dwellings at Pella,

first seen in plots III E and III Q.

Under the Late Roman occupation a thick destruction layer was found overlying a good surface. It was expected that this would be Late Hellenistic, equivalent to that exposed in 1984, but preliminary analysis of the sherds indicates a rather different assemblage; another Late Hellenistic surface may well underlie it.

In Area VI two Roman period tombs were fully excavated. Tomb 64, located and partially excavated in the previous season, was re-opened and fully cleared during December. It is the usual Roman type, with dromos leading into a chamber, off which run eleven loculi - two of these were extremely wide, occupying the space of two normal loculi; one of these wide loculi had a longitudinal grave over which were placed large, lightly baked capping tiles.

The bones recovered from Tomb 64 are the best preserved yet found at Pella. Some thirty individuals were interred; the state of preservation of material threw interesting light on mortuary practices. Among the evidence:

1. The use of beds of laurel, box or bay leaves on which to place the bodies.
2. The use of wooden coffins, at least one

of which contained several bodies.

3. Plaster was used in one coffin, poured over the winding sheet (a hessian-type cloth) of the first corpse buried.

The lamps indicate that the tomb was in use from the 1st to the 4th Centuries A.D. Glass (small jars, flasks, *unguentaria*) date to the 2nd and 3rd Centuries. The tomb appears to have been looted in Byzantine times.

The second Roman tomb excavated in 1985, no. 56, lies in the hillock of Mugharat al-Khalaṣ (Area VI). It is architecturally the finest tomb found by the Australian team at Pella, consisting of a large well-cut chamber with a central pillar of natural rock; in the chamber were six sarcophagi, and off it ran eleven loculi. Access was by a vaulted dromos built of ashlar masonry with a decorated *cyma recta* string-course. Although the door was locked, entry had been forced above the lintel and the whole tomb systematically plundered. A few fragmentary pots and glass vessels and one intact juglet show that the tomb was in use in the 3rd Century A.D. at least.

(A. W. McN.)

LOCKING DEVICES FROM ROMAN TOMBS AT PELLA

Excavations in Area VI at the southern base of Tell el-Husn have located a number of tombs dating to the Roman Period (see above, also *PJ I*, p. 84-101). To date three stone locking devices, either complete or in fragments, have been recovered from tombs 24, 52, and 56 in this area, all of which are rock-cut chamber tombs of around the 3rd Century A.D. The locking device from tomb 56 (Registration No. 80060) was *in situ* and closed (i.e. locked) when discovered. This showed very clearly how the lock was assembled. Other tombs in the vicinity also had locks, but these are now missing.

Description of the Tomb Doorways

The Roman tomb doorways at Pella consist of five major architectural ele-

ments, all of dressed limestone. The lintel was mortised on its left hand side to take the upper projecting pivot of the door. The threshold, also mortised on the left hand side, received the bottom pivot of the stone door. The two door jambs consist of a single block on the left side and two separate blocks on the right, within and between which was placed the locking device with its external access hole for a key. The massive, one piece, stone-slab door opened inwards, and was equipped with a socket on its right-hand vertical edge to receive the lock bolt when closed. An external metal handle facilitated the closing of the heavy door.

The Lock

The locking device within the right-hand jamb of the tomb doorways consists of

two worked stone elements, an oblong bolt and a guiding lock case. The bolt was pierced by several holes which contained the traces of bronze pins, and has a boss on one side (Pl. XXVII). The boss fitted into a groove cut into the bolt-guiding slot of the square lock case, and stopped the bolt moving too far in either the open or closed position, or from falling out. A hole on one

side of the lock case, which was aligned with a key hole in the right door jamb, permitted external access for the key device. The bolt could only be moved from the locked position by use of the key. The form and functional nature of these keys is currently under investigation.

(J.H.)

THE BYZANTINE PERIOD IN PLOT IVH.

(Figs. 3-5, Pl. XXVI)

A room which had been partially excavated in 1980 was reopened for excavation in 1985. Dug as IVH locus 50, it forms part of the Umayyad complex described as the "North Building" in Area IV (*PJ 1* 1982, p.132, Fig.28 and room 32 of end-plate 2). This complex has been retained and conserved, but investigation into the preceding Byzantine levels was continued in Area IV Plots D and E, and Area III Plot P, providing a good sequence of occupation phases throughout the Sixth and early Seventh Centuries A.D. It was established that the Umayyad structures have their origin in the Late Byzantine period. Room 32 had been left in a state of collapse at some stage; it was certainly never used by the latest Umayyad occupants of the North Building. The purpose of the 1985 investigation was to determine when the collapse had occurred, and how it related to the five Late Byzantine phases observed in IVD, IVE and IIIP (see *PJ 2* ch.8).

The room (Fig. 3) is situated on the north side of the east-west Byzantine street, whose function ceased when it was blocked by a wall during the Umayyad alterations to the buildings. These alterations had included the complete razing of structures south-west of the North Building and the street, and the creation of a large courtyard in their place (in IVD, IVE and IIIP). The southern wall of room 32 was rebuilt at this time, blocking the doorway to the street. The collapsed remains inside

the room were not removed and the room was rendered inaccessible. The trench for the rebuilding of the wall was cut into the collapse deposit. While the extant deposits in IVD, IVE and IIIP shed little light on the reasons for this extensive demolition and rebuilding programme, the evidence from room 32 makes it clear that there had been large-scale structural collapse. A coin-dated corpus of pottery and other objects associated with the collapse and the preceding occupation layers, has provided a solid terminus for the Byzantine sequence of architectural phases.

Stratigraphy and Finds (Figs. 4-5, Tables 6-7, Pl. XXVI)

Three phases of occupation are revealed in room 32, followed by a fourth phase of abandonment after the collapse (Pl. XXVI, 1). While the room to the west (room 34) was similarly abandoned, loci to the east (a laneway), north (room 31), and south (the former street), were cleared and continued to be used.

Phase i)⁵. This phase is represented by the original surface (50.8) associated with use of the room opening south onto the street and north into room 31. The deposit may originally have been a packing beneath a removed pavement, as a number of fragmentary mudstone slabs formed part of the surface. However an overall blackening of this surface, and the overlying traces of occupational detritus (50.7) show

5. Phase numbers are localized to this sequence and are not applicable to the broader Byzantine phasing

sequence outlined in *PJ 2*, ch.8. Phases are numbered from the earliest to the latest in this report.

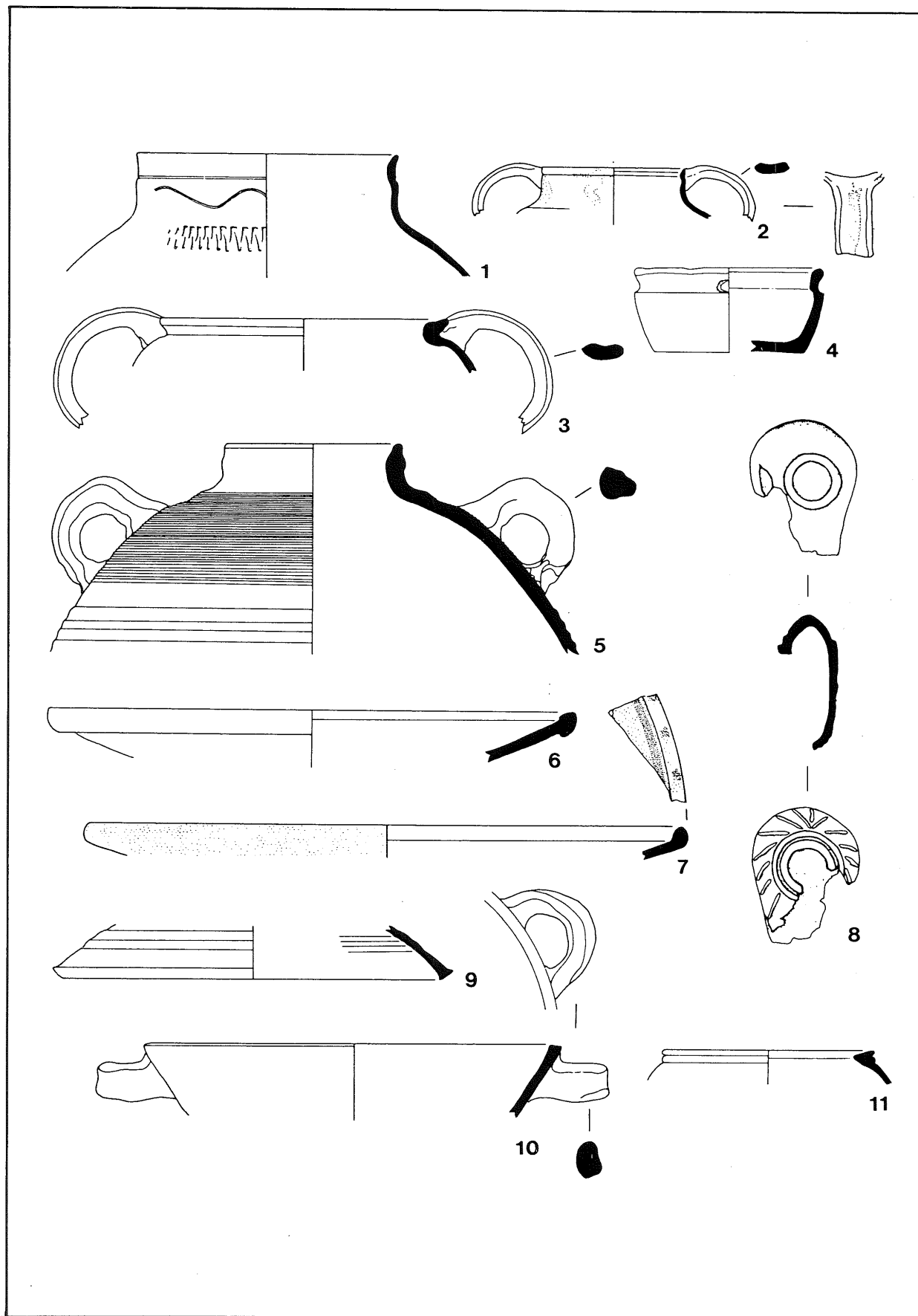


Fig. 4. Selection of terminal Byzantine pottery from IVH locus 50 (occupation).

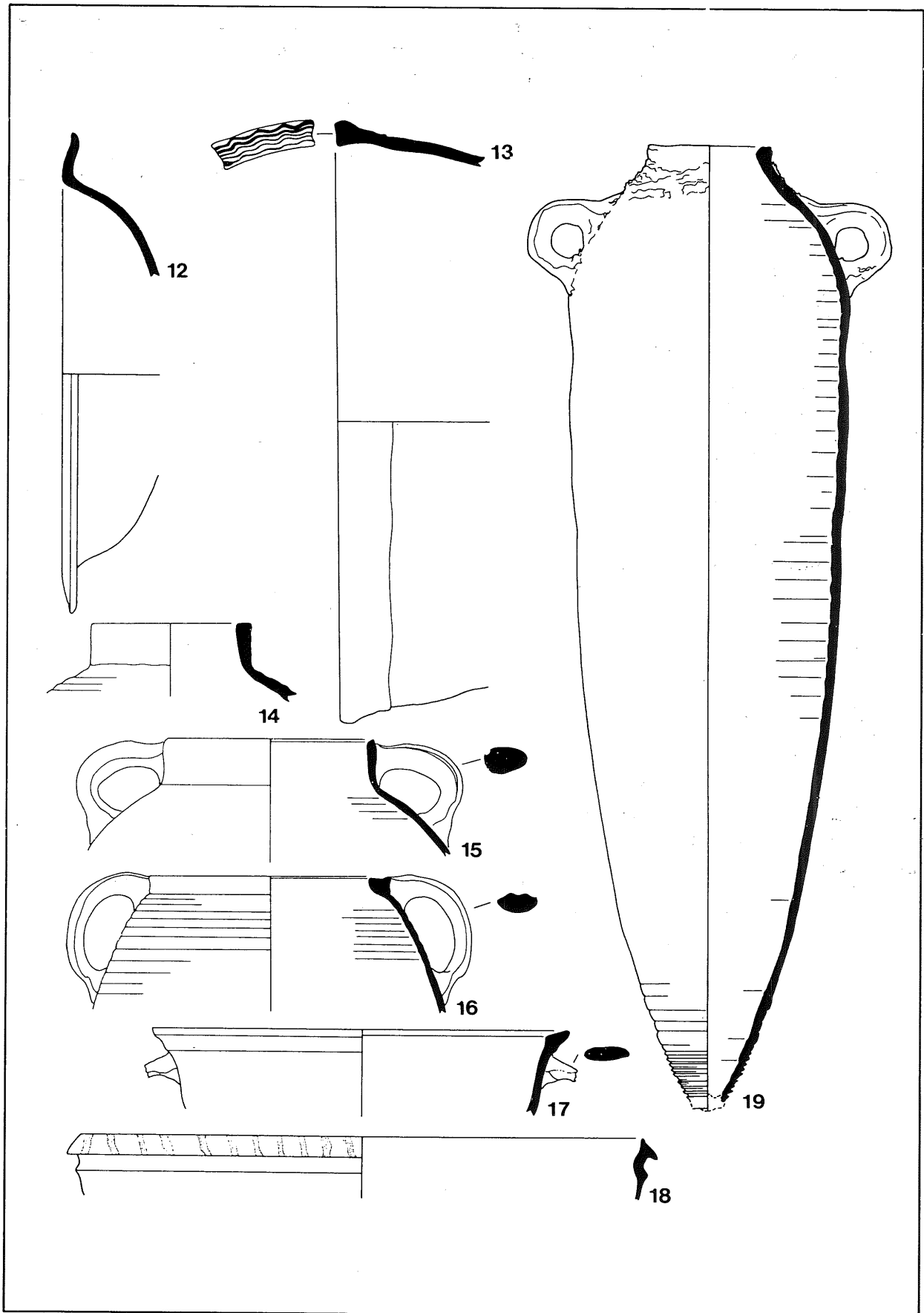


Fig. 5. Selection of terminal Byzantine pottery from IVH locus 50 (collapse).

that it also served as a floor. An earlier wall can be seen emerging in the western half of the locus, immediately beneath 50.8.

Phase ii). Subsequently the room seems to have been used to house animals. The surface is very soft fine brown above a soft fine yellow organic deposit. An identical deposit was found in IVE locus 5/14, which had associated feed bins. The size of the doorway and the lack of any built feed-bins or obvious tethering facilities, suggests the accommodation of small animals.

Phase iii). A period of disuse is indicated by mounds of domestic rubbish thrown into the centre and the north west of the room (50.3, 50.4). They contained charcoal, carbonized seeds (lentil, olive, wheat and barley)⁶, and a large quantity of animal bones, especially small bird, within a soft organic earth. In the south and partially blocking the doorway, was a mound of earth covered and lensed with thick ash (50.5).

Phase iv). The room collapsed, filling with a *piše*-like deposit containing ash lenses and large stone tumble (50.1, 50.2). The east wall collapsed neatly inwards to the west, retaining the line of the wall face. The other walls remained standing roughly 0.50m above the surface. Within this deposit (but not *in situ* on the floor), were the remains of numerous "Gaza" amphorae (Pl. XXVI, 2), a cooking jar, a

grey krater and other vessels that were probably complete (Fig. 5, descriptions in Table 7). Also notable were the imported fine ware bowls classified by John Hayes as African Red Slip Form 105, and Cypriot Red Slip Form 9C (Hayes 1972, p.166, 379), and fragments of the painted pictorial bowls known as "Jerash Bowls". The evidence suggests an upper storey with *piše* walls that was occupied at the time of the collapse. Many utilitarian objects were found: nails of various sizes, a bronze cup-hook, iron rings, an iron clamp, arrow-heads (which preserve impressions of wood in the corrosion), knife blades, a pick head and an object resembling the blade of a hoe. A good quantity of glass was retrieved, none identifiable as Umayyad, but best set within the late Sixth/early Seventh Centuries⁷. More useful however was the recovery of a follis of Heraclius, minted at Constantinople in 615/616 A.D. (R.N. 80164, from IVH 50.1).

It is reasonable to assume that the collapse occurred not long after this date and the damage could perhaps be attributed to the Islamic Conquest of the town in 635 A.D. The sources do not state whether this involved any extensive damage (Smith 1973, p.69-74) and the archaeological evidence is equivocal. Earthquakes were endemic in the area during this decade (Amiran 1950, p.226) and the collapse pattern of the east wall of room 32 suggests this as a likely cause.

(P.M.W.)

6. Identified by Sue Colledge.

7. Information kindly supplied by Margaret O'Hea.

Table 6. Byzantine Pottery Descriptions for Fig. 4.

1. CN 1645. IVH 50.3. Jar. Well mixed, finely gritty fabric with occasional small lime grits. Fired hard. Red core, light red interior, light reddish-brown exterior. Incised wavy line on neck, chiselled decoration on shoulder.
2. CN 10278. IVH 50.3. Jar. Ware as 1. Red core and interior, grey exterior. Thin white paint on neck and handle.
3. CN 10282. IVH 50.3. Jar. Well mixed with many small grits including quartz and lime. Fired hard. Reddish-brown to reddish-yellow core, reddish-grey interior, grey exterior.
4. CN 10277. IVH 50.3. Bowl. Finely mixed with some fine dark grits and occasional lime grits. Fired hard. Light brown core reddish-yellow interior and exterior.
5. CN 10268. IVH 50.3 Jar. Well mixed, very sandy fabric with scatter of fine lime grits. Fired medium-soft. Red core, light brown interior, pink exterior.
6. CN 102686. IVH 50.6. Bowl. Imported African Red Slip ware, Form 104 (Hayes 1972, p.166). Abnormal colouring: reddish-yellow throughout, slip very eroded.
7. CN 10276. IVH 50.3. Bowl. Well mixed, with some small and occasionally medium lime grits. Fired hard. Red core, very pale brown slip interior and exterior. Weak red painted decoration.
8. CN 10319. IVH 50.7. Lamp. Finely mixed with some fine dark grits and occasional lime grits. Fired soft. Buff throughout.
9. CN 10281. IVH 50.3. Lid. Ware as 3. Yellowish-red core, reddish-brown interior and exterior.
10. CN 10284. IVH 50.4. Bowl. Ware as 3. Reddish-yellow core, greyish-brown interior, pinkish-grey exterior.
11. CN 2526. IVH 50.3. Jar. Ware as 3. Yellowish-red to grey core, grey interior and exterior.

Table 7. Byzantine Pottery Descriptions for Fig. 5.

12. CN 10287. IVD/H B2. Bowl. Very finely mixed, dense fabric with tiny grits. Fired hard. Slipped surface with flat burnishing-tool bands on exterior. Red and grey core, reddish-yellow interior and exterior.
13. CN 10261. IVH 50.1. Bowl. Very well mixed, dense fabric with many small and some medium grits. Fired hard, slurried surface. Reddish-yellow to light yellowish-brown core, yellowish-red interior and exterior. Incised comb decoration on rim top.
14. CN 10273. IVH 50.2. Jar. Very well mixed, with small and occasional medium lime grits. Fired very hard. Light brown core, dark grey interior and exterior. Type generally has white painted decoration of swirls and strokes on body.
15. CN 10265. IVH 50.2. Jar. Ware as 3. Reddish-brown throughout.
16. CN 10266. IVH 50.2. Jar. Ware as 3. Reddish-yellow core and interior, dark brown exterior.
17. CN 10270. IVH 50.2. Bowl. Ware as 4. Slurried surface. Pink to light brown core, light brown interior and exterior.
18. CN 10290. IVH 50.10. Bowl. Ware as 1. Red and grey core, light reddish-brown interior, brown exterior. Thin white painted stripes on rim.
19. CN 10318. IVH 50.1,2. Amphora of "Gaza" type. Ware of average mix, with many fine and some medium to large grey and lime grits. Fired medium-hard. Reddish-yellow core and interior, pinkish-brown exterior. Characteristic rough "applied" clay adhering to neck/shoulder.

THE ABBASID OCCUPATION IN AREA XXIX

(Figs. 6-9, Tables 8-10)

Area XXIX was assigned to a large ruin located in the Wadi el-Khandaq ('the ditch') to the north-east of the main tell (Khirbet Fahl) and immediately north of the tell — Abu Khas saddle. The Wadi el-Khandaq is a broad, dry valley susceptible to severe flooding after rain. It drains a small area of gently sloping fields and mounds to the east, and is bound on the north by series of yellow clay *tulul*. Because of the flooding and the clayey nature of the silt, the valley floor is both stoney and unfertile. Only in a good (*i.e.* wet) year do the northern and eastern flanks of the wadi produce a viable grain crop. There is, however, a marked improvement in the soil quality further west to the north of the main tell. Here the slope of the valley floor lessens and most of the silt originates from the northern slope of the mound. Olive trees have recently been planted in this area. At the western end of the wadi lie the houses of northern Ṭabaqat Fahl.

The architectural remains of Area XXIX, although extensive, have not claimed the attention of either travellers or archaeologists in the past. The ruins apparently escaped Schumacher's notice, probably because they were obscured by the luxuriant spring growth of 1887. However Richmond, during the course of his 1933 survey, noticed a number of wall lines in the Wadi Khandaq, although the single open-ended rectangular structure depicted in his map is very inaccurate (Richmond 1934, pl. V). It is possible that he thought these remains represented another church or monastery (thus the plain rectangular shape), a view that has been recently offered by a number of visitors to Pella.

Closer inspection of the surface remains indicates that the structure is a complex and probably not a church. Although details are not clear, it is possible to trace the substantial but rough stone walls of two large rectangular buildings standing adjacent to each other. In both cases the long axis of the buildings run in an east-west

direction. The Western Building lies to the south of its eastern counterpart, and is flanked with smaller columned structures to its north and west. Both buildings appear to have the same internal layout of a central court surrounded by rooms on sections of all four sides. No gateways are identifiable from the surface features.

Both the unusual plan of these buildings and the scatter of Early Islamic pottery in and around them posed many questions concerning their function and the date of their construction and use. It was therefore decided to probe the Eastern Building in four locations with the following intentions:

1. To clarify the layout of the Eastern Building and define its relationship with the Western Building.
2. To establish the date of that building's construction and periods of use and the connection between this chronology and that revealed by the excavations in Area IV.
3. To determine the use(s) to which the building was put from its construction to its abandonment/destruction.

The Excavations and their Results

Plot XXIXA. (Excavated by S. L. Bassett)

Plot XXIXA was a 6 by 2 metre sounding designed to section across the western wall of the Eastern Building. Roughly half of this plot was inside building, while the other half was located over a passage-like strip between the two buildings. This plot has the honour of being the only one in the history of excavations at Pella that was both started and finished on the same day. Yet in spite of its short life this plot revealed some significant architectural details. Inside the wall the removal of 40 to 50 cms of topsoil exposed a regular stone paving — perhaps a courtyard — over the whole locus, while outside the wall no surface could be satisfactorily identified. Af-

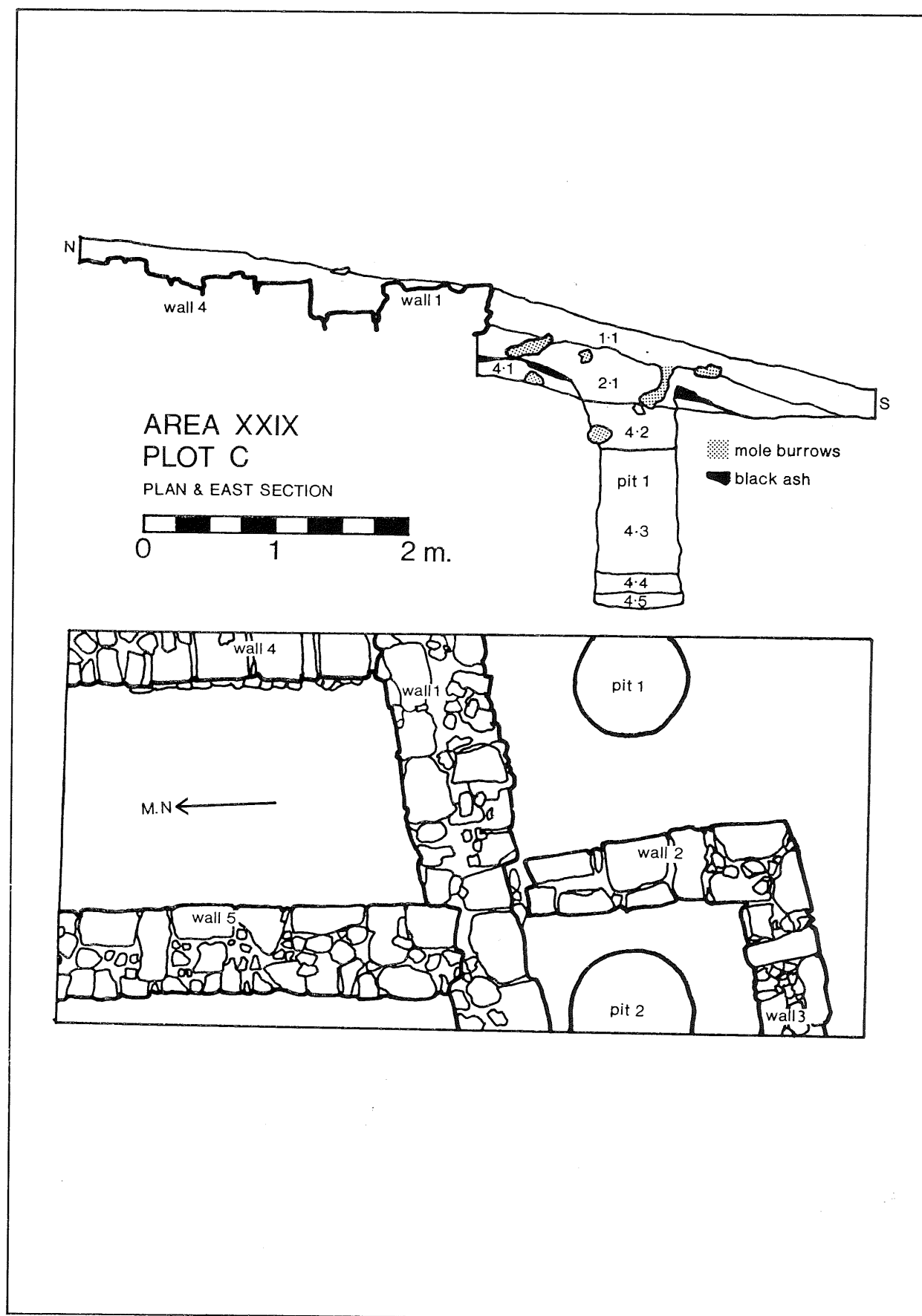


Fig. 6. Plan and east section of Plot XXIXC.

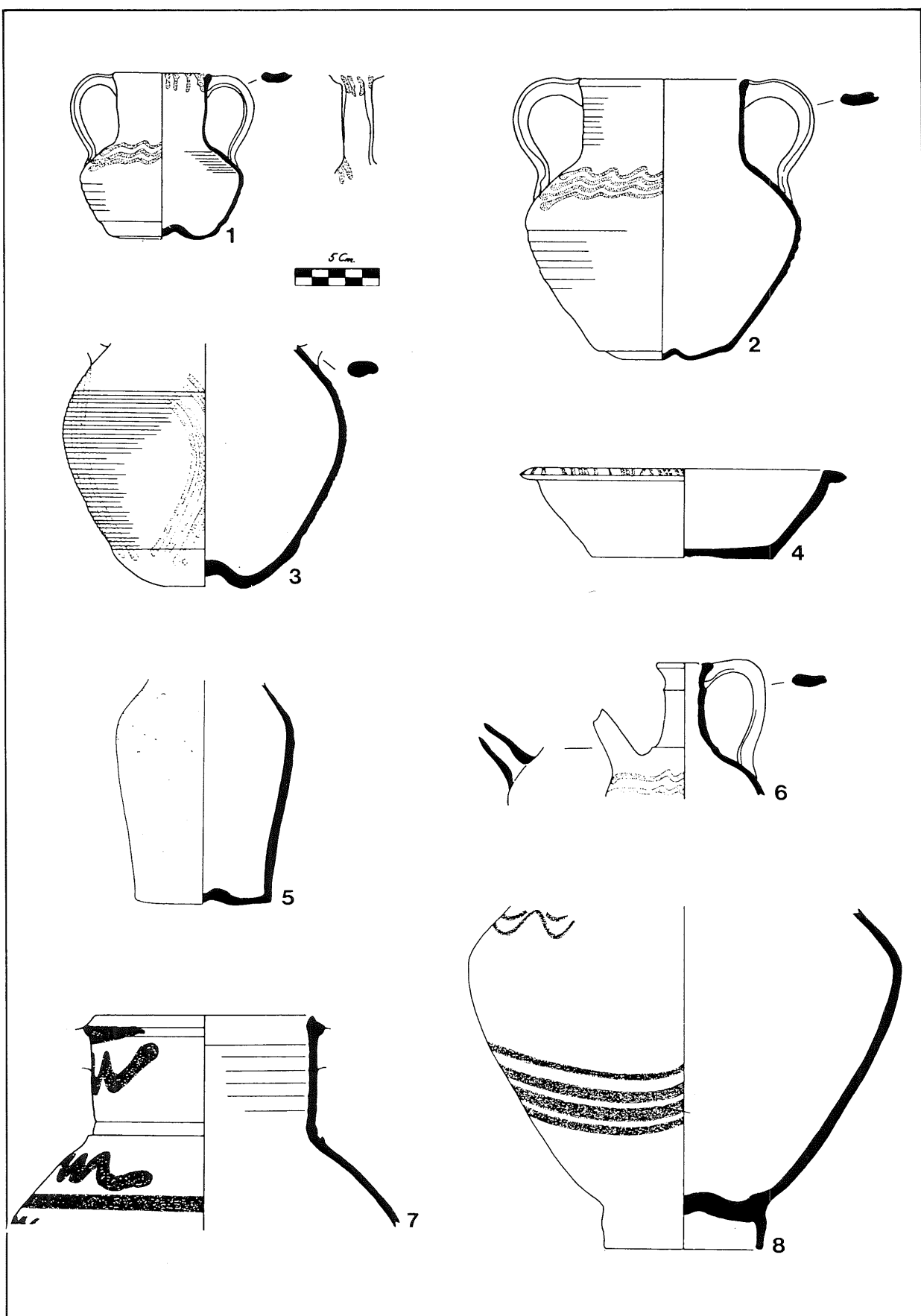


Fig. 7. Abbasid Pottery from Area XXIX (see table 8 for descriptions).

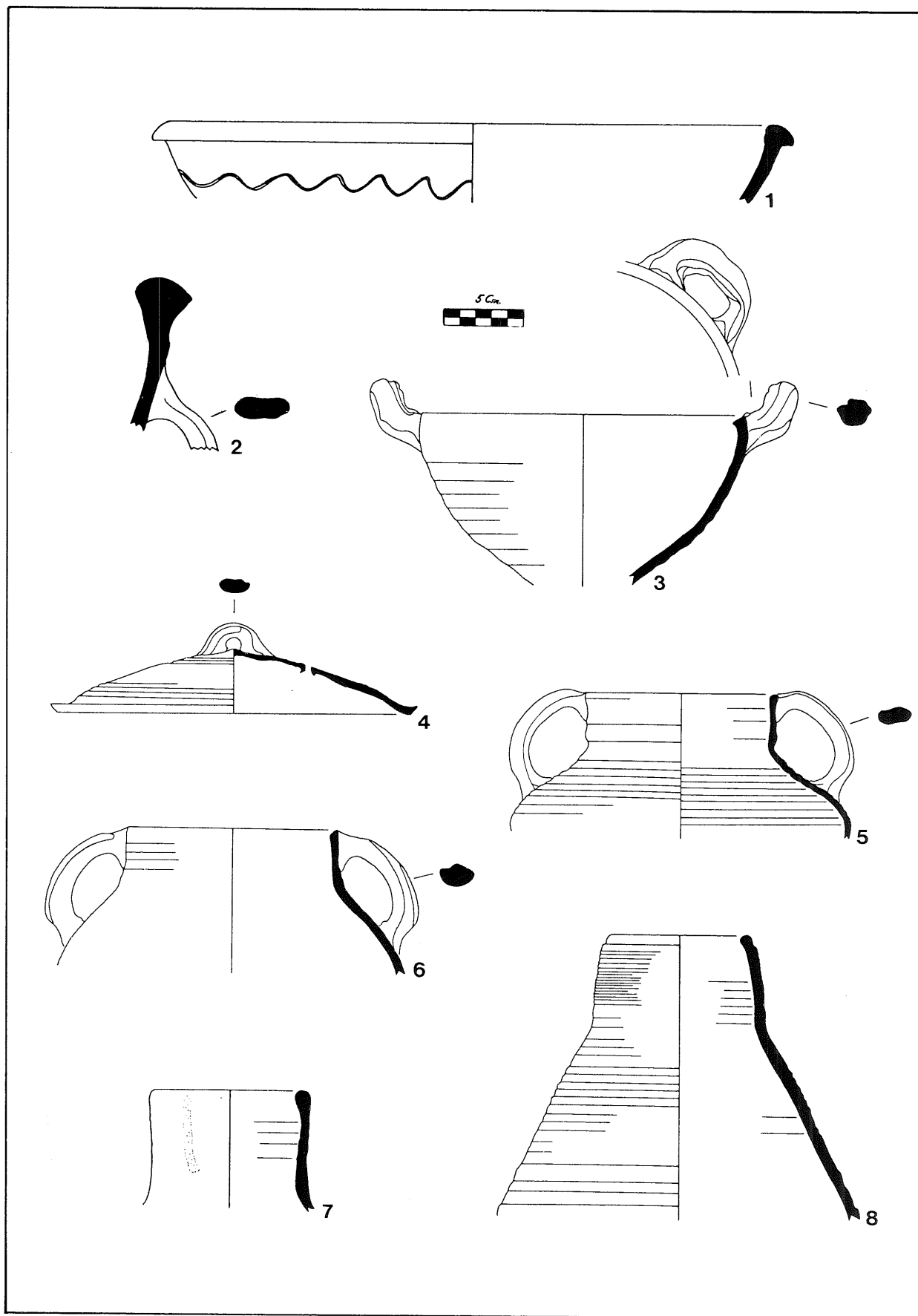


Fig. 8. Abbasid Pottery from Area XXIX (see table 9).

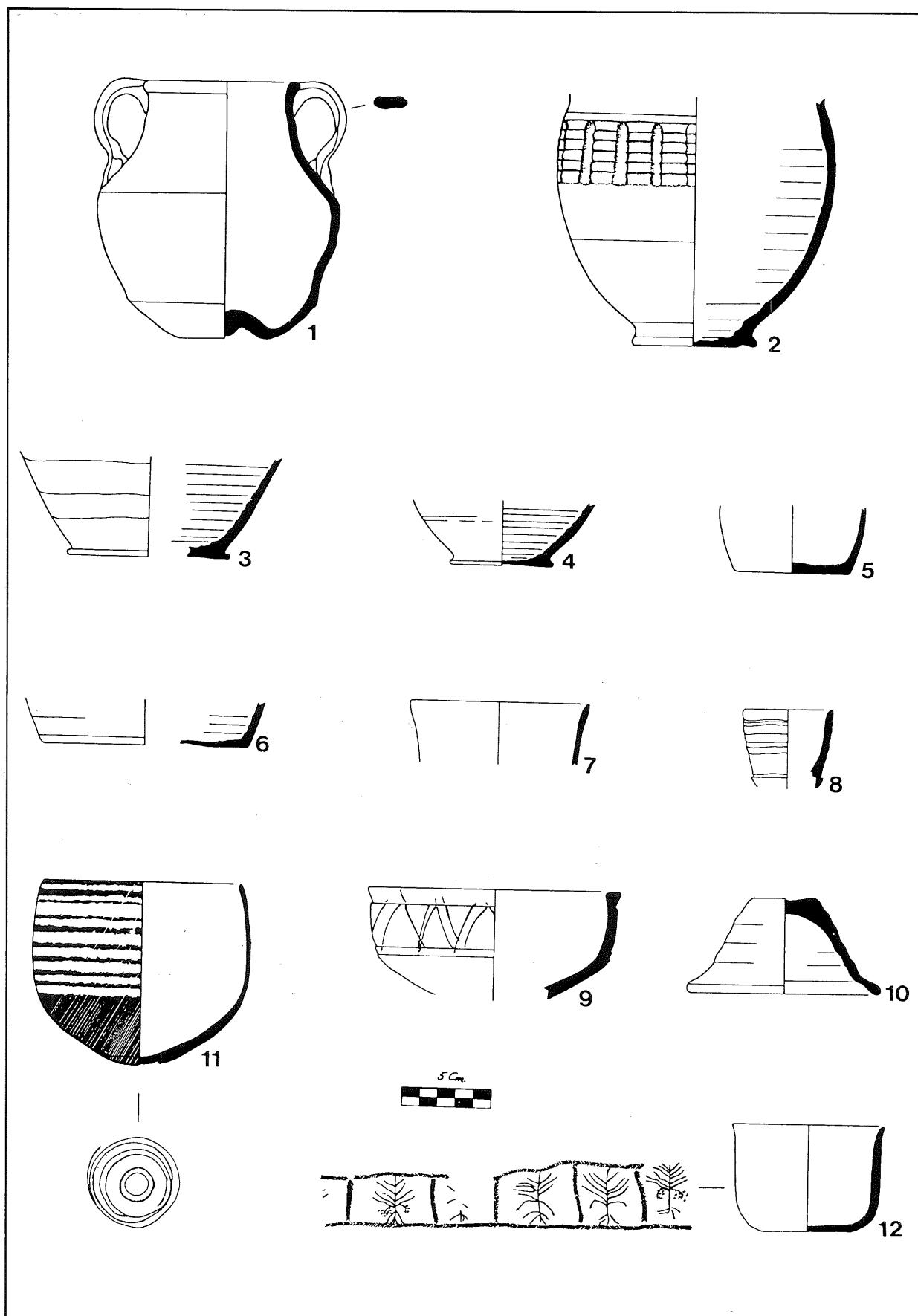


Fig. 9. Abbasid Pottery from Area XXIX (see table 10).

Table 8. Abbasid Pottery Descriptions for Fig. 7.

Ware: White Paint on 'Metallic' Terracotta
(*PJ I*, p.146).

1. CN 10251. XXIXC 5.3. Complete.

Form: small, thin-walled jar with two vertical 'strap' handles, tall neck, carinated body and dimple base.

Temper: small and occasionally medium-sized white limestone grits.

Dec: white paint in bands of wavy lines on shoulder and vertical multiple strokes on handle and rim.

Col: core & int. - 2.5YR 5/6

ext. - patchy 2.5YR 5/6 to 7.5YR 7/4

lls: *PJ I*, pl. 144.6 [mid 2nd/8th Century].

2. CN 10260. XXIXC 6.2. Complete.

Form: as previous, but larger in size.

Temper: many small white limestone and grey chert grits.

Dec: white paint in bands of wavy lines on shoulder.

Col: core - N 5/0

int. - 7.5YR 6/4

ext. - patchy 2.5YR 5/8 to N 5/0

lls: *PJ I*; pl. 144.4 [mid 2nd/8th Century].

Walmsley 1986, Fig. 2.1 [2nd quarter of the 8th Century A.D.]

Clark & Falkner 1986, Fig. 21.8 [8th Century Umayyad].

Schaefer 1986, Fig. 12.2 [700-750 A.D.]

Baramki 1944, Fig. 3.5 (no paint) [prior to A.D. 746/7].

3. CN 10241. XXIXC 4.5. Body only; neck and handles missing.

Form: thin-walled jar with two handles and dimple base.

Temper: small white limestone and grey chert grits with occasional larger white limestone grits.

Dec: white paint in vertical, curving parallel bands.

Col: core - 2.5YR 6/8

ext. - patchy 5YR 6/3 to 5YR 5/1

4. CN 10247. XXIXC 5.2. Largely complete.

Form: shallow bowl with flat base and out-folded rim.

Temper: small to medium-sized white limestone and quartz-like grits.

Dec: multiple strokes of white paint on rim top.

Col: core - N 4/0

int. - 2.5YR 6/6

ext. - patchy 2.5YR 6/6 to 7.5YR 6/4 to N 5/0

lls: Walmsley 1986, Fig. 1.1 [2nd quarter of the 8th century A.D.]

5. CN 10250. XXIXC 5.3. Body only; neck and handle missing.

Form: spoutless, wide-necked jug (see parallels) with slender body and dimple base.

Temper: many small to medium-sized white limestone, grey chert and quartz-like grits.

Dec: white paint in freely applied bands of wavy lines.

Col: core - N 4/0

int. & ext. - 2.5YR 5/8

lls: *PJ I*, pl. 144.2 [mid 2nd/8th Century].

Clark (1986), pl. XIV.27 [1st half of the 8th Century].

6. CN 10235. XXIXC 4.4. Upper half of vessel.

Form: spouted jug with single vertical 'strap' handle between rim and shoulder; narrow-neck and squat body.

Temper: many small and some medium-sized white limestone and grey chert grits.

Dec: white paint in wavy lines on body and horizontal strokes on handle (the latter not shown in the drawing).

Col: core & int. - 2.5YR 6/8

ext. - patchy 2.5YR 6/8 to 10YR 6/1 to N 5/0

lls: *PJ I*, pl. 144.3 [mid 2nd/8th Century].

Schaefer 1986, Fig. 12.3 (no paint) [700-750 A.D.].

Gawlikowski 1986, pl. X [Umayyad, 7th & 8th centuries].

Clark & Falkner 1986, Fig. 21.9 [8th Century Umayyad].

Ware: Purplish-brown Paint on Light Fabric (PJ 1, p. 147).

7. CN 10257. XXIXC 6.2. Large sherd from upper part of vessel.
Form: tall-necked jar; having an enlarged pointed rim with vestiges of two handles, pointed ridge at junction of neck and body, and finger 'rilling' on inside of neck.
Temper: mostly small but some medium-sized white limestone and grey chert grits.
Dec: red-brown paint of straight and wavy lines.
Col: core & int. - 7.5YR 7/4
ext. - fabric 10YR 8/3, paint 10R 4/3
Ils: *PJ 1*, pl. 143.1 [mid 2nd/8th Century].
Homès-Fredericq & Franken 1984, p. 239 no. 782 [Umayyad, mid 8th Century].
8. CN 10256. XXIXC 5.3. Body only; neck and handles missing.
Form: wide-bodied jar with pronounced shoulder and high ring base; neck very likely as previous vessel.
Temper: small to medium-sized white limestone, grey chert and miscellaneous other grits.
Dec: red-brown paint of horizontal parallel lines, slightly curved on lower body and wavy on upper body.
Col: core - 10YR 7/3
int. - 5YR 7/3
ext. - fabric 10YR 7/3, paint 2.5YR 4/4
Ils: *PJ 1*, pl. 140.12, 143.1 [ca. A.D. 720, mid 2nd/8th century respectively].

Table 9. Abbasid Pottery Descriptions for Fig. 8.

Ware: Dark Grey Fabric (PJ 1, p. 149)

1. CN 10243. XXIXC 2.1. Large rim sherd.
Form: basin with enlarged rim.
Temper: mostly small but a few medium to large quartz and limestone inclusions.
Dec: shallow-incised combed wavy pat-

tern ext.

Col: N 5/0 throughout.

2. CN 10220. XXIXB 2.1. Rim-handle sherd.
Form: basin with external vertical loop handle(s) and enlarged rim with pointed lip ext. Rim diameter 55 cm.
Temper: copious small to medium sand grits.
Dec: none apparent.
Col: N 5/0 throughout.
Ils: *PJ 1*, pl. 148.5 [mid 2nd/8th Century].

Ware: Coarse 'Cooking-pot' Fabric (PJ 1, p. 148).

3. CN 10238. XXIXC 4.4. Large rim-handle sherd.
Form: cooking bowl with horizontal loop handle, sharply upturned and grooved on top; shallow ribbing on body ext.
Temper: copious small quartz grits.
Dec: none.
Col: blackened through use.
Ils: Smith 1973, p. 230 [Umayyad].
PJ 1, pl. 140.7, 143.2 [ca. A.D. 720, mid 2nd/8th century respectively].
Tzaferis 1983, p. 33, Fig. 6.9 [Periods II-III, 614-mid 8th Century].
4. CN 10259. XXIXC 6.2. Complete.
Form: lid of a cooking bowl with central loop handle and single offset steam hole.
Temper: as previous entry.
Dec: none.
Col: core & int. - 2.5YR 4/6
ext. - 5YR 5/1
Ils: *PJ 1*, pl. 143.2 [mid 2nd/8th Century].
Schaefer 1986, p. 431, Fig. 14.14 [700-750 A.D.].
Tzaferis 1983, p. 33, Fig. 6.14 [Periods II-III, 614-mid 8th Century].
5. CN 10255. XXIXC 5.3. Large rim-handle sherd.
Form: tall-necked cooking jar with flat-sided ovoid handles from rim to shoulder; ribbed neck and body.

Temper: copious small to medium quartz grits.

Dec: none.

Col: 7.5YR 4/4 throughout.

lls: *PJ 1*, pl. 145.1 [mid 2nd/8th Century].

Clark & Falkner 1986, Fig. 21.13 [8th Century Umayyad].

Homès-Fredericq & Franken 1984, p. 235-6 [Abbasid, probably 9th Century according to Gawlikowski 1986, p. 117].

Tzaferis 1983, p. 33, Fig. 6.5-7 [Period II, 614-late 7th/early 8th Century].

6. CN 10233. XXIXC 4.3. Large rim-handle sherd.

Form: necked cooking jar with vertical handles and very shallow body-ribbing.

Temper: as previous entry.

Dec: none.

Col: core - 5YR 4/4

int. - N 4/0

ext. - 5YR 5/2

lls: Clark & Falkner 1986, Fig. 21.12 [8th Century Umayyad].

Schaefer 1986, Fig. 13.6 [700-750 A.D.].

PJ 1, pl. 140.1, 147.11 [ca. A.D. 720, mid 2nd/8th century respectively].

Walmsley 1986, Fig. 2.3. [2nd quarter of the 8th Century A.D.].

Ware: White Paint on a Grey/Brown-surfaced Fabric (PJ 1, p. 149, where this pottery is inaccurately labelled 'Brown slipped, white painted ware').

7. CN 10234. XXIXC 4.3. Rim sherd.

Form: tall neck of bag-shaped amphora (see parallels).

Temper: many small grey chert, white limestone, and red-orange 'grog' grits.

Dec: white painted vertical stripe ext.

Col: core - 5YR 6/6

int. - 5YR 7/6

ext. - 5YR 7/3

lls: Baramki 1944, Fig. 3.3 [mid 8th Century?]

Ware: Pale Cream Fabric (PJ 1, p. 147).

8. CN 10237. XXIXC 4.4. Rim and body

section.

Form: tall-necked jar with deep groove below rim ext, fine ribbing on neck and broader ribbing on body.

Temper: small grey chert and red-brown 'grog' grits.

Dec: none.

Col: core - 10YR 7/4

int. - 5YR 7/3

ext. - 5YR 8/3

Table 10. Abbasid Pottery Descriptions for Fig. 9.

Ware: Pale Cream Fabric (cont.).

1. CN 10252. XXIXC 5.3. Complete.

Form: wide-mouthed jar with two flat-sectioned vertical handles between rim and shoulder; concave lower body; thick dimple base.

Temper: small and occasionally medium-sized grey chert inclusions.

Dec: none.

Col: 5Y 8/4 throughout.

lls: *PJ 1*, pl. 140.4, pl. 145.5 [ca. A.D. 720, mid 2nd/8th Century respectively].

2. CN 10242. XXIXC 4.5. Body & base.

Form: thin-bodied jar, with finger 'rilling' marks int.; fine ribbing on mid-body ext. evenly interrupted by broad vertical finger grooves; pared base and lower body.

Temper: many small grey chert and white limestone grits, occasional larger limestone pieces.

Dec: ribbing/finger grooves on mid-body.

Col: core - 2.5Y 7/4

int. & ext. - 2.5Y 8/2

lls: see next entry for similar base-types.

3. CN 10228. XXIXC 4.1. Base.

Form: thin-bodied jar with pronounced finger 'rilling' marks int. and knife trimming marks ext. & under base.

Temper: many small grey chert grits; aerated fabric.

Dec: none apparent

Col: core - 10YR 7/4

int. & ext. - 10YR 8/3

lls: de Vaux & Steve 1950, pl. C nos.

- 5-7 [10th-11th Century].
 Sauer 1982, p.333, Fig.5 [Abbasid
 ca. 750-969 A.D.].
 Tzaferis 1983, p.34, Fig.8.16
 [Phase III, towards the mid 8th
 Century].
 Meyers *et al.* 1976, Fig.7.22.56
 [Stratum VI, 640-850 A.D.].
4. CN 10229. XXIXC 4.1. Base.
 Form: as previous entry.
 Temper: as previous entry.
 Dec: none apparent.
 Col: core - 10YR 7/4
 int. & ext. - 2.5Y 8/2
 Ils: as previous, especially:
 Tzaferis 1983, p.34, Fig.8.17
 [Phase III, towards the mid 8th
 Century].
 Meyers *et al.* 1976, Fig.7.22.57
 [Stratum VI, 640-850 A.D.].
5. CN 10232. XXIXC 4.3. Base.
 Form: thin-bodied jar with knife-
 trimmed flat base.
 Temper: same as CN 10242 (table
 10.2).
 Dec: none apparent.
 Col: 5Y 7/3 throughout.
 Ils: Tzaferis 1983, p.34, Fig.8.19
 [Phase III, towards the mid 8th
 Century].
 Meyers *et al.* 1976, Fig.7.22.52
 [Stratum V-VI, late 5th - mid 9th
 Century A.D.].
6. CN 10277. XXIXC 3.3. Base.
 Form: as previous entry, but mild fin-
 ger 'rilling' int.
 Temper: as previous entry.
 Dec: none apparent.
 Col: 2.5Y 8/2 throughout.
 Ils: Meyers *et al.* 1976, Fig.7.22.45
 [Stratum V-VI, late 5th-mid 9th
 Century A.D.].
7. CN 10218. XXIXB 2.1. Rim Sherd.
 Form: thinly thrown jar with outplayed
 neck; body perhaps as CN 10242
 (Table 10.2).
 Temper: small and occasionally
 medium-sized grey chert grits; aerated
 fabric.
 Dec: none apparent.
 Col: 5Y 7/2 throughout.
 Ils: Meyers *et al.* 1976, p.219-220,
- Fig.7.19.21 [Stratum VI, 640-
 850 A.D.].
8. CN 10230. XXIXC 4.2. Rim/neck.
 Form: flask; irregular grooves on neck
 ext.
 Temper: same as CN 10242 (Table 10.2)
 Dec: none apparent.
 Col: 2.5Y 8/2 throughout.
 Ils: Tzaferis 1983, p.34, Fig.8.22
 [Phase III, towards the mid 8th
 Century].
9. CN 10236. XXIXC 4.4. Large rim/body
 sherd.
 Form: deep carinated bowl.
 Temper: same as previous entry.
 Dec: incised double zigzag lines within
 a continuous panel formed by one upper
 and two lower cut grooves ext.
 Col: core - 5Y 7/4
 int. & ext. - 5Y 7/3
 Ils: *PJ I*, p.148, pl.147.4&5 [possibly
 post A.D. 746/7].
 Tzaferis 1983, p.32, Fig. 4.22
 [Phase III, towards the mid 8th
 Century].
 Meyers *et al.* 1976, p.212, Fig.7.
 18.6 [Stratum VI, 640-850 A.D.,
 although authors
 favour 12th Century].
10. CN 10253. XXIXC 5.3. Complete.
 Form: jar lid with string-cut markings
 on flat top.
 Temper: small white limestone and
 brown (?grog) grits.
 Dec: none.
 Col: 2.5Y 8/2 throughout.
- Ware: "Fine Byzantine Ware"* (Gichon
 1974).
11. CN 10246. XXIXC 5.2. Complete.
 Form: deep bowl (=cup) with pared and
 grooved base.
 Temper: very small white limestone
 and chert grits.
 Dec: body between pared base and rim
 spiral-burnished with the paring knife.
 Col: core - 7.5YR 7/4
 int. & ext. - fabric 7.5YR 6/4, bur-
 nishing 5YR 6/6
 Ils: Gichon 1974, p.123 [Early Arab,

perhaps 9th c. A.D.].

de Vaux & Steve 1950, p.123-4,
pl.B nos 1&2 [9th-10th Century
A.D.].

Schneider 1950, p.116 no.503
[end of the Byzantine Period and
the beginning of the Arabic Period
(p.118)].

Baramki 1944, Fig.7.21 [disturbed
level].

Saller 1957, p.270 no. 5889 [6th
to 8th Century A.D.].

Ware: Incised Fine Terracotta (later var.
of *PJ 1*, p.155?).

12. CN 10248. XXIXC 5.2. Largely com-
plete.

Form: straight-sided cup with slightly
outsplayed rim.

Temper: many small white limestone
grits; fabric close to white painted met-
allic terracotta.

Dec: incised date palms (note date bun-
ches) within finely 'chiselled' borders
on smoothed surface ext.

Col: core - 10YR 6/2

int. & ext. - 10YR 5/1

lls: Gawlikowski 1986, pl.XII - but
white (or red?) painted lines in
place of incised dec. [late
Umayyad/Abbasid].

Abbreviations used in tables 8, 9 and 10

CN: Catalogue Number from the registra-
tion book of the pottery type series.

Dec. decoration.

Col. colour (from Munsell colour charts).

int. internal faces.

ext. external faces.

lls: parallels. See text for the significance
of the parallels quoted. Dates in square
brackets are those stated in the refer-
ence. Dual dates are A.H. / A.D.

pl. plate.

var. variation.

ter some 50 cms the wall bottomed out and excavation ceased.

Plot XXIXB. (Excavated by A. G. Walsley)

As with plot XXIXA, this plot was intended to section across a wall of the Eastern Building already visible on the surface. The area chosen for Plot XXIXB was on a highpoint at the northwest corner of the building where, it was surmised, the depth of deposit would have preserved the occupational sequence of the site. For this reason plot XXIXB, which measured 6 m. east-west by 3 m. north-south, was laid out over an inside, rather than outside, wall of the building.

Excavations on either side of the wall revealed an earlier major and a later minor period of occupation separated by a collapse layer of about 45 cms. The occupation levels were represented by various domestic features such as feed bins and a *tabun*, associated floor surfaces, and a number of artefacts. These included an iron dagger blade and a complete ceramic lamp as well as sherds (see below), glass fragments and small pieces of moulded white marble. Bone, especially chicken, was the most common ecofact.

The architectural remains in plot XXIXB consisted of two stone-block and rubble walls. The more substantial Wall 1, some 60 cms wide, was constructed in a foundation trench cut into the streaky white and brown sterile silts that underlie the site. The east face of this wall is a competent construction in which fairly large stone blocks (*i. e.* can be lifted by two men) with roughly dressed outer faces have been laid in even courses on rubble foundations. Snecking was used liberally. In contrast the west face was usually little more than rough packing behind the uneven internal surfaces of the eastern face blocks. Wall 2, in the south baulk, was of poorer quality and, as it abutted Wall 1, later in date.

Plot XXIXC. (Excavated by S. L. Bassett)

This plot was a 6 m. (north-south) by 3 m. (east-west) sounding midway along the approximately 34 m. long southern

wall of the Eastern Building. It was envisaged that XXIXC would provide a section either side of the wall, both outside the building (south of the wall) and within it. It was also thought that a *mihrab* would be found here if this building had served as a mosque.

The excavation of plot XXIXC failed to find any evidence for a mosque, but instead exposed a complex arrangement of subsidiary walls with associated floors and features on either side of the main southern wall of the Eastern Building (Fig. 6). A series of floors/occupation levels were identified in the room bound by walls 1, 4, and 5 (locus 3 levels 2-4). Under the lowest of these floors another surface (loc. 3 lev. 5) was exposed which ran under wall 1 and was cut by the footings of wall 4. However this surface abutted walls 5 and 2, placing these two walls chronologically earlier than walls 1 and 4. Walls 2 and 3, which were one continuous construction of rather poor quality, had traces of a white-plastered outer face and the remains of a painted Greek inscription on the east face of the northern end of wall 2.

Unfortunately the construction of wall 1 destroyed the structural relationship between walls 5 and 2/3, and it is therefore uncertain if they were built at the same time. Their poor alignment would suggest otherwise, as would stratigraphical considerations. In the later occupational period (walls 1, 4, and 5, room with floors), walls 2 and 3 were no longer functional. They were dismantled to their lowest course and filled over with ashy earth, probably during the construction of wall 1. This fill around walls 2 and 3 was subsequently cut by two deep rubbish pits which were, therefore, most likely contemporary with the occupation of the room on the other side (north) of wall 1 (Fig. 6, East section). These pits contained a wide range of broken ceramic vessels as well as other artifacts of iron (dagger, nails) stone (limestone box, marble fragments, tesserae) and some glass fragments. Bone (fragmentary — as yet unidentified) was also present.

Thus a provisional three-phase chrono-

logy can be suggested for XXIXC.

1. The original construction, of which only walls 2 and 3 remain. Fragmentary Greek inscription on wall 2 (*in situ* ?); function uncertain.

2. Additions or rebuilding, evidenced by wall 5. Its relationship with walls 2 and 3 is unclear, but these walls were still exposed in this phase (common surface with wall 5).

3. Major reconstruction. Walls 2 and 3 probably destroyed, walls 1 and 4 built, incorporating the already standing wall 5. Note that wall 1 is built around the southern end of wall 5 (Fig. 6). Domestic occupation with living surfaces and rubbish pits.

However it is possible that the walls in phases 1 and 2 were part of the same building, or wall 5 was the original construction with walls 2 and 3 as later additions. Further excavations in this area, planned as part of the Program Grant, may illuminate this problem.

*Plot XXIXD. (Excavated by A. G. Walm-
sley)*

Another 6 by 3 metre sounding was put down near a column and wall structure at the eastern end of the Eastern Building. It was thought this could represent a gateway into the compound of the building. However it quickly became apparent that this plot was outside the eastern limits of the building as only levels of redeposited sherds within a gravelly wash were encountered. It was also concluded that the architecture referred to above was the superstructure of a ?Medieval grave, and once no further pottery was being recovered from the wadi wash the plot was immediately abandoned.

The Pottery and Other Artifacts from XXIXB and XXIXC

The bulk of the diagnostic pottery from Area XXIX came from the pits in plot C (see above). This consisted of broken but complete, or near complete, domestic pottery vessels, including small and large jars — some painted in either white or red designs — juglets with white painted decora-

tion, coarse ware cooking jars and bowls with their lids, as well as a variety of other bowls and basins in dark grey, red-orange, or off-white wares. One pit also contained pieces of a yellow, green and purple-brown glazed bowl. In addition a few sherds were recovered from stratified primary deposits in plot B. All of these were from vessels of the same ware and shape as those found in the refuse pits of XXIXC. The other artifacts recovered from plots B and C have already been mentioned (above).

Comments on the Pottery (Figs. 7-9, Tables 8-10)

The selection of pottery from plots XXIXB and XXIXC published in this report concentrates on the material from XXIXC pits (see Tables 8 to 10 for the catalogue). A preliminary study of this pottery has identified eight ware subdivisions within the corpus. Both the ware types and the vessel shapes have much in common with the late Umayyad (second quarter of the 8th Century A.D.) ware recovered from the domestic housing complex in Area IV and the Civic Complex of Area XI (*PJ I*, chs 7 & 8), although the appearance of new forms and manufacturing techniques would suggest this corpus is of a post A.D. 747 date.

Fig. 7 (descriptions in Table 8) illustrates examples of two distinctively A.H. 2nd/8th A.D. Century ceramic types. The white painted 'Metallic' Terracotta jars, flat-based bowls, tall jugs and spouted juglets have mid-Eighth Century A.D. parallels in both form and decoration (Fig. 7.1-6, see Table 8 for selected parallels). The large, thin-bodied, ring-based jars (Fig. 7.7&8) decorated in purplish-brown paint on a light fabric do not make an appearance at Pella until the early 8th Century, and only become popular there in the decade or so prior to the A.D. 747 earthquake (*PJ I*, p.156). Thus on the basis of these examples the pottery from the pits in plot XXIXC should not be dated earlier than *ca.* A.D. 715-730.

The hand-made grey ware basins, coarse ware cooking pots and casseroles, and white-painted thin-walled amphora

illustrated in Fig. 8.1-7 are less diagnostic than the previous examples, although the parallels quoted in Table 9, especially those from Jerash and Area IV at Pella, leave little doubt that these vessels belong to the Early Islamic Period. Of particular interest is the cooking jar CN 10255 (Fig. 8.4, Table 9.4), already known at Pella from a late Umayyad context (*PJ 1*, p.148 CN 43). However the discovery of a group of these cooking pots during the excavation of an early Abbasid potters' workshop to the north of the South Decumanus at Jerash suggests that this form remained popular well into the 9th Century A.D. (Homès-Fredericq & Franken 1984, p.235-6 nos 763 & 764; for dating see Gawlikowski 1986, p.117).

Quite outside the ceramic tradition of Umayyad Pella is much of the pottery illustrated in Fig. 9. Although wares are similar to the Umayyad types (Table 10), this cannot be said for both the vessel shapes and their methods of manufacture. The new forms consist of pale cream ware jars with thin walls and a knife-trimmed base (Fig. 9.2-8) and also finely made cups, either burnished with a pared and grooved base or incised (Fig. 9.11-12). The extensive use of a paring knife is characteristic of this pottery, as is the deep finger rilling marks on the inside of the pale cream jars. Incised pale cream ware bowls (Fig. 9.9) are already known from Pella (*PJ 1*, pl. 147.3-5), although their continued absence from the Umayyad destruction levels in both Area IV and Area XI (the Civic Complex) is a potent argument in favour of placing these bowls in the period after the A.D. 747 earthquake (*PJ 1*, p.148).

Dating of the Pottery

The appearance of new forms amongst the pottery from plots XXIXB and XXIXC, especially the presence of sherds from a yellow, green and purple-brown glazed bowl, would strongly imply a post-Umayyad date for this corpus. This view finds additional support from many of the parallels quoted in Table 10. Particularly noteworthy is the burnished cup with a pared and grooved base (Fig. 9.11), reliably dated at

Abu Ghosh to the 9th and 10th Centuries A.D. (de Vaux & Steve 1950, p.123-4; cf. Gichon 1974, p.123). Furthermore the pale cream ware bowls and jars, with their incised and applied decoration and pared bases respectively, are commonly ascribed to the Abbasid Period. These may have started as early as the end of the 8th Century, but were very frequent in the 9th and 10th Centuries A.D. (de Vaux & Steve 1950, p.127-30; Sauer 1982, p.333; Meyers *et al.* 1976, p.219-20, 232-3). Dissenting views are held by Tzaferis (1983, p.32-5) who dates his "buff ware" bowls, jugs and flasks from Kursi to the early - mid 8th Century, and by Meyers *et al.* (1976, p.212) who prefer a 12th Century date for the incised bowls at Kh. Shema. However the Pella evidence refutes both of these opinions, as both the incised/applied decorated bowls and the pared-base jars in a pale cream ware are not present in either the extensive pottery corpus from the late Umayyad destruction level in Area IV (*PJ 1*, ch.9), or the material from Medieval deposits in Areas II (Smith 1973, p.236-43) and XVII (*PJ 2*).

Conclusions on the Pottery

The pottery from the pits and occupation levels in plots XXIXB and XXIXC shows an interesting mix of both late Umayyad and 10th-11th Century late Abbasid/Fatimid ceramic traditions (compare, for example, the Umayyad assemblages in Smith 1973 and *PJ 1* with the pre-Crusader material in de Vaux & Steve 1950, p.119-32; see also Sauer 1982, p.330-4). Accordingly this pottery is datable to the intervening period, most probably the very late 8th to mid-9th Centuries A.D. During this time Islamic Pella (Fihl/Fahl) functioned as a capital of a 'qurah' (district) in the *Jund al-Urdunn* (see the contemporary sources of Ibn Khuradadhib, Ed. de Goeje 1889, p.78.7 and al-Ya'qubi, Ed. de Goeje 1892, p.327.22).

The Significance of Area XXIX

The discovery of the first well-stratified Abbasid remains at Pella has further

expanded the Islamic cultural history of the Fihl region. Until this season only the 1st/7th and 2nd/8th Centuries and the Mamluk-Early Ottoman Periods were definitely represented in the occupation levels of the site. Hints of an Abbasid presence had been found on the main mound in the form of a post-Umayyad destruction refuse pit in plot IVC and stray surface sherds in IVS (originally thought to be possibly Umayyad — see *PJ 1*, p.148), but these finds lacked confirmation.

The architecture and artefacts from Area XXIX, when taken with the finds from the main mound, indicate a reasonable Abbasid presence at Pella. The existence of a rubbish pit on the main mound suggests associated houses, and there is some architectural evidence for these (e.g.

wall stubs in IIIA). The function of the structure in the Wadi Khandaq remains unclear, although both its size and layout suggests it is more than a mosque. Possibly it served as the market and *khan* of the early Medieval settlement of Fihl, although further excavation is required before the full plan of the complex becomes clear. Also unresolved is the building's date of construction. If the Greek inscription was *in situ*, then the post-Umayyad, even post early 8th Century A.D. date, is unlikely for the original structure. However the tentative Phase 3 could easily be Abbasid. These tantalizing problems must remain unanswered until time and finances permit our return to Area XXIX.

(A. G. W.)

A SUMMARY OF OTHER STUDIES AND PROJECTS

The ceramic technologist Mr. Ian Edwards carried out further kiln tests, concentrating his efforts on the heat treatment of flint (a study of considerable importance for the Natufian culture); further studies of clay sources are in train, along with an examination of the ceramic technology of the different periods represented on the site (see *PJ 2*, appendix 10).

Mr. Stephen Bourke has continued work on the human skeletal material, particularly the material from Tombs 64 and 62. The discovery of Natufian skeletal remains on site W.H. 27 has added a new dimension to the study of human beings in the Pella district, expanding the chronological range enormously (see *PJ 2*, appendix 3).

Dr. Christopher Browne continued his work on ancient diseases and abnormalities, concentrating on osteo-arthritis. Some interesting specimens were found in the Roman period population; a number have been taken back to Australia for fur-

ther examination (for results see *PJ 2*, appendix 4).

Dr. Bernard Knapp commenced work on the adaptation of the *Minark* computer programme for recording the ceramic typology. During the season Dr. Knapp also collected clay samples for neutron activation analysis in Australia.

During the 1985 season, special attention was paid to the cataloguing of material backlogged from earlier seasons. This saw, by the end of the season, the late Bronze and Iron Ages, Hellenistic, Late Roman, Byzantine and Umayyad ceramic backlogs fully recorded and mostly drawn, much to the credit of those involved. The glass cataloguing was also brought up to date by Miss M. O'Hea. Intensive drafting (Kathryn Eriksson, Leanda Randle, Sue Thorpe and Ian Edwards) as well as artifact conservation (Noel Siver) continued throughout the season.

(A. W. McN.)

OTHER ACTIVITY DURING 1985

The research team associated with the University of Sydney's excavations at Pella concentrated their attention on two significant objectives during 1985.

i» The bulk of our research time was occupied with the preparation of the second interim report of the Joint Sydney - Wooster Expedition to Pella (*PJ 2*, forthcoming). This exercise made us aware just how much has been accomplished since the publication of the first interim report (*PJ 1*, 1982).

ii» The award of an Australian Research Grants Scheme 'Program Grant' to ensure funding and the continuation of excavations at Pella until 1992. Our deepest gratitude is due to the A. R. G. S. Committee

for this award, which will facilitate detailed forward planning and allow greater flexibility should unforeseen discoveries occur. In this regard, the continuing support by the Council and Director (Mr. James Mollison) of the Australian National Gallery is also gratefully acknowledged.

So, in effect, 1985 was a pivotal year during which the University of Sydney's Pella team set about assessing its past achievements. From this basis, and with the knowledge of guaranteed funding, the team is currently putting the final touches to the future research objectives of the excavations.

(A. W. McN.)

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ROMAN INSCRIPTIONS FROM THE SIQ OF PETRA

Remarks on the Initial Garrison of Arabia

by

F. Zayadine and Z. T. Fiema

In 1979-80, the clearance of accumulated debris from the Siq of Petra was undertaken by the Jerash-Petra Tourist Project, under the supervision of Muḥammed Murshed. This operation led to the discovery or rediscovery of several Greek inscriptions. The most significant are engraved on the southern cliff of the Siq, about 400 m. from the Khazneh. At this point where the two kilometer gorge narrows, nine cultic niches have been recorded by Dalman (Nos 148-161)¹. The most remarkable cult monuments are Nos 149-150, which represent a deity standing between two animals, dedicated by Sabinus Alexandrus and the hemispheric baetyle of Adraa (Der'a in the Hauran).

I. The Initials of the IIIrd Cyrenaica: (Fig. 1)

This short inscription has been noticed by Brünnow and von Domaszewski in *Die Provincia Arabia*, I, p. 221, who refer to previous explorers, but it was erroneously interpreted. Dalman records it under No. 157, to the right of the Adraa Baetyle, without interpretation. Recently, the inscription has been brought to public attention by F. Zayadine,^{1bis}. Although it is short and contains only the name of the military unit, it is significant because of the

shortage of military inscriptions in Petra.

The approximate dimensions of the inscription are : 43 cm. in length and 10 cm. in maximum height (*rho*). It reads Γ KYP to be interpreted: τρίτη Κυρηναϊκή] (Legio III Cyr (enaica).

To our knowledge, it is the first dedication of the legion written in Greek at Petra. A funerary plaque in Latin, previously found in the vicinity of Petra mentioned C. Antoninus Valens, an *eques* of the IIIrd Cyrenaica, and was dated by the authors of publication to approximately the first half of the second century A.D.² The abbreviated Greek form used here is not unknown, and the best comparative examples come from Bostra,³ which was the legionary headquarters throughout the history of the province.

Although no precise date can be established for the inscription from Petra, an attempt can be made to offer an approximate chronological appreciation through the reconsideration of the early military history of Arabia.

The examination of the Papyri Michigan 465, 466, 562⁴ in recent years led to the assumption that it was the IIIrd Cyrenaica which formed the core of the first garrison of Arabia⁵. Indeed, the military

1. *Petra und seine Felsheiligtümer*, Leipzig, 1908, p. 145-147.

1bis. F. Zayadine, 'Tempeî. Gräber, Töpferöfen'. In: *Petra. Neue Ausgrabungen und Entdeckungen*. Ed. by Manfred Lindner. Delp Verlag, München 1986. Reference to the inscription is on page 224.

2. C. M. Bennett and D. L. Kennedy, A New Roman Military Inscription from Petra. *Levant* X, 1978, p. 164.

3. M. Sartre, *Inscriptions grecques et latines de la Syrie. Tome XIII, Fasc. I. Bostra*. Paris: Geuthner 1982. Inscriptions: 9452 (Γ KYP) 9396 (Γ KYP) dated for A.D. 320-21; 9182 (ΕΓ III KYP); 9089 (ΑΕΓ KYP); 9002 (ΑΕΓΓ KY..)

4. Herbert Ch. Youtie and John G. Winter. *Pa-*

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5. Glen W. Bowersock. *Roman Arabia*, Harvard University Press, Cambridge, Mass. 1983, 81; 'Nabataeans and Romans in the Wadi Sirhan,' *Pre-Islamic Arabia*, vol. II, King Saud University Press, 1984, p. 134; Michael Speidel. Arabia's First Garrison, *ADAJ* XVI, 1971, 112; The Roman Army in Arabia, *ANRW* II.8, 1977: 693-94; David L. Kennedy. Legio VI Ferrata: The Annexation and Early Garrison of Arabia, *HSCPh* 84, 1980 : 282-309.

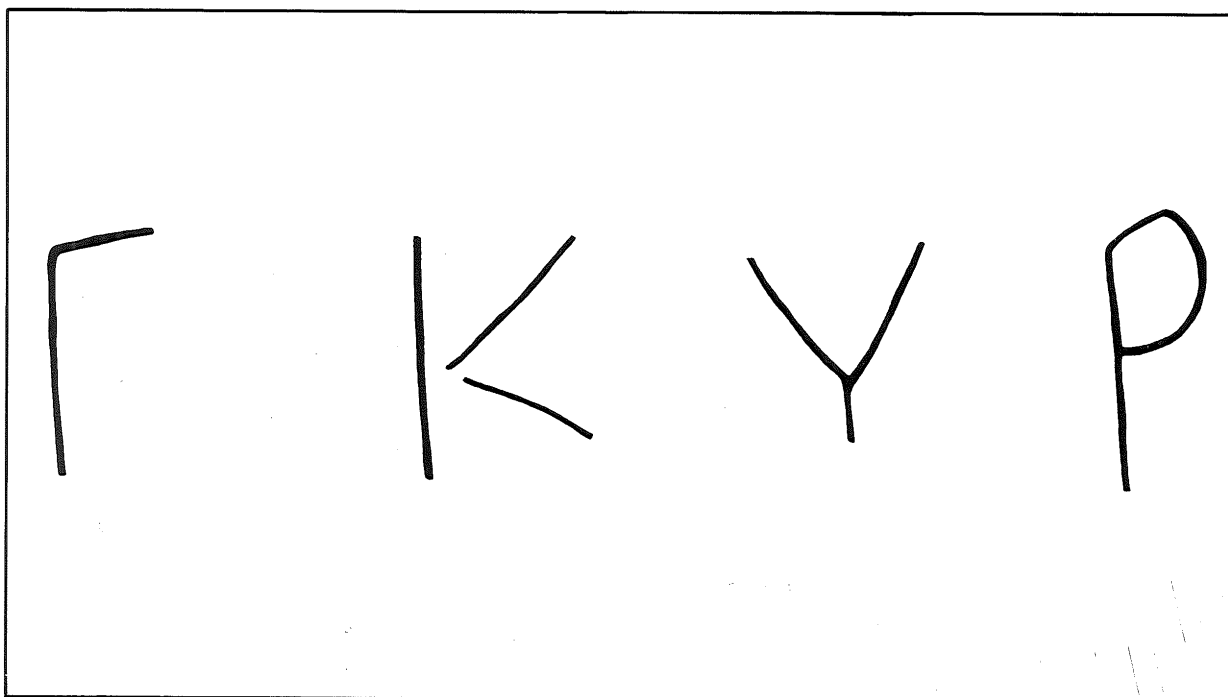


Fig. 1. The initials of the IIIrd Cyrenaica (after Z. T. Fiema)

membership of Julius Appolinarius, an Egyptian N.C.O. and the author of letters sent to Egypt from Petra in A.D. 107 seems to be reasonably well established. The whole assumption has been considerably strengthened in an article by D. Kennedy whose attractive hypothesis presents the reconstruction of movements and transfers of the Eastern legions during the Trajanic-early Hadrianic period.⁶

However, the questions about the annexation forces and the initial garrison of Arabia may need to be re-addressed. It has been already voiced that the Roman invasion may have been in fact a two-pronged operation, with the troops from the North (with Cornelius Palma, the governor of Syria) and the South involved.⁷ Palma had been granted the *ornamenta triumphalia* by Trajan for his Arabian exploits⁸ and apparently the Syrian forces from his "im-

perium" were present in the annexation army as well as additional, supportive troops. It would be unreasonable to assume that the governor of Syria commanded the forces from Egypt only during the operations in Arabia. Thus in A.D. 106 Arabia possessed the occupation garrison consisting apparently of Syrian legionary forces, and the legio VI Ferrata had been for long voiced as the best candidate.⁹ Since the whereabouts of the VIth Ferrata in the first decade after the annexation is not precisely known¹⁰ and the inscriptions of that legion, found in Jerash and Amman are dated probably to the early Hadrianic period,¹¹ the first question emerges: when the Syrian legionary forces left Arabia; immediately with Palma or sometime later?

Divorcing ourselves here from the discussion concerning the early capital of Arabia, it should be stated that the choice of

6. Kennedy, *Legio VI Ferrata*... pp. 282-309.

7. Bowersock, *Roman Arabia*, 81; Bengt E. Thomasson. *The One-Legion Provinces of the Roman Empire during the Principate. Opuscula Romana IX: 7*, 1974 pp. 64, 66.

8. *Corpus Inscriptionum Latinarum* (CIL) VI. 1386 = Dessau: *Inscriptiones Latinae Selectae* 1023.

9. Ritterling, 'Legio'. In: *Paulys Real Encyclopädie* (begonnen von G. Wissowa) = P-W

24. 1486, 1510, 1591. Recently, the hypothesis of the VI Ferrata as the initial garrison is supported by M. Sartre (see bibliography).

10. Ritterling, 'Legio VI Ferrata' in: *P-W* 1590. Besides very fragmentary inscription of that legion from Rhaphaneae, nothing is known definitely about its whereabouts in the beginnings of the IInd century A.D.

11. Kennedy, 'Legio VI Ferrata'.. pp 299, 302.

Bostra as the legionary headquarters of Arabia had in fact larger strategical importance than the security of Arabia alone. J.C. Mann expressed the opinion that the place had been selected as far North as possible, so a legion stationed there could concentrate rapidly with the main strategical forces of Syria if a military deployment on the Parthian border was necessary¹². The stationing of a Syrian legion in Bostra would thus satisfy strategically the military needs of both Syria and Arabia.

The presence of an Egyptian soldier in Petra in A.D. 107 supports an assumption of a two-pronged invasion. Second question however concerns the problem if the IIIrd Cyrenaica was present in Arabia in its full strength or only as a separate detachment. On the basis of the Appolinarius' letters, M. Sartre argued that the headquarters of the IIIrd Cyrenaica was still in Nicopolis that time. Furthermore discussing the rank of Claudius Severus, Sartre argued that only the Syrian legion could be considered as Arabia's first garrison, with vexillatio(nes) of the IIIrd Cyrenaica as supportive troops¹³. Indeed, the title of Severus (ὕπατικός; ὑπατικός τῆς λεγεῶνος) mentioned in Pap. Mich 466 caused a confusion, but it was most plausibly explained as a "governor"¹⁴. However, if we accept that in A.D. 107, the garrison of Arabia consisted only of legio III Cyrenaica (in its full strength), some other assumptions will have to be taken into consideration as well, namely:

- a. Claudius Severus would have been appointed *ad hoc* as the commander of the occupation legion (since of senatorial rank, he could not have commanded that legion while still in Egypt) and the first governor. If he were originally on

Palma's staff, possibly he had commanded one of the Syrian legions, the command of which he must have now handed over to someone else.

- b. an officer commanding the IIIrd Cyrenaica in Egypt up to now (either a *praefectus* or *primipilaris*¹⁵) would have to be relieved of his command or made a subordinate of Claudius Severus.
- c. if the *whole* legion participated in the Parthian War, thus in 115 there must have been a successive rapid change in command (knight or senator?). In 116 a *vexillatio* of legio III Cyrenaica was in Jerusalem, probably subduing Jewish revolt¹⁶. Finally, according to hypothesis presented by D. Kennedy, the legion was transferred back to its old headquarters in Nicopolis¹⁷, where it is attested in A.D. 119. Again, if in Mesopotamia the legion was led by a senator, there would be another change in command necessary now.

One may wonder, if it would not be safer to assume, that instead of continuous transferring of the *whole* legion including the rapid changes in command, legio III Cyrenaica during Trajanic period operated at large in shape of independent vexillationes being detached to particular forces according to the needs occurring, and its permanent camp throughout the period was still in Nicopolis at least till A.D. 123.

Thus, it is perhaps not out of place to suggest that legio VI Ferrata was the initial garrison of Arabia, with some supportive troops of the IIIrd Cyrenaica. In such a case, Claudius Severus, most probably a commanding officer of the Syrian legion was the first governor of the province and simultaneously the commander of all milit-

12. John C. Mann. 'The Frontiers of the Principate.' *ANRW* 11.1.1974, p 552.

13. M. Sartre. *Trois études sur l'Arabie romaine et byzantine*. Collection Latomus vol 178. Bruxelles 1982, p. 79; M. Sartre. *Inscriptions grecques et latines...* pp. 234-36.

14. Bowersock. 'A Report on Arabia Provincia', *JRS* 61, 1971, 232.

15. A praefectus of equestrian order (*praefectus exercitus qui est in Aegypto*) see Ritterling, P-W, 1510, 1513. The actual commanding and administrative duties rested probably with a *primipilaris*, see Valerie Maxfield. *The Military Decorations of the Roman Army*. University of California Press, L.A. & Berkeley 1981, p. 24.

16. See references and discussion in Speidel, 'The Roman Army..' 693.

17. Kennedy, 'Legio VI Ferrata'.. p. 307.

ary forces in Arabia.

In such a light, the affair of Iulius Appolinarius may be differently interpreted. By calling Severus as ὑπατικός τῆς λεγεῶνος, Appolinarius refers actually to the rank of Severus as the commander of the VI Ferrata the most powerful and in its full strength, military unit stationed in Arabia.

Although there is no clear indication of Appolinarius' transfer to another legion (in such a case, a headquarters cohort of the VIth Ferrata in Bostra), such an interpretation is not impossible either and was already discussed elsewhere¹⁸.

The remarks presented above are highly hypothetical, however an example of similar situation from neighbouring province can be cited here. Having conquered Jerusalem, Titus, the supreme commander of the Roman army had left the task of final pacification of the country to Sex. Vettulenus Cerialis, the commander of legio X Fretensis stationed there and simultaneously the first governor of the post-war Judaea.¹⁹

The short discussion presented above shows that whereas the idea of the presence of the IIIrd Cyrenaica in Arabia, from the beginning of the province (with eventual interval of A.D. 115-123) seems to be hypothetically more attractive, the doubts about the presence of the whole legion are still existent, until a new epigraphic evidence emerges. Meanwhile, it would be safer to date the new military inscription from Petra to the post-Hadrianic period for which the final establishment of that legion in Arabia is well attested. The Latin dedication of L. Velinna Firmus, a centurion of the IIIrd Cyrenaica, recently discovered at Madaba and dated by P-L. Gatier²⁰ to the

mid second century A.D., together with another dedication of the same legion discovered at Jebel Qu'eis in Southern Hauran,²¹ tend to confirm this opinion.

II. Sabinus Panegyriarches:

This Greek dedication is chiselled in a *tabula ansata*, under the relief of a standing god, flanked by two antithetic animals. It has been deciphered by Dalman, under no. 149 (*Petra*, p. 145). Length of the inscription: 75 cm; H. of B: 6,5 cm.; Omegha: 3 cm.

Text : (Pl. XXVIII)

- | | |
|-------------------|------------------|
| 1. CABEINOC ΑΛΕΞΑ | Σαβεῖνος Ἀλέσα |
| 2. ΝΑΡΟC ΠΑΝΗΓΥΡ | νόρος πανηγυρ(ι) |
| 3. ΑΡΧΗC ΑΔΡΑΗΝΩΝ | άρχης Ἀδραηνῶν |
| 4. ΕΥΣΕΒΩΝ ΑΝΕ | εὐσεβῶν ἀνέ |
| 5. ΕΗΚΕΝ | (θ)ηκεν |

Translation:

Sabinus Ale(x)andros, panegyriarches of Adraa, in piety dedicated.

Commentary:

Some Greek misspelling occur in the inscription:

Line 1: Alesandros for Alexandros; line 2: *panegyrrarches* for *panegyriarches*; line 5: *epilson* for *theta*.

Sabinus Alexandrus was a *panegyriarches* (president of festivals) of Adraa (Der'a). He arrived in Petra to participate, as suggested by J. Starcky,²² in a religious festival. Every four years, the Nabataeans of Petra and Bostra celebrated the "*actia dusaria*", a festival of games in honour of Dusares. A coin of Bostra minted under Decius (249-251)²³ bears on the obverse: "*actia dusaria*" with the repre-

18. Thomasson, 'The One-Legion Provinces' ..., p. 64.

19. Josephus. *De bello iudaico* VII, 163. Bengt E. Thomasson. *Laterculi Praesidum*, vol I, Göteborg: Radius, 1984, p 324. The whole area was still apparently under the "imperium" of the governor of Syria L. Caesennius Paetus, however the responsibility of final pacification and reorganisation of the

province lay with the commander of the legion (X Fretensis) stationed in Jerusalem.

20. Cf. *Liber Annuus*, 37 (1987) forthcoming.

21. D. Kennedy and H.I. MacAdam, 'Southern Hauran Survey', 1985 in this issue, p. 136;

22. *Dict. Bible Sup.* VII, 1964, col. 990.

23. *Idem.*, col. 689 & Fig. 695, 13.

sensation of an altar supporting three baetyles with offerings. According to St. Hieronymus²⁴ (4th century A.D.), an annual festival assembled the bedouins of the Negev in honour of Venus-al-'Uzza, the goddess of Elusa.

As indicated above, Sabinus Alexandrus carved the image of his god, standing between two squat animals. The relief has been unfortunately erased in later periods (probably Byzantine or Arab). It is possible, however, to recognise a god with a large tunic, standing between two opposed bulls. The statue of Qaus found at Khirbet Tannur,²⁵ now in the Cincinnati Art Museum, depicts the god seated between two bulls. Both of these sculptures can be compared to the Jupiter Heliopolitanus of Baalbek,²⁶ flanked by two bulls. It is likely in this case that the standing relief of the Siq represents a Zeus-Dusares (Pl. XXIX, 1).

The hemispheric baetyle of Adraa which is set on a moulded pedestal, has been carved to the right of Sabinus' dedication (Pl. XXIX, 2). The word *panegyriarches* is engraved, once again, underneath. A similar baetyle is reproduced on the coins of the city dated 174 and 177 A.D. with the inscription: "*Dusares theos Adraenon*" (Dusares god of Adraa).²⁷

The pedestal on which the baetyle rests is called in Nabataean: "*motab*" (in Greek *basis*), and derives from the root *yib*, to sit down, to settle ... It appears for the first time on a pedestal found at Teima²⁸ in Arabia and dated to the 6th century B.C. Another pedestal measuring 90 cm. by 40 cm. and bearing the word *motab* in Hatraean, was discovered at Sari in Mesopotamia.²⁹ At Petra, in the Turkmanyeh Nabataean inscription, the *motab* of Dusares is personified and called Harisha.³⁰ It

is evident from all these inscriptions that the *motab* is specifically the seat of the god which can be personified and receive a cult. It is in some cases empty³¹ and can be the symbol of the god's presence.

Both the dedication of Sabinus and the baetyle of Adraa can be tentatively dated to the second half of the second century A.D.

III. Victorinus beneficiarius: (Fig. 2, Pl. XXX, 2)

It is useful to reproduce in this context an inscribed altar, published by F. Zayadine.³² The Greek dedication is engraved on a sandstone altar 0.66 high and 0.33 wide at its base. It is provided on its top with a cup for incense burning and was discovered in 1979 about 500 m. from the Khazneh, opposite the niche which shelters ten baetyles. At this place, the water channel runs behind a rock platform (Pl. XXX, 1) and the altar was engaged in a later period, probably Byzantine, between the rock platform and the channel (Pl. XXX, 3). Since the water channel cuts the base of the arched gate, at the mouth of the Siq, it could be dated to the Byzantine period.

Text:

Θεῶι Ἀγίωι
Ἐπηκόωι *
Οὐκτωρῖνος
β(ene)φ(ικιάριος) εὐξάμενος ἀνέθηκεν

Translation:

To the saint god, who hears prayers, Victorinus, b(ene)f(iciarius), as an ex-voto dedicated.

Commentary:

Line 1: The epithet *saint* which is of orien-

24. *Vita Sancti Hilarionis Eremitae*, P.L. XXIII, 41 (quoted by J. Starcky, *op. cit.* col. 1004).

25. N. Glueck, *Deities and Dolphins*, New York, 1965, p. 195 & Pl. 42.

26. H. Seyrig, 'La triade heliopolitaine et les temples de Baalbek,' *Scripta Varia*, Paris, 1985 p. 3ff and 91 ff.

27. J. Starcky *DBS*, VII, col. 990.

28. *Corpus Inscriptionum Semiticarum*, II, 114.

29. B. Aggoula, *Semitica*, 32 (1982) p. 102-103.

30. J. Catineau, *Le Nabatéen*, II, Paris 1952, p. 4-5, line 3.

31. For example the throne of Astarte at Eshmun, M. Dunand, *Bul. Musée Bey*, 24 (1971) p. 19-26.

32. *ADAJ*, 26 (1982) p. 365.

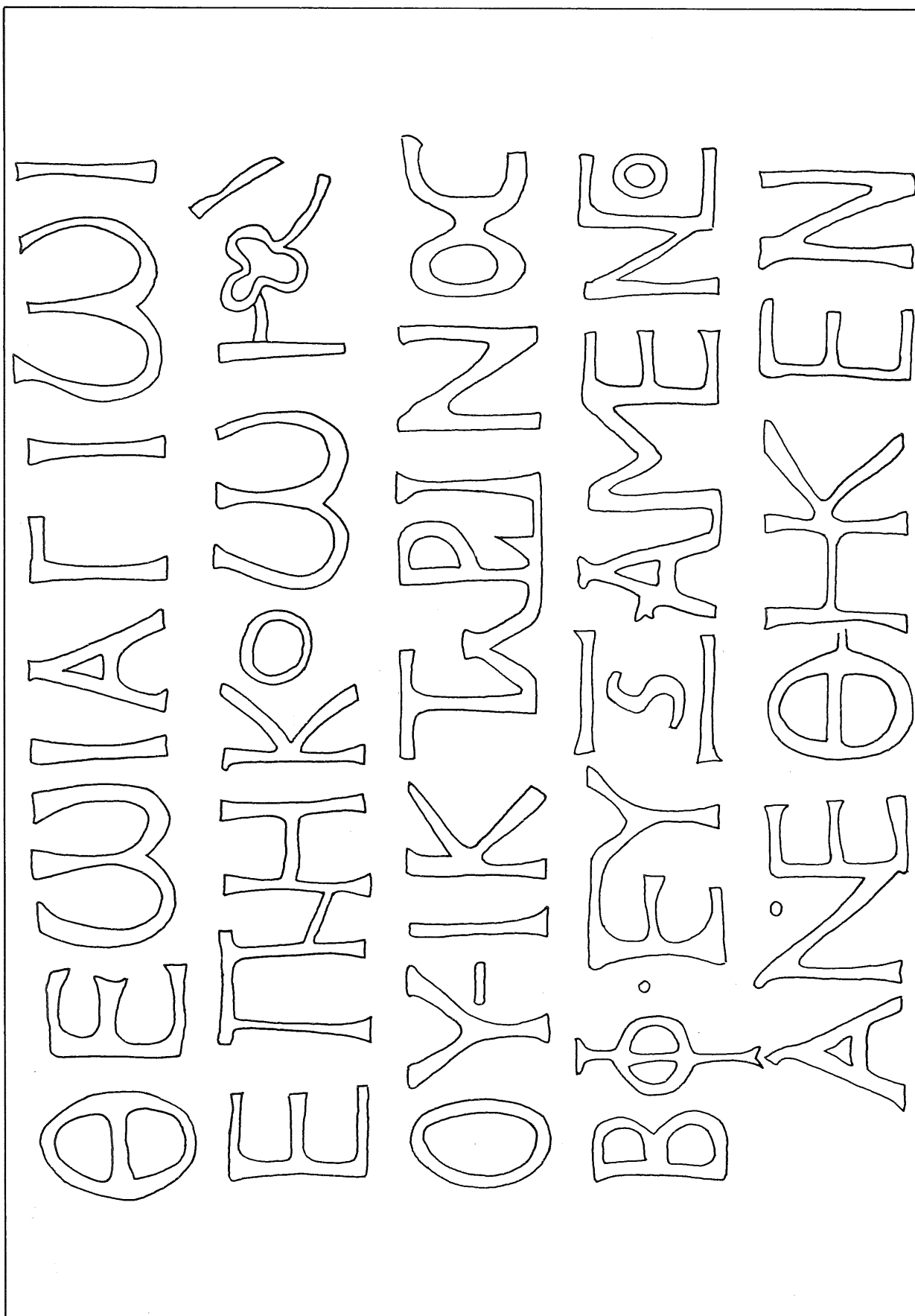


Fig. 2. The inscription of Victorinus (facsimile by Z. T. Fiema)

tal origin is attached to Zeus in the Phoenician cities of Tripoli, Sidon and Baetocece (Qal'at el-Husn). At Petra, an altar with the Greek inscription "To saint Zeus Dusares" was discovered by the Horsfields,³³ on the hill north of Qasr el-Bint temple. Another dedication to saint Zeus Dusares was noticed by J. T. Milik³⁴ at Umm el Biyarah chapel.

Line 2 : "epikoos" "who listens, who hears prayers" is another epithet applied to Zeus. It is likely that the dedication is in this inscription to Zeus-Dusares.

Line 3 : Victorinus is a Roman *cognomen*, well known in Central Italy and Gaule. At Bostra, it appears in a military list of the 3rd century A.D.³⁵

Line 4 : The b(ene)f(iciarius) of the Roman army was a non-commissioned officer attached to the staff of senior (high-ranking) officer as an aide/orderly and serving various administrative duties (clerk) or being entrusted with special missions.³⁶

A considerable number of *beneficarii* would be attached to the staff of a provincial governor (in case of Arabia, a simultaneous commander of the provincial legion). It has been also observed that the number of *beneficarii* in the provincial *officia* increases during the Roman period and by the late second century, the *beneficiarius* is found often associated with

places where customs could be collected^{36a}. In our case, the function of Victorinus is not further specified (*beneficiarius consularis* or not) neither is his status.

The script together with the many ligatures suggest a date in the third century A.D.

General conclusion

It is evidence from the Roman inscriptions which have been surveyed in this note that the Siq of Petra continued to play the role of a sacred way in the Roman period.

On the other hand, the old capital of the Nabataean kings remained a military centre as late as the 3rd century A.D. In the second century A.D., Petra was still an administrative centre, since the Roman governor, Julius Julianus, held his assises in the city.³⁷ Sextius Florentinus, a legate under Hadrian, acquired a tomb between the Nabataean royalties. In a recent article about Wadi es-Sirhan, G. Bowersock³⁸ expressed the opinion that the Roman Emperors reoccupied the Nabataean forts for the defense of the limes. They could certainly not afford to neglect Petra as a major strategic point for the protection of the trade routes between Arabia, Egypt and Syria.

F. Zayadine
Z. T. Fiema

33. *PEQ*, 89 (1957) p.13-14.

34. Cf. C-M. Bennett, *ADAJ*, XXIV (1980) p.211.

35. M. Sartre, *IGLS*, XIII, *Bostra*, Paris, 1982, p. 225 col.2.

36. G. Webster, *The Roman Imperial Army* (London 1974), p. 121.; Maxfield, *The mi-*

litary decorations, p. 31. *IGLS*, VI, Paris, 1967, p.125.

36a. G. Webster, *idem*, p. 263-64.

37. G. Bowersock, *Roman Arabia*, Harvard, 1983, p. 86 & 161.

38. *Ibid.* 'Nabataeans and Romans in the Wadi Sirhan', *art. cit.* especially p. 134.

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AN EXAMPLE OF LOCAL SCULPTURE AT JERASH*

by
Maria Cristina Bitti

In June 1984, a limestone head that appears to be an interesting addition to the current stock of knowledge of local Middle-East sculpture was found at Jerash during the clearing of the area in front of the temple of Artemis (Pl. XXXI, 1). It had been reused in the construction of a channel running from North to South, which was probably part of a new drainage layout for the Artemis cult complex installed under the Umayyads. Had the face not been turned towards the inside of the channel, the piece might not have been discovered, because the back of the head was in no way different in its appearance from the blocks of stone among which it was embedded. This is not a piece of sculpture executed in the round, but rather an high-relief stripped from its original location, as can readily be seen in the side views (Pls. XXXI, 2 & XXXII, 1). The locks of hair, face and neck have been preserved. The overall height is 30 cm. Though slightly less than natural size, the dimensions of the piece are none the less reasonable if one assumes that it was not part of a dedicatory or cult statue.

The head is sculpted in the soft Malki limestone used to build the city's monuments. The features have been executed with particular care. The wavy hair-style,

with no central parting, displays a motif that, as far as official Roman portraiture is concerned, can only be compared with that of a female head of Flavian age¹. Here, since there is no reason to suppose that a portrait is intended, type is determined by two plaits falling down the two sides of the neck and by the laurel wreath around the head. The simple features express a deep pathos. The large eyes sunk on their sockets and the curl of the fleshy lips are in line with the local Hellenistic work most strikingly represented by the head of Alexander the Great from Beth-Shan². The massive neck, too, is consistent with the impression of power the artist has set out to convey. These, indeed, are features that must be borne in mind in the by no means easy task of identifying the subject thus portrayed.

Another consideration, of course, is that the casual nature of this find means that the objective data on which an initial chronological assessment can be made are lacking. Since one can only rely on the style of the piece and its iconographic similarities, the question is complicated by the fact that this is the first example of a local work to emerge from the excavations at Jerash.

Very few examples of Jerashine sculp-

* I would like to thank several people who gave me valuable help in outlining the frame within which this head should be placed: Prof. Giorgio Gullini, director of the Centro Scavi di Torino per il Medio Oriente e l'Asia, and Dr. Roberto Parapetti, director of the Italian expedition at Jerash, whose interest in my work proved a source of stimulating suggestions; Dr. Ghazi Bisheh and Dr. Fawzi Zayadine, of the Jordanian Department of Antiquities, who have been following our work in the Sanctuary of Artemis in a spirit of collaboration and close attention for many years; our colleagues from other teams working at Jerash, especially the director of the French expedition, Jacq-

ues Seigne, a discerning connoisseur of Middle East art; Hans Günter Martin, who gave me much of his time at the Deutsches Archäologisches Institut in Rome, in the search for iconographic forms representative of the Eastern sector of the Roman Empire.

1. The subject is Domitilla. This head is a copy of an original in the Torlonia Museum (Ny Carlsberg Glyptothek, n. 3186, in M. Wegner, *Das Römische Herrscherbild - Die Flavii*, Berlin, 1966, pp. 120-121, figs. 51-52.)
2. This is to be found in the room devoted to the Hellenistic period in the Jerusalem Museum. It is assigned to the 2nd cent. B.C.

ture are known at present, specially in the case of figurative pieces, which were more prone to destruction than any other media of decoration. Besides the better-known examples, such as a head of Zeus and another of Marcus Aurelius, there are large numbers of terracotta figurines which have been produced on large scale at Jerash from the beginning of the Christian era³. These are all linked by a thread of Hellenism that spread throughout the area and remained a strong influence even during the process of its Romanisation. This is a feature that regularly reappears in the finds from the public areas of the city which have been systematically excavated⁴.

Here, however, we are faced with something different. Loyalty to the Hellenistic tradition is not so total, nor can one discern any precise references to the Nabatean tradition, the other mainspring of this area⁵.

The very fact that this head is in a material of much less worth than the white marble used for the other sculptures in our possession suggests the activity at Jerash itself of workshops engaged in the creation of autonomous figurative models. Or better still, the fact that our fragment comes from a high-relief may indicate that these local craftsmen were entrusted with all the architectural decorations, whereas the rich statues which adorned the city's buildings were the work of sculptors steeped in the Hellenised artistic *koine* current in the Eastern regions of the Roman Empire. Hellenism persists here as an acquired her-

itage in the superficial rendering of the iconographic features; it is present in the shading, the soft touches of the scalpel, and in the search for a certain solemnity of expression. Yet this heritage is clearly not understood in its deepest essence: the frontal presentation deprives the image of that intensity and immediacy which were obtained with external devices in Hellenistic sculpture and seemed to spring forth from the interior of the figure. Here there is a type of treatment of the surface which recalls the decorative motifs of the *temenos* in the sanctuary of Zeus, rather than the elaborated and sharply defined outlines of the temple of Artemis.

The piece may well have been originally located near the place where it was found and can thus be referred to some part of the sanctuary itself. It is certain, in fact, that the channel was built with stones taken from adjacent monuments. This is shown by the presence of some perfectly squared blocks from the original stairway leading to the temple. This view is equally supported by a certain interpretation of the iconographic features. As we have said, this is far from being a portrait piece, as can be understood from its rapt, almost supernatural expression. The hair style, with its plaits and the crown of laurel, tells us who the subject is: Apollo, in his best-known image. The local touch has undoubtedly wandered away from the classical idea. Even so, the workmanship is not such as to mask the choice of subject.

3. The head of Zeus is on display in the Amman Archaeological Museum, as are the terracottas that tell us so much of what we know of the iconography of this period (in J.H. Iliffe, 'Imperial Art in Transjordan. Figurines and Lamps from a Potter's Store at Jerash', *QDAP* XI, 1944, pp. 1-24). The head of Marcus Aurelius is at the Ecole Biblique in Jerusalem (*Das Römische Herrscherbild* II.4, fig. 33). The statuettes date from the first two centuries A.D. The head of Zeus must come from the 1st cent. A.D., whereas that of Marcus Aurelius clearly belongs to the great rebirth of Jerash under the Antioines.

4. These come from the North Theatre and were

shown to me by Julian Bowsher, director of the British expedition. They are fragments of lower limbs and heads with different hair styles in white marble. Other fragments are at present in the garden of the Antiquities Department of Jerash and come from the excavations conducted by Mrs. Aida Naghawi near the Eastern Baths. These are part of headless, draped statues of exquisite, classical style.

5. Thought was initially given to the possibility that this head could be a Nabatean piece in view of the markedly local character of its style. Reference to the literature, however, readily shows that different influences are at work (see e.g. N. Glueck, *Deities and Dolphins*, Cassell, 1966).

Now it is no cause for surprise to find a portrayal of Apollo in a cult scenario dominated by his sister Artemis. The association of these two divinities is common enough under the Empire and in this area, where an example is offered by a coin found at Gaza⁶. Yet it is also true that Apollo enjoyed a place in his own right at Jerash. This is made plain by many of the terracotta statuettes in the Amman Museum, where the god is portrayed in graceful Hellenistic forms. Stronger evidence, too, is provided by a 2nd cent. A.D. inscription found in the Northern part of the city, which speaks of a place of worship dedicated to Apollo only⁷.

The cult data thus suggest that our head dates from the period when the city was at the peak of its vitality and may even go back to the Hellenistic stage. Closer dating, however, can be attempted in the light of its style.

This, however, is by no means an easy task. The scholars we have consulted were puzzled by certain aspects of the workmanship. Besides, there is the more objective consideration that there are virtually no reports of similar works in the whole of the Middle East; while the museums prefer to put on display more "classical" pieces and hence tend to attach no more than secondary importance to these undoubtedly significant local forms.

From what has been said so far, one can make a reasonable guess that this head was sculpted in connection with a local revival of Hellenistic sculpture started in Flavian times. The conquest of Palestine may well have led to the introduction of an iconographical heritage, followed by its spread to the neighbouring territories. A head from Qanawat assigned to the end of the 2nd cent. A.D. can be said to mark the end of this revival, since it shows how the path opened by our Apollo led to a Hellenism devoid of all meaning⁸ (Pl. XXXII, 2).

Lastly, a few more words must be said about the original location of this piece. Nothing is known about the roofing — if any⁹ — over the temple of Artemis. As matters now stand, the only structure for which a high-relief can be postulated is the altar. This, however, has only been excavated on the South and West sides and its architectural features have not yet been established¹⁰. It is already clear, on the other hand, that it does not lie on the same axis as the temple, but is shifted to the North. This unusual position may have been rendered necessary by the existence in the courtyard of other structures when the great reconstruction promoted by Trajan and Hadrian began. It may be that these structures were incorporated in the new layout of the temple area and were rendered exploitable when the Umayyads built their kilns on the site. If so, some of

6. Hill, *BMC: Palestine*, pp. IXXV-IXXVI. This coin portrays a nude Apollo with a goddess thought to be Artemis in a temple roughly represented by two columns supporting an architrave.

7. C.B. Welles, "The Inscriptions", n.38, p.392, in C.H. Kraeling, *Gerasa: City of the Decapolis*, New Haven, 1938, pp.355-493.

8. This head and many others are housed in the store-rooms of the Flagellation Museum, Jerusalem (inv. SF204). I am extremely grateful to Michele Piccirillo for his readiness to help me and the great trouble to which he went in the hard job of finding pieces that might be of assistance. I must also thank him for permission to publish this piece for the first time and for supplying me with the necessary chronological and background information, as well as several pho-

tos of the head.

9. With regard to the question of how the temple was covered, the view generally accepted is that expressed by Dr. Parapetti ("The Sanctuary of Artemis at Jerash", *ADAJ* XXIV (1980), p. 145f.). From his examination of the blocks found on the ground and the architecture still standing, he suggests that the roof was never installed because the temple itself was never finished.

10. The altar was partly uncovered during the 1984 season by Dr. Fontana and Dr. Pierobon. Unfortunately, however, the restoration programme has made it necessary to suspend all digs not directly aimed at the work of restoration. The Italian mission has now shifted its attention to the front of the Sanctuary along the *cardo*. It is hoped that the altar and other parts of the terrace will be investigated in the near future.

their material might have been dismantled to build the channel. Our head could thus have been part of their decoration and suffered the same fate.

It is well to remember, of course, that the terrace of the temple of Artemis, like all the rest of the city, still requires extensive clearing and excavations before the work of restoration envisaged by the Jordanian Department of Antiquities can begin. If, indeed, the head proves to have been connected with the temple and its vicinity, it will serve to illustrate the presence side by side of different cultures equally

concerned with efficient transmission of the message to be conveyed by works of art: for the Roman imperialistic attitude, the need to exploit a source of political propaganda; for the pre-existent local craftsmen, the need to survive this foreign presence and still retain their vigour.

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A GROUP OF ROMAN TERRACOTTA APPLIQUES FROM ABILA OF THE DECAPOLIS*

by
Thomas Weber

Abila,¹ a city of the Decapolis,² has been located and partly excavated near the southern banks of the Yarmuk River at modern Quweilbeh (وادي تل القويلبة).³ Apart from other monuments, a glimpse of its importance in antiquity survives especially in its rich cemeteries of chamber tombs, cut into the natural bedrock along the wadi.⁴ One of the graves⁵ preserved a group of three terracotta discs, showing

frontal lion heads (Pl. XXXIII, 1), which are on exhibition at two public archaeological collections in Amman.⁶

These lion masks are made from a finely levigated, buff-brownish clay without surface incrustation. Only the rings, which are fixed in the mouths of the lion heads, are evenly fired. The busts themselves are air dried rather than kiln treated.⁷

* The study of the Syro-Roman sarcophagus attachments was conducted with permission and support of the Direction Générale des Antiquités et des Musées de la Syrie (Dr. 'Afif Bahnassi) and the Department of Antiquities of the Hashemite Kingdom of Jordan (Dr. 'Adnan Hadidi). Dr. N. Khairy (Jordan University Archaeological Museum) and M. Zayyat (Jordan Archaeological Museum, Amman) kindly gave consent to the publication of the terracotta appliques from Abila. Further photographic material for this article was provided: in Aleppo by W. Khayyata; in Berlin by P. Grunwald; in Bosra by R. al-Muqdad; in Damascus by B. Zouhdi and J. Shehadé; in Frankfurt by P.C. Bol; in Irbid by Z. Kafafi, R. Gordon, E.A. Knauf, Ch. Lenzen and B. Mershen; in Jerash by A. Nagaway and E. Owie; in Mayence by E. Künzl and F.-J. Hassel; in Paris by F. Baratte; in Salt by S. el-Hadidi and A. Sa'idi. I extend my thanks to all of the above and to R.A. Coughenour of ACOR for editing the English text.

As far as possible the transliteration of Arabic names refers to: *Syrie- Répertoire Alphabétique des Noms des Lieux Habités*, ed. by Le Service Géographique des Forces Françaises du Levant, 3rd. ed., 1945.

1. Cf. H. Bietenhard, *ZDPV* 79, 1977, p. 24ff. (= *Aufstieg und Niedergang der Römischen Welt* II, 8, ed. H. Temporini — W. Haase 1977, p. 220ff.); A. Spijkerman, *The Coins of the Decapolis and Provincia Arabia*, ed. M. Piccirillo (1978), p. 13ff., p. 48ff.
2. G. Schumacher, *Abila of the Decapolis* (1889); *Princeton Encyclopedia of Classical Sites*, ed. R. Stillwell [2nd ed. (1979)]

p. 4 s.v. Abila (A. Negev); Cf. the bibliography by D. Homès-Fredericq — J.B. Hennessy, *Archaeology of Jordan I*, Akkadika Suppl. III (1986) p. 232 s.v. Quweilbeh; Ancient literary sources: P. Thomsen, *Loca Sancta*, Repr. of the ed. 1907 (1966) p. 14 s.v. Abila; C. Möller — G. Schmidt, *Siedlungen Palästinas nach Flavius Josephus. Beihefte zum Tübinger Atlas des Vorderen Orients Reihe B (Geisteswissenschaften) XIV* (1976) p. 195 s.v. Abila. For the Decapolis as a Roman administrative entity, see S. Thomas Parker, "The Decapolis Reviewed", *Journal of Bib. Lit.*, 94 (1975), p. 437-441; B. Isaac, *ZPE*, 44 (1981) p. 67-74.

3. For the location cf. *Princeton Encyclopedia loc. cit.* map 6, EA 1; *Tübinger Atlas des Vorderen Orients* sheet BV 19: *Siedlungen nach Flavius Josephus* (1980); *Codex Kulturatlant: Der Nahe Osten*, Blatt 32/35: Tiberias (1:25,000), E6.
4. Cf. H. Mare, *ADAJ* 28 (1984) p. 41ff.; C. Vibert-Guige — A. Barbet, *ADAJ* 26 (1982) p. 67ff.
5. According to references in the museum inventories and in the Registration Center of the Department of Antiquities, Amman, all three appliques come from the tomb Nr. 16. Cf. note 9.
6. Amman, University Museum Inv.- Nr. 22/23 (formerly Amman, Jordan Archaeological Museum J. 8666) and Amman, Jordan Archaeological Museum Inv.-Nr. 8664 and 8665.
7. The piece from Jordan University (see note 6) was researched by H.-J. Kunkel, conservator at the German Mining Museum at Bochum (Amman, April 1986).

In iconography, style, measurements,⁸ and technique, all these discs are so coherent and their unity as a group so certain, that one does not hesitate to assert their production by one workshop only. The discs have smooth border-frames, unprofiled at the ridges, but slightly sloped. In the centers frontal lion heads are raised to a relatively high relief. Between the teeth of the opened mouth originally movable clay rings were affixed. All three examples preserve these completely or in more or less large fragments. From the pierced throat the long and rounded tongue is hanging on the lower jaw. The wedge-shaped muzzle is flattened at its front, details such as whiskers and nostrils are incised into the buff, wet clay. The mane of flat relief is arranged in long hairs, also incised with a knife or a wooden spatula, parted at the forehead and falling in long obverse tufts from the smooth and slender cheeks. The lips and the eye-brows are made from small rolled lumps of clay, glued to the surface in a wet condition. Originally all three masks were painted. On the eyeballs one recognizes traces of a white wash; on the faces and rings remains a small amount of a thick dark-grey paint; at the tongue and lips are pinkish colors. Without chemical analysis it is impossible to determine whether the dark grey pigments consist of a type of silver sulphate.

These terracotta appliques demonstrate

a four-phase production. The basic disc is cast in a mould; hand-modelled features were added. In a leather-like, just slightly dried stage of the working process, the attachments were nailed by iron studs to a wooden background. The third phase of production demonstrates why these clay appliques were not fired, but dried in the air. Finally, the masks were painted.

All three appliques come from one rock-cut tomb. Since the context of the finds is not published, the inventory of the burial does not provide any chronological information.⁹ Nevertheless, questions concerning the original purpose of these discs may be answered by observing typological analogies.

As the traces of the greyish color on the faces indicate, apparently these clay lion heads holding rings in their mouths copy metal prototypes. The iconographical type was invented by a Greek artist during the fourth or fifth century B.C.¹⁰ In Hellenistic Macedonia metal attachments showing lion busts holding rings in their mouths are known as door handles of private houses and portals of chamber tombs,¹¹ and also as shoulder straps of a soldier's armour.¹² In their use as "door-knockers" and armour attachments they can be followed from the Roman Imperial period into both the Oriental and European Middle Ages.¹³ This Hellenistic-Greek iconographical type most probably was brought to

8. Amman, Jordan University Inv.-Nr. 22/23: Diameter of the disc: 18.15 cm; Height of the relief, 9cm; Diameter of the ring 9.5-9.95 cm; Amman, Jordan Archaeological Museum Inv.-Nr. 8664: Diameter of the disc 18.3-18.5 cm; Height 9.3 cm; Diameter of the ring 9.5 cm. Inv.Nr. 8665: Diameter of the disc 19.3 cm; Height 8.5 cm.
9. There is a reference to tomb 16 as place of discovery, which is Nr. H 1 of the American Expedition of the Covenant Theological Seminary at St. Louis, Missouri, USA. An inscription, quoted by M. el-'Abadi (*ADAJ* 4/5, (1960) p.26, Arabic section) points to the year 47 B.C. It is sure that the tomb was in use for all the Roman Imperial period and also during the Byzantine epoch. Cf. Mare (see note 4) 43. On the basis of information given by the documentation at the Registration Center of the Antiquities

Department, Amman, it is not possible to say to which of these burials the terracotta discs originally belonged.

10. O. Kurz, *Studia Hierosolymitana* 24 (1972) p.41.
11. Cf. E. Meyer in: *Festschrift E. v. Mercklin* (1964) p.80ff. For the door-knocker from Olynthus: D.M. Robinson, *Olynthus* X (1941) p.249ff. Nr. 898 Pl. LXVI-LXVII; For the bronzes from Langada and Pydna: B. Gossel, *Makedonische Kammergräber*, Ph.D. Berlin (1980) p.150 Nr. d with note 780, p.224 with note 1132.
12. M. Andronikos, *Antike Welt* 13,1 (1982), p.31, Fig.16; idem. *Vergina, The Royal Tombs*, (1984) p.137ff, colour pl. 138f.
13. Meyer, *loc. cit.* 80ff.; U. Mende, *Die Türzieher des Mittelalters*. Bronzegegeräte des Mittelalters II (1981) p.128ff.

the Near East during its conquest by Alexander the Great, and from there extended as far as China.¹⁴ From the first century A.D.¹⁵ onward we can observe in the eastern Levant a special burial custom of embellishing wooden coffins with lion-headed metal discs and rings. Many graves along the Levantine coast and in the Syro-Palestinian inland area provide numerous such bronzes and several times fragments of the cedar or juniper wood of the coffins are preserved.¹⁶ As with the terracotta rings of the Abila find, most of these bronze discs could not have been used to lift the sarcophagus or to lower it into the grave with the help of ropes. Instead, copies of such coffins in limestone, representing those lion heads from the first century A.D.,¹⁷ prove that garlands of leaves, flowers and fruits were hung longitudinally on the faces of the coffins, fastening the ends of the garlands by straps on the rings.¹⁸ Thus, the statement of F. Cumont, that these sarcophagus attachments adapt the banal scheme of a "door-knocker"¹⁹ has to be revised. Most probably these metal attachments,

showing the lion as the traditional protector of the dead, were necessary to adorn the sarcophagus with garlands during the *Prothesis* and *Ekphora*, i.e. portions of the burial ceremony, as a symbol of immortality.²⁰ In this respect, the stone garlanded sarcophagi of the Roman sepulchral sculpture have a historical background which originates in the Near East and which spread together with the oriental religions during the second and third centuries A.D. all over the empire.²¹

Distinguishing characteristics of style and technology demonstrate the production of these bronzes at several regional centers, thus accounting for the provenances of their discovery in the Near East (Fig. 1).²²

The first group (Type I, Fig. 1, Symbol ■) originates from Sidon, the provenance of the earliest copies of coffins with garlands and lion heads made from limestone.²³ The bronzes consist of thin sheet (Pl. XXXIII, 2),²⁴ partially also made from silver (Pl. XXXIV, 1),²⁵ which were filled

14. Kurz, *loc. cit.* p. 40.

15. Cf. The grave at Ḥomṣ/Abu Ṣabun: H. Seyrig, *Syria* 30, (1953) p. 14f.

16. Cf. E. von Mercklin, *Archäologischer Anzeiger* (1926) p. 293; idem: *Führer durch das Hamburgische Museum für Kunst und Gewerbe* II (1930) p. 167f. A piece of juniper wood is preserved at the reverse of a bronze attachment from Tell Umm Ḥauran, now: Damascus, National Museum Inv.-Nr. 19634.

17. G. Koch, *Archäologischer Anzeiger* 1977, p. 111ff.; F. Baratte—C. Metzger, *Catalogue des Sarcophages en pierre d'Époques Romaine et Paléochrétienne*, Musée du Louvre (1985) p. 294ff. Nr. 196-198; A. Konikoff, *Sarcophagi from the Jewish Catacombs of Ancient Rome* (1986) p. 32f. Nr. 9 Pl. 7.

18. Koch, *loc. cit.* p. 119 Fig. 8-9.

19. F. Cumont, *Recherches sur le Symbolisme Funéraire des Romains*. BAH XXXV (1966) p. 338.

20. Cf. V.M. Strocka in: *Festschrift F.K. Dörner* II (1978) p. 893f.; H. von Hesberg, *Römische Mitteilungen* 88, (1981) p. 201.; Cumont *loc. cit.* p. 245, p. 297 note 1, p. 317f., p. 458, p. 465. Possibly a glimpse of this ancient custom survives in

the modern burial habit of showing palm leaves in front of the cortege as a symbol of immortality: Cf. T. Canaan, *ZDPV* 75, (1959), p. 105.

21. Cf. F. Cumont, *Die orientalischen Religionen im römischen Heidentum* (8th ed.) (1981) passim; A. Hatem, *AAAS* 11/12 (1961/62) p. 83f.

22. Cf. J. Chehadé — L. Khalil — Th. Weber, *Syrisch-Römische Sarkophagbeschläge - Orientalische Bronzewerkstätten römischer Zeit. Damaszener Forschungen* (forthcoming).

23. Cf. Koch, *loc. cit.* (See note 17) 111f.; For Sidon see *Princeton Encyclopedia loc. cit.* (see note 2) p. 837 s.v. Sidon (J.P. Rey-Coquais).

24. Paris, Louvre 3454, from Sidon: G. Perrot—Ch. Chipiez, *Histoire de l'Art dans l'Antiquité* III (1885) p. 194 with fig. 137; A. De Ridder, *Les Bronzes Antiques du Louvre* II: Les Instruments (1915) p. 176f. Nr. 3453ff.

25. Damascus, National Museum Inv. 10334/4510 and 10337/4513, from Ḥomṣ, Abu Ṣabun tomb 10: H. Seyrig, *Syria* 30 (1953) p. 14f. (without fig.); B. Zouhdi, *Musée National de Damas* (1976) p. 87 Nr. 4 (without fig.).

from behind with a core of gypsum or bronze.²⁶ The representation of the lion face is always very summary in character, or schematic. The opened mouths are shown in flat relief. The movable rings are attached by a crimped iron with two tangs, both of them twisted on the reverse of the attachment.²⁷ The borders of the discs were stabilized upon the wooden walls of the coffin by iron nails.

The provenances of the second group (Type II, Fig. 1, Symbol ●) are scattered over the northern Syrian regions. With regard to the technology, the casting technique of the "lost-wax" method is typical for this group. The separately casted rings are fitted into the mouths, always represented by a flat, cut-out relief. Many of the busts have wide circular corners on the mouths (Pl. XXXIV, 2).²⁸ Stylistically, this group of lion heads is more correlated with the naturalistic prototypes of the Mediterranean Hellenistic world, even though a gradual "decline" to a more graphical abstraction of the physiognomy can be seen. The short, velvet-like skin of the face is indicated by small engraved dashes, the large, visible teeth between the upper and lower jaws hold the ring in its position.

Details such as the contracted brows above the nasal bone tend to a linear, leaf-shaped abstraction (Pl. XXXV, 1).²⁹ Some of the less elaborate pieces (Pl. XXXV, 2)³⁰ show a rather schematic arrangement of the mane. Due to the concentration of finds at Homs, ancient Emesa,³¹ this Northern Syrian city could be the location of one of the leading centers of production.

A third group appears in Southern Syria (Type III, Fig. 1, Symbol ▲). Most of the finds come from the Hauran mountains and from the fertile plain which slopes from them to the West.³² The distribution of finds reaches the northern Palestinian coast and the highlands of Galilee, where the cities of Jaffa³³ and Nablus³⁴ are assumed as provenances. All the bronzes of the third type consist of thin sheet metal, apparently pressed and modelled over a positive mould. Many of these sheet attachments show the same iconographical "mistake", already reported by E. von Mercklin, of one example acquired by the Art and Industry Museum at Hamburg.³⁵ There is a slight displacement of the parted mane to the right of the forehead and to the left under the chin. Other pieces cohere in style and iconography to such an extent

26. E. von Mercklin, *loc. cit.* (see note 16, 1926) p. 304ff. The silver sheet appliques from Homs (see note 25) are filled with a core of bronze and not iron, cf. P. C. Bol-Th. Weber, *Bildwerke aus Bronze und Bein aus minoischer bis byzantinischer Zeit. Wissenschaftliche Kataloge des Liebieghauses II*, ed. H. Beck — P. C. Bol (1985) p. 162 Nr. 77.

27. E. von Mercklin, *loc. cit.*, p. 305 fig. 10.

28. Mayence, Römisch Germanisches Zentralmuseum Inv. 0.38422, from the environs of Aleppo (unpublished).

29. Damascus, National Museum 1254/7320 and 1255/7321, from Homs (unpublished).

30. Aleppo, National Museum Inv. 129 (formerly Damascus, National Museum 11991/5425) from Hama (unpublished).

31. *Princeton Encyclopedia loc. cit.* (See note 2) p. 302 s.v. Emesa (J.-P. Rey-Coquais).

32. Cf. G. Rindfleisch, *ZDPV* 21 (1898) p. 1ff.; F. Huguet in: *Hauran I*, 1 ed.

J.-M. Dentzer, *BAH CXXIV* (1985) p. 5ff.

33. *Princeton Encyclopedia loc. cit.* p. 426 s.v. Joppa (A. Negev): Stuttgart, Württembergisches Landesmuseum 460A, from Jaffa; E. von Mercklin, *Jahrbuch der Hamburger Kunstsammlungen* 3 (1958) p. 222 (without fig.). Meyer *loc. cit.* (See note 11) p. 87.

34. *Princeton Encyclopedia loc. cit.* p. 330 s.v. Flavia Neapolis (A. Negev): Copenhagen, National Museum Inv. Nr. 8470, from Nablus. I owe thanks to K. Parlasca (Erlangen) for the information about this unpublished piece.

35. E. von Mercklin *loc. cit.* p. 221 with fig. 5; more examples for this: Chehadé — Khalil — Weber (forthcoming, see note 22). A single disc without provenance is published by D. Schütz, *Monatsschrift für Geschichte und Wissenschaft des Judentums* 75, 1931, 289 (opposite pl.); E. R. Goodenough, *Jewish Symbols in the Greco-Roman Period VII 1: Pagan Symbols in Judaism*. Bollingen Series XXXVI (1958) p. 34, fig. 24, right.

that they all must come from one mould (Pl. XXXVI, 1).³⁶ Also these sheet appliques were affixed by iron nails upon the wooden coffin. The movable rings, as far as they are preserved, are made from a flat, hammered wire of lead and fitted to the "cut-out" mouths. As already evident with the terracotta rings of the Abila group, the leaden rings of this type are not suitable to lift the coffin with the corpse. As striking elements of the style, one notes on all of these bronze sheets the "pathetical" contraction of the eye-brows, the anthropomorphic, nose-shaped muzzle and the flat shaping of the cheeks. The Hauran provides in basalt examples of the same type used as "door-knockers"³⁷ and ornaments of sarcophagi³⁸ as well. While the focus of these finds is of little current importance from a political or cultural standpoint, in antiquity Bosra³⁹ was the administrative and economic center of the Southern Hauran and, therefore, an excellent candidate for the place of production of the third group.

A trend to a more abstract representation of the lion's face can be observed in the fourth group (Type IV, Fig. 1, Symbol ◆), which was common in the Golan area.⁴⁰ The bronzes of this group consist of thin bronze sheets, shaped to circular plates with a concentric step, and a half-globular knob in its center. Sometimes this is figured by *repoussé* work to a rather ab-

stract lion's bust (Pl. XXXVI, 2),⁴¹ while most of the *attachments* known today have very few or no embellishments (Pl. XXXVII, 1).⁴² Some of the stepped borders of the discs have simple geometric ornaments punched from the reverse of the disc. The ring is fixed in a way similar to those in the Sidonian group (Type I), but here it was always positioned underneath the central knob or the chin of the lion.⁴³ The discs themselves were nailed upon the wooden coffin by iron studs. A fifth group has been located in Gerasa (Jerash) and its environs (Type V, Fig. 1, Symbol ►). Some unprovenanced pieces which are presently in museums of Jordan (Pl. XXXVII, 3)⁴⁴ are so similar to those from Gerasa, that this was likely to have been their centre of production.⁴⁵ The lion faces of flat relief with a rather unskilled representation of the physiognomy seem to be provincial imitations of the Syrian prototypes. The sheet bronze heads are worked in *repoussé*, and the open mouths appear in relief. The rings, which are also made from thin rolled bronze sheets, are fixed into drilled holes at the corners of the mouths. The mane of the lion is sparse and is framed by a concentric *torus*, sometimes stylized as a rope by engraved hatching. One fragment found in one of the vaulted mausoleums near Hadrian's arch at Gerasa (Pl. XXXVII, 2)⁴⁶ represents an example better in quality, but belonging to the same group

36. Bosra, Archaeological Museum Inv. 97 (C.37) from the Hauran (unpublished).

37. Cf. S. Diebner, *Rivista di Archeologia* 6 (1982) p.66 Nr. 44 fig. 53. Cf. the epigraphical evidence for lions as embellishments of doors: D. Sourdel, *Les Cultes du Hauran à l'Epoque Romaine*, BAH, CV (1952) 26 note 4.

38. E. Littmann — D. Magie Jr. — D.R. Stuart, *Greek and Latin Inscriptions in Syria: Bosra*, in: Publications of the Princeton University Archaeological Expedition to Syria in 1904- 1905 and 1909 III A 4 (1913) p.254 (with fig.).

39. *Princeton Encyclopedia loc. cit.* p.159f. s.v. Bosra (J.-P. Rey-Coquais); M. Sartre, *Bosra - Des Origines à l'Islam*, BAH CXVII (1985).

40. G. Schumacher, *The Jaulan* (1888); D.

Urman, *The Golan. A Profile of a Region During the Roman and Byzantine Periods*. British Archaeological Reports International Series 269 (1985).

41. Frankfort, Liebieghaus Inv. 1610, provenance unknown. Bol-Weber *loc. cit.* (See note 26) p.163ff. Nr. 78.

42. Irbid, Yarmouk University, Institute of Archaeology and Anthropology Inv.Nr.325 A and D, from Umm Qais (unpublished).

43. See note 27.

44. Salt, Archaeological Museum Inv.-Nr.347 (unpublished).

45. *Princeton Encyclopedia loc. cit.* (see note 2) p.348f. s.v. Gerasa (W.L. MacDonald; *Jerash International Project 1981-1983 I*, ed. F. Zayadine (1986).

46. F.Zayadine in: *Jerash International Project I loc. cit.* p.12ff.

in terms of technique and iconography.

Our research about these bronze attachments from Syria and Jordan leads to the following results concerning the sixth group (Type VI, Fig. 1, Symbol ◀) from Abila: These three examples, so far unique in their clay material, are attachments of a wooden coffin. They demonstrate a coherence to their bronze counterparts both in the way of affixing to the wood by iron nails and iconography. Thus, they can be explained as direct copies from the metal ones. Ancient craftsmen often imitated metal work with the less expensive ceramic material.⁴⁷ Rarely are we so well informed about copies and prototypes as has been demonstrated for the group of Roman terracotta appliques from Abila of the Decapolis.

Acknowledgements

Fig. 1: Drawing by the author; Pl. XXXXIII, 1: Neg. Jordan University, Institute for Archaeology; Pl. XXXIII, 2: Paris, Musée du Louvre (Neg. M. Chuzeville); Pls. XXXIV, 1. XXXV, 1. XXXV, 2. XXXVI, 1. Neg. German Archaeological Institute, Damascus (1984) 433.438; (1985) 172.489 (P. Grunwald); Pl. XXXIV, 1: Mayence, Römisch Germanisches-Zentralmuseum Neg. T. 69/233; Pls. XXXVII, 1—XXXVII, 3: Neg. of the author.

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47. Cf. G. Schneider-Hermann, *Bull. Ant. Beschavinge* 38, 1963, p. 92ff.; idem, *Bull. Ant. Beschavinge* 37, 1962, p. 51ff.; E. D. Reeder, *Clay Impressions from Attic Metalwork*, Ph.D. Princeton University

(1974). Similar to the Abila appliques was the purpose of the Tarentine terracotta attachments: R. Lullies, *Vergoldete Terrakotta-Appliken aus Tarent*. 7. Ergänzungsheft der Römischen Mitteilungen (1962).

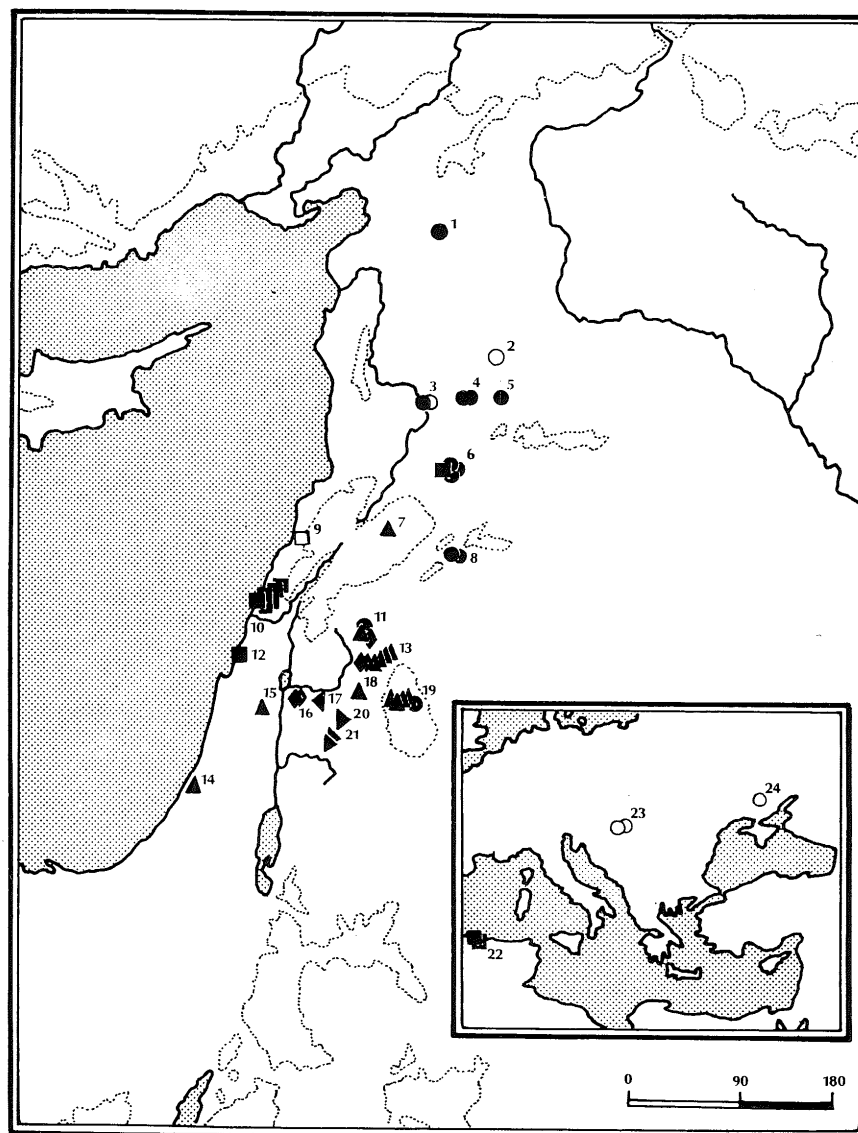


Fig. 1. Distribution of findspots of metal attachments.

Symbols ■ = Type I
 ● = Type II
 ▲ = Type III
 ◆ = Type IV
 ► = Type V
 ◄ = Type VI
 □ ○ = Provenances not certain

1: Aleppo (see Pl. XXXIV, 2); 2: Qaṣr Ibn-Oudarne; 3: Ḥama (see Pl. XXXV, 2); 4: Sélémiye; 5: Sabboûra; 6: Ḥomṣ (see Pls. XXXIV, 1 and XXXV, 1); 7: Ras Ba'albek; 8: 'Aqaba near Nébék; 9: Byblos; 10: Sidon (see Pl. XXXIII, 2); 11: Tell Umm Ḥauran; 12: Tyrus; 13: al-Asarî near Tafas; 14: Jaffa; 15: Nablus; 16: Umm Qais/Gadara (see Pl. XXXVII, 1); 17: Quweilbeh/Abila (see Pl. XXXIII, 1); 18: Ezraa; 19: Djebel Druze/Ḥauran (see Pl. XXXVI, 1); 20: Khirbet Quri near Jerash; 21: Jerash/Gerasa (see Pl. XXXVII, 2); 22: Skikda; 23: "from Rumania"; 24: "from Gaimk, Southern Russia".

THE EXCAVATION OF BYZANTINE BATHS IN UMM QEIS

by

Svend Holm-Nielsen, Inge Nielsen and Flemming Gorn Andersen

A report on the proceedings of the Danish excavations in Umm Qeis over the years 1977-83 ought to have appeared yearly in this annual. Regrettably, however, this has been neglected, and the following will therefore be a summary of the whole campaign and its results. A final detailed account of the excavations will be published in the series *Abhandlungen des Deutschen Palastinaver eins*.

The excavations were organized thanks to an agreement with Dr. Ute Lux, who was then the leader of the German Archaeological Institute in Jerusalem (Deutsches Evangelisches Institut für Altertumswissenschaft des Heiligen Landes) and her much esteemed colleague, the late architect Ernst Krüger. In 1976 Ute Lux had, after several preliminary surveys, commenced a proper excavation campaign in the ruins of a Byzantine church (*ADAJ* XXIV/1980, p.157ff). The campaign was to be continued in 1977, and a Danish team was invited to join it. This Danish campaign and all the ensuing ones have been financed by the Foundation for Danish Research in Palestine in Memory of H.P. Hjerl-Hansen. In 1977 the excavation team consisted of Flemming Gorm Andersen, the architect Jorgen Levinsen and Professor Svend Holm-Nielsen, the leader of the team. These three have been chiefs of staff in all four campaigns, but other Danes have taken part for shorter or longer periods, among them John Strange and Per Lyk-Jensen. During the 1983 campaign Inge Nielsen was the technical leader, and the responsibility for the final report rests upon her.

In 1977 the Danish and the German teams worked together and shared the housekeeping. The Department of Antiquities had approved the Danish participation in the excavations and has continued to do so from year to year. In various cases the Department has offered its help, as e.g. in 1981 when a bulldozer was placed at our

disposal as a relief to our own insufficient physical strength. The workers needed for the digging were recruited from the nearby village: in the course of four campaigns we have employed between 12 and 25 men. The co-operation with these men and with the village has always been exemplary. In 1977 and 1978 the Department had involved 'Omar Resheidat and Sultan Shraideh in the diggings. 'Omar Resheidat also participated in the 1981 and 1983 campaigns, but instead of Sultan Shraideh we were assisted by Tayseer 'Atayat in 1981 and by Muhamed Hatamleh in 1983.

The 1977 campaign started on the 9th of May and finished on the 23rd of June. The co-operation with the Germans was to have been continued in 1978, but Ute Lux being otherwise engaged, we were allowed to resume the diggings on our own, and the excavation of the Bath thus became a purely Danish project. The 1981 campaign lasted from May 1st till June 28th, and the 1983 campaign from Sept. 30th till Nov. 27th. In 1978 Mrs Karen Holm-Nielsen was in charge of the housekeeping, in the years 1981 and 1983 she was assisted by Mrs Lone Lyk-Jensen.

When we started digging in an area about 100 metres west of the Byzantine church we were completely ignorant as to what we would find. The only visible signs were a few large building stones protruding above ground and the upper part of a grey granite column. A few weeks of digging made it clear that what we were uncovering was a Bath, chimneys being found hewn into a wall. We dug in what were later-on called rooms III and I in the southern part of the area where the ground starts dipping abruptly towards the south.

In 1978 and 1981 the digging in these two rooms was continued, but an extension was made towards the west, and in 1983 we included an area north of the rooms first excavated. In that way we have succeeded in determining the extreme limits

of the Bath and identifying the various rooms with some degree of certainty. Although large areas are still left unexposed, it is possible to get an impression of the lay-out of the Bath, its history and its function as a public Bath.

The Lay-out

The Bath has been built on a steep slope west of the Acropolis of the town and near the western Theatre (Pl. XXXVIII, 1). The southern part has been built on an artificial terrace whilst the northern part has been hewn into the rock. On its northern side the building is skirted by the *Decumanus Maximus*, the main street, which runs east-west through the entire length of the city. Another street runs along the southern facade, and from here there was access to two vaulted rooms in the terrace foundation. North-south going streets, probably laid out as steps, must have run along the east and west facades of the Bath; presumably one entered the Bath from one of these streets, maybe it could be entered from both. The whole edifice occupied a land register (an *insula*).

Three main periods are discernible in the building. In the two first periods it functioned as a bath. The latter period, the Umayyad, includes several phases of habitation (Figs. 1-3).

According to the finds the first Bath Period should be dated to the beginning of the 4th century A.D. This period was terminated by a destruction, probably caused by an earthquake. Exactly when this took place, and when the second Bath Period started is uncertain. We know of earthquakes both in A.D. 365 and 447. The termination of the second Bath Period which was also the end of the Bath as such is marked by the beginning of the Moslem era in the first half of the 7th century A.D. The building was ultimately destroyed by the great earthquake in A.D. 746 at the end of the Umayyad period.

There were ten rooms in the building, two of which were auxiliary rooms. The other eight rooms all had some kind of a bath function. The rooms are distinguished with Roman numerals, and on the follow-

ing pages a brief description will be given of each with regard to their appearance, their state of preservation and their functions in the various phases.

Room III

This room measures approx. 14.50 m. by 9 m. Added to this there is a recess in the eastern part of the room, measuring 8 m. by 4.50 m. which makes a total length of 19 metres. The room was originally barrel-vaulted, the vault spanning the north and south walls. This vault was found lying intact on a layer of accumulated soil on the floor (Pl. XXXVIII, 2). The recess held a hot bath *alveus* (III A) (Pl. XXXIX, 1), and in the south wall there was, in the first Bath Period, an arched opening of great dimensions leading into another hot bath *alveus* in room I. In the second Bath Period an apsidal hot bath (room II) was built up to the opening from the south (Pl. XXXIX, 2), incorporating it and thus disconnecting room I from room III. The north wall had, in the first Period, an arched opening of even bigger dimensions connecting room III with room IV. This opening was made smaller in the second Period, and then blocked up in the Umayyad Period (Pl. XL, 1). In the western part of the room a door opened southward on to room V, and there may also have been a passage to the West to room IX. Below the floor was found a *hypocaust* with basalt pillars, and the walls had tubulation.

The room must have served as a main *caldarium* in both Bath Periods. Under the Umayyads the western part was adapted for habitation, and a former stove room converted into a storage room. The apsidal bath (room II) was in a later phase used as a stable.

Room I

This imposing room was originally the most luxurious room and measures 9.50 metres by 10.40 metres. In each corner it had a grey granite column, standing 4.70 metres high, with a Corinthian capital in white marble. Only the column in the north-east corner is still in position.

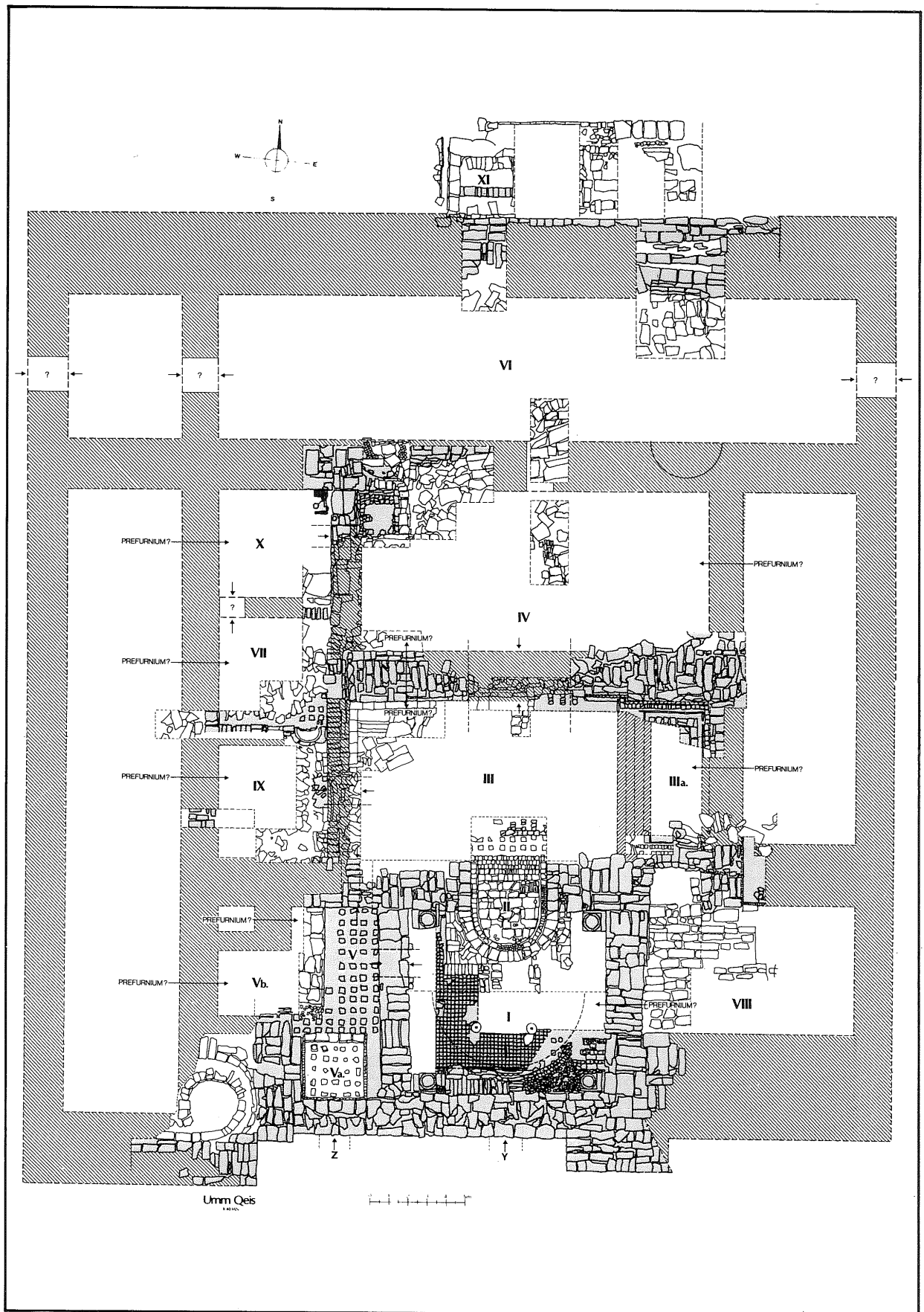


Fig. 1 The first Bath-Period. Drawing: J. Levinsen.

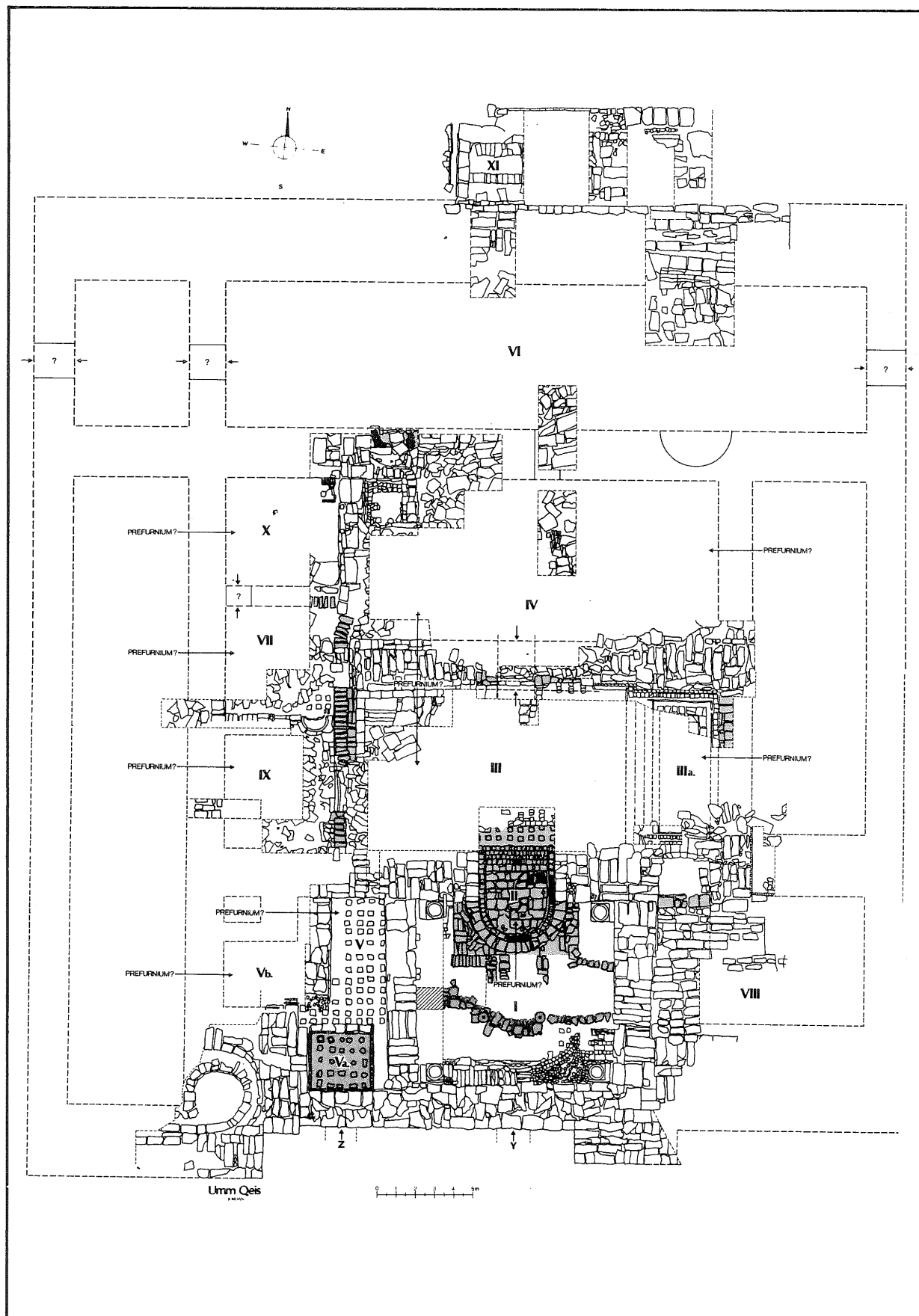


Fig. 2 The Second Bath-Period. Drawing: J. Levinsen.

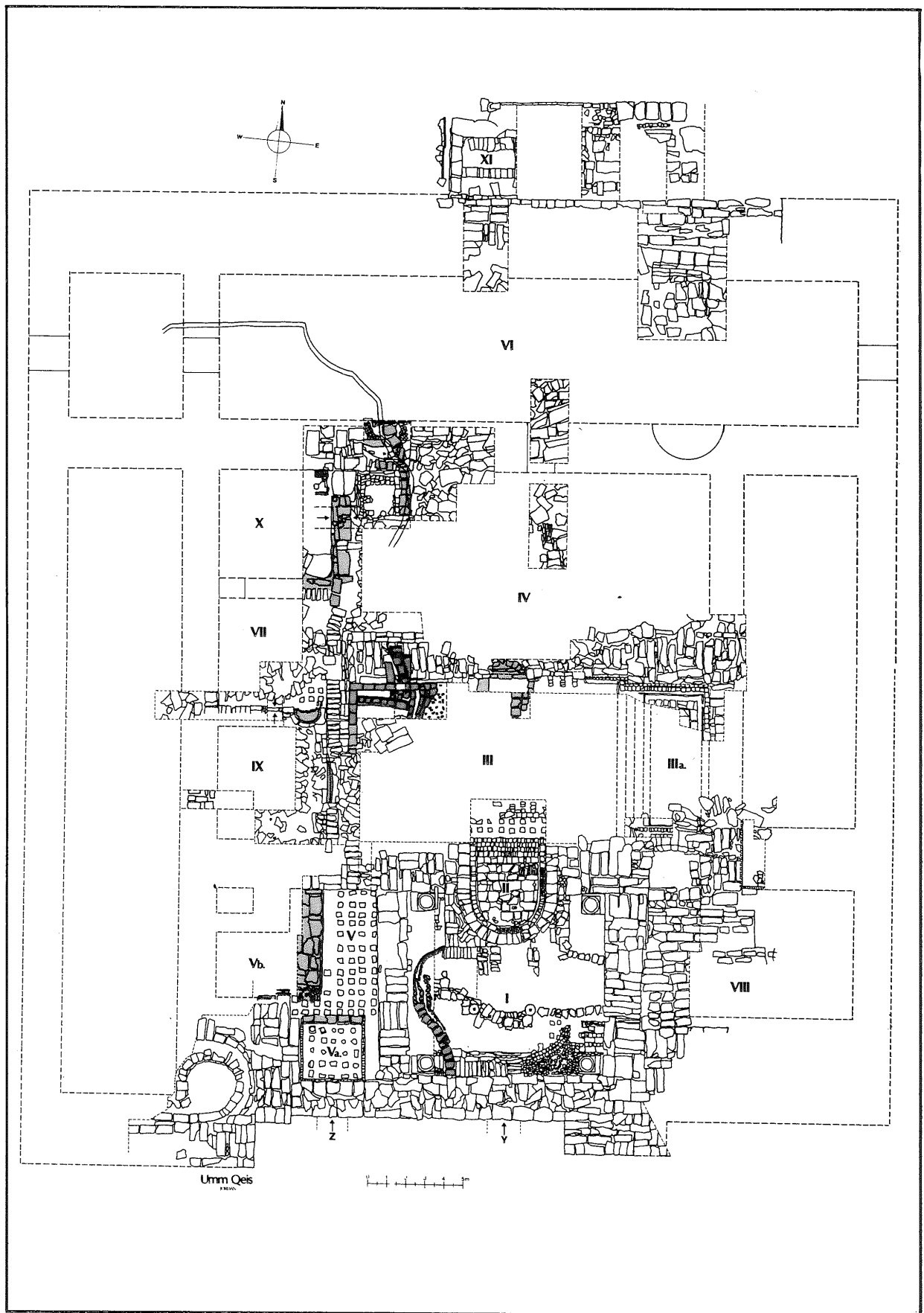


Fig. 3 The Umayyad Periods. Drawing: J. Levinsen.

Another lies fallen within the walls, whereas the others have probably disappeared down the southern slope. Only their bases are still left in their respective corners.

In the first Bath Period the room was indubitably a bath room, the southern part of it holding a large semi-circular *alveus* (Pl. XL, 2). Both the *alveus* and the room itself were heated by *hypocausts*. Several chimneys had been set into the walls, but there were no *tubuli*. The room was heated by means of a furnace (*praefurnium*) in the auxiliary room to the east (room VIII).

Originally room I was connected with room III through the above mentioned arch, and the rooms were organically one entity, because room I served as an *alveus* for the main *caldarium*. From room I there was also access to room V via a door in the west wall. This door was blocked up in the second Bath Period when room I ceased to function as a bath room. Its *alveus* was replaced by the newly built apsidal *alveus* (room II), and room I was degraded into an auxiliary room, a stoke-hole for the *hypocaust* below room II being built into the south side of the apse (Pl. XLI, 1).

No remnants of the roofing have been found. It must have been utterly destroyed at the end of the first Bath Period, a contributory factor to the room's falling into disuse as a bath room. The fallen roof must have been removed when the room was converted into an auxiliary room. In the Umayyad Period the room was not used at all, and gradually it filled up with soil and debris.

Room V

This room is located in the south west corner, the hottest part of the building complex. It comprises two distinguishable parts, a main part which today measures 6.80 metres by 3 metres (room V) and a recess to the south (VA) measuring 3.50 metres by 3.50 metres (Pl. XLI, 2). The main section was originally bigger and measured 4.70 metres across, but in the Umayyad Period an edifice of unknown purpose was built into it, the end of which now forms the west wall. Both room V and

the recess (VA) are equipped with *hypocausts* with basalt pillars, but *tubuli* are missing. A chimney has been found cut into the east wall. In the first period this room was accessible from room I through a door in its east wall, but this door was blocked up in the second Bath Period when room I was converted into an auxiliary room. For as long as the building existed, a door in the north wall led from room V to room III. The roofing has not been preserved, but it may be supposed that it was barrel-vaulted. The room was probably a *caldarium* in both Bath Periods, but in the second Period, the *alveus* in the recess (VA) was converted into a heated recess. The *alveus* in the west part of the room (VB) was probably still in existence at that time, but, as mentioned above, a new structure interfered with this part of the bath under the Umayyads, and rooms V and VA were then, like the rest of the building, used for housing people.

Room IV

Only about one third of this room, the western part, has been completely excavated (NTIII). Some test trenches (NTI and NTII) in the middle of the room had to be abandoned because of a massive blockade of fallen building stones right below the top soil.

The room seems to have been of approximately the same dimensions as the adjacent room south of it (room III), i.e. 19 metres by 10.5 metres. In the excavated area was found a *hypocaust* with basalt pillars and the walls had tubulation. A door in the west wall led to room X. In the Bath Periods there was access to room III via the arched opening mentioned above. This broad opening was later reduced in size, before it was eventually obliterated by the Umayyads. It must be supposed that there was a door in the north wall leading to room VI, but this door belongs to the part of the room not as yet unearthed and has not been located.

The room was probably roofed by a barrel vault spanning the north and south walls; contrary to that of room III it did not survive intact when it fell in. In the wes-

tern part of the north wall a vaulted room appears to have been built into the wall. Actually it is an apsidal cold bath belonging to the adjacent room (VI), but the Umayyads made an opening in its south wall, presumably with the intention to use it as a storage room (Pl. XLII, 1). With certain reservations for the part of the room left unexcavated, it seems that originally room IV held no baths at all. The room must have functioned as the main *tepidarium*.

Under the Umayyads the room was converted into living quarters.

Room VI

This room, the most northerly of the proper bath rooms, has only been excavated in its north end, where we have come into contact with the north wall in two places (NT IV and NT V). From the excavations in room IV we know of the apsidal bath in the south west part of the room which, in the Bath Periods, was available from room VI (Pl. XLII, 1). It was a cold water bath and was still functioning as such in the second Period although it had been reduced in size. Room VI was not hypocausted and was probably a *frigidarium*. It must, however, also have functioned as an *apodyterium* since the entrance to the Bath from one of the bystreets — maybe from both — was via this room. A door must have opened on to room IV to the south, and there may also have been a doorway in the south west corner leading directly to room X. In the north wall a door led to an auxiliary room (XI), but this door was later sealed off, thus disconnecting the auxiliary room from the Bath.

Room VI was probably covered by a barrel vault spanning the north and south walls.

Room X

This room is the most northerly of a small bath-suite comprising room IX, VII and X. The rooms were of almost similar size, and together they made up the west wing. They were probably all heated by furnaces, which were placed in the auxiliary corridor running along the west side of the Bath. Room X measures 5.80 metres by 6

metres, provided its west wall follows the same line as the other rooms in this wing. Only the eastern part of the room has been dug out in connection with the excavations in room IV. There was a door connecting the two rooms, and there may also have been a door between room X and room VI north of it. Presumably there was a third door in the south wall giving access to the adjoining room (VII). Room X had a *hypocaust* with basalt pillars, but there were no signs of *tubuli* in the walls. The room functioned as a *tepidarium* in the Bath Periods. A niche in the south west corner, probably a *mihrab*, indicates that the room may have been used as a prayer room in the Umayyad Period. The door opening on to room IV was maintained also in this period. The roofing has disappeared; probably it was barrel-vaulted and spanned the east and west walls. Similar constructions would have been found in the other west wing rooms.

Room VII

This room measures approx. 5.80 metres by 5.80 metres. It has been in use during all periods, although it has been altered more than once. As yet only the eastern and southern parts of the room have been excavated, but the extension of its walls has been ascertained (VTI). A narrow doorway leads to room IX to the south of it (Pl. XLII, 2), and there must also have originally been a passage in the north wall opening on to room X.

The room was heated by means of a *hypocaust* with basalt pillars and the walls probably had tubulation. Because of its being so close to the furnace which provided heat for it, the room was probably a *sudatorium* in the Bath Periods. Beside the doorway to room IX a small semicircular cold water basin has been built in (*labrum*). This was in use in both Bath Periods. The Umayyads seem to have exploited it as a *mihrab*, cf. room X (Pl. XLII, 2).

Room IX

Although only the eastern part of this room has been uncovered, the extension of its four walls has been ascertained. The room measured 5.80 metres by 5.80 me-

tres. It was the most southerly of the suite. It was hypocausted and may have had *tubuli* in the walls. There is little doubt that this room functioned as a *sudatorium* as well. It has always had access to room VII to the north of it, but the passage opening on to the main *caldarium* to the east (room III), was converted by the Umayyads into a small bath with a curved wall. This bath may have served some ritual purpose in connection with the two prayer rooms.

The Auxiliary Rooms

Only two auxiliary rooms have been unearthed. One of these is room VIII at the south east corner of the building, measuring 6.75 metres across. Its length has not yet been ascertained, but it must have exceeded 8.50 metres. In the north-east corner of the room a small room with a sloping barrel vault (VIII A) has been built into the north wall. This may have served as a staircase. East of it there was a water tank constructed of brick, measuring 3.60 metres by 1.10 metres. In the first Bath Period the auxiliary room contained a *praefurnium* for room I, in the second Period it was given over to other uses, and in the Umayyad Period it was left unused. The roofing was a barrel vault spanning the north and south walls. It was found undamaged on a layer of accumulated debris, cf. the roofing of room III. The room was probably connected to the auxiliary corridor running alongside the east range.

Another auxiliary room was room XI in the north wall, which has already been mentioned in connection with room VI. It has been carved out of the rock beneath the *Decumanus* and was located right below the pavement of this street (NT IV G). It is 3 m by 2.75 m in size and was reached from room VI by a flight of steps in the wall. The room was probably used as a storage room for fragrant oils and other articles needed for the bathing. In the second Bath Period the entrance from room VI was blocked by bricks, and the room now became a storage room accessible from the street.

The Function of the Bath (Fig. 1)

The way in which the Bath in Umm

Qeis is planned indicates that there were two ways of using it. The quicker sequence followed by a bather was to go into the main *tepidarium* (IV) after he had undressed in room VI. From the *tepidarium* the bather passed into the big *caldarium* (III) to have a hot bath in one of the two *alvei* (I and IIIA). He then retraced his steps via the *tepidarium* (IV), where he anointed himself with fragrant oil before entering the *frigidarium* (VI) for a cold plunge and massage.

The more prolonged bathing sequence started in the *apodyterium* (VI). From there the bather passed into the small *tepidarium* (room X — either directly, provided there was a door connecting rooms VI and X, or via the main *tepidarium* (IV). From room X the bather went on to the first *sudatorium* (VII) for a damp steam bath and then to room IX, which was a dry air *sudatorium*. From here the bather went either to room III to immerse himself in one of the big hot-water *alvei* in that room (III A, 1), or he might prefer the small *caldarium* (V), which had two small hot water baths (VA, VB). The route was then retraced via the *tepidarium* (IV) as described above.

The water needed for the bath must have been transported via the aquaduct, the existence of which is ascertained in the eastern part of the town, although it is no longer visible. The water was then distributed to various cisterns or water tanks and, via water conduits, on to the *alvei* or to boilers above the furnaces (*praefurnia*), where it was heated. In the first Bath Period there were four large hot water *alvei* and at least two cold water baths (*piscinae*). This arrangement called for great supplies of water. Both the water and the air in the bath were heated by means of several *praefurnii*, which were fired from the auxiliary rooms. A safe guess is that there were about ten *praefurnii*, and the need for fuel must have been great. The necessary supplies came from the woods in the neighbourhood. Olive trees predominated, which may be seen from the thousands of olive seeds found in the ashes.

The Bath of ancient Gadara was in the

first Period a magnificent building covering about 2300 square metres. Its highly developed and efficient heating and water systems were of a high technical standard and well able to satisfy a fastidious taste. The town must have been especially prosperous to be able to build and maintain a Bath of that standard.

The Second Period (Fig. 2)

The transition between the first and the second Bath Period is marked by a destruction, probably brought about by an earthquake; maybe it was the great earthquake of A.D. 447, the effects of which were felt from Asia Minor to Egypt. We do not know this for certain, though, there being several earthquakes about that time. The large bathing room with the columns (I) was in particular ravaged. The south wall collapsed and the roof fell in. The room fell into disuse. The monumental arched doorway opening on to room III was incorporated in an apse, which became the new *alveus* (Pl. XLI, 1). The door in the west wall was bricked up, and the former luxurious bathroom was reduced to being a stoke room for the new *alveus*. Only one column is still standing as a token of lost splendour.

As a result of the re-building of room I into an auxiliary room and the construction of the new *alveus*, the most easterly of the vaults in the basement below the *alveus* was filled up with boulders to be able to sustain the weight of the new *alveus*, which rested on a massive podium built of large stone blocks.

Also room III seems to have been ravaged although the barrel-vaulted roofing was not destroyed, but the west wall and part of the east wall seem to have collapsed. They were re-built in the second Period, although in a somewhat different technique, which used lesser stones, and, to a greater extent, re-used materials.

The northern end of the Bath apparently suffered the least, probably due to the underlying rock, which has stabilized this part of the building.

Even though the Bath was still functioning, the second Bath Period is charac-

terized by a number of lesser reductions and by its re-use of materials. Monumental doorways between the rooms have been reduced in size, (Pl. XL, 1) the baths made smaller (Pl. XLII, 1), presumably to lessen the need for fuel and maybe also for water. The repairs done to the floors of the *alvei* in rooms II and III are evidence of the re-use of materials (Pl. XXXIX, 1). The original floors were paved with big, finely-cut limestone slabs. Now they were being mended with fragments of those marble slabs which once covered either walls or floors.

Still, in spite of minor reductions, the Bath served its purpose as it had done in the first Period. The prosperity of the town may have been slightly declining, but there are no signs of a depopulation or impoverishment. Gadara was still a thriving town, sufficiently wealthy to be able, in the 6th century, to build a big church a little further east.

The use of the building after the Bath Periods (Fig. 3)

The excavations have made it reasonably clear which parts of the whole complex were still used after it had ceased to function as a Bath. The Umayyads apparently only used the western part, and the rooms to the north (VI) and to the south (I) seem to have been abandoned. Only immediately after the discontinuation of the Bath were these rooms accessible. Traces of water channels have been found in both, dug into the soil, presumably these were drains (sewers). But very soon the rooms were left to decay, and they gradually filled up with soil and debris.

It seems quite natural that the continued use of the building should be confined to its western parts. For one thing the eastern parts may have been generally more ruined than the western wing, but the rooms belonging to the west wing also were clearly more attractive to live in than the large bath rooms. The western parts of room III and IV were, however, adapted for habitation, and north-south going retaining walls were erected to confine the masses of earth and building stones to the

eastern parts of the rooms. The possibility remains, though, that the eastern parts were indeed put to some use right after the bath function had been discontinued, and if this surmise is correct, the retaining walls are a somewhat later construction. It is quite easy to distinguish between the Byzantine and the Umayyad periods, but it is next to impossible to say exactly when the Bath stopped functioning as such. It may have been utilized as a bath in the early Moslem period, and the further cutbacks will then have been effected gradually in the course of the well over a century of Umayyad control.

There is nothing to indicate that the discontinuation of the Bath was due to a destruction, such as an earthquake. More likely it was due to a general decline structurally and economically. A Bath of that size was simply no longer needed, and the maintenance costs were too high. The much smaller bath building further west met the needs quite adequately (*cf. Zeitschrift des Deutschen Palästinavereins* 82 (1966), pp. 64-70).

The one certain thing is that the west wing was used for habitation in the century before the building was eventually abandoned. There have been between two and three habitation phases corresponding to the levels in the habitation layers. It may be safely assumed that the roofings of the inhabited area were still intact at this time, maybe except for the vault in room V, and that they remained so until the final catastrophe in A.D. 746.

First Umayyad Period

Only with difficulty it is possible to separate the two first Umayyad Periods from each other, and they probably overlapped. There is, however, a slight dissimilarity in their building activity.

It may be assumed that the first period started shortly after the bath function had been brought to an end. The extensive network of drains discharging into or running along the bottoms of the former *hypocausts* is datable to this time. In the *hypocausts* the basalt pillars were removed. They were found thrown aside or piled up among the

debris in the east part. The openings in the walls deriving from the heating system were now utilized for the drains, which are all very solidly built of big re-used building stones, quite evidently fetched from the disused baths. They are dressed on the inside, and the cover stones are laid in mortar. The re-utilization of a rather big opening through the east-west wall between rooms III and IV is also datable to this period. The opening was originally part of the heating system, but after one of the said drains had been led through it, it was enlarged into a storage room. The coverstones of the drain served as flooring. In this room was found an abundance of broken glass.

Another relic from this period is the massive wall in the western part of room V dividing it in two. It had no doors, presumably it was part of a building which was oriented westward, and thus outside the limits drawn for our activities. The dimensions of the wall seem to suggest a building of major importance, but we know nothing of its actual size or to what purpose it was built.

At the south west corner of the former Bath a peculiar circular structure had been built into the wall, which seemed to be in no way connected to the original building. It was hollow and had a built-in cornice on the inside. Apart from ascertaining the location, we have not paid much attention to it. It lies outside our scope, and we do not know whether it belongs to the early or the late Umayyad Period.

The building technique of the first Umayyad phase is quite advanced. The big limestone blocks, re-used from earlier periods, have been carefully laid in mortar with regular joints.

Second Umayyad Period

The difference in time between the first and the second Periods must have been minimal, according to the general standard. What distinguishes the second Period is its prosperity and the way the building is now being extensively inhabited. The living quarters may have been included in a large housing complex, or

they may have been divided up in small separate units. Building materials were still being re-used, particularly limestone. It was then that the thin wall between room IV and the apsidal bath in room VI was pierced by a door, and the bath itself rebuilt into a small storage room partitioned from room VI by a wall following the northern facade of the existing wall (Pl. XLII, 1). The discovery of a number of spindle whorls in room IV makes it seem possible that it was inhabited in this period. The *mihrabs* of rooms X and VII (Pl. XLII, 2) and maybe also the small bath of room IX, belong to this phase. The west range may somehow have been connected to the above mentioned Umayyad building built into room V, but this is only a hypothesis.

Third Umayyad Period

The transition from the second to the third period is equally indistinct, perhaps it is only the way of building that altered. It seems reasonable, though, to relate to this period the rather peculiar exploitation of the former apsidal *alveus* dating from the second Bath Period (room II). After the eastern part of room III had gradually been filled up with eroded soil deposited there by wind and weathering from the more hilly country to the east, the room has evidently been used as a cattle pen, probably also housing sheep and goats. Re-used stones have been set on edge to form a trough, and the room was sheltered off from the north by a kind of wall, or rather a fence, made of re-used stones, among them some basalt pillars from the *hypocausts*. Two water conduits, one from the north, the other from the east, led to this room on the same level. One of them was covered. An outlet from the room ended in the long abandoned room I, which is levelled with the floor. The outlet passes through one of the two openings in the southern apse wall, through which formerly water flowed to the bath. It cannot be said for certain how long these conditions lasted, but presumably the west wing was still inhabited when the vaults collapsed, the remnants of them having been found at floor level, not on accumulated debris as in the east rooms.

The period after the fall of the vaults

It can be fairly safely judged that the great earthquake, which occurred in A.D. 746, caused the downfall of the vaults. After this date there are only faint signs of any habitation. Gadara probably ceased to exist, or, at least, it decayed into an insignificant village. There are traces of human activity but none of their dwellings. Probably they were shepherds, who found temporary shelter in the ruins. Here and there they seem to have piled up stones as a kind of shelter, and in the eastern part of room III an open fire-place used for breadmaking (*furn ḥaṣawi*) was found. Some Mamluk sherds also speak of a sporadic habitation in rooms III and V.

After the roofs had fallen in, and the buildings given up, soil has continued to accumulate from the north and — in particular — from the east, and gradually it spread over the remnants of the former building complex so that in 1977, when the excavations started, it looked like a natural slope in the landscape, maybe not so very much unlike its original natural appearance.

The Finds (Fig. 4-5) by F.G. Anderson

There are two discernible levels in the fillings in and around the Bath. The older level is datable to the rebuilding phase after the first Bath Period, the later level, which is mostly composed of topsoil and debris, has accumulated along with the gradual abandonment of the Bath. Both levels are mixed up with building materials, but it may be assumed that the majority of the proper finds, predominantly fragments of pottery, originate in the surrounding town area.

Those finds related to the building itself are mainly fragments of the technical installations, particularly the drains which were made of clay (Fig. 4.1-3). There is an abundance of window glass and of the plaster used for fitting the glass in the frames. Some plaster fragments even showed imprints of wooden frames. In the southern part of the Bath were found fragments of marble slabs and profiled cornices which once covered the walls. In room IV and in the west wing suite were found

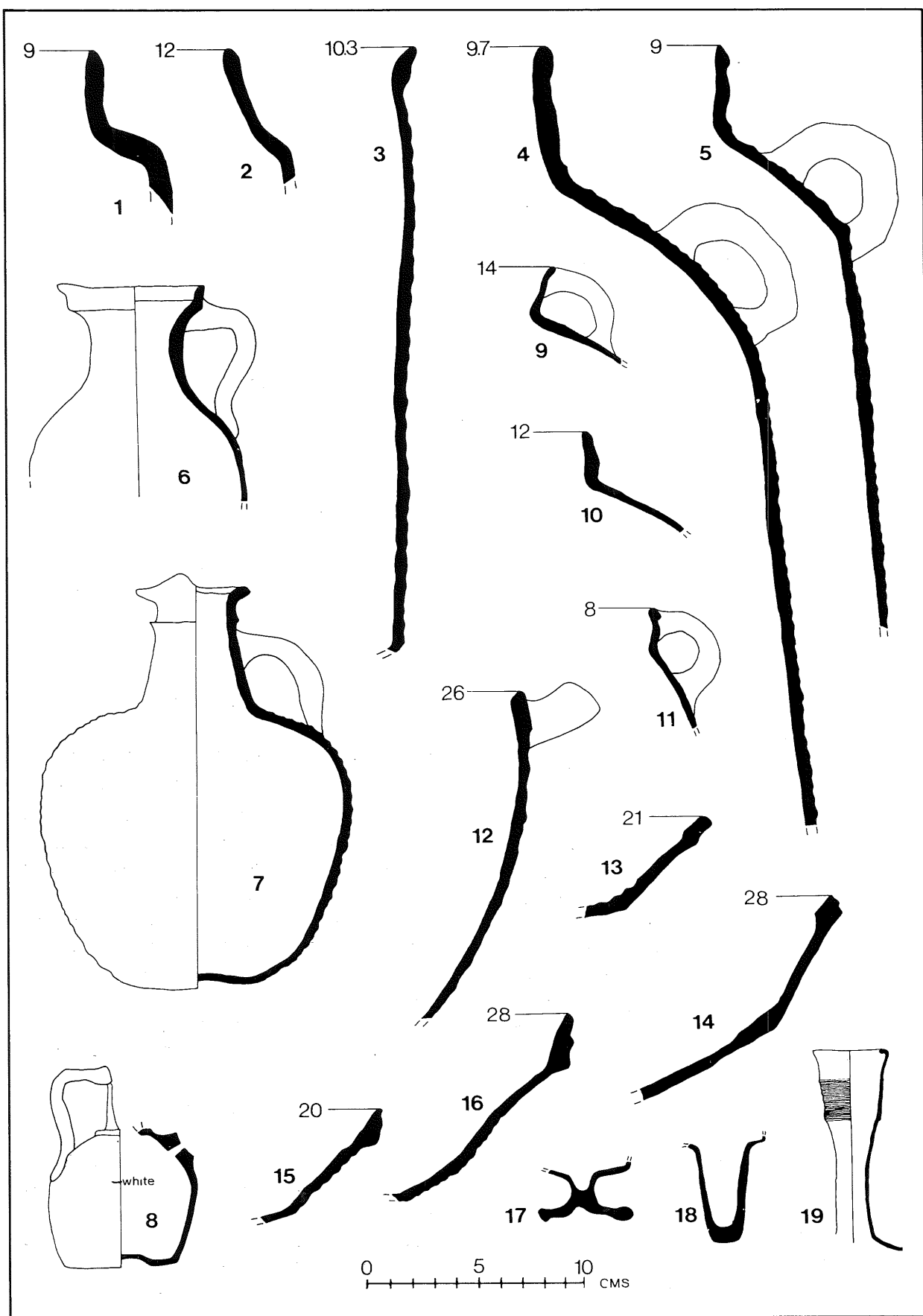


Fig. 4 Typical examples of pottery, glass and drains from the excavation of the building complex.

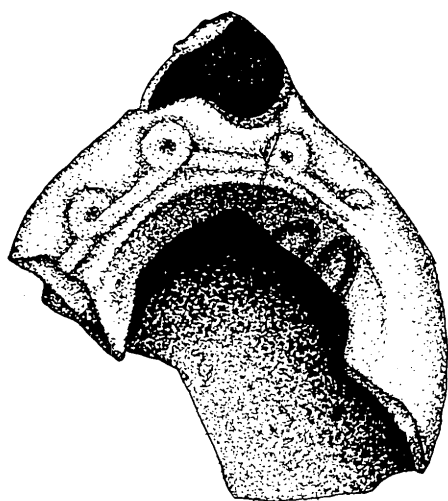


FIG. 5.1

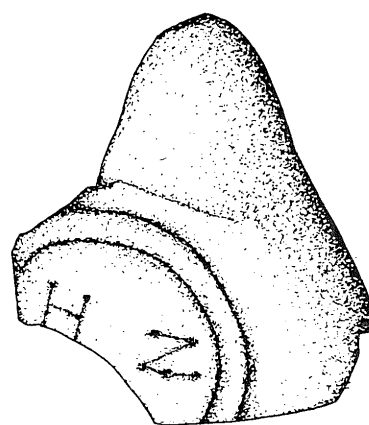


FIG. 5.2

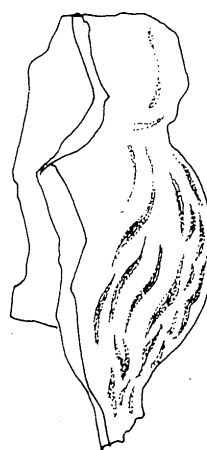
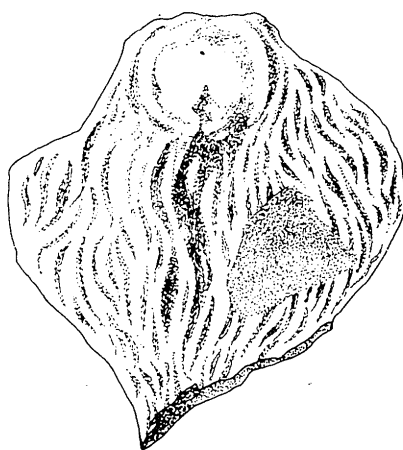


FIG. 5.3



FIG. 5.4

Fig. 5 Fragments of lamps and miscellania. Drawing: J. Levinsen.

traces of painted wall plaster. That of room IV could be dated to the Bath Periods, whilst the west suite must have been redecorated in its latest phase under the Umayyads.

The pottery shows some marked differences between the two levels. The older level only yields jars of Roman-Byzantine types, grey or buff-coloured (Fig. 4.4), whereas the black, white-painted ware dominates the later level (Fig. 4.5). Jugs offer a greater variety of shapes (Figs. 4.6-8; the latter is in black, white-painted ware). Cooking vessels are mostly of closed shapes (Figs. 4.9-11); open vessels appear in connection with the late habitation (Fig. 4.12). Bowls in fine wares are infrequent. In the older level Galilean bowls predominate (Figs. 4.13-14) whereas bowls with an embossed rim are typical of the younger level (Figs. 4.15-16).

Glass finds are rare. Yet, there was such an abundance of glass of all kinds and for all purposes in the successive layers in room III belonging to the Umayyad phases that it made one think of the dumps of a glass dealer (Fig. 4.17-19).

In room VIIIA, which was sealed off in the course of the first Bath Period, some lamp fragments were found (Fig. 5.1-2).

The coins found in the Bath are very worn, but the debris deposited north of the Bath yielded a number of much corroded Roman coins, most of which were minted locally.

The miscellanea include fragments of terracotta figurines (Fig. 5.3), two cosmetic bronze ladles, remnants of bone needles and a glass cover knob, shaped after a lion's head (Fig. 5.4).

A complete catalogue of the finds is being prepared for publication in the *Abhandlungen*.

Soundings at the Western Outskirts of Umm Qeis

While surveying the area west of the present village in the middle of the seventies, Dr. Ute Lux found so many Iron Age sherds that she considered it worthwhile,

given the opportunity, to make soundings to investigate whether there had been any settlement before the Roman-Byzantine-Umayyad periods, so amply represented to the east (*cf.* ZDPV 1978, pp.135-44 and 1980, pp.48-58). Not having found the opportunity, however, to make such a sounding, she suggested that we should make the attempt during our campaign in 1983.

Dr. John Strange, who had worked as a site supervisor in the Bath in the years 1978 and 1981, accepted the job. During six weeks in October-November three test trenches were dug just north of the *Decumanus Maximus*, about 400 metres west of the Bath. A final report on these soundings will be published by John Strange in ZDPV.

The surface finds and the pottery found in the soundings seem to suggest that the area in question was settled in some form for a short period during the Iron Age, possibly also in the Persian period and again in the Roman period. However, no building remains from these periods were found. The test trenches may of course have inadvertently avoided any such remains, but the general impression is that the area was not permanently settled.

The building remains actually found date from the Byzantine period, but these are also sparse. The pottery does, however, indicate a settlement up to and during the Mamluk period, perhaps with some breaks.

Generally the soundings gave the impression that the settlement in the Byzantine and Umayyad periods was concentrated further to the east, but that the remaining settlers, after the destruction of the city in the 8th century A.D., moved further west, where the soil was more fertile. The area where the soundings were made was later used as a cemetery, and then a refuse dump in the Mamluk period.

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THE LIMES ARABICUS PROJECT: THE 1985 CAMPAIGN

by

S. Thomas Parker

Introduction

The Limes Arabicus Project seeks to gain an understanding of the historical development of the sector of the Roman frontier east of the Dead Sea between A.D. 300 and 550. The beginning of this period witnessed a dramatic military buildup in this region, including the erection of new fortifications, systematic repair of the regional road network, and the arrival of new military units (Fig. 1). For about two centuries the frontier (in Latin, *limes*) remained well fortified, but by the early 6th century there appears to have been a widespread abandonment of most of these frontier forts.¹ Therefore, the project seeks to answer two principal historical questions: What can account for the massive military buildup in this sector about A.D. 300? Why were most of these same fortifications abandoned about two centuries later?²

A four part program is being employed in order to answer these questions: 1) large scale excavation of the legionary fortress of el-Lejjūn (the largest military site in this sector), 2) limited soundings of several smaller fortifications, 3) intensive archaeological survey of the frontier zone, 4) a parallel survey of the desert fringe east of the frontier to learn about the nomadic tribes. Three of five planned campaigns have been conducted thus far, in 1980, 1982, and 1985.³ Additional campaigns

are scheduled for 1987 and 1989.⁴

The 1985 campaign was conducted between June 8 and July 31, under a permit granted by the Department of Antiquities of Jordan. The project is sponsored by North Carolina State University and is affiliated with the American Center of Oriental Research (ACOR) in Amman. Principal funding for the 1985 season again was provided by the National Endowment for the Humanities. Additional funding was provided by the Dumbarton Oaks Center for Byzantine Studies, the National Geographic Society, the North Carolina State University Foundation, the NCSU Faculty Professional Development Fund, student contributions, and a number of private donors. The Department of Antiquities also provided important logistical assistance. The author is deeply grateful to all these organizations and individuals for their support. Special thanks are due Dr. 'Adnan Ḥadidi, Director of the Department of Antiquities, and Dr. David W. McCreery, Director of ACOR.

Senior staff in the field in 1985 included John Wilson Betlyon as numismatist and camp administrator, Vincent A. Clark as team leader of the desert survey and Semitic epigrapher, Patricia Crawford as paleo-botanist, Bert De Vries as architect/surveyor, Eric Green as photographer, Jennifer C. Groot as objects specialist, Denise Hoffman as draftsman, Frank L. Koucky

1. For a detailed examination of the Arabian frontier and its history, see S. Thomas Parker, *Romans and Saracens: A History of the Arabian Frontier*, ASOR Dissertation Series no. 6, Philadelphia, 1986.
2. S. Thomas Parker, *Archaeological Survey of the Limes Arabicus: A Preliminary Report*, *ADAJ* 21 (1976) 19-31; Parker, *Towards a History of the Limes Arabicus*, pp. 865-878 in W. S. Hansen and L. J. F. Keppie, eds. *Roman Frontier Studies 1979* (Oxford: British Archaeological Reports, 1980).

3. For the most detailed preliminary reports, cf. Parker, *Preliminary Report on the 1980 Season of the Central Limes Arabicus Project*, *BASOR* 247 (1982) 1-26; *Preliminary Report on the 1982 Season of the Central Limes Arabicus Project*, *BASOR Supplement No. 23* (1985) 1-34.
4. For briefer preliminary reports on the first two seasons, cf. *ADAJ* 25 (1981) 171-178; *ADAJ* 27 (1983) 213-230; *Archaeology* 37.5 (1984) 33-39.

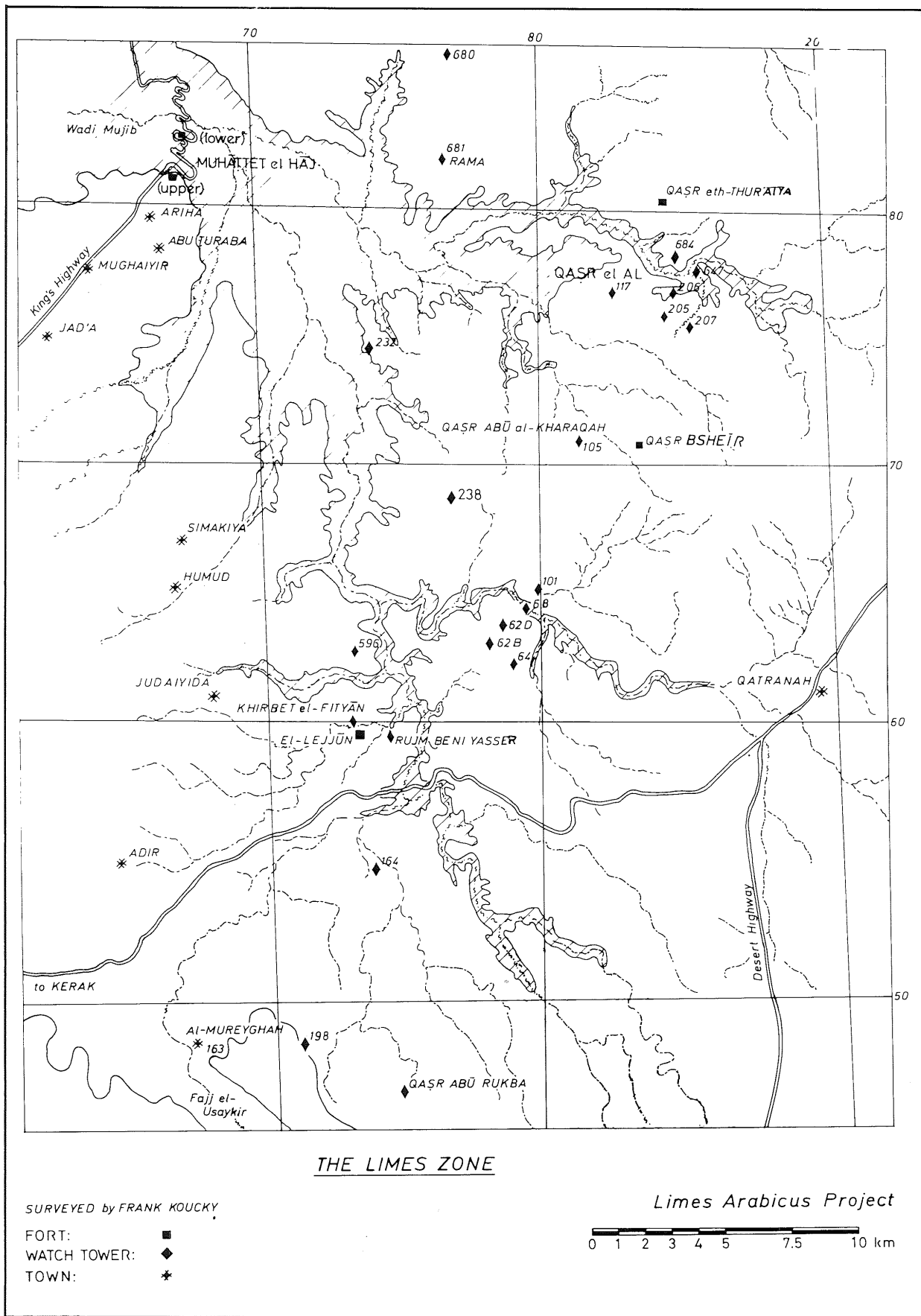


Fig. 1 Map of the frontier zone (*Limes Arabicus*) east of the Dead Sea.

as geologist and director of the survey, S. Thomas Parker as director, stratigrapher, and ceramicist, and Michael Toplyn as faunal analyst. Area supervisors were Anne E. Haeckl (Area A- the Lejjūn *principia*, Jennifer Groot (Areas B and K- the Lejjūn barracks), Andrea Lain (Area C - the Lejjūn fortifications), Vincent A. Clark (Area H- Qaṣr Bsheīr), Robert Schick (Area J- the Lejjūn church). Nabil Beqa'in again served as department representative. Square supervisors included Lynn Boone, Susan Downey, Julie Ferguson, Timothy Ferrell, Victoria Godwin, Nelson Harris, Eric Lapp, Kathleen Mitchell, Jane O'Brien, Janice Scilipoti, Patricia Seabolt, Michelle Stevens, Michael Strickland, Carolyn Tesari, Laurie Tiede, Anne Undeland, and Louise Zimmer. James Michener and Daniel Ritsema were assistant architect/surveyors. Victoria Godwin served as pottery and glass registrar.

The following is a summary of the results of the 1985 season in preliminary form. It describes the results obtained from excavation of the Lejjūn legionary fortress, soundings of the *castella* of Khirbet el-Fityān and Qaṣr Bsheīr, survey of the *limes* zone itself, and survey of the desert fringe east of the frontier. Finally, some preliminary historical conclusions are drawn from these and prior results.

Excavation of the Lejjūn Legionary Fortress

A) Plan of the fortress and Stratigraphic Summary⁵

The Lejjūn fortress offers the rare opportunity to study a late Roman legionary fortress built *de novo* on a virgin site and not complicated by significant later occupation. The site has long been identified as Betthorus, base of *legio* IV *Martia*, *ca.*

A.D. 400 in the *Notitia Dignitatum*.⁶ This identification is still unproven by the project but remains probable. The fortress (Fig. 2) measures 242 x 190 m. and covers an area of 4.6 ha. (*ca.* 11 acres). The fortress is protected by an enclosure wall 2.40 m. thick and studded with projecting towers. Each wall is pierced in the middle by a gate. Two major streets intersect at right angles at the *groma* or middle of the fortress: the *via praetoria* extends from the east gate to the *groma*, the *via principalis* runs from the north gate to the south gate. Near the intersection of the two streets at the *groma* is the *principia* or headquarters building. The entire eastern half of the fortress is devoted to blocks of barracks.

The objective in excavating Lejjūn is to learn its complete stratigraphic history, shed light on the garrison and its role in the military frontier, and recover data about the late Roman legion and *limitanei* (frontier forces) of the late Empire. The strategy has been to sample through excavation each principal component of the fortress: the headquarters building, barracks, fortifications, and a church. A major structure in the *vicus* has also been sounded. This proved to be a *mansio* or *caravanserai*.⁷

A major achievement of the 1985 season was the completion of a remeasured and relatively detailed overall plan by the project architects, superseding that of Domaszewski.⁸

B) Stratigraphic Summary

The first season in 1980 established a basic stratigraphic sequence based on associated numismatic and ceramic evidence. Results from 1982 permitted a slightly more refined stratigraphic picture.⁹ Results from 1985 have not altered the major

5. For a more detailed overview of the fortress, cf. James Lander and S. Thomas Parker, *Legio IV Martia and the Legionary Camp at el-Lejjūn*, *Byzantinische Forschungen* 8 (1982) 185-210.

6. *N. D.* 37.22.

7. Parker, *BASOR Supplement* 23 (1985) 13-14, Fig. 13.

8. R. Brünnow and A. von Domaszewski, *Die Provincia Arabia*, 3 vols., Strasburg, 1904-09. Their descriptions and photographs, however, made before establishment of the Late Ottoman resettlement *ca.* 1900, are still valuable.

9. Parker, *BASOR Supplement* 23 (1985) 1-2.

periods of occupation (*ca.* A.D. 284-551) but did produce the first evidence of Umayyad (*ca.* 661-750) occupation, albeit rather minor and confined to a single area, the northwestern angle tower. Whether this material is sufficient to justify it as a new stratum, is as yet undecided. Otherwise, the stratigraphic framework is little changed:

Stratum	Period	Approximate Date
VII	Early Roman	63 B.C. - A.D. 135
Post Stratum VII Gap	Late Roman I-III	A.D. 135-284
VI	Late Roman IV	284-324
VB	Early Byzantine I	324-363
VA	Early Byzantine II	363-400
IV	Early Byzantine III-IV	400-502
III	Late Byzantine I-II	502-551
Post Stratum II	III Gap	551-1900
II	Late Ottoman	1900-1918
I	Modern	1918-

Stratified Early Roman (Nabataean) evidence has come from Rujm Beni Yaser, *ca.* 1.5 km. east of Lejjūn. The fortress itself has yielded very small amounts of Nabataean pottery, though never in a stratified context. This suggests that a small Nabataean site may have been obliterated completely by the subsequent massive legionary occupation.

C) The Principia (Area A)

The headquarters building (63 x 52.50 m.), in its traditional location at the intersection of the *via praetoria* and *via principalis* (Fig. 3), contains the essential elements of the classic *principia*: 1) the principal entrance at the *groma* leading into an outer or public courtyard, 2) an inner, sacred courtyard or transverse basilical hall, and 3) a block of official rooms serving as administrative offices and containing the legionary shrine, or *aedes*. Work in 1985 continued in the 'L'-shaped area in the southwestern quadrant of the building, encompassing a portion of each major architectural element. This sector was also worked in both previous seasons. In addition, excavation was initiated in the *groma*

fronting the *principia*.

The major elements of the building's plan were elucidated in 1980 and 1982. Some further details were revealed this season. In 1985 the complete stratigraphic profile of the *principia* was obtained. Although its major walls appear to date from the primary stratum (VI) of fortress construction, the building was thoroughly remodelled in the late 4th century, perhaps following the A.D. 363 earthquake.

Excavation of a portion of the *groma* revealed a monumental gatehouse decorated with engaged columns, reminiscent of the legionary headquarters buildings at Lambaesis and Palmyra. The date of construction of this gatehouse is as yet undetermined. The large public courtyard was separated from the inner sacred courtyard by a series of pier and arches. At the southern end of the inner courtyard was the *tribunal* or elevated platform for officers to address small contingents of troops.

To the west of the courtyard and south of the *aedes*, in the official range of rooms, further excavation was conducted in a large room identified as an *officium*. Recovery of several phases of hearths, numerous fragments of cookingpots, and charred animal bones suggested considerable domestic activity in one corner of this room. Limited excavation of the narrow space between this room and the *aedes* to the north confirmed an earlier supposition that this was a corridor leading from the sacred courtyard to the west exterior of the building.

The interior of the *aedes* or legionary shrine was rebuilt in the late 4th century with a U-shaped platform extending around three sides. Access to the platform, supported by the barrel-vaulted substructures discovered in 1982, was provided by staircases in the southeast and (presumably) northeast corners of the room. Another staircase led up to the platform on the west wall that supported the legionary standard base. This staircase, the standard base, and the *aedes* entrance are all on an east-west axis with the entrance to the *principia*, the *groma*, the *via praetoria* and the *porta praetoria*, as is typical of Roman military architecture. There was no

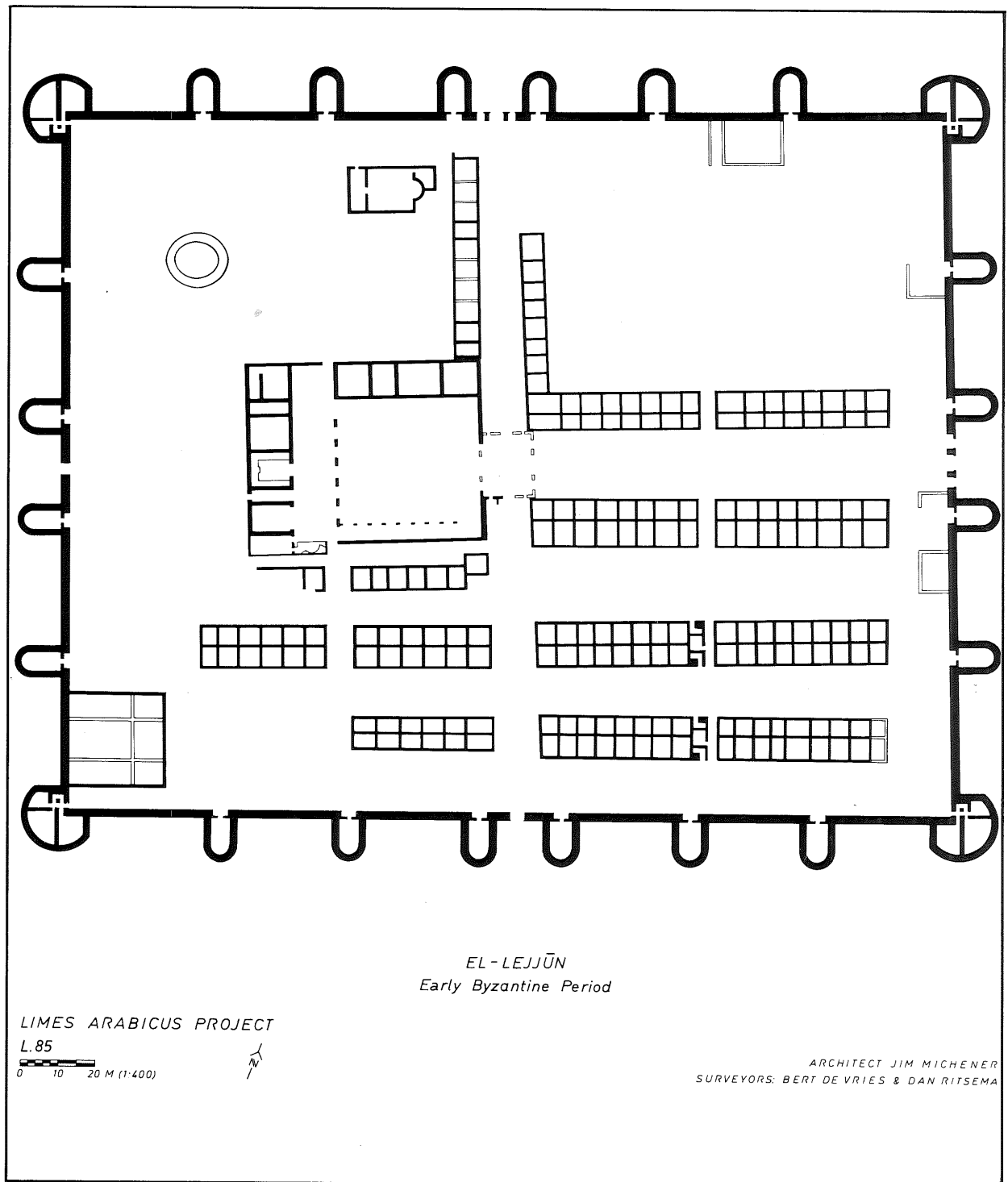


Fig. 2 Plan of el-Lejjūn in the Early Byzantine period.

evidence of an underground vault that might have served as the legionary treasury. But the handful of stray coins found at the entrances to the barrel vaults suggested that the vaults themselves perhaps served this purpose.

D) The Barracks (Area B and K)

Excavation continued in Area B, examining a set of rooms within one of four major barracks blocks visible on the surface (Fig. 5). The goals were to recover

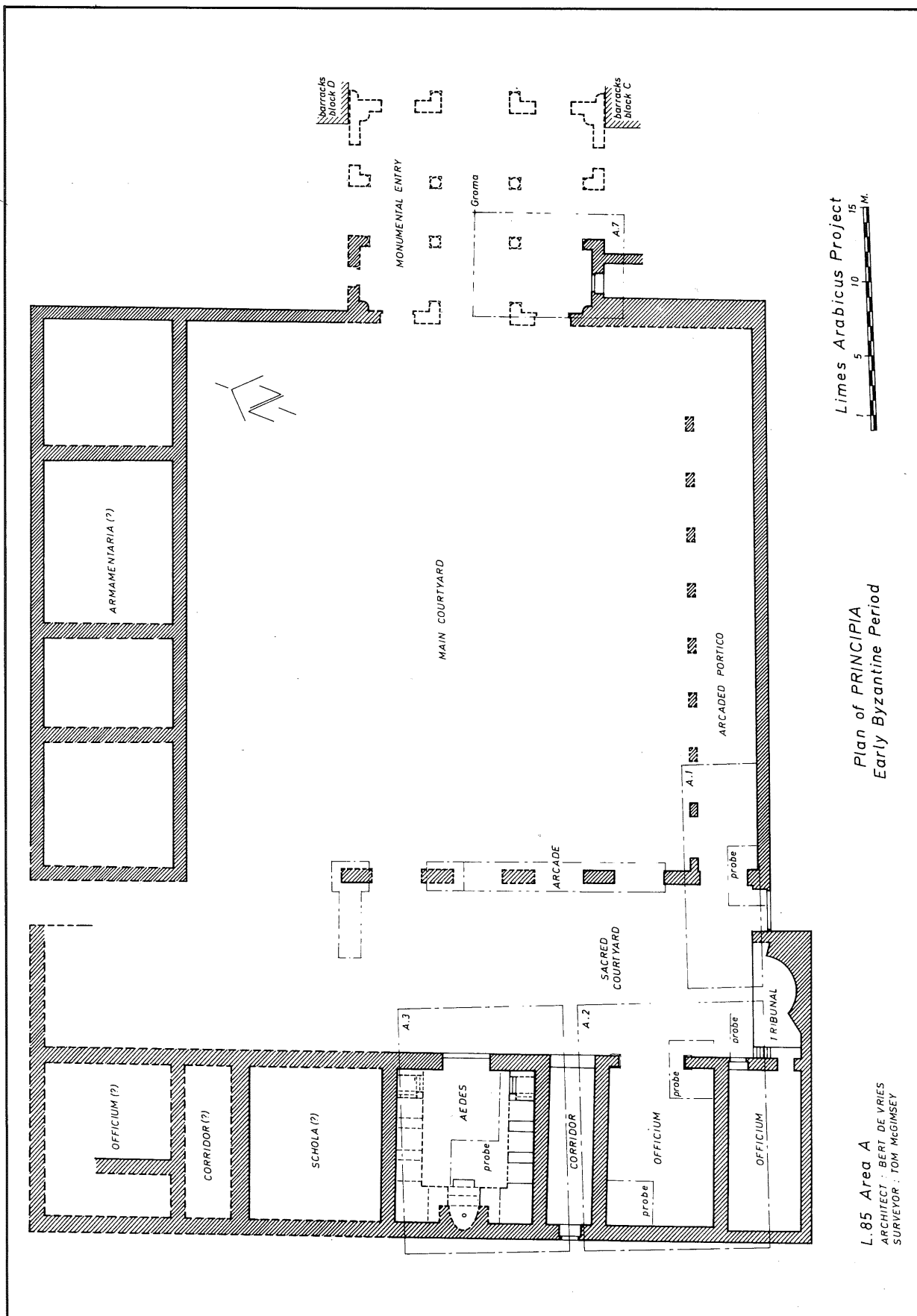


Fig. 3 Plan of the *principia* of el-Lejjūn.

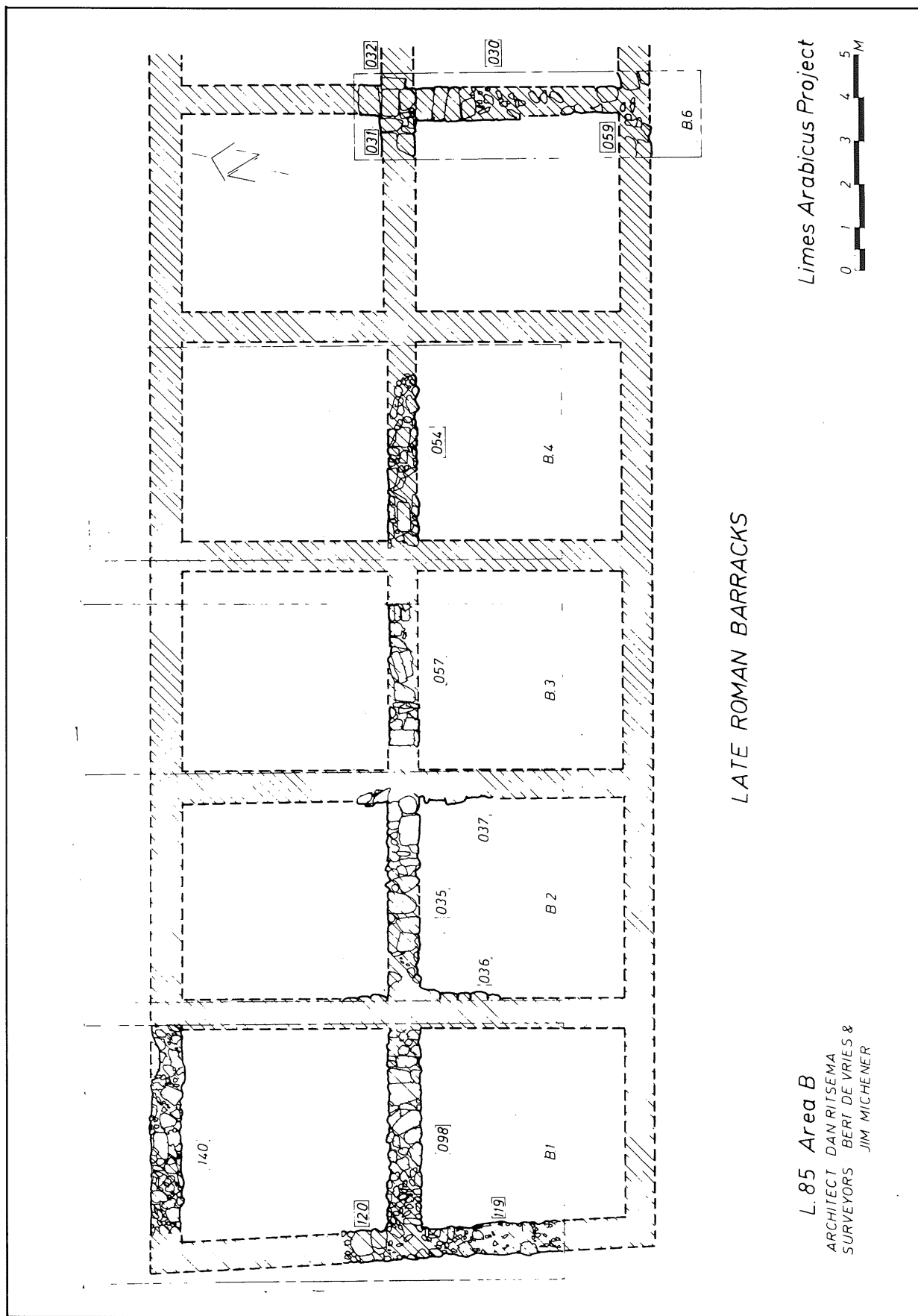


Fig. 4 Plan of the Late Roman barracks in Area B.

the plan of this sector of the block and recover cultural material relating to the legionary garrison, including evidence on the supposed transformation of the late Roman *limitanei* from full-time soldiers to a hereditary peasant militia.

In 1980 and 1982 four rooms and associated courtyards (B.1-4) at the western end of block B, south of the central spine wall, were excavated. B.2 and B.3 were completely excavated in 1982. The other two (B.1 and B.4) were finished this season. In addition, two additional trenches (B.5. and B.6) were laid out farther down the block to the east. B.5 (8x2 m.) was laid out to recover more of the plan of the primary Late Roman (Stratum VI) barracks found in 1982 (Fig. 4). A secondary goal was to section the alleyway between blocks A and B. B.6 (13 x 9m.) was laid out to investigate an anomaly in the plan. Detailed planning revealed an interruption in the continuous row of rooms about midway down this block and in the other three blocks. This feature was not noticed by Domaszewski. Clearance of the surface rock tumble revealed a passageway connecting the alleyway between A and B blocks with that between blocks B and C. A small room of uncertain purpose opened onto the passageway. The small room was flanked on both north and south by 'L'-shaped staircases entered from the two alleyways. These staircases gave access to the roof of the barracks, perhaps to facilitate roof-maintenance.

The evidence obtained offered further support for the stratigraphic framework for this barracks specifically and the fortress generally as elucidated in the previous seasons.¹⁰

Strata VI-VB (ca. 284-363) witnessed the erection and initial occupation of the garrison, probably punctuated by the earthquake of 363. A partial plan of this primary barracks was recovered in Area B (Fig. 4). Important new evidence about this period was obtained from two long trenches

(Area K) in the northeastern quadrant. This sector is mostly devoid of surface ruins and appears largely empty on both Domaszewski's plan and more recent aerial photographs. However, several fragments of walls appear on Domaszewski's plan and traces of a few wall lines were still discernable on the surface. Further, surface sherding of this quadrant produced a pottery sample that was over 70 % Late Roman in date (i.e. late 3rd and early 4th century). Thus two trenches were laid out to determine whether barracks existed here during Strata VI-VB.

One trench (K.1, 56m. x 1.5m.) ran south from near the north enclosure wall to the northern face of block D. Another trench, K.2 (14.5 x 2.5 m.), extended parallel to and just west of the eastern enclosure wall in an effort to locate the eastern terminus of these early barracks. The foundations of four barracks blocks, each separated from others by intervening alleys, were found just below the surface. The walls were associated with Late Roman pottery and three 4th century coins. The barrack rooms were identical in size to those of the same period in Area B. The plans appear to be essentially similar to the later Byzantine barracks of Strata VA-III. The major difference is that there were apparently eight barracks blocks in the eastern half of the fortress as originally built (Fig. 6). But following the demolition of the eight old barracks to their foundations in the late 4th century, only four new blocks were reconstructed. This implies a 50 % reduction in the size of the IV *Martia*.

E) *The Fortifications*

The project is sampling each component of the fortifications of the fortress: enclosure wall, 20 U-shaped interval towers, four semi-circular angle towers, and four gateways. In 1980 a section through the northern enclosure wall was conducted. Representative angle and interval towers were excavated in 1982.¹¹ Work conti-

10. Parker, *BASOR* 247 (1982) p. 2, 9-10.

11. For detailed plans and a section, cf. Parker,

BASOR Supplement no. 23, 1985, p. 11, Fig. 10.

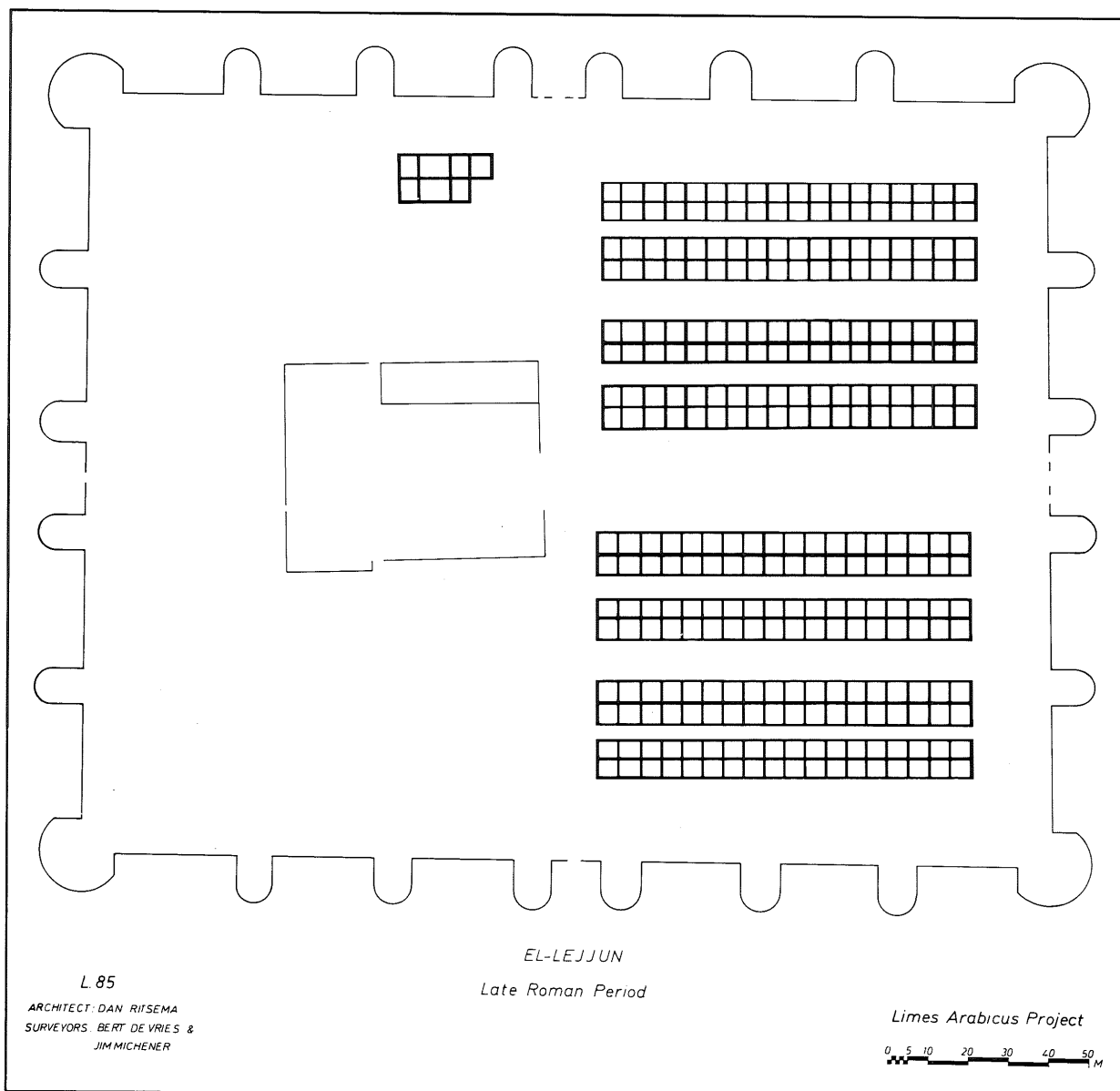


Fig. 6 Plan of el-Lejjūn in the Late Roman period.

nued in the northwest angle tower (number VI on Domaszewski's plan) this season. The major goals were to check the accuracy of Domaszewski's plans and sections and recover the occupational history of the tower. A gateway will be excavated in a future season.

The tower measures 19 m. in diameter (Fig. 7). The tower walls project 6 m. from the enclosure wall before curving to form a semi-circle. The interior of the tower is divided into four rooms. The small southeast room, completely cleared in 1982, contains the entrance into the tower from the fortress, a corridor providing access to the three other ground floor rooms,

and a staircase reaching to the upper stories (Fig. 8). This season the other three rooms of the first story were partially excavated. All were roofed by a series of parallel limestone arches that carried oblong roofing slabs. Several of the arches had fallen with their blocks still closely aligned. As in past seasons, bedouin burials from the late Islamic period were encountered in the rubble near the surface. Holes (for tethering animals?) were drilled in the springers of several arches in the larger northwest and northeast rooms, suggesting their use as stables. The roofs of these two rooms apparently collapsed in the 551 earthquake. But some limited evidence of

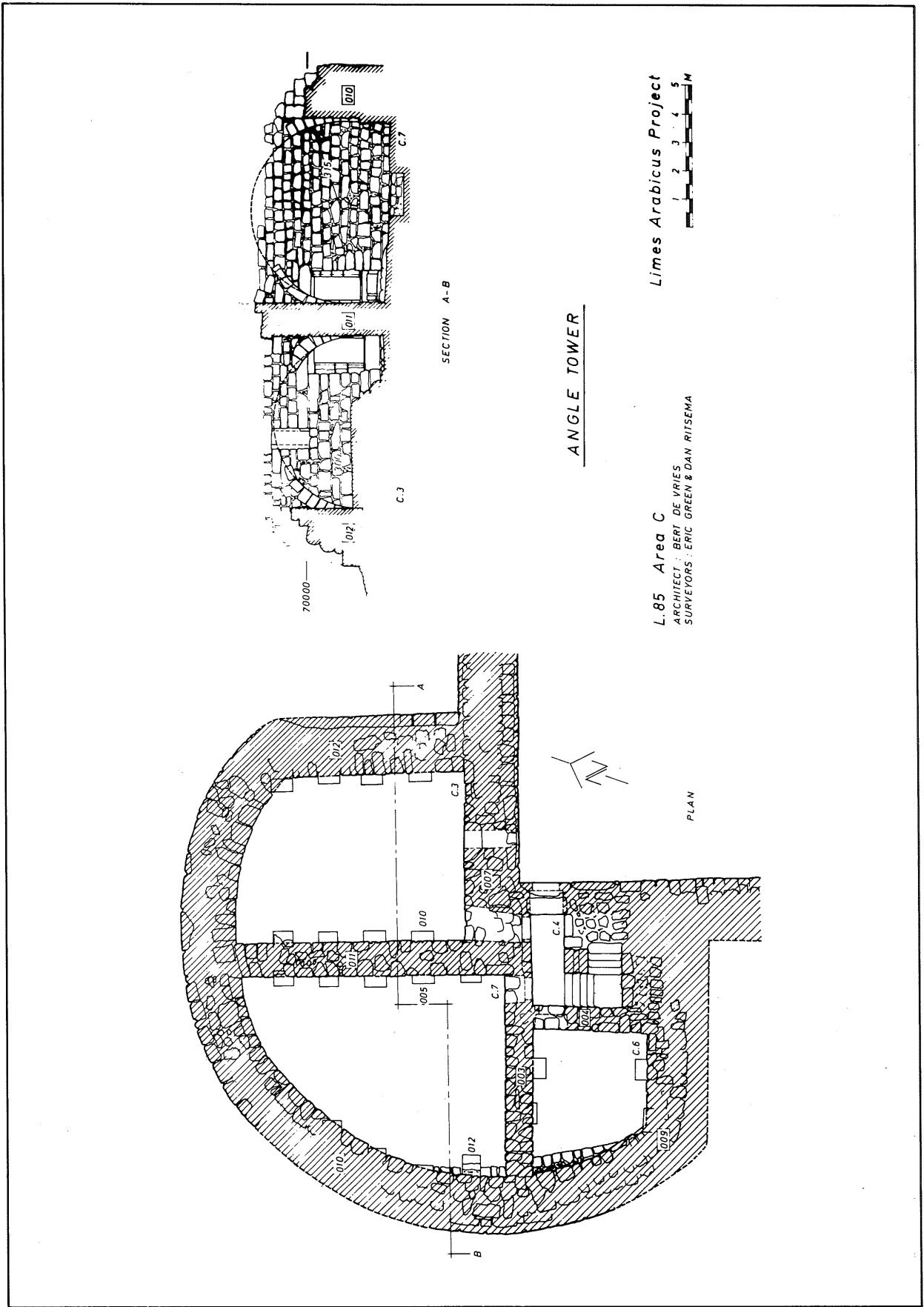


Fig. 7 Plan and section of the northwest angle tower of Lejjūn.

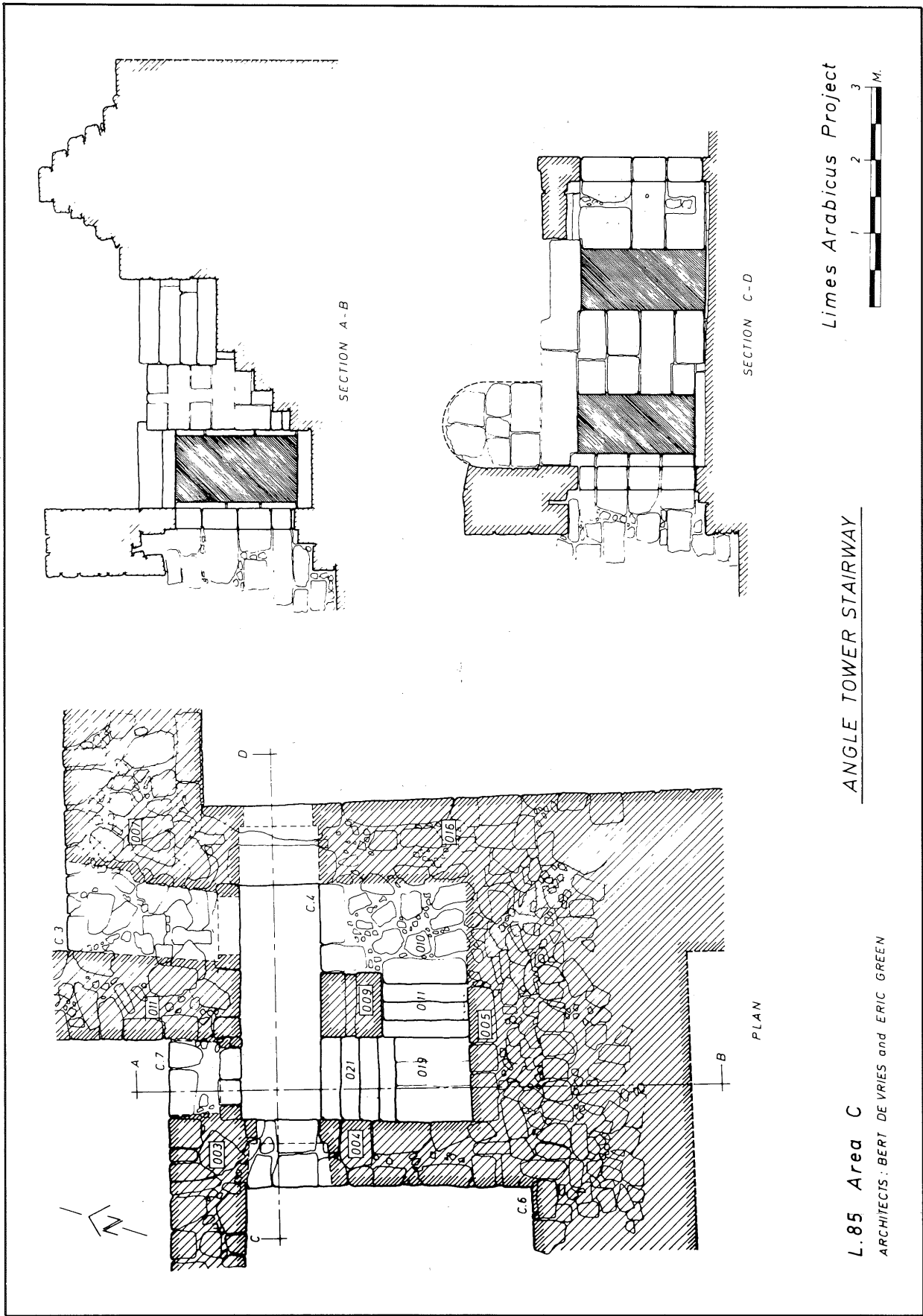


Fig. 8 Plan and section of the angle tower stairway.

Umayyad occupation (late 7th or early 8th century) was recovered near their still intact doorways. The much smaller southwest room, however, apparently remained roofed and was in use intermittently in the Islamic period, as evidenced by several domestic installations. Beneath this material was evidence of Byzantine and Late Roman occupation in these rooms. Foundations were reached only in a restricted probe in the northwest room, however, requiring further excavation next season.

The projecting angle tower fits neatly into the typology of Roman fortifications of the late 3rd and 4th century, as noted elsewhere.¹²

F) The Church

Among the buildings within the fortress is a rectangular structure in the northwest quadrant near the north gate with an apse on its eastern end (Fig. 9). This building, tentatively identified as a church from its surface architectural features, was investigated through a series of trenches (J. 1-6). The identity of the building as a church was confirmed. Other principal goals were to date the church, articulate its plan, and recover its occupational history. Since Diocletian launched the last great persecution of Christianity in the Empire and systematically purged Christians from the army, the church could not have been built when the fortress was constructed, *ca.* 300. But how much later was it erected? Its date provides evidence for the vexed problem of the conversion of the Roman army from paganism to Christianity.¹³ Further, since the church was clearly secondary in date, what occupied this space originally? Because sacred places tend to remain sacred, even after a change in religion, would an earlier pagan structure of some sort be found beneath the church?

The church measures *ca.* 24 x 13 m., including the narthex on its western end. The church was basilical in plan, with the nave divided into three aisles by east-west

arches carried by columns. Somewhat surprisingly, the only entrance into the church from the exterior was via a door in the north wall of the narthex. The narthex was roofed by parallel limestone arches and slabs. A second door in the east wall of the narthex gave access into the nave. An additional room, probably a sacristy, is located on the northeast corner of the building. The church was erected in the late 5th century, based on pottery and coins from its foundations. A major refurbishing occurred in the early 6th century. This included laying new floors of oil shale pavers, rebuilding the doorways at a higher level, constructing a new chancel screen of carved oil shale, and adding a *synthronon*, or deacons' bench, in the apse. The sacristy was connected by a doorway with the north side aisle of the nave. The sacristy yielded considerable artifactual material apparently sealed by the 551 earthquake. This included several large storage jars and a ceramic multi-nozzled ring lamp. The ring lamp was incised with 'trees of life' surmounted by birds in full relief.

This church is small and appears to be quite poor and shoddy, even by the relatively modest standards of Transjordan. There was no evidence that mosaics, frescoes, or marble were used. Beneath the church were extensive wall foundations of an earlier structure, probably contemporary with the foundation of the fortress. But whether these foundations actually represent an earlier pagan sanctuary or some secular structure cannot yet be determined.

In any event, it seems clear that a significant portion of the garrison was Christianized by the late 5th century. How long paganism survived among the soldiers is problematic. There is evidence of deeply devout pagans in the local area. At Areopolis (modern Rabba, *ca.* 12 km. west of Lejjūn), pagans reportedly rioted *ca.* 385 when the imperial authorities attempted to close or destroy their temples.¹⁴

12. For detailed citations of close parallels from several parts of the Empire, *cf.* Parker, *Ibid.*, p. 13.

13. For a recent discussion, *cf.* R. MacMullen,

Christianizing the Roman Empire, New Haven, 1984, p. 41-44.

14. A. H. M. Jones, *The Late Roman Empire*, Oxford, 1964, p. 167, 943, with full references.

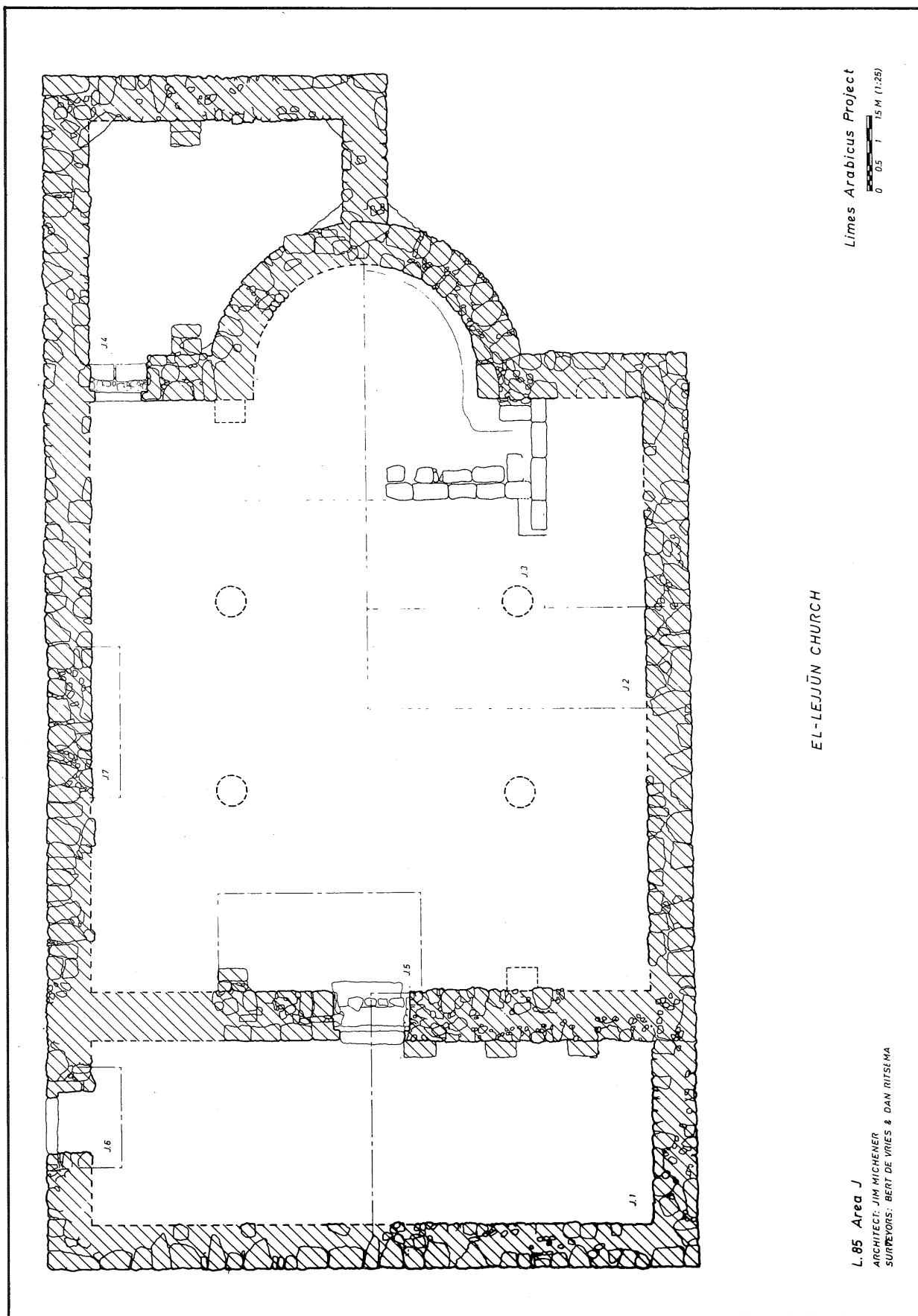


Fig. 9 Plan of the Byzantine church at el-Lejjūn.

Soundings of Khirbet el-Fityan

The *castellum* of Khirbet el-Fityān is located 1.5 km. northwest of Lejjūn. It sits atop the steep northern bank of the Wadi Lejjūn and commands the best view of the surrounding topography in the entire region. It probably served as the central hub of a complex observation and communication network, tested in 1982.¹⁵ Soundings of Fityān were conducted in 1980. These included excavation of the main gateway (D.1) and two adjacent barrack rooms (D.2-3).¹⁶ These soundings established that the barracks were built directly on bedrock during Stratum VI (ca. 300) and that the *castellum* was abandoned by the end of the 5th century.

Although the barracks were now securely dated, the date of the enclosure wall of the fort remained undetermined. Earlier pottery, including Early Bronze, Iron Age, and Early Roman (Nabataean) had appeared in the soundings, though always mixed with later material. Thus a trench (D.4) was laid out this season to section the west wall of the fort and determine its date. Unfortunately, very little artifactual material appeared in the foundations of the wall. The few sherds recovered dated to the Iron Age. Therefore the possibility remains that the Romans, although clearing the enclosed area of the fort to bedrock before constructing their barracks, may have simply built their enclosure wall atop an earlier Moabite foundation.

Soundings of Qaṣr Bsheir

Located 15 km. northeast of Lejjūn, Qaṣr Bsheir is one of the best preserved *castella* of the Roman Empire (Fig. 10). The fort, ca. 56 m. square, is a classic Diocletianic *quadriburgium* securely dated by its *in situ* Latin building inscription of 293-305 (Fig. 11).¹⁷ The fort was presumably garrisoned by an auxiliary unit. Surface pottery suggested it was abandoned

by the end of the 5th century. Thus this fort, contemporary with Lejjūn, offers important evidence about the major military buildup in this sector. Two small soundings (H. 1-2) conducted in 1982 revealed something of its occupational history, including evidence of some limited Umayyad occupation from one probe. The discovery of apparent mangers in most ground floor rooms strongly suggested that Bsheir was designed for a cavalry unit.¹⁸

Much more extensive soundings were undertaken in 1985. The goals were to prepare a new and more detailed plan of the fort and to obtain artifactual material for comparison with the legionary fortress, recover a complete stratigraphic profile of the fort, and learn more about its garrison. Soundings were laid out in the courtyard, in a stable, and in a cistern within the courtyard. A structure in the *vicus* outside the fort was also investigated. In addition, a new plan of the *castellum* was drawn, superseding that of Domaszewski (Fig. 11).

The results affirmed the stratigraphic history outlined above, with the primary occupation in the 4th and 5th centuries. Most ground floor rooms probably served as stables, with accommodation for at least 69 horses or camels. The soldiers were housed in the second story of the rooms built against the enclosure wall. The room directly opposite the main gateway probably served as the *principia*. It lacks both managers and a second story, having instead a high ceiling over the ground floor and an anteroom that projects into the courtyard. Further evidence of Umayyad occupation also appeared, although again confined to limited areas.

Survey of the Limes Zone

A substantial portion of the fortified frontier zone was surveyed in 1982, with 130 sites visited.¹⁹ In 1985 additional

15. Parker, *BASOR Supplement* no. 23 (1985) p. 16-19.

16. Parker, *BASOR* 247 (1985) p. 11-16, Figs. 12-15.

17. *C.I.L.* 3.14149. Its ancient name was

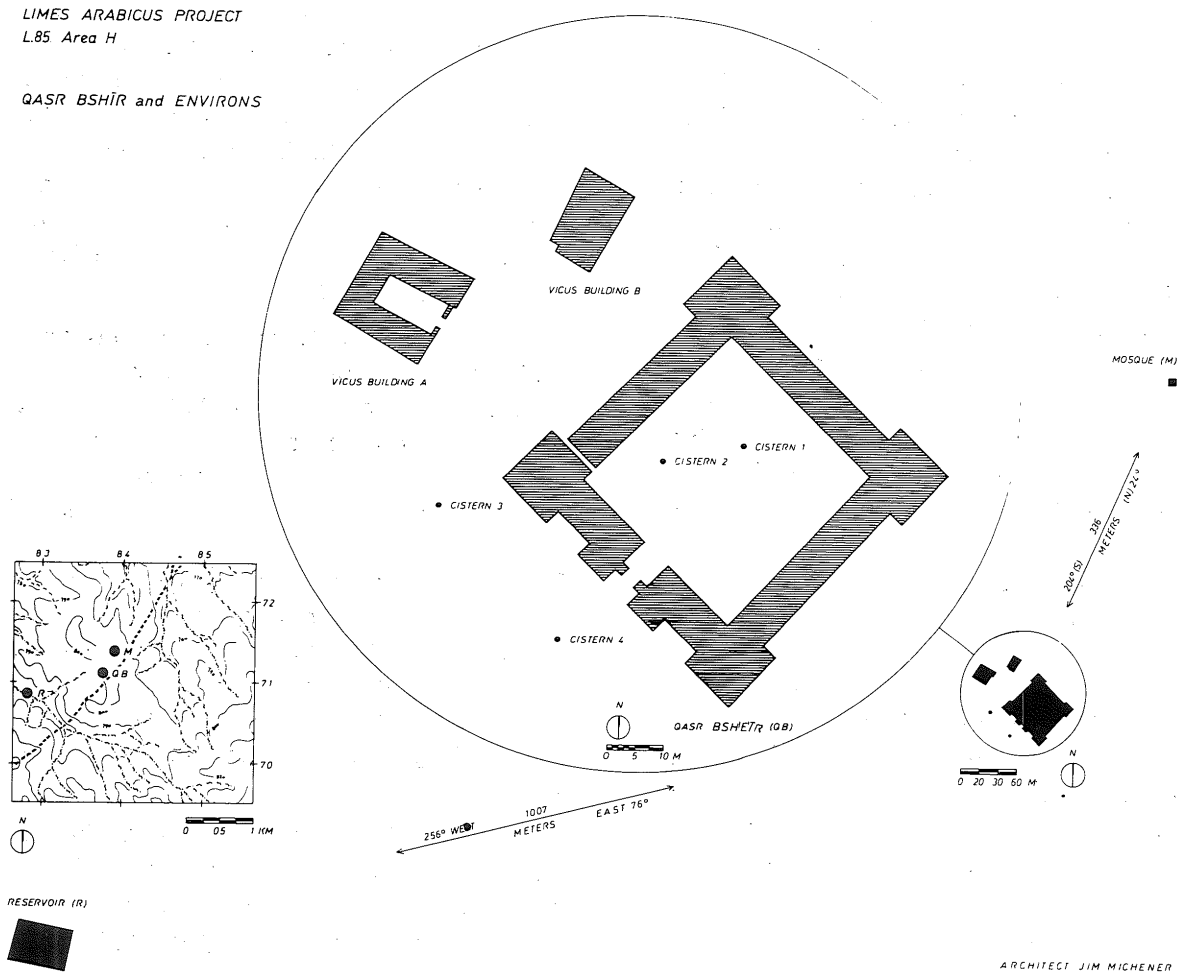
castra Praetorii Mobeni.

18. Parker, *BASOR Supplement* no. 23 (1985) p. 15-16.

19. Parker, *BASOR Supplement* no. 23 (1985) p. 16-18.

LIMES ARABICUS PROJECT
L.85 Area H

QASR BSHĪR and ENVIRONS



ARCHITECT JIM MICHENER
SURVEYORS BERT DE VRIES & DAN RIJSEMA

Fig. 10 Map of Qasr Bsheir and its environs.

sectors of both the desert fringe and the *limes* zone were surveyed. Although most of the *limes* zone within the region outlined above has been surveyed, a few gaps remain to be covered in the next season.

The surveyed region was generally bounded by the Desert Highway to the east, the Wadi as-Su'aydah to the north and the Wadi ad-Daba'ah to the west. Both wadis are part of the upper Mūjib catchment. A few sites were visited slightly beyond these parameters. This region, at the outer edge of the cultivated zone, served as the fortified frontier of three successive peoples: the Moabites, the Nabataeans, and the Romans. Each constructed a system of fortified posts that monitored movement of

nomadic tribes through the upper Wadi Mūjib and its tributaries. Interestingly, each group followed a somewhat different strategy, based on the deployment of their posts for observation and communication.

It appears on the basis of preliminary analyses of the data that the Nabataean frontier was advanced farthest east. This era also apparently witnessed the greatest number of sites occupied within the frontier zone. The outer edge of the Moabite and Roman frontier zones appear to have been located somewhat to the west. As pointed out long ago, many of the ubiquitous watchtowers were originally constructed in the Iron Age or Early Roman (Nabataean) periods and reused by the Romans.

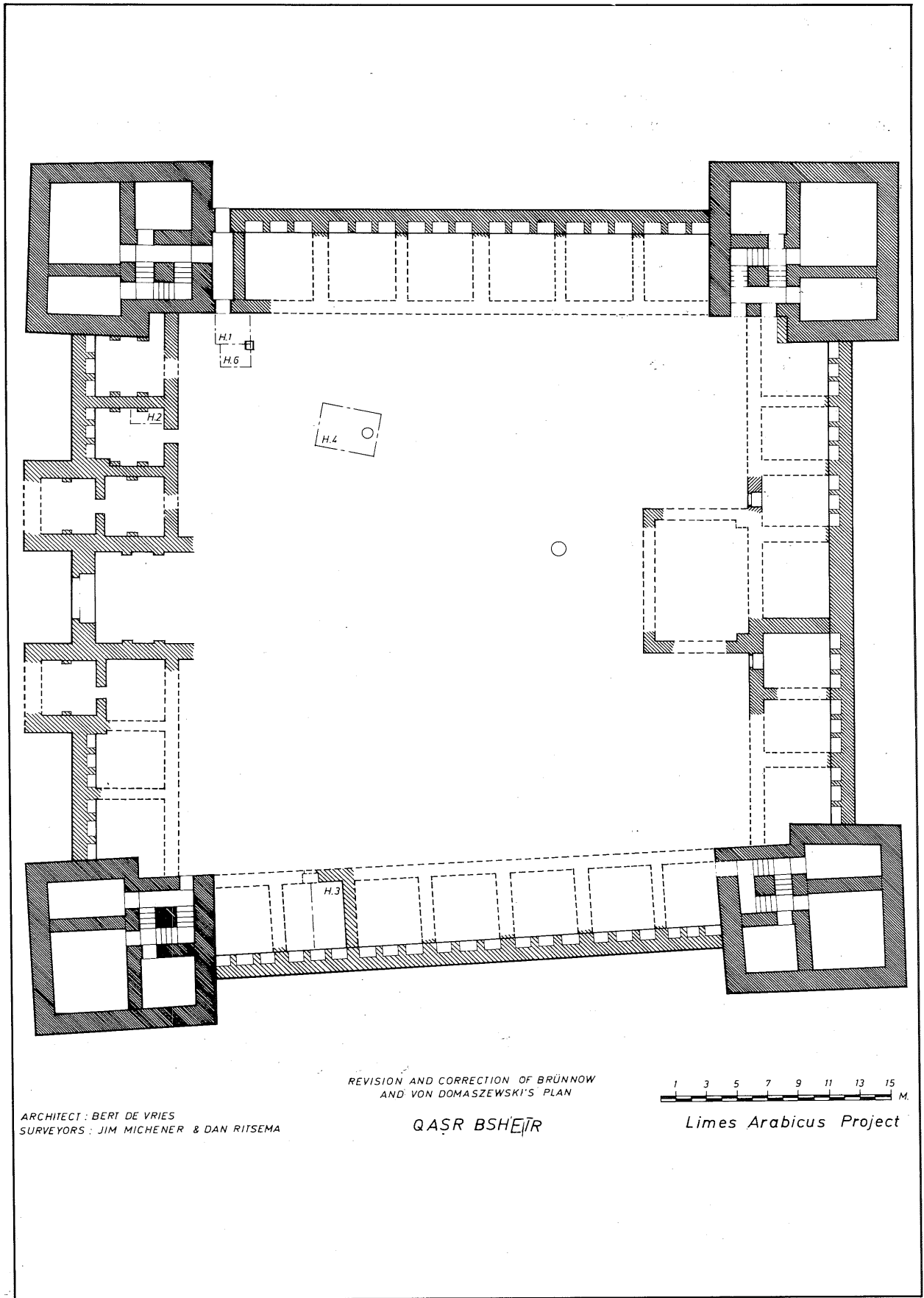


Fig. 11 Plan of Qaṣr Bshēīr.

Other towers, such as Qaşr Abū Rukba, appear to be Roman foundations (Fig. 12). The feasibility of rapid transmission of signals among the network of posts was demonstrated by a simulation in 1982.²⁰

In sum, considerable evidence of occupation was found from the Paleolithic (to 35,000 B.C.), Chalcolithic/Early Bronze Age (4500-2200 B.C.), Iron Age (1200-539 B.C.), Early Roman (63 B.C.-A.D. 135), and Late Roman/Early Byzantine periods (A.D. 284-500). There was little or no evidence of occupation of the region in the Neolithic (8500-4500 B.C.), Middle and Late Bronze Ages (2200-1200 B.C.), and Late Byzantine and Islamic periods (A.D. 500-1918).

The Desert Survey

Portions of the desert fringe up to 15 km. east of al-Qaṭrana were sampled in 1980. Some 50 sites were recorded.²¹ New areas south of the Wadi al-Ḥafirah were surveyed in 1985, for a total of over 100 sites surveyed from the desert fringe. Most of the sites visited were simple campsites utilized in several periods, presumably by nomads or semi-nomads. There was considerable evidence of human activity in the Paleolithic period. Evidence of the Nabataean presence was also considerable. The Nabataeans manned several outposts overlooking the wadis, no doubt to monitor nomadic movements. One or two of these sites found near Qaṭrana in 1980 probably also served the Romans in this fashion. No additional such outlying watchposts were found in 1985, however, suggesting that this region may have simply been patrolled, either by regular Roman forces or perhaps by *foederati*.

Historical Conclusions

The third season of the Limes Arabicus Project has provided more detailed evidence about the sector of the Roman fortified frontier east of the Dead Sea. Some

preliminary observations may be offered at this early stage. The military buildup in this sector *ca.* 300 may now be regarded as proven. It may be viewed as part and parcel of similar buildups along the Syrian frontier, where the *Strata Diocletiana* was established, and in northern Trans-jordan, where the northwestern outlet of the Wadi Sirḥān was refortified. The reasons for such a massive deployment of military and financial resources from an Empire only just recovering from the turmoil of the 3rd century are clear. Some reconstruction of the imperial defenses was mandated in any case after the Sassanid and Palmyrene invasions of the East. But the Saracene tribes posed another threat, in 290 requiring the presence of the Emperor Diocletian himself on a campaign in central Syria.

East of the Dead Sea, the evidence suggests that major nomadic pressure was being exerted through the Wadi el-Mūjib approaches to this frontier sector. Tribes of the Arabian peninsula, tempted by the weakened condition of the imperial defenses and suffering from the "bedouinization" of Arabia, migrated towards Roman territory. Unless controlled, they posed a threat to the local sedentary population.²² The Roman response to this threat involved reconstruction of the regional road system to facilitate movement of troops and supplies, construction of new forts, reoccupation and refurbishing of older Moabite/Nabataean fortifications, and the introduction of new military forces.

The most important new evidence obtained this season was the discovery of the 50% reduction of the legion at Lejjūn by the late 4th century. The abandonment of some forts by the late 5th century was already known, but the reduction by half of the largest military unit in this sector less than a century after the Diocletianic buildup was not.

What could have accounted for this reduction? Two possible explanations immediately spring to mind. Zosimus (2.34)

20. Parker, *BASOR Supplement* no. 23 (1985) p. 18-19.

21. Parker, *BASOR* 247 (1982) p. 18-19.

22. For a recent discussion of the Arabs in the 4th century, see Irfan Shahīd, *Byzantium and the Arabs in the Fourth Century*, Washington, D.C., 1984.

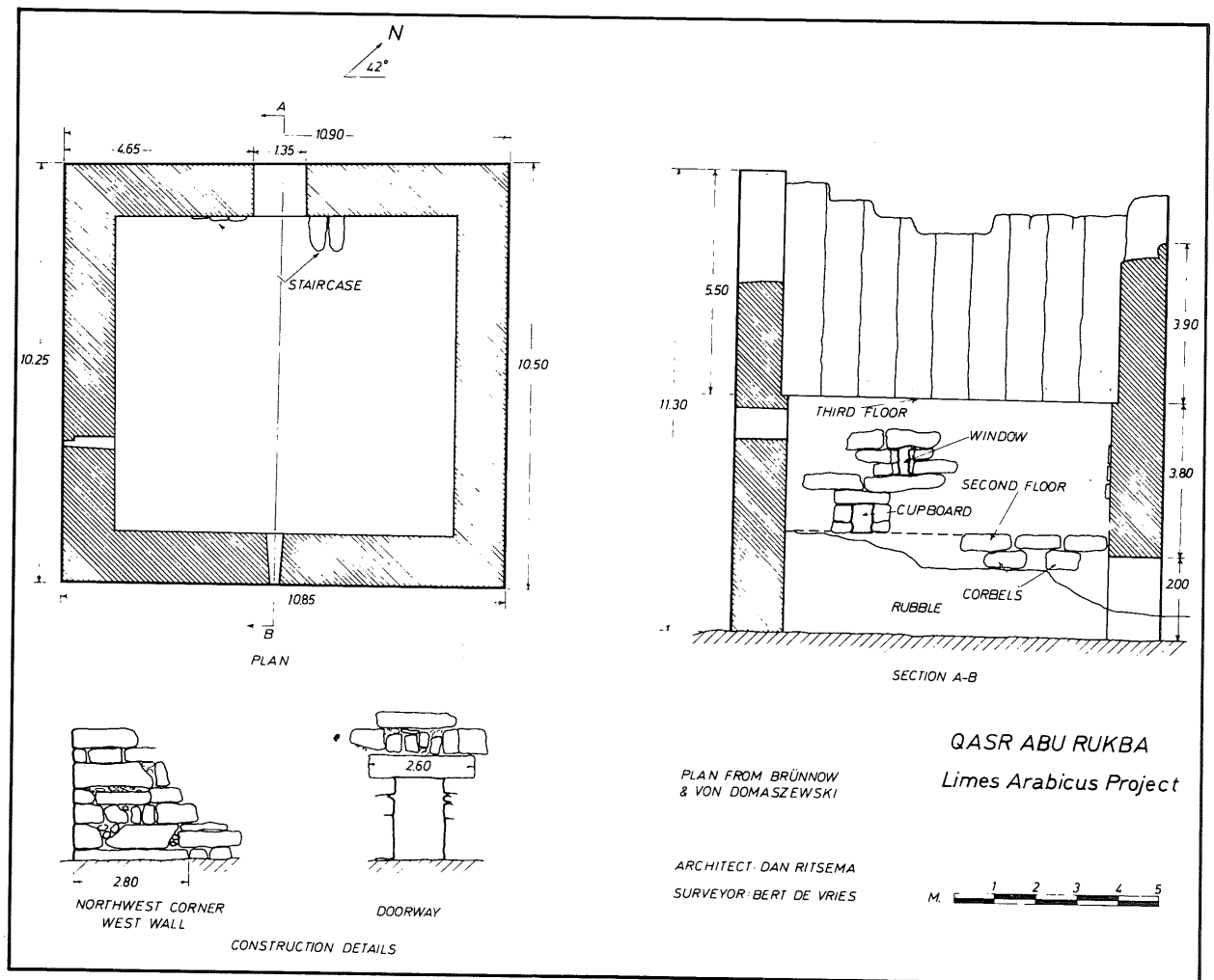


Fig. 12 Plan and section of Qasr Abū Rukba.

asserts that Constantine weakened the frontier forces (*limitanei*) in order to strengthen the mobile field army (*comitatenses*) kept behind the frontiers. It is possible that two cohorts of *legio IV Martia* were withdrawn from Lejjūn at this time, i.e., between 324 (when Constantine conquered the eastern half of the Empire by defeating Licinius) and 337. Another possibility is that half the legion may have been withdrawn for Julian's Persian expedition in 363 and never returned to Lejjūn. Unfortunately the literary sources, such as Ammianus Marcellinus, do not provide a detailed breakdown of Julian's expeditionary force to prove or disprove this suggestion. Other explanations are also possible. In any case, following the earthquake of 363 the four barracks (half the former

number) erected in the fortress remained in use throughout the remainder of the legionary occupation.

The argument that most fortifications in this sector were abandoned by the early 6th century was strengthened this season by new evidence. None of the surveyed military sites of the Roman *limes* zone yielded any Late Byzantine (i.e. 6th and early 7th century) pottery, as noted in previous seasons. The abandonments of those four forts excavated thus far appear to have occurred peaceably, implying the demobilization or transfer of the garrisons according to a definite imperial policy and confirming assertions in the literary evidence.²³ Primary responsibility for the defense of the southeastern frontier, from the Euphrates to the Red Sea, was transfer-

23. Procopius, *Anecdota* 24.12-14; *Bellum Persicum* 1.17.45-48.

red to the Ghassānids and their Arab *foederati*. The garrison at Lejjūn was probably demobilized *ca.* 530. Therefore the final two decades of its occupation probably reflect a squatter occupation of the fortress, perhaps by demobilized soldiers and

their families, ended by the 551 earthquake.

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**THE HUMAYMA HYDRAULIC SURVEY:
PRELIMINARY REPORT OF
THE 1986 SEASON**

by
John Peter Oleson

Introduction

The first season of the Humayma Hydraulic Survey took place between 31 May and 26 June, 1986. This project, funded by a three-year grant from the Social Sciences and Humanities Research Council of Canada and by the Faculty of Arts and Sciences of the University of Victoria, has as its objective the analysis of the character and evolution of the system of water-supply of the ancient settlement of Avara during the Nabataean, Roman, Byzantine, and — it is hoped — the Umayyad periods. The project is licensed by the Department of Antiquities of the Hashemite Kingdom of Jordan.¹

The site of Avara, now called Humayma, was one of the major Nabataean centres in the Hisma, Jordan's southern desert.² It is located 15 km west of the modern Desert Highway, approximately equidistant between 'Aqaba on the south and Ma'an on the north. The relatively good preservation of the site, its well-marked urban or proto-urban focus,³ and the clear definition of its catchment area

and hydraulic resources make it an excellent candidate for a case study. Much has been written about Nabataean skills in intercepting and storing water in the arid region they inhabited, but no integrated analysis of their capabilities has yet appeared.⁴ Furthermore, the precise character of the reworking of this technological inheritance by the Romans after their occupation of the kingdom in the early second century has never been properly documented. The goal of the Humayma Hydraulic Survey is completion of research for a monograph provisionally entitled *The Water-Supply Systems of Nabataean and Roman Humayma: Technology and Society in a Desert Environment*. This will be the first full evaluation of all the water systems at a well-preserved Nabataean site, taken in their historical and technological context.⁵ It will concern itself as well with broader questions, such as the origins of the Nabataean skill in hydraulic technology, and the cultural reasons for differences between Nabataean, Roman, and possibly post-Roman use of the scarce desert water resources.

1. The author was the Project Director; the Field Assistant was Mr. Andrew Sherwood, Princeton University; the Representative of the Department of Antiquities was Mr. Suleiman Farajat. Through the kind permission of the Ministry of Education the team was allowed to live in a school building at New Humayma. I am very grateful to Dr. Hadidi, Director of the Department of Antiquities, for granting a permit for this season's work, for his advice on the project, and for helping with the practical arrangements. I would also like to thank Prof. John W. Eadie, University of Michigan, who holds the original permit for the site of Humayma, for permission to initiate this related project. Dr. David McCreery and Mr. David Jacobsen of the American Center of Oriental Research, Amman, provided invaluable advice and logistical assistance during the 1986 season and the year of preparation that preceded it.

2. For the bibliography on Humayma, see Eadie

and Oleson 1986, p.73-6. Add now Eadie 1984; Gregory and Kennedy 1985, p.317-29, 433; Jobling 1984; Mayerson 1986, p.41-2; Oleson 1984.

3. I have tried to avoid as much as possible applying the term "city" to the site, since it still is not clear how appropriate that term is to Avara or any other Nabataean settlement. There is good discussion of the question of the nature of Nabataean "urbanism" in Negev 1976, p.132-3, 1977, p.586.

4. The most important studies are cited in Eadie and Oleson 1983.

5. A doctoral dissertation presented at the Sorbonne in 1983 by Zeidoun Al-Muheisen, *L'Alimentation en eau de Petra*, provides an admirable catalogue of the evidence for hydraulic technology in the ancient city, but the analysis is only rudimentary. There is a copy of this dissertation in the Department of Antiquities Library, Amman.

In 1983, in collaboration with Prof. John Eadie of the University of Michigan, who holds the permit for the city site, I carried out several soundings in reservoirs within the settlement and surveyed part of the aqueduct.⁶ The comprehensive survey of hydraulic technology just begun will stretch over three seasons of field work. The first — completed in 1986 — involved the careful survey of the natural catchment area of Avara, outside the actual habitation centre, in an attempt to locate and catalogue all water resources and the structures associated with their exploitation. Included were springs, cisterns, wadi barriers, artificial terraces and cleared fields, an aqueduct, and a dam. The second season, scheduled for 1987, involves searching out and cataloguing all such facilities within the habitation area proper, particularly reservoirs and cisterns, and, where necessary, excavation to determine the nature of the distribution system and its chronology. During the third season, scheduled for 1988, the project director will examine structures associated with hydraulic technology at other Nabataean and Roman sites in Jordan and the surrounding regions as comparative material.

Execution of the 1986 Survey

The area selected for survey in 1986 was quite large for a team of three individuals to cover in four weeks: 240 square kilometres. The objective was feasible, however, because the goals were circumscribed and strictly defined, and the structures targeted were very characteristic in design and usually easy to spot in the barren landscape. The survey was judgemental and did not attempt to record all evidence for past human occupation of the region.

The survey area was essentially the drainage catchment between Ḥumayma and the al-Sharah escarpment, along with the Wadi Qalkha and its tributaries from Ḥumayma proper as far south as the modern Ma'an- 'Aqaba highway (Fig. 1). The northern boundary was the crest of the escarp-

ment between 'Ain el-Qanah and the line of the new highway just below Ras en-Naqab. The line of the new road was taken to define the eastern and southern border. Although this last boundary is artificial in strictly archaeological terms, it does in fact include only slightly more than the rainfall catchment area along its northern portion. It terminates 10 km south of the site at the natural southern boundary of the territory presumably presided over by Avara: the gap between Jebel Thaur and Ḥudeibāt Um Dureira, through which passes the Wadi Qalkha. The western limit was taken to be the boundary between the Wadi el-Jamam and Wadi el-Beida watersheds. The former feeds the Wadi Qalkha. The latter leads into the Wadi el-Ḥilwa, which dives steeply through the western mountains to the Wadi 'Araba. Exceptions were made, of course, for sites like 'Ain el-Qanāh, which is in the Ḥilwa watershed but is connected to the city by an aqueduct, and for several sites on the southeastern slopes of the hills along the highway which are outside the watershed but well within Avara's probable area of interest. The fringes of the Wadi el-Beida watershed were, in fact, surveyed during some extra time available at the end of the season, but without result. South of the settlement centre, the western boundary of the survey area was formed by the crest of the Jebel Qalkha, which backs right up against the precipitous descent to the Wadi 'Araba, and by the lower slopes of the Jebel Thaur, which towers over the pass down the Wadi el-Yutum to 'Aqaba.

In simplified form this area can be visualized as two great amphitheater-shaped valleys just north and just south of Ḥumayma, separated from each other by a low ridge extending west from the Ḥudeibāt edh-Dhiru (adjacent to the new highway) almost as far as the site itself, cut off from it by the wide bed of the Wadi el-Amghar. The winding courses of the Wadi el-Jamam and Wadi el-Amghar in the north and the great Wadi Qalkha in the south form their respective foci. From the settlement site the crest of the escarpment can be reached

6. Reported in Oleson 1984; Eadie and Oleson 1986.

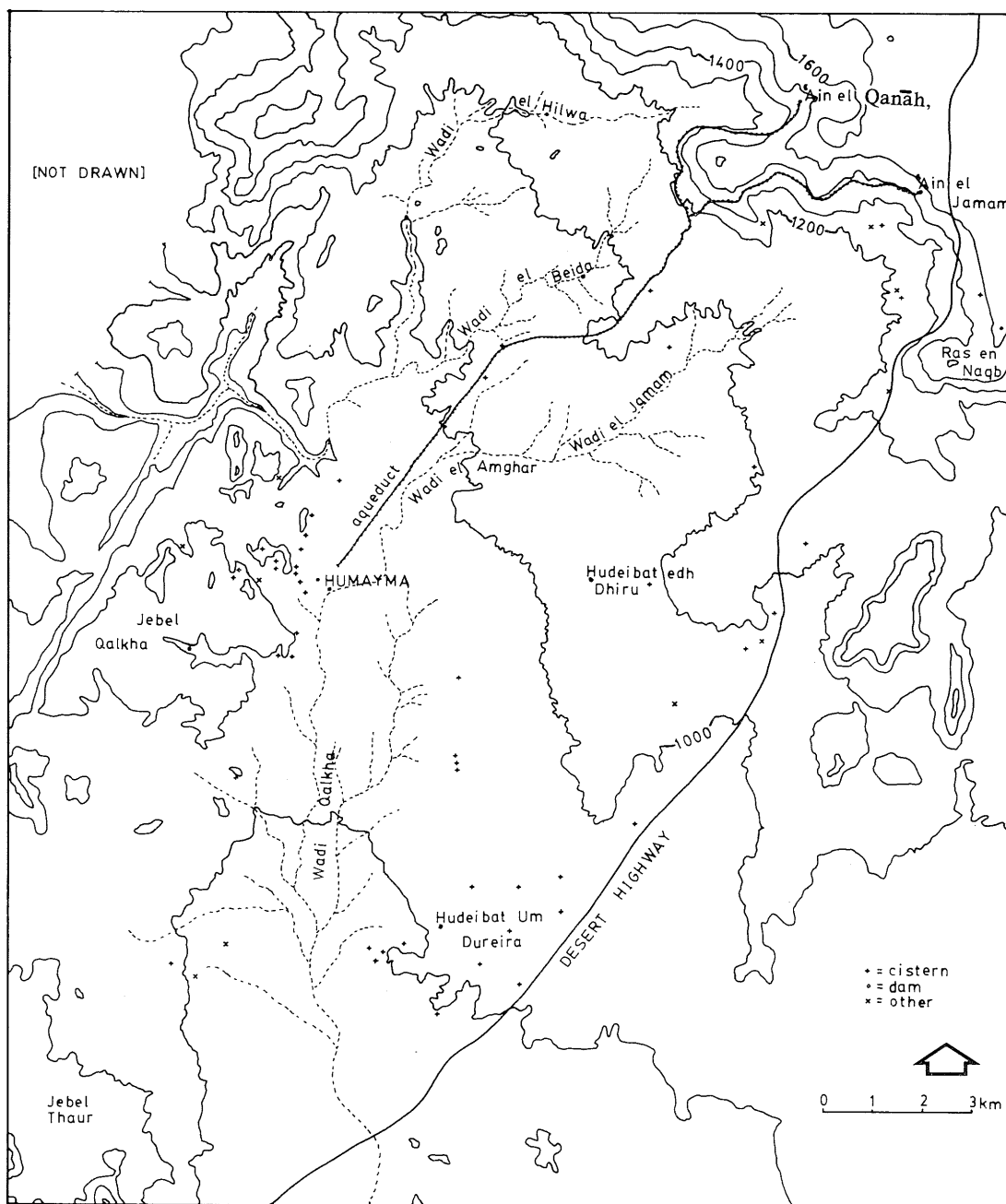


Fig. 1. Ḥumayma: map of survey area. (Map: Oleson).

in about five or six hours of walking (depending on the route), the eastern edge of the Ḥudeibāt edh-Dhiru in two hours, the intersection of the Wadi Qalkha and the new highway in about three hours, and the sheer cliffs overlooking the Wadi Aḥeimir, west of the city, in about one hour. The 1986 campaign began at the periphery of this survey area and worked toward the settlement site near its centre, treating the aqueduct as a single feature that was examined separately. The modern network of dirt roads and tracks provided relatively easy access to much of the area by four-wheel-drive vehicle, but the search for hydraulic installations was carried out for the most part on foot. As each new site was discovered, relevant data were entered on standard site record sheets, and each site was assigned a number for ease of reference. No excavation was carried out this season, but the nature of ceramics observed on the surface was recorded, and samples of building materials were collected.

Results

Sixty-one sites were recorded during the 1986 survey, some of which contained several different types of structure or several examples of a single type. The results can be tabulated as follows:

cisterns: 51
 springs: 4
 aqueduct: 1
 dam: 1
 wadi barriers: 2
 terraces and stone piles: 6
 "slides": 4

Cisterns. The predominant category clearly is that of cisterns, although reuse and the similarity of some ancient and modern building traditions occasionally made it dif-

ficult to determine whether a cistern was of ancient or recent origin. Nineteen of the cisterns (all but one of them cut in the bed-rock) are only possibly ancient. The design or present condition of the remaining 32 examples mark them out clearly as ancient in origin, although the precise chronology cannot yet be determined. Only two of these ancient cisterns are built mostly of blocks rather than cut in the bed-rock. Of the remaining rock-cut cisterns, 16 were unroofed, roofed with stone slabs, or roofed with an undisturbed stratum of bed-rock. The other 14 were roofed in typically Nabataean fashion by means of stone slabs carried on arches springing from the side walls of the cistern basin. One of these must be the best-preserved unrestored Nabataean cistern known: four of the five arches were intact, carrying nearly all their original roofing slabs (Pl. XLIII, 1).

Springs. The three springs that fed the aqueduct — 'Ain el-Qanāh, 'Ain el-Jamam, and 'Ain Sharah — must have been critical to the water-supply system of Ḥumayma, because their discharge was brought to the settlement at enormous effort through 27 km of conduit. At present the springs discharge an average total of 2.2 m³/hour; the 'Ain el-Jamam and adjacent 'Ain Sharah are by far the most prolific.⁷ The survey documented the connection of these three springs with the aqueduct leading to Ḥumayma. It is puzzling that a fourth spring, the 'Ain 'Abu 'Insor, approximately 2.25 km southeast of 'Ain el-Jamam, does not seem to have been connected to the aqueduct.⁸ It may be that the flow of this spring was less in antiquity than now and was completely exhausted by the needs of a Nabataean and, later on, Roman military post the remains of which are still visible

7. The statistics on water flow were provided through the kindness of Mohammed Abu Taha of the Irrigation Authority, Amman. The present average flows are 'Ain el-Qanāh, 0.25 m³/hour, 'Ain el-Jamam, 1.2 m³/hour, 'Ain Sharah, 0.75 m³/hour, 'Ain 'Abu 'Insor, 0.9 m³/hour. The maximum possible flow through the aqueduct has been calculated at 6.2 m³/hour (Eadie and Oleson 1986, p. 68).

8. Jobling 1983, p. 188 assumes that 'Ain 'Abu 'Insor was connected to the Ḥumayma aqueduct system, but a careful search for evidence of a branch channel between this spring and 'Ain el-Jamam produced nothing. Construction of the new highway has disturbed much of the intermediate area, but some traces of the channel's substructure or highly characteristic conduit blocks should have survived had they existed there.

100 m to the south.

Aqueduct. The aqueduct leading to Ḥumayma is the most remarkable surviving example of Nabataean hydraulic technology so far reported anywhere. Even in isolation it would make the site of Ḥumayma memorable. The main line extends from 'Ain el-Qanah, at an elevation of 1,425 m for 18.901 km to the Nabataean reservoir at the north end of the habitation centre, at 955 m. A branch line 7.625 km long connected 'Ain el-Jamam and 'Ain Sharah, also at an elevation of 1,425 m, to the main line, joining it 6.557 km downstream from 'Ain el-Qanah. The character and design of the aqueduct is described in some detail by Oleson in Eadie and Oleson (1986, p. 61-70). In summary, it consists of a heavy rubble foundation wall 0.80 m. across, carrying long stone conduit blocks framed by rubble packing set in mortar (Pl. XLIII, 2). A water channel 0.12 m wide and 0.14 m deep has been carved lengthwise along each of the monolithic conduit blocks.

Along almost the entire course of the aqueduct the conduit blocks have been exposed by the decay of its superstructure, but this year for the first time intact sections were found that revealed the method of roofing the channel. Fist-sized pieces of rubble were set in a hard mortar on the upper edges of the conduit blocks alongside the trough and smoothed over with stucco on the interior. Untrimmed, but for the most part flat, slabs of limestone were laid over the top, covering the water course. This roofing was designed to protect the water from evaporation, contamination, obstruction by falling debris, and possibly from unauthorized diversion. A still unexplained feature is the use of inverted roof-tiles set inside the conduit blocks in the Jamam branch to carry the water (Pl. XLIV, 1).

The use of a hand-operated odometer wheel permitted accurate recording of the aqueduct, starting from the springs and ending at the city. In this way, precise measurement of the enormous structure was accomplished, slopes calculated, and the location recorded of features of special

interest encountered along the way. The 1986 survey documented for the first time the presence of draw tanks along the course of the aqueduct and recorded stretches of the structure which preserved their covering slabs (Pl. XLIV, 2). The remarkable variations in the slope of the aqueduct, only now accurately charted, continue to be astonishing. The average slope from the springs to the city is 2.45%. The actual slope varies constantly, however, from slightly less than 1% at either end to 10%, 20%, and even 45% for precipitous sections along the el-Sharah escarpment (Pl. XLV, 1).

Dam. A large, beautifully constructed and splendidly preserved dam was found late in the season in a small canyon just south of Ḥumayma (Pl. XLV, 2). This structure (L 10.66 m, W 4.36 m, H 3.65 m) was built of blocks of limestone set in mortar in a head-and-stretcher arrangement, and the spillway, the most vulnerable part of any dam, was cut into the bed-rock at one end. Sand has completely filled the basin upstream, but it still retains a significant amount of water, which trickles out slowly between several of the blocks. The location, coursing of the blocks, and presence nearby of a Nabataean inscription cut in the canyon wall confirms its Nabataean character. Rock-cut stairs give access from below to the upper surface of the dam, where water could have been obtained by dipping. The canyon walls are too steep and high to allow any other approach.

Wadi Barriers. Although the Bedouin around Ḥumayma now commonly make use of earth and stone wadi barriers to slow the process of erosion and foster the infiltration of run-off water into their fields during the winter, only two possibly ancient structures of this type were catalogued. By their very nature, such barriers are vulnerable to complete destruction, and in the immediate vicinity of Ḥumayma the recent use of tractor-drawn plows in the ancient fields has obliterated any traces. One of the two sets of barriers tentatively accepted as ancient (Pl. XLVI, 1) differs from the modern examples in being constructed of large boulders rather than of earth or small

stones. The antiquity of the other is suggested by the presence nearby of ancient architectural remains.

Terraces and Stone Piles. The clearing and terracing of slopes was a method used by the Nabataeans, along with most other Near Eastern peoples, to improve and protect arable land on such terrain. In addition, the terraces help hold back water running off the slopes after a rain and thus increase absorption. Only six sites with this feature were identified, perhaps because the local geology makes most of the sloping ground around Humayma totally unsuited for agriculture. In one case, a field was simply cleared of surface stones by heaping them in orderly rows of piles (Pl. XLVI, 2). This procedure freed some ground for agricultural activity, but it may also have been intended, as at Nabataean sites in the Negev,⁹ to increase run-off to a field lying below.

'Slides'. Two types of grooves cut in the slopes of sandstone hills were encountered in the course of the survey: the enigmatic features were termed "slides" for lack of any better definition. They seemed at first possibly relevant to water-supply, but in retrospect they can be seen to be unrelated. The features nevertheless are mentioned here to prevent confusion among other researchers in the field of ancient hydraulic technology and in the hope of eliciting suggestions of their function. The first class (Pl. XLVII, 1) consists of smooth, shallow grooves, 0.20-0.40 m wide, worn down short, steep sandstone slopes, usually in groups of 3 to 6. They are often associated with rows of circular depressions that seem to be eroded toe holds for ascending the slope to the crest. The grooves are capable of carrying water, but they were never associated with a cistern or natural catchment area. Examination of some freshly-worn examples revealed the presence nearby of abraded, flat-bottomed stones or flattened jerry-cans, suggesting that at least at present some of the grooves

are used as slides by Bedouin children. The grooves are not necessarily ancient, and their relevance to hydraulic technology is highly doubtful.

The second type of "slide" remains enigmatic. These are wide, shallow slots, 0.30-0.40 m wide and 0.02-0.05 m deep, cut into bedrock slopes with picks or chisels (Pl. XLVII, 2). They nearly always have a slightly deeper, narrow, central groove and vary in length from 1.0 to 30 m. The cuttings are usually arranged in a disconnected series of 5 or 6 examples of different lengths up the side of a rolling sandstone hill. The upper end of the lowest cutting is always at precisely the same level as the lower end of the next cutting, but separated from it by a horizontal distance of 1 to 10 m, and the same arrangement continues up the hillside with the rest of the cuttings. Some of the channels are placed in such a position that they could have carried water, but most are not. In any case, no cistern was ever observed in association with any of the cuttings. Since the manner of stone-working seems to be ancient, and groups of these grooves can be found throughout the northeastern part of the survey area, they should have some relevance to Nabataean culture in the region.¹⁰

Preliminary Analysis

The water supply system of ancient Avara was regional in scope and varied in its strategy. Around the periphery of the catchment area, where the bed-rock is at the surface and the topography fosters rapid, directed run-off of rain water, there are rock-cut cisterns and wadi barriers. Few cisterns were built in the lowland area around the settlement centre, in the land most suited for agricultural use. Construction would have been more difficult here, since the bed-rock is inaccessible, and local run-off is more scanty in the absorbent sandy soil. Only in the habitation centre

9. See Evenari, Shanan, and Tadmor 1982, p.127-47.

10. I have not seen parallels for the second type

of groove at any Nabataean site. I would be grateful for any information concerning similar features elsewhere, or suggestions of their function.

itself, where the concentration of population required it, and where the aqueduct and roofs of houses supplied artificial catchments, where cisterns built entirely of blocks. The cisterns around the periphery of the Humayma catchment must have been intended primarily for livestock and the herdsmen and farmers spread thinly over the region. Rainfall is too meager and evaporation too extensive to allow dependence on irrigation for major crops.¹¹ The wadi barriers and terraces were designed to counter these factors and enhance the moisture content of the soil. The placement of most of these cisterns close to the border between bed-rock and arable land is consistent with this interpretation. Both farmers in the nearby fields and herdsmen leading their flocks from field stubble to wild brush land and back again could have made use of such a location.

All these structures must have been planned and built by individuals, and consequently privately owned. The aqueduct, by contrast, must have been a public structure. It is by far the longest known Naba-

taean aqueduct, and it is longer than any other pre-Roman aqueduct in the Near East, with the exception of that serving Herodian Jerusalem.¹² The concentration of resources needed for its construction shows that it was felt to be critical to the survival of the settlement. Only excavation can reveal whether it was built when Avara was founded, to ensure the viability of the settlement, or later on, when the population had out-grown the local water sources. What is significant is that Avara reached out farther into the countryside for its water than any other pre-Roman settlement in the Near East. The extent of this effort implies as well the existence of highly developed social mechanisms within the settlement for governing the distribution and use of the water. Excavations within the habitation centre in 1987 should shed light on this important question.

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11. See Eadie and Oleson 1986, p. 72.

12. Parallels for the aqueduct are cited in Eadie and Oleson 1986, p. 69-70.

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NORTH ARABIAN (-THAMUDIC) INSCRIPTIONS & ROCK ART FROM THE 'AQABA-MA'AN AREA OF SOUTHERN JORDAN

by
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SELECTION I

I

The 'Aqaba-Ma'an Survey has been successful in locating, recording and photographing several thousand North Arabian (-Thamudic) inscriptions along the southern edge of the Old Edomite escarpment and in and around the HĪSMA which spreads S.East from the Sharah Mountains to Mudawara.¹ Examples of this epigraphic archaeological data have been reported or published with the reports of each season's fieldwork since 1980. As this epigraphic data has been located, techniques for recording, cataloguing and publishing have been investigated and developed and extensive research has been undertaken into the history and current state of the art of North Arabian epigraphy and paleography with a view to publishing a repertoire of inscriptions and rock art. While progress in this cataloguing and analytical linguistic and lexicographical research is well under way it has been decided to publish selections of this epigraphic data as soon as possible. Each panel and its constituent inscriptions and drawings have been recorded and photographed in black and white and in Ektachrome colour film. Microfiche and interactive videodisc editions of these records are in preparation. The inscriptions and rock drawings in Selection I are preliminary transliterations, translations and notes on the evidence for the linguistic and artistic objectifications of certain later stages in the pre-Islamic indigenous occupation of the 'Aqaba-Ma'an area.²

II

Repertoire — Selection I

AM82/9B/15 Wadi Judaiyid (see Pl. XLVIII, 1 and Fig. 1)

1. L. 'BD ل عبد
2. L. NGM. BN. 'SLH ل نجم بن اسله
1. By 'BD
2. By NGM son of 'SLH

This small panel has a south easterly aspect. It is situated in the midst of Wadi Judaiyid close to Sad Raqa and south of Jebel el-Jill and north of Quweira. The panel is part of a large scatter of epigraphic data. This concentration of inscriptions and drawings is situated on one of the main tracks from the HĪsma and Wadi Ramm to Ras en-Naqab.

In the centre of the rock face is a stylized drawing of the long horned caprid.

AM83/32B/10 Wadi el-Hafir (see Pl. XLIII, 2 and Fig. 2)

L. BNT. BN. ZD'L. D. 'L. 'MT

ل بنت بن زد ال ذ ال عمت

By BNT son of ZD'L of the tribe of 'MT

This is a well preserved inscription in which the letters, or graphemes, are carefully pecked. The graphemes are uniformly squarish and regular in their formation. The usual formula D. 'L. prefaces the designation of the tribe name 'MT³.

AM83/32B/7 Wadi el-Hafir (see Pl. XLIX, 1 and Fig. 3)

1 (i) W.J. Jobling, in D. Homès Fredericq and J.B. Hennessy (eds.), *AKKADICA* Supplementum III, Vol. I, Bibliography, Leuven, 1986, p.92-93.
(ii) W.J. Jobling, The Fifth Season of the 'Aqaba-Ma'an Survey 1984, *ADAJ*, XXVIII, 1984, p. 191-202.

2. Cf. P.L. Berger and T. Luckman, *The Social Construction of Reality*, Pelican P/B, 1984, p. 51ff *et passim*.

3. see G.L. Harding, *An Index and Concordance of Pre-Islamic Arabian Names and Inscriptions*, 1971 (=HIn.) p.2.

L. MR. BN. 'THD
By MR son of 'THD

ل مر بن أ طخد

This is a clear and well preserved inscription and probably relates to the drawing of a camel pecked on the rock face to the left side of this inscription. The letters of the inscription are incised into the patina. The lettering and shape of each grapheme reflects a reasonably steady control of the medium. The patronymic proper name 'THD would appear to be new. The shape of the antepenultimate grapheme may also be read as H in Thamudic C and D according to Winnett's taxonomy.⁴

AM83/32B/15 Wadi el-Hafir (see Pl. XLIX, 2 and Fig. 4)

- | | |
|--------------------|--------------|
| 1. L. GRM | ل جرم |
| 2. L. 'RŠ. BN. FLT | ل ارش بن فלט |
| 3. L. DR | ل ضر |
| 4. L. NHM. BN. DQL | ل نهم بن دقل |

These four inscriptions occur on the lower left hand corner of a large rock face which is situated on the flat of the wadi bed. A variety of rock drawings are preserved on the same rock face. Except for the hunting scene to the immediate left of the fourth inscription most of these drawings have a lighter patina and appear to be by other hands. The hunting scene to the immediate right of the inscriptions has been drawn over and to some extent obliterated.

Two graphemes occur in these inscriptions which now appear to have different phonemic values than previously attributed to them. In the first inscription the first grapheme in the proper name GRM has been previously read as having the phonetic

value Thā' (I = ث)⁵. The concurrence of lexical with graphic data now suggests that in the 'Aqaba-Ma'an area of Southern Jordan this grapheme represented the Gīm phoneme (G = ج).⁶

In the third inscription the first grapheme in the proper name DR has had a variety of readings. In Study V of his *Studies in Thamudic* Professor Winnett has suggested that this grapheme has variously the values Dad (ض) in Thamudic 'E' (or Tabuki) and Gīm (ج) in other areas. The late G. Lankester Harding attributed to this grapheme the value gīm for inscriptions from the Wadi Ramm area⁷. Professor Winnett has drawn my attention to G. King's proposal that this grapheme represents the phoneme Dad (ض) in Tabuki.⁸ While more evidence and scholarly exchange will need to take place before the phonetic equivalences of this grapheme has been assured, the accumulation of examples of this grapheme in the 'Aqaba-Ma'an survey and research leads me to prefer King's proposal for this grapheme for this area.

AM83/36B/26 Wadi el-Hafir (see Pl. L, 1 and Fig. 5)

L. ŠŠRT. BN. 'RŠ
By ŠŠRT son of 'RŠ

ل صصرت بن ارش

As noted in the next inscription (AM83/36B/29) the proper name ŠŠRT occurs frequently in this area and is often written with the second grapheme in reverse. In this particular case the patronym 'RŠ is also given. The proper name 'RŠ is well attested in North Arabian (see *HIn.* p. 37). In both inscriptions the lettering is well formed and neatly executed.⁹

4 F. V. Winnett, *A Study of Lihyanite and Thamudic Inscriptions*, Toronto, 1937, Plate X.

5 vide F. V. Winnet, *op. cit.*

6 (i) E. A. Knauf, Südsafaitich, *ADAJ*, XXVII, 1983, p. 587-596.
(ii) E. A. Knauf, A South Safaitic Alphabet From Khirbet Es-Samrā', *Levant*, XVII, 1985, p. 204-206.
(iii) R. M. Voigt, Some Notes on South Safaitic, *ADAJ*, XXVIII, 1984, p. 311-314.
(iv) W. J. Jobling, Preliminary Report of the

Sixth Season of the 'Aqaba-Ma'an Epigraphic and Archaeological Survey, *ADAJ*, XXIX, 1985, p. 211-219.

7 G. L. Harding, *Some Thamudic Inscriptions from the Hashemite Kingdom of the Jordan*, Leiden, 1952, p. 3, and Plate XXVI.

8 G. King, *Some Inscriptions from Wadi Matak, Memorial Volume for Mahmoud Ghul* (forthcoming).

9 A separate study of all the recorded occurrences of this name is in preparation along with a comparative study of the style and content of the panels of rock drawings on which this signature occurs.

AM83/36B/29 Wadi el-Ḥafir (see Pl. L, 2 and Fig. 6)

L. ṢṢRT. ḤṬṬ ل صصرت خطط
By ṢṢRT he drew (it)

This well preserved drawing of a bridled horse and owner is graced with the signature of the artist. The proper name ṢṢRT is new, though it occurs frequently in the Wadi el-Ḥafir Wadi Rabiḡ complex (see AM83/36B/26). The curious procedure of inscribing the second grapheme in reverse also occurs frequently with this signature and may be an ideosyncrasy of script consciously employed by a particular individual or artist. Preliminary study of the several panels to which this name and the formula ṢṢRT ḤṬṬ is affixed suggests a common style and method of drawing.

AM85/71B/30 Wadi el-Ḥafir — Jebel 'Amud (see Pl. LI, 1 and Fig. 7)

1. L. HRB. BN. QRḤ. BN
2. L. Ṣ' LH
3. W. 'H' B. BN. 'N' L. ḤṬṬ. KLL

ل هرب بن قرح بن
ل شعله
و اخ آب بن عنال خطط كلل

1. By HRB son of QRḤ son of ...
2. By Ṣ' LH
3. And 'H' B son of 'N' L (he) drew all (of it).

Both weathering and subsequent hammerings have interfered with the preservation of the drawings and inscriptions on this rock face. The central panel and focus to which the inscriptions seem to relate features a hunting scene. In this scene the object of the hunt appears to have been a bovid. This animal has a humped back. A later artist has clumsily added horns more appropriate to an ibex or caprid. Dogs and hunters appear to be moving in for the kill and several darts and arrows are depicted in flight. The figure next to the second inscription may be the representation of a woman. Thus the scene preserves details of an important aspect in the life of the North Arabian indigenes and may also indicate that hunting was not a role restricted to any

one gender.

In the second panel on the bottom right hand side of this rock face there is preserved the scene involving a horse-like animal. The human figure to the left and behind the horse is armed with a bow and may well represent the stylized form of a woman. The human figure in front of the horse is armed with a round shield and is brandishing what appears to be a sword which has a straight blade. The well drawn dog in the top left hand corner would appear to be assisting by holding the horse at bay. The patronym in the second inscription is difficult to read because of later hammerings which have weathered away the patina: the ductus of the middle bar of the final grapheme is difficult to discern.

AM85/99B/21 Wadi Judaiyid (see Pl. LI, 2 and Fig. 8)

1. L. ṢN'T ل شئات
2. [L]. [S]'DN. BN. NG'T

ل سعدن بن نجات

1. By ṢN'T
2. By S'DN son of NG'T

This rock has a south easterly aspect. Although the script preserved on this rock face is quite clear, the rock face has been severely weathered on the top left hand corner with the result that the initial graphemes of the second inscription are not preserved. The script is well formed and deeply incised through the patina of the rock face.

AM85/83B/19 Wadi el-Ḥafir (see Pl. LII, 1 and Fig. 9)

L. LT. BN. 'SLM ل لث بن اسلم
By LT son of 'SLM

This inscription has a southerly aspect. Although the second grapheme in the proper name LT has previously been ascribed the phonetic value /D/ (=ض), Professor Winnett has drawn my attention to a recent study by Geraldine King in which she advo-

cates that this grapheme should be given the phonetic value of *T* (ث) in Thamudic E.¹⁰ The proposed vocalization of this grapheme would seem to be corroborated by other onomastic and lexical data in the 'Aqaba-Ma'an area and is tentatively accepted here. The root *LT* is attested in Classical Arabic.¹¹

AM85/87B/14 Wadi el-Hafir (see Pl. LII, 2 and Fig. 10)

1. *L. KHLT.* ل كهلت
2. *L. 'SWR. BN. SR* ل اسور بن سر
1. By KHLT
2. By 'SWR son of SR

These brief inscriptions have a north westerly aspect. With the exception of the area around the *Lam Auctoris* at the beginning of the first inscription this rock face is well preserved. The script is clear and the graphemes are well formed. The second inscription appears to have been written around the first inscription. The size and clarity of incision in the patina make this ordering of the inscriptions quite feasible. A hammering occurs on the right side of this rock face. This may be the beginning of an unfinished inscription.

AM85/97B/8 (see Pl. LIII, 1 and Fig. 11)

- L. 'RFLH. BN. NHQ. BN. 'BŠLH*
ل آرقله بن نهق بن أبشله
By 'RFLH son of NHQ son of 'BŠLH

Although this inscription is quite well preserved there is some difficulty in reading the second and third graphemes of the proper name 'RFLH. The *Rā'* could be read as *Bā'* though the three instances of this grapheme in this inscription do not compare well in the proportions of the letterings. The *Fā'* is poorly preserved and is obscured by a later mark. It could be read as *shfn*. Given the frequency of papponymy attested in other inscriptions in this area I

am inclined to suggest that given this context the first proper name should be read as 'BŠLH which is already attested in North Arabian.

AM85/83B/27 Wadi el-Hafir (see Pl. LIII, 2 and Fig. 12)

W. TM. BN. W'L. HTT

و تم بن وعل خطط

And TM son of W'L drew (it)

There are three drawings on this rock face. The drawing situated above the inscription may well have been the drawing related to the inscription. The evidence of patina and comparative weathering suggests that the cruder camel and anthropoid drawings to the left of the inscription appear to be later additions to this rock face.

It is noted that this inscription preserves the syntax usually associated with the authorship of rock drawings. Phrases such as this, which begin with *Waw*, are usually embedded in a larger context (cf. AM85/74B/23 & 73B/15). However the example may suggest that the *Waw* particle introduced a brief formula of authorship which could stand alone.¹²

AM85/96B/15 Wadi el-Hafir (see Pl. LIV, 1 and Fig. 13)

1. *L. BNN* ل بتن
2. *L. DBN* ل ضبن
3. *W.H. DSR Y. R. M'Z*

و ه ذ شرى ر معز

1. By BNN
2. By DBN
3. And Oh Dushares see (the) goats

This rockface faces west and is situated on a scree close to the junction of the Wadi Hafir and Wadi At-Tfeif.

The prayer to Dushares on this rock-face may be related to the rock drawings which depict a hunting scene in which a

10. G. King, *op. cit.*

11. E.W. Lane, *An Arabic English Dictionary*, 8 vols, London, 1863-1893, p. 2649ff.

12. W. Fischer (ed.), *Grundriss der Arabischen Philologie*, Weisbaden, 1982, p. 22, 85.

long horned caprid has been pierced by an arrow. Curiously the hunter, armed with a bow is depicted facing away from the pierced caprid.

The situation of the second and third inscriptions suggests that it may be possible to posit that *DBN* was the author of this prayer to Dushares.

AM85/74B/23 Wadi el-Hafir (see Pl. LIV, 2 and Fig. 14)

1. *L. WTR. BN. 'M* ل وتر بن عم
2. *L. BN. HRB* ل بن حرب
3. *L. 'KBR*
4. *W.L. NST. BN. RMN* ل عكبر
ول نصت بن رمن
5. *L. KTLH* ل كئله
6. *L. SKRN. BN. MB'LN* ل سكرن بن مبعل

1. By WTR son of 'M
2. By the son of HRB
3. By 'KBR
4. and by NST son of RMN
5. By KTLH
6. By SKRN son of MB'LN

This rockface has a south westerly aspect. The inscriptions range around the drawing of a camel. Later hammerings despoil the original definition of this rock drawing and obscure the final graphemes of the first inscription.

In the fourth inscription there appears to be a ligature connecting *Waw* and *Lam*. In the sixth inscription the last two graphemes are difficult to read.

AM85/65B/14 Wadi el-Hafir (see Pl. LV, 1 and Fig. 15)

1. *L. 'LYN. BN. QNT. BN. N'MY*
ل علي بن قنت بن نعمي
BN. RBQT. BN. 'RK. BN. 'BD
بن ربقت بن عرك بن عبد
2. *L. SMDT. BN. ZDLH. BN. HN' LH*
ل سمדת بن زدله بن هنله
3. *SM'T. DSRV. KLLH*
سمعت ذ شري كله

1. By 'LYN son of QNT son of N'MY
son of RBQT son of 'RK son of 'BD
2. By SMDT son of ZDLH son of HN' LH

3. May you hear O Dushares, [all of it (?)]

This panel faces upwards towards the sky and contains a prayer to the deity Dushares. The final graphemes in the third inscription (the prayer to Dushares) are not well preserved and render this reading as provisional for the moment. While the letters *LL* are reasonably clear the lettering of the initial *K* and final *H* are disputable. There are also hammerings or marks following these letters. They do not appear to be graphemes. The style of lettering and the patina of the third inscription differentiate it from the other inscriptions on this rock face.

AM85/73B/15 Wadi el-Hafir (see Pl. LV, 2) and Fig. 16)

1. *L. WTR. BN. FHT. BN. Z...*
ل وتر بن فहत بن ز
2. *L. SKMLH. BN. S'D. BN. NG M*
ل شكمله بن سعد بن نجم
3. *L. MSLM. W. SLM* ل مسلم وسلم
4. *DKRT. LT. 'L'N* ذكرت لت العن
W. WTR. HTT و وتر خطط
5. *L. MR. BN. ZR' LH. D' L. MZN*
ل مر بن زرعه ذال مزن
6. *L. FGT. BN. SD.* ل فجت بن شد
7. *L. SLM. BN. NHQ* ل سلم بن نهق

1. By WTR son of FHT son of Z...
2. By SKMLH son of S'D son of NG M
3. By MSLM and SLM
4. May LT remember 'L'N
and WTR drew (it)
5. By MR son of ZR' LH of the tribe of MZN
6. By FGT son of SD
7. By SLM son (of) NHQ

This rock face has an easterly perspective and is quite weathered. However the drawings and inscriptions are quite well preserved.

The first grapheme in the proper name *FHT* in the first inscription is difficult to read. It could possibly be read as *Dal* thus giving the proper name *DHT*.

The final grapheme in the proper name *NGM* in the second inscription is usually constructed and is difficult to construe. Its formation is somewhat irregular for the style reflected in the scripts of this area.

In the fourth inscription the prayer to

the goddess Al-LT follows a frequently recurring formula.¹³ It should be noted that *WTR* whose genealogy is given in the first inscription claims authorship of this invocation.

The first two graphemes of the sixth inscription are difficult to read because of the imposition of the back legs of the camel drawn above this inscription by a later artist. However both shape and context would suggest that the first grapheme is the *LAM* (ل) of the *LAM AUCTORIS* while with less certainty the second grapheme would appear to be the grapheme *FA'*. (ف)

III

This brief selection of inscriptions and rock drawings from the 'Aqaba-Ma'an Survey repertoire reflects but a small aspect of the epigraphic data so far recorded. The transliterations and preliminary translations and notes are tentative and will no doubt need to be revised in the light of new data and further experience in this area of North Arabian research. For the present however it would appear to be possible to assert that these new data provide valuable insights into certain aspects of the social stock of knowledge common to the North Arabian indigenes who lived in this area some two thousand years ago.

LEXICON¹⁴

'L.	WH. p.629
SM'.	WH. p.639
R'.	C1338; C5263; Clark, p.300; Wright, p.374; Thatcher, p.186.

D.	WH. p.636
HTT.	WH. p.635
KLL.	WH. p.644
M'Z.	WH. p.646

Index of Proper Names

'BŠLH	possible new name. cf. Lane p.206-207.
'H'B	HIn. p.29 see JS 12
'RS	HIn. p.37
'RFLH	see 'RFL. HIn. p.38
'SLM	HIn. p.45
'SLH	HIn. p.45
'SWR	HIn. p.47
'THD (?)	possible new name
'L'N	see 'L' HIn. p.68
BNT	HIn. p.119
BNN	HIn. p.121
TM	HIn. p.136
GRM	see TRM. HIn. p.144. cf. TIJ. 44, 113, 198, 219 et passim
HRB	HIn. p.182
DQL	HIn. p.241
DŠRY	WH. p.575; Clark. p.128
RBQT	see RBQN - RBQ. HIn. p.267
RMN	HIn. p.288
ZD'L	HIn. p.296
ZR'LH	see ZR'. HIn. p.297
ZDLH	HIn. p.297
SR	HIn. p.814-815
S'D	HIn. p.318
SKRN	HIn. p.323
SLM	HIn. p.325
SMDT	see SMD. HIn. p.327
ŠD	HIn. p.343

13. (i) W.J. Jobling, *Desert Deities: New Epigraphic Evidence for the deities Dushara and Al-LAT from the 'Aqaba-Ma'an area of Southern Jordan*, *Religious Traditions*, Vol. 7-9, 1984-1986, p.32ff
- (ii) V.A. Clark, *A Study of New Safaitic Inscriptions from Jordan*, (UMI), Ann Arbor, 1984, p.126ff.
14. Abbreviations:
- AM Aqaba-Ma'an
- ARNA F.V. Winnett and W.L. Reed, *Ancient Records from North Arabia*, Toronto, 1970.
- C *Corpus Inscriptionum Semiticarum*
- Clark V.A. Clark, *A Study of New Safaitic Inscriptions from Jordan*, (UMI), Ann Arbor, 1984.
- Hava J.G. Hava, *Al-Faraid, Arabic-English Dictionary*, Beirut, 1970.

- HIn G.L. Harding, *An Index and Concordance of Pre Islamic Arabian Names and Inscriptions*, Toronto, 1971
- JS A. Jansson and R. Savignac, *Mission archéologique en Arabie*, I (Paris, 1909), II (Paris, 1914)
- Lane E.W. Lane, *An Arabic-English Dictionary*, 8 vols, London, 1863-1893.
- Thatcher G.W. Thatcher, *Arabic Grammar of the Written Language*, New York (UNGAR reprint)
- TIJ G.L. Harding and E. Littmann, *Some Thamudic Inscriptions from the Hashemite Kingdom of Jordan*, Leiden, 1952
- WH F.V. Winnett and G.L. Harding, *Inscriptions from Fifty Safaitic Cairns*, Toronto, 1978.
- Wright W. Wright, *A Grammar of the Arabic Language*, Cambridge, 3rd edn., 1967.

<i>Š'LH</i>	<i>HIn.</i> p.351	<i>KHLT</i>	<i>HIn.</i> p.506
<i>ŠKMLH</i>	see <i>ŠKM.</i> <i>HIn.</i> p.354	<i>LT</i>	<i>Clark</i> p.126
<i>ŠN'T</i>	see <i>ŠN'</i> , <i>WH.</i> p.587	<i>LT</i>	possibly a new name, see <i>Lane</i> p.2649
<i>ŠŠRT</i>	possible new name	<i>MB'LN</i>	possible new name (cf. <i>B'L.</i> <i>HIn.</i> p.111)
<i>DBN</i>	(or <i>WBN</i> , see <i>WBNHN</i> , <i>WH</i> p.621	<i>MR</i>	<i>HIn.</i> p.536
<i>DR</i>	(or <i>WR</i> , see <i>WH</i> p.622	<i>MZN</i>	<i>HIn.</i> p.543
<i>'BD</i>	<i>HIn.</i> p.396	<i>MSLM</i>	<i>HIn.</i> p.545
<i>'RK</i>	<i>HIn.</i> p.416	<i>NGM</i>	<i>HIn.</i> p.582
<i>'KBR.</i>	<i>HIn.</i> p.428	<i>NŠT</i>	see <i>NŠ.</i> <i>HIn.</i> p.590
<i>'LYN</i>	<i>HIn.</i> p.434	<i>N'MY</i>	<i>HIn.</i> p.595
<i>'M</i>	<i>HIn.</i> p.434	<i>NHQ</i>	possible new name (see <i>Hava.</i> p.804
<i>'MT</i>	<i>HIn.</i> p.435	<i>NHM</i>	<i>HIn.</i> p.602
<i>'N'L</i>	<i>HIn.</i> p.444	<i>HRB</i>	<i>HIn.</i> p.612
<i>FGT</i>	possible new name (see <i>Lane</i> p.2339)	<i>HN'LH</i>	<i>HIn.</i> p.626
<i>FLT</i>	<i>HIn.</i> p.471	<i>WTR</i>	<i>HIn.</i> p.633
<i>FHT</i>	<i>HIn.</i> p.472	<i>W'L</i>	<i>HIn.</i> p.645
<i>QRH</i>	<i>HIn.</i> p.479		
<i>QNT</i>	<i>HIn.</i> p.489		
<i>KT₂LH</i>	possible new name (see <i>Lane</i> p.2591)		

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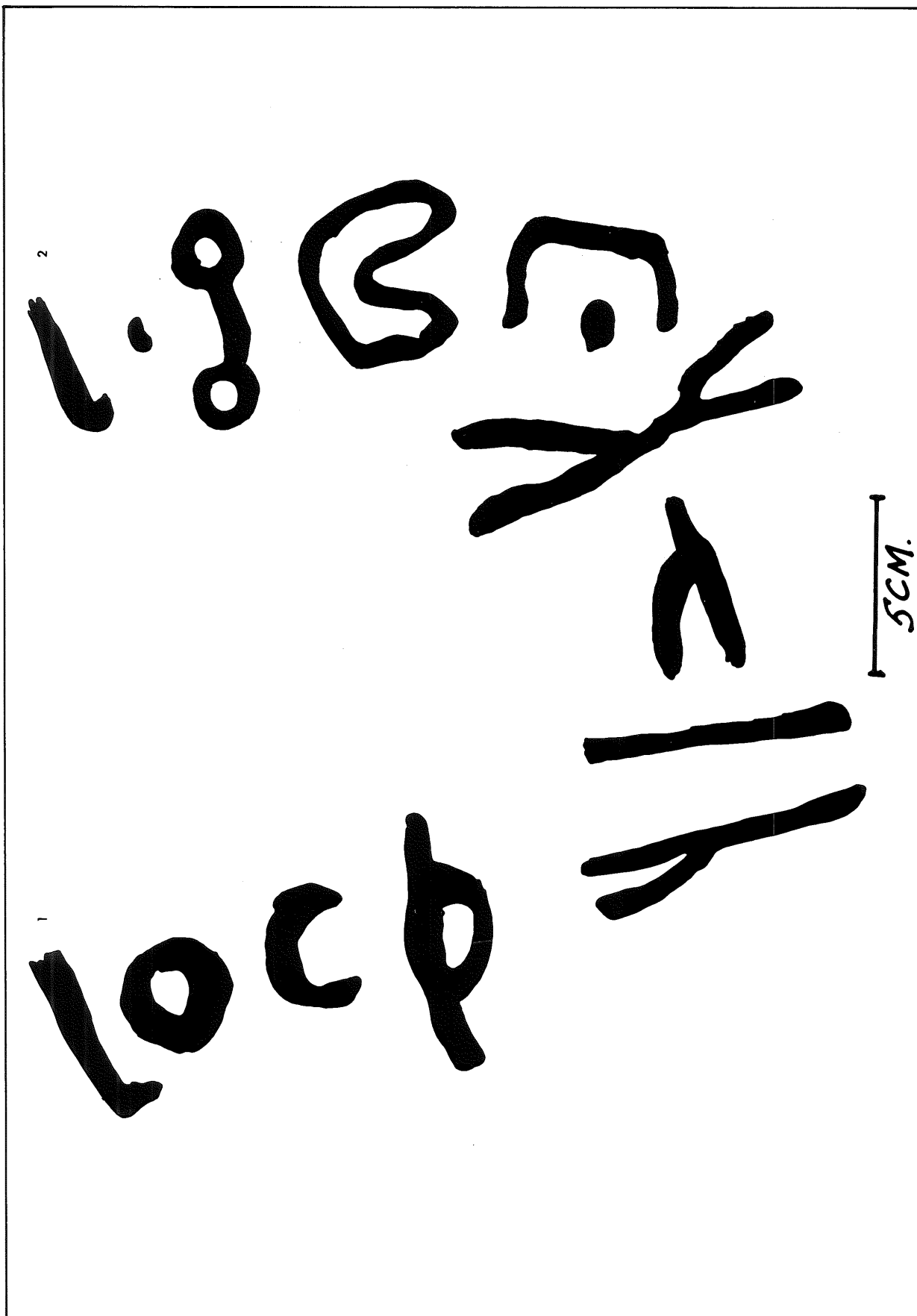


Fig. 1 AM82/9B/15

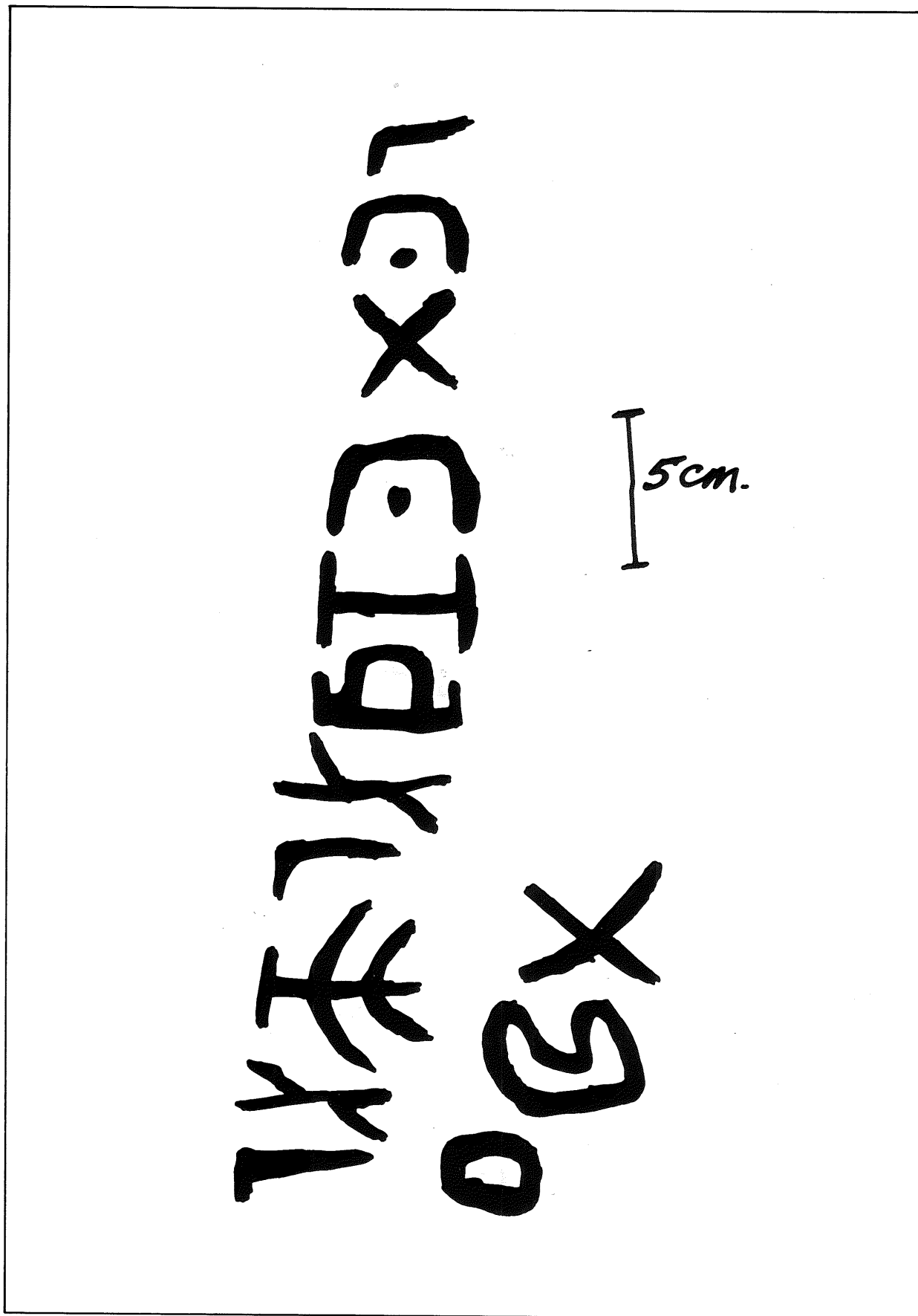


Fig. 2 AM83/32B/10



Fig. 3 AM83/32B/7

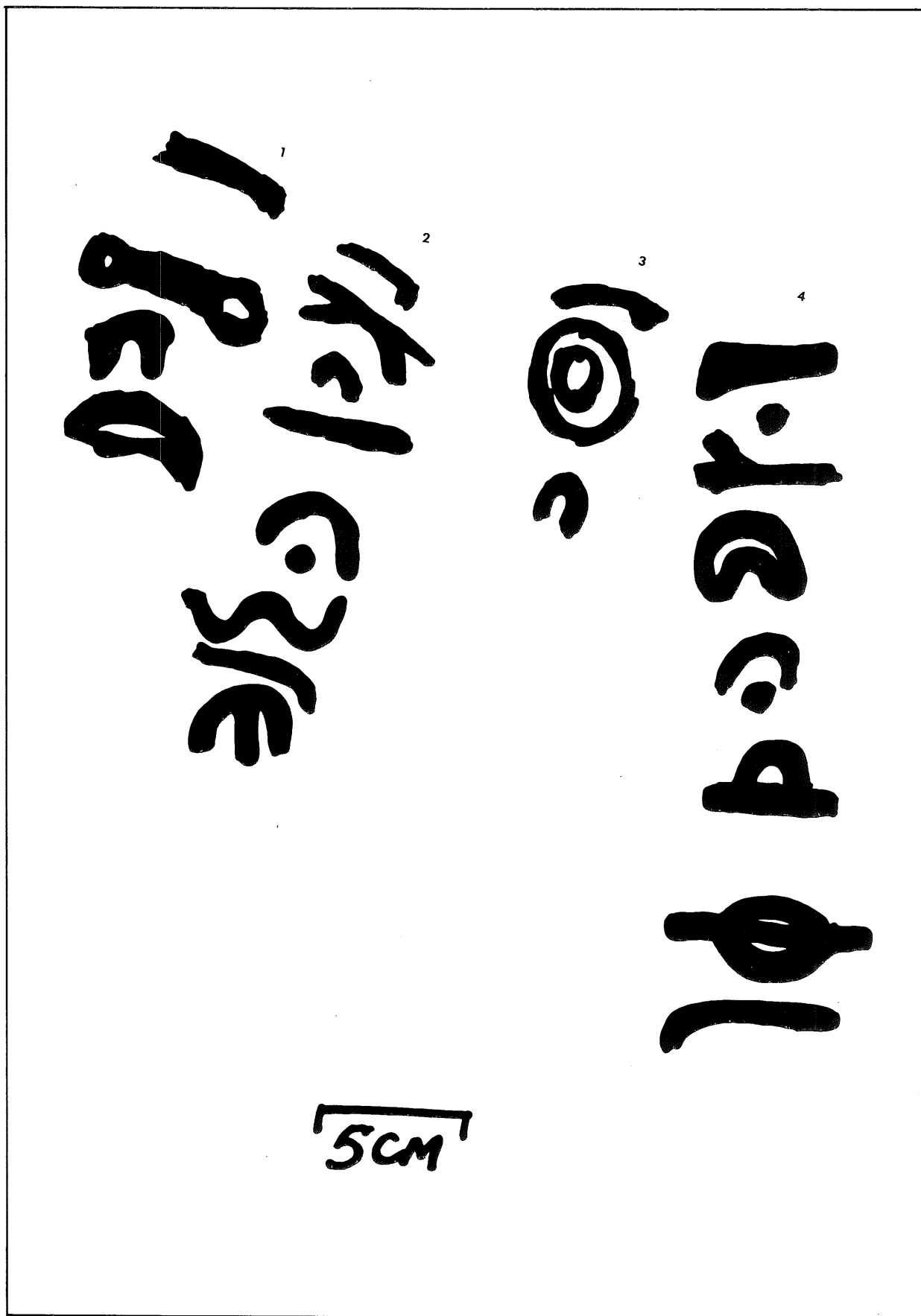


Fig. 4 AM83/32B/15

109c + 9c 1

5cm.

Fig. 5 AM83/36B/26

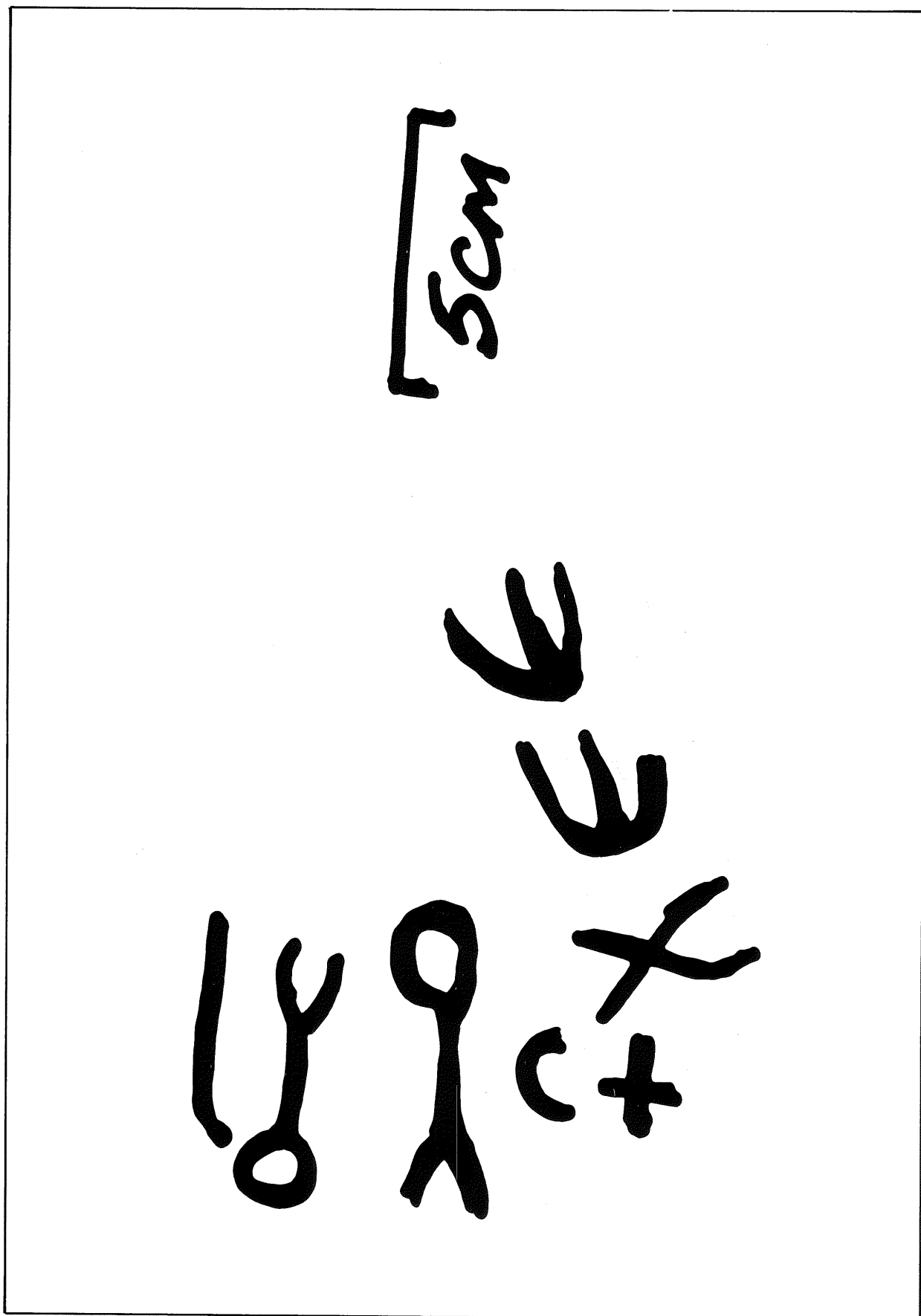


Fig. 6 AM83/36B/29

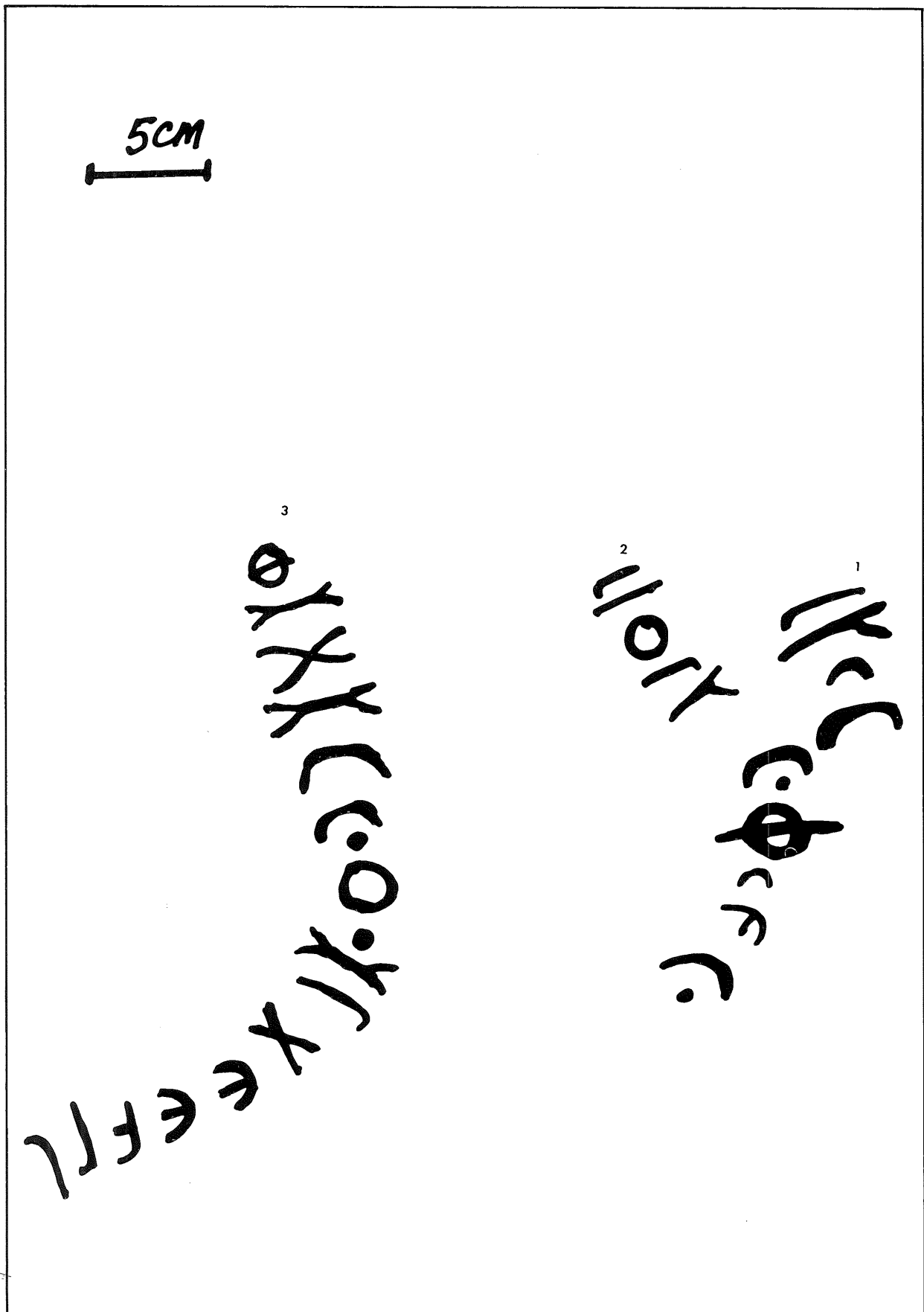


Fig. 7 AM85/71B/30

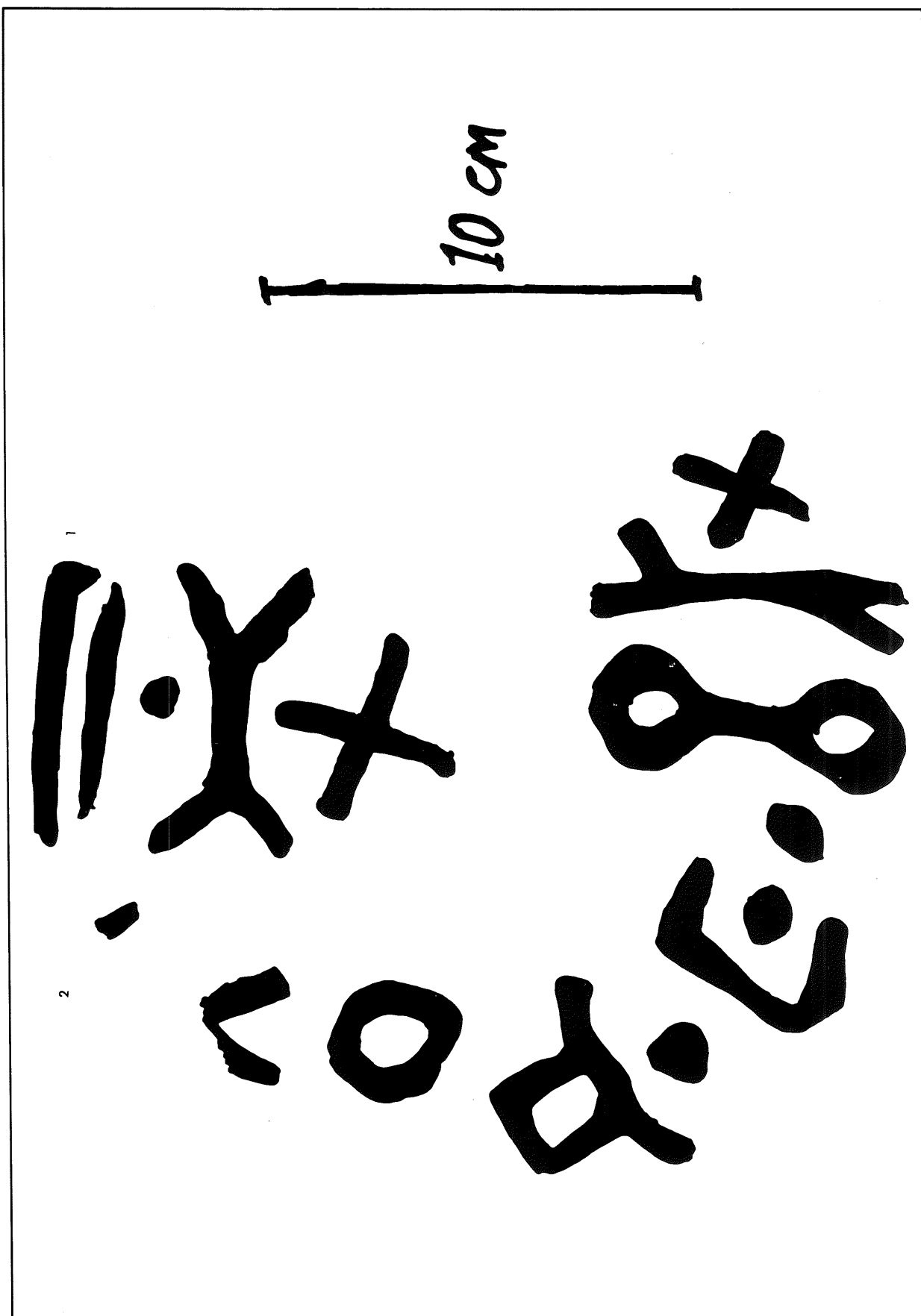


Fig. 8 AM85/99B/21

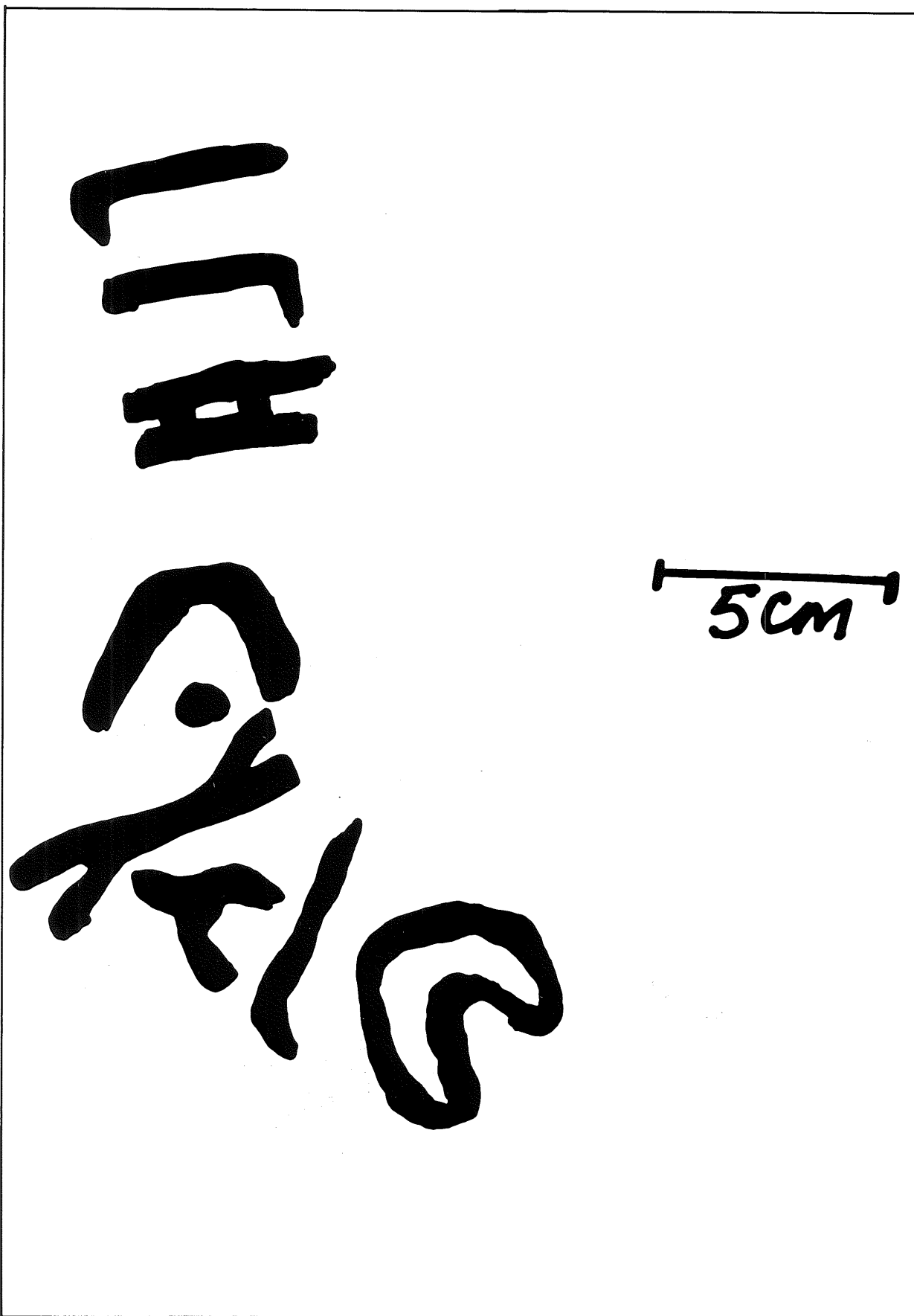


Fig. 9 AM85/83B/19

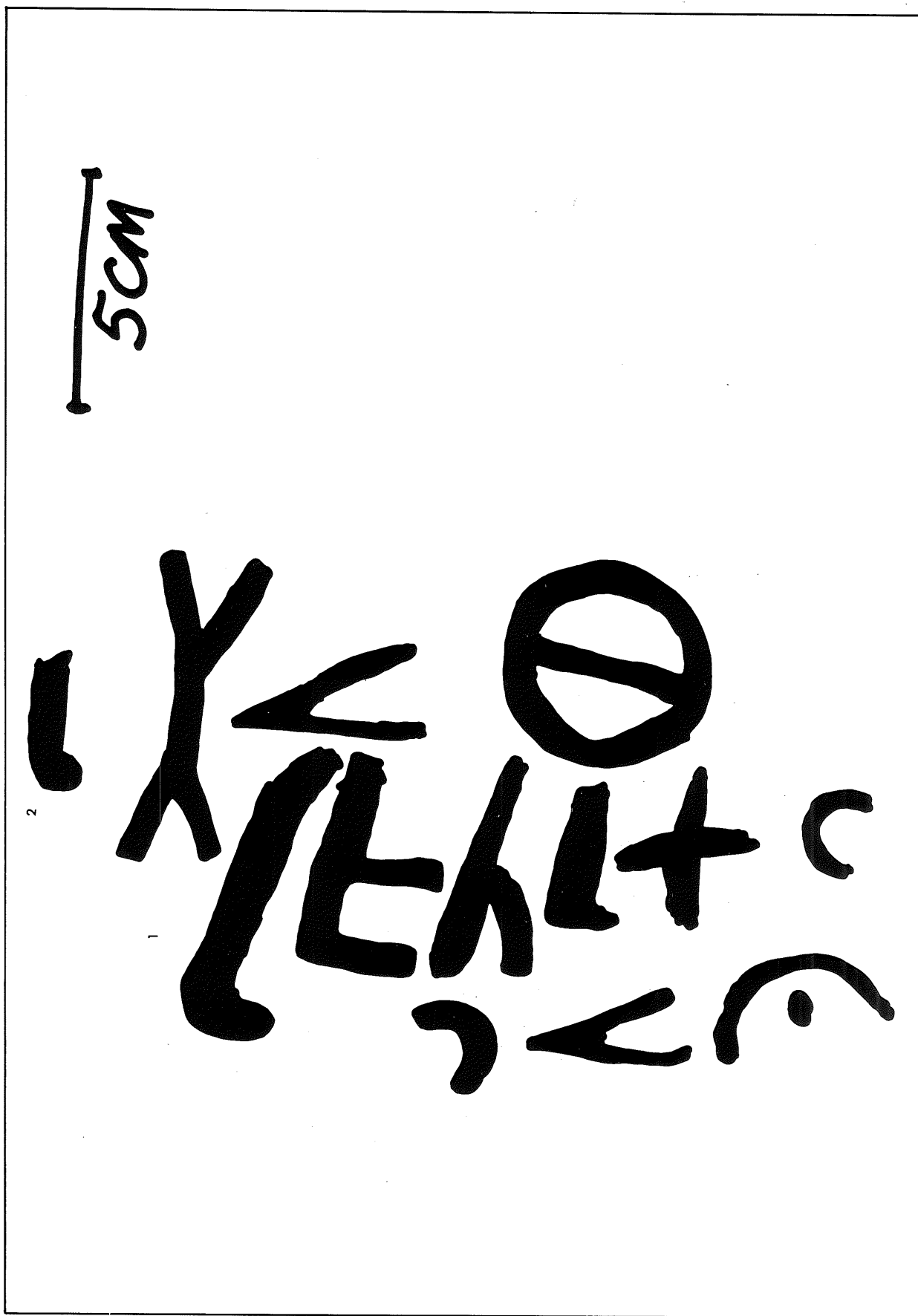


Fig. 10 AM85/99B/21

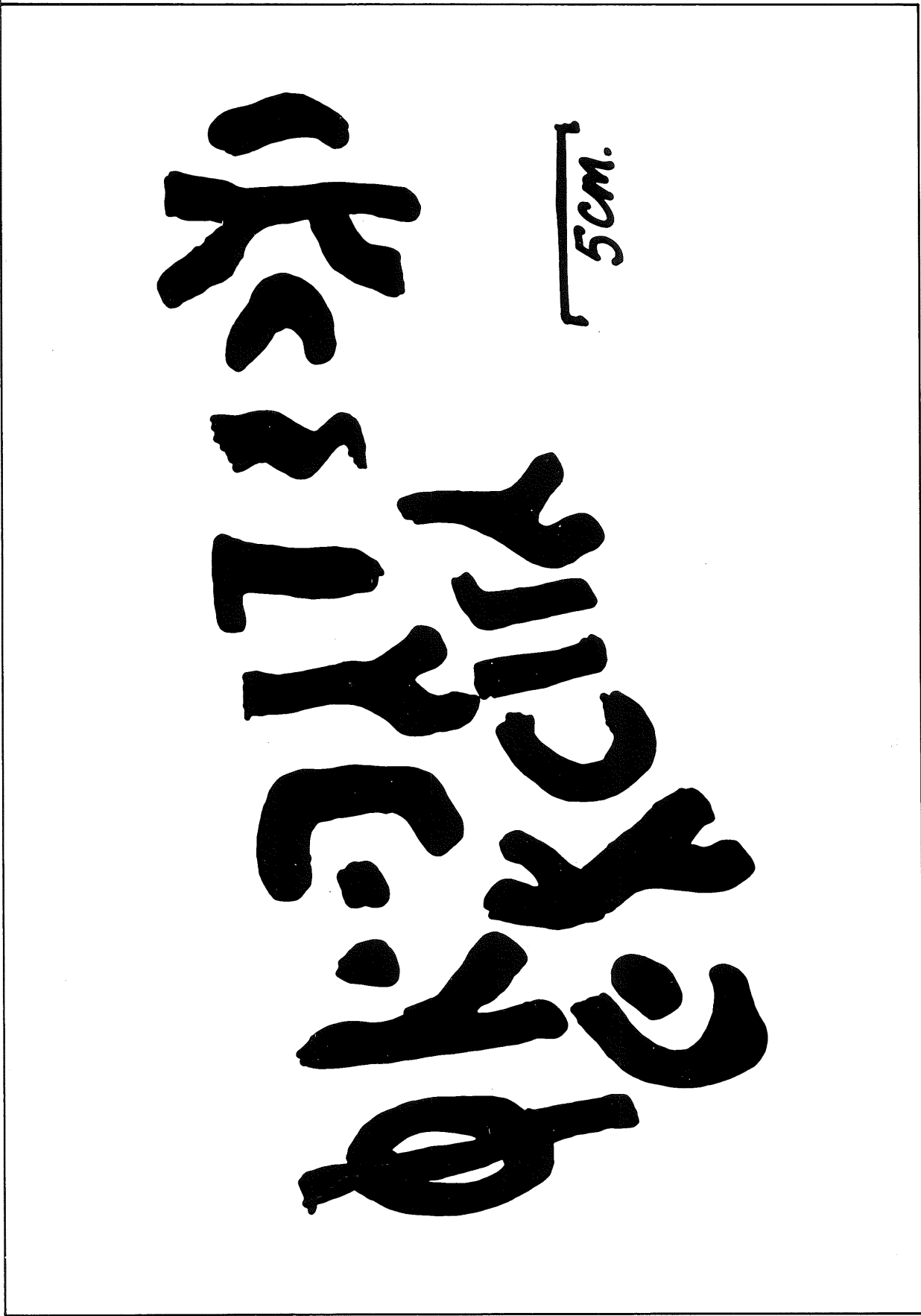


Fig. 11 AM85/97B/8

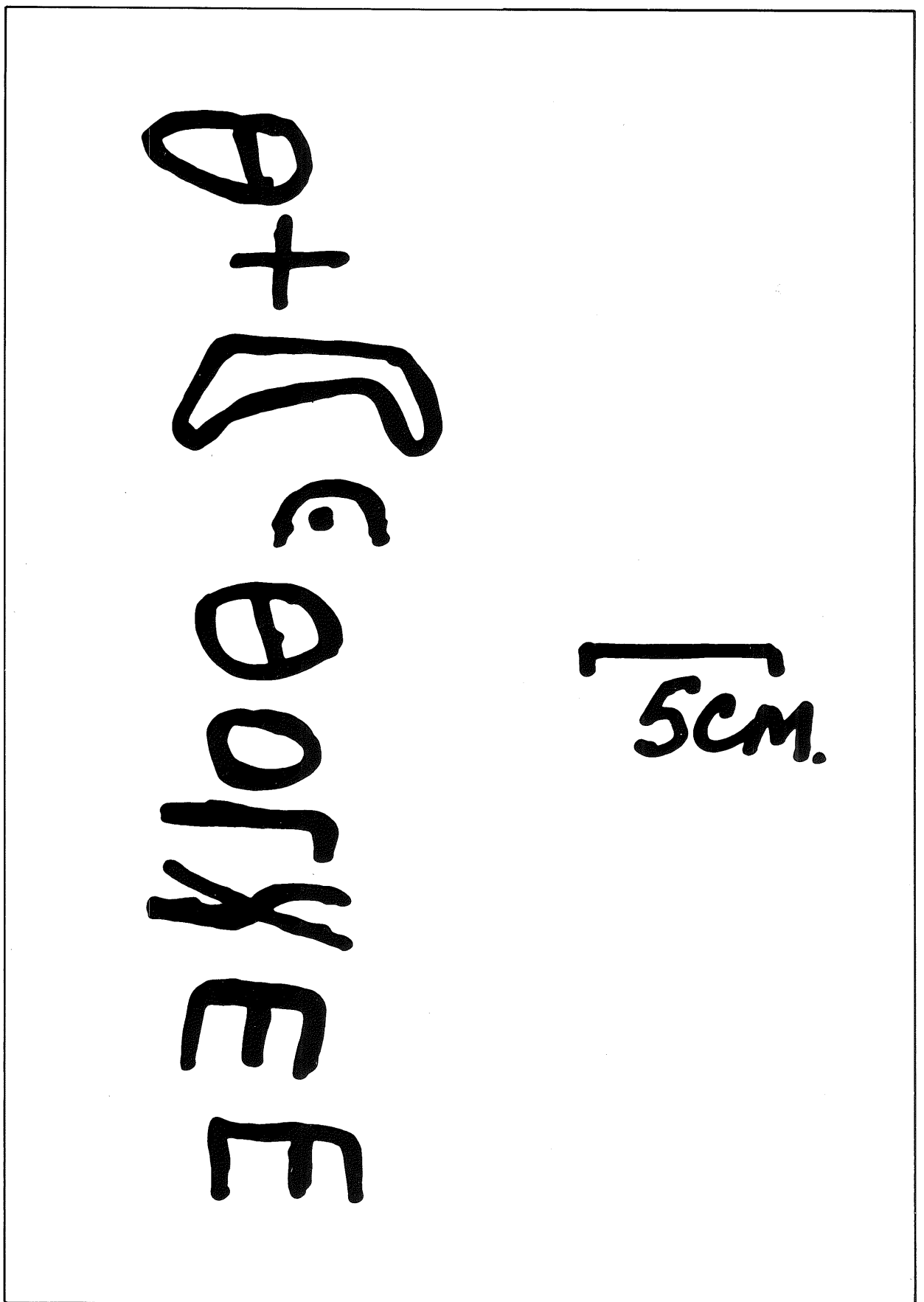


Fig. 12 AM85/83B/27

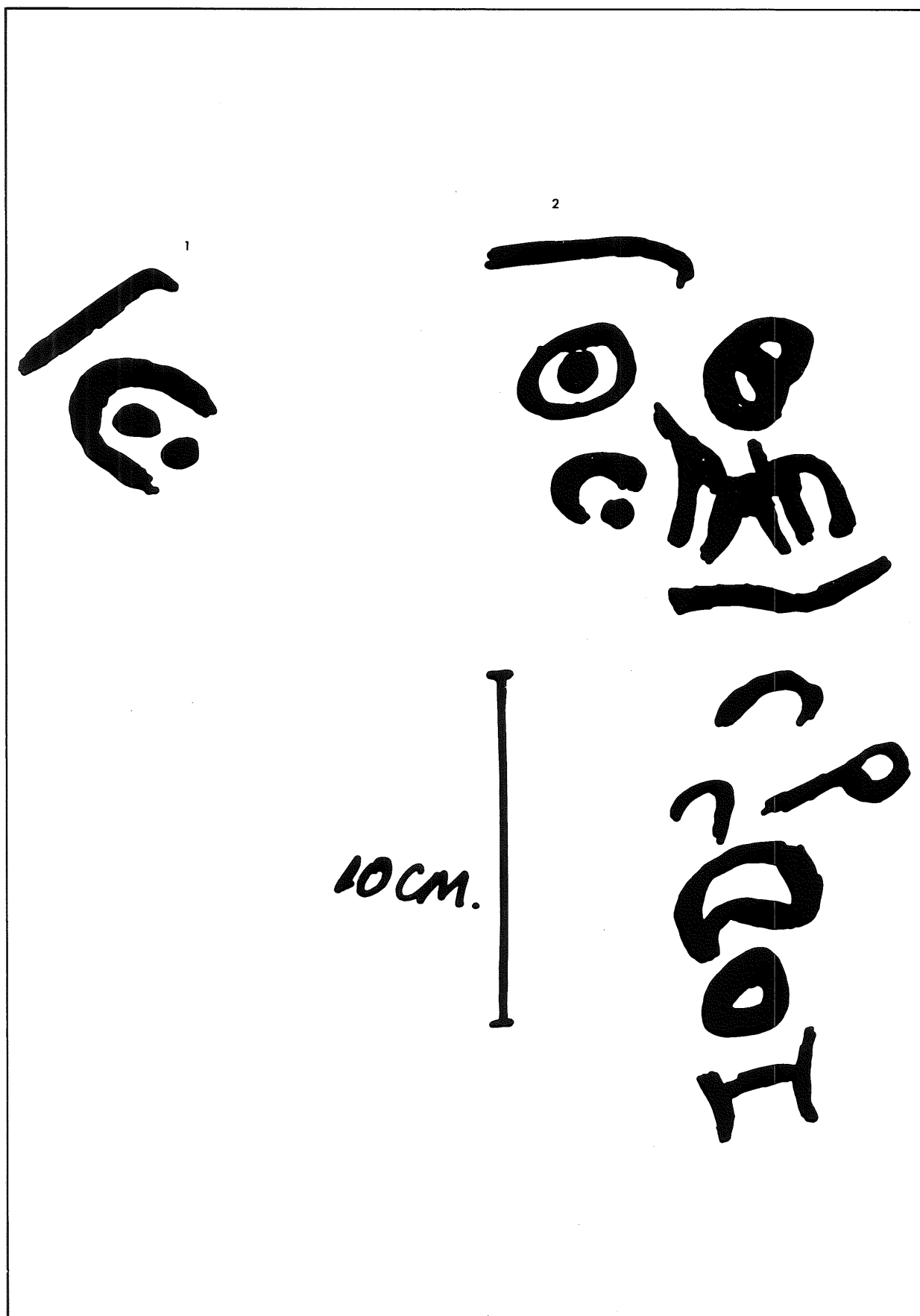


Fig. 13 AM85/96B/15

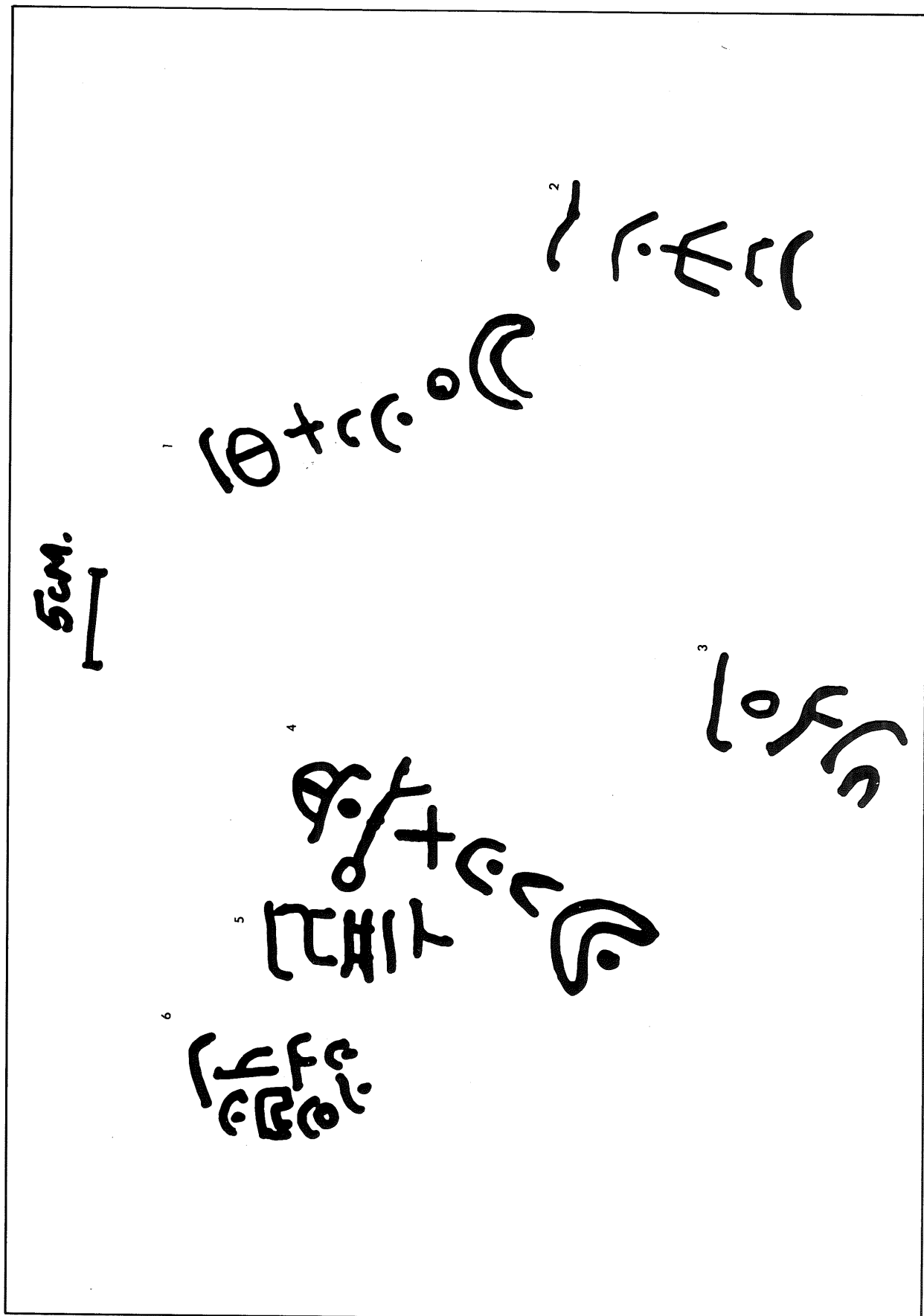


Fig. 14 AM85/74B/23

$\frac{5CM}{2}$
 $\frac{10/d_1 C_{\phi} \bar{U}_1 + \bar{U}_2}{3}$
 $\frac{C_{\phi} \bar{U}_1 + \bar{U}_2}{2}$
 $\frac{C_{\phi} \bar{U}_1 + \bar{U}_2}{2}$

Fig. 15 AM85/65B/14

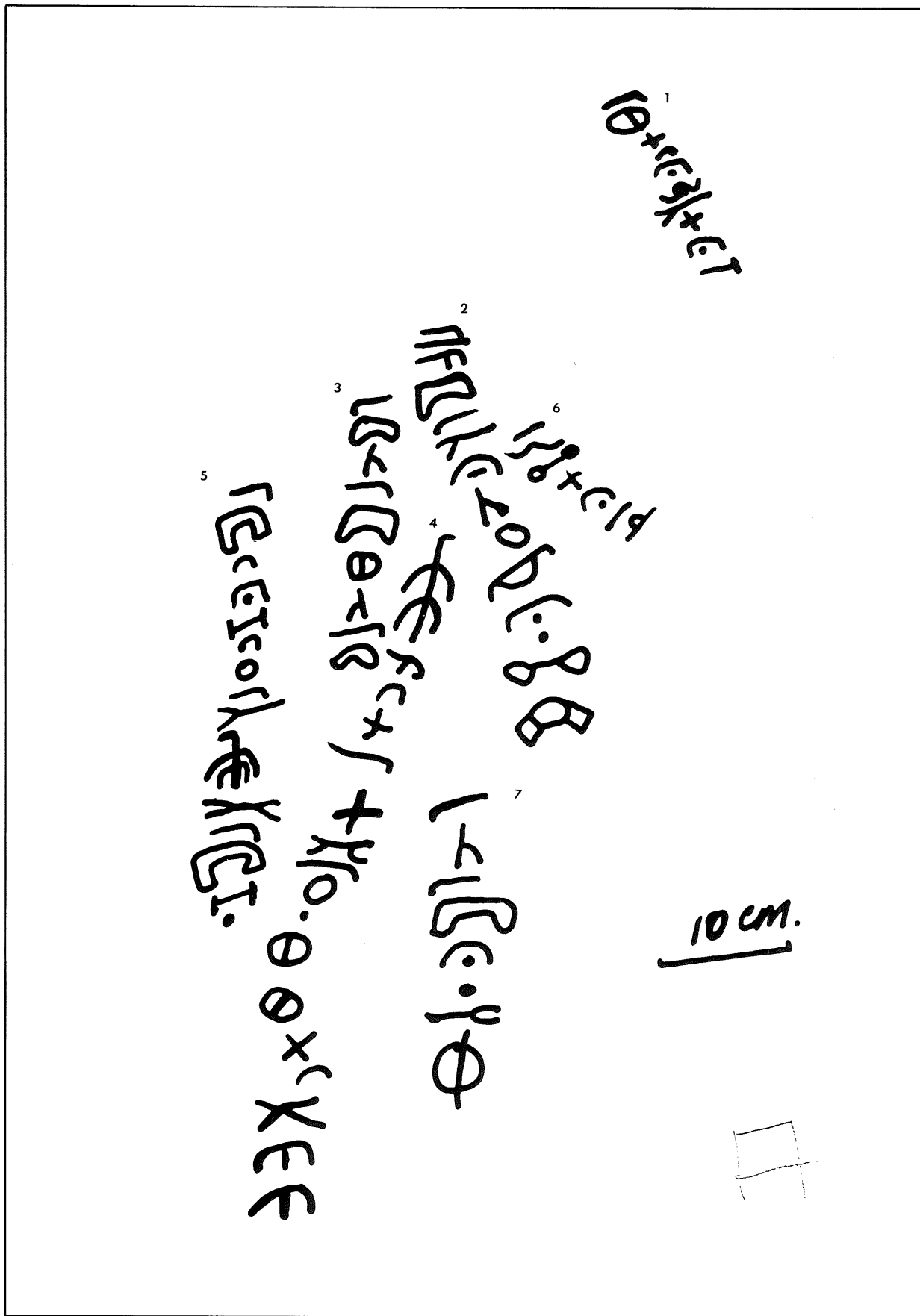


Fig. 16 AM85/73B/15

THE FOURTH SURVEY SEASON IN THE NORTH-WEST ARḌ EL-KERAK,
AND SOUNDINGS AT BALU' 1986.

by
Udo F. Chr. Worschech, U. Rosenthal
and F. Zayadine

The fourth season of the reconnaissance survey in the northwest ArḌ el-Kerak was carried out from June 30 to July 23, 1986. The project was funded by the Deutsche Forschungsgemeinschaft (German Research Foundation, Bonn, Germany) and the Theologisches Seminar Marienhöhe (Darmstadt, Germany). The members participating in the survey and the soundings were F. Zayadine, U. Rosenthal, Ursula Worschech, and Udo Worschech. N. Beqa'in and E. Masa'deh were the helpful and able representatives of the Department of Antiquities. U. Rosenthal wrote the report on Area CII of the sounding at Balu'. F. Zayadine was also supervising the sounding in Area CII.

The survey owes its importance to the fact that the territory of the slopes extending from the Transjordanian plateau to the Dead Sea between Wādī el-Kerak and Wādī el-Mūjib has never before been the object of archaeological campaigns. In order to get a better understanding of the Iron Age pottery in the survey area two soundings were carried out at Balu'. We are very thankful to Dr. A. Hadidi, Director-General of the Department of Antiquities of Jordan, for his support in this matter during this season.

The first campaign of this reconnaissance survey took place in the spring of 1983. Other campaigns followed in the summer of 1984 and 1985. For a complete coverage of the results reached during the three campaigns see *ADAJ* 29 (1985) and the Beiheft Biblische Notizen (*BNB* 2, Munich, 1985), where methods, goals, and objectives are presented in detail, as well as site descriptions and drawings pertaining to the more important discoveries. 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. 86

Name: *Wādī Judēra*, Elev.: 800 m,
PG.: 2199.0917

A considerable number of Thamudic rock drawings were found on big black basalt boulders facing south, ca. 50 m above the Wādī Judēra. The drawings show the typical ibexes of Thamudic art, hunting scenes, and warriors (the largest figure ca. 0.80 m high with naked body and a sword or a large knife). The figures do not appear to have been arranged systematically or to depict a cultic or everyday-life scene. Unfortunately, recent Arabic writing on the rocks have marred most of the scenes (Pl. LVI, 1). No pottery.

Site No. 87

Name: *ed-Dēr or Tabi'at Judēra*, Elev.: 700m, PG.: 2198.0915

Below the escarpment dropping into the Wādī Judēra is a ca. 150 m wide plateau extending to the banks of the wadi at its north side. On this plateau there are numerous, mostly circular, walls standing 5-6 courses high built of roughly dressed basalt stones. These circular dwellings (ca. 2-4 m in diameter) form clusters of three to four rooms with wide open spaces (courtyards?) among them. The units are spread over an area of ca. 160×100 m. Only Mamluk pottery was found here. However, it is not very convincing to date all of these houses to Mamluk times when considering the massive, almost megalithic, stone blocks set into the ground. Pottery:

Pottery: Mamluk.

Site No. 88

Name: *Mudeyneh*, Elev.: 750m, PG.: 2197.0932

This site is located on a flat narrow plateau high above Wādī el-Mūjib. The extensive

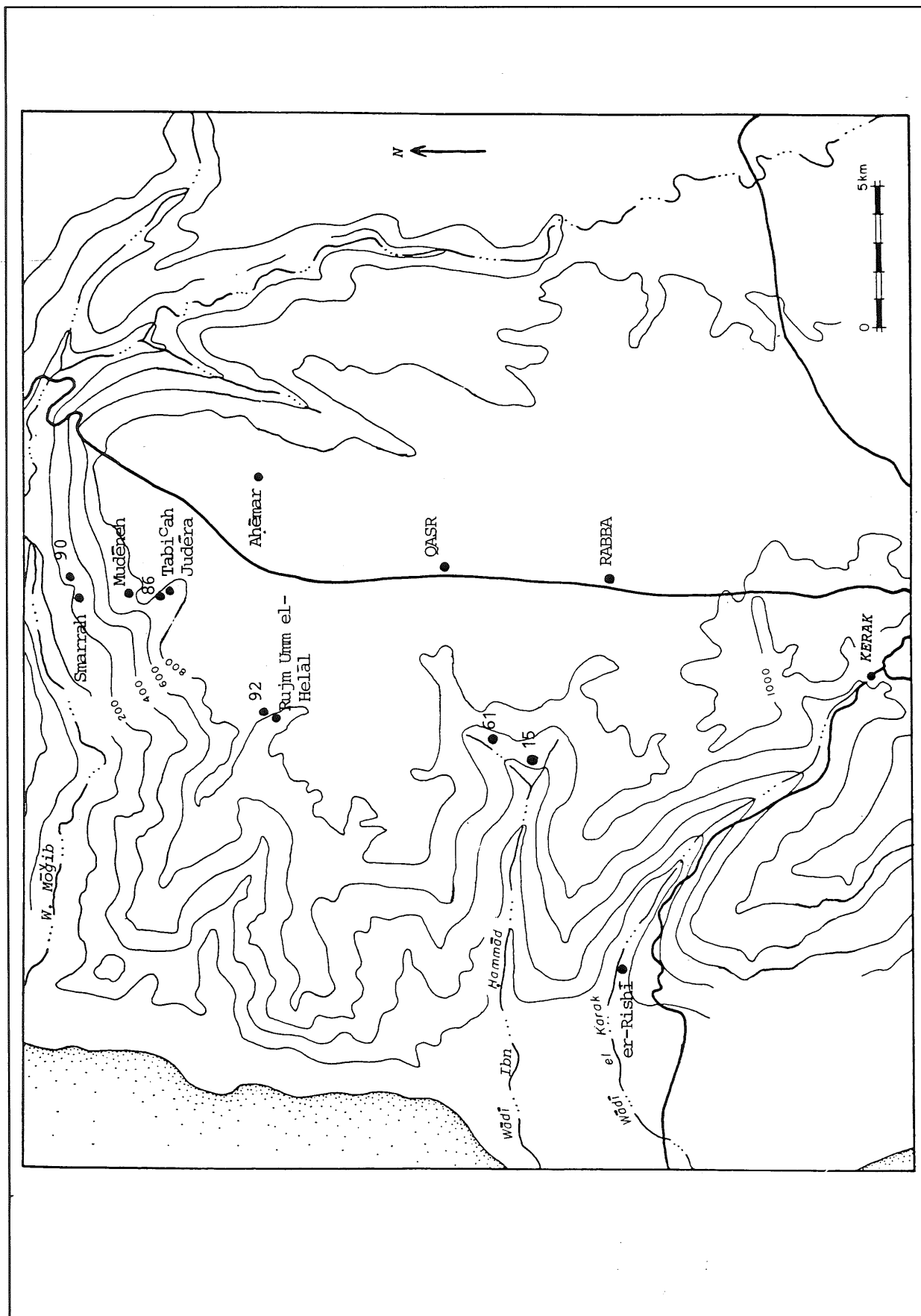


Fig. 1: Sites located in the Arḍ el-Kerak during the survey of 1986

ruins date mostly from Mamluk times and cover an area of *ca.* 120x25-30m. The site can be reached over a rocky saddle from the plateau *ca.* 2.5 km NNW of Miṣ'ar. The descent to the foot of the plateau as well as the ascent is dangerous since large basalt rocks and boulders are covering the area. The Mamluk ruins are covering the older remains which date back to the Iron I period. At the south side of the narrow site there is a 1.20m thick fortification wall built of unhewn basalt boulders, following the topography of the top of the plateau (Pl. LVI, 2). There are small bastions and towers. However, it is difficult to draw the outline of the city walls since other buildings from later times have been partially or completely erected on the outer walls. No wall could be traced out at the north side of the settlement. The Iron Age pottery was found at the western slopes of the settlement. A plastered pool (called *berkat moyeh*) measuring 12x8m, is 2.5 m deep and can be seen immediately at the foot of the site when approaching the settlement from the east.

Pottery: poss. MB II, Ir I-II; LHell, E/LRom, Byz, Um, Ayy/Mam.

Site No. 89

Name: es-Smarrah, Elev.: 280m, PG.: 2192.0944

At this site two installations were identified. There is one rectangular building measuring 12x9 m. Its outer wall is standing two courses high, built of fairly dressed stones. Inside is a heavy accumulation of stones, therefore no interior wall lines could be identified. The other "building" consists only of an ellipsoidal line of fairly dressed stones (*ca.* 10 m in diameter). The side of the wall to the east is built against the slightly sloping ground. This wall stands five courses high. The western wall is even with the ground floor inside the camp-like installation. It is difficult to understand the function of this structure (which may be a threshing floor?).

Only pottery dating to the Ir II period was found inside and outside the buildings and at the western slopes of the hillock on which these installations are located.

Site No. 90

Name: -, Elev.: 270 m, PG.: 2195.0945
This tomb, *ca.* 100 m east of no. 89 at the roadway to the Wādī el-Mūjib is representative of nine other tomb structures of the same kind, which can be seen near the roadway through Wādī Judēra. The dolmen-like structure consists of a ring (*ca.* 1 m wide) of fist to head-size stones forming a circle of *ca.* 6m in diameter. Off center, at the west side, is a huge capped standing stone measuring *ca.* 2x1x0.50 m. Other stone slabs close off the western portion, while the east side is "open". Hard packed soil is inside the stone ring. This tomb structure is of the same kind as those discovered at Wādī Jarra during the survey in 1983 (see *Beiheft Biblische Notizen*, 1985, pp. 28-34). No pottery, no flints.

Site No. 91

Name: Rujm Umm el-Helāl, Elev.: 900m, PG.: 2163.0869

This building complex (see Fig. 2) can be compared with other Roman-Byzantine farmhouses or villas in the survey area. It is situated in a fertile region of the Moabite plateau at the confluence of Wādī Imrā' and Wādī Faqū'. The outer walls of the building are built with fairly dressed stones forming defence-like walls which are 1.20 m thick. Interior walls can be made out and show three long rooms at the west side. There is a small pool (?) inside the complex which itself measures 30x19.50 m. In the courtyard is a cistern. *Ca.* 5 m from the northeast corner is another pool (cistern?) measuring 8.60x6.80x1.70 m.

Pottery: terra sig., tessarae, ER, Byz, Um, Ayy/Mam.

Site No. 92

Name: Hajar el-Yahudieh, Elev.: ca. 900 m, PG.: 2164.0876

About 25-30 years ago some people of the tribe of Ḥamaydeh had erased the inscription which was found on this hewn black basalt stone. Inquiries concerning the whereabouts of the pieces which were cut off from the stone — chisel marks can still be seen — were fruitless. The dressed stone functioned as a standing stone before

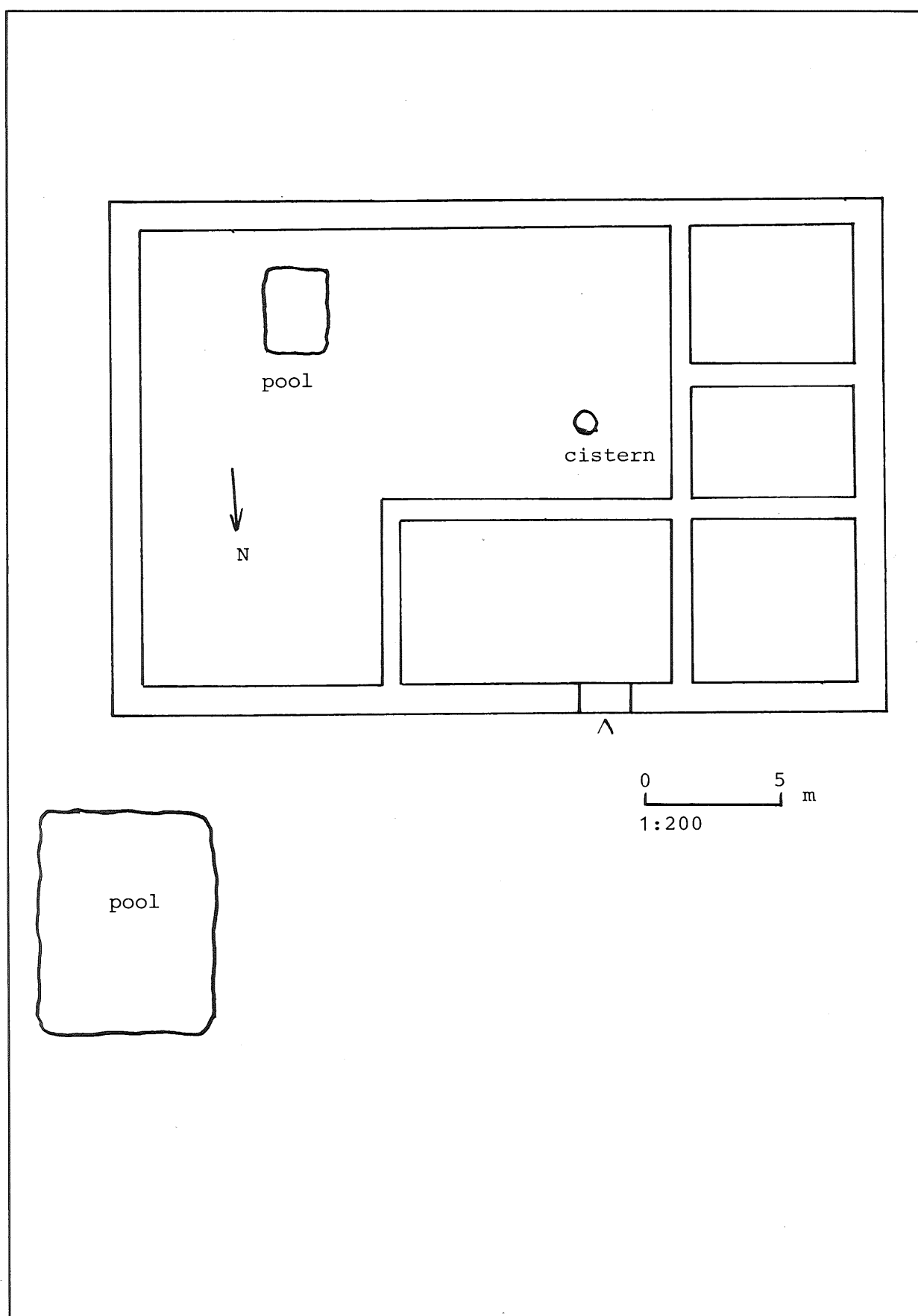


Fig. 2: Rujm Umm el-Helāl

it was pushed over. The bottom is entirely flat. Its measurements are: 2.90m long, the diameter at the top is 0.80m and at the bottom 0.45m.

No pottery.

Site No. 93

Name: er-Rishī, Elev.: -100m, P.G.: 2059.0754

This site consists of two settlements dating to the EB- (93.1) and Nabataean-Roman-Byzantine periods (93.2).

93.1: The EB-settlement can be reached by crossing the Wādī el-Kerak to the south *ca.* 150 m before the newly installed water catchment basin at the north bank of the wadi. Wall lines which were exposed by the heavy erosion of this site in the past can be seen especially at the western upway to the site, as well as at the upper escarpment of the plateau which lies *ca.* 12 m above the Wādī el-Kerak. The walls are built of unhewn boulders. At the exposed banks where the walls are visible thick ashy layers can be seen indicating heavy destruction of the site by fire. The spread of the pottery and the wall lines suggest the size of the site to be *ca.* 80x60 m.

Pottery: EB I-III.

93.2: PG.: 2060.0754. Of this site only those walls which are close to the escarpment of the wadi bank can be seen. They were built of fairly dressed stones of which two to three rows are visible. Interior walls are covered by heavy rock tumble. It appears that this site is only a large building complex of *ca.* 30x25 m. A small tower of which 5-6 courses are still standing can be seen across a small wadi east of the main building.

Pottery: Nab (also rouletted ware), ER (also terra sig), LR, Byz.

Site No. 94

Name: Aḥeimer, Elev.: ca. 800 m, PG.: 2249.0867

Aḥeimer is located immediately north of the wadi head of Wādī et-Tu'alaqah. The site consists of a complex building arrangement with an indefinable outer wall line

standing at certain spots two to three courses high. Interior wall lines can be seen but are difficult to follow, since heavy accumulation of fallen rocks have covered the foundation walls. There may have been a tower at the north side of the settlement. Immediately at the wadi are three terraces dropping down to the wadi bed. The entire site measures about 80x60 m.

Pottery: MB(?), Ir II (?), Hell, Nab, ER, Ayy/Mam.

Other sites visited and revisited

Two sites which are already known from other earlier visits (Glueck, Miller) were revisited. Here only the extent of the ruins, the Palestine grid and the pottery are registered.

Name: Qreifilla, Elev.: ca. 1030 m, PG.: 2195.0694

A very ruined site measuring *ca.* 120x100 m. Recent building activities have destroyed some of the south side walls which were built of dressed stones. Other wall lines are visible. Three cisterns were counted. Numerous small caves.

Pottery: ER, LR, Byz.

Name: Kinnār, Elev.: ca. 1050 m, PG.: 2193.0668

Of this site almost no definite wall lines have remained since bulldozer work has levelled the building remains to the ground. The site was bulldozed to form a rectangular wall enclosure which may follow the original outline of the outer walls measuring *ca.* 120x100m.

Pottery: ER, LR, Byz.

During a revisit in order to restudy some pottery samples for comparison from earlier surveys (1984), two sites produced additional occupational periods which had escaped the attention of the team earlier.

Name: Jebel Dafyān (site no. 61), Elev.: 510 m, PG.: 2149.0801

Immediately at the much eroded escarpment of the west bank of Wādī Fawwār where this site is located wall remains of an EB and MB settlement were discovered. Hence, the former date of this site which

was assigned to the LB and Iron Age periods must be pushed back to the EB and MB periods.

Name: Fuḥḥara (site no. 15), Elev.: 460 m, PG.: 2137.0783

Fuḥḥara 15.1 has the remains of a Nab-Roman house measuring 20×14 m of which only the foundation stones are visible. Interior wall lines are missing. The site is across the roadway north of the earlier identified site of Fuḥḥara, which dates to the same periods and also includes later remains.

Summary

The reconnaissance survey in the northwest Arḍ el-Kerak in 1986 has mapped 11 new sites dating to the various periods already identified in former surveys. Of special interest may be the EB-site of er-Rishi (no. 93) and site no. 88 (Mudeyneh) dating to the Iron age, which may be identified with the enigmatic "city in the

midst of the valley (river)" Joshua 13,16). Again the different installations from settlements to tombs and isolated houses present a picture of the rich and manifold culture during the various epochs in the ancient Arḍ el-Kerak. The area not reached during the surveys is the extreme northwest territory close to Wādī el-Mūjib. This difficult terrain can only be reached on horse back with equipment to stay for several days.

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, also for providing the survey license for us, as well as for his unbeaureaucratic help when special requests were made. I would also like to thank Dr. F. Zayadine for his support and help in many respects during the soundings at Balu'.

SOUNDINGS AT KHIRBET EL-BALU'

The ancient site of Khirbet el-Balu', which lies to the east of Jebel Shiḥan, is well known for its extensive ruins dating to EB and MB (Balu' North¹, to LB and Iron Ages, as well as to the Nabataean, Roman, Byzantine and Mamluk periods. Except for J.W. Crowfoot's soundings at Balu'², no more than casual remarks and references have been made concerning the site³. There are studies pertaining to the pottery from Balu'⁴, and to the dating and interpretation of the Balu' Stele⁵. However, since Crowfoot, only sherds have been gathered at the site. Not even a plan has been drawn or a specific area studied or excavated. This neglect of the site is largely due to the uninviting basalt ruins which have discouraged anyone considering excavations.

But anyone visiting the site which is ca. 5km. east of Jebel Shiḥan and about a 15 minutes drive through the fields from the village of Smakiyeh to the southeast, is undoubtedly impressed by its extensive ruins, by its location at the Wādī Balu' with its rugged beauty, and by the breathtaking escarpment by which the early site was situated not far from the springs of the now dried-up wadi. On the other hand, the descriptions which M. Horsfield and Père Vincent gave of the site as "misérable et ... amorphe"⁶, and as "gloomy and desolate" and standing on an "intolerably dreary" plain⁷, deterred archaeological work there, since J.W. Crowfoot's soundings in 1933. It seems also that the verdict he passed upon the site was the final word -

and taken seriously: "As a site for future excavations Balu'ah does not appear to the writer to be attractive... the prospects of important finds are not obviously promising"⁸.

The team which carried out the soundings at Balu' stayed at the village of Smakiyeh, the only permanent settlement near the site, even during Crowfoot's days there. We are thankful to Khalil el-'Awabdeh for the rent of his newly built house. There were workmen from Smakiyeh who had once excavated for Crowfoot and we met one man who had laboured at Balu' for 500 fils per day. According to the British archaeologist, he and his friends were "tolerably efficient"⁹. We found that the five young men we hired (one workman came from Jad'ah) were most efficient, as demonstrated by the mounds of soil and stones which were removed during the fortnight. The older people of Smakiyeh confirmed Crowfoot's observation that in his days the villagers came to the springs of Balu' to fetch water.

Today, the rolling plains of the Moabite plateau are covered with fields yielding barley, oats, wheat and trees. Modern irrigation techniques have made the plain more hospitable than fifty years ago.

The Site

An extensive survey of the site of Balu' during the afternoons from June 28 to July 11, and also while the soundings were in progress, provided a better under-

1. J. Maxwell Miller, 'Archaeological Survey of Central Moab', *BASOR*, 234 (1979) p.49; *ADAJ*, 23 (1979), p.81. The first explorer to refer to the site seems to be Tristram in 'The Land of Moab', New York, 1873, p.139. But his description, as it has been pointed out by J. Miller, is inadequate.
2. J.W. Crowfoot, 'An Expedition to Baluah', *PEFQ*, (1934), p.76-84.
3. Miller, *BASOR*, *op. cit.*, p.49.
4. M.F. Oakeshott, 'A Study of the Iron Age II Pottery of East Jordan with Special Ref-

erence to Unpublished Material from Edom'. Unpubl. Doctoral Thesis, University of London, 1978.

5. E. Drioton, *RB*, 42 (1933) p.353-365; W.A. Ward, M.F. Martin, *ADAJ*, 8/9 (1964) p.5-29.
6. G. Horsfield, L.H. Vincent, 'Une stèle Egypto-moabite au Balou'a', *RB*, Chronique, 41(1932) p. 417-444.
7. Crowfoot, *op. cit.*, 77.
8. *Ibid.*
9. *ibid.*

standing of the site, and in particular of the area of concentration for occupational periods. On the basis of this survey, the main occupational centres can be established and mapped as follows (see Fig. 3)¹⁰:

- The latest occupational remains date to the Mamluk period.¹¹ The small settlement can still be seen in the area south-west of Balu'. Here the concentration of sherds of Mamluk provenience was heaviest.
- Between this area and the Qaṣr, as well as around the Qaṣr itself, Nabataean, Roman, and Byzantine pottery is most prominent. The Qaṣr and the tower *ca.* 100 m. south of it (today with the benchmark at elevation 852 m) seemed to have been rebuilt and used in Nabataean and Roman times as the hewn stones suggest.
- Iron Age pottery is found all over the site, except at or near the Mamluk settlement (D). However, immediately west between the Qaṣr and the escarpment to the springs below and a little to the southwest of the Qaṣr, there seems to have been the oldest settlement dating to the Late LB and early Iron I periods (on Fig. 3 encircled area A). The Iron IIA city expanded to the east (B) and north of the Qaṣr as the sherds indicate. In the following Ir IIB period the city expanded further to the east (CI-II), covering an area as much as *ca.* 600 m east of the Qaṣr (CIII).
- The ruins of the EB and MB settlement can be seen across the wadi to the north.

It should be noted that the entire site of Balu' is covered with sherds dating to the Iron Age periods. Also, no sherds have been found dating to the Persian and Hellenistic epochs. The extension of the city

area towards the east can be misinterpreted if one expects closely built housing units or suburbs. This is not the case. Between the settlement units of two or three houses are large open spaces measuring from 80 x 50 (the largest) to 10 x 8 m (the smallest). These may have been public places, yards or forums.

It is most likely that the southern city wall can be traced in the southeast. On the map Fig. 1, this is indicated by the two dotted double lines. The wall can no longer be traced when one moves to the west towards the Qaṣr and the Mamluk settlement.

Any visitor to the site of Balu' knows that the entire settlement is covered with small to extremely large blocks, slabs, and boulders of basalt. For the sounding, areas were chosen which did not require too much of the time-consuming removal of stones. Therefore, the sounding areas are located in the later extension of the Iron Age city (C).

Area C I

Area CI is located inside a large building complex (22 x 16 m.), which is situated at the top of steep escarpment of Wādī Balu' (Fig. 4). The north wall of the house is part of the city wall running almost exactly east-west and following the irregular line of the edge of the plateau. Between the house and the (earlier?) western quarter lies a large open space (*ca.* 80 x 50 m) with no definite wall lines within it except for the city wall on the north side.¹²

The building overlooks the valley of the wadi as far as the Wādī Meḥeires, the northern plains, and the areas to the south and the east. Its commanding position controlling all approaches to the eastern quarters of Balu' has led us to interpret it as an administrative centre since it is also the largest building in the Ir II extension of the city

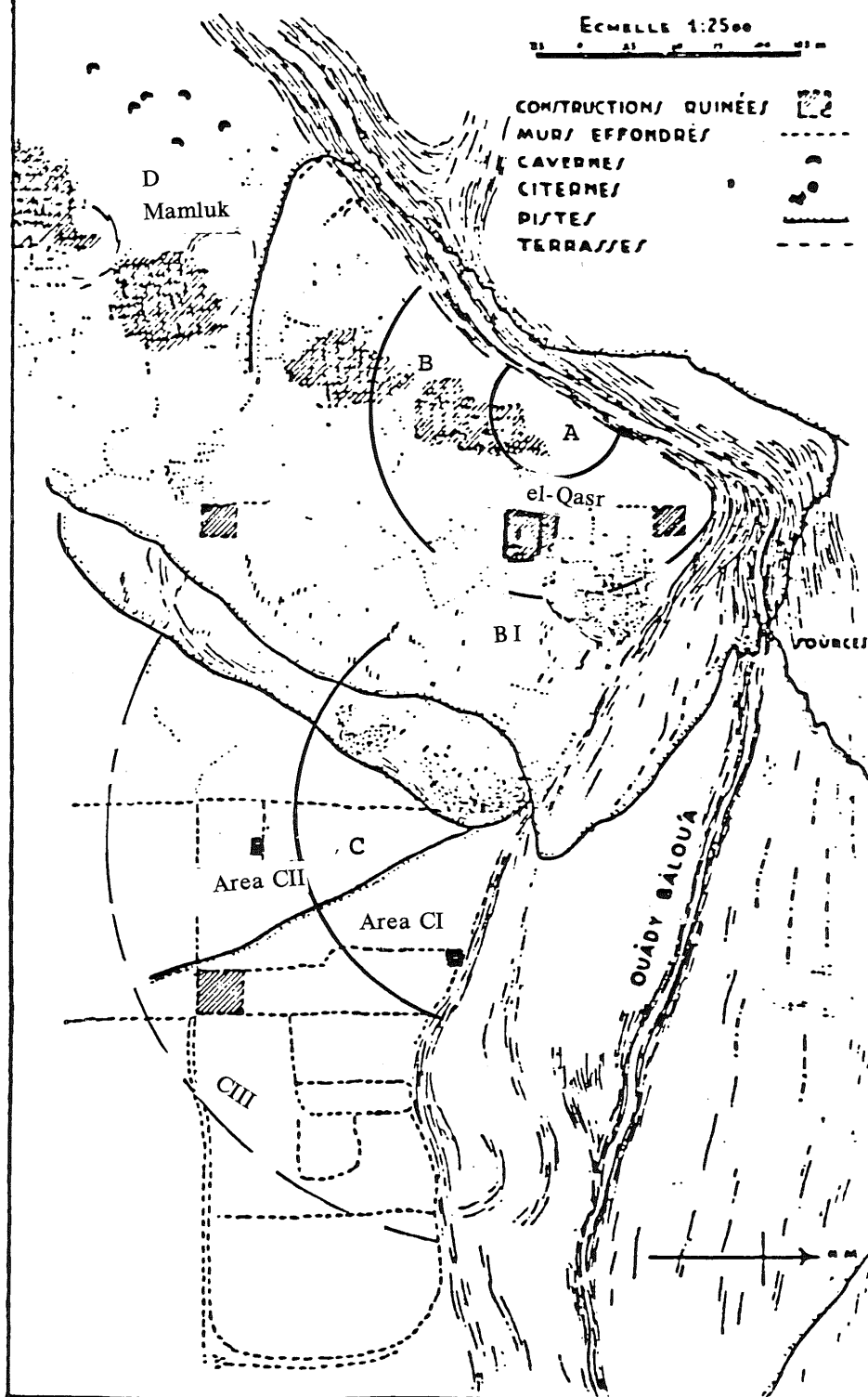
10. The map is taken from Horsfield-Vincent, *op. cit.* Fig. 1.

11. Many Arab Chroniclers refer to Shihān or Siḥān. The earliest author to my knowledge is al-Harawī (12th century A.D.) in his '*kitāb el-isharāt ila ma'rifat el-ziyarāt*', translated by J. Sourdel-Thomine, *Guide*

des Lieux de Pèlerinage, Damas, 1953, p.18 (Ma'ab). See also al-'Umari (14th century) and Yaqut (13th century) in '*Textes Géographiques Arabes sur la Palestine*', p.113 (Siḥān, Siḥān).

12. Crowfoot's sounding at the casemate wall can still be seen *ca.* 30 m west of the building.

KHIRBET BĀLOU'Ā



— Kn. EL-BĀLOU'Ā. Diagramme topographique levé par M. Head.

A = LB and Ir I B = Ir I to IIB C = Ir IIB-C (approx. dates)

Fig. 3: Map of Khirbet Balu'

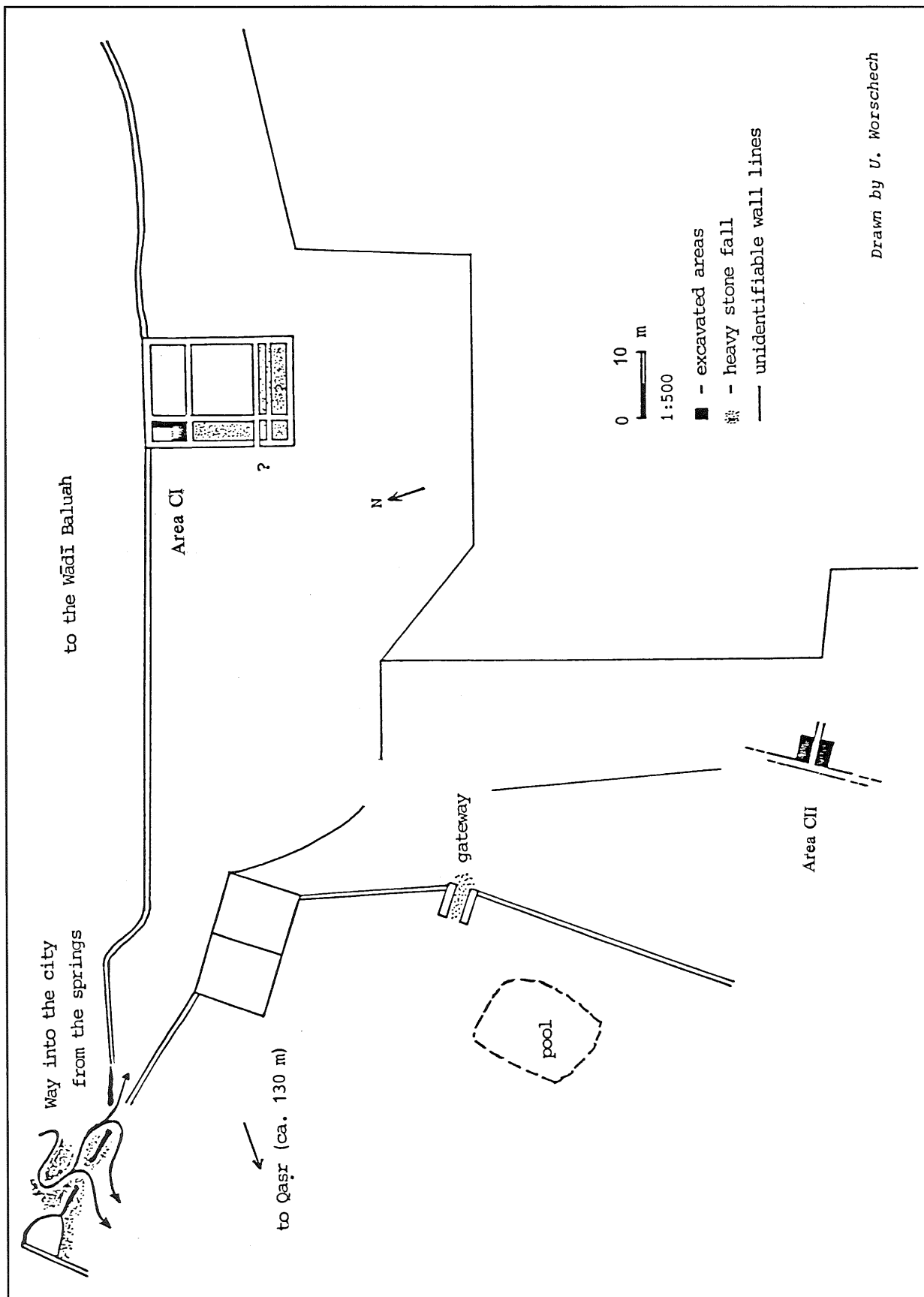


Fig. 4: Eastern City quarters with Sounding Areas at Balu'.

area to the east.

On the plan (Fig. 5) only the drawn walls present identifiable original walls standing almost to their original height. It was possible to identify the general outline of the house with certainty, although the wall faces and its top were covered with heavy rock fall and debris. It appears that some areas in the compound which have cobble stone layers are later constructions by the bedouins who have camped inside the remains. There is also architectural evidence for rectangular tower or one storey structure within the south side of the building. A doorway leads from a possible yard into this tower-like southern room of the compound (Pl. LVII, 1-2). Only further excavation can verify whether the wall running east-west inside the building is a partition wall between large rooms or separates an outer court from a roofed living area.

The sounding area was chosen within the building complex where wall lines suggested a room or an open unroofed living area. This unit lies at the northwest corner of the complex. A trench (1 m wide) was opened running east-west from a large well-cut stone slab towards the western outside wall (wall 70) of the house. This sounding very soon revealed that the cut stone slab formed the lintel of a doorway. The left and side of the door was exposed showing two stones of the doorpost (Pl. LVII, 2).

In order to uncover the entire doorway another trench was cut alongside wall 50 towards the south. Thus the doorway was exposed, measuring 0.95 m - 1 m between the doorposts (Fig. 6 & Pl. LVIII, 2). At the right hand doorpost (ca. 0.30 m) the second wall (wall 60) of the entire room was uncovered; it measures 4.50 x 3.40 m. Although there is no doorway leading from this room to the south, an adjoining southern room can be postulated, since some stones ca. 3.30 m south of wall 60 seem to form a wall line. It thus appears that three rooms may have been built alongside the western wall (wall 70) inside

the compound.

With the discovery of the southern partition wall (wall 60), the limits of the sounding in Area CI were well defined, within the context of the building. We continued with the excavation of the entire room. Although time did not allow for clearing it completely, the sounding was still successful in identifying the function of this room.

Subsidiary balks were left standing whenever the physical properties of the soil seemed to change. However, the same soft, crumbly brown soil filled the entire room to the fillor, which was reached at the depth of 2 m. The fill¹³ contained at various levels between 0.90-1.40 m and in different spots throughout the excavated area hard packed clayey grey soil. The irregularity of these clay pockets with regard to level, size, and location in the fill material excludes the possibility of one or several floors. It is more likely that these "layers" are portions of the plastered roof, which have fallen at different times into the accumulating fill. The patches were of different sizes of clayish soil in the wind-blown and rain-washed fill material. No wooden beams or pieces from the roof were found. However, a grinding stone with a flat and smooth bottom was found on top of and partially sunk into the clayey layer, near the corner where walls 60 and 70 join (Pl. LVIII, 1). It is possible that this object was once used either to smooth the roof's surface or for grinding work on top of the flat roof.

As already mentioned, the floor (loc 7) of the room was reached in a 1 m wide trench at a depth of 2 m from the top soil level. Next, the subsidiary balk left in front of the doorway was removed and bedrock was encountered. More clearing of the area in front of the doorway revealed that the doorposts were set on bedrock, which was cut to form a step for entering the doorway. The bedrock was level with the floor (Fig. 6 and Pl. LVIII, 2).

When removing the portions of the balk at wall 60, a *ṭabun* (loc 8) was discov-

13. The pottery of the fill will be published else where.

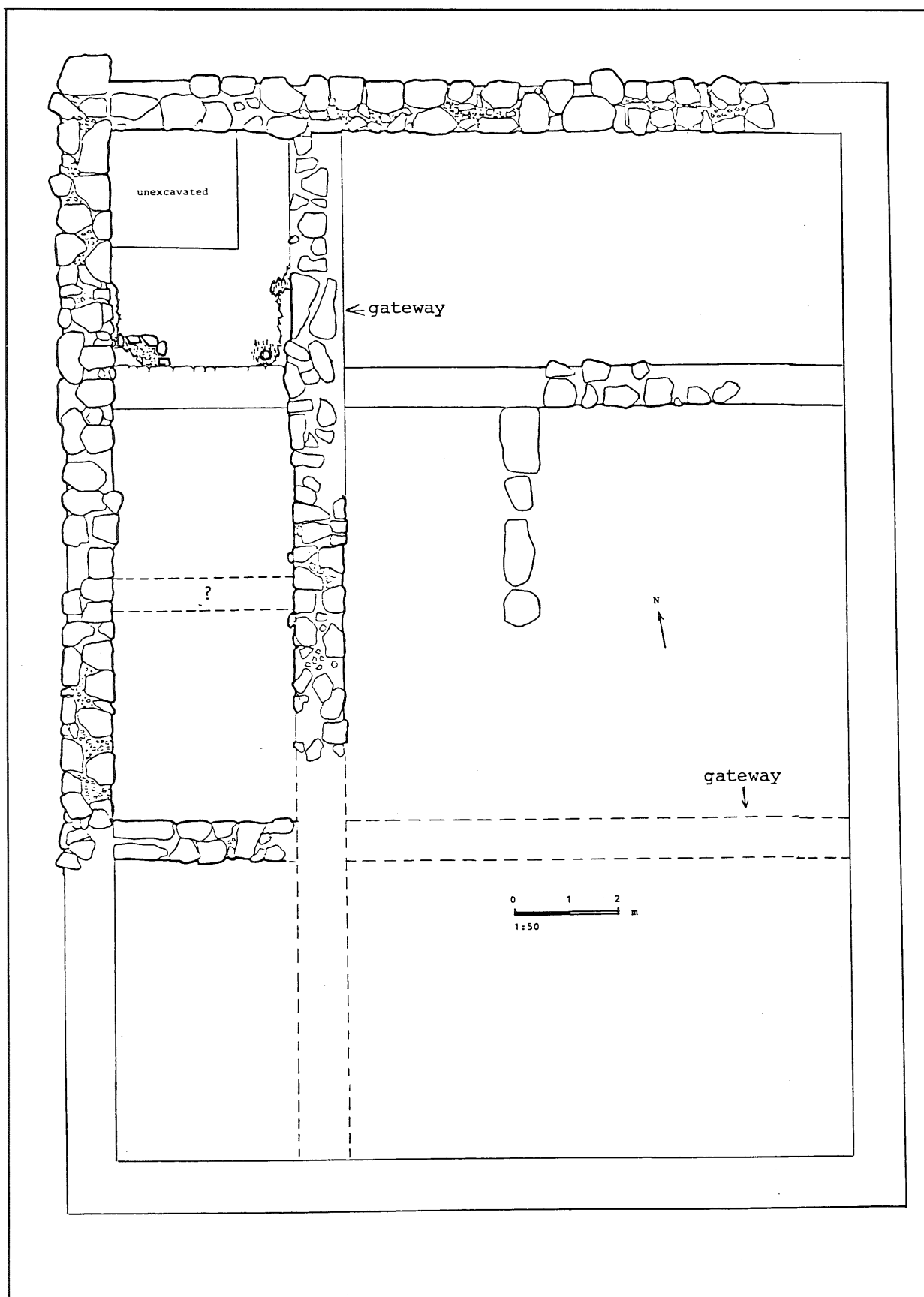


Fig. 5: Plan of House in Area CI.

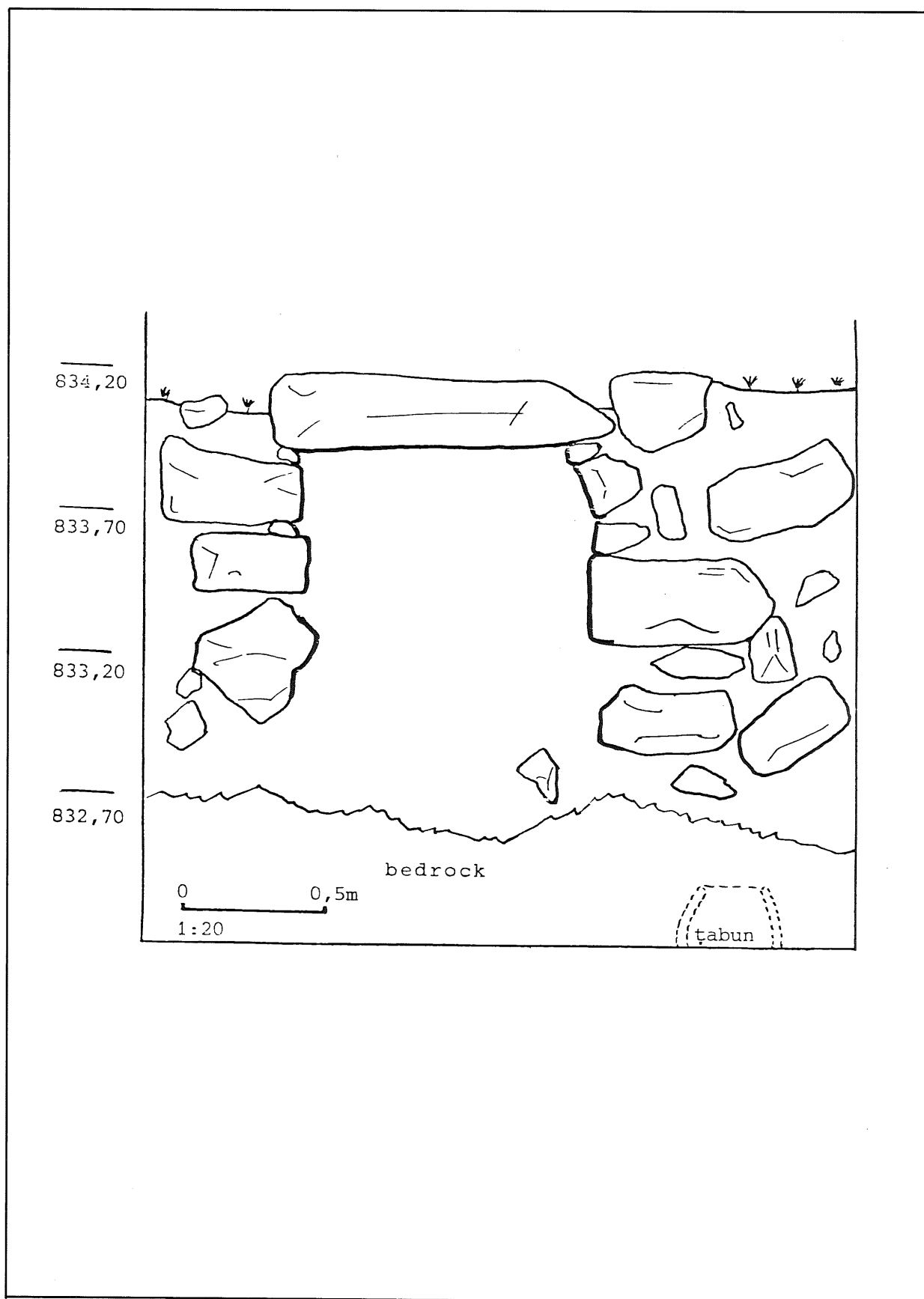


Fig. 6: East wall (50) with doorway.

ered set in the rounded corner of the bedrock (Fig. 7 and Pl. LIX,1), which was cut out here. The *tabun* is set *ca.* 0.15 m. away from the curve the bedrock makes here before it continues under wall 60. The space between the bedrock wall and the *tabun* was filled with ashes. Ashy layers were also inside and in front of the *tabun* to the west. Sherds of a broken jar were set tight against the eastern wall of the *tabun*. The bedrock was followed under wall 60. It continued under wall 70 and wall 50, against the city wall. A small portion of the wall face was uncovered at the end of the sounding (Pl. LIX,2).

During the final stage of the sounding in Area A, the soil fill at the southeast corner between walls 60 and 70 was removed. An almost rectangular structure (loc 9; 1.05 x 0.60 m) consisting of two rows of head-sized stones and extending alongside wall 60 to the east was discovered built on bedrock (Fig. 7 & Pl. LX,1). The floor came up against its side walls. From the top row of stones to the bedrock floor, this structure measured *ca.* 0.35 m. The inside was filled with very fine sand which contained some charcoal as a storage place or bin.

Finally, when cleaning the floor and bedrock in front of the doorway, a rectangular basin-like "installation" in the bedrock was uncovered filled with a thick layer of ashes which contained no bones or potsherds (Fig. 7). The possibility of another fireplace must be excluded because of its awkward location in front of the doorway. This "installation" (*ca.* 0.10 m deep) is nothing but a natural crevice in the bedrock, and may have served as a "container" to receive the burned-out material and ashes from the *tabun* close to it.

During the eleven days of soundings at Balu' in Area CI, this room was partially excavated and appears to be the kitchen of a possible administrative complex. The *tabun*, the bin, the ash layers, as well as the objects found in the fill, such as 4 grinding stones, one spindle-whorl, and a broken

box-like ceramic object (see Pl. LX,2 - LXI,2) seem to support this interpretation. An ostrakon with possible reading of a *mem* and *waw*¹⁴ was also found in the fill (Pl. LXII,1). The pottery from above the floor (see below the detailed descriptions) contained no Persian or later forms. Hence, a tentative date to the Ir IIB-C may be assigned to this room (and to the whole complex?).

Area CII

This area is an open platform, located at the east side of the walled Iron IIA-B city. It communicates with area BI by a gateway, situated to the NW, and opens to the N into the passageway which leads down to the springs of W. Balu' ('Ayun el 'Arāyes) (Fig. 4).

Two squares, CII,1 and CII,2, both measuring 4 x 2 m. were plotted on both sides of wall 100 (Fig. 8). This wall, which was built with roughly squared blocks, is 0.80 to 0.86 m wide and stands to the preserved height of 1.75 m (Pl. LXI,1). Before the excavation, many fallen boulders had to be removed in CII,1.

The top layer consisted of a soft, grey-brown vegetal soil (Fig. 9). Locus 2 (henceforth loc) was a layer of hard-packed light grey soil with many sherds and bone fragments. In the softer and stony greyish-brown soil of loc 3, the number of sherds increase. Loc 4 was assigned to a platform-like accumulation of unhewn fist to head-sized stones which covered only half of Sq. CII,1. Its function is not clear. After removal of this platform, two big stones appeared, measuring *ca.* 0.70 x 0.48 x 0.30 m (Pl. LXII,2). A floor (loc 5), running against the stones and wall 100, was uncovered below loc 4. A rim fragment of a basalt bowl was found on this floor.

Another square was then opened at the north side of wall 100. This Sq. CII,2 had the same stratigraphy as CII,1, except for the following: in loc 2 the amount of sherds was less than in CII,1, loc 2. At

14. See description and interpretation of the possible ostrakon by M. Weippert in a forth-coming issue of *ADAJ*.

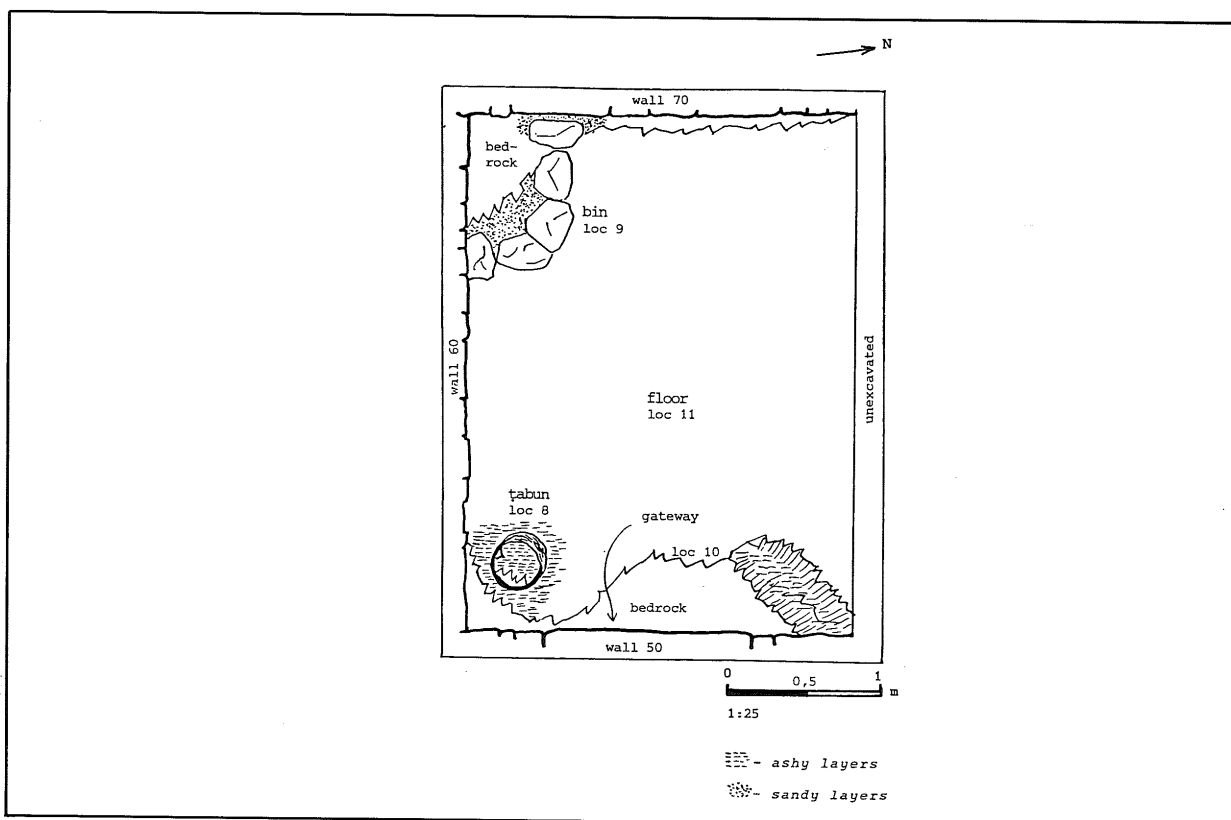


Fig. 7: Plan of kitchen area in Area CI.

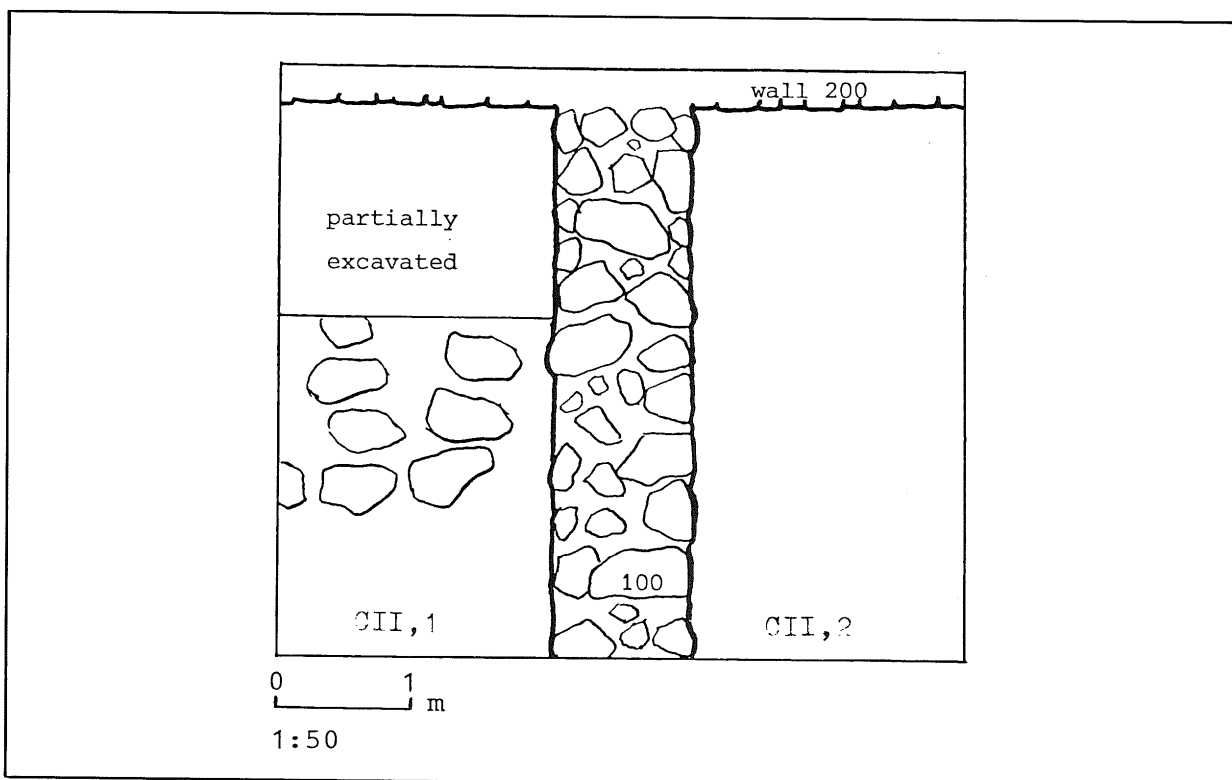


Fig. 8: Top plan of Area CII.

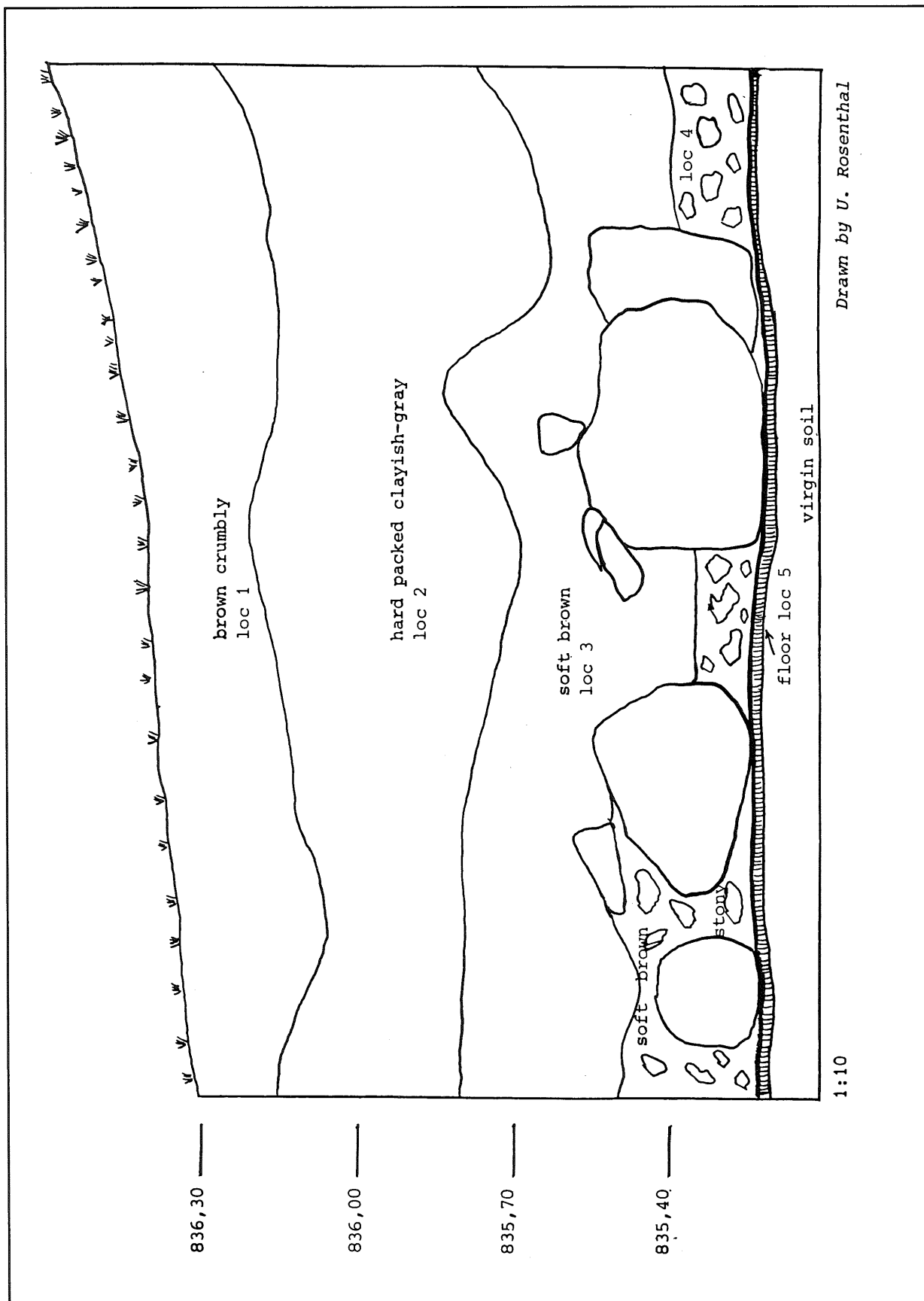


Fig. 9: South-balk of Area CII, 1.

level 835.70 m. (loc 2) a corroded knife blade was found sticking out of wall 100 (Pl. LXIII, 1). Loc 3 was a possible floor consisting of a layer of hard-packed light-grey soil which ran against wall 100.

The excavation then continued to the west by extending CII, 2 towards a wall which was almost entirely covered with rockfall. This wall (200), which runs north-south, is 0.90 m. wide and preserved to the height of 1.75 m. The same stratigraphy (loc 1-3) continued here. On the floor of loc 3 a column base (?), 0.39 m. in diameter and 0.14 m. thick (Pl. LXIII, 2), and a *ṭabun* fragment were found. The floor came up against wall 200. Hence the two walls form an architectural unit, which is still awaiting further excavation and interpretation.

Loc 4 in CII, 2 is identical with loc 4 in CII, 1: a platform of fist to head-sized stones extending *ca.* 0.96 m. from wall 100 to the north but not running alongside the entire length of the wall. In loc 4 a spindle-whorl made of stone was found (Pl. LXI, 1). Much stone fall was encountered at wall 200.

After removal of loc 4, another very smooth floor (loc 5) appeared, extending all over Sq. CII, 2 (Pl. LXI, 1). This corresponds to loc 5 in CII, 1. The floor contained sherds, ashy patches, and charcoal flecks. At level 835.20 m., close to wall 100, at the depth of 1.10 m. from the preserved height of the wall, one half of a rounded basalt object (0.16 m. in diameter, mortar or door-socket?) was found with an inscription of four Moabite letters written on its 0.025 to 0.04 m. wide flat rim (Pl. LXV, 1. Figs. 10-11; see publication by F. Zayadine in this report). There was also an arrow or spear head made of basalt in this locus. Further excavations in CII, 2 revealed that both walls were built on virgin soil.

In order to secure additional information concerning the two large stone slabs left in CII, 1, and to investigate the possible continuation of wall 200 towards the south, we continued in CII, 1 towards the west. It was found that the stratigraphy (loc 1-5) extended here in the same layers, except that the stone fall increased closer to wall 200. In loc 5, a pendant made of green stone and a shell, both pierced, were found (Pl. LXI, 2). Below loc 5, virgin soil was reached.

The two stone slabs of CII, 1 turned out to be part of a circular structure of concentric rings of stones of which the inner circle is sunk deep into virgin soil (Pl. LX, 2). Only one half of this structure was excavated. It is however, contemporaneous with the floor (loc 5) and wall 100. Its function is not clear (cistern? bin?).

Summary and Conclusion

The soundings in Areas CI and CII at the site of Balu' have produced a number of important discoveries which accentuate the great significance of this ancient city. The first Moabite ostrakon and the stone inscription mentioning a *melek* (king) as well as the impressive architecture demand a resumption of the excavation. That there were no indications of any destruction by fire or warfare in the soundings raises several questions as to the exact reason for the abandonment of the site in the Ir IIC period. Since no other household or significant objects except for the grinding and work stones were left in the kitchen area, at least this area was cleaned out by the inhabitants before leaving. It may be however that there are destruction levels in other parts of the city.

Hopefully, future excavations will give some answers and raise more questions, thus stimulating the overdue research in the Arq el-Kerak and Balu'.

THE MOABITE INSCRIPTION

by
F. Zayadine

It has been noted above that the fragmentary Moabite inscription was excavated in Sq. CII, 2, loc 5, a smooth packed floor, associated with walls 100 and 200. Four letters are carved on a flat basalt rim, about 16 cm in diameter and not more than 4 to 2.5 cm in width. The inner face, which is preserved to the height of 3 cm, is well polished and suggests that this object was used as a cosmetic mortar rather than a doorsocket (Pl. LXV, 1 and Fig. 10-11).

Paleography

Three of the four letters display characteristics of the early Moabite and South-Palestinian script. The *taw* shows the x form of the Mesha' Stone¹⁵ (around 840 B.C.), the Kerak¹⁶ and Dhiban¹⁷ fragments. The *lamed* with the hooked tail is also common in these inscriptions. It is also frequent in Hebrew and Aramaic epigraphy.¹⁸ In the Citadel inscription,¹⁹ dated to the 9th century B.C., the same *lamed* occurs. As for the *kaf* with a long curved shaft and two branches, it appears on the Mesha' Stone (especially 1.28 ('NK) and on the Amman Citadel inscription. Only the *mem* with a horizontal thrust and two parallel sprongs is different from the zigzag headed *mem* of the Mesha' Stone and the Citadel inscription. In the Balu' fragment, the *mem* displays a short vertical leg and a horizontal thrust with two parallel

sprongs. This type of *mem* occurs on several Moabite seals and is said by P. Bordreuil²⁰ to be a post Mesha' development. This development was most probably under Aramaic influence and G.L. Herr states that "strong Aramaic elements were brought into the Trans-Jordanian scripts, possibly by the Assyrian conquests, in the M and L 8th c."²¹ A scaraboid seal belonging to M'Š H MZKYR (Me'ash, the herald), was discovered at Um Udheina, west of Amman and dated to the 8th century B.C., shows the same *mem*. The stratified Moabite inscriptions are unfortunately very rare and the chronological evidence from the seals, attributed to the Moabites, might be irrelevant. Since most of the letters display the characteristics of the early Moabite epigraphy, it is reasonable to date the Balu' fragment to the 8th century B.C. The pottery sherds collected with the inscription are of no help for dating, since the object was a later reuse.

Interpretation

It is not easy to restore the original meaning of this fragmentary inscription. My first intuition was to read it *KMŠYT MLK M'B*, Kamoshyt, king of Moab. But the break of the rim suggests a letter with a long curved shaft, like *mem*, *kaf* or *bet*. If the first letter is a *bet*, the inscription could be completed: *L BT MLK M'B*, be-

15. See Clermont-Ganneau, *La stèle de Dhiban ou stèle de Mesa roi de Moab*, Paris 1870; A. Lemaire, in *La Voie Royale*, Catalogue of the Exhibition in Musée du Luxembourg, Paris, 1987, p. 121 with bibliography; F.A. Tuqan, *ADAJ*, 15 (1970) p. 19-51 and Pl. I (Arabic).
16. W.L. Reed and F.F. Winnet, *BASOR*, 172 (1963) p.1-12; D.N. Freedman, *BASOR*, 175 (1964) p.50-51.
17. R.E. Murphy, O. Carm, *BASOR*, 125 (1952) p. 20-23
18. See L.G. Herr, *The Script of the Northwest Semitic Seals*, Harvard Semitic Museum, Missoula Montana, 1978; J. Naveh, *The*

Development of the Aramaic Script, Jerusalem, 1970.

19. *BASOR*, 193 (1969), p.2-18 and Figs. 1-3.
20. *Catalogue des Sceaux Ouest-Semites Inscrits*, Paris, Bib. Nationale, 1986, p.59. For a similar *mem*, see seals No. 62,63,65.
21. *The Script of Ancient North-Semitic Seals*, *op. cit.*, p.153.
22. F. Zayadine, *Syria*, 62 (1985) p. 156-158 and Fig. 13; M. Abu Taleb, *ZDPV*, 101 (1985) p. 21-29, Fig. 1 and Pl. 1, B-C. Fig. 1 is not accurate. The photograph Pl. 1 shows that the *mem* of line 2 has a horizontal thrust.

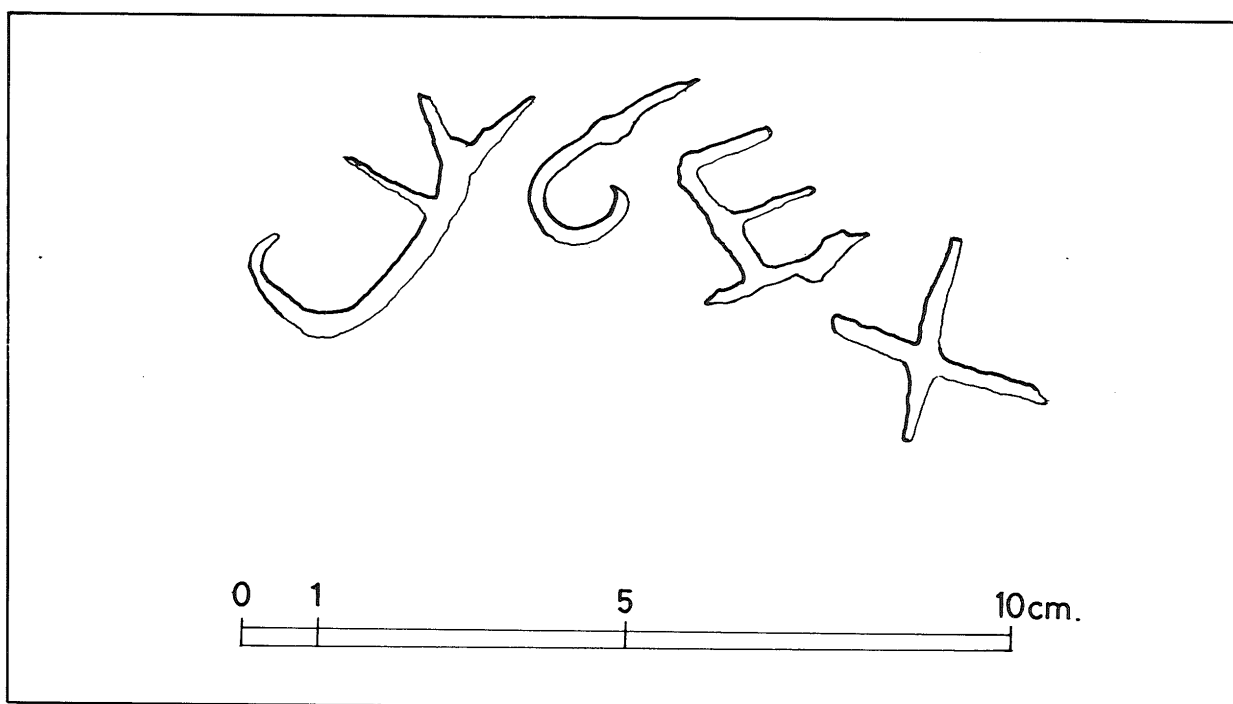


Fig. 10: Facsimile of the Moabite Inscription (after J-P. Lange)

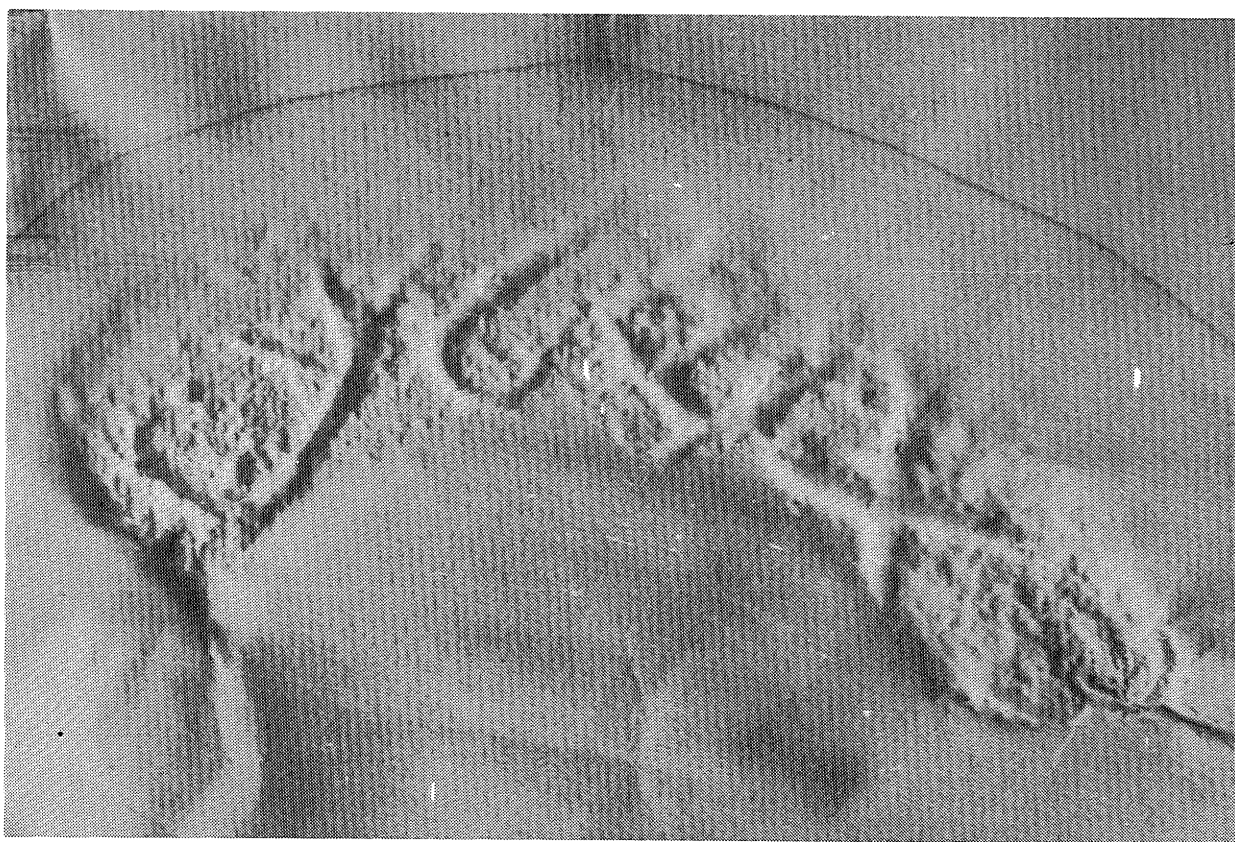


Fig. 11: Squeeze of the Moabite Inscription.

longing to the house of the king of Moab (royal palace) or to the daughter or to the wife ('ŠT), in case the rim is part of a mortar. *BT* is also a capacity measure of 45 or 22-23 litres.²³ A storage jar inscribed with *BT LMLK* to be translated "royal bat" was discovered at Lachish.²⁴ Another pottery fragment bearing *BT* was found at Tell Beit Mirsim.²⁵ After the examination of the different inscriptions, R. de Vaux concludes: "Il est difficile que cette chaîne d'hypothèses conduise à une certitude". Thus, the real volume of the *bat* remains uncertain. A sherd with the Phoenician

characters .. *TMLK* was excavated at Kamid el-Loz in Lebanon. W. Röllig²⁷ who published it, presents different hypotheses for the reading. One of them is that the inscription is a compound name, like '*mtmlk*', '*htmlk*' or '*mtmlk*'. Such theophoric names appear also in the Moabite onomastic.²⁸ But it is more likely that the Kamid el-Loz short inscription belongs to a capacity measure. It is also possible that the Balu' inscription belongs to a proper name: *TMLK*, which appears in the West Semitic onomastic,²⁹.

23. Cf. R. de Vaux, *Les Institutions de l'Ancien Testament I*, Paris, 1969, p.307-308.

24. O. Tufnell, *Lachish III*, London, 1953, p. 356-7 and Pl. 49.

25. R. de Vaux, *op.cit.* p.307.

26. *Idem*, p. 308.

27. *Fruhe Phoniker im Libanon*, Mainz/Rhein,

1983, p.47-48; Kamid el-Loz, 1977-1981, p.159-160 & Pl. 20.

28. P. Bordreuil, *Catalogue, op.cit.*, p.59 & note 19.

29. See Harding, *An Index and Concordance of Preislamic Names and Inscriptions*, University of Toronto, 1971, p.138 & 564.

THE IRON II POTTERY FROM BALU'

Figs.12-15

In order to immediately present to the archaeologists of Jordan the small corpus of stratified Iron IIB-C pottery from Balu', I have refrained from giving an exhaustive treatment of the material presented here.

The published pieces come from Area CI and CII. They are exclusively those pottery fragments which were found on or partially embedded in the floors (loc 7 in Area CI and loc 4 and 5 in Area B) or underneath the floor in Area B (loc 6).

In the following report, only brief and very general descriptions of the color and possible surface treatments of the individual pieces are given. However, emphasis is laid upon the parallels from the published reports from Ḥesbān, 'Aro'er, and Balu'.

A more detailed study of the pottery from Balu' will be presented in the future, but because of limited time and space a glimpse at the first stratified pottery from a relatively unknown area — the northwest Arḍ el-Kerak — will have to suffice at this time. The pottery description will follow this sequence: number — registration number — surfaces (ext./int.) — inclusions — parallels.

Abbreviations: PH = E.N. Lugenbeal, J.A. Sauer Seventh-Sixth Century B.C. Pottery from Area B at Hesbon, *AUSS* 10 (1972), 21-69; Ar = E. Olavarri, *Sondages à 'Aro'er sur l'Arnon*, *RB*, 72 (1965), 77-94; B = J.W. Crowfoot, *An Expedition to Baluah*, *PEQ* (1934), 76-84.

Pottery description:

1	A. 7.31	cream slip	fine	PH IXA 507,511; Db III 2:33
2	B. 4.14	pinkish cream slip	fine	PH IV 213-125
3	B. 4.7	reddish cream slip	fine	PH IV 224, 212
4	A. 7.21	cream/pinkish slip	fine	PH IV 211; Db III 24:13.14
5	B. 4.21	light reddish brown slip	fine-medium	PH IV 219
6	B. 5.23	greenish cream	coarse	PH IV 215; Db III 22:5; Ar 1:7
7	B. 4.22	reddish/light brown	fine-medium	PH VIII 446.449
8	A. 7.32	light reddish	fine	PH VIII 446.449
9	A. 7.20	light brown	fine	PH VII 367; VIII 424; Db III 1:37
10	B. 4.3	reddish brown/sandy	fine	PH VIII 454
11	B. 6.5	light orange	fine-medium	PH VIII 401
12	A. 7.25	greenish cream	fine	Db III 22:8
13	B. 5.0	reddish brown/sandy	fine	PH VII 355
14	B. 4.1	cream/light brown	fine-coarse	Db III 1:41
15	B. 6.4	light greenish slip	fine-medium	PH VII 353,370; Db III 14:8; B II 1:1
16	A. 7.12	light brown	fine	PH VII 389; Db III 24:19
17	B. 4.12	light reddish brown slip	fine-medium	PH VII 389; Db III 24:20; B II 2:2
18	A. 7.13	brown	fine-medium	PH VII 389; Db III 24:19; B II 2:1
19	A. 7.24	sandy cream	fine-medium	PH VII 389; Db III 24:20
20	B. 4.23	reddish brown	fine-coarse	PH VII 378,384
21	A. 7.3	brick orange	fine-medium	PH V 313 (?)
22	B. 4.11	reddish brown	fine	B II 2:5
23	A. 7.1	reddish brown	fine-medium	PH VIII 396 or Krater (cf. no. 49)

24	A. 7.4	light reddish brown	fine	PH VI 320,321
25	A. 7.5	grey	fine-medium	no parallels
26	B. 5.30	greyish brown/ reddish brown	fine-medium	PH VI 320,321
27	B. 6.2	sandy-cream	fine	PH IX 460
28	A. 7.22	cream	fine	no parallels
29	B. 4.17	cream	fine-medium	PH IX 460
30	A. 7.6	brick red	fine	PH VIII 419
31	A. 7.7	dark grey	fine	PH IX 498
32	A. 7.15	creamy orange	fine	PH IX 490
33	B. 4.19	grey	fine	no parallels
34	A. 7.14	cream/light brown	fine	no parallels
35	B. 4.5	grey	fine	Db III 22:4; PH IX 468(?)
36	B. 4.6	sandy	fine	no parallels
37	B. 4.9	creamy white	fine	PH IX 484
38	A. 7.23	greenish/pink	fine	PH IIA 151,152
39	A. 7.17	ochre; burnished slip	very fine	PH IIA
40	A. 7.26	reddish brown on pink slip/ pinkish cream	fine-medium	PH IX 487, 488
41	A. 7.15	light pinkish brown	very fine	no parallels
42	A. 7.17	alternating stripes red and black; black zig-zag line/ dark reddish brown	very fine	PH IIIA 205,206
43	B. 4.12	light ochre	very fine	no parallels
44	B. 5.41	light brown	very fine	no parallels
45	B. 4.4	grey	fine-medium	B II 1:4
46	B. 5.20	greenish slip/ bricky red	medium	PH X 535, 538; Db III 17:15
47	A. 7.11	greenish cream	fine-medium	no parallels
48	B. 6.3	light brown	fine-medium	no parallels
49	A. 7.2	grey brown	coarse	Db III 1:40; B II 2:3
50	A. 7.9	brick orange	fine-medium	Db III 2:52; B II 2:15; Ar 1:12
51	B. 5.17	greenish cream	fine-medium	see no. 50
52	B. 5.4	light brown	fine-medium	PH XI 553
53	B. 5.1	reddish brown	fine-medium	see no. 52
54	B. 4.8	pinkish cream	fine	PH X 528
55	A. 7.30	light brown	fine-medium	see no. 54
56	B. 4.2	black on creamy white	fine	
57	B. 4.18	chocolate on creamy white	fine	poss. LB II
58	A. 7.29	black line between red brown on light brown slip	fine	see PH 61f. for discussion of painted body sherds
59	B. 4.13	same as no. 58		
60	B. 5.31	cream	fine-large	incised lines as decoration
61	A. 7.10	brick orange	fine	platter or pan
62	A. 7.8	cream slip/ dark-grey	fine-large	spindle whorle

Udo F. Chr. Worschech
U Rosenthal
F. Zayadine

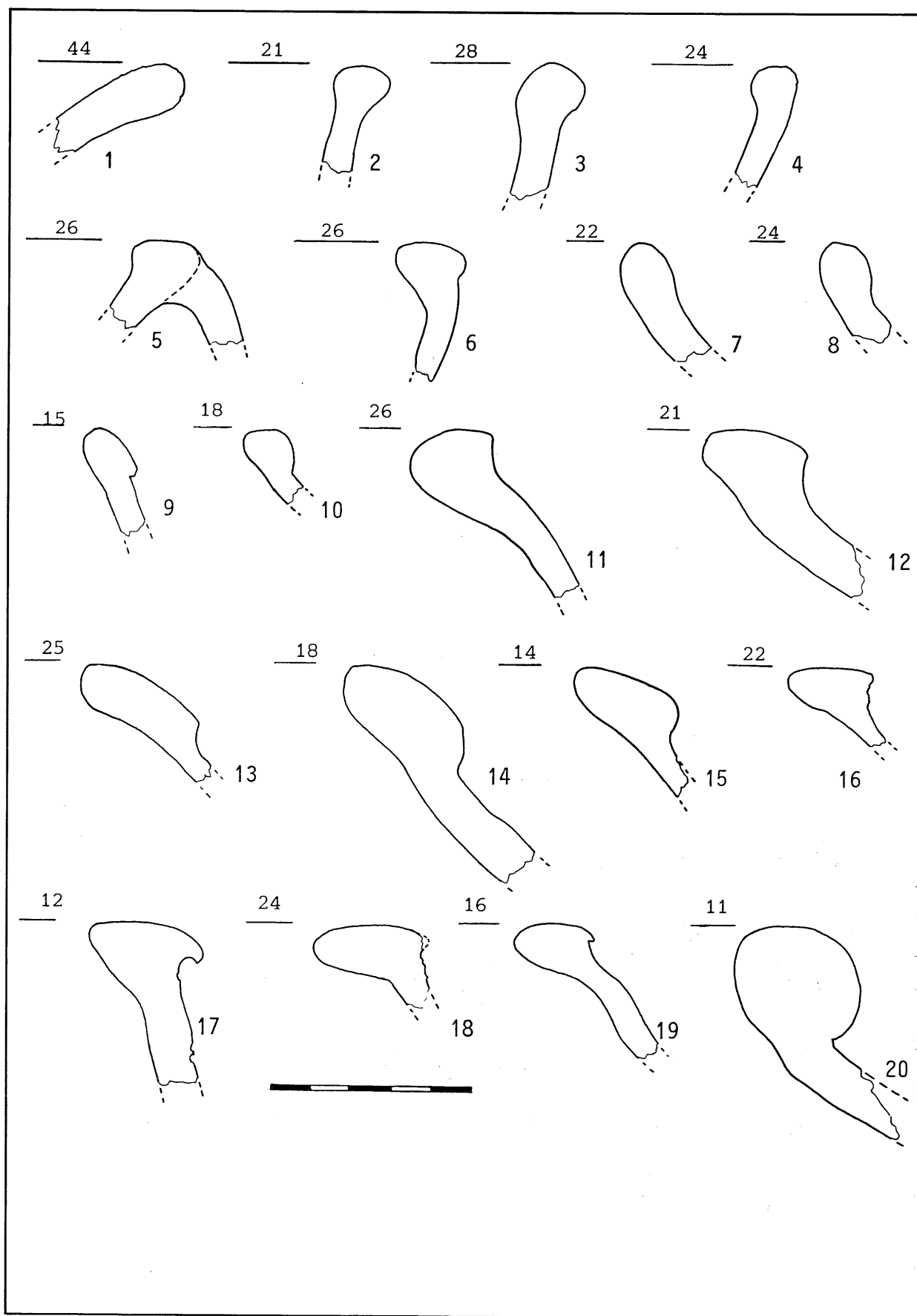


Fig. 12 Iron II Pottery from Balu' 1 Platter; 2-8 Bowls; 9-20 Jars .

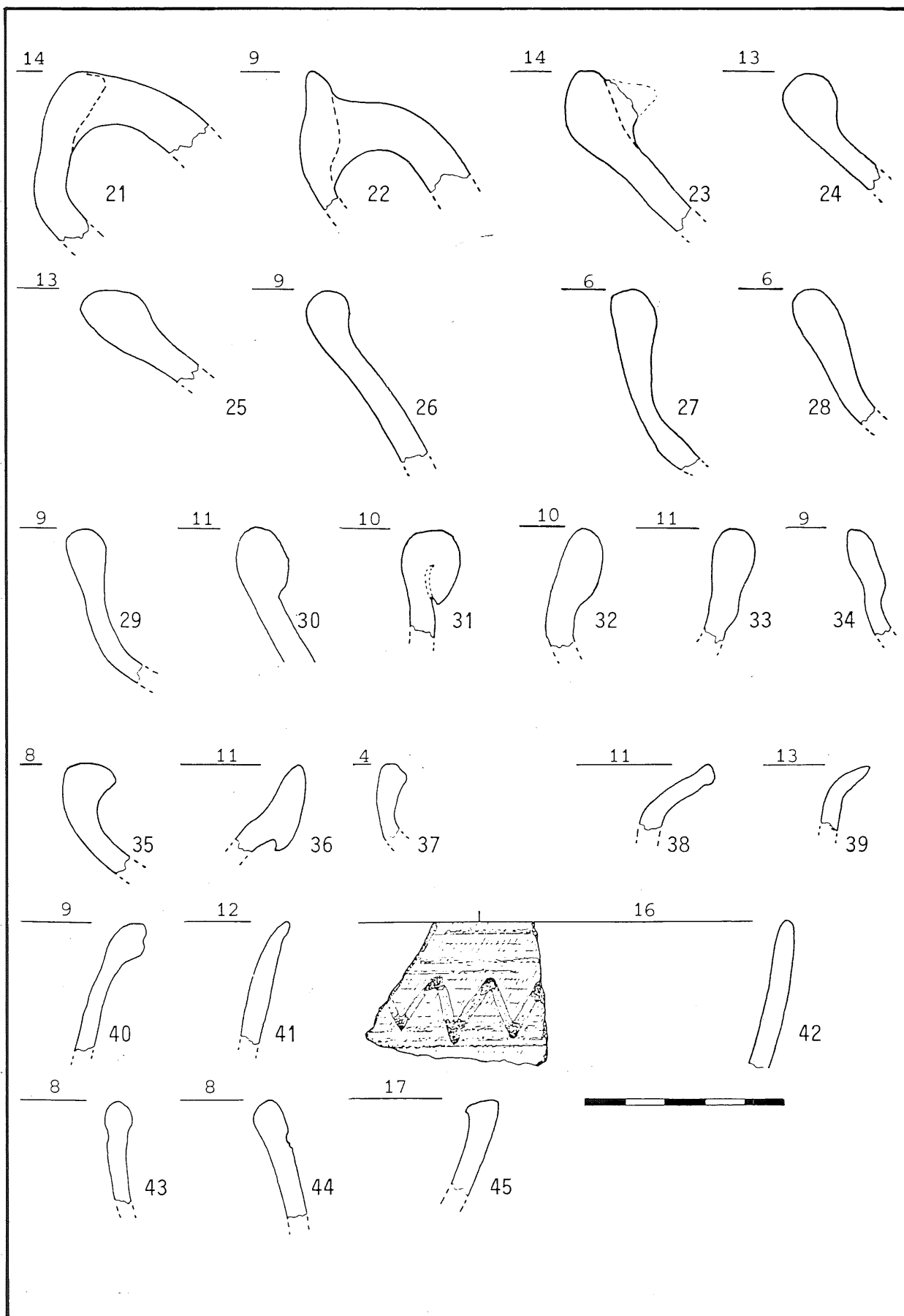


Fig. 13 Iron II Pottery from Balu' 14-26 Cooking pots; 27-37 Jugs and Juglets; 38-45 Fine Bowls .

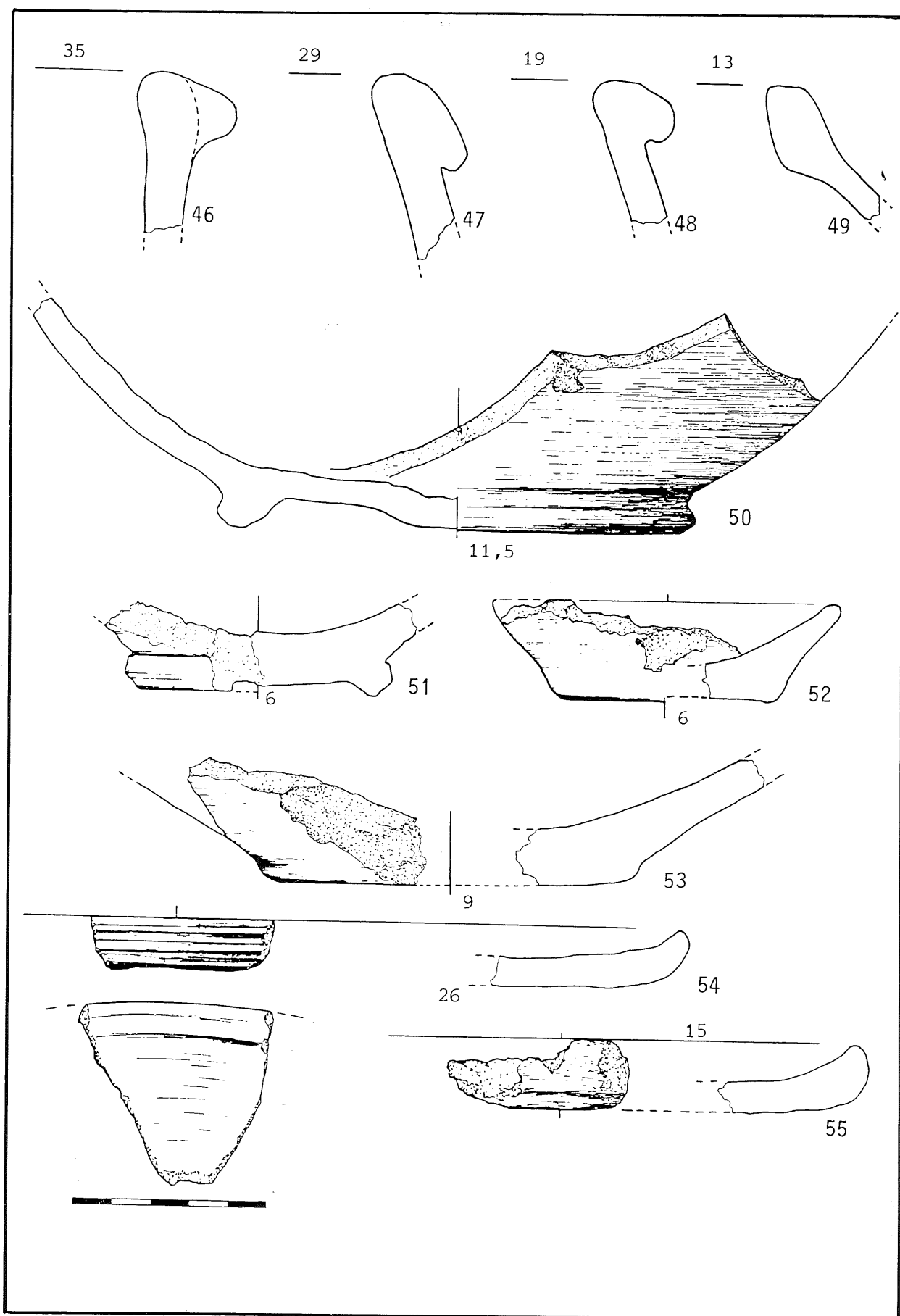


Fig. 14 Iron II Pottery from Balu' 46-49 Kraters; 50-55 Bases and Plates.

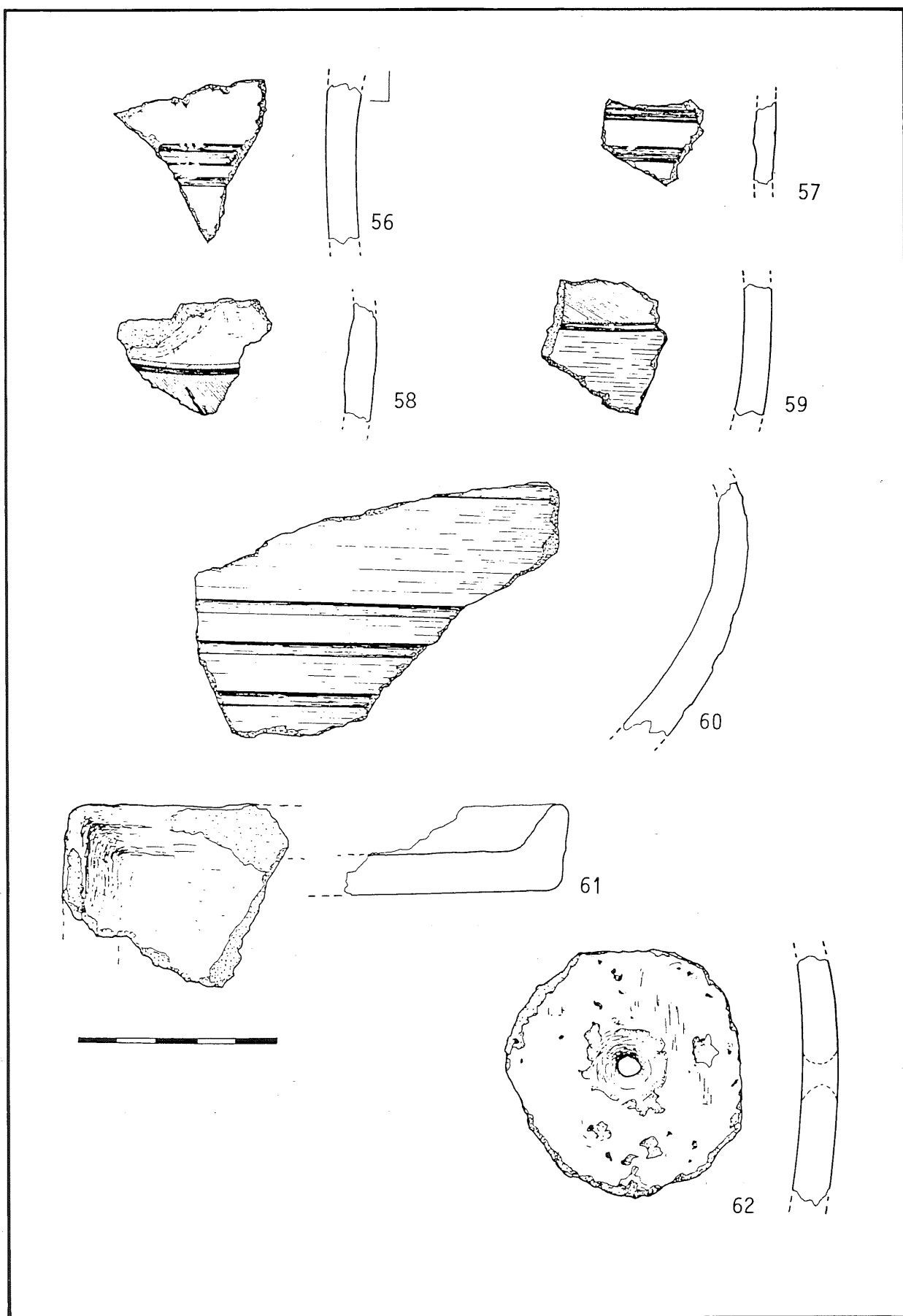


Fig. 15 Iron II Pottery from Balu* 56-60 Body Sherds decorated; 61 Plate or Pan; 62 Spindle whorl

THE PORT OF 'AQABA AND ITS ROLE IN THE INDIAN OCEAN TRADE IN ANCIENT AND MEDIEVAL TIMES

by
Yousef Ghawanmeh

Aila ('Aqaba) is an old town which dates back to the Edomites, who were the first people to establish it as a port on the Red Sea¹. In the 6th century B.C., the Nabataeans gradually replaced the Edomites, and settled in the region, called the "Rocky Arab Lands". From the 4th century B.C. onwards, the Nabataeans took full control of the overland trade roads connecting Egypt and Damascus to the Arabian peninsula².

After the death of Alexander the Great, his empire was partitioned among his generals. Ptolemy I had Egypt as his share. But in 312, he occupied Syria and Palestine with eastern Jordan. Thus Aila ('Aqaba) was incorporated into the realm of the Ptolemaic Kingdom, until 198 B.C., when Syria was conquered by the Seleucid Antiochus III³.

The Ptolemies were closely interested in the Red Sea, and the African and South Arabian coasts, and they established commercial relations with these regions. Ptolemy II displayed his interest in the coast of the Arabian peninsula by dispatching Ariston to carry out a scouting mission in the region. The principal aim of this mission was to restore the maritime route between Aila and Aden. Actually, the Ptolemies were able to bring under their control both Aila in the Gulf of 'Aqaba and the route from Aila to South Arabia via the Red Sea⁴.

The policy of the Ptolemies invited the reaction of the Nabataeans, because it undermined their monopoly over commerce

and navigation in the Gulf of 'Aqaba, as well as their port at Leuke Kome, which functioned as a transit station for Eastern trade flowing from south Arabia to Petra and Gaza. Consequently, the Nabataeans tried to stop the Ptolemies' inroad into the Red Sea trade. They began to attack and plunder the Ptolemaic vessels which carried Eastern goods⁵. Despite Ptolemy II's efforts and the arrival of some Greek vessels to south Arabia, both the overland and maritime routes between South Arabia, and Egypt and Syria remained in Arab hands (the Nabataeans in the north, and the Sabaeans and Mineans in the south), through the 3rd century B.C.⁶ In time, however, the Ptolemies and the Seleucids improved their commercial relations with the Red Sea region, South Arabia and the African coast, and even organized regular voyages to India.⁷

During the Roman era of Trajan, Hadrian, and the Antonines (98-192 A.D.) commercial prospects guided the relations between the Mediterranean and Indian Ocean coastlands. In order to consolidate the Roman supremacy over the Eastern trade, Trajan annexed the Nabataean kingdom in south Jordan to Rome and founded the Province of Arabia (106 A.D.). He also rebuilt and improved the roads which connected the Red Sea to the Mediterranean.

Clearly, Aila ('Aqaba) had a golden age in the period beginning with Trajan and extending into the Byzantine era. Aila acquired a widely-acknowledged significance in the Roman as well as Byzantine world of

1. Robert, *The Holy Land*, Vol. 3, p. 40, Cf., al-Maqrizi, *Khutat*, Cairo, 1324-1326 H., Vol 1/2, p. 228.

2. R. Dussaud, *Pénétration des Arabes en Syrie avant l'Islam*, Paris, 1955. *Al-'Arab fi Suriya* (tr. al-Awakhili), Cairo, n.d., p. 15, Robert, *op. cit.*, p. 43.

3. Najib Mikhail, *Misr wa al-Sharq al-'Adna al-Qadim*, Cairo, 1959, Vol. 3, p. 249.

J.R. Barnett, "The Rise and Fall of the Kingdom of Edom", *PEQ*, (1972), p. 26-37.

N. Glueck, *The Other Side of the Jordan*, Cambridge, 1970, p. 106ff and p. 138ff.

4. George Hourani, *Al-'Arab Wal-Melāḥah fil-Muḥit al-Hindi*, (tr. Y. Bakr), Cairo, 1958, p. 58.

5. *Ibid.* p. 58.

6. *Ibid.* p. 59.

7. *Ibid.* p. 66.

commerce and seafaring. Two fine roads served Aila: One of these roads connected it to Damascus, running through the major Jordanian towns such as Petra, Amman, Jerash onwards to Bostra, via the Trajan Highway (King's Highway). The other road connected Aila to Gaza on the Mediterranean coast⁸. Aila's prosperity caused the decline of the Nabataean port at Leuke Kome. Nevertheless, the Nabataeans still loomed as winners under the circumstances. They became the masters of trade in the northern Red Sea area and south Syria. In the 2nd century A.D., Petra attained a hitherto unknown level of development.

Trajan's reforms also included the restoration of the canal which connected the Nile with the extreme north-west arms of the Red Sea at the port of Clysma (Suez)⁹. In addition, thanks to the Roman fleet which cruised the Red Sea to protect commercial vessels, navigation in the Gulf of 'Aqaba and Suez became secure¹⁰. On land, the peace imposed by the Romans (*Pax Romana*) provided Syria with security and trade across its branching roads¹¹. Aila became a center of bustling commercial activity. It attracted merchants and itinerants from the adjoining regions, such as the Palmyrenes, who became active in Red Sea navigation, and formed a guild of skippers during Hadrian's reign (117-138 A.D.)¹².

Aila remained an important commercial center at the head of the Gulf of 'Aqaba during the reign of the Antonines (138-192 A.D.), when Roman activities in the Red Sea and the Indian Ocean continued to grow. Roman merchants reached Ceylon and India. Ships kept unloading cargo at Aila and Clysma, whence the merchandise was conveyed to the Mediterranean coast and Europe. By the 3rd century, however, the Roman presence in the Red Sea began to fade away along with the economic decline of the Empire. In 395

A.D. the Empire split into its Eastern and Western parts.

The Byzantines began to rise in the Red Sea. They considered it the artery of their trade with India, China, and Africa, and brought the area under their direct control in view of the Persian attempts to harass Byzantine trade. In order to consolidate their supremacy over navigation in the northern extremities of the Red Sea, the Byzantines established a tollhouse on the island of Jutaba, at the southern entry to the Gulf of 'Aqaba. Here they collected tolls from the vessels sailing in from the south¹³.

Jutaba continued to function as a commercial station and tollgate until the reign of Justin I (518-527 A.D.). The revenue from this tollgate did bear a significance in Byzantine finances. During Justin I's reign, the number of commercial vessels active in the Red Sea, Arabian Sea and the Indian Ocean amounted to 60, and were distributed as follows:

- 15 vessels in Aila ('Aqaba)
- 20 vessels in Clysma (Suez)
- 07 vessels in Jutaba
- 07 vessels in the islands of Farsan
- 09 vessels in India
- 02 vessels in Berenice on the Red Sea¹⁴.

The struggle between the Byzantines and the Persians over the international trade routes instigated both powers to try to establish a foothold in Aden and south Arabia. This struggle adversely affected the Eastern trade. When the two powers finally agreed upon peace in 532 A.D. however, trade between Byzantium and the East resumed as vigorously as before, and the tollhouse on the island of Jutaba continued to perform its function.

In the first quarter of the 6th century, a Byzantine merchant took the trip to the Indian Ocean, passing by Ethiopia and the

8. A. A. Vasiliev, *Justin the First*, Cambridge, 1950, p. 363. Hourani, *op. cit.*, p. 86.

9. L. B. Moss, *The Birth of the Middle Ages*, New York, 1977, p. 2.

10. Hourani, *op. cit.*, p. 86.

11. R. Fedden, *Syria: an Historical Appreciation*, London, 1946, p. 97.

12. Hourani, *op. cit.*, p. 87.

Moss, *op. cit.*, p. 2. and see also,

J. Innes Miller, *The Spice Trade of the Roman Empire*, Oxford, 1969.

13. Vasiliev, *op. cit.* p. 365.

14. *Ibid.*, p. 367.

Arabian Gulf, finally to reach Ceylon. There he met a mixed group of Byzantine ('Roman'), Persian, Ethiopian, and south Arabian merchants. He was most impressed with the Persians, who had a large fleet in Ceylon¹⁵. In fact, the Byzantine trade with the East was one of imports at Justin I's time. The Empire had an unfavourable balance of trade and tended to lose gold to the Eastern countries. This situation had adverse effects on Byzantine economy¹⁶. Nevertheless, the trade continued. In the year 570 A.D., the pilgrim Antonius observed a vessel arriving at Aila from the Indian Ocean and laden with various kinds of commodities¹⁷.

The same period also witnessed the rise of the Qurayshi power in central Arabia. The Quraysh played an increasingly important role in international commerce across the land routes from south Arabia to Bilad esh-Sham (Greater Syria), and the Mediterranean coast. Aila, however, retained its maritime commercial connections with the South, African coast, India and China. An evidence of Aila's continuing significance is the protection conferred on its residents by the Prophet Muhammad (s). His statement made clear that 'the residents of Aila and whoever was with them from among the people of (the) Damascus (area), the Yemen, and the (Red) Sea were granted God's and the Prophet's protection over the security of their ships and caravans at sea and on land'¹⁸.

The Umayyads also attributed special importance to Eastern trade. The English pilgrim Arculf visited Alexandria in 670 A.D./50 H., at the time of Mu'awiyah ibn-abi-Sufyan. He described Alexandria as a large center of international trade¹⁹. As for the Red Sea, the ships continued to bring in various Eastern commodities, and unload them in Aila or Clysma to be transported to the Mediterranean coast²⁰.

Later, the Abbasids were able to bring the three major international trade routes under their control: the overland route across Asia, the sea route through the Arabian Gulf, and the sea route via the Red Sea. Hence they became the masters of trade from the 7th century onwards (3rd H.)²¹. The port of Aila retained its significance in international trade activities involving Eastern Africa and the Indian Ocean during the Fatimid times. The port of 'Aqaba was also connected to Alexandria via Fustat²².

From the early 10th century (4th H.) onwards, Jidda (Mecca's coastal port on the Red Sea) began to flourish. Ships arriving from the Indian Ocean anchored here to disembark cargo. The cargo was then carried by local vessels to Clysma or 'Aqaba, because the larger ships were unable to continue northward, given the navigational difficulties in the Red Sea²³. The Fatimid state collected taxes and tolls on merchandise arriving at Jidda from Egypt, India, and China at the following rates:

A load ('himl') of wheat	1/2 dinar
A scale ('safat') of 'Shatawi'	3 dinars
A scale ('safat') of 'Daybaqi' cloth	2 dinars
A load ('himl') of Wool	2 dinars
A basket ('salah') of saffron	1 dinar
Per slave head	1 dinar ²⁴

Early in the 12th century (6th H.), Aila and the Red Sea came under the pressure of an external force. After having occupied Jerusalem, the Franks turned their attention to and seized 'Aqaba to divert some of the Red Sea and Indian Ocean trade to Jerusalem. They were not content with that alone, however. Their Red Sea fleet became a cause of constant threat to eastern and southern trade, and moreover, to the sanctuaries in Mecca and Medina.

15. *Ibid.*, p.371.

16. *Ibid.*, p.371.

17. *Ibid.*, p.363.

18. M.H. al-Haydari, *Majmu'at al-Watha'iq al-Siyasiyyah*, p.34.

19. J. Thompson, *An Economic and Social History of the Middle Ages*, London, 1928, p.196.

20. *Ibid.*, p.197.

21. *Ibid.*, p.338.

22. 'Abu 'Abdallah al-Maqdisi, *Ahsan al-Ta'asim Fil-Ma'rifat al-Aqalim*, 2nd ed., Leiden, 1906, p.178; W. Heyd, *Histoire du commerce du Levant au moyen age*, Leipzig, 1886, Vol. 1, p.8.

23. Hourani, *op. cit.*, p.229.

24. Al-Maqdisi, *op. cit.*, p.104.

Before long, Ṣalāḥuddīn al-Ayyūbi expelled the Crusaders from the Gulf of 'Aqaba, and restored the Arab supremacy in the area (1170/566 H.). He also hastened to add the Yemen to his domain. Hence the southern entrances to the Red Sea, as well as its northern extremities at 'Aqaba and Suez came under his rule. He then devoted the revenue from commerce with China and India through the Red Sea to the struggle against the Franks.

The economic and commercial significance of the Red Sea, and its southern and northern ports became even more manifest during the Mamluk era. The Mamluks patronized commerce and travel, and passed regulations to encourage trade and attract merchants to their lands. Maṣṣūr Qalawūn issued a proclamation to encourage merchants from India, China, Sind, the Yemen, Iraq, Anatolia, and the Balkans to come to Bilad esh-Sham and Egypt. He bestowed on them the right to enter his lands, where they would find hospitality and good treatment. He described his lands as being always green and affluent, offering a continuous springtime and prosperity to the travellers. Justice was widespread in these lands, and security and peace reigned in every corner. He added that whoever heard his decree from among the merchants of the Yemen, India, Sind, China and other places, should make their preparations to set out for the Mamluk lands to find upon their arrival that practice was truer than word. Those who were to bring spices or other merchandise which the long-distance merchants were wont to deal with, needed not be apprehensive of dues, for they would not be troubled with any hardships²⁵.

Qalawūn's proclamation was dispatched to all the major towns and ports of

India, China and the Indian Ocean islands with which the Mamlūk state had commercial relations. The proclamation was intended as a guarantee for the security and protection of the merchants from these lands.

In order to attend to the vessels sailing from the East, and the merchandise therefrom, across the Indian Ocean and the Red Sea, the Mamluks set up a customhouse at al 'Aqaba. Ibn Iyas mentions that al 'Aqaba was the seat of a tollkeeper who collected dues on the merchandise brought there from India, the Yemen, China and other countries²⁶. The dues collected in al 'Aqaba amounted to about three thousand dinars annually²⁷. As for the overland caravans conveying goods from south Arabia to Egypt, they were tolled at Buwayb al-'Aqaba, to the south of al-'Aqaba²⁸. The caravans heading towards Damascus paid tolls at Jisr al-Ḥasa, near Karak, which produced an annual revenue of about 10,000 *Mithqal* (4.68 gr.) gold²⁹. In return, the Mamlūks safeguarded the roads, and provided travellers with security and necessary facilities.

Under the Circassian Mamlūks, Aleppo became a prosperous town and attained great significance as a commercial juncture in the trade with the East. By the mid 15th century, the number of camels which came to Aleppo reached 15,000. Towards the end of the same century, however, Aleppo's position was undermined by the obstruction of the overland roads across Asia Minor as a consequence of the ongoing wars between the Ottomans and their neighbors. Only one source remained for Aleppo to acquire Eastern commodities, and that was via 'Aqaba. The cargo bound for Aleppo was disembarked at 'Aqaba, and transported to Aleppo by caravans³⁰. Con-

25. Ahmad al-Qalqashandī, *Subh al-A'sha fi Sina'at al-'Insha*, Cairo, 1963, Vol. 13, p. 340-41.

26. Muhammad Ibn Iyas, *Nashq al-Azhar fi 'Ajib al-Aqtar*, manuscript in Dar al-Kutub in Egypt, Folio 87.

27. Na'um Sh'uqair, *Sina Wal-'Arab*, Cairo, 1916, p. 197.

28. Al-Maqrizi, *Al-Suluk Li-ma'rifat Duwal al-Muluk*, Cairo, 1924-1983, Vol. 4, p. 256.

F. Zayadine, Caravan routes between Egypt and

Nabataea and the Voyage of Sultan Baibars to Petra in 1276. *Studies in the History and Archaeology of Jordan*, II, Amman, Jordan, p. 159-174.

29. Gh. Ibn Shāhīn, *Zubdat Kashf al-Mamālik wa Bayān al-Ṭurūḡ wal-Masālik*, Paris, 1894, p. 108, and 122; Yusuf Ghawanmah, *al-Tārikh al-Hadhari li-Sharqi al-'Urdun fil-'Aṣr al-Mamlūki*, 2nd ed. Amman, 1982, p. 89.

30. Na'im Zaki, *Turuq al-Tijārah al-Duwaliyya*, Cairo, 1973, p. 150.

sequently, the Mamlūks paid an even closer attention to 'Aqaba. They built a new wharf there to facilitate the unloading of the merchant ships. Sultan Qanṣūh al-Ghūri renovated this wharf and undertook other public constructions in 'Aqaba in 1508 A.D. (914 H.). He assigned a team of engineers and masons to the task of completing these works under the direction of the architect-engineer Khayir Bey ³¹.

'Aqaba also served the pilgrims travelling from Spain, north and central Africa, and the southern parts of Bilad esh-Sham to the Ḥijāz. The pilgrim caravans remained in 'Aqaba for three or four days. Enormous fairs were set up there to serve them. Traders from many parts of Syria were attracted to these fairs in view of business prospects. Ibn-Faḍlullāh al-'Umari described these fairs as places bustling with activity, unparalleled even in the largest towns ³². The pilgrimage caravans contributed to commercial activities also in the Ḥijāz. Abu al-Maḥāsin mentions that at pilgrimage time 80,000 camels gathered in Jidda, Mecca's seaport. Here the pilgrims exchanged with Eastern commodities what they brought along with them, and their caravans returned home laden with these commodities ³³. This intensive trade rendered Jidda the principal coastal port on the Red Sea. Walls were built around the town, fortified with towers and cannons ³⁴.

Eventually, a struggle broke out between the Mamlūks and the Europeans, more specifically the Portuguese, over the control of the Eastern trade. The Mamlūks had dominated this trade for several centuries. However, the Portuguese had discovered an alternative road to the East. In 1486 A.D., the Portuguese navigator Bartholomeu Dias rounded the Cape of Good Hope. In 1498, Vasco da Gama completed

his voyage and reached Calcutta ³⁵.

One notices that the Portuguese activities in the Indian Ocean coincided with Sultan Qaytbay's reign. However, the actual struggle between the Europeans and the Mamlūks was delayed until the reign of Sultan Ashraf Qanṣūh al-Ghūri: I believe that this delay was caused by the grinding pressure of the Mamlūks' struggle against the Ottomans and other European powers in the Mediterranean ³⁶. Simultaneously a number of natural disasters, such as pestilences, epidemics and drought critically affected the internal conditions in Egypt and Bilad esh-Sham, and wiped out a large part of the Mamlūk army ³⁷. The economic recession which undermined Mamlūk finances was reflected in the retrogression of their military power. The state was unable to raise the necessary funds to build a fleet, and to bring together a sufficiently strong force to combat the Portuguese in the Indian Ocean and the Red Sea. The total expenditures of the Mamlūk state in the Ottoman wars had reached 7,650,000 dinars. This huge sum, which astonished the historian Ibn Iyas, had exhausted the state ³⁸.

Sultan Qanṣūh al-Ghūri was, however, able to undertake several measures to bring the Portuguese advancement in the Indian Ocean and the Red Sea to a halt. In 1506 A.D. (911 H.), he built a fleet and dispatched it to India to fight back the Portuguese encroachment ³⁹. This means that the first Mamlūk reaction against the Portuguese took place seven years after their arrival to the Indian Ocean, and nineteen years after their arrival to the Cape of Good Hope. Other measures taken by Qanṣūh al-Ghūri included the construction of fortresses and fortifications in al-'Aqaba and Sinai. He also garrisoned these forts

31. Ibn Iyas, *Badāi' al-Zuhur fi Waqai' al-Duhūr* (Sha'ab ed.), Cairo, 1960, p.767.

32. Ibn Fadhlallah al-'Umari, *Masālik al-'Abṣār* (manuscript), vol. 2/1, folio 168.

33. Abu al-Maḥāsin, *Hawadith ad-Duhūr fi Mada al-'Ayyām wal-Shuhūr* (W. Boyard ed.), California, 1931, Vol. 1, p.327.

34. Ibn Iyas, *Badāi'*, p.1044.

35. A. Kammerer, *La Mer Rouge*, Cairo, 1929-35,

Vol. 2, p.9.

36. Ibn Iyas, *Badāi'*, pp. 547, 550, 554, and 558-9.

37. *Ibid.*, pp.632-3 and 880. Cf. Y. Ghawanmah, 'al-ta'un wal-jafaf wa atharuhuma 'alal-bi'ah fi janub al-Sham', *Majallat Dirasat Tarikhiyyah* (Damascus University), nos. 13-14 (1983), pp. 77ff.

38. Ibn Iyas, *Badāi'*, p. 593.

39. *Ibid.*, p.734.

with troops dispatched from Egypt and regularly replaced each year. In this way, the northern ports of the Red Sea were protected against the Portuguese inroads. Qanṣūh also built forts at 'Ajrud, Nakhal and al-Alzam, on the road connecting al-'Aqaba to Cairo, and supplied them with troops and military provisions ⁴⁰.

There can be little doubt that the Mamlūks tried to the best of their ability to restrict Portuguese activities in the Red Sea, the Arabian Gulf and India. They pursued the task despite difficult internal conditions, the financial exhaustion of the state, and the dearth of crucial raw materials such as iron, timber and saltpeter. The Mamlūk effort was not confined to internal precautions. They also resorted to diplomatic measures. They dispatched envoys to almost every state which was concerned with the Portuguese presence in the Indian Ocean, the Arabian Gulf and the Red Sea. To give an idea about the extensiveness of the Mamlūk diplomatic activities, one could mention that in one month in the year 1512 A.D. (918 H.), Sultan Qanṣūh al-Ghūri accepted fourteen envoys from different rulers. Among them were the envoys of Isma'il Ṣafawi, the King of Persia, the Turkoman ruler Ibn Ramadhan, the Ottoman Sultan, the Turkoman ruler Yusuf bin Sufi Khalil, the ruler of Tunis and al-Maghrib, the ruler of Kunbaya in India Muzaffar Shah bin Mahmud Shah, the Turkoman ruler Ibn Durghul, Ali Dawlat, and the messengers dispatched by the ruler of Mecca, the viceroy of Aleppo, Husayin al-Kurdi and the viceroy of Jidda. There were also European missions, the envoys of the King of France and the Duke of Venice ⁴¹.

Conclusion

This study surveyed the significance of the port of 'Aqaba in the Red Sea and Indian Ocean trade through the Ancient and Medieval ages. It becomes clear that 'Aqaba owed its importance to being the sole opening of Bilad esh-Sham (Greater Syria) into the Red Sea, and, thereby, to the Far East. It attracted steadily growing

attention since the 3rd century B.C. The Ptolemies of Egypt and the Seleucids of Syria developed the port of 'Aqaba to link their lands to the maritime routes leading to the Far East. From then on, merchant vessels sailing from the south kept carrying the goods of India, China and the islands of the Indian Ocean to 'Aqaba. These merchandises were thence conveyed overland to Gaza, Petra, and Damascus.

Roman rule initiated a new stage in the history of the port of 'Aqaba. The Trajan Highway and other roads built by the Romans linked the port of 'Aqaba to the network of roads that centered around Rome. The Romans also ensured the peace and security of maritime as well as overland trade. Commercial relations with the Far East across the Red Sea intensified. 'Aqaba's position as Bilad esh-Sham's sole window into the Red Sea, Indian Ocean and East-African trade became underlined.

In view of the significance of the Eastern trade, the Byzantines tried to extend their supremacy from the Gulf of 'Aqaba southward over the Red Sea to Aden. They reached an alliance with the Ethiopians, but Persian counteraction frustrated the Byzantine plans. The struggle between the Persians and Byzantines did not prevent the pouring in of the Eastern merchandises into the port of 'Aqaba. As already mentioned, the observations of a contemporary, the pilgrim Antonious, make clear that vessels sailing from the south continued to disembark various kinds of Eastern commodities at 'Aqaba. At the time of Justin I, 60 vessels operated in the Red Sea and the Indian Ocean.

The significance of 'Aqaba was well-realized also in the Islamic Era, from its very beginnings onward. The Prophet Muhammad (s) provided the residents of 'Aqaba, including the visiting merchants from distant lands, with protection and security. Before long, the Arabs took direct control of the area and reestablished its links with the network of maritime and overland commercial routes which connected Egypt, south Arabia and the east

40. *Ibid.*, p.779.

41. *Ibid.*, p.852 and 864.

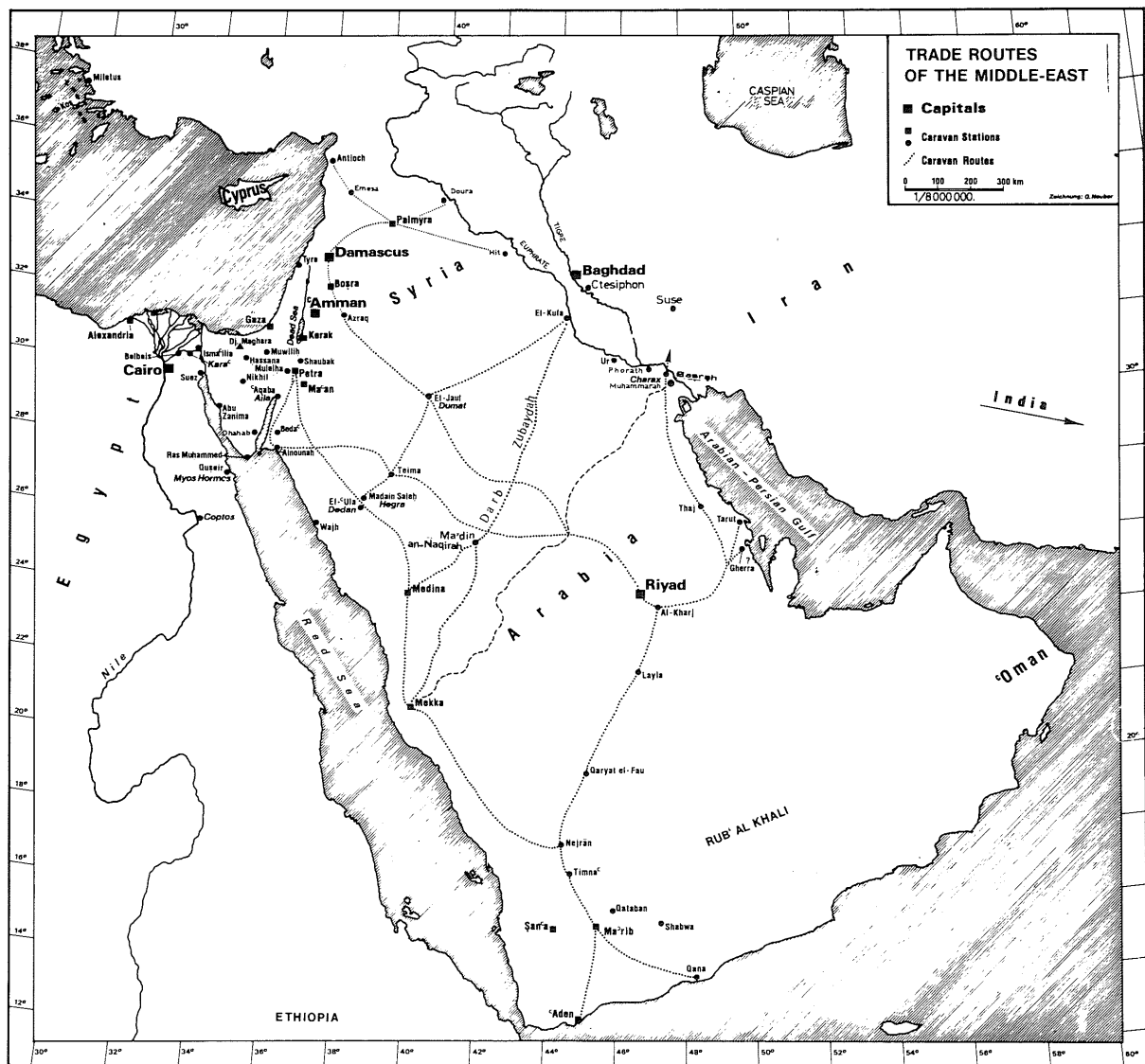


Fig. 1

African coastland. Once more, the port of 'Aqaba resumed its role as a window to maritime trade with the Far East and Africa.

The strategic position of the port of 'Aqaba was dramatically highlighted during the struggle against the Crusaders. Having occupied Jerusalem, the Franks soon turned their attention to 'Aqaba, and invaded it (1116 A.D.) to divert at least part of the Eastern trade to Jerusalem and Jafa, their port on the Mediterranean coast. Şalāhuddīn al-Ayyūbi restored 'Aqaba back to Arab rule in 1171 A.D. Meanwhile, however, the Eastern commodities had begun to flow to the Egyptian port of Aithab on the Red Sea. 'Aqaba could not acquire its

former vitality until after the establishment of the Mamlūk rule.

The Mamlūks attributed a special importance to the port of 'Aqaba. The Mamlūk state was commercially oriented, and its rulers paid their utmost attention to the development of maritime trade with the Far East across the Red Sea. The volume of long distance trade at the major Red Sea ports, such as 'Aden, Jidda, 'Aqaba, Suez and Tour greatly increased during the Mamlūk era. At 'Aqaba, the Mamlūks built a new wharf to facilitate the disembarkation of the merchant vessels. They also set up a customhouse to collect dues on merchandise imported from India and China. The revenue of this customhouse exceeded

3000 dinars annually. 'Aqaba also played a significant role in the overland trade flowing from south Arabia toward Damascus and Egypt. The pilgrimage traffic added to 'Aqaba's prosperity. The fairs set up for the transient pilgrims were remarkable for the abundance and diversity of the Syrian, Egyptian, African and Eastern commodities displayed for sale.

The Circassian Mamlūks were particularly concerned with the defence of 'Aqaba, in view of the Portuguese menace against the Red Sea ports and the Eastern trade via the Red Sea. Sultan Qanṣūh al-

Ghūrī built fortifications at 'Aqaba and supplied them with troops and provisions to discourage Portuguese attacks. In time, however, the shift of the East-West trade routes away from the Mediterranean and the Arab lands became unmistakable. 'Aqaba's strategic position concerning the Eastern trade, and thereby its prosperity, were seriously undermined.

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INSTRUMENTAL NEUTRON ACTIVATION ANALYSIS OF POTTERY AND CLAY FROM THE ZURRABAH KILN COMPLEX*

by
Khairieh 'Amr

Twenty two sherds from the kiln complex at Zurrabah (excavated in 1980-81 under the direction of Dr. Fawzi Zayadine; Zayadine, 1981; 1982; 1986), and seven clay samples from two back rooms of the complex were analysed by neutron activation analysis. The sherds are described in Table 1. Most of the sherds are kiln wasters, ZP2 is of particular interest: its 'slip' is most probably due to a material in the body of the vessel which migrated to the surface when the vessel was drying. The extension of the 'slip' onto the breakage section indicates it broke either before, or at the start of, the firing, when the breakage section would have acted like any other surface to the migrating material.

The sherds were prepared for analysis by scraping clean a small area of a surface using a rough piece of synthetic sapphire. The rest of the surfaces were then covered with masking tape, leaving only the cleaned area clear. A further layer of that area was then removed using a synthetic sapphire drill head mounted on a small hand drill, then approx. 150mg of powder were drilled out from the centre of the sherd. The clay samples contained a few fragments of marine bi-valve fossils, indicating that they had not been levigated in antiquity. Other than that, the clay samples seemed of quite high purity, and, due to the fact that it is not known as to what extent the ancient Nabataean potters levigated their clays, it was decided not to subject the clay samples to any treatment except for drying prior to the analysis. The dried clay was then crushed to powder between polyethylene sheets.

Around 100mg of the powder from each sample were weighed into polyethylene irradiation capsules. The samples

were irradiated in several batches. Each batch had ten samples and two irradiation capsules containing the 'internal' standard, placed in outer 'core' tubes. The 'internal' standard was prepared from pottery sherds at the London Institute of Archaeology and calibrated against the IAEA's soil-5 standard.

The irradiation and counting were carried out at the University of London Reactor Centre in Ascot. The batches were irradiated at the core of the reactor, where the thermal flux is about $1.33 \times 10^{12} \text{ ncm}^{-2} \text{ s}^{-1}$, for four "working" days. At the reactor centre this is 7-8 hours a day with 16-17 hours during which the reactor is turned off.

The counting was carried out six days after the end of each irradiation, using a fully automated system incorporating a germanium-drifted lithium - Ge(Li) - detector with a sample changer, coupled to an ND6620 multi-channel analyser. Each sample was counted for one hour and thirty minutes (5400 seconds).

Fourteen elements were determined. Their concentrations in the samples are given in Tables 2 and 3. Of these fourteen elements, Na, Rb, and Eu proved unreliable, and are therefore not included in the statistical analyses of the results ('Amr, 1986). For the data analysis, the statistical package GENSTAT was used (Alvey et al., 1983). It was submitted from remote-entry terminals to the Cambridge University IBM 370/165 machine.

To separate the samples into clusters, the k-means method, using the sum of squares criterion, was employed (Doran and Hodson, 1975). What the method basically does is that it splits the units into a given number of clusters, calculates the

* This study formed part of a Ph.D. thesis presented to the Institute of Archaeology, University of London.

centroids of all the clusters, then reshuffles the units until an optimum criterion value is reached. In this case when the total sum of squared Euclidean distances between each unit and the centroid of the cluster to which it is allocated is minimised. This is equivalent to maximising the sum of the squared distances between the cluster centroids.

The Zurrahah samples were subjected to the k-means method, starting at $k=7$ and going down to $k=2$. The log-transformed values were used as most of the elements investigated proved to have (roughly) log-normal distributions ('Amr, 1986). The elemental concentrations were also divided by their standard deviations in the samples in order to give the elements equal weights. The plot of the criterion value vs. the number of clusters (Fig. 1) shows that most of the decrease in the criterion value is accounted for at $k=5$. This is an indication that there are five clusters present. The classification at $k=5$ is given in Table 4.

To test the separation of the clusters, canonical variate analysis was used. In canonical variate analysis, the units are projected into a new space having fewer dimensions than the original space (the original space being defined by a number of dimensions equal to the number of given attributes). The new dimensions (called canonical variates) are correlated with the original dimensions in accordance to their effect in discriminating between the given clusters. In the majority of cases the first two or three canonical variates account for most of the variance. The elemental concentrations were log-transformed and then subjected to the canonical variate analysis. The plot of the first two canonical variates are in Fig. 2. The first canonical variate accounts for 91.6% of the variance, and the second 7.5%, totaling 99.1% of the variance. The '+'s in the plot denote the centres of the clusters, and the ':'s indicate where more than one value coincide. Clusters 1 and 2 are somewhat close in the plot. All the members of cluster

2 have concentration values for all the elements smaller than the values for cluster 1, and when the mean concentrations for cluster 2 are divided by the means for cluster 1, a factor of around 0.75 is obtained (Table 5). This indicates that both composition groups represent the same origin, with more 'inert' temper (e.g. silicates or calcites) being present in the fabric of the samples of cluster 2, all of which are coarse wares. Added to this is the fact that the number of samples studied is somewhat small, and both the k-means method and the canonical variate analysis assume all the clusters to have similar variances, which is not the case. It is felt that clusters 1 and 2 are 'artificially' separated, they seem to represent one composition group and should be amalgamated into one single cluster.

The final classification is given in Table 6, where all the pottery samples, except for ZP2, form one composition group. The clay samples are separated into two other composition groups. The composition of the final composition groups is given in Table 7. The plot of the first two canonical variates are in Fig. 3. The first canonical variate accounts for 85.0% of the variance, and the second 14.5%, totaling 99.5% of the variance.

ZP2 is definitely a waster, its differing composition is most probably due to the added material responsible for the 'slip' on its surface. It has La, Ce, Lu and Sm concentrations substantially higher than any of the other samples. None of the clay samples match the pottery. The clays were not levigated and therefore may have just been used as flooring material in the back rooms.

In conclusion, it seems that the Zurrahah potters used the same clays for making different types of pottery, although different manufacturing processes were involved. Most probably the clays found in the workshop were not used for making the pottery.

Khairieh 'Amr

Table 1 Description of the pottery samples

<i>Sample</i>	<i>Prov.</i>	<i>Vessel</i>	<i>Ware description</i>
ZP1	A. 1. 14	Cooking pot, ribbed.	Black (over-fired). Dark brown core. Many small white grits. Traces of green-creamy slip.
ZP2	A. 1. 14	Holemouth jar, collared rim.	Creamy pink. Some small-medium white and grey grits. Deep reddish-brown 'slip' on both surfaces, extending on part of one breakage section. Slightly encrusted.
ZP3	A. 1. 15	Fine painted bowl (late Nabataean).	Red-brown. Wide black core. Few small white grits. Very dark grey paint.
ZP4	A. 1. 15	Four body sherds of thin walled bowls melted and fused together in one mass.	Black - deep wine red - brown (over-fired), with a few 'bubbles'.
ZP5	A. 2. 6	Cooking pot.	Light red. Some small white and grey grits. Traces of brown slip. Heavily encrusted.
ZP6	A. 2. 8	Handle.	Yellow buff. Pinkish core. Some small white and grey grits. Brown slip.
ZP7	A. 2. 8	Jar.	Light pink. Light buff-grey core. Some large white and grey grits. Brown-grey slip. Encrusted.
ZP8	A. 2. 9	Fine Nabataean body sherd.	Red. Few small white and grey grits. Deeper red slip on the outer surface.
ZP9	A. 2. 10	Fine painted bowl (late Nabataean).	Red. Some small white and grey grits. Traces of dark brown paint.
ZP10	A. 2. 14	Fine painted bowl (late Nabataean).	Red. Thin buff-grey core. Few small white grits. Dark brown paint.
ZP11	A. 2. 14	Fine Nabataean closed bowl.	Red. Some small white and grey grits. Deeper red slip on the outer surface.
ZP12	A. 3. 15	Thin walled open bowl.	Grey-black (over-fired). Wide brown core. Some small white and grey grits. Turning yellowish in bands on the inner surface and part of the outer surface, with grey showing in the grooves of the wheel-marks. Yellow extending on some of the breakage sections.
ZP13	A. 3. 15	Fine painted bowl (late Nabataean).	Red. Wide black core. Some small white and grey grits. Dark brown paint.
ZP14	A. 3. 19	Vertical rimmed open fine Nabataean bowl.	Red. some small white and grey grits.
ZP15	A. 3. 19	Jar.	Buff-brown. Grey core not showing at the breakage sections. Many small-medium white and black grits, giving a mottled appearance. Traces of buff slip.
ZP16	A. 4. 2	Jar.	Light red. Grey core. Some small white and grey grits.
ZP17	A. 9. 8. 11 (436)	Four sherds from thin walled bowls, melted, fused together, and greatly warped.	Black - reddish brown (over-fired). Highly porous and crumbly. Slip turned green - yellow.
ZP18	A. 1. clearance	Small jar.	Black (over-fired). Many 'bubbles'. Surface dark purple-brown.

ZP19	A.10.3.20	Small jar.	Dark grey (over-fired). Sandy grits.
ZP20	A.10.8.39b	Open bowl.	Deep red. Wide dark grey core. Many small white grits.
ZP21	A.10.35.59	Very thick warped sherd.	Grading from black at the surface to reddish brown at the centre (over-fired). Many sandy grits. Heavily encrusted.
ZP22	A.11.3.5	Body sherd of a large vessel; melted into folds with surfaces fused together.	Black - deep wine red - brown (over-fired). Some 'bubbles'.

Table 2 Composition of the pottery samples. (Concentrations in ppm except for K, Na and Fe, which are in %).

	<i>ZP1</i>	<i>ZP2</i>	<i>ZP3</i>	<i>ZP4</i>	<i>ZP5</i>	<i>ZP6</i>	<i>ZP7</i>	<i>ZP8</i>
%K	1.43	1.21	1.99	1.86	1.59	1.31	1.73	1.84
%Na ¹	0.147	0.174	0.157	0.138	0.145	0.148	0.138	0.189
%Fe	3.23	3.54	4.75	4.07	3.41	3.43	3.53	4.26
Rb ¹	92.0	56.2	102.	99.6	50.2	50.7	54.8	84.0
Cs	2.91	5.18	3.64	3.47	2.28	1.64	2.63	3.65
Sc	13.6	18.7	20.3	20.8	14.4	15.0	14.9	21.7
La	21.6	46.3	26.1	24.0	22.0	18.7	20.3	23.3
Ce	47.5	114.	61.9	60.3	49.2	41.8	45.5	56.2
Eu ¹	0.935	2.42	1.10	1.13	1.61	1.27	1.21	1.54
Lu	0.374	0.895	0.456	0.498	0.322	0.274	0.285	0.365
Th	7.19	12.7	8.52	9.41	6.50	6.03	6.10	8.77
Cr	87.8	110.	130.	144.	83.9	83.4	86.7	142.
Co	15.5	11.2	24.1	17.6	14.6	18.1	15.3	18.4
Sm	4.07	12.6	5.65	5.22	5.15	4.19	4.67	5.41
	<i>ZP9</i>	<i>ZP10</i>	<i>ZP11</i>	<i>ZP12</i>	<i>ZP13</i>	<i>ZP14</i>	<i>ZP15</i>	<i>ZP16</i>
%K	1.83	1.84	2.06	2.14	2.02	2.41	1.98	2.01
%Na ¹	0.198	0.170	0.195	0.208	0.205	0.168	0.254	0.174
%Fe	4.29	4.51	5.04	4.31	5.26	5.32	5.14	4.61
Rb ¹	69.6	78.6	79.8	81.2	87.3	81.3	77.2	70.1
Cs	2.57	1.97	3.80	3.24	3.44	3.63	3.32	3.02
Sc	17.2	18.0	20.6	18.0	20.4	21.7	20.5	17.7
La	26.7	26.1	27.3	26.2	27.2	23.9	36.1	28.1
Ce	64.2	60.5	60.9	57.9	67.0	62.3	83.6	66.9
Eu ¹	1.73	1.62	1.76	1.61	1.54	0.992	2.00	1.75
Lu	0.387	0.377	0.388	0.370	0.406	0.353	0.442	0.440
Th	7.59	7.55	8.05	7.68	8.24	7.43	8.59	8.28
Cr	97.1	107.	120.	108.	111.	111.	114.	105.
Co	21.0	20.6	23.4	21.2	23.9	21.2	23.6	20.3
Sm	6.23	5.90	6.15	5.80	6.05	5.32	8.17	6.57

	<i>ZP17</i>	<i>ZP18</i>	<i>ZP19</i>	<i>ZP20</i>	<i>ZP21</i>	<i>ZP22</i>
%K	1.99	1.71	*	2.27	1.59	1.92
%Na ¹	0.238	0.152	0.136	0.251	0.218	0.120
%Fe	5.12	4.45	4.12	5.43	3.26	4.01
Rb ¹	79.0	78.2	65.0	81.0	58.1	60.7
Cs	3.54	3.36	2.81	4.27	2.71	2.77
Sc	20.2	20.7	18.8	23.2	13.7	16.3
La	29.9	27.8	23.0	32.3	23.2	26.0
Ce	68.7	63.0	53.9	61.2	53.7	61.0
Eu ¹	1.76	1.40	1.06	1.49	0.985	1.19
Lu	0.431	0.385	0.278	0.437	0.268	0.353
Th	8.77	9.02	7.54	10.7	7.87	9.09
Cr	120.	141.	114.	141.	80.6	98.0
Co	23.5	17.3	19.2	22.9	14.5	18.0
Sm	6.48	4.94	4.69	6.60	4.17	5.27

¹ Elements not considered in the statistical analyses.

* Missing value.

Table 3 Composition of the clay samples. (Concentrations in ppm except for K, Na and Fe, which are in %).

	<i>ZC1</i>	<i>ZC2</i>	<i>ZC3</i>	<i>ZC4</i>	<i>ZC5</i>	<i>ZC6</i>	<i>ZC7</i>
%K	*	*	*	*	1.16	1.05	0.565
%Na ¹	0.090	0.054	0.073	0.040	0.181	0.111	0.075
%Fe	2.13	1.59	1.74	0.821	2.63	2.34	1.30
Rb ¹	37.5	14.0	18.1	12.4	39.1	30.5	*
Cs	1.30	0.684	0.893	0.499	1.54	1.68	0.496
Sc	7.76	4.30	4.91	2.87	10.5	8.62	4.67
La	13.0	9.43	8.79	6.52	17.9	17.4	7.89
Ce	29.0	21.1	19.1	12.5	42.1	34.9	19.0
Eu ¹	0.694	0.451	0.432	0.280	1.08	1.07	0.347
Lu	0.161	0.096	0.115	0.086	0.248	0.283	0.101
Th	3.45	1.85	2.19	1.17	5.48	5.05	2.05
Cr	41.8	23.3	28.6	14.6	70.4	56.7	28.4
Co	7.11	5.77	3.26	2.53	11.3	9.37	4.54
Sm	2.70	1.96	1.74	1.30	3.48	3.49	1.59

¹ Elements not considered in the statistical analyses.

* Missing value.

Table 4 Classification of samples given by the k-means method at k=5.

<i>Cluster</i>	<i>Pottery</i>	<i>Clay</i>
1	ZP3,4,8-20,22	
2	ZP1,5-7,21	
3	ZP2	
4		ZC2-4,7
5		ZC1,5,6

Table 5 Composition of clusters 1 and 2. (Concentrations in ppm except for K, Na and Fe, which are in %).

	<i>Cluster 1</i>		<i>Cluster 2</i>		<i>Mean 2 /</i>
	<i>Mean</i>	<i>σ</i>	<i>Mean</i>	<i>σ</i>	<i>Mean 1</i>
%K	1.99	0.18	1.53	0.16	0.77
%Na ¹	0.185	0.040	0.159	0.033	0.86
%Fe	4.67	0.48	3.37	0.12	0.72
Rb ¹	79.7	10.9	61.2	17.5	0.77
Cs	3.28	0.55	2.43	0.50	0.74
Sc	19.8	1.9	14.3	0.6	0.72
La	27.1	3.4	21.2	1.7	0.78
Ce	63.1	6.7	47.6	4.4	0.75
Eu ¹	1.48	0.30	1.20	0.27	0.81
Lu	0.398	0.052	0.305	0.044	0.77
Th	8.45	0.86	6.74	0.78	0.79
Cr	119	16	84.5	2.88	0.71
Co	21.0	5.4	15.6	1.5	0.74
Sm	5.90	0.84	4.45	0.46	0.75

¹ Elements not considered in the statistical analyses.

Table 6 Final classification of the samples

<i>Cluster</i>	<i>Pottery</i>	<i>Clay</i>
A	ZP1,3-22	
B	ZP2	
C		ZC1,5,6
D		ZC2-4,7

Table 7 The composition groups. (Concentrations in ppm except for K, Na and Fe, which are in %).

	<i>Group A (21 spls)</i>			<i>Group B</i>	<i>Group C (3 spls)</i>		
	<i>Mean</i>	<i>σ</i>	<i>c. v.</i>	<i>(ZP2)</i>	<i>Mean</i>	<i>σ</i>	<i>c. v.</i>
%K	1.88	0.27	14.2	1.21	1.11	0.08	7.12
%Na ¹	0.179	0.039	22.2	0.174	0.127	0.048	37.5
%Fe	4.36	0.71	16.2	3.54	2.37	0.25	10.5
Rb ¹	75.3	14.7	19.5	56.2	35.7	4.6	12.8
Cs	3.08	0.64	20.8	5.18	1.51	0.19	12.7
Sc	18.5	2.9	15.6	18.7	8.95	1.38	15.4
La	25.7	4.0	15.5	46.3	16.1	2.7	16.8
Ce	59.4	9.1	15.4	114.	35.3	6.5	18.5
Eu ¹	1.41	0.31	22.1	2.42	0.948	0.220	23.2
Lu	0.376	0.064	17.0	0.895	0.231	0.063	27.3
Th	8.04	1.11	13.8	12.7	4.66	1.07	23.0
Cr	111.	20.	18.5	110.	56.3	14.3	25.4
Co	19.7	3.2	16.2	11.2	9.26	2.10	22.7
Sm	5.56	0.98	17.7	12.6	3.22	0.45	14.0

	<i>Group D (4 spls)</i>		
	<i>Mean</i>	<i>σ</i>	<i>c. v.</i>
%K ²	0.565	-	-
%Na ¹	0.0605	0.0168	27.8
%Fe	1.36	0.40	29.7
Rb ¹	14.9	2.95	19.8
Cs	0.643	0.188	29.2
Sc	4.19	0.91	21.8
La	8.16	1.26	15.4
Ce	17.9	3.7	20.8
Eu ¹	0.377	0.079	21.0
Lu	0.0994	0.0122	12.3
Th	1.81	0.45	24.7
Cr	23.7	6.6	27.7
Co	4.03	1.43	35.5
Sm	1.65	0.28	16.8

¹ Elements not considered in the statistical analyses.

² In group D, the K concentration is that for ZC7. The values for ZC2-4 are missing.

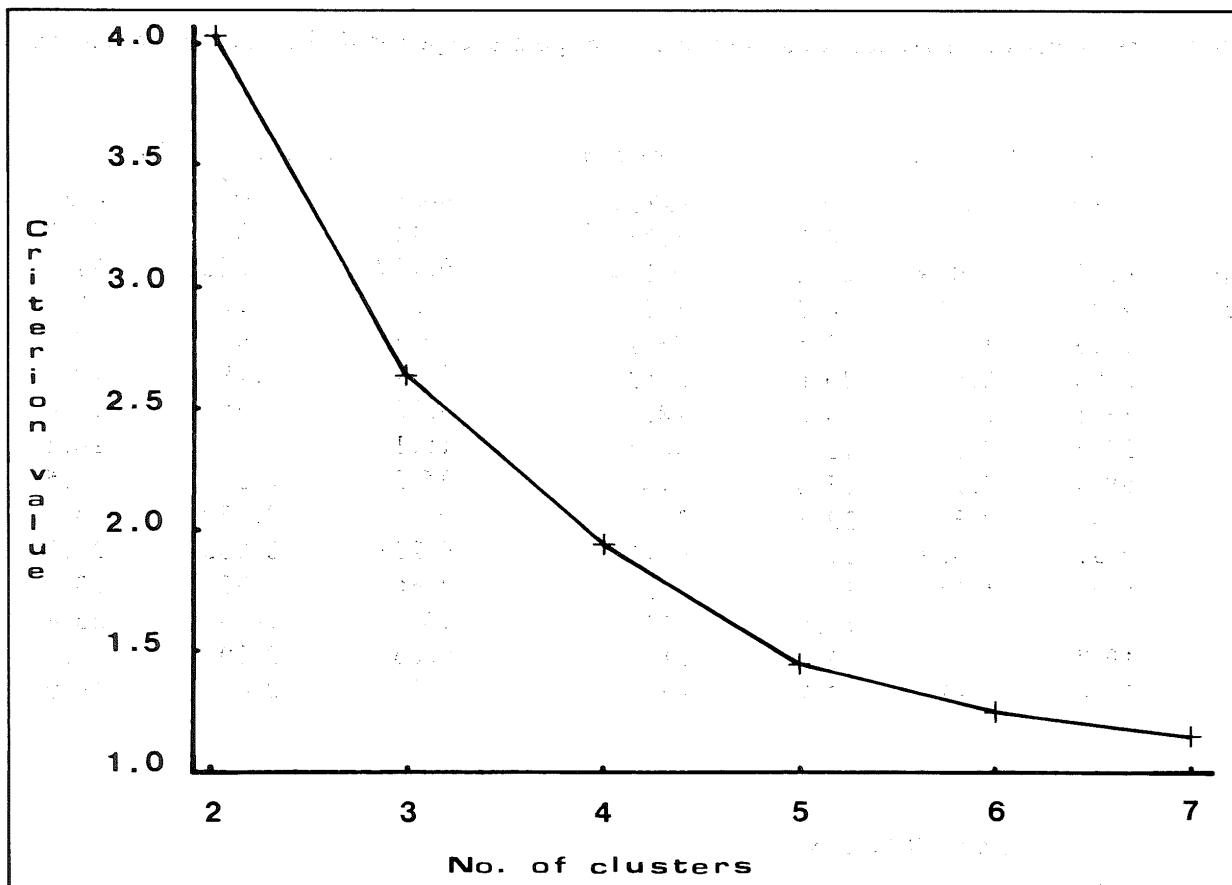


Fig. 1

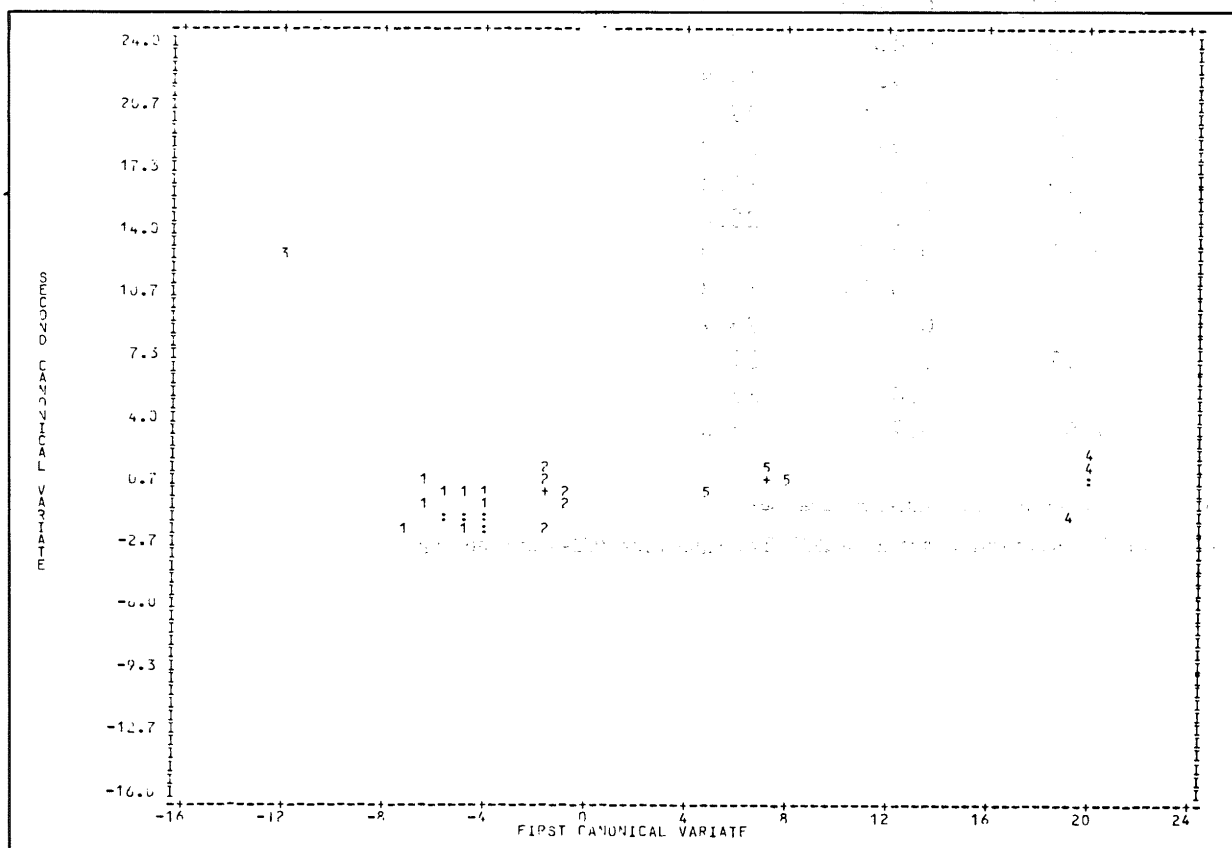


Fig. 2

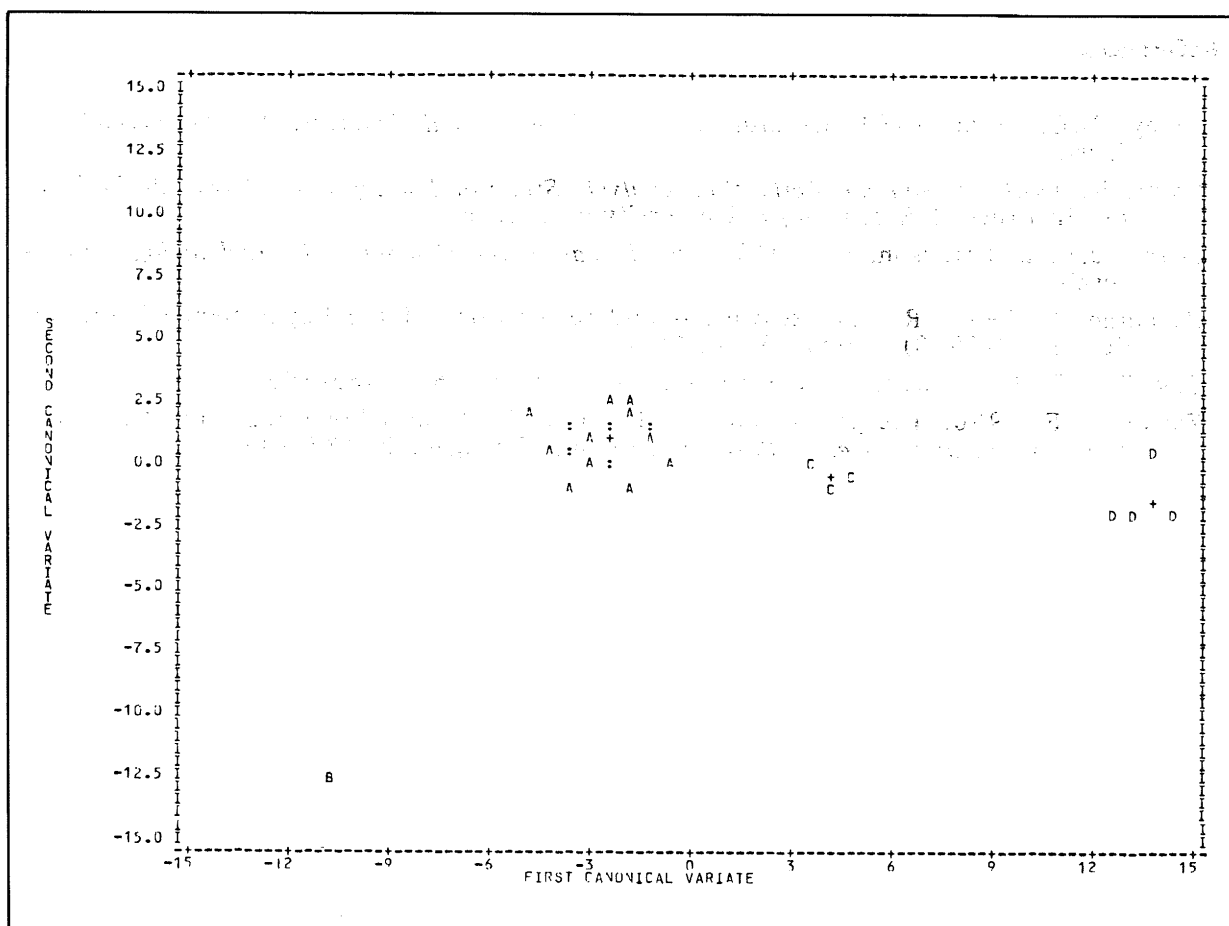


Fig. 3

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A NABATAEAN SCULPTOR'S SIGNATURE FROM PETRA

by

Zbigniew T. Fiema and

Richard N. Jones

In August 1986 during work on the registration of architectural and sculptural objects conducted by British archaeologists at Petra, the existence of a new Nabataean inscription was brought to the attention of one of the authors (Z. Fiema).¹ The inscription was found on a stone drum decorated with acanthus leaves which once was the lower portion of a Corinthian capital. The drum, which is neatly situated on the second landing of the steps leading up toward the museum at Petra, was probably uncovered during the clearing and excavations of the *temenos* of the Qasr by Parr during the 1960's or during the clearing and restoration done by the Department of Antiquities of Jordan, however the exact provenience of the drum may be impossible to establish.² The inscription is *ca.* 5 cm. long and *ca.* 1.4 cm high (Pl. LXVI, 1, 2 & Fig. 1), and is incised upon the convex *anulus* which originally marked the separation of the column shaft from the acanthus leaf decoration on the lower part of the Corinthian capital. The inscription consists of seven letters which can be clearly read even though the lower portion of some of them are slightly damaged. The text reads as follows:

šlmwr/d''

Because of the close similarity between the shapes of the letters *resh* and *daleth*, it is difficult to decide which of the readings was actually meant by the ancient writer. It

seems clear, however, that this is a signature left by a sculptor upon his work. Indeed, the inscription was not intended for display to the public because of the fact that when the capital was in place on the top of a column shaft, the inscription would never be seen by anyone. Therefore it is difficult to see the inscription as a greeting beginning with šlm followed by a personal name. Examples of workers leaving their names on their work "in memoriam" rather than for display are common in the Hellenistic Roman East and it must be assumed that the name belonged to a sculptor who executed the Corinthian capital. One of the best examples of sculptors' signatures comes from Palmyra, where a team of sculptors working on the temple of Bel left their names in a trilingual inscription on the upper surface of a drum from a column that was then situated in the peristyle of the temple cella.³ Another signature is known from Si'. There a damaged column was found consisting of the upper portion of the shaft, the capital, and the abacus. A Greek inscription on the abacus was left which reads "Kasit son of An'am made it."⁴

In Nabataean and Palmyrene, the name šlmw occurs often but compound names employing šlmw as the first element are distinctly rare.⁵ The second portion of our sculptor's name may reflect the Semitic root *r'h/r''* which is rare in Nabataean,⁶

1. Warmest thanks are extended to Prof. Margaret Lyttleton, British Museum, who kindly called attention to the existence of the inscription.

2. See Peter Parr, "Découvertes récentes au sanctuaire du Qasr à Pétra," *Syria* (1968), pp. 1-24; and *ADAJ* 11-12 (1967-68), pp. 5-19.

3. See Z. Fiema, "An Inscription from the Temple of Bel in Palmyra Reconsidered," *BASOR* 263 (1986), pp. 81-83.

4. E. Littmann and D. Magie, Publications of the Princeton University Archaeological Expedi-

tion to Syria in 1904-5 and 1909. Division III. *Greek and Latin Inscriptions in Syria*. Section A. Southern Syria, Part 6 (Leyden: E.J. Brill, 1916), p. 369.

5. A few possible examples are found in Nabataean inscriptions over which there are disputed readings, see *R.E.S.* I:227.

6. There is an uncertain occurrence of this root in a compound name found in the index of *R.E.S.* I:417 but this appears to contain a citation error. Compare also Cantineau, *Le Nabatéen*, 2: 147.

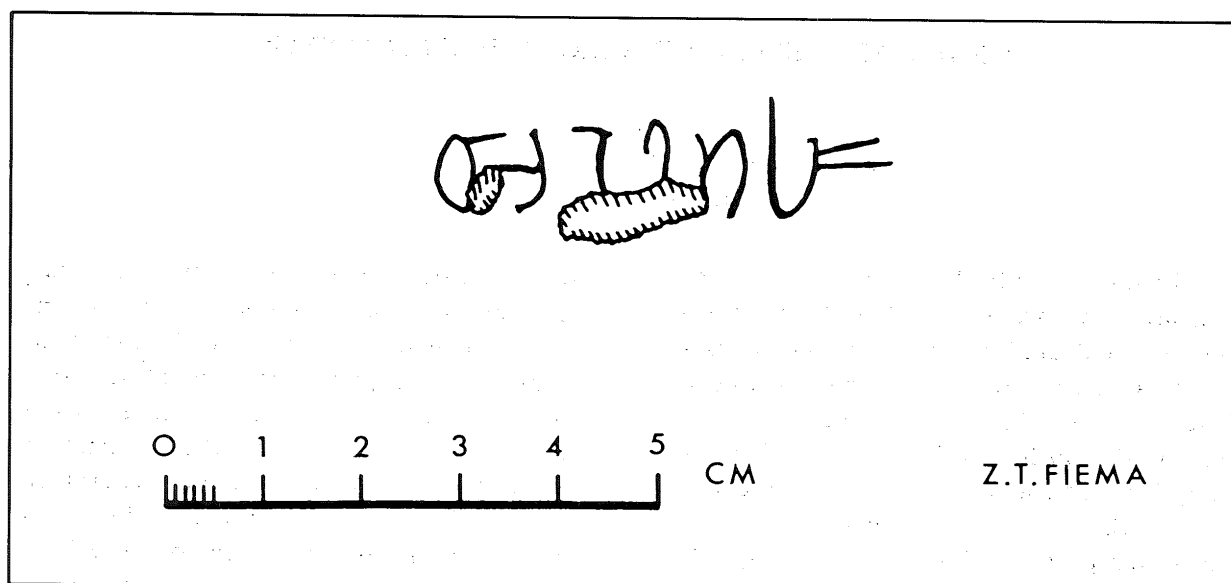


Fig. 1

but found as a proper name in Palmyrene.⁷ It is found often in Semitic compound names containing divine elements such as Sabaeen *yr' l*, and Thamudic *r' l*.⁸ Another alternative is to see the reading as *šlm wr/d'*, representing the names of two sculptors, although this seems to us to be somewhat less probable. The reason for this is that the proper name *šlm* in Nabataean is infrequent in the inscriptions as against *šlmw* which is very common.⁹ The last possibility is to view this as a compound name *šlmwd'*, the last portion reflecting the Nabataean personal name *wd'w* occurring mostly in Sinai.¹⁰

There are some features of the script

which deserve attention. The *lamadh* is connected to the preceeding letter *sin* rather than to the following letter *mim*, a less than common ligature in Nabataean although examples are known.¹¹

We conclude that this text represents the compound name *šlmwr/d'*, left by a Nabataean sculptor as a signature upon his work at Petra, which may now be added to the Nabataean onomasticon.

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7. See Jurgen K. Stark, *Personal Names in Palmyrene Inscriptions* (Oxford: Clarendon Press, 1971), p. 49.

8. G. Ryckmans, *Les Noms Propres Sud-Sémitiques* t.1, (Louvain: Bureaux du Museon, 1934), p. 249.

9. For example, there are some 46 certain citations in the *C.I.S.* and an additional 7 probable occurrences, see *C.I.S.* II:2:247. Can-

tineau, *Le Nabatéen*, 2: 151 cites 65 certain and 4 uncertain examples of the spelling *šlmw*, as against 4 certain and 2 uncertain examples of *šlm*. However, the name *šlm* is common in other Pre-Islamic texts, especially Safaitic (see Lankester Harding 1971: 325).

10. Cantineau vol. 2, p. 89. One might compare the name *wd'* in Safaitic, Lihyanite, and Thamudic in Harding p. 638.

11. For example, *C.I.S.* nos. 194 and 921.

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THE BURNT PALACE OF MADABA

by
Michele Piccirillo

In April 1985, the Jordanian Government decided to go ahead with the practical realization of a project which will enclose and cover the area along the Roman *Cardo* of Madaba including the church of the Virgin, part of the road and the crypt of the church of the Prophet Elias. The plan is to create a unique museum in the middle of the modern city, where it will be possible to re-read seven centuries of the history of Madaba.

In connection with the preparation for this project, I was given the opportunity to conduct an archaeological examination of another sector of the city along the *cardo*,¹ somewhat to the north of the church of el-Khadir which was excavated by Ute Lux in 1966² (Fig. 1). The area had been indicated to me by the reading of a long article devoted to the antiquities of Madaba by the Archimandrite Melezius Metaxakis of the Greek Orthodox Patriarchate in Jerusalem.³ By means of this new excavation, we were able to delineate even further what seems to have been the centre of the city in Roman-Byzantine times.

Metaxakis wrote in 1905 that he had obtained permission by the owner to make a trial excavation in the courtyard of the house of Yousef Ma'ay'a and that he discovered there a mosaic pavement beneath a layer of ashes and charcoal. He believed this to be the remains of a church. Our excavations produced a different conclusion. The mosaic, of which the Archimandrite had seen only the south-east corner, decorated a room of a private house which had been burned and abandoned in the Byzantine epoch and which we found still cover-

ed with a uniform layer of ash and charcoal mixed with roof tiles.

This patrician mansion which we call "the burnt palace" of Madaba, had a paved courtyard on the west side nowadays occupied by a modern house (Fig. 1, 6). Two doors, of which remain the solid stone thresholds, led into a hall with a mosaic pavement to the east, and into a narrow service room to the south, mosaiced with large, white tesserae. The room, in turn, was attached to a paved area elevated some 30cm. above the level of the mosaiced hall, with two doors on the southern and northern walls, which served as a passageway from the hall to the exterior, where, probably, one would reach the *cardo* which ran along the north wall of the church of el-Khadir on a level about two meters lower.

The mosaiced hall (9.50m. long and 7.30m. wide, Fig. 2) constituted one of the central areas of the residence on the eastern side of the courtyard, where the main entrance was located. The double door, made of wood, fell inward while still burning, thus causing visible damage to the mosaic floor. In this area we recovered the two bronze door-knockers together with other metal accessories (Fig. 3).

The decorative program of the mosaic, partially destroyed three years ago during the construction of a new building on the north side, repeats ordinary motifs (Pl. LXVII, 1, 2). The entrance is introduced by a pair of sandals in a crown.⁴ Trees, flowers, birds, fish and animals fill the bordering frame of the carpet which is divided into six rows of four acanthus scrolls decorated with pastoral and hunting motifs (Pl.

1. Thanks to the cooperation of Dr. Adnan Hadidi and Mr. Taysir Attiyat of the Department of Antiquities. The archaeological team of Mount Nebo collaborated. The plans were drawn by Fr. Eugenio Alliata.

2. U. Lux, "Eine altchristliche Kirche in Madaba", *ZDPV* 1967, p. 165-182, Taf.

26-40.

3. M. Metaxakis, "Madiba", in *Nea Sion* 1905, p. 452-454.

4. Like in the Hippolytus Hall under the Church of the Virgin (*LA* 1982, tav. 73) and in the mosaic of el-Qsar in Madaba.

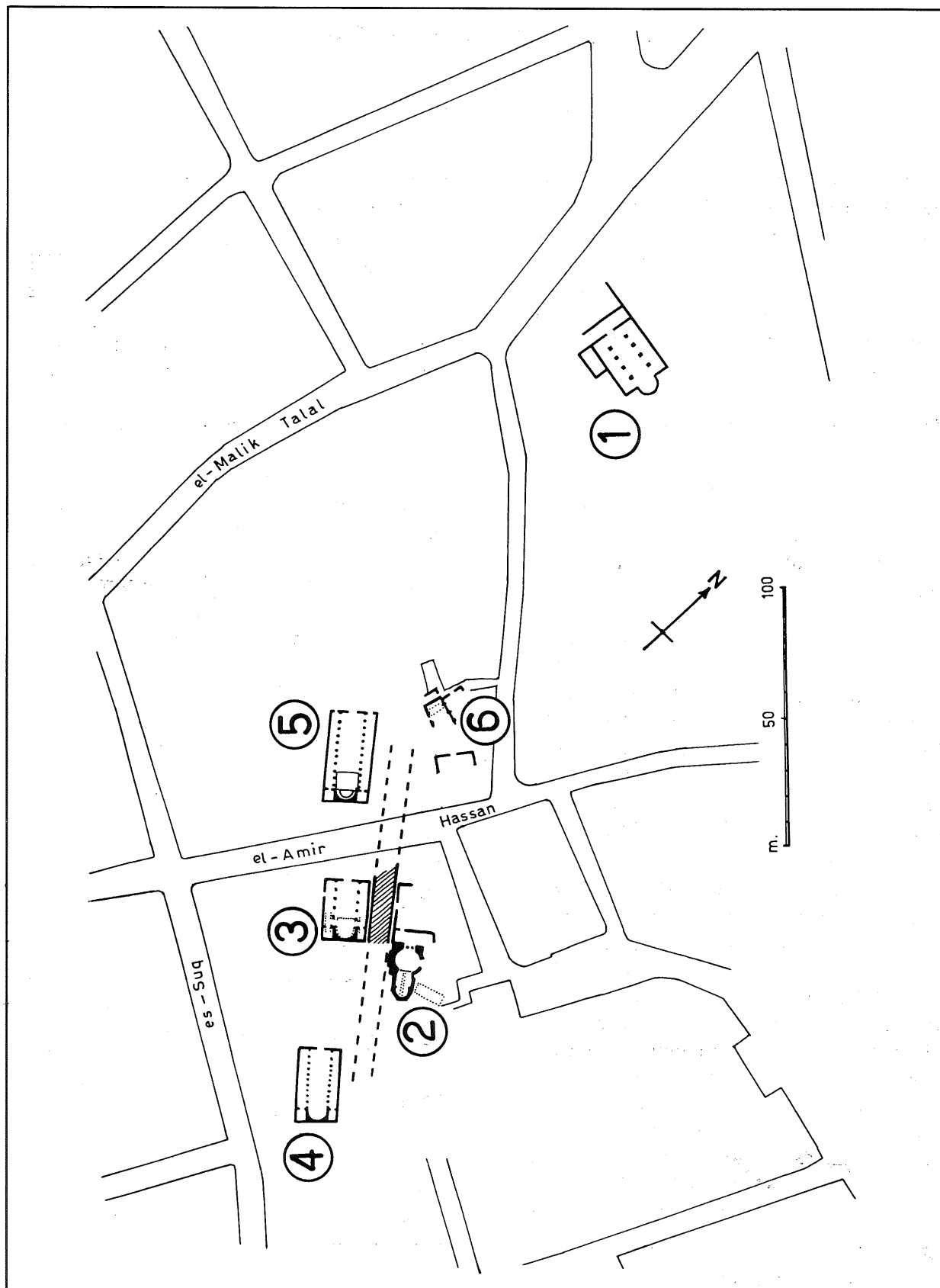


Fig. 1. Madaba. The Byzantine monuments along the Roman *cardo*. 1. The church of the Map; 2. The church of the Virgin; 3. The church of the Prophet Elias; 4. The church of the Şunna' family; 5. The church of el-Khadir; 6. The Burnt Palace. (Drawing Fr. Eugenio Alliata).

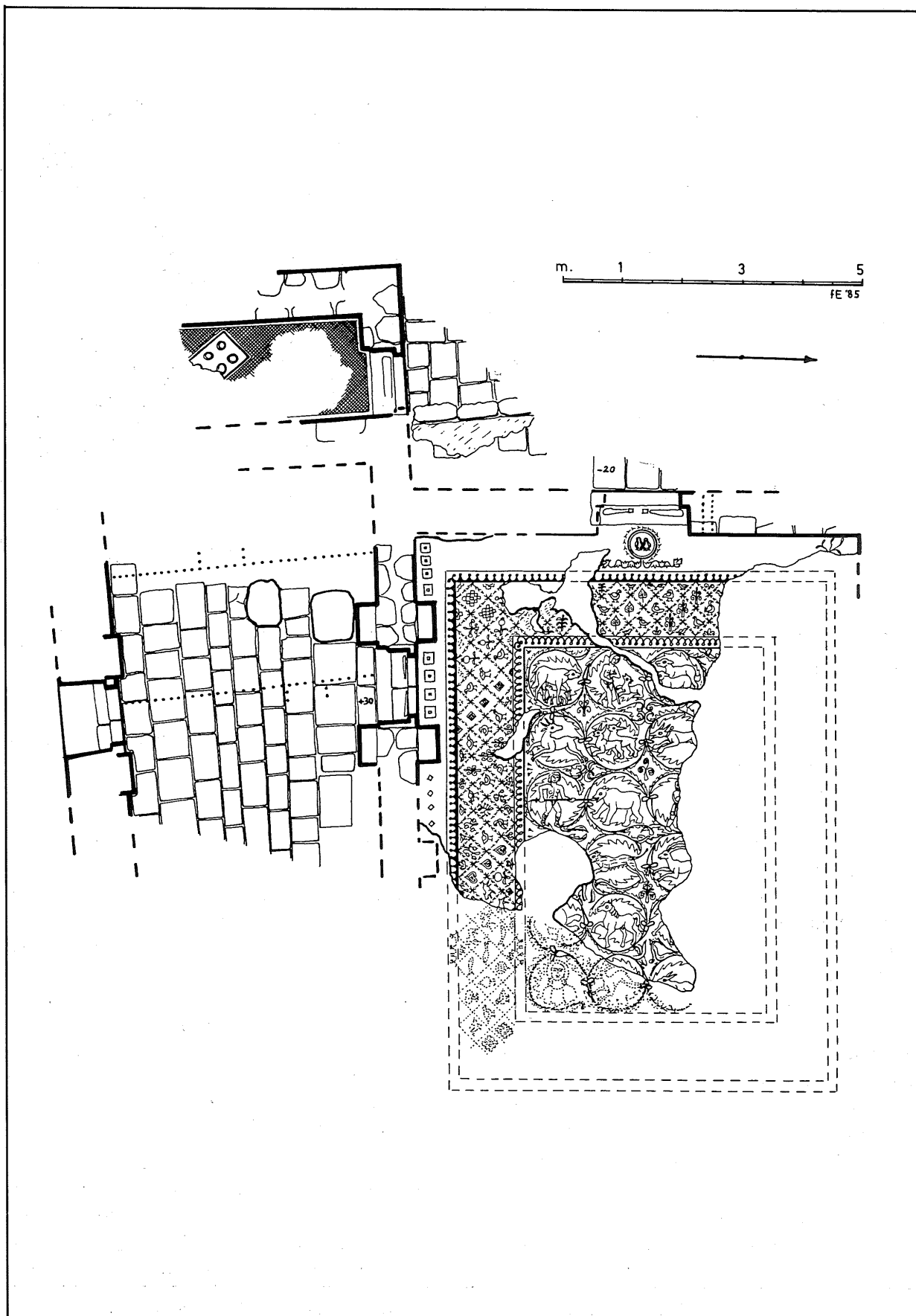


Fig. 2. The Burnt Palace (drawing Fr. Eugenio Alliata).

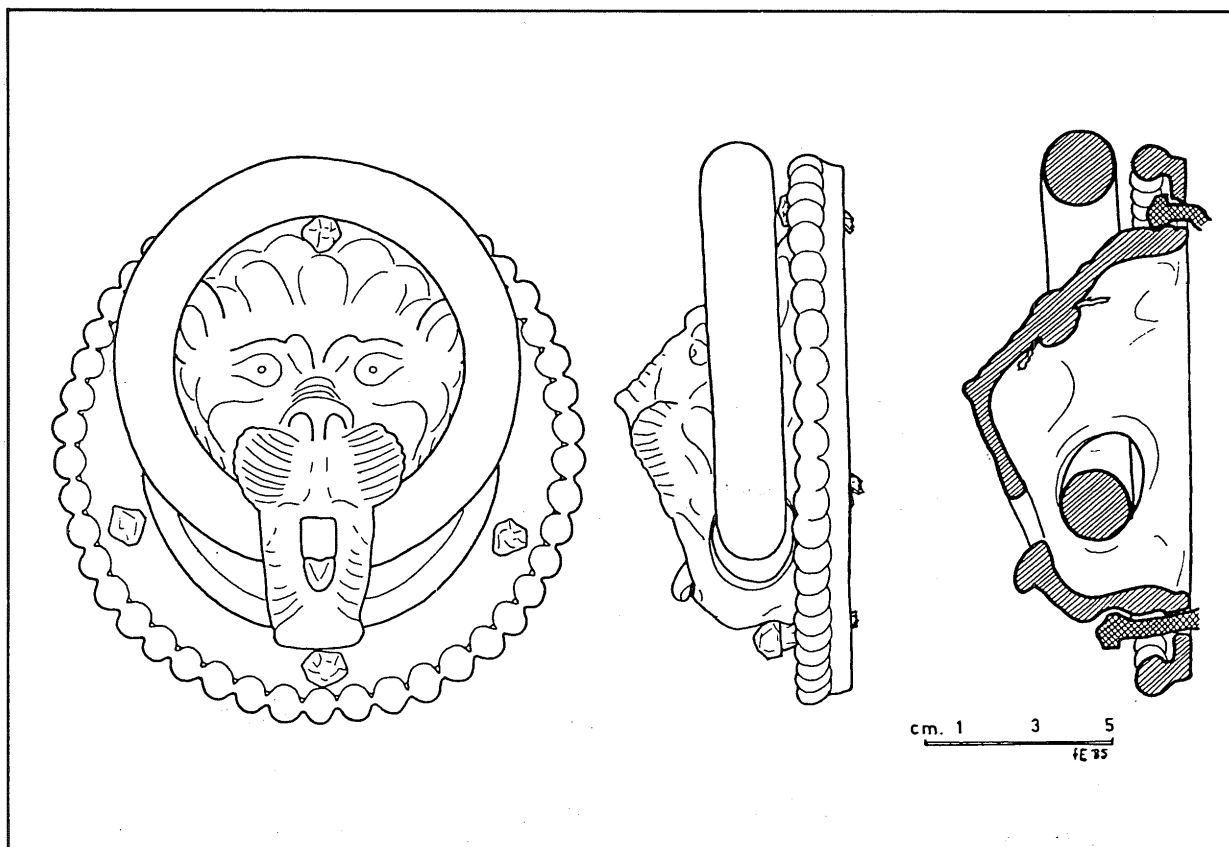


Fig. 3. The door-knocker (drawing Fr. Eugenio Alliata).

LXVII,2). In the first row, on the western side, a shepherd rests, leaning on a staff, with a dog crouched at his feet, between a ewe which is nursing a lamb (on the left) and two sheep in the scroll on the right. In the second row, a dog runs after two rabbits, preceded by a stag in flight. In the third, a hunter, wearing shoes, thrusts a spear into a bear. A long-horned stag and a female leopard occupy the two scrolls still visible in the fourth row. In the fifth, a horse with a flourishing mane, is faced off against a crouched lion. A stag in flight faces the bust of a woman in the sixth row, now destroyed but seen and photographed by Metaxakis in the south-east corner of the hall⁵. The bust may be the personification of the Earth.

As far as color is concerned, the composition is predominated by warm tones and there is an accentuated use of red tes-

serae. Technically, the design is poor, if compared with other mosaic-floors of Madaba.

The biggest surprise came from the discovery of the metal items, particularly the two bronze door-knockers (Pl. LXVIII, 1 & Fig. 3), and a tripod in bronze, which is a novelty in Jordan. The two door-knockers, both out of the same mold, with a leonine protome, measure 19 cm. in diameter. A ring is inserted in the animal's muzzle. Six nails, in iron, secured the latch to the wood of the door. The locks of the lion's mane, the ears, the muzzle and the tongue are modelled with particular care for realism.⁶

The bronze tripod is composed of three series of elements that are articulated at the centre and with slides moving on the three legs (Pl. LXVIII, 2 & Fig. 4,5). The foot of the legs is modelled into a small

5. Metaxakis, *Nea Sion* 1905, Fig. XVI.

6. Four bronze door-knockers were found during the Baqa'a-Irbid Road Survey by A. Leonard in 1984. A door-knocker was found

in Bet Shan (G.M. Fitzgerald, *Bet-Shan Excavations 1921-1923, The Arab and Byzantine Levels*, Philadelphia 1931, p.41, pl. XXV,4).

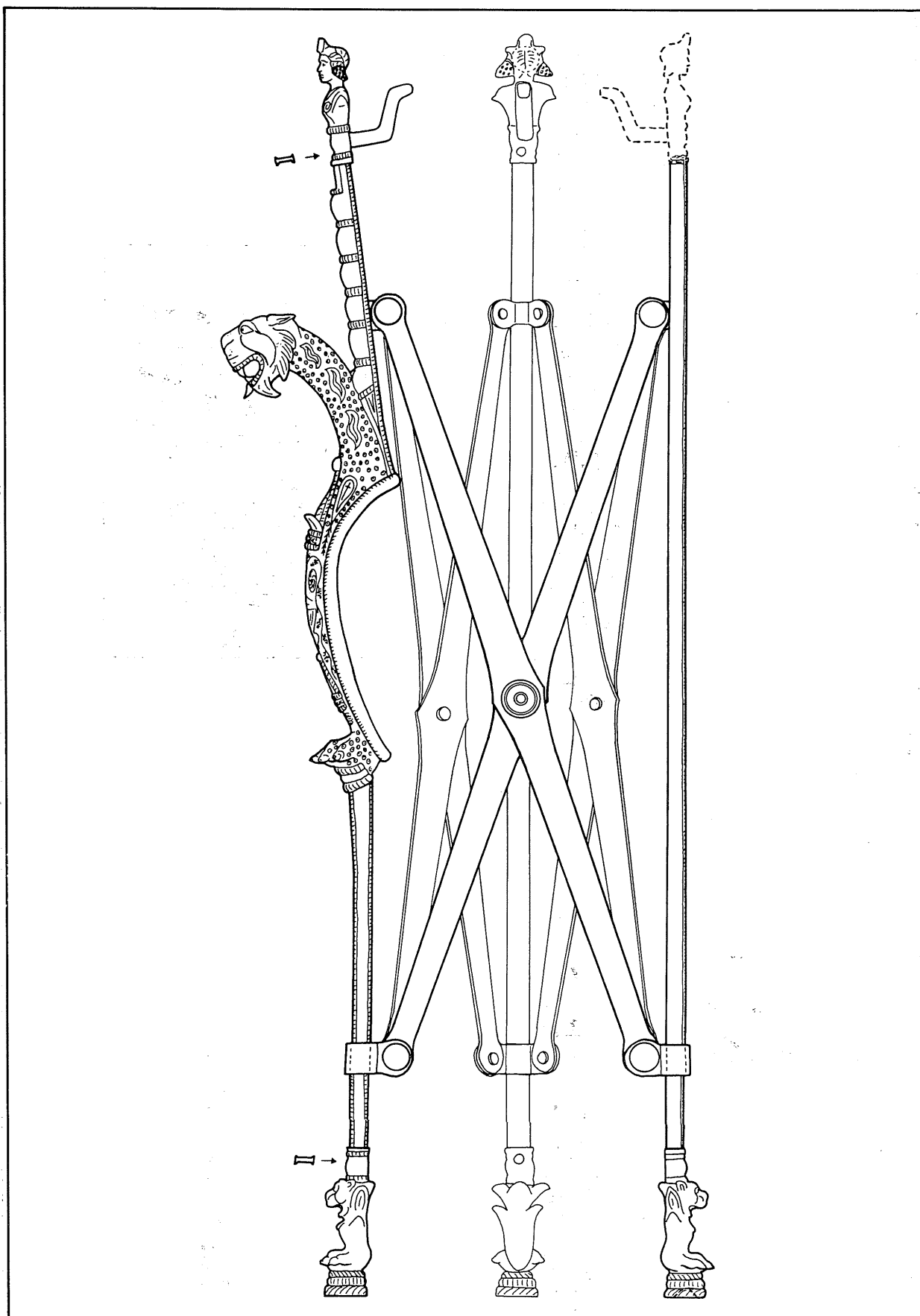


Fig. 4. The panther's bronze tripod (drawing Fr. Eugenio Alliata).

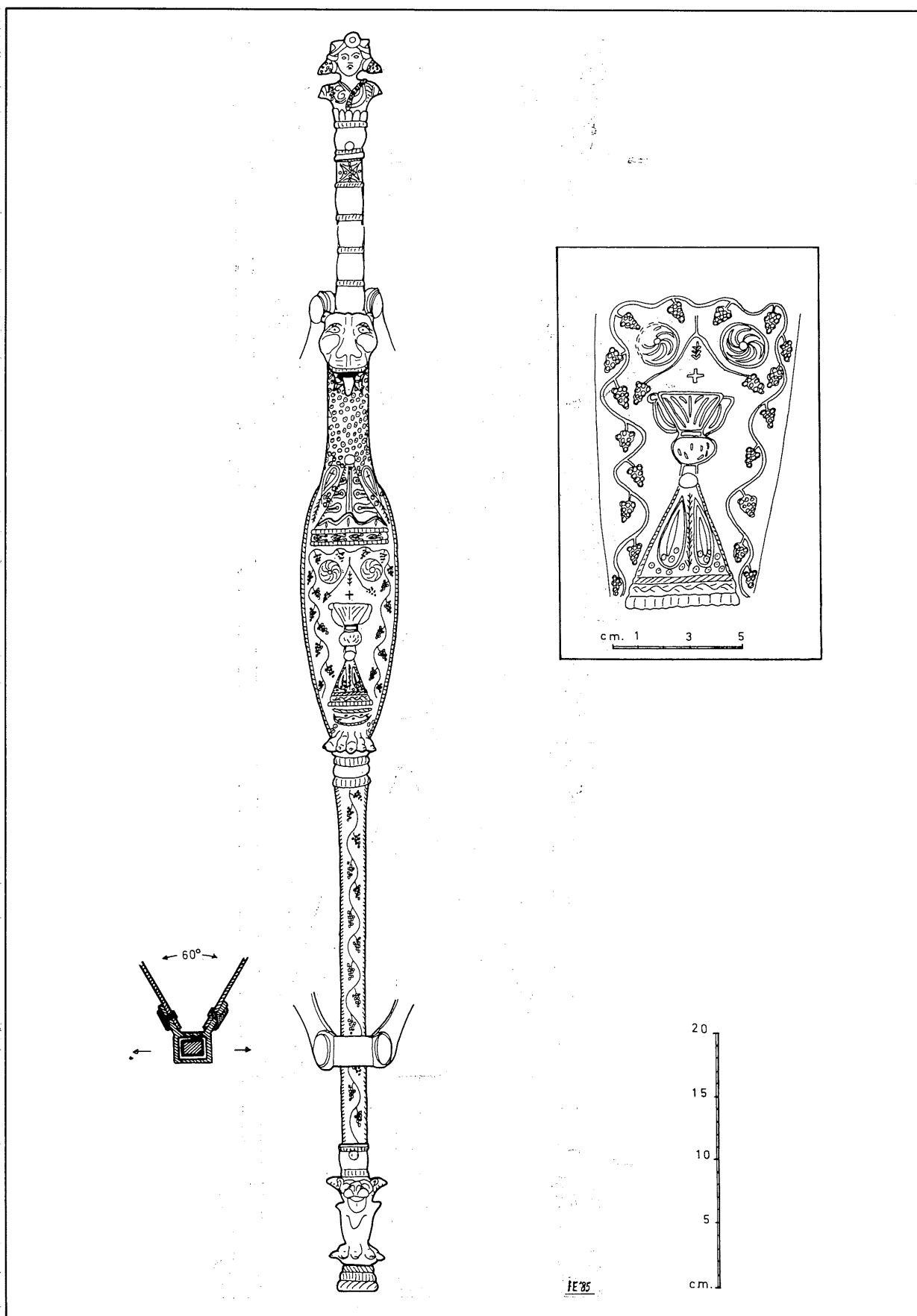


Fig. 5. Detail of the bronze tripod...

crouched lion (Pl. LXIX, 1). The legs are terminated at the top with three (one is now missing) small busts, Banchae or the young Dionysos (Pl. LXIX, 2), draped with a skin and the hair bound with a net. On the back of the busts, welded in a single block is a strong hook which served to hang a brazier or other metal utensil. The front leg reflects particular care in its decoration. The rectangular bar, above the foot, is engraved with a continuous vine of bunches of grapes. Inserted half way up is a loop handle surmounted by a panther's head on a long arching neck (Pl. LXVIII, 2), an element common to other tripods found elsewhere, like in Italy and Egypt. The long neck is decorated with dots and long tongues. Half way below the long neck, there is a kantharos between vine sprays, two spiral rosettes, a palmette and a cross. As far as I know, this tripod of the type called the "panther's tripod", judging by the main feature, is the most recent discovered yet, as it is found in a late Byzantine context.⁷ The head of the panther

testifies to the skill of the craftsman who molded it. It is a fusion of fantastic elements and naturalistic details producing a forceful expression.

The mosaic-floor, the bronze items, the tiles and the sherds found among the ashes, point to the end of the VIth century A.D. as a date for the burning of the mansion, and its last occupation.

The "burnt palace" is the first case to date of private architecture of Byzantine Madaba which has been explored, even though only partially. Thus even if it is premature to force general conclusions, the discovery can orientate future research and suggest a context for other, isolated mosaic pavements that have come to light by chance, as e.g. the mosaic of Achilles,⁸ the Bacchic procession in the archaeological museum, still *in situ*, and the Hippolytus Hall under the church of the Virgin.⁹

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7. For a discussion see D. Kent Hill, "Roman Panther Tripods" in *AJA* 1951, p. 344-347, pls. 38-39. For the tripods found in the Ballana tombs in Egypt, see Service des Antiquités de l'Égypte, Mission Archéologique de Nubie 1929-1934, *The Royal Tombs of*

Ballana and Qustul by W.B. Emery, Cairo Government Press 1938, vol. I, p. 348-353. For bronze tables and tripods; see vol. II, Plate 90.

8. *ADAJ* 1960, p. 116, Pl. VI, 2.

9. *LA* 1982, p. 386-396, tavv. 56-73.

THE COMPLEX OF SAINT STEPHEN AT UMM ER-RASAS-KASTRON MAFAA

First Campaign, August 1986

by

Michele Piccirillo and Taysir Attiyat

The Exploration of the Ruins

While camping in Ghor el-Mezra' on his way back from the unsuccessful journey to Petra, the German explorer Ulrich Seetzen was told by his guide, Bey Maijub, about the existence of an extraordinary ruin on the high plateau north of Wadi el-Mujib. Bey Maijub told the explorer:

"that these ruins are the most exciting - the ruins of Umm er-Rasas (which means the mother of lead). This ancient city is found a half-day walk southeast of Dhiban. It has only one gate - like that of Jerash - only more beautiful. He assured me - writes the explorer - that the whole city is still well preserved, thus it is still possible for one to see all the streets, the houses, and the temples. The greatest marvel of this site is the walls, built with large, black, square stones, which, instead of mortar, have a fine layer of lead. The Beduins would have taken this lead long ago if the well constructed, large stones would have allowed it".¹

By the end of his journey, Seetzen was convinced that Umm er-Rasas enjoyed great fame among the Beduins as a "house of hidden treasures". Because he couldn't reach the site himself, he hoped that some other traveler would have the good fortune to visit it in the future.

Burchardt had the same wish.² But, it was Bunningham - his party, arriving at Umm er-Rasas in the spring of 1816 - who made the wish a reality. However, the reality seemed more modest than what they had expected.

"(The area) is filled with ruined buildings, all, however, of a small size, and unadorned by architectural ornament of any kind, though constructed of very large stones... and the whole appearance of the buildings was small and unimportant, though the masonry was unusually solid for such works, and calculated for great duration".³

Irby and Mangles shared the same impression when they reached the site in June 1818:

"At 3.00 p.m. we reached Umm er-Rasas. We found the ruins very extensive, and evidently Christian. There were the remains of a stone wall which enclosed the whole city; the cross is often to be met with, but there is no architectural remnant worthy of notice".⁴

The reaction of the explorers of the second half of the century was more realistic.⁵ Palmer, attracted by the report of an inscription, reached Umm er-Rasas on his return from the Sinai in May 1870. He was motivated by the discovery of the Me-sha' Stone at Dhiban two years earlier. The

1. U.J. Seetzen, *Reisen durch Syrien, Palästina, Phönicien, die Transjordan-Länder...*, II, Berlin 1854, 352 f.
2. J.L. Burchardt, *Travels in Syria and the Holy Land*, London 1822, 361: "About eight hours S.S.E. (from el-Kahf) is the ruined city of Om el-Reszasz, i.e. the Mother of Lead, which, according to all accounts, is of great extent, and contains large buildings. In my present situation it was impossible for me to visit these two places. I hope that some future traveler will be more fortun-

ate".

3. J.S. Bunningham, *Travels among the Arab Tribes inhabiting the Countries East of Syria and Palestine...*, London 1825, 104.
4. Ch.L. Irby - J. Mangles, *Travels in Egypt and Nubia, Syria...*, London 1823, 471.
5. The ruins were visited, among others, by G. Robinson (*Travels in Palestine and Syria*, II, London 1837, 187f.) and H. Layard (*Early Adventures in Persia...*, London 1887, 111).

inscription turned out to be a Nabataean text already known to the scholars, but Palmer had the opportunity to study the ruins of Umm er-Rasas with more accuracy:

“Umm er-Rasas is a large ruined town (of considerable extent) built on similar arches to those described in other ruins, and containing two churches. It is surrounded by a strong buttressed wall, and is about 400 yards square... From the size and extent of the ruined city, and the two fine churches which it contains, it is evident that Umm er-Rasas must have been a town of considerable importance during the Christian occupation of the Holy Land.”⁶

The Canon Tristram, who camped with his expedition at Umm er-Rasas for a week in the middle of February in 1872, gave a more accurate description of the ruins:

“Umm er-Rasas a large, solidly built, square city, far more perfect than anything we have before seen. The walls of the old city are still entire and intact for a part of their height, and had an imposing appearance as we neared them from the west... Now all within these walls is utterly desolate...”⁷

Later Vailhé realized that the large square city enclosed by thick walls was a

Roman camp at the edge of the desert.⁸ When he arrived at the site in 1896, he found that the ruins north of the fort were inhabited by some families of the Salayta tribe.

At this time, several scholars attempted proposing a historical identification for Umm er-Rasas. In 1898, Clermont-Ganneau published the Nabataean inscription seen at Umm er-Rasas.⁹ The orientalist also tried to explain the origin and significance of the name of the ruins. Umm er-Rasas, which in the most simple terms, refers to lead, actually is related to the Arabic root Rass, Rassas, indicating the action of putting something on top of something else in perfect alignment. Thus, murassas, covered by lead, is only a derived name. Therefore Umm er-Rasas, or mourassas in the toponomastic of the region of Syria-Palestine, is a term which indicates a well-built wall, and for this reason it is a good indication of the antiquity of the locality.

The Brünnow-Domaszewski expedition arrived at Umm er-Rasas in April of 1897.¹⁰ In the third volume of their monumental study of the Provincia Arabia, they published eight beautiful photos of Umm er-Rasas and a general plan of the fort with the position of three churches inside the walls. On June 5, 1933 Glueck arrived at the site. He collected only Nabataean, Byzantine and Arabic sherds.¹¹ On April 1,

6. E. H. Palmer, *The Desert of the Exodus*, II, Cambridge 1871, 498-500.

7. H. B. Tristram, *The Land of Moab*, London 1874, 140-143.

8. S. Vailhé, “Dans les montagnes bleues”, *Echos de Notre-Dame de France*, 1986, 230: “Ce sont de beaucoup les ruines les plus considérables et les mieux conservées de la région. Elles se divisent en deux parties bien distinctes. Au Sud, un quadrilatère régulier de 150 mètres, enfermé dans d’épaisses murailles flanquées chacune de sept fortes tours. Trois chapelles orientées sont comprises dans cette partie. Au Nord, s’étendent les ruines de nombreuses maisons. Plusieurs sont encore debout avec leurs arceaux et leurs toitures en dalles comme les habitations du Hauran. Des rues coupent la ville et se reconnaissent encore. Cinq églises se trouvent dans cette partie

non fortifiée de la ville... La vue de ces ruines divisées si régulièrement fait penser à un camp romain, placé sur la lisière du desert...” Fr. J. Germer-Durand, who arrived to Umm er-Rasas with Fr. Vailhé, proposed to identify the ruins with Mefaat (“Frontières de l’Empire Romain en Arabie...”, *Echos de Notre-Dame de France*, 1897, 37 s.): “Oum er-Rasas a été identifié, par un certain nombre d’exégètes, avec l’ancienne Mephaat de l’Ecriture, ville sacerdotale de la tribu de Ruben. L’Onomasticon la signale comme ayant une garnison romaine.”

9. Ch. Clermont-Ganneau, “L’inscription de Oumm er-Rasas”, *RAO*, II, 185-188.

10. R. E. Brünnow - A. Domaszewski, *Die Provincia Arabia*, II, Strassburg 1905, 63-72.

11. N. Glueck, *Explorations in Eastern Palestine*, I, *AASOR* XIV, 1934, 39 f.

1948, Fr. Bagatti tried to establish a schematic plan of the ruins to the north of the fort, focusing on the buildings with apses which he identified as churches: four inside and six outside the walls.¹²

In the last ten years members of the Studium Biblicum Franciscanum have returned several times to Umm er-Rasas, to visit, to document and to test what had previously been written about the site. Since it was close to the base-camp at Mount Nebo, it was easy to visit, especially after 1978 when the government asphalted the road which led straight from Madaba to Umm er-Rasas. This also made it possible for the institute to consider future on-site research. The friendly collaboration of Dr. Adnan Hadidi, director of the Department of Antiquities, made it possible to begin the research this year. The first campaign has already proved to be significant for the history of Jordan.

On July 17, 1986, Dr. Hadidi, Mr. Taysir 'Attiyat, inspector of the Madaba region, Fr. Eugenio Alliata and Fr. Piccirillo visited the site. Here the choice of an area for excavation, the conditions of the collaboration between the Studium Biblicum Franciscanum and the Department, and the date for the beginning of the excavation were formalized. On July 26, Mr. 'Attiyat began the first soundings. For practical reasons, specifically, to facilitate the removal of a considerable amount of debris, the two edifices with apses on the north edge of the ruins were chosen. These were listed as numbers 1 and 2 in the plan of Fr. Bagatti. The first campaign, which included the enthusiastic participation and expertise of the archaeological team of Mount Nebo,¹³ lasted until September 6,

1986.

The Ruins of Umm er-Rasas

Umm er-Rasas is located 30 kilometres southeast of Madaba, north of Wadi el-Mujib, roughly half-way between the King's Highway and the Desert Road. It is possible to reach the site directly from Madaba by the road which goes to Nitl. From there the road, twisting south across Wadi Themed, passes the towers of Za'faran and Rumeil. Alternate routes are from the King's Highway, turning east at Dhiban, or the Desert Road turning west to the height of Khan ez-Zebib station.

The ruins are situated at a high elevation of the plateau and are, therefore, visible from a distance of about 20 kilometers. As one can see in the aerial photograph provided by the National Geographic Centre (Pl. LXX), the ruins of Umm er-Rasas cover an area of at least 30 dunums, about 3 hectares. The ruins contain a walled area on the inside of a fortified camp that has high and strong wall buttresses which extend 150 meters in the east-west direction and 120 meters in the north-south direction. An open quarter of roughly the same dimensions extends outside the camp to the north. Also toward the north, about 1300 meters away, stands a tower. It is 15 meters high with ruined buildings on its eastern side, defended on the north side by a square building constructed near large pools hewn in the rock.¹⁴

As Bey Majub had told Seetzen, the fortified camp has only one gateway on the north wall.¹⁵ On the inside there is a huge number of stones out of which arise several arches, lintels and small columns decorated with crosses. Among the buildings, there

12. S. Saller - B. Bagatti, *The Town of Nebo*, Jerusalem 1949, 245-244: "Nabataean, Roman, Byzantine and Arabic remains have been noted on this site, but in its present form it is essentially Byzantine and it is this period which would undoubtedly receive much new light if this place would ever be studied more thoroughly."

13. Participants in the excavation along with Mr. Taysir Attiyat, M. Piccirillo and Fr. Eugenio Alliata, include: Fr. John Abela,

Fr. Vincenzo Janniello, Br. Paschalis Kwoczata, Br. Nicodemus Gdyk, Piero Galimberti, Nelly Cabboi and many others.

14. Some restoration works were carried on in the area by the Department of Antiquities in the 1970's.

15. A second gate, closed in an unknown period, seems to be located on the eastern wall (S. Vailhé, *Echos ND*, 1896, 230: "Les portes se voient encore sur deux côtés...").

are four structures with apses, probably churches. At the south-east corner a deepening of the rubble probably indicates the presence of a large water reservoir. Because the city had no springs, several cisterns are to be seen in the area outside and inside the ruins.

The ruins of the northern quarter outside the walled area are less uniform because they were inhabited by the beduins in the first half of the century.¹⁶ By 1948, when Fr. Bagatti arrived, the ruins had already been abandoned once again. Fortunately, a modern village built by some families of Al-'Ajish of the Bene Sakhr, is developing outside the ruins along the asphalt road which joins Umm er-Rasas with Madaba.

The Excavation: Results of the first campaign, 1986 (Fig. 1)

The place where the archeological explorations began seems to be a large monastic complex enclosed by a wall (Pl. LXXI, 1, 2). It contains four areas with apses and courtyards on the western sides. The excavation was limited to three of these areas. The complex contained two churches next to each other, with an apsed courtyard (Pl. LXXII). The two churches, both containing mosaics, and the paved courtyard, which had been changed into a chapel, formed a large and interconnected liturgical room with three different levels (Fig. 1). Such a structure is unique in the region. The central church is connected with the courtyard through a door on the western facade. The courtyard is only separated from the northern church by a bench. The two churches are connected by a stairway of 5 steps. The walls of these buildings are still well-preserved to a height of 1

meter to 3 meters up to the cornice. Some of the pilasters which supported the transverse arches are preserved up to the capital.

The Church of Bishop Sergius

The mosaic pavement of the northern church, situated on the edge of the ruins, was done at the time of Bishop Sergius in 587. The building is an ordinary, one-apsed church with a sacristy on the north and the presbytery two steps higher than the nave (Pl. LXXIII). In the presbytery the base of the altar together with a bench for the clergy all around the apse is left. A rectangular panel in front of the altar is decorated with a medallion between two lambs and two trees loaded with fruit (Pl. LXXIV, 1). The dedicatory inscription within the medallion reads: "In the good times of our lord, the most holy and most blessed Bishop Sergius the whole work of this most holy church was mosaiced by the priest Procopius in the month of Gorpiaus on the 6th indiction of the year 482 of the Province Arabia" (this date corresponds to 587 A.D.).

Because of this inscription, it is possible to date the mosaic as well as the construction of the church. In the outline of the historical geography of the region, the inscription with the mention of Bishop Sergius of Madaba, confirms that the territory of the episcopal city reached Wadi el-Mujib, including Umm er-Rasas and Dhiban.¹⁷

Unfortunately, the excavation of the central nave of the church confirmed guarded expectations. In contrast to the discovery of the two miraculously intact lambs in the presbytery, all the figures of the church - the benefactors, animals,

16. According to Fr. Savignac, the beduins had exploited the tombs of the cemetery on the west side of the walled area (*RB* 1936; 243-245: "La vaste nécropole de la localité se développait dans la plaine à l'O. Depuis longtemps repérée par les bédouins, elle leur a livré périodiquement des trouvailles fructueuses. En l'une de nos visites, en 1912, nous avons pu constater la déprédation récente d'un nombre considérable de tom-

bes d'où l'on aurait extrait en particulier beaucoup de verres irisés").

17. At the time of Bishop Sergius in Madaba were built the following churches: the baptistry in the cathedral (574), the church of the Apostles (578), the crypt of Saint Elianus (595), together with the three nave basilica at Mount Nebo (597/8).

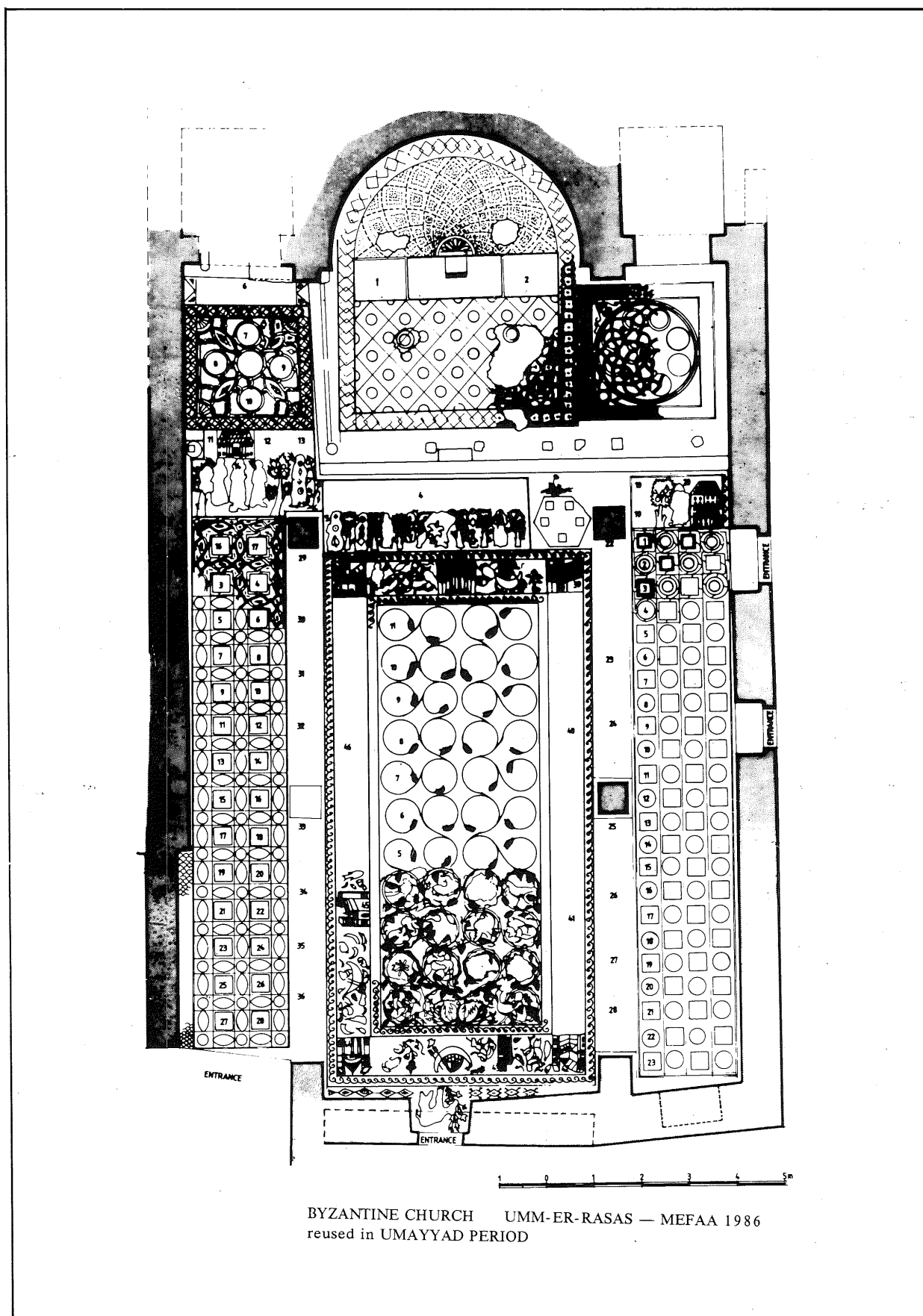


Fig. 1 : General Plan of the excavated area (drawing by Fr. Eugenio Alliata, Franciscan Archaeological Institute).

birds and fish - had been destroyed by the iconoclasts. The only remaining elements that are useful for interpreting the figurative motifs, are the Greek inscriptions and what is left of the figures which were badly patched up. The mosaicist preferred to place scenes of hunting, fishing and vintage in the acanthus scrolls of the frame. In the central carpet he placed portraits and life-scenes of the benefactors. He placed them between two classical personifications: toward the altar, the Abyss,¹⁸ the Sea; toward the main door, the Earth, depicted as a lady crowned with fruit and grain. In her hands she holds a cloth filled with fruit. In between, the mosaicist depicts the sons of John, and Ouadia with a censer in his right hand to the sides of a church.¹⁹ John (son) of Porphirius, Baricha and Zongon are depicted holding the ropes around a bull which is to be killed with an ax and a knife.²⁰ At the right are the sons of Sophia. A second John is depicted with a book in his hands. Next is a shepherd with his flock, followed by Soelos ploughing with a pair of oxen; then an anonymous benefactor with a boy on his shoulders who indicates a second church. John and Peter, on horse back, are accompanied by an archer and a foot soldier, followed by two oxen and two wild beasts. Three more benefactors are depicted among trees in front of the chancel screen. The name of one of them, Robab, remains on the left side. Two unusual scenes are shown in two scrolls: a phoenix bird with rays coming out of its head, and a man carrying a bed on his shoulder. (This typology was used in ancient Christian art to depict the paralytic healed by Jesus.)

There are three more inscriptions on the outside of the main motifs. Near the step of the presbytery, in three lines, there

is a quotation from Psalm 87,2 : "The Lord loves the gates of Zion more than the other tents of Jacob".²¹ In a *tabula ansata* in the first intercolumnar space on the north is beautifully written: "O Lord, have mercy on all who toiled on this mosaic. Their names are known to you. (It was done) in the times of Soelos, of Casiseos, of Abdallos, of Obedos, and of Elias your faithful (ones)".

A third inscription is found in a medallion near the door: "For the salvation of ... (son) of Isaac and of Martirius (son) of Sabinus, and of Theodorus his brother, and of Marinus". Later, near the first step of the stairway between the two churches, an unskilled workman copied an inscription from the upper church.

Geometric motifs decorate the north nave. The southern nave is, for the most part, paved in red stone from Bethlehem. To the right of the main door is the opening of a water cistern. Nearby a stand for amphoras is built reusing an ancient capital.

An un-expected surprise was the discovery of an intact figure under the pulpit. The figure depicts a Season and is located on the south-east corner of the frame (Pl. LXXIV, 2). This figure and the two lambs of the presbytery are the only examples left to indicate the artistic quality of the figures which were destroyed during the iconoclastic crisis.

The Church of Saint Stephen

The church of Saint Stephen lies one meter higher than the church of Bishop Sergius. The two churches are structurally parallel. Both have an apse and an elevated presbytery, two steps higher than the nave. Access to the church of Saint Stephen was also possible from two doors along the south wall (Pl. LXXV, 1).

18. The Abyss had a ram as a standard in his left hand, like the Sea in the Apostles' church at Madaba (Lux, *ZDPV*, 1968, Taf. 29). For a parallel to the Earth, for the first time portrayed in full figure in the mosaics of the region, except for the bare bust, see the imperial diptych in the Louvre museum (A. Grabar, *L'Iconoclasme Byzantin*, 1957, photo 73).

19. As Theodor in the church of Saints Cosmas and Damianos at Jerash (Kraeling, *Gerasa*, Pl. LXXIII).

20. The same motif is in the mosaic of the church of Saint George at Kh. el- Mukhayyat (Saller-Bagatti, *The Town of Nebo*, Pl. 23, 3).

21. Like in the church of the acropolis of Ma'in (LA, 1985, 344).

The richness of the inscriptions and the quality of the motifs of the mosaic pavement make this church one of the most important archaeological monuments in Jordan. It is paralleled only by the discovery of the Madaba map in 1897.

From a historical viewpoint the greatest surprise was the dedicatory inscription, located along the step of the presbytery (Pl. LXXV, 2):

“At the time of the most holy Bishop Sergius the mosaic of the holy and illustrious proto-deacon and proto martyr Stephen²² was completed by the care of John son of Isaac, most beloved of God, *lexou*²³ and deacon and leader of Mefaa, *econom*, and by the care of all the people of Kastron Mefaa who love Christ, in the month of October, the 2nd indiction, of the year of the province of Arabia 680 in memory and for the repose of Fidonus (son) of Aeias, lover of Christ”.

It was a triple historical surprise.

1. The inscription mentions the old name of Umm er-Rasas, Mefaa, Kastron Mefaa, two times.
2. The date of the mosaic floor, October 785²⁴, extends for almost a century the history of mosaic art in Jordan.
3. The inscription provides evidence of the existence of an organized Christian community at the end of the VIIIth century. That community included a bishop, a deacon, and the local clergy.

Any incredulity or critical skepticism²⁵ was cleared away by a second inscription written near the altar in the presbytery decorated mainly with geometric motifs.

“By the grace of Christ, the mosaic of this holy bema was decorated at the

time of our most pious father Bishop Job... in the month of March, the 9th indiction of the year 650 (756 A.D.). Remember O Lord, your servant Staurachios, the mosaicist of Hesban²⁶, the son of Zada and Eurmios his companion²⁷. Lord, remember your servant Elia (son) of Samuel *lexou*, of Constantine, of Germanus, of Abdela, together with Mary”.

There is some difficulty reading the inscription due to the abbreviations used by the mosaicist. However it contains some historical data of great interest. First of all, the date confirms the reading of the preceding inscription. Second, the name of a new bishop, Job, along with Sergius II, can be added to the list of names of the bishops of Madaba. Third, the name of the mosaicist, Staurachios of Hesban, makes him the first artist of the mosaicists of the region whose place of origin is known to us. In addition, the two dates confirm each other, leading to the conclusion that the mosaic floor of the church is a later restoration²⁸ done by a team of mosaicists who wished to remain anonymous, as indicated in an inscription from the southern nave: “O Lord, remember your servants the mosaicists, whose names you know.”

The portraits of the benefactors, who were giving offerings or wearing the emblems of their public and ecclesiastical standing, had been placed among trees loaded with fruit. Since these portraits and the scenes of hunting, agriculture and pastoral life of the central carpet were disfigured and made unintelligible, the major interest of this mosaic is focused on the double geographical frame and on the toponyms which accompany the city plans (Pl. LXXVI, 1).

22. A church dedicated to Saint Stephen was found in the village of Rihab (Piccirillo, *Chiese e Mosaici della Giordania Settentrionale*, Jerusalem 1981, 73).

23. The Greek word *lexou* can be seen as a personal name.

24. The year fits in with the ninth indiction and not with the second indiction given in the inscription.

25. From a careful examination, the inscription was damaged and restored just in the area of the dating.

26. The Greek text reads: *Ezbontinou*.

27. The Greek has *eterou autou*.

28. The same conclusion can be reached from the height of the first step and of the base of the pulpit.

The mosaicist used a motif already known from the mosaic of the church on the acropolis of Ma'in dating to 719/20²⁹. Between the intercolumnar spaces he has inserted a double series of the cities of the area. On the north, there are eight cities of Palestine divided into two groups of four: The Holy City of Jerusalem, Neapolis-Nablus, Sebastis-Sebastia, Cesarea (Pl. LXXVI, 2), Diospolis-Lidda, Eleutheropolis-Beit Gibrin, Askalon, Gaza (Pl. LXXVI, 3)³⁰. To the south, there are seven cities of Jordan: the first double space was given to Kastron Mefaa, followed by Philadelphia-Amman, Madaba (Pl. LXXVII, 1), Esbounta-Hesban, Belemounta-Ma'in, Areopolis-Rabba, Charachmoba-el-Kerak (Pl. LXXVII, 2)³¹. Another two toponyms of the Jordan area, Limbon and Diblataon, have been added in two panels, along with the portraits of the benefactors on the eastern top of the two side naves. Another toponym without illustration is the inscription which mentions the superior of the monastery on Mount Nebo (called Pisgah in

the Bible): "O Lord, remember your servant Kayoum, monk and priest of Phisga".

The inner geographical frame of the carpet is decorated as a river stream with fish, birds, and water flowers (Pl. LXXVIII, 1). Floating among them are boats and boys fishing or hunting. The continuous scene is interrupted by ten city plans whose toponyms refer to the Nile Delta³²: Alexandria, To Kasin, Thenesos, Tamiathis, Panau, Pilousin, Anticiaou, To Eraklion, Kynopolis, and Pseudostomon³³.

As far as historical identification is concerned, all the toponyms of Palestine and Jordan are well known, with the exception of Limbon. There is a possibility that Limbon could be identified with the actual village of Libb, 10 km south of Madaba on the Kings' Highway³⁴. Diblataon, which is known in the Bible as Diblataim, and as Beit-Diblataim on the Mesha' stele, line 30, has not yet been identified with a ruin in the area. It might be found north of Dhiban.

29. Piccirillo, *LA*, 1985, 345-349, Pianta I, A-B.

30. Askalon, Gaza and Eleutheropolis (?), are depicted in the mosaic of Ma'in (*LA*, 1985, Pianta I, B). All, but Sebastis, are to be seen in the Madaba Map (M. Avi-Yonah, *The Madaba Map*, Jerusalem 1954).

31. Esbounta, Belemounta, Areopolis and (Charach M)ouba, are depicted in the mosaic of Ma'in (*LA*, 1985, Pianta I, B).

32. Nilotic motifs were found at Jerash in the church of Saint John (C.H. Kraeling, *Gerasa*, Pls. LXVII-LXIX) and in the church of Saints Peter and Paul (*ibid*, Pls. LXXV); in the church of Zay (Piccirillo, *Studia Hierosolymitana*, III, 359-378); in the church of Saints Lot and Procopius at Kh. el-Moukhayyat (Saller-Bagatti, *The Town of Nebo*, Pls. 20-21); in the church of St. John at Khirbet es-Samra (*LA*, 1982, tav. 122); at Umm el-Manabi' on Jebel 'Aj-lun (Piccirillo, *Chiese e Mosaici*, I, 21 f.). For a recent discussion on the subject, see J. Balty, "Thèmes Nilotiques dans la mosaïque tardive du Proche-Orient", in *Alessandria e il Mondo Ellenistico-Romano*, Roma 1984, 827-834, tavv. CXXX-CXXXIII.

33. For Alexandria, Kasin, Thenesos, Pilousin, Kynopolis, see H. Donner, "Das Nildelta

auf der Mosaikkarte von Madaba", in *Fon-tes atque Pontes*, (Ägypten und Alten Testament, Band 5) Wiesbaden 1983, 75-89, Taf. 3; *Idem*, "Transjordan and Egypt in the mosaic map of Madaba", *ADAJ*, 1984, 249-257. Tamiathis, modern Dimyat, was a bishopric city in the Byzantine epoch (George of Cyprus, no. 758). The Pilgrim from Piacenza going from Memphis to Alexandria, passed through the city of Antinuo-Antino (Antonini *Itinerarium*, 43, 4). Eraklion is to be identified with Heracleopolis parva-Sethroites, west of Pelusion, mentioned in the Tabula Peutingeriana (K. Miller, *Itineraria Romana*, p. 858, 870). Strabo writes that at Mendes "they (the Egyptians) worship Pan and, among animals, a he-goat" (*Geography*, XVII, I, 19). The same author writes: "there are also others in among these (main mouths), pseudo-mouths (*pseudostomata*) as it were, which are rather insignificant" (*Geography*, XVII, I, 18).

34. Libb-Limbon, for dissimulation. Among the 14 cities promised by Hyrcanus to the King of the Nabataeans, Josephus lists *Libyas*, which can be the locality mentioned in the mosaic (*Antiquities*, XIV, I, 4, Ed. Dindorfius). At Libona, was stationed the "Ala secunda Constantiniana" (*Notitia Dignitatum*, I, 81, n. 27, ed. Seek).

Because of the repair the Egyptian toponyms are difficult to read. The name is Antisiaou or possibly Antiniaou. Most of them are known from historical sources, with some variations in the spelling. Some of them, such as Kasin, Thenesos, Pilousin, and Kynopolis are found in the Madaba Map. The iconography could either be conventional, more or less developed schematic depictions, or simplified realistic representations³⁵. Limited knowledge about the monuments found in the depicted cities limits the possible answers. But at least in one case, namely the toponym of Kastron Mefaa, it seems fairly certain that the mosaicist was inspired by reality and gave actual details.

Another example might be the toponym of the Holy City, where it is possible to identify the aedicule of the Holy Sepulchre according to iconography attributed to it in the Byzantine epoch (Pl. LXXVIII, 2). A third example is the toponym of Neapolis. Here the mosaicist preferred to use the facade of a temple to represent the city. This temple might possibly be the temple on the top of Mount Gerizim, which is found on the city-coins struck at Neapolis in the Roman period³⁶. The monotonous repetition of a city-plan with its walls, its towers, its gates, and one or two internal edifices, certainly supports the opinion that the toponyms of the cities of Jordan are very conventional. Only in the case of Belemounta-Ma'in does the toponym make reference to a large un-walled village (*Onom.* 44, 21).

From an artistic point of view, the illustrations of the Palestinian cities are notable for their freedom of composition and for the variety of color-tones which defer to the pre-existent cartoons in the workshop of the mosaicist.

The Onomastics

The historical importance of the three dedicatory inscriptions and the wealth of written texts which accompany the geometric and figurative motifs of the mosaics in the two churches have already been noted. But it is important to emphasize another conclusion which resulted from reading the inscriptions.

A majority of the benefactors have names whose origins are Arabic or of generic Semitic origin. One starts from the common names like Abdallos, Obedos, Naoum, Elias and continues to the more rare names like Abesobeos, Uaias, Alafa, Gomela, etc. In one case there is a very specific name: Petron Arabbous, i.e. Peter the Arab. Furthermore, it is recorded that Abesobeos is the father of Ouaias, that John is the son of John, that Theodore is the son of Goumela and so on. Meanwhile at Mount Nebo there are inscriptions asking that all the members of the family be remembered, the father, the mother, the sons, and the daughters. The inscriptions at Umm er-Rasas do not contain any women's names. One possible observation about this phenomenon might explain it. It is found in the Arab military nature of the city in the Roman, Byzantine, Arabic and possibly even in the Nabataean epochs³⁷. In the *Onomasticon* (128, 21), written in the first half of the IVth century, Eusebius of Caesarea writes that there was a unit of the Roman army stationed on the edge of the desert at Mefaat³⁸. The *Notitia Dignitatum*, an imperial document of the IVth century, records that local soldiers who had been promoted to the cavalry, that is auxiliary troops of the Roman army, were stationed in the camp of Mefaa³⁹. The military nature of the locality is underlined by the name Kastron Mefaa, that is Camp of

35. See N. Duval, "L'iconografia architettonica nei mosaici di Giordania", in M. Piccirillo, *I Mosaici di Giordania*, Roma 1986, 151-156; and F.M. Biebel, 'The Walled Cities of the Gerasa Mosaics', in Kraeling, *Gerasa*, 341-351.

36. G.F. Hill, *Greek Coins of Palestine*, (BMC), pl. V, 15-16.

37. According to the Nabataean inscription

found at Um er-Rasas (*CIS*, 195), a strategos stationed at the site.

38. "Mefaath... sed et alia est trans Iordanem in qua praesidium Romanorum militum sedet propter vicinam solitudinem".

39. 'Sub dispositione viri spectabilis ducis Arabiae: Mefa, Equites promoti indigenae' (*Notitia Dignitatum*, I, 81, n.19, ed. Seek).

Mefaa, which is recorded twice in the dedicatory inscription and once among the city-plans.

A Locality Mentioned in the Bible

The toponym Mefaa clearly refers to *Mayfa'ah* recorded by the Arabic historian el-Bakry as a village of the Belqa' of Syria.⁴⁰ In the Old Testament, *Mefa'at* is listed among the localities of the high plateau of Moab, along with Madaba, Nebo, Ma'in, Dhiban, Bet Gamul etc. (Joshua 13,18; 21,37; Jeremiah 48,21). Several names of the localities have been preserved by the Beduins of the area. The inscription in the church of Saint Stephen identifies the ruins of Umm er-Rasas with the name *Mefa'at*. Until now, however, no trace of human occupation prior to the Nabataean epoch has been found among the ruins. Future research on the site will ascertain if the ruins of the Byzantine Arabic Umm er-Rasas cover the Iron Age village of the VIIIth-VIth Centuries B.C.

The Tower of Umm er-Rasas

The double plan of Kastron Mefaa in the series of Jordanian cities, might be a clue to the purpose of the tower north of the ruins. Most of the explorers considered it to be a military watchtower, either guarding against the danger of Beduin raids from the desert, or protecting the water cisterns hewn out of the rock.⁴¹ Others have thought it may have served as a platform for Stylite monks.

The mosaicist added a second plan related to Mefaa outside of the camp proper. He depicted a church. On the inside of the church three burning lamps hang from the arches. The church is connected to a closed courtyard, enclosed by a series of rooms on

the sides. In the courtyard, on a white background, stands a solitary column. On the top of the column there is a kind of parapet with the line of black tesserae at its centre. The column may represent the tower of Mefaa and explains its purpose in a religious sense. Perhaps it was a Stylite tower at the pilgrimage sanctuary of Kastron Mefaa.

This hypothesis needs to be clarified by further excavations at the foot of the tower⁴². What is certain is that by including the tower the mosaicist wished to depict the outstanding monument of Kastron Mefaa.

Conclusions

Even though it is only the first campaign, the excavation at Umm er-Rasas has yielded noteworthy historical results:

1. The identification of the ruins with Kastron Mefaa.
2. The clarification that the bishopric of Madaba extended as far as Wadi el-Mujib; and the discovery of the names of two bishops of that city.
3. The late dating of the mosaics in the church of Saint Stephen opens what was a closed chapter in the history of Jordan relative to civil, religious and artistic interests. The dating shows that at the end of the VIIIth Century an urban community still existed on the site. That community was religiously and administratively organized, and exhibited an unexpected artistic vitality.
4. The excavation of Umm er-Rasas re-opens the historical problem of iconoclasm. If the figures of the churches of Umm er-Rasas were destroyed after 785, the possibility exists for an iconoclastic movement in Jordan that was both contemporaneous and parallel to

40. 'Abdallah ben 'Abdel 'Aziz al-Bakri, *Mu'jam ma ista'jam*, ed. Wüstenfeld, Göttingen 1877, II, 569, *Mayfa'ah*.

41. Saller-Bagatti, *The Town of Nebo*, 250 (opinion of Palmer and Wilson, *PEQSt*, 1899, 316). For Stylites see, I. Pena, P. Castellana, R. Fernandez, *Les Stylites Syriens*, 1975 and *Les Reclus Syriens*, 1980.

42. The church seen by the explorers near the tower, is only the second large tower excavated and partly restored by the Department of Antiquities. A chapel can be seen, possibly, south-east of the tower: "Une église fort modique, actuellement très ruinée, se trouvait à quelques pas à l'Est de l'élégant campanile qui se dresse dans le voisinage" (Savignac, *RB*, 1936, 244).

the iconoclastic movement of the Byzantine Empire. That movement would seem to exhibit its own local character and radical nature which did not even spare the figures of animals and fish.

These are only the first important discoveries. Umm er-Rasas-Mefaa must still

be excavated. What this first campaign illustrates is that the monotonous stretch of fallen stones covers a chapter of Jordanian history yet to be explored.

Michele Piccirillo and Taysir Attiyat

PRELIMINARY RESULTS OF THE FIRST SEASON OF THE JOINT JORDANO-FRENCH PROJECT AT ABU HAMID

by

G. Dollfus, Z. Kafafi,

with contributions by

E. Coqueugniot, J. Desse and R. Neef

Abu Hamid is situated in the Jordan Valley, 16 km NW of Deir 'Alla on the terrace constituted by the marls of the Pleistocene Lake Lisan at a mean altitude of 250m below sea-level (Fig. 1). In that region annual precipitation nowadays is about 200mm; dry-farming is possible but irrigated farming is more reliable.

The site was discovered in 1975 and dated to the late Neolithic/early Chalcolithic period by M. Ibrahim, K. Yassin, and J. Sauer¹ during the first year of their survey of the Jordan Valley, it was revisited by Z. Kafafi in 1982² but had not been excavated. Unfortunately the site was partially bulldozed since then to facilitate agro-industrial development.

A first season of excavations took place in January-March 1986 under the auspices of Yarmuk University (Jordan), the French Center of Scientific Research and the French Ministry of Foreign Affairs. Great support was given by the Department of Antiquities and a grant received from the National Geographic Society (Washington)³.

The goals of our first season were:

- 1) To establish the extent and nature of this late 5th or most probably first half of the 4th millennium settlement.
- 2) To precisely define, both chronologically and ecologically, Abu Hamid's position and role relative to other contemporary sites of the region such as Shunah North, Neve Ur (on the West Bank), Pella, Megiddo (w.b.), Beisan (w.b.), Farah (w.b.), Ghrubba, Ghas-sul, and outside the region to the sites of the Gaulan and Hauran to the north, to the ones of the coastal plain and southwards to the sites of the Negev such as Gilgath, Abou Maţar, Safadi, and Shiqmim among others.
- 3) To excavate an area large enough to understand the nature of the structures and their spatial relationship in order to answer to the following questions:
 - Was Tell Abu Hamid a permanent settlement? Were the populations settled or partially settled, or were they nomadic?
 - What were the subsistence practices and

1. Ibrahim *et al.*, 1976.

2. Kafafi, 1982.

3. The participants to the 1st season of excavations were C. Andrews (Yarmuk Univ.), M. Biewers (Univ. Lyon II), S. Cluzan (Univ. Paris I), E. Coqueugniot (CNRS, URA 17), J. Desse (CNRS, CRA), G. Dollfus (CNRS, ER 317), M.G. Froidevaux (CNRS L.P. 5500), M. Jamra (Yarmuk Univ.), Z. Kafafi (Yarmuk Univ.), N. Kayser (Univ. Paris VI), F. Le Mort (CNRS, ER 376), R. Neef (Groningen Univ.), D. Rahimi (Univ. of Pennsylvania), I. Suleiman (Dept. of Antiquities of Jordan), A. 'Omari (Yarmuk Univ.), M. Qedi, N. Qedi (Yarmuk Univ.), K. Wright (Yale Univ.), I. Zu'bi (Yarmuk Univ.)

We owe a great deal of gratitude to René Sau-pin (Ingénieur des travaux IGN), who spent many of his week-ends mapping the site. The

flint drawings are the work of A. Deraprahamian (CNRS, URA 17).

We would like to express our special thanks to Dr A. Hadidi, general director of the department of antiquities, Dr A. Badran, president of Yarmuk University, Dr M. Ibrahim, director of the Institute of Archaeology and Anthropology, Ph. Guillemin, sous-directeur des sciences sociales et humaines DGRCS, P. Leclercq, ambassadeur de France, H. Le Breton, attaché culturel de l'ambassade de France à Amman, G. Tate, directeur de l'IFAPO, F. Villeneuve, secrétaire scientifique de l'IFAPO à Amman, for their constant help in the different steps of the project.

Our gratitude goes also to the Museum of the University of Pennsylvania and to the Fulbright fellowship foundation who gave the possibility to D. Rahimi and K. Wright to join the expedition.

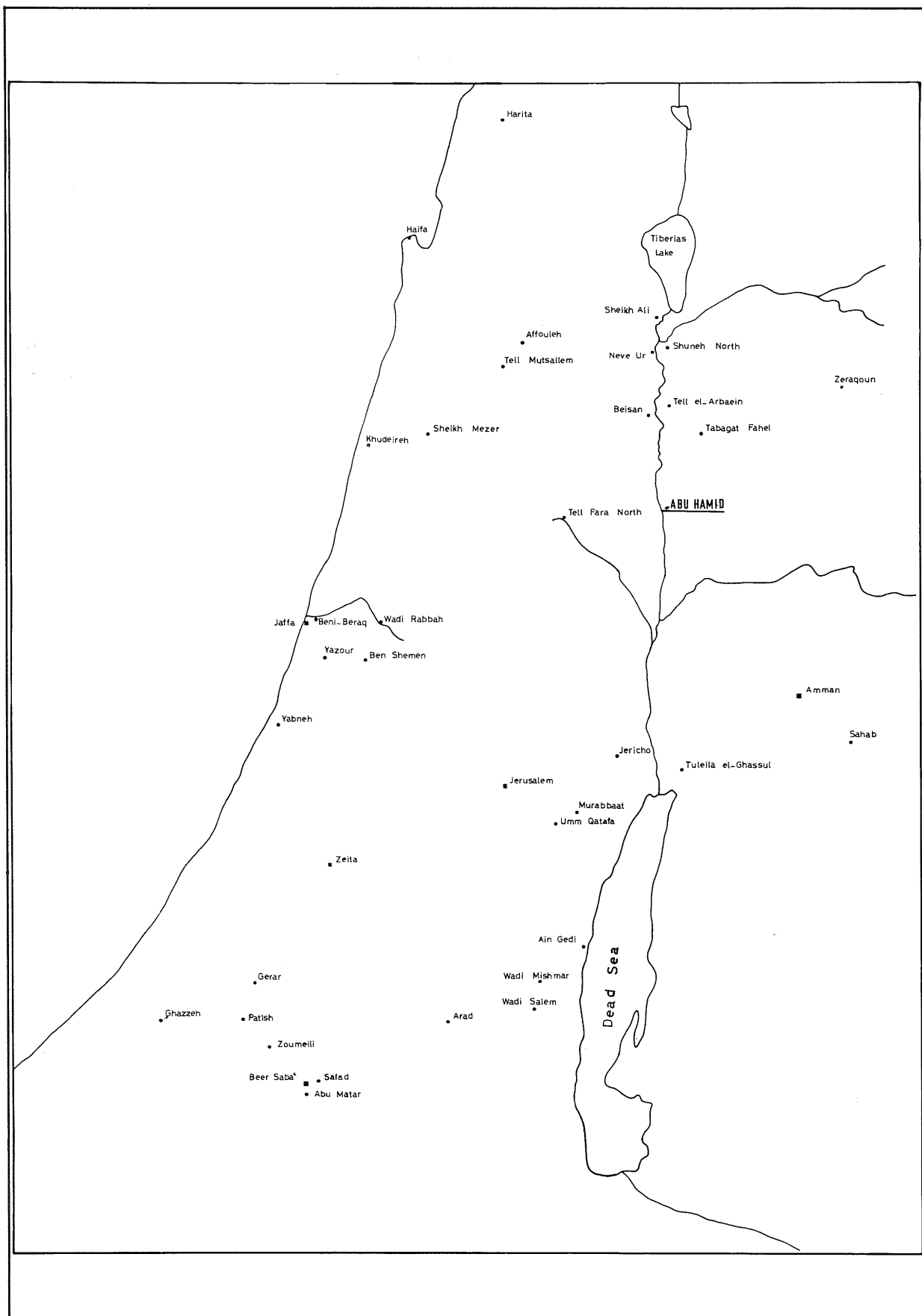


Fig. 1 Abu Hamid 1986. Map of situation.

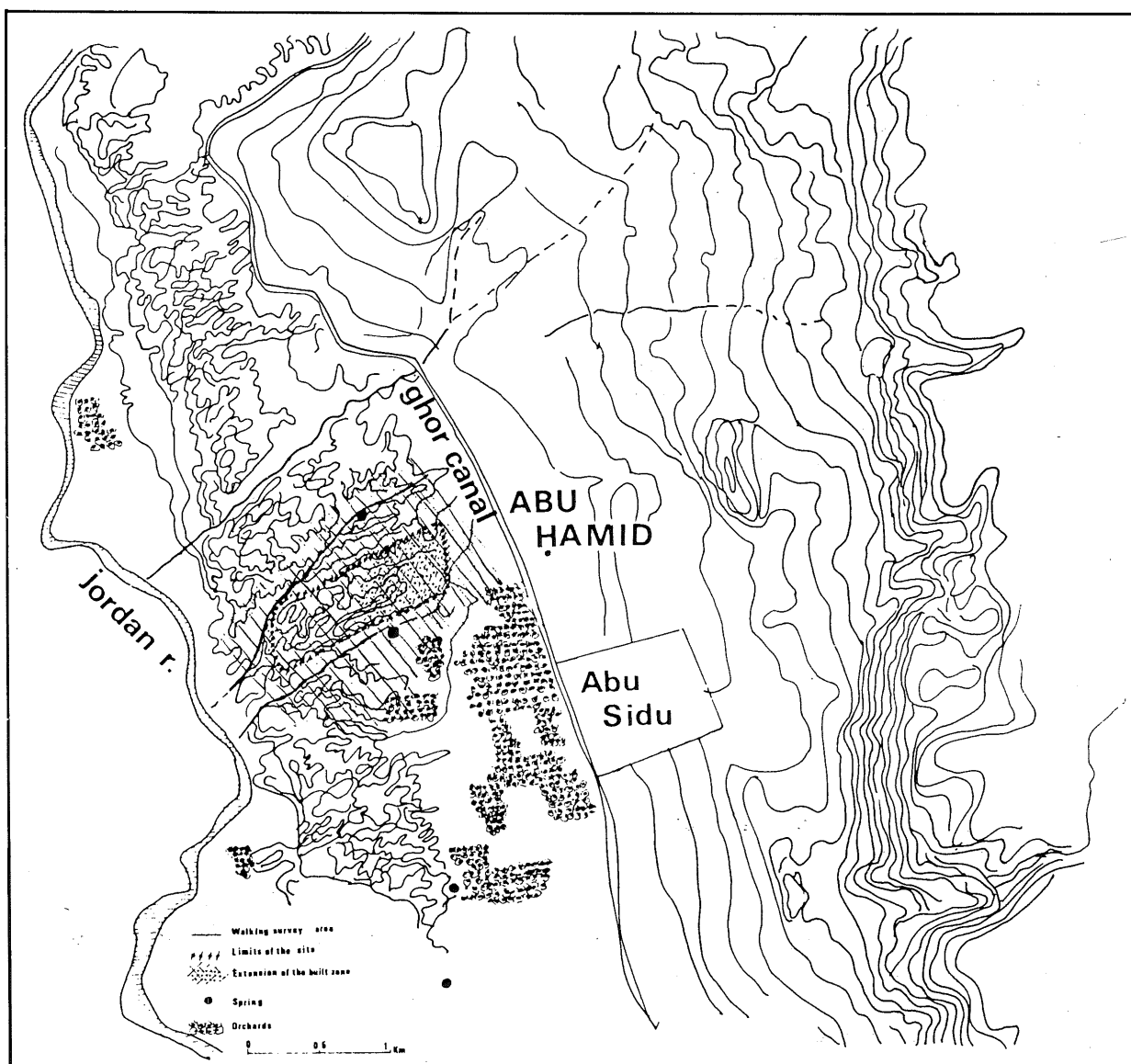


Fig. 2 Abu Hamid 1986. Map of the surveyed area and of the extension of the site.

diet of this group?

- Finally did the settlement which appeared quite large from the survey come to be a point of exchange and interaction between the Jordan river, the highlands and the Eastern Plateau? A possibility suggested by its situation.

History of the excavations and first results

- A. Our first task was to make a general walking survey over a 20 hectare area, to determine with a reasonable degree of confidence the limits of the site. During that operation, only the diagnostic artifacts were picked up.

This survey showed that:

- Pottery sherds, lithics, flints, ground stone tools cover an area of 5.6 hectares (1,400 m E-W; 0,4 km N.S.) (cf. Fig.2).
- The site is limited on its southern and northern sides by two deep valleys in which are located two perennial springs. With the Jordan river also nearby, access to water was definitely not a problem for the inhabitants.
- The site is located near two fords of the Jordan river. Fords and wadis coming on the eastern side from the 'Ajlun mountains, on the western side from the Samaria hills provided the population with natural routes to move back and forth in the area (Pl. LXXIX: 1-3).

- The site has been dissected by many erosional gulleys. A good geomorphological survey is badly needed. Such a survey is scheduled for the fall of 1986.

B. Our second step was to put in some small soundings to see if all the site had been inhabited (Fig. 3). These soundings showed very clearly that 2.5 hectares (including the part which has been bulldozed) at the most was covered with permanent or semi-permanent buildings. We can then conclude that either the western part of the site was only the location of very temporary dwellings (tents, bush or reed shelters) which disappeared completely with deflation and erosion,⁴ or alternatively, that this part of the site was not built up but was only an area of outdoor activities or of enclosures for the herds.

C. Then, according to the grid and preliminary to the excavations, we proceeded to systematically map and pick-up all the artifacts over an area of 2000 m² which seemed to be the best preserved.

Our purposes were:

- 1) To document as much as possible the duration of occupation and particularly the final phases of occupation of the site despite the erosion and deflation that has affected the structures of the last periods of the settlement.
 - 2) To have the data in order to compare, in a coming stage of our research, the nature of the materials found on the surface with those from the excavation; this will enable us to figure out the degree to which surface material found on surveys can be taken as an indication of ancient community size and organization for this kind of site which is common in the Jordan Valley.
- D. We opened about 300 m² (Fig. 3) in three main operations: the first two in the area where we did the systematic

pick-up (Pl. LXXX:1); the third on another spur (Pl. LXXXII:1), a little lower in altitude in a zone where lines of stones (Pl. LXXXII:2) and delineation of pits were still visible on the ground. Also several sections exposed by erosion were cleaned.

The cultural deposit is thin, varying from 0.30/0.50m in some areas to 1.00/1.20m in others. The sterile soil was reached in pits, in sections and in one sounding⁵. All these exposures suggest that at least in the area which has not been bulldozed, the period of occupation of the settlement was of short duration.

In two of the operations we distinguished two successive main levels of occupation; we might be able in the future to subdivide these on the basis of indications of refectory of walls and floors which were noticed while we were excavating.

The first level, immediately over the sterile soil is consistently distinguished by mud brick walls defining rectangular rooms. So far, we have not yet excavated a complete room, and we do not know the plans of the houses. The walls are definitely built of plano-convex mud-bricks⁶ with neither foundation trenches nor stone-foundations. They are sometimes delineated on one of their sides by a row of small pebbles; one wall shows a niche or an opening marked by four big stones. Associated with these walls are small stone surfaces and packed clay living floors on which pots, flint artefacts, spindle whorls and other debris could be precisely mapped (Fig. 5; Pl. LXXXII:1). During the following occupation, these structures were cut by cylindrical pits. At least one of these pits had its bottom and sides well coated by a smooth yellow-clay plaster and could be considered as a storage bin (Pl. LXXXII: 2).

4. Many big stones that could have been used in temporary structures were found down below on the slopes of the gulleys of erosion.

5. Pits, loc. 115-113 square A 4; section, operation 3 squares AN-AP 09; A6, test pit.

6. The average size of the bricks is 21x15x10/12cm.

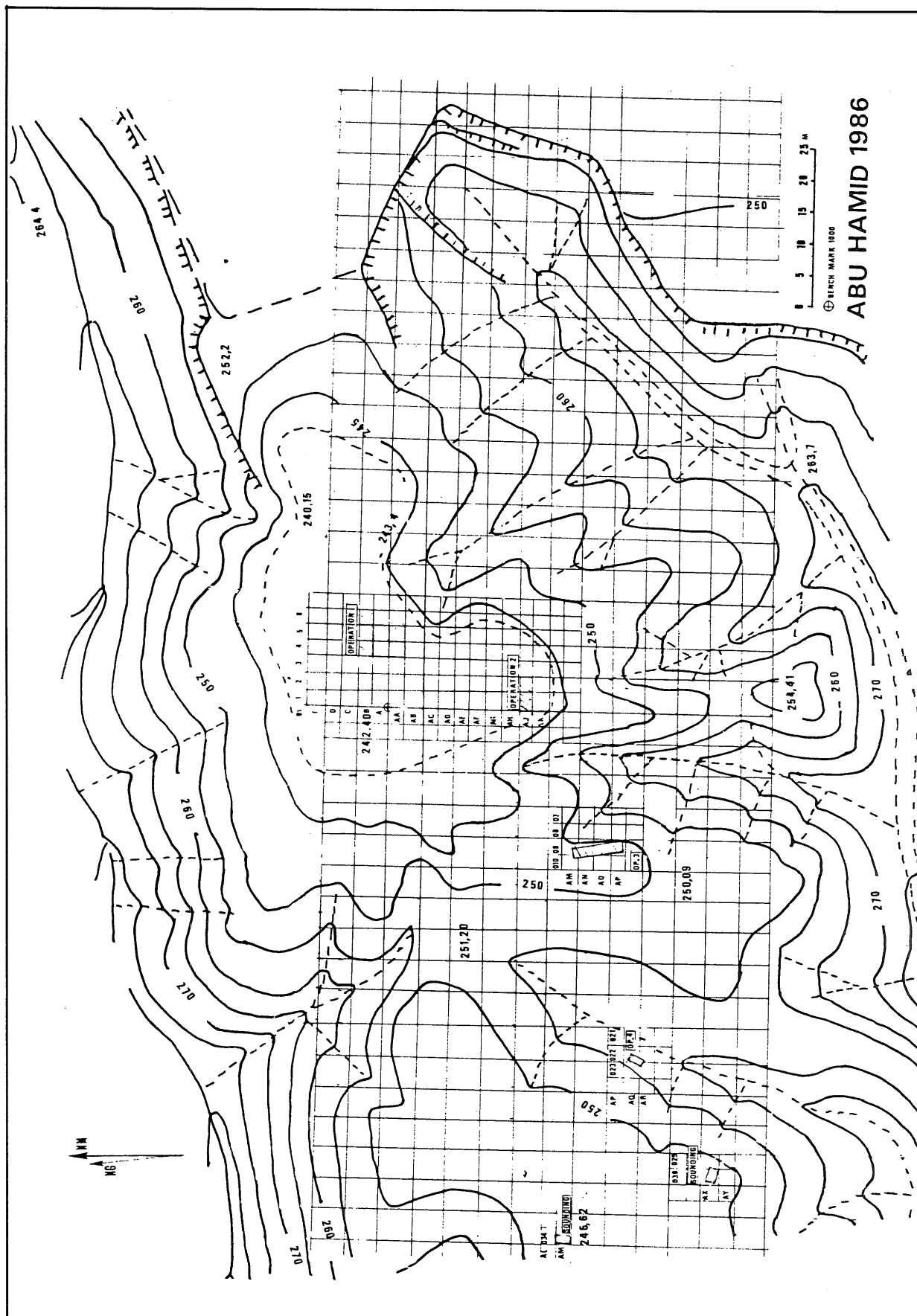


Fig. 3 Abu Hamid 1986. Map of the site with the location of the main operations

In its bottom was uncovered a large stone slab.

Unfortunately, the level from which most of the pits seem to originate is badly eroded. It consists essentially of patchy remains of burnt whitish clayey floors, of mud-brick walls of which only one or two courses of bricks only are usually preserved, of circular clay-lined basins, of small stone-filled fire pits and hearths which sometimes are associated with cooking vessels and jars (Pl. LXXX:3) and of larger pits filled with rubbish or with pebbles, most often cracked by heat (Pl. LXXX:2). Associated with this level are irregular sloping open-areas, sometimes limited by little stones, filled or covered with grey-black organic material and remains of decayed structures of combustion (*cf.* Fig. 4, square B6).

On what appears to be the western margin of the settlement, close to remains of mud-brick stone-lined rectangular dwellings (Pl. LXXXII:2), we noticed a series of large depressions. In order to try to find a stratigraphic link between these kinds of structures and the mud-brick structures we decided to clean a long section beside one of the erosion gulleys which cuts both of them (Fig. 6b; Pl. LXXXII:1). In one of the depressions, we cleared a very regular 1,50m circle of 2 rows of 4 layers of bun-shaped finger impressed bricks (Pl. LXXXIII:2,3) that were protecting the rim of a huge pithos (Pl. LXXXII:3). This jar (diam. 1m; ht. 1,50m) was placed in a deep pit dug into the marl and the underlying conglomerate sand (Fig. 6b). The morphology of the jar (with the exception of the rather unusual inner ledge-handles), the ware, and the relief bands with impres-

sed finger impressions on the outside, are comparable to storage vessels excavated at Ghassul⁷, in the Beisan region⁸, at Sahab⁹, and on chalcolithic sites on the Gaulan¹⁰. Our suggestion is that, in the depressions noticed nearby, there are or were more of these jars and that this area was a kind of storage space for the settlement. This hypothesis has to be proved by future excavations.

The Archaeological Material

Pottery

The mending of the vessels and the preliminary study of the pottery are in process. The data are being computerized¹¹ in order to quantitatively assess the components of the assemblage. Therefore the picture presented here is very impressionistic.

Most of the sherds are covered with lime concretions and the surfaces are very often quite eroded. The colour of the surfaces as they appear when cleaned are generally buff, pink, pale reddish, and sometimes light grey; altogether they look different from the dark red, highly vitrified wares from Ghassul, even if the techniques of manufacture are similar. In the colour of their ware they are, at least in appearance, closer to the ones found in the north of the Jordan Valley: Tabqat Fahl (chalcolithic levels)¹², Shunah north¹³, and Neve Ur (w.b.). Coarse, medium and fine wares were found. Half of the sherds are very gritty; the size of the grit (chert, gypsum, calcite, basalt) which seems to be natural to the clay rather than added on purpose generally vary from 0.5mm to 2mm. In some vessels there are 4-5mm particles of basalt. Small bowls are made of fine ware, the temper of which is usually sand. Use of

7. Mallon *et al.* 1934.

8. Pers. comm. J. Perrot.

9. M. Ibrahim; paper delivered to the 3rd international conference on archaeology and history of Jordan.

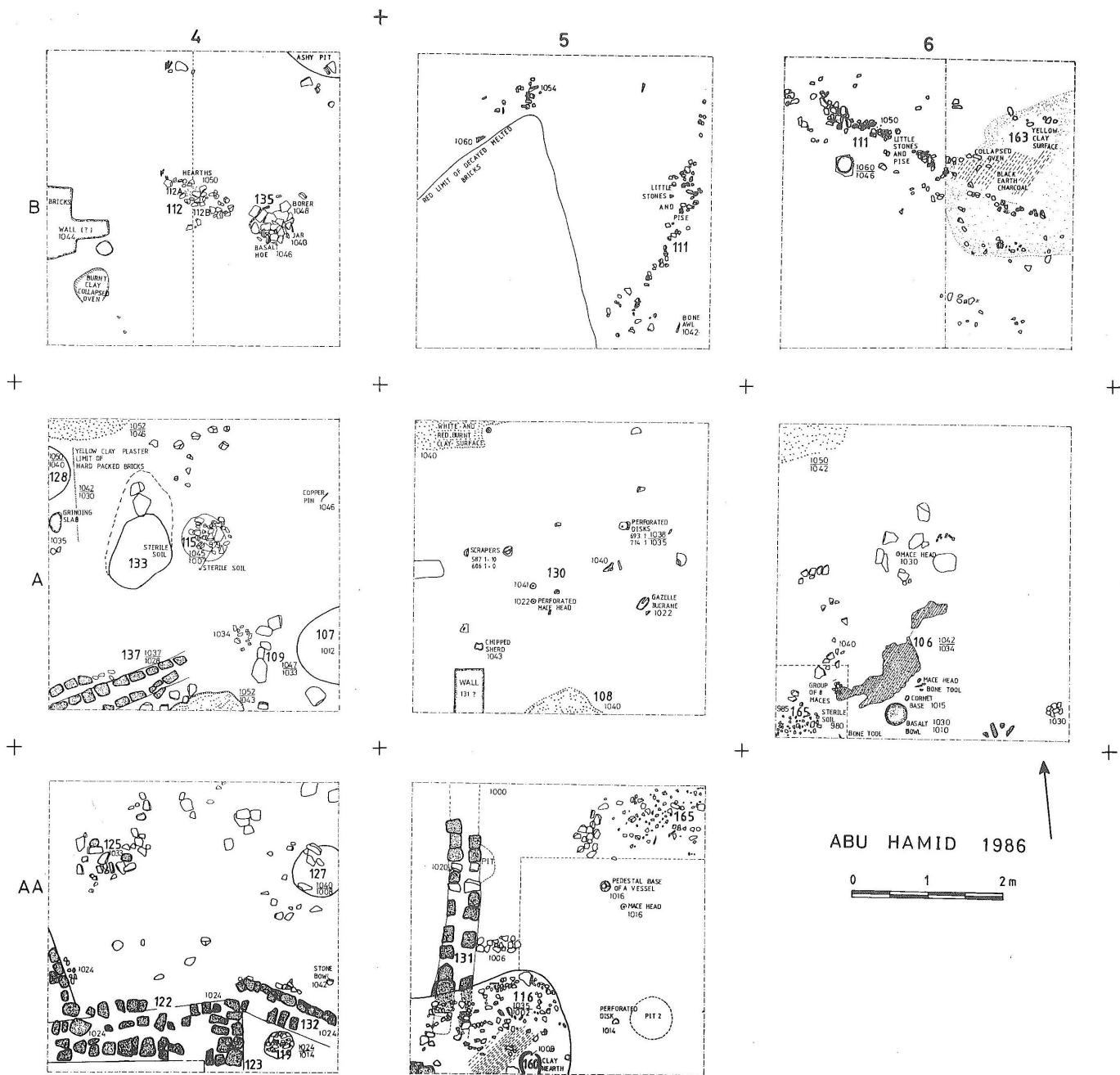
10. Epstein, 1982.

11. The computer program chosen for this pur-

pose is Microbase. S. Cluzan is in charge of computerizing the data.

12. Pers. comm. J. Tenneson.

13. Some sherds from Shunah North were on exhibit during the Tübingen workshop on *Prehistory in Jordan*; we were able to compare them to those from Abu Hamid.



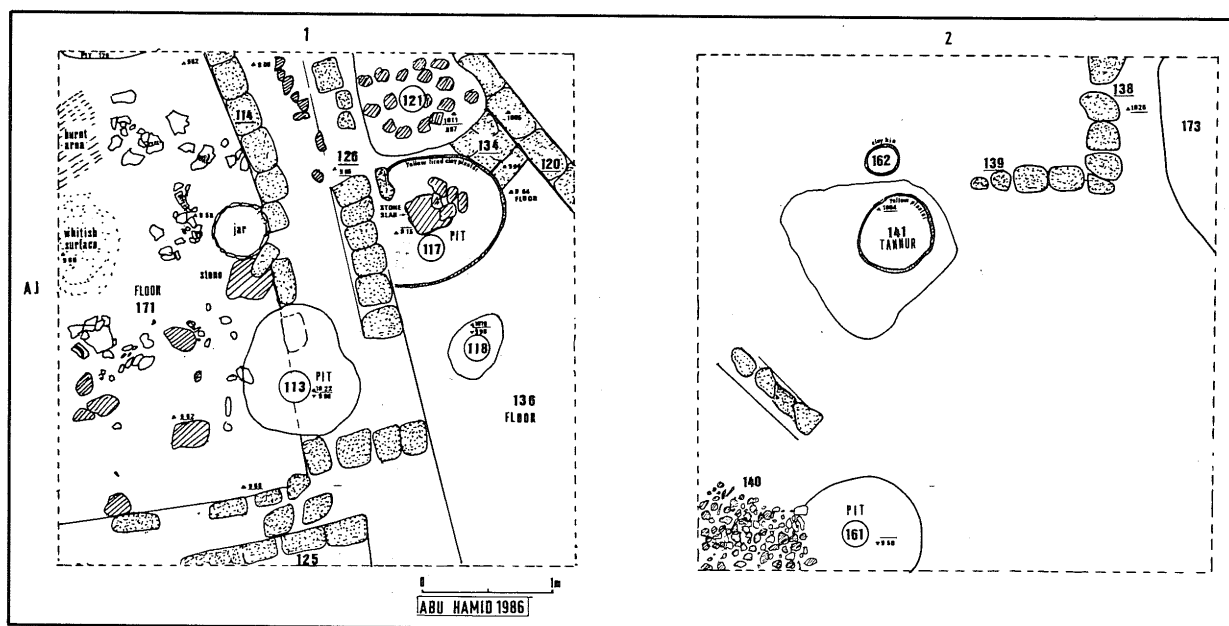


Fig. 5 Abu Hamid 1986. Plan of the structures, operation 1, squares AJ 1-2

well levigated clay is not rare. With the exception of the small conical bowls on the inside of which traces of slow-wheel are visible, the pottery is hand-made, sometimes coiled. During their manufacture, the pots were standing on mats or basketry the imprints of which can still be seen on the bases (Fig. 10:20,21; Pl. LXXXV:12-14). The outside surface and often the inside surface of the open bowls was wet-smoothed and/or self-slipped. In general the pottery is hard, and the firing seems well controlled, even for the very large jars. However many vessels are porous.

The decoration of the vessels includes:

a) impressed designs (Fig. 10:1-17; Pl. LXXXV:1-11) made either with the tip of a reed, or of a stick (Pl. LXXXV:1-3,5), or with finger nails (Pl. LXXXV:4,6,7); b) applied clay bands with lunates in relief overlapping each other (Pl. LXXXIV:1,3,6), or with finger impressions; c) associations of these applied coils or finger nail impressions with painted bands or motives of red iron oxide either horizontal, vertical or oblique (Pl. LXXXIV:1,2,6); d) simple geometric painted patterns (Pl. LXXXIV:4) or rare naturalistic designs usually of

plants (Pl. LXXXIV:5); and e) a few, unfortunately very small sherds from the deepest level that are covered with dark red paint and burnished¹⁴.

The main shapes in the category of the open forms are conical bowls (Fig. 7:1-14), the smaller ones with diameters of 8-10cm (with or without a red painted band near the rim), the larger bowls with diameters 13-18cm, and cups on a high pedestal base, often fenestrated (Fig. 7:18-20). Sherds of huge basins with thick walls and applied decoration are attested. Very flat discs with finger-impressed rims could be either large plates or lids (Fig. 7:17). So far only one ogival base of a cup (Fig. 10:18) and what might be a fragment of a cornet (Fig. 10:19) have been found. Among the closed forms, the holemouth jars seem to be by far the most numerous (Fig. 8:1-5); some jars, either globular or ovoid have low-necks (Fig. 8:6,7). One of these deserves special mention. It is a huge pithos or storage jar found intact (Pl. LXXXIII:1) in a pit (*cf. supra*). The general shape is ovoid. The mouth is slightly smaller than the widest diameter (0.85m and 1m respectively), the rim is everted.

14. Most of these pottery fragments were uncovered on the pebble surface loc. 165 in squares AA5 and B6. They look similar to

some of the brown-red burnished sherds found at Munhata (W. Rabah phase; pers. comm. C. Pellerin and J. Perrot).

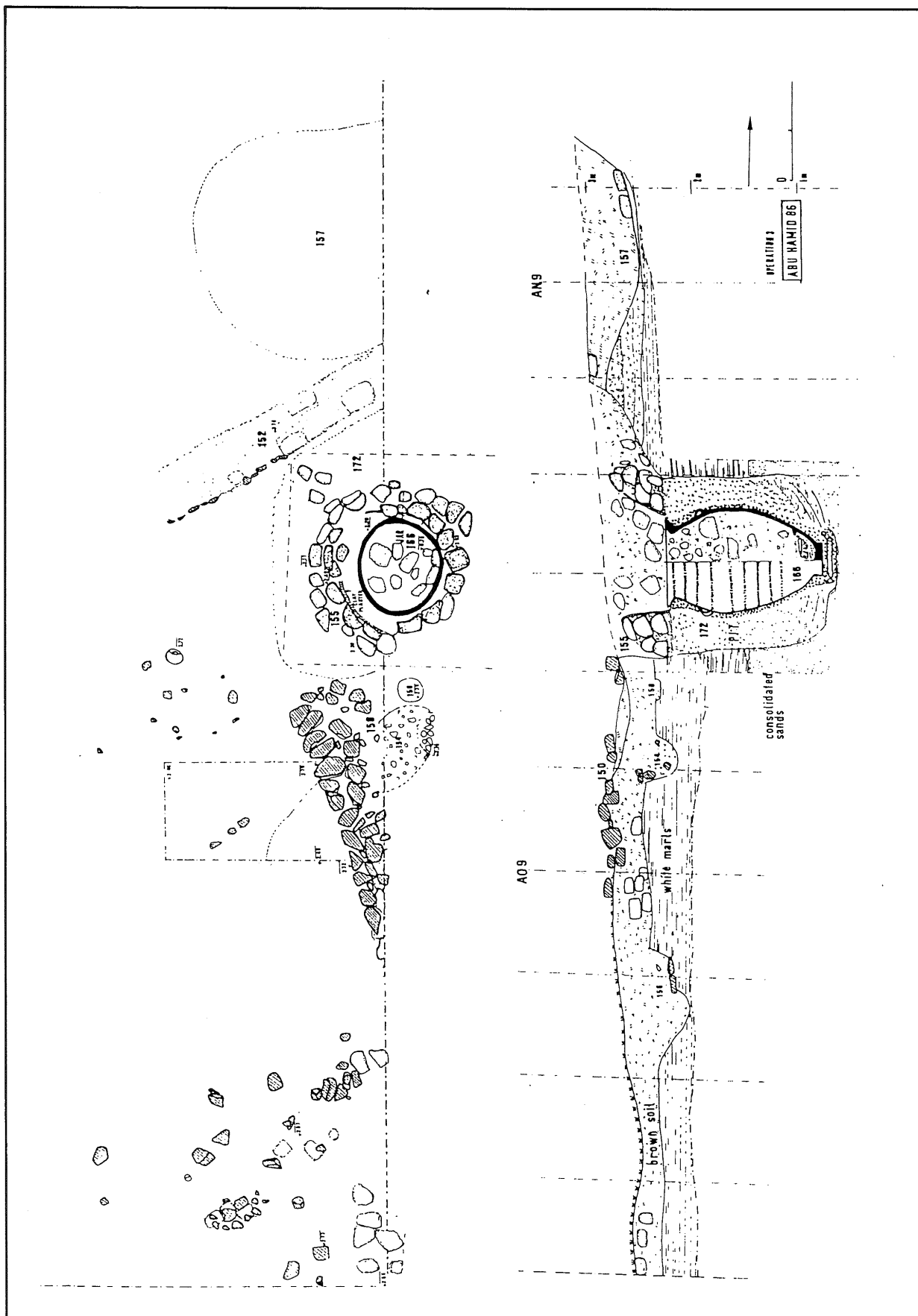


Fig. 6 Abu Hamid 1986. Plan and section of the structures, operation 3 — AN-AO 9

The base is flat and narrow. On the shoulders are two opposed loop handles. In the inside, at 35cm above the bottom, are two ledge handles (Pl. LXXXIII:4). They do not seem to have functioned as handles and it has been suggested that they were used as refill level indicators. The outside wall of the jar is ornamented with nine rows of applied impressed bands. Among the jars, there is a group of very small jars made of fine ware, some of them painted with plant motives. In general, on the jars, the handles (Fig. 9:1-7) are usually vertical lug

handles, but loop handles and even ledge handles occur. Some handles have applied decoration.

All the ceramic assemblage seems very close to the ones of the Chalcolithic sites of the Gaulan¹⁵; it presents many similarities with the pottery found in the basal levels of Shunah North and on a number of sites of the Jordan Valley surveyed by Kafafi¹⁶, and many parallels with the pottery from Ghassul¹⁷. Ties definitely exist with sites of the coastal plain¹⁸ and of the Negeb but they seem looser.

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15 Epstein 1982.

16 Kafafi 1982

17 Cf. Mallon *et al.* 1934; North 1960.

18 Perrot and Ladiray 1980.

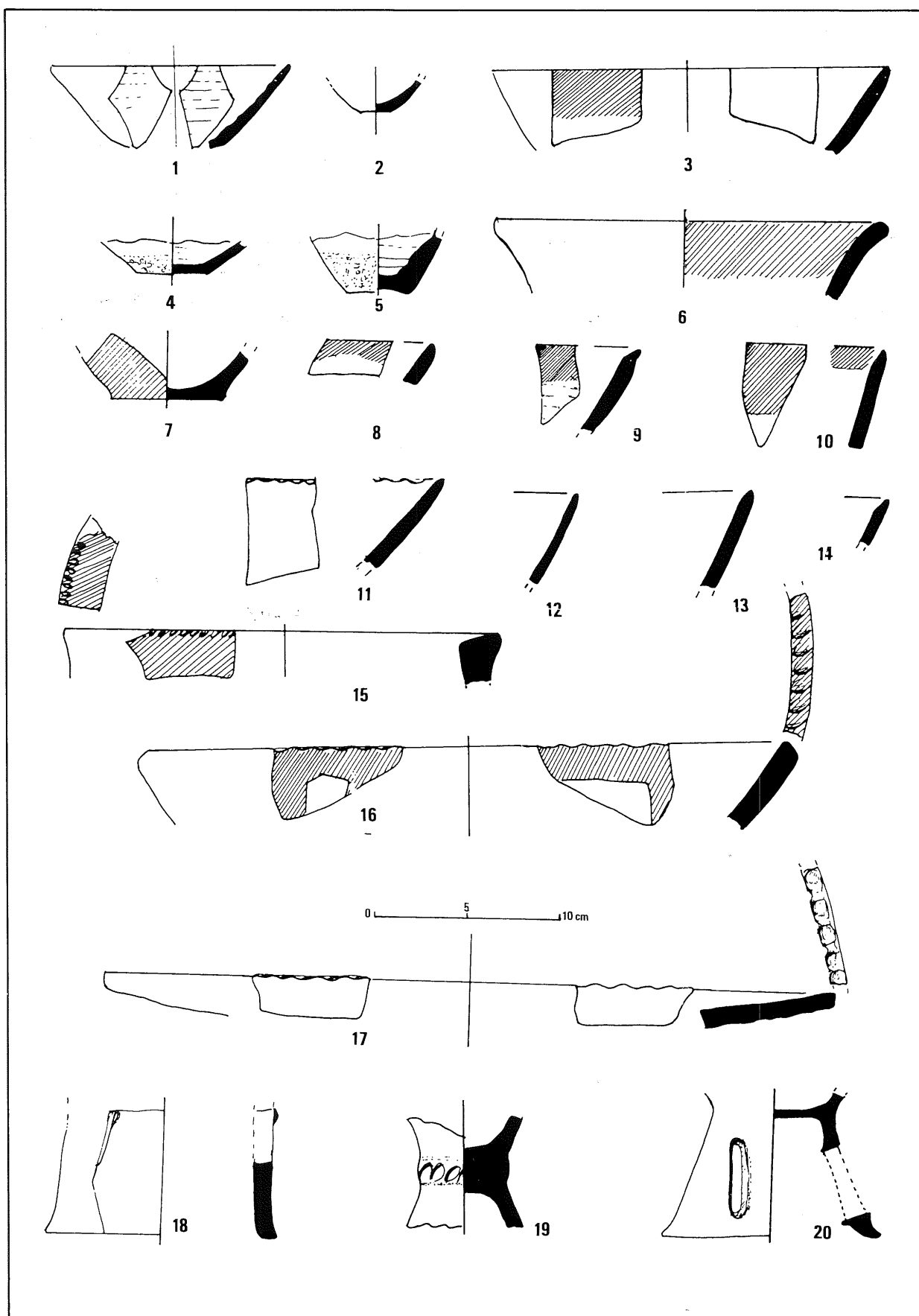


Fig. 7 Abu Hamid 1986. Pottery; open vessels: bowls, basins, lid, pedestal bases of vessels

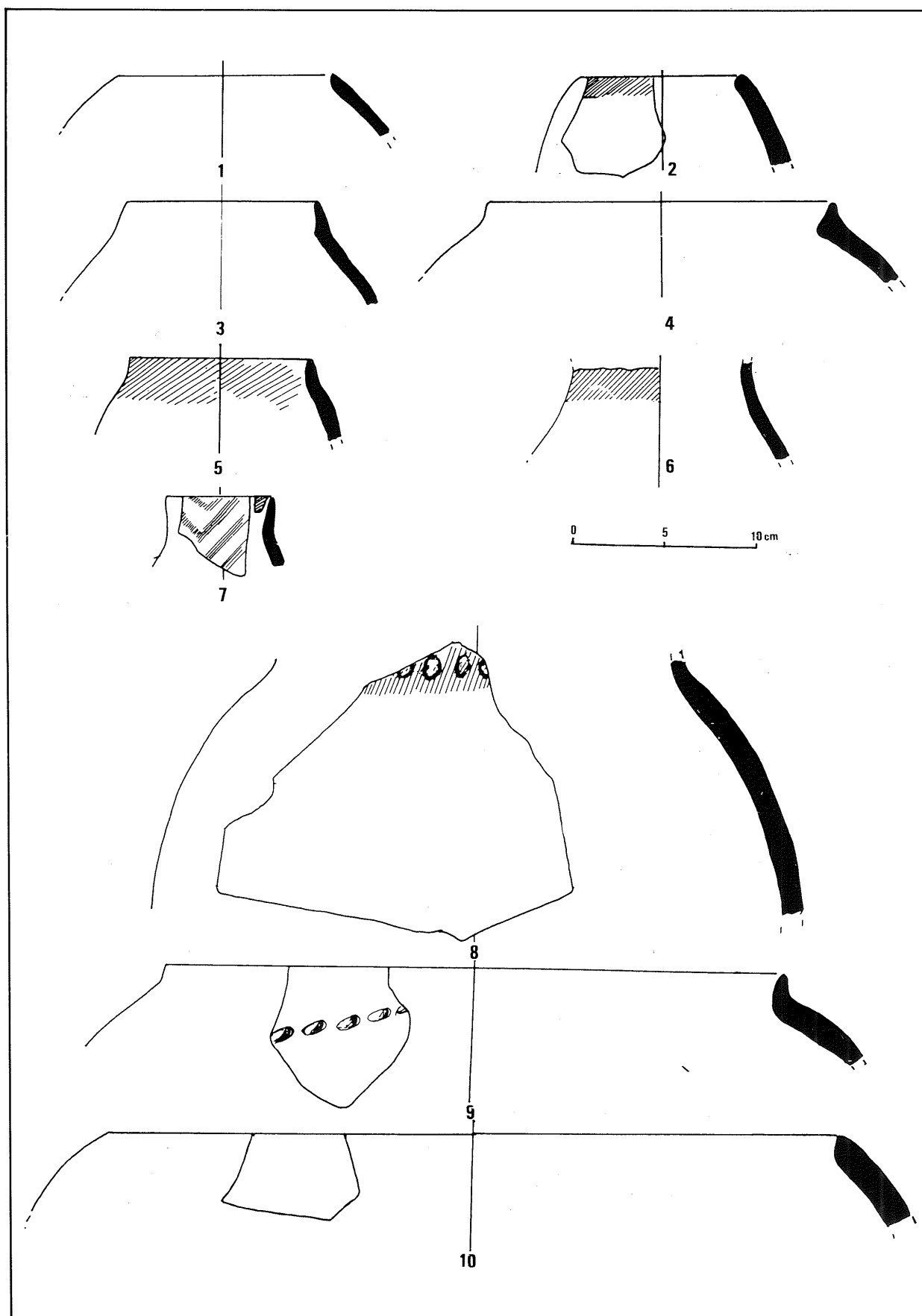


Fig. 8 Abu Hamid 1986. Pottery; closed forms: holemouth and small jars

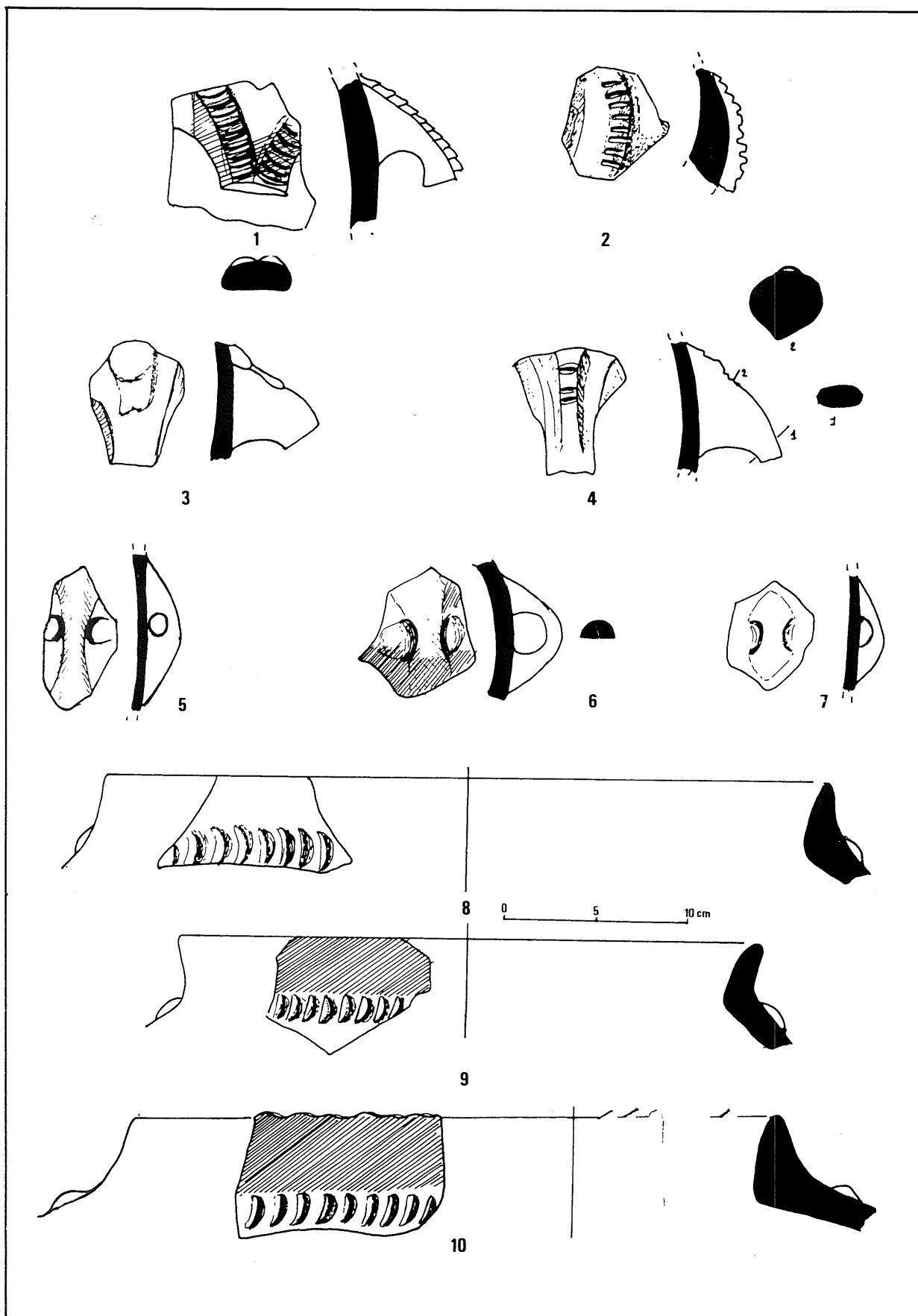


Fig. 9 Abu Ḥamid 1986. Pottery; handles; upper part of big jars.

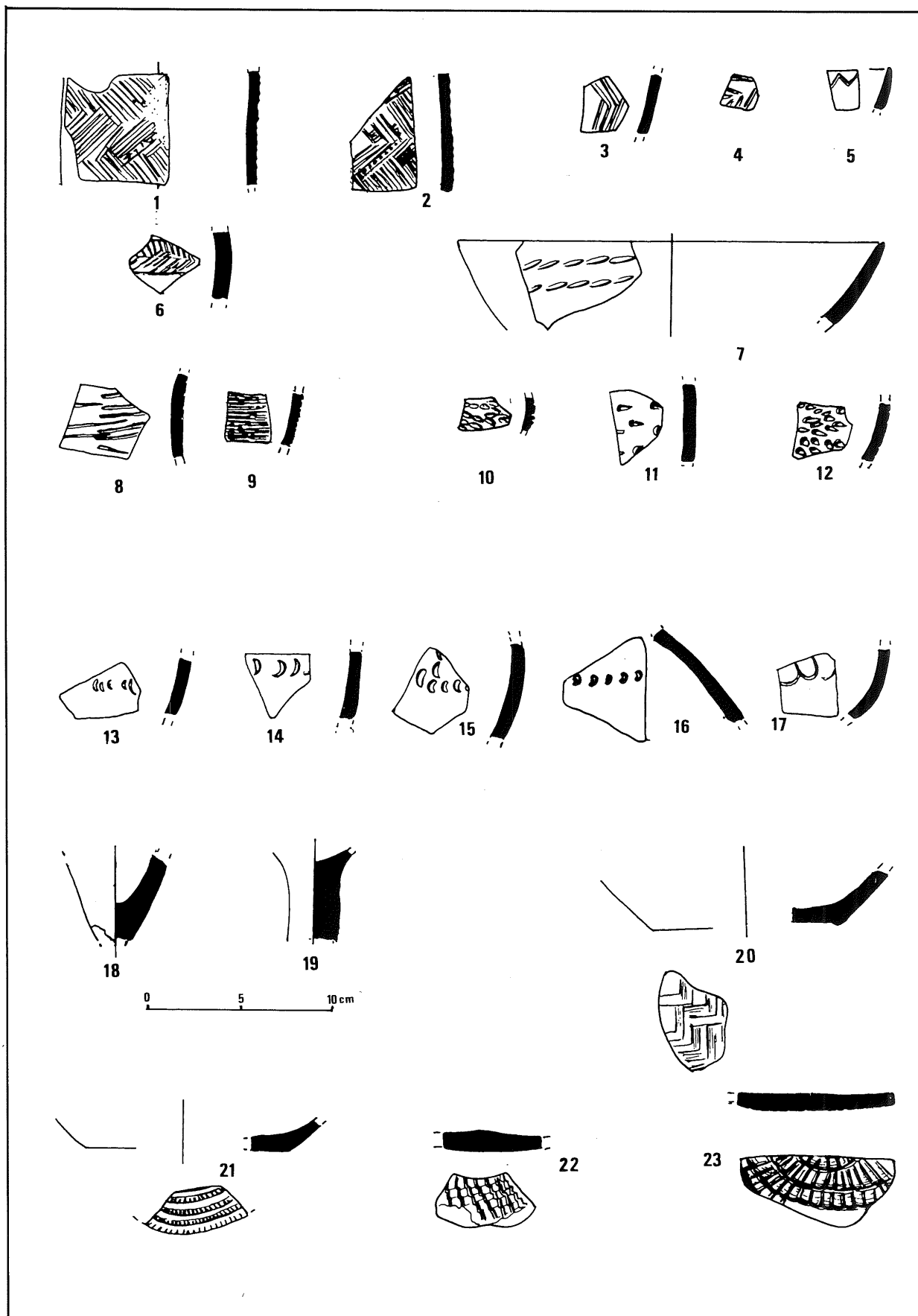


Fig. 10 Abu Hamid 1986. Pottery; sherds with incised decor 1-17; base of an ogival base cup (so far unique) 18;

base of a cornet (?) (so far unique) 19; mat impression on a base 20; basket impressions on bases 21.

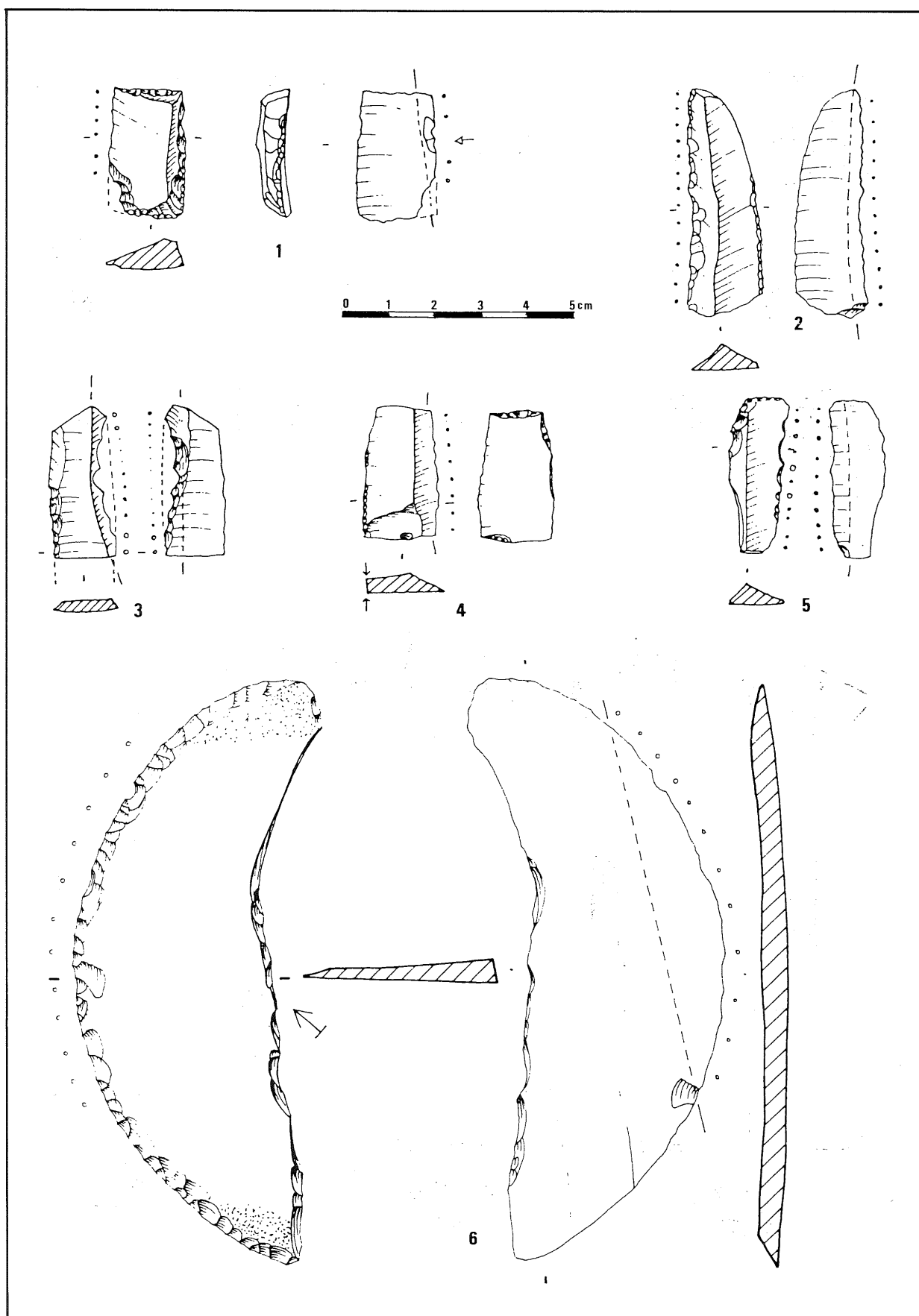


Fig. 11 Abu Ḥamid 1986. Flint industry: 1-5 sickle blades; 8-10 crescent-shaped "scraper" on tabular flint.

PRELIMINARY RESULTS OF THE ANALYSIS OF THE FLINT INDUSTRY

by
E. Coqueugniot

Different kinds of flint have been used; their texture is either very fine, fine or coarse; for some objects silicated limestone has been used.

Raw material and debitage

The main source of flint consists of flint pebbles rolled by the wadis running from the 'Ajrun mountains. Their cortex is altered. Most of the time this kind of flint is of mediocre quality not so much because of its texture but because of the presence of many cracks. Despite the abundance of flint pebbles attested in the wadis, as well as in some beds of the terrace, the relative scarcity of flint suitable for knapping probably explains why debitage was so heavily worked; it also explains the near absence of large nucleii and the great proportion of small very exhausted cores in the series which has so far been studied.

In technological terms, there is predominance of rather crude flakes with smooth butt and well developed bulbs; there are also predetermined flakes and blades with preparation of the platform that show high ability of the flint knappers.

In the small sample from the excavations studied so far (N=1588 artefacts), the percentage of different classes are:
Debitage: 47.5 % consisting of flakes (92 %), blades (4.6 %), bladelets (2.3 %)
Chips: 42 %
Nucleii: 3.4 %
Tools: 7 %

The relatively crude aspect of the tool assemblage is due to the fair amount of notched, denticulated and retouched pieces, flakes and blades with distal or lateral retouch; the retouch, either total or partial, can be direct or inverse. The typology of these artefacts will be refined.

The sickle blades are rather short, bi-truncated blades (Fig. 11:1-5); examination with the microscope indicates that most of the time, the fine denticulation

visible on the working edge is the result of utilization rather than of manufacture.

Tool Assemblage From The Sample (Fig. 11-14)

In the assemblage of formed tools (N=112), one can recognize the following:

Typological groups

Scrapers on tabular flint	1
Endscrapers	14
Sickle blades	15
Chisels, adzes, axes	2
Arrowheads	1
Burins	2
Truncated pieces	8
Borers, piercers	15
Notched pieces	9
Denticulates	8
Retouched pieces	33
Choppers	1
Hammerstones	1
Others	1

The sample examined presents some lacunae due to the small amount of pieces analyzed to date. However the large sample of diagnostic artifacts collected on the surface and in the excavations indicates a more complete range of variation in the assemblage and some lines for future research.

- 1) The typology of the chisels-axes-adzes-celts group (Fig. 14) has to be refined. So far, it varies according to different scholars. The great number of these artifacts collected at Tell Abu Hamid will allow such a study for the first time.
- 2) Two large thin and regular crescent-shaped scrapers (Fig. 11:6) had been deposited close to each other. A bright sheen on their convex edge clearly indicates that they were used to cut some cereals or reeds. An examination with new techniques of microscopic wear analysis will help in determining their actual use.
- 3) Two large circular or oval predeter-

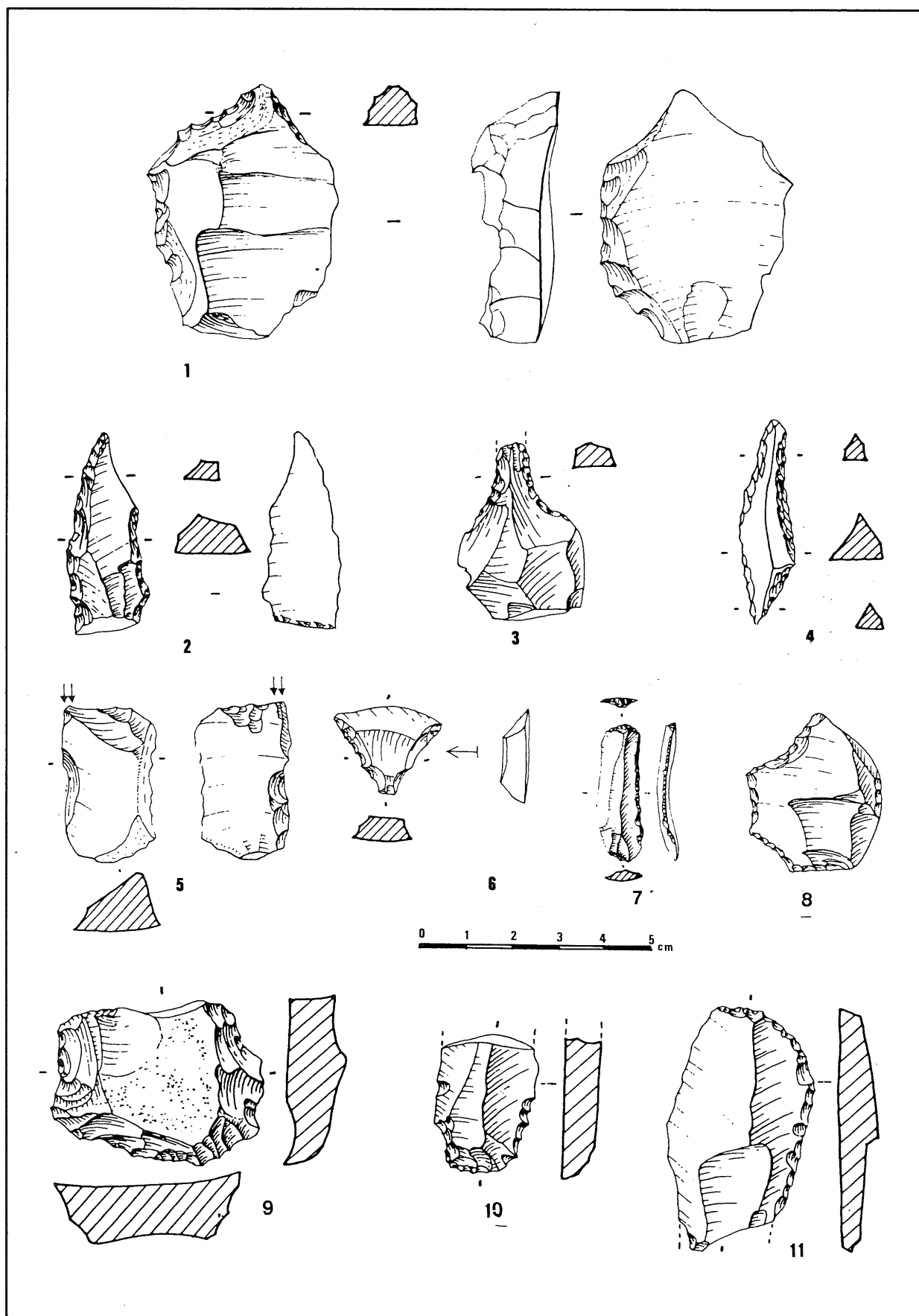


Fig. 12 Abu Hamid 1986. Flint industry: 1-4 borers and piercers; 5 burin; 6 transverse edge projectile; 7 micro end-scraper; 8 notched piece; 9-11 scrapers.

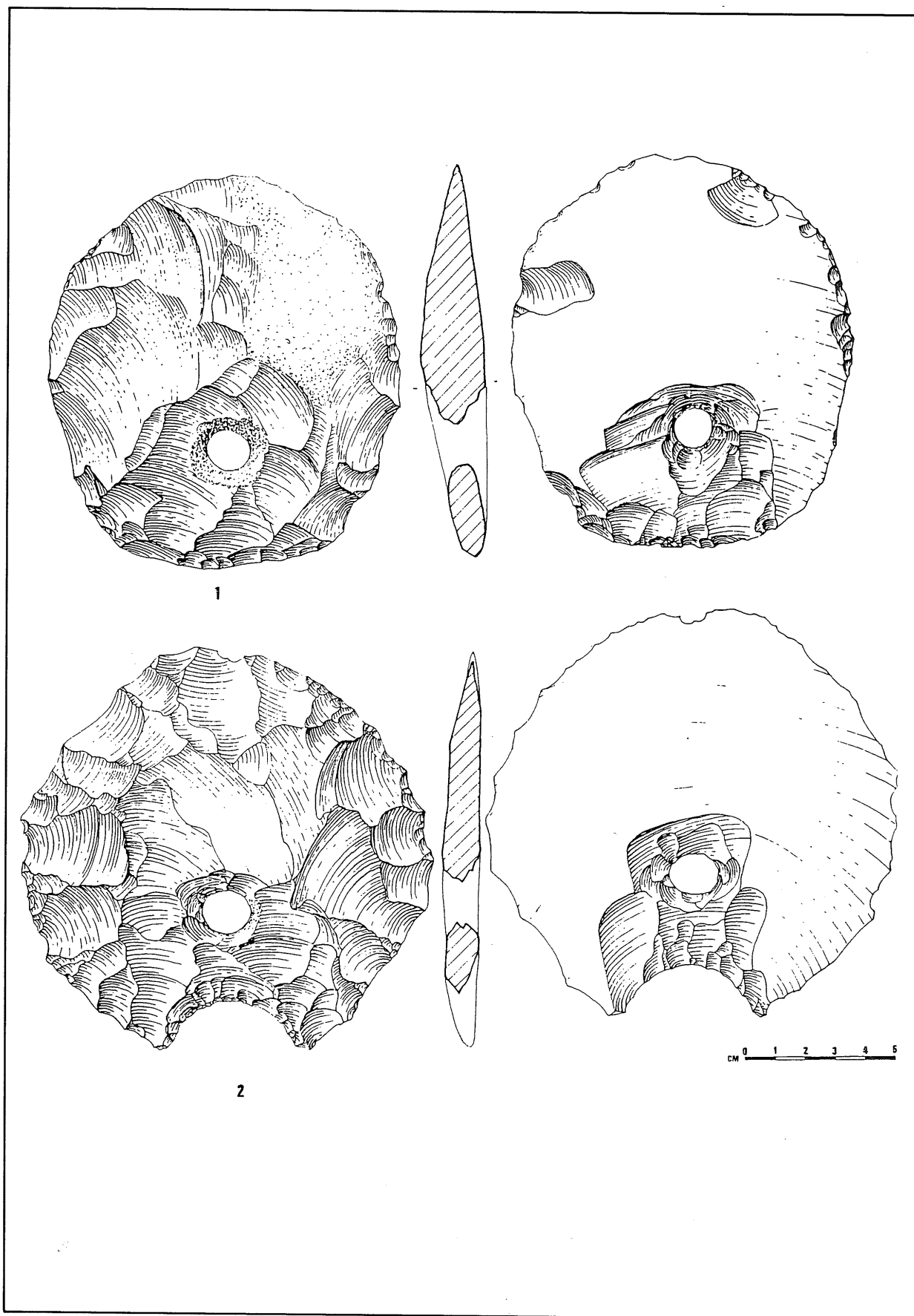


Fig. 13 Abu Hamid 1986. Flint industry: perforated disks.

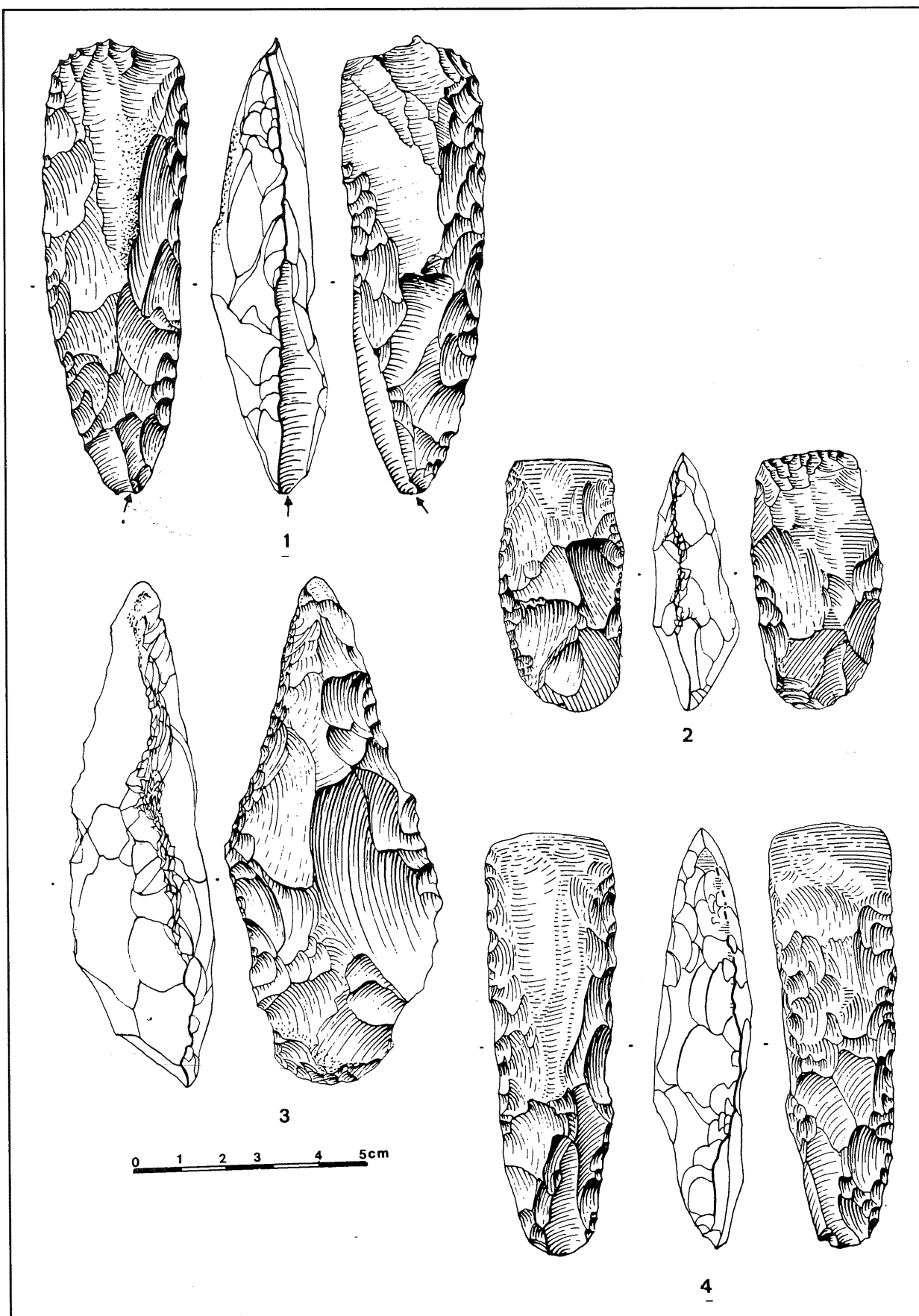


Fig. 14 Abu Hamid 1986. Flint industry: axes, adzes and pick.

mined flakes, with an axial perforation obtained by stone percussion were found deposited intentionally above each other (Fig. 13; Pl. LXXXVI:10). The butt and the bulb were taken off by bifacial retouches. They are very similar to the ones found at Neve Ur²⁰ and to a lesser degree at Der'a in Ḥauran²¹, and at the Gaulan sites²². They seem to be rarer at Ghassul²³ and on the Negev sites²⁴. So far it is too early to conclude if these two tools were made at Abu Ḥamid or if they were trade objects manufactured elsewhere. Anyway, they are certainly not the product of long-distance exchanges. Their raw material is absolutely identical to that used for other kinds of artifacts and to a large core found on the surface. The provenience of this raw material could be the 'Ajlun mountains.

- 4) During the geomorphological study of the region (Autumn 1986)²⁵, we will search for the exact provenience of the different sources of raw materials. This study will provide some information on the economics of the lithic industry.
- 5) In the near future, the sample under consideration will be enlarged to get a better idea of the debitage techniques. This kind of study has already been accomplished by scholars working on more ancient periods (Epipaleolithic and Aceramic Neolithic) but, so far, never on the lithics of more recent periods. The Abu Ḥamid flint assemblage will constitute a reference element for further studies on sites of the same period.

E. Coqueugniot

19 Abu Maṭar, Safadi *cf.* Contenson 1956; Shiqmim, Levy and Alon 1985.

20 Perrot *et al.* 1967.

21 Nasrallah, 1948.

22 Epstein, 1978.

23 Neuville in Mallon 1934.

24 Perrot, pers. comm.

25 J. Rewerski (laboratoire de géophysique de Meudon, CNRS) will do the geomorphological survey of the site in October 1986.

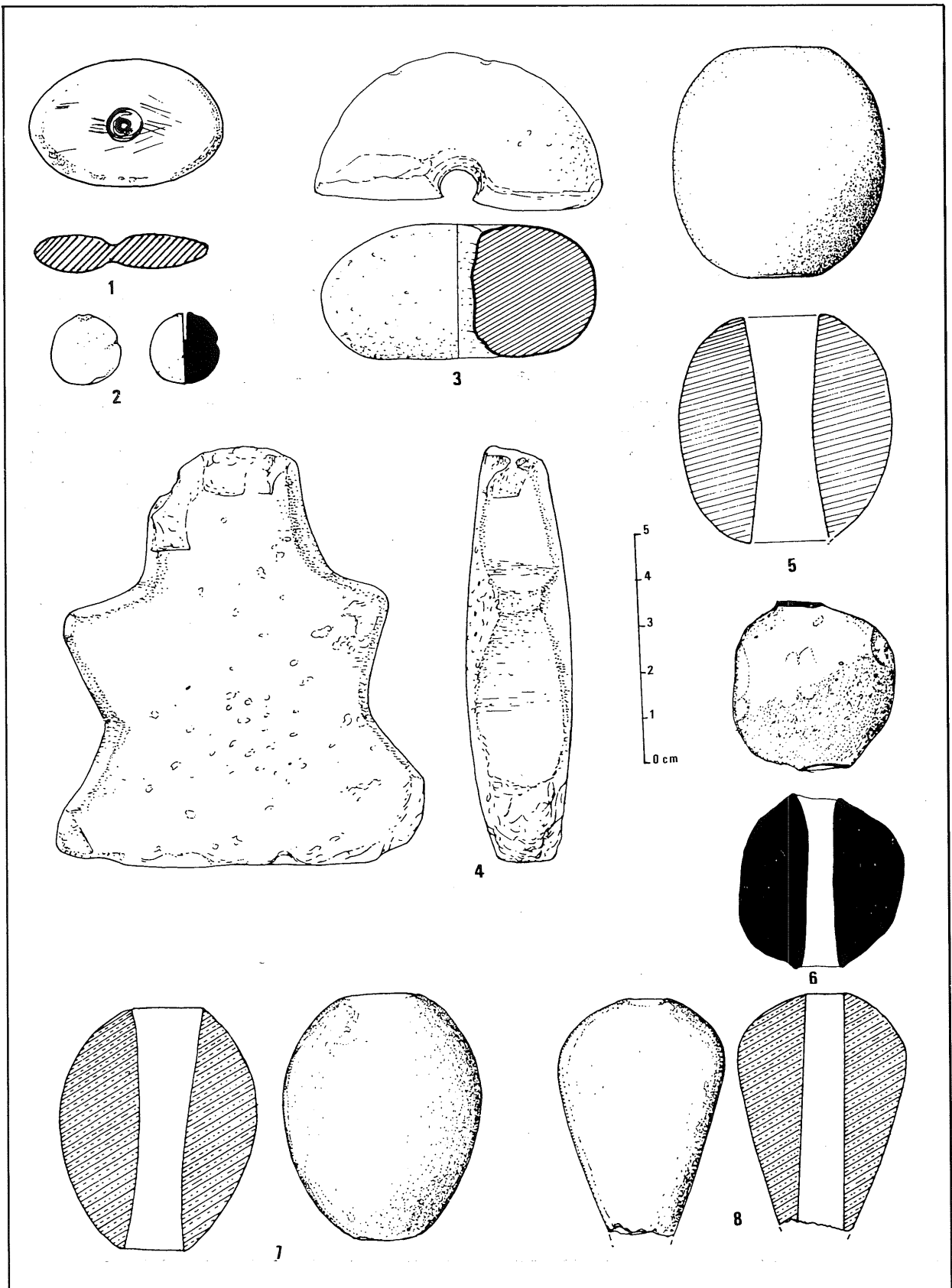


Fig. 15 Abu Hamid 1986. Stone, hematite and clay objects. 1: flat pebble with the beginning of a perforation; 2: small clay ball half pierced; 3: per-

forated stone; 4: violin figurine in limestone; 5: stone macehead; 6: pierced clay ball; 7-8: oval and piri-form hematite maceheads.

PRELIMINARY RESULTS OF THE FAUNAL ANALYSIS

by
J. Desse

The faunal remains collected during the first season of excavations at Tell Abu Hamid are few. Only about 2500 fragments have been collected. They are very corroded by their proximity to the surface and most of them are covered with lime concretions. The percentage of possible determinations is rather low, 17.6 %, and the observation of butchering techniques or any other kind of anthropic action is rarely possible. 420 fragments were identifiable.

All the sediments have been sieved and all the fragments and bone chips kept²⁶. The bones have suffered from corrosion as well as from animal and human action. They exhibit the marks of gnawing by carnivores, especially dogs and foxes, the presence of which is attested. Many bones, especially the epiphyses of young *Suidae* were very much chewed. The results of anthropic action such as cooking, breaking during butchering etc. are sometimes evident. Considering all these factors, we can understand easily why so far, in the sample analyzed, few measurements could be taken.

The faunal assemblage

One of the characteristics of the faunal assemblage is the very low percentage of wild species. Less than 1 % of the identifiable fragments are attributed to the *Gazella*. Hunting activities certainly did not play an important role. The other remains of wild Fauna like foxes, birds and watercrabs do not seem to have played any important role in the dietary habits of the Abu Hamid people. Indeed some of the bones of the wild Fauna could be intrusive. However, one problem remains, the possible presence of wild boar *Sus scrofa ferus*. The Jordan Valley is an excellent biotope for *Sus scrofa* which is still found nowa-

days in the region; it would be very surprising, when we have more data, not to find that this animal played some role. Anyway, for the time being the totality of the remains of *Suidae* of the site, despite their bad condition of preservation, were attributed to *Sus domesticus* since most of the remains of the *Suidae* seem to be the ones of young animals.

It is notable that the Jordan river has a high potential for fish such as *Barbus sp.*, *Carpio sp.*, *Chichlidae*, and *Claridae*. Unfortunately, due to the bad conditions of preservation for bones, fishbone was not recovered; it will certainly be difficult to shed light on fishing activities even though they could very well have played a role at Abu Hamid.

Domestic Animals

They represent 95.5 % of the remains. This high percentage indicates a mastery of herding by the populations. 93.3 % belong to *Capra hircus*, *Ovis aries*, *Sus domesticus* and *Bos taurus*.

Capra hircus and *Ovis aries* represent 60 % of the faunal remains. Most of the time, fine discrimination based on Boessneck, Teichert and Muller criteria²⁷ was not possible due to the poor state of preservation of the bones; however, when the diagnosis was possible, *Capra hircus* seems predominant. The possibility that goats are more numerous than sheep must be tested on a greater number of individuals.

The bones of the wild goat (*Capra aegragus*), of any of the ibexes (*Ibex sp.*) and of any kind of wild sheep (*Ovis ammon*, *Ovis orientalis*...) have not been found.

The bone fragments come from the different goats and sheep: the relative frequencies of some bones seem to be due to

26. All the data will appear in tables in the monograph that we aim to publish at the end of the 2nd field season. Scholars who would

like to get more information earlier can write to Jean Desse.

27. Boessneck, Teichert and Muller 1964.

the preservation that can vary according to the different kind of bones (jugal teeth, cotyloides cavities, and phalanxes are the best preserved bones; on the contrary, proximal ends of the humerus or distal ends of femurs are absent). The very low number of metapodia (2 fragments) could very well be related to the production of bone tools since some awls manufactured on distal ends of metapodia have been found.

Sus domesticus

They represent 25 % of the remains and belong to young animals. This leads us to infer that they have a domestic status. Unfortunately so far, the material does not offer the possibility of any osteometric measurements. As in the case of the *Capra/Ovis* remains, bones from all parts of the body were retrieved. With the exception of 5 fragments (upper maxillaris, mandiulae, 1 distal fragment of scapula) all the bones belong to unfused elements, so the size of the animals could not be evaluated.

Bos taurus

12 % of the bones could be identified as *Bos taurus*. Most of them belong to large-sized adults. Unfortunately the small sample (50 bones) does not allow further gen-

eralization. Only one proximal fragment belongs to a small size *Bos*. However not a single fragment reaches the size of the aurochs of Palestine²⁸.

Equids

Only 2 fragments from *equids* have been retrieved. The diameters of the bones (metacarpal III and metatarsal III) suggests *Equus asinus*.

Canis familiaris

7 fragments. None could be measured.

Concluding remarks on the faunal assemblage

In conclusion, despite the physical alteration of the material, it is possible to get an idea of the economic activities of the group which lived at Abu Hamid; it seems that concerning their meat diet, hunting played a very small role.

The analysis of the ages of Cattle, *Capra/Ovis* or *Suids* give some information: the 50 fragments of Cattle bones as well as the great majority of *Ovis/Capra* bones belong to adult animals: they were certainly raised for production of milk, wool and hide; that would explain the reason for the absence of bones of young animals. On the contrary, most of the Pigs are animals which were slaughtered when they were still young.

J. Desse

28 Weiler, 1981.

PRELIMINARY RESULTS OF THE BOTANICAL REMAINS

by
R. Neef

During the excavations, soil samples were collected. Because of the shallow deposits and the always possible risk of contamination, they were mostly taken from the pits and storage jars, from the vicinity of hearths and from some well sealed occupation floors. The best material came from the pits dug in squares AJ1 (loc. 117) and A5 (loc. 116).

In the laboratory, carbonized seeds and charcoal were separated from the sediment by the waterflotation techniques.

The botanical remains found so far are:

Crop plants

1. *Triticum dicoccum* (emmerwheat): seeds as well as many spikelet forks. This species seems by far the most important crop at Tel Abu Hamid.
2. *Hordeum vulgare* (barley).
3. *Pisum sativum* (pea).
4. *Lens sp.* (lentils).

Fruit of trees

1. *Ziziphus spina christi* (siddr), species still found near the site.
2. *Olea sp.* (olive)

Wild plants

1. *Lolium sp.* (fields)
2. *Hordeum sp.* (fields)
3. *Papilionaceae* indet.
4. *Rumex sp.*
5. *Cyperus sp.* (damp places)

6. *Graminae*
7. *Medicago sp.* (fields)
8. *Astragalus sp.* (fields)
9. *Plantago sp.*

Further analysis (especially the determinations) has to be done as well as charcoal determination.

Conclusion

It would be premature at this point to discuss the details of the whole assemblage of artifacts. The pottery and the lithics, especially the perforated disks so closely comparable to the ones found at Neve Ur on the West Bank (opposite to Shuneh North), at Hauran, at Der'a and on the chalcolithic sites of the Gaulan, the basalt (Pl. LXXXVI:1) and limestone vessels and grinding utensils, the maceheads (Fig. 15:5,7-8; Pl. LXXXVI:2-9)³⁰, some of them in hematite, others in marble, the figurines — clay horns³¹ and one stone anthropomorphic schematic figurine (Fig. 15:4)³² — indicate an occupation which seems to reflect the horizon of the Ghassulian *sensu lato*. Was the site inhabited for the first time on the horizon of the Wadi Rabah Phase as some small sherds could indicate still remains a question.

From the bulk of the material, the closer parallels so far seem to be with Neve Ur, Beisan XVIII, the bottom layers of Shunah and with the levels of Ghassul IV as well as with the sites of the Gaulan. The

29. K. Wright and N. Qedi are in charge of the publication of the grinding utensils and stone vessels.

30. Many "mace-heads", sometimes fragmentary, were uncovered. 8 of them (5 of hematite, 2 of veined limestone and 1 of black stone) were found lying together and might have been originally placed in a bag or basket which has now decayed. No traces of it were visible. This kind of object is well attested on nearly all 4th millennium sites and seemed to have had a rather common use despite the

nature and quality of the raw material.

31. D. Rahimi and I. Soleiman are in charge of the publication of the small objects made of clay. Among the figurines, clay horns are the most frequent items collected so far. On this chronological horizon, horns seem to have played an important role *cf.* the ones applied on ossuaries of the coastal plain (Perrot and Ladiray 1980, p. 114)

32. *Cf.* Ghassul. Mallon *et al.* 1934; Alon 1977; Yadin 1976.

ties seem to have been looser with the sites of the Negev. However there are to date very few C14 dates for these sites and their material is not fully published, which makes it difficult to assess their contemporaneity.

Since on this horizon of the Ghassulian, no settlement has been to date exposed over a large surface, our plans for the next season are to open a horizontal ex-

posure of 1000-1500 m² in order to make part of a general plan of the settlement of an agro-pastoralist group dependent essentially, as the preliminary botanical and faunal analyses have shown, on the cultivation of wheat and barley, and on flocks of goats rather than of sheep and on some herding of pigs and cattle.

R. Neef

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EXCAVATIONS AT EZ-ZĀRA

by

August Strobel and Christa Clamer

The oasis of ez-Zāra is situated on the east shore of the Dead Sea (1:100,000 Palestine Sheet 13 Dead Sea 203 x 111), about 25 km south of Sweimeh and about 1.5 km south of the Zarqa Ma'in gorge. (Fig. 1). It extends and rises in a rough semicircle of about 2-2.5 km in diameter eastward towards the first plateau of the mountain range, and is provided with at least 40 hot springs, rich in minerals and with temperatures ranging from 31 to 53 degrees Celsius.

According to ancient literary sources, a famous thermal bath complex called Kallirrhoe ('beautiful springs') was situated in this area in Greco-Roman times. Among others, the Roman historian Plinius (*Nat. Hist.* V, 16) mentions the well-known mineral springs and according to Josephus (*War* I, 657; *Antiqu.* XVII, 171), Herod the Great was taken here, hoping to find relief from his pains several months before his death in 4 B.C. The bath complex obviously continued to be used in Byzantine times, since it is depicted on the mosaic map of Madaba, where it is labelled 'Therma Kallirrhoe'. It is shown in a vignette of three pool-like buildings or spring houses and palm trees, set between two gorges, which may represent Wadi Zerqa Mā'in and Wadi el-Mūjib.

Since the beginning of last century, the oasis of ez-Zāra has been a favourite candidate for ancient Kallirrhoe. Surface explorations were carried out by the German Protestant Institute for Archaeology of the Holy Land, especially by H. Donner (*ZDPV* 79, 1963, pp. 59-89), H. Schult (*ZDPV* 82, 1966, pp. 139-148) and A. Strobel (*ibid.*, pp. 149-162). Further surveys were conducted by A. Strobel in 1984 and 1985. Judging by the surface remains, the ancient settlement was concentrated on the western lower terraces, spreading to the shoreline of the Dead Sea, where foundations of ancient harbour establishments are still visible today. Until recently, the only

practicable way to reach the site was by boat from the western shore (e.g. Rujm el-Baḥr, the harbour of Jericho in Roman and Byzantine times). A Roman road with a steep ascent to the first plateau (about 50 m above sea level) connected ez-Zāra (Kallirrhoe) with inland Zerqa Mā'in and the fortress of Machaerus (el-Mashnaqa) near modern Mukāwir, situated on top of the mountain range at a relative altitude of 1.100 m. The road was linked with a main north-south route, later called 'Darb es-Sultān' (Musil, A., *Arabia Petraea*, Vol. I, 1907, p. 271 ff. Also: *ZDPV* 97, 1981, pp. 81-92).

A small-scale trial excavation was conducted at ez-Zāra from September 23rd to October 20th 1985 on behalf of the German Protestant Institute (Jerusalem/Amman) and in cooperation with the Department of Antiquities (Amman). It was directed by Prof. Dr. A. Strobel. Prof. Dr. W. Boeser (Karslsruhe) was responsible for the cartographic and geodesic assignments and for the chemical analysis of the thermal water. He was assisted by Ing. A. Rieger and K. Klehr. Dr. C. Clamer was in charge of the archaeological excavations and evaluations, assigned by G. Hahne and A. Lewerentz as surveyors, by theological and archaeological students from Germany, and local workmen. Representative of the Department of Antiquities was Em-saytef Suleiman.

The brief sounding was in part intended to expose the first stratigraphical evidence of occupation in the oasis of ez-Zāra, and was in part salvage-oriented. The site, which has already been severely affected by erosion and agricultural activity over hundreds of years, has recently been further damaged by the construction of the coastal road, while additional establishments, hotels and recreation facilities are planned. Near the Dead Sea shore, all surface structures, as e.g. 'Qasr el-Baḥr' (first described by H. Donner in *ZDPV*

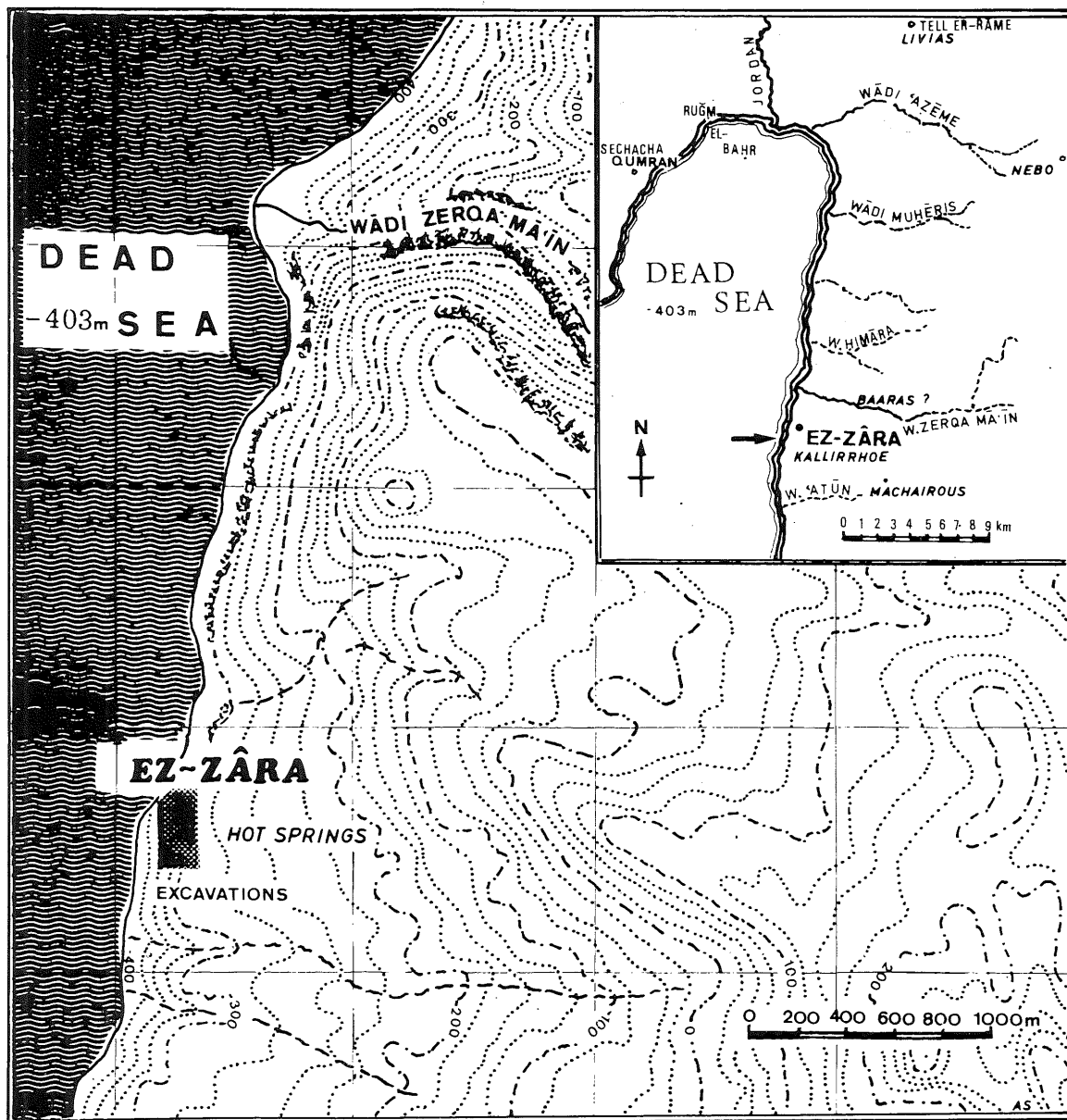


Fig. 1 Topographic Map of ez-Zāra (Kallirrhoe).

79, 1963, p.78f.), have been destroyed or covered up. It therefore seems most urgent, to recover as much information as possible about the ancient remains of the site, which is threatened with total destruction.

The area chosen for trial excavation was on the lowest terrace of the oasis, where a concentration of archaeological remains was visible on the surface, consisting of the outline of a large structure, as well as several terrace walls (Pl. LXXXVII, 1). The large structure, recognizable by the concentration of fallen building material, among them column bases and drums, occupied the centre of the terrace. It is aligned with the terrace walls, its western wall built in prolongation of the lowest wall. The building material is of local basaltic tuff, a porous and layered stone, which weathers easily and thus shows a poor state of preservation. While the western wall of the building is much eroded and seems partly missing due to the sloping terrace, the eastern hill-side wall is better preserved. Several column bases are still *in situ* on top of the wall (Pl. LXXXVII, 2), and its foundations of roughly-hewn stones go down more than 2.20 m; the lowest course has not yet been reached in the adjacent trial trench. The monumental character of the structure, which measures 35m × 29m, is most remarkable and probably indicates a public building.

After the establishment of a grid, based on 5m x 5m squares, and a determination of the absolute height below sea level, several trenches of 2m x 2m were sunk within and outside the building remains. Two trenches inside the columned building, one close to the south-east corner adjacent to the eastern wall (P 17/1), the other in the north-west corner (O 18/2) revealed a similar stratigraphic picture (Pl. LXXXVIII, 1). The top layer showed a heavy stone tumble and packing with larger boulders, several column drums and rectangular stone slabs, part of which seemed to be laid rather than fallen. In both trenches a wall built of roughly cut stone boulders appeared in the sections set at right angles to the outer wall of the large build-

ing. The walls seem to be part of an inner structure. No floor was discovered connected with the columned building, but pottery of the late Byzantine period was found within the stone fill.

Below the stone tumble, a thick geological deposit of whitish to yellowish/brown travertine grit or fine travertine gravel appeared, alternating with thin layers (up to 5 cm) of reddish-brown, greyish or blackish soil. The travertine deposits seem to be washed in perhaps by a spring, and the reddish-brown and blackish soil layers may also be washed in by spring water (similar soil occurs as swamp soil in the vicinity of some of the hot springs at ez-Zara). Weathered travertine is found superimposed on natural gravel deposits e.g. in a quarry south of the oasis, as a result of recent sedimentation.

Human occupation levels, on the other hand, seem to be connected with the greyish, very loose and powdery soil surfaces within the geological layers, containing many pebbles, some charcoal pieces, fragments of glass vessels and many pottery sherds. Most of the sherds are of a small size and belong to the Byzantine period, while in the lowest level all seem to come from the Roman period. In Trench O 18/2 we also reached a fragmented white plaster floor (Pl. LXXXVIII, 2), associated in the south section with a plaster covered wall one course high. The floor and the lower wall segment seem to belong to the Roman period, while the upper courses of the wall seem to have been re-built in a later phase (Pl. LXXXIX, 1).

Another trench, P 17/2, outside the large building and adjacent to its western wall, again revealed no floor connected with the surface structure, but the loose powdery surface soil contained Byzantine pottery sherds. A retaining wall was discovered *ca.* 40cm below the surface, with one row of larger pebbles and a stone packing laid against it (Pl. LXXXIX, 2). Connected with the retaining walls was a thick layer of ashy soil (up to 30cm), slanting down towards the west. This ashy layer contained a vast amount of partly restorable pottery, limestone mugs and bowls, as

well as some coins. The pottery is typical of the Early Roman period, with lamps and coins from the 1st century A.D. The pottery layer, which looks like a dump, as well as the retaining wall were cut by a foundation trench for the foundations of the eastern wall of the large columned building. Between 1.20 and 1.40m down, a level of natural gravel deposit was reached, but there were no signs of the nearby travertine.

At the northern end of the terrace, stratigraphically connected with the columned structure by the two terrace walls, a house complex with three rooms was discovered, (Pl. XC): Here too, the floor surface has been eroded and only the foundation walls remained intact. The walls go down 1 m to 1.5 m and are founded on bedrock or on wadi gravel. They are built with large boulders on top and smaller stones below, the latter strengthened by mortar.

Very little pottery was found, but several coins were discovered in the loose surface soil, dating from the second half of the 4th century A.D. and the beginning of the 5th century A.D.

In conclusion one can say that the lower terrace of ez-Zāra shows clear evidence of Early Roman to Late Byzantine occupation, with possible gaps in between. However, further excavations are needed to provide additional information. Further work at ez-Zāra is planned for October 1986, and it is hoped that more efforts on a larger scale will help clarify the history of the site.

A preliminary geological evaluation was undertaken by Dr. K. H. Proesl and Dr. J. Mutterlose (Dept. of Geology and Mineralogy, University of Jordan), whom we would like to thank.

August Strobel and Christa Clamer

L'UTILISATION ACTUELLE PAR LES BEDOUINS DES GROTTES ARCHEOLOGIQUES DE PETRA

par

Anna Ohannessian-Charpin

1 — Introduction

Ce travail est issu des trois missions ethnoarchéologiques menées sur la population contemporaine des Bdoul, occupant le site archéologique de Petra¹. Un trait spécifique est développé ici, à savoir l'utilisation des grottes archéologiques par les Bdoul.

a - Situation des Bdoul

Les Bdoul forment une tribu d'origine bédouine. Ils sont rattachés à la confédération tribale des Huweitat qui occupe tout le sud de la Jordanie et s'étend en Egypte et en Arabie-Saoudite.

Actuellement, la tribu des Bdoul est divisée en deux clans : celui de Pétra et celui du village moderne de Humeimah². A Pétra, le clan est composé de cinq unités lignagères : celles des Fuqara, des Mawassa, des Judeilat, des Samahine et des Jumada. Les deux derniers lignages sont plus récents ; les Samahine ont été rattachés aux Bdoul en contractant mariage avec les Mawassa, quant aux Jumada, ils sont une segmentation des Mawassa. Par contre, nous retrouvons les trois premiers lignages chez les Bdoul de Humeimah accompagnés d'autres, absents à Pétra.

Jusqu'en 1985³ les Bdoul ont occupé le site de Pétra. Les grottes creusées ou aggrandies aux époques nabatéenne et romaine et qui servaient essentiellement de tombes sont réinvesties et utilisées pour l'habitation en général.

Ainsi jusqu'à cette date Pétra (et surtout le site)⁴ a constitué l'habitat des Bdoul, qu'ils ont partagé avec les touristes de plus en plus nombreux.

En Avril 1985, une grande partie des Bdoul, ceux qui occupaient le site même, ont déménagé au village d'Um-Sayhoun, après plus de cinq ans de refus. C'est un lotissement construit à cet effet par le gouvernement, et qui fait partie d'un projet de sédentarisation en vigueur dans la région.

b - Travail et objectifs :

Les différentes transformations survenues à Pétra depuis l'ouverture du site au tourisme ont profondément influencé le mode de vie des Bdoul dont le village d'Um-Sayhoun est le résultat le plus tangible. A différentes reprises, les Bdoul ont mis en avant des "stratégies" socio-économiques et culturelles diverses pour s'adapter ou répondre à ces changements externes. Ces

1. Une première mission de 2 semaines, a eu lieu en oct.-nov. 1983, en collaboration avec l'architecte R. Jarno. Elle s'est centrée sur l'observation directe de l'occupation des grottes et l'organisation de l'espace à Wadi-Farassa.

La deuxième mission en 1985 (1 mois) a eu plusieurs objectifs : les premières installations dans le village, les semi-nomades Bdoul de Stouh et de Beidha et le système de parenté des Bdoul notamment la généalogie. La 3ème mission (1986) avec la collaboration de R. Jarno s'est centrée uniquement sur le village, d'Um-Sayhoun. Ces missions sont subventionnées par O. Aurenche directeur de la R.C.P. 624 "Ethnoarchéologie du Proche Orient", et par la Direction des Relations Culturelles du Ministère des Affaires Etrangères. La mission de 1983 a bénéficié également d'une subvention de l'Institut du Monde Arabe.

2. Humeimah, près de Quweira sur la route du desert,

est un village moderne construit vers 1960, et qui longe les 2 bords de l'autoroute. L'ancien village, à quelques kms dans le desert, regroupe quelques maisons anciennes, actuellement en état de ruine. Elles étaient utilisées comme grenier et stockage par les Bdoul nomades. Une partie des maisons neuves ont toujours cette même fonction.

3. La question de l'origine des Bdoul ainsi que la date de leur installation à Petra n'est pas encore claire. Les Bdoul, actuellement déplacés et hors du site, réclament leur droit sur le site et le territoire de Pétra d'une manière indirecte, soit en soulignant leur descendance des Nabatéens, soit en racontant des légendes se rapportant sur leur installation à Pétra. Ces dernières ressemblent au moins par leurs formes aux événements historiques liés au site.

4. Dans ce travail, Pétra désigne le territoire archéologique global. "Site de Petra" désigne par contre le circuit touristique qui s'étend du Sik au musée.

transformations ont donné lieu à une utilisation diversifiée de l'espace à Pétra et notamment des grottes.

Dans ce travail les grottes de Pétra sont considérées comme un élément représentatif de la culture matérielle des Bdoul. Un élément qui porte le témoignage des transformations survenues dans leur mode de vie et leur culture. En d'autres termes, l'objectif et la ligne directrice sont de cerner la relation entre le comportement socio-culturel et la culture matérielle. Essayer de voir comment la notion liée à la grotte se transforme et suit les changements du mode de vie, le passage de la grotte-abri représentative d'un mode de vie nomade à la grotte d'habitation des sédentaires. Pour cela nous allons procéder en deux temps d'analyse: en un premier temps

à travers l'analyse diachronique nous essayerons de cerner les différentes utilisations des grottes liées aux changements dans le mode de vie des Bdoul qui ont conduit les pasteurs nomades du début du siècle à une sédentarisation complète avec le village d'Um-Sayhoun. A chaque étape s'opère une transformation dans les pratiques liées à l'utilisation des grottes avec l'introduction de nouvelles fonctions et la disparition d'autres, qui marque des changements de la représentativité de la grotte.

En deuxième lieu, l'analyse synchronique considère les grottes comme des artefacts Bdoul dont les différences dans les modes d'utilisation, les fonctions, le nombre par famille etc. sont liées aux différences socio-économiques des familles à l'intérieur de la tribu.

A- LES TRANSFORMATIONS DE MODES DE VIE ET UTILISATION DES GROTTES ARCHEOLOGIQUES DE PETRA

Première étape : Avant l'introduction du tourisme

Les données de cette étape proviennent essentiellement des témoignages des Bdoul. Ils sont en partie vérifiés par ceux fournies par F.G. Peak dans son ouvrage, "History and Tribes of Jordan", (voir biblio, No. 4).

Avant l'introduction du tourisme à Pétra, les Bdoul étaient des pasteurs-nomades, avec une économie fondée uniquement sur le troupeau de mouton, chèvre et quelques chameaux. Ils les achetaient à Ma'an et les vendaient à Ber-sheeba. Ils pratiquaient également la chasse. L'agriculture était complètement absente de leur économie.

Le territoire tribal des Bdoul s'étendait de Wadi-Sabra au sud-est de Pétra, englobait tout l'ouest (Jebel-Haroun, Wadi-'Uleiq, Thughra) et Um-el-Biyara, à Beidha au nord. La partie est de Pétra se trouvait dans le territoire des Lyathneh de Wadi-Moussa. (voir la carte No. 1). Ces derniers s'abritaient l'hiver dans les grottes archéologiques de Pétra à l'entrée du

site, et l'été, ils dressaient leurs tentes sur leurs champs à Wadi-Moussa près de leurs maisons utilisées comme grenier. Les Bdoul échangeaient avec les Lyathneh les produits laitiers: le Laban (yaourt), et le Saman (beurre) contre des céréales et d'autres denrées. Ils vendaient également le poil de chèvre, utilisé pour la confection de la tente. De ce fait même ils n'avaient pas de tente, dû aussi à leur extrême pauvreté, et, ils campaient l'été et au printemps en plein air.

Les Bdoul s'abritaient l'hiver dans des abri-sous-roches-dénommés *tor*. (Pl. XCI, 1-2; XCII)

Tor est un terme générique qui désigne notamment un abri sous-roche naturel mais s'étend aussi aux pans de murs rocheux laissés par des carrières nabatéennes ou romaines. Tous les *tor* ont la caractéristique d'être habités ou occupés. Ils sont multifonctionnels, abritant la famille et le troupeau les jours pluvieux d'hiver, et servaient de grenier et de stockage lors des déplacements. A l'intérieur des *tor*, dans la partie abritée, un alignement de pierres délimite l'endroit de couchage de la famille de

celui du troupeau. Une rigole creusée à l'entrée draine l'eau des pluies vers l'extérieur. En plus de ces quelques aménagements, un *tor* se différencie d'une autre cavité naturelle par le noir de fumée qui recouvre toutes les parois internes et, par une couche épaisse d'excréments animaux qui recouvre le sol.⁵ (Pl. XCI, 1:2)

Les premières utilisations des grottes de Pétra par les Bdoul étaient à des fins funéraires. En effet, les Bdoul plaçaient les morts dans les grottes⁶. Trois grottes à la fois étaient utilisées pour l'ensemble de la population; une pour les hommes, la 2ème pour les femmes et la 3ème pour les enfants. (Pl. XCIII, 1, 2)

a- Critères de choix d'une grotte funéraire :

— L'emplacement - aux pieds du mont Um-El-Biyara, qui marque la limite de leur territoire. (voir la carte No. 1)

— L'accès - difficile, elles sont en hauteur.

— La taille intérieure - pouvant contenir environs 50 corps.

— Le sol intérieur - est toujours de la roche.

— La façade externe - naturelle⁷.

b- Aménagements apportés aux grottes funéraires :

Ils se limitaient aux entrées qui étaient obturées entièrement par des pierres sèches, renouvelées après chaque cérémonie funéraire.

2ème étape : Ouverture du site au tourisme.

Après l'introduction du site au tourisme: (ouverture du premier hôtel au fond du site, en bordure du territoire tribal des Bdoul) et jusqu'à son intensification vers 1960 (avec la construction par le gouvernement du deuxième hôtel en 1958, à l'entrée du site sur le territoire tribal des Lyathneh) les changements qui s'opèrent dans le mode de vie des Bdoul sont les suivants :

1 - Introduction de bénéfices monétaires dans l'économie pastorale des Bdoul. Elles sont issues soit des emplois liés aux hôtels ou aux fouilles archéologiques de plus en plus nombreuses à Petra, soit, au commerces effectués avec le tourisme: boutiques de souvenirs ou vente de boissons.

2— Introduction de l' agriculture : Les Bdoul commencent à cultiver le blé, l'orge et le tabac et installent leurs champs dans le site. (voir la carte No. 2)

Avec l'agriculture, les grottes dans le site et près des champs servent pour le stockage des grains. C'est leur deuxième fonction dans l'ordre chronologique de leur utilisation.

a- Les grottes de stockage présentent les critères de choix suivants: (Pl. XCV, 1)

— L'emplacement - près des champs.

— L'accès - difficile, facilité par un petit sentier aménagé.

— La taille intérieure - de petites grottes d'une superficie de moins de (10m²).

— Le sol à l'intérieur - toujours de la roche.

b- Les aménagements apportés par les Bdoul:

— A l'intérieur un muret de pierres (environ 50cm.) sépare le blé de l'orge et sert de silo. A cet effet des grottes à loculi, utilisés également comme des silos, sont aussi choisies.

— Une porte, de petite taille, en bois ou autres matériaux de récupération, toujours fermée.

3—Le cimetière d'Um-Khreribe, placé plus en retrait par rapport au site, et au milieu du territoire tribal, remplace désormais les grottes funéraires (Pl. XCIV, 1) .

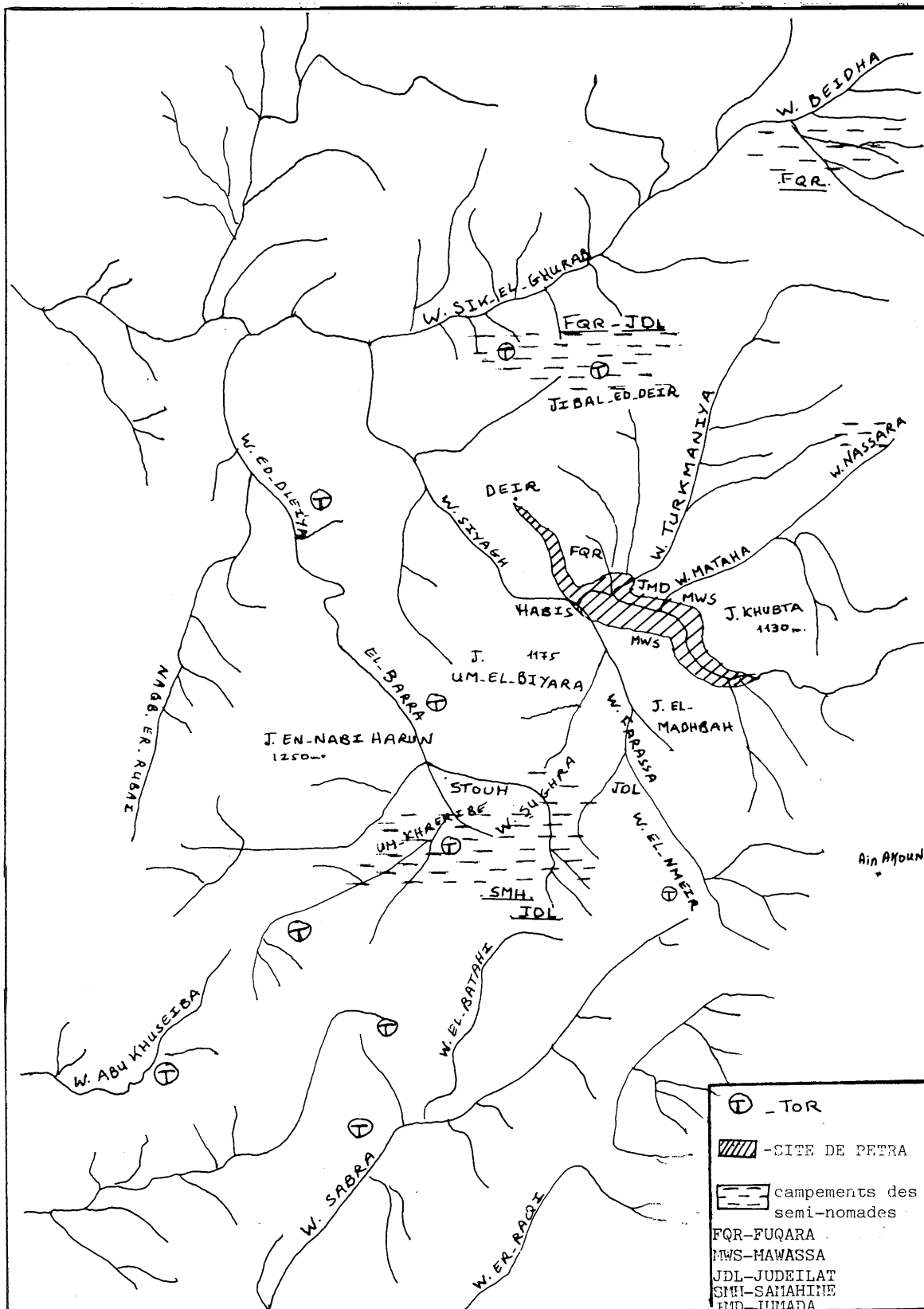
4—Changement d' habitat : Les Bdoul commencent à resserrer leur parcours de dé-

5. Pour les Bdoul il n'y a aucune confusion entre une grotte archéologique, dénommée *Mgharah* lorsqu'elle n'est pas habitée, *Dar* lorsqu'elle est habitée et un *tor* qui est non seulement habité mais naturel.

6. Cette pratique funéraire où les morts ne sont pas enterrés mais placés dans des coins, des fissures ou ouvertures dans la roche était fréquente chez

des bédouins nomades dont les témoignages remontent au début du siècle.

7. En général les Bdoul préfèrent ne pas utiliser les grottes qui ont des façades sculptées. Elles marquent trop une présence humaine et donnent lieu à diverses superstitions. Un seul cas d'utilisation comme habitation a été observé et ceci par une Egyptienne mariée à un Bdoul.



Carte No. 1

placement autour du site et s'abritent dans les grottes les jours pluvieux d'hiver.

L'occupation des grottes comme abri ainsi que des aménagements apportés sont identiques à ceux des *tor*. Toutefois, le nombre de grottes disponibles dans le site étant plus important, la famille et le troupeau occupent des grottes différentes.

Il faut néanmoins souligner la différence fondamentale dans l'utilisation d'un *tor* et d'une grotte qui réside dans le fait qu'une même grotte est réoccupée à chaque saison pluvieuse par la même famille. Ainsi, les grottes sont désignées par le nom du père de la famille qui les occupe alors qu'un *tor* ne l'est jamais. Sa désignation repose en général sur la topographie.

Dans cette étape, la fonction funéraire disparaît au profit de celle d'abri. Pour les Bdoul, ces deux fonctions sont exclusives. L'apparition de la fonction d'abri ne se fait qu'après la disparition de la grotte funéraire. Quelques *tor* continuent également à être utilisés.

Avec ce retour au site et à la même grotte à chaque saison pluvieuse, les Bdoul deviennent des semi-nomades. D'autres part, les grottes, abri pour la famille et abri/bergerie pour le troupeau, avec le stockage, regroupent les trois fonctions essentielles liées à une économie agro-pastorale. Ces fonctions ne sont pas réunies dans une seule grotte, ainsi, on peut voir un passage des *tor* multifonctionnels aux grottes monofonctionnelles de bergerie et de stockage.

Troisième étape : de 1960 à 1985.

Depuis 1960, les Bdoul ont de plus en plus concentré leur habitat autour et à l'intérieur du site de Pétra. En 1965 le Département des Antiquités jordaniennes interdit toute culture à l'intérieur du site, ainsi que l'occupation des grottes sculptées. Les champs sont alors déplacés vers la périphérie, plus particulièrement aux Stouh (le plateau) de Jebel-Haroun et à Beidha.

Avec l'accroissement du tourisme, les activités commerciales qui lui sont liées occupent désormais une place importante

dans l'économie des Bdoul, à côté des activités agro-pastorales. Ceci leur procure un enrichissement considérable, dont le premier effet est la possession (d'une manière presque systématique chez la 5ème génération) de la tente.

Cette étape est la plus connue et la plus observée. Elle prend fin en 1985 avec le déménagement d'une partie des Bdoul aux lotissements d'Um-Şayhoun.

En effet, malgré l'unité des Bdoul sur le plan tribal, territorial et généalogique, un clivage dans le mode de vie s'opère à cette étape. Une partie des Bdoul continue les déplacements semi-nomades entre les grottes et les campements, et une autre partie s'installe dans le site et occupe les grottes d'une manière permanente.

L'étude de ces deux modes de vie fait l'objet de l'analyse synchronique.

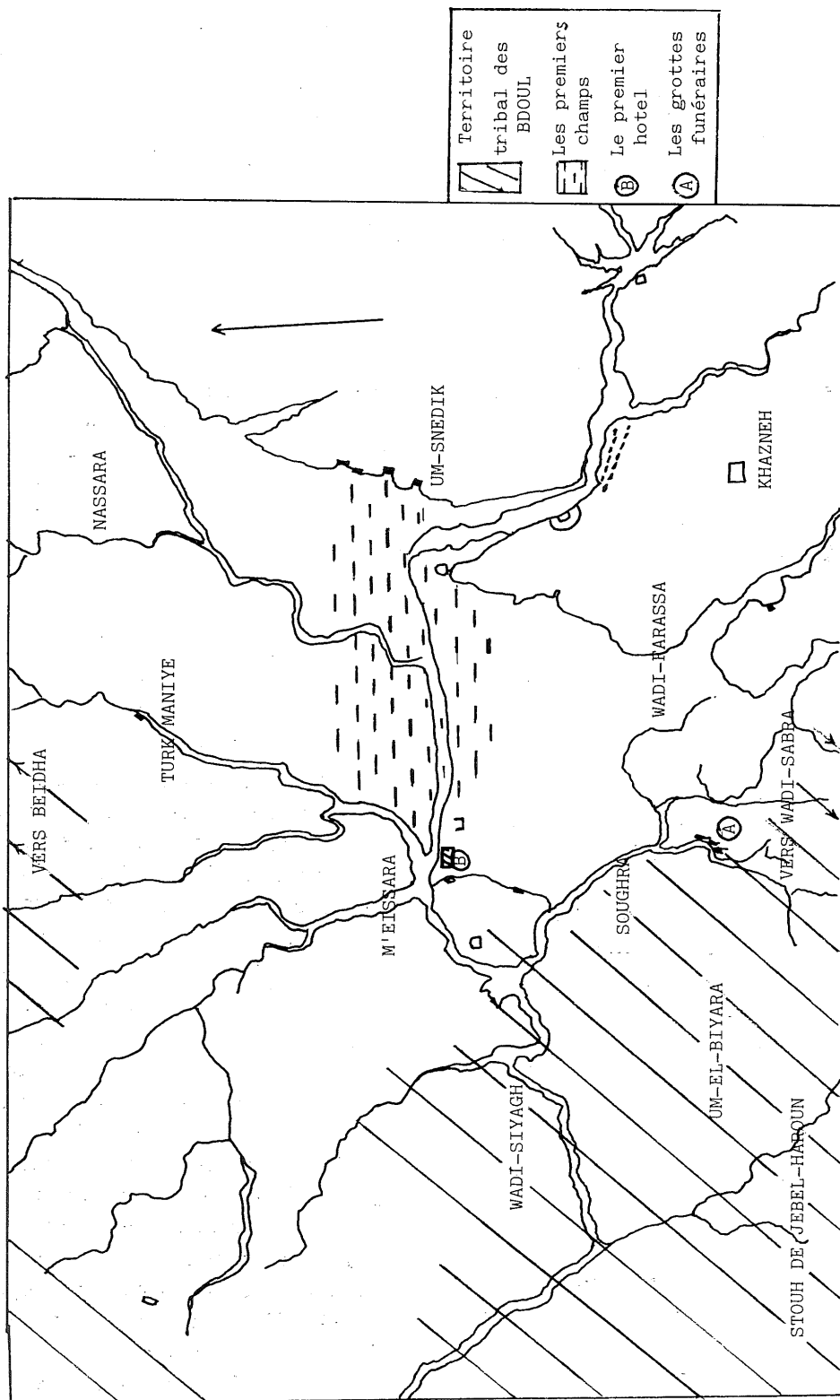
3- Analyse synchronique

Les semi-nomades de Beidha et des Stouh de Jebel-Haroun.

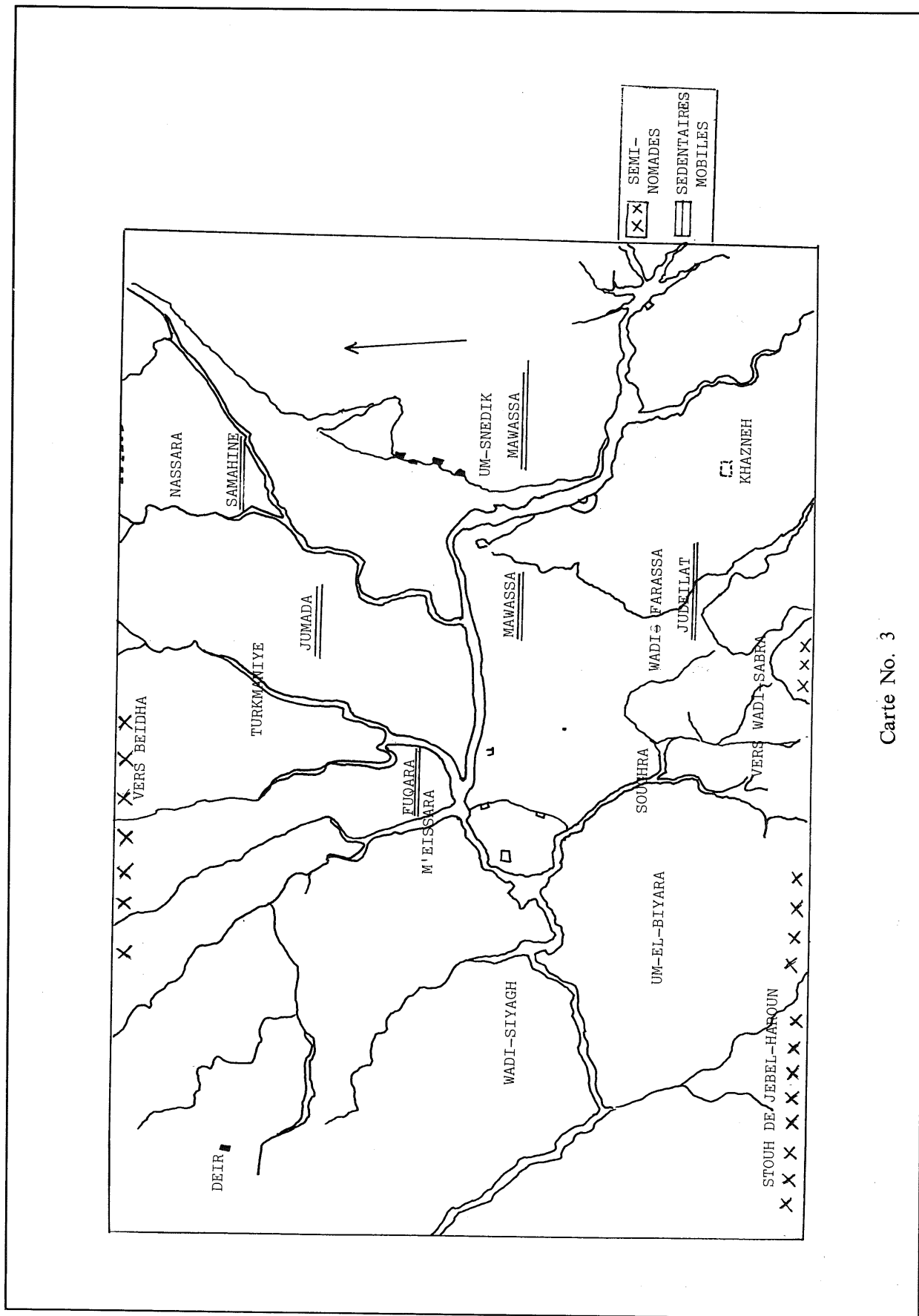
Deux traits principaux caractérisent le mode de vie des semi-nomades: les activités économiques concentrées sur l'élevage du troupeau, (l'agriculture venant en second lieu), et leur mode de déplacement saisonnier. (voir la carte No. 3)

Beidha et les Stouh sont leur territoire de campement. Ils se trouvent en retrait du site archéologique et du circuit touristique. Ce territoire est caractérisé par la rareté des grottes archéologiques. Il correspond à l'habitat bédouin où les déplacements et le choix des campements sont d'abord définis par rapport à la proximité des points d'eau et des pâturages. Leur économie agro-pastorale est surtout définie par le troupeau (moutons et chèvres en moyenne 100 têtes). L'agriculture, essentiellement de l'orge pour le troupeau, vient en second lieu. Elle n'est pas pratiquée systématiquement tous les ans. Les revenus issus du tourisme sont aussi de moindre importance.

A Beidha, le déplacement semi-nomade se fait avec le retour chaque hiver au site et l'occupation des grottes vers le



Carte No. 2



Carte No. 3

Mu'eisra. Aux Ṣtouḥ, certains Bdoul s'abritent dans les *tor* l'hiver, et d'autres viennent occuper les grottes de Thughra. Cette occupation des grottes ou des *tor* est identique à celle décrite aux étapes précédentes.

Le semi-nomadisme des Bdoul à Petra (à Beidha et au Ṣtouḥ de Jebel-Haroun) se définit par les trois caractéristiques suivantes:

— L'alternance entre deux types d'habitation, grotte et Beit-Sha'ar ou bien, *tor* et campement de plein-air (Pl. XCIV, 2).

— La présence de quatre "structures" d'habitation regroupées en deux ensembles: grottes archéologiques, et abri sous-roche d'une part, et d'autre part, le Beit-Sha'ar et les campements de plein-air.

— Les déplacements saisonniers sur un même parcours qui est réduit, de l'ordre de 6 à 10 km., et dans un territoire délimité par le site naturel et archéologique.

— Les grottes ont trois fonctions:

- abri, dont l'utilisation est saisonnière.
- bergerie, dont l'utilisation est aussi saisonnière.
- stockage, dont l'utilisation s'étale sur toute l'année.

Ces fonctions sont spécifiques et ne sont pas interchangeable sauf pour les deux premières réunies parfois dans une seule grotte.

b- Les sédentaires - mobiles du site de Pétra.

L'élément principal qui caractérise ce mode de vie et le différencie à la fois du précédent et de celui des autres bédouins de la Jordanie est:

— L'occupation du site archéologique de Pétra.

— L'introduction de nouvelles fonctions pour les grottes.

— La présence et l'importance de l'économie touristique.

— L'organisation des grottes en ensembles aménagés.

Les Bdoul de Pétra sont en contact permanent avec les touristes à travers le commerce qui est une activité présente dans

toutes les familles. Ils sont également des pasteurs-cultivateurs et possèdent des champs et des troupeaux dont l'effectif est inférieur à ceux des semi-nomades (15 têtes en moyenne).

Cette nouvelle situation requiert toute une organisation du site et des grottes.

L'occupation de l'espace du site se fait suivant le regroupement des unités lignagères: (voir la carte No. 3)

— Les Fuqara, sont installés essentiellement à Mu'eisra

— Les Mawassa, occupent le Wadi-Nassara et les grottes derrière le théâtre.

— Les Judeilat sont à Wadi-Farassa.

— Les Samahine à Wadi-Maṭaha et à Um-Ṣnedik.

— Les Jumada à Turkmanieh.

Les grottes constituent la structure d'habitation principale. Elles sont regroupées en ensembles devant lesquels s'étendent des terrasses aménagées. (Pl. XCVI, 1-2) Chaque ensemble appartient à une famille qui l'occupe d'une façon exclusive. Ils sont constitués de grottes monofonctionnelles dont les rôles sont les suivants:

— La grotte d'habitation ou de couchage, attribuée à chaque épouse. (Pl. XCVII, 1)

— La grotte-cuisine, avec trois types de foyer: mobile, délimité par trois pierres, construits ou creusés, et, parfois même un braséro.

— La grotte-bergerie. (Pl. XCV, 2)

— La grotte-étable, pour abriter l'âne, le cheval ou le chameau.

— La grotte qui contient le *taboune* (le four à pain). Lorsque ces deux dernières fonctions sont présentes dans un ensemble elles sont toujours regroupées dans une même grotte.

— La grotte de réserve, pour les aliments comme le thé, le riz le sucre et la farine, et/ou le bois.

— La grotte de stockage, est rarement incluse dans les ensembles. Elle est souvent isolée, à mi-chemin entre les champs et les habitations.

Critères de choix des ensembles.

— L'emplacement, est fréquemment déterminé par le regroupement lignager de l'époux et plus rarement par celui de l'épouse.

se. Parfois l'occupation saisonnière détermine aussi le choix au fond de wadis pour la protection contre les vents et les pluies ou sur des plateaux ventés.

— L'accès, est d'abord défini par les terrasses.

Les terrasses:

Elles ne regroupent pas systématiquement les grottes d'un seul ensemble. Elles sont souvent aménagées, délimitées par des murets de soutènements. L'atterrissage obtenu, après avoir vidé les grottes, a toujours servi pour niveler et aggrandir la terrasse. Ainsi, le nettoyage et le vidage des grottes est contemporain de l'aménagement et du nivellement des terrasses, lorsqu'elles ne sont pas des promontoires rocheux.

Une installation sédentaire dans le site peut être induite à partir des observations qui sont les suivantes:

— Leur présence permanente, tout le long de l'année, dans le site.

— La division de l'espace entre les unités lignagères.

— La désignation et l'appartenance des grottes et des ensembles aux familles.

Pourtant, à l'intérieur du site et de cette organisation nous constatons une mobilité par rapport à la durée de l'occupation des grottes et des ensembles. Cette mobilité est accompagnée des éléments suivants:

— La possession ou non par la famille du *Beit-Sha'ar*.

— La possession ou non par la famille de plusieurs ensembles de grottes.

— Le type d'activité économique dominant: agro-pastorale, monétaire (commerciale ou salariale), ou double, regroupant les deux.

1er degré de mobilité : Entre un ensemble de grottes et le *Beit-sha'ar*. La tente est dressée sur les terrasses devant les grottes ou à proximité, et l'été, lors des moissons, près des champs. On retrouve cette mobilité entre deux structures différentes chez les familles qui ont une économie double, avec toutefois une importance plus grande des activités commerciales.

2ème degré de mobilité: Entre un ensemble de grottes occupé l'hiver un deuxième en-

semble d'été avec entre les deux l'emploi du *Beit-Sha'ar* lors des moissons. (Pl. XCVII, 2)

Cette mobilité qui accompagne trois déplacements est présente chez les familles qui ont une économie double où les activités agro-pastorales sont plus importantes (troupeaux plus nombreux, possession de champs et de jardins).

Absence de mobilité : Où un seul ensemble de grottes est occupé tout le long de l'année. Ces familles ne possèdent pas de tente et leur économie est uniquement fondée sur les activités commerciales.

4- Economie, degré de sédentarisation et fonctions des grottes

L'étude par chaque habitant à Wadi-Farassa (où nous avons une concentration des Judeilat) et à Mu'eisra (essentiellement Fuqara) permet de souligner certaines relations entre les activités économiques de la famille et le degré de sa sédentarisation en fonction des grottes.

Les tableaux No. 1 et 2 (pp. 13-14) synthétisent ces deux études.

L'économie uniquement monétaire regroupe les activités commerciales touristiques à Pétra, et les activités salariales à l'extérieur du site. Cette dernière est de deux types:

— Le départ à l'armée laissant l'épouse et les enfants à Pétra.

— L'émigration vers les autres pays arabes en l'occurrence Bahreïn, laissant l'épouse avec les enfants à Pétra.

En 1983, quatre départs étaient enregistrés pour les deux régions étudiées. Leurs ensembles d'habitation comportaient uniquement la pièce de couchage.

Ceux dont l'économie est touristique possèdent un plus grand nombre de grottes dont les fonctions s'élargissent de la pièce de couchage à la cuisine, à la réserve et à l'étable.

Ces deux activités économiques correspondent à un mode de vie sédentaire sans mobilité. A l'inverse, l'économie double accompagne toujours un grand nombre de grottes monofonctionnelles. où, l'intensité

de l'économie agro-pastorale est liée à l'utilisation d'un plus grand nombre de grottes de stockage et de bergerie.

En ajoutant aux modes d'utilisation des grottes par les sédentaire-mobiles, ceux des semi-nomades, nous obtenons les tableaux No. 3 et No. 4.

5- Les grottes: abri ou habitation

La notion d'abri pour une grotte est directement dérivée de celle donnée à un *tor*.

Un *tor*: 1- est multifonctionnel = couchage, bergerie, cuisine, réserve et stockage.
2- son occupation est saisonnière.
3- changement d'occupant à chaque retour de la saison.
4- désigné par un nom autre que celui de son occupant.
5- à la périphérie de Pétra, loin du site.

Ces caractéristiques sont liées à un mode de vie nomade et une économie uniquement pastorale.

Une grotte-abri: 1- est multifonctionnelle = couchage, cuisine, réserve.
2- accompagné de l'apparition de deux grottes monofonctionnelles: la bergerie et le stockage.
3- son occupation est saisonnière.
4- retour du même occupant.
5- est désignée par le nom de son occupant
6- se trouve dans le site.
7- cette fonction est incompatible avec la grotte funéraire.

Les caractéristiques No. 4 et 5, différencient la grotte-abri du *tor*, et sont liées à un mode de vie semi-nomade, accompagné d'une économie agro-pastorale.

La grotte: ensemble d'habitation: 1- chaque grotte est monofonctionnelle, un ensemble de plusieurs grottes regroupe un nombre important de fonctions.
2- organisation en ensemble.

- 3- occupation permanente ou saisonnière.
- 4- retour du même occupant
- 5- est désigné par le nom de l'occupant.
- 6- est placé dans le site.

Les fonctions qui sont réunies dans une grotte-abri occupent dans un ensemble d'habitation des structures différentes. La grotte devient ainsi monofonctionnelle. Avec ces caractéristiques la notion d'abri liée à une grotte est remplacée par celle d'habitation qui accompagne un mode de vie en voie de sédentarisation.

Conclusion

Cette simultanéité de modes de vie n'entrave pas l'unité tribale. Elle n'est pas indicatrice non plus d'une division sociale ou généalogique. Nous la trouvons répartie dans la généalogie à l'horizontale, dans une génération, entre cousins et même frères.

Pourtant sur un plan conceptuel ces modes de vie sont interprétés dans une perspective évolutionniste linéaire. Ils sont présentés se succédant l'un à l'autre dans un ordre défini et fini. Ceci est surtout explicite dans l'utilisation des couples d'oppositions comme explication: "nomade-sédentaire", "habitation naturelle-habitation construite", etc... qui sont servies pour démontrer un passage nécessaire du premier au deuxième.

Sur le plan diachronique, à travers la généalogie ascendante nous trouvons cette succession.

Retrouver ces modes de vie à la fois sur le plan diachronique et synchronique, indique que leur succession n'est pas une condition nécessaire à leur apparition et, que leur apparition n'est pas un effet de transformations culturelles totales, car, à l'intérieur de la même tribu, certains membres suivent cette succession et d'autres en suivent de différentes.

Anna-Ohannessian-Charpin

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LA NECROPOLE DE QASTAL

par

Sylvie Bacquey et Frédéric Imbert

Jusqu'à cette date (novembre 1986), deux missions successives ont été menées à bien sur le site de Qastal (30 km au sud d'Amman), aux mois de septembre 1985 et juillet 1986. Le présent rapport va donc nous permettre de présenter les recherches entreprises et les résultats obtenus lors de ces deux missions.

PREMIERE MISSION

Introduction

Cette mission avait été organisée par Mademoiselle Patricia Carlier archéologue, et Monsieur Frédéric Morin architecte, afin de compléter leurs recherches sur le château omeyyade de Qastal. Elle avait pour but l'étude de tombes construites apparemment d'époque ottomane, situées à l'extérieur du mur ouest du château, de même que l'étude de graffitique l'on peut apercevoir sur les murs du château, de la mosquée et de la *birkat* al-Zubayr. Rapidement ces tombes et les stèles funéraires qui les complètent se sont avérées être des imitations datant du début du siècle: 1326/1329. Elles concernaient toutes la célèbre famille al-Fayiz.

Ce fut lors de prospections aux alentours du château que la nécropole de Qastal fut découverte le 09/09/85, à 312 m. à l'ouest du château. Seules trois stèles étaient apparentes, et c'est au cours d'une deuxième prospection plus approfondie qu'onze autres stèles ont été mises à jour, dont une d'écriture sémitique, peut-être nabatéenne. Onze stèles ont été transportées au musée de Madaba pour les préserver de tout dommage. Un plan fut tracé le jour même par Mr Morin, chaque stèle étant numérotée selon l'ordre chronologique de la découverte.

Résultats

- Trois de ces stèles comportent des dates abbassides: Q1 = 229 h/843 j.c.; Q2 = 239 h/853 j.c.; Q12 = 205 h/820 j.c.

- Quatre d'entre elles sont gravées d'une écriture coufique très anguleuse, typiquement omeyyade: Q4; Q5; Q7; Q13.
- Les stèles Q5 et Q11 portent des noms féminins, et Q13 se réfère à une femme mais le nom n'a pas encore été déchiffré.
- Les stèles Q5; Q11; Q12; portent des noms masculins.
- Après la présentation détaillée de chaque stèle, une première étude onomastique nous permettra de cerner l'identité de certains de ces personnages.

Qastal 1 (Plan L 5)

Stèle en calcaire, rectangulaire, aplanie.

Dimensions = 63 × 34 cm

Epaisseur = 15 cm

Surface écrite = 55 × 34 cm

Découverte enterrée; la partie supérieure est très érodée et l'angle supérieur droit est cassé. Présence de lichens. Elle comporte 11 lignes d'écriture anguleuse évoluant vers le cursif.

... - 1

... - 2

... - 3

... - 4

5- أسقه

6 - من حوض محمد

7 - النبي صلى الله عليه

8 - وسلم هلك نَفِيع / نَفِيع / نَفِيع⁽¹⁾

9 - في المحرم سنة

10 - ثمانية (Sic) وعشرين وما

11 - تتين

1 Ce nom est attesté dans al-Ikmal (ibn Makula) volume XII p. 358 et dans Tabari volume VIII p. 129 et p. 164.

Stèle en calcaire, rectangulaire, aplanie.

Dimensions = 100 × 45 cm

Epaisseur = 23.5 cm

Surface écrite = 81.5 × 41 cm

Découverte dressée à la tête d'une tombe rectangulaire. La partie supérieure est érodée, présence de lichens. Elle comporte 13 lignes d'écriture anguleuse évoluant vers le cursif.

- 1 - ... الله [الر]
- 2 - حليم ... اللهم أغفر
- 3 - ... علي
- 4 - ... ولقه
- 5 - حجته و [نـ]ور له في
- 6 - ... قبره
- 7 - ... الحقه بنبيه محمد
- 8 - صلى [الله] عليه وسلم
- 9 - توفي ... رضي الله
- 10 - عنه في مستهل ذي
- 11 - القعدة من سنة
- 12 - سبعة (sic)
- 13 - وثلاثين ومائتين

Qastal 3 (Plan H 4)

Stèle en calcaire, rectangulaire, aplanie.

Dimensions = 90 × 44 cm

Epaisseur = 26 cm

Surface écrite = 74.5 × 40 cm

Découverte dressée à la tête d'une tombe rectangulaire. Elle est difficile à déchiffrer à cause de l'érosion et des lichens. Elle comporte 9 lignes d'écriture anguleuse évoluant vers le cursif.

- 1 - [بسم] الله الرحمن
- 2 - الرحيم [شهد
- 3 - الله أنه لا اله
- 4 - الا هو و الملا
- 5 - نكة واولوا العلم]
- 6 - قائم (sic) بالقسط
- 7 - لا اله الا هو العز

- يز الحكيم الحمد لله

9 - رب العالمين

Qastal 4 (Plan G 5)

Stèle en calcaire, rectangulaire, aplanie.

Dimensions = 84 × 49 cm.

Découverte enterrée, laissée in situ sur la nécropole. Elle est très érodée. Elle comporte 8 lignes d'écriture anguleuse.

- 1 - ...
- 2 - ... [شهد]هد [الله أنه]
- 3 - لا اله الا هو
- 4 - [و] [الملائكة و [اول]
- 5 - و العلم قائم (sic)
- 6 - بالقسط لا اله
- 7 - الا هو العزيز
- 8 - الحكيم

Qastal 5 (Plan H 5)

Stèle en calcaire, rectangulaire, aplanie (Pl. XCIX, 1,2).

Dimensions = 76 × 49 cm.

Epaisseur = 14 cm.

Surface écrite = 54 × 31 cm.

La majeure partie de la stèle était enterrée. Le côté gauche et le bord inférieur sont biseautés. La partie supérieure est mutilée. Elle comporte 7 lignes d'écriture anguleuse.

- 1 - الله
- 2 - ... اللهم
- 3 - أغفر لآمتك
- 4 - أم الحجاج ا
- 5 - بنت محمد بن
- 6 - العباس ذنبها
- 7 - ولق(ن)ها (sic) حجتها

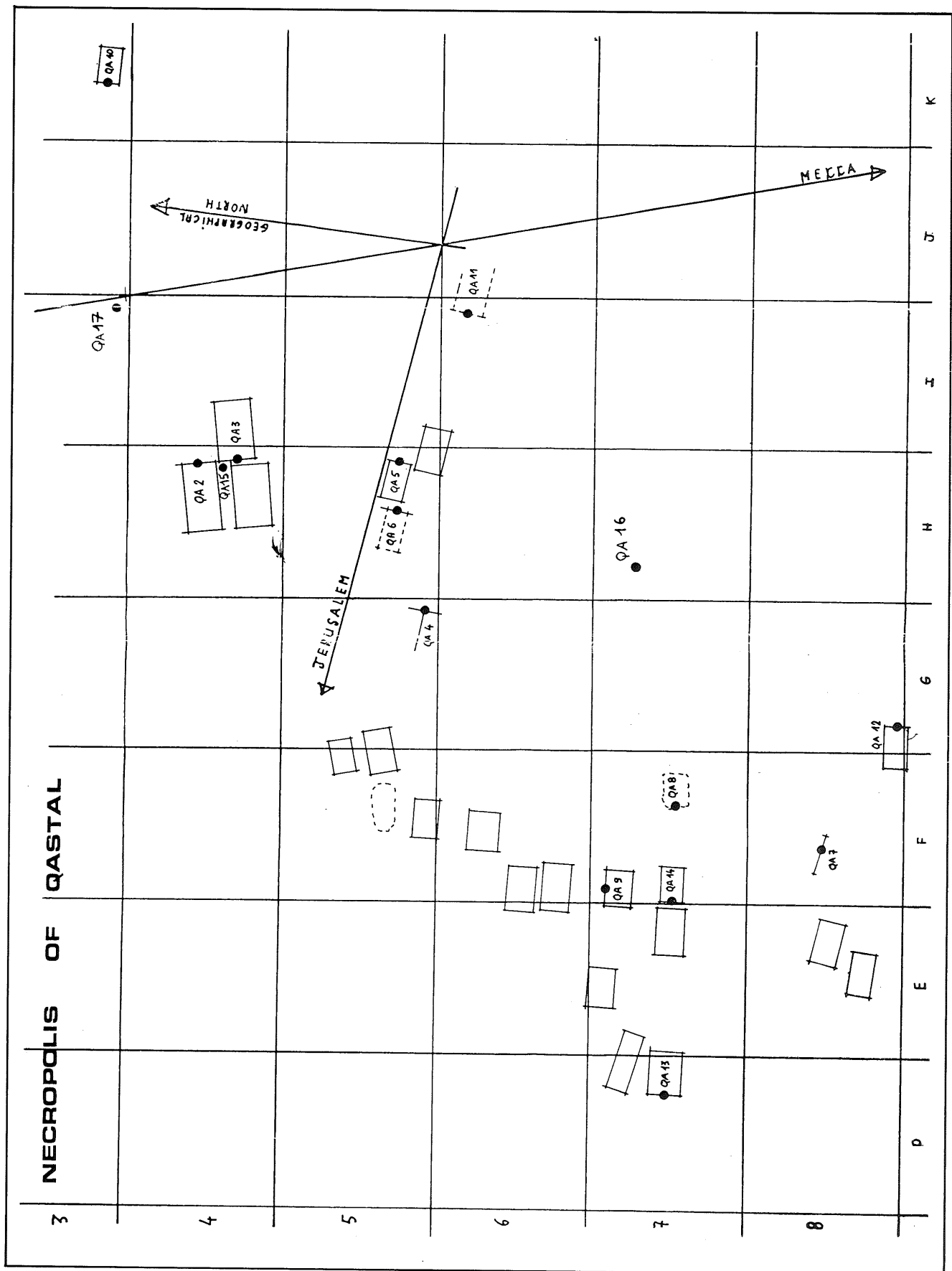
Qastal 6 (Plan H 5)

Stèle en calcaire, rectangulaire, aplanie.

Dimensions = 76 × 45 cm.

Epaisseur = 21 cm.

Découverte enterrée, l'angle inférieur gau-



che est cassé. Elle est très érodée, rongée par des lichens, et donc très difficile à déchiffrer. Elle comporte 10 lignes d'écriture anguleuse évoluant vers le cursif.

- 1 - بِسْمِ اللّٰهِ الرَّحْمٰنِ
- 2 - الرَّحِيْمِ يَشْهَدُ
- 3 - مُحَمَّدٌ اَنْ [لا]
- 4 - اِلَه [الا]
- 5 - اللّٰه
- 6 - وَحْدَهُ لَا
- 7 - شَرِيْكَ لَهُ وَ
- 8 - اَنَّ مُحَمَّد
- 9 - اَعْبَدَهُ وَ
- 10 - رَسُوْلُهُ

Qastal 7 (Plan F 8)

Stèle en calcaire, rectangulaire, aplanie.
Dimensions = 101.5 × 46.5 cm.
(Pl. XCIX, 3,4)
Epaisseur = 27 cm.
Surface écrite = 40 x 41 cm.

Découverte enterrée tête bêche, seule la partie supérieure est gravée. Deux lignes sont très érodées et difficiles à déchiffrer. De larges fissures traversent la partie inférieure. Elle comporte 6 lignes d'écriture anguleuse, typiquement omeyyade.

- 1 - [بسم] اللّٰه الرَّحْمٰنِ
- 2 - الرَّحِيْمِ اَلْهَم صَلّ
- 3 - اَنْتَ وَمَلَائِكَتُكَ ا
- 4 - لِمُقَرَّبِيْنَ وَاَنْبِيَائِكَ
- 5 - الْمُرْسَلِيْنَ ...
- 6 - ...

Qastal 8 (Plan F 7)

Stèle en calcaire, rectangulaire, aplanie.
Dimensions = 85 × 41 cm.
Epaisseur = 20 cm.
Surface écrite = 55 × 38 cm.

Découverte enterrée et laissée *in situ* sur la nécropole. Les angles supérieurs droits et gauches sont cassés, ainsi que l'angle inférieur gauche. La partie supérieure est très érodée. Elle comporte 7 lignes d'écriture

anguleuse évoluant vers le cursif.

- ... - 1
- ... - 2
- ... - 3
- ... - 4
- 5 - الْحَقُّ بَنِيَّه مُحَمَّد
- 6 - صَلَّى اللّٰهُ عَلَيْهِ
- 7 - وَسَلَّم

La stèle suivante (Q9) ne relevant pas de l'alphabet arabe, elle n'est pas mentionnée ici. II s'agit peut-être d'une stèle nabatéenne.

Qastal 10 (Plan K 3)

Stèle en calcaire, rectangulaire, aplanie
(Pl. XCVIII, 1,2)
Dimensions = 58 × 33 cm.
Epaisseur = 28 cm.
Surface écrite = 54 × 33 cm.

Découverte enterrée, tête bêche. L'angle supérieur droit et l'angle inférieur gauche sont cassés. Présence de lichens. Elle comporte 9 lignes d'écriture anguleuse évoluant vers le cursif.

- 1 - بِسْمِ اللّٰهِ
- 2 - الرَّحْمٰنِ الرَّحِيْمِ
- 3 - شَهِدَ اللّٰهُ اَنَّهُ
- 4 - لَا اِلَهَ اِلَّا هُوَ وَ
- 5 - الْمَلَائِكَةُ وَ (و) لَوْ
- 6 - الْعِلْمُ قَائِمًا
- 7 - بِالْقِسْطِ لَا اِلَهَ ا
- 8 - لَا هُوَ الْعَزِيْزُ ا
- 9 - [لِحَكِيْم]

Qastal 11 (Plan I 6)

Stèle en calcaire, rectangulaire, aplanie.
Dimensions = 60 × 53 cm.
Epaisseur = 13 cm.
Surface écrite = 56.5 × 46 cm.

Découverte couchée sur le sol; la partie supérieure et l'angle inférieur droit sont cassés. Présence de fissures et d'érosion. Elle comporte 10 lignes d'écriture anguleuse évoluant vers le cursif.

- 1 - بسم الله الرحمن الرحيم (Sic)
- 2 - الرحيم اللهم أغفر
- 3 - لأمتك بنت عبدك
- 4 - أم يوسف بنت ا
- 5 - لعاص ذنبيها و
- 6 - لق(ن)ها (Sic) حجتها نور
- 7 - لها في قبرها وو
- 8 - سع مداخلها و [ب]ليض
- 9 - وجهها آمين رب
- 10 - العالمين

Qastal 12 (Plan G 8)

Stèle en calcaire, rectangulaire, aplanie.

Dimensions = 109 × 39 cm.

Epaisseur = 22 cm.

Surface écrite = 94.5 × 37 cm.

Découverte enterrée; l'angle supérieur droit et l'angle inférieur gauche sont cassés. Présence d'érosion. Elle comporte 11 lignes d'écriture anguleuse évoluant vers le cursif.

- 1 - بسم الله الرحمن الرحيم
- 2 - حيم اللهم
- 3 - أغفر لعبدك
- 4 - ابن عبدك ابن ا
- 5 - متك ال[و] ليد ابن (Sic) ا
- 6 - لوليد (؟) و لقه
- 7 - حجه و نور له
- 8 - في قبره ووسع مد
- 9 - اخله وبيض وجهه
- 10 - الح[قه] بنبيه ما
- 11 - نئين و ...

Qastal 14 (Plan F 7)

Stèle en calcaire, rectangulaire, aplanie.

Dimensions = 67 × 57.5 cm.

Epaisseur = 14 cm.

Surface écrite = 60 × 53 cm.

Découverte enterrée, tête bêche. La partie inférieure est érodée. Présence de trous et de lichens. Elle comporte 11 lignes d'écriture anguleuse évoluant vers le cursif.

- 1 - بسم الله الرحمن الرحيم [ر] حيم
- 2 - اللهم صلي (Sic) أنت وملائكتك
- 3 - على محمد عبدك ورسو
- 4 - لك ونبيك كما صليت
- 5 - ورحمت وباركت على
- 6 - ابراهيم (Sic) وآل ا
- 7 - برهيم (Sic) انك
- 8 - حميد مجيد
- 9 - كتب في جماد [ي]
- 10 - الأول (Sic) بسنة
- 11 - ...

ETUDE ONOMASTIQUE

Cette étude s'est révélée très difficile du fait du peu d'ouvrages historiques ou onomastiques traitant de la région de Qastal. Malgré cela, nous avons pu rassembler quelques remarques intéressantes qu'il nous faudra encore approfondir.

Ces remarques concernent les noms:

(Q5); أم الحجاج ابنت محمد بن العباس

(Q11); أم يوسف بنت العاص

(Q12). ابن امتك الوليد بن لوى

Dans l'ouvrage *Tarih al-Ya'qubi* Tome II, p. 331, l'auteur nous parle du célèbre caliphe al-Walid b. Yazid en disant:

... وآمه أم الحجاج بنت محمد بن يوسف الثقفي ...

Même si la dernière partie du *nasab* ne correspond pas exactement, on peut retenir l'hypothèse selon laquelle la défunte pourrait être une parente du caliphe omeyyade ou de sa famille.

Ceci d'autant plus que le chercheur Antonio Almagro Gorbea précise dans son ouvrage "El Palacio omeya de Amman" Tome I, p. 29 à 33 = "Une fois caliphe, il (al-Walid II) résida aux environs d'Amman,

peut-être à Qastal''

L'hypothèse semble se vérifier lorsque l'on considère les informations trouvées dans l'ouvrage de Ya'qubi cité plus haut, p. 334, à la fin de la biographie d'al-Walid:

وخلّف (الوليد) من الولد الذكور أربعة عشر ذكراً
= عثمان ويزيد والحكم والعباس وفهر ولؤي
(لؤياً) والعاص وموسى وقصي وواصل وذؤابة وفتح
والوليد وسعيد .

Les informations que nous venons de présenter semblent bien converger pour appuyer notre hypothèse: certains des personnages (surtout des femmes) enterrés à Qastal se rattachent directement à la dynastie omeyyade des marwanides. Par exemple أم الحجاج serait la petite-fille du fils du calife al-Walid. De même

يوسف serait la petite-fille du calife.

Malheureusement par manque de preuves formelle, rien ne peut encore être affirmé, mais l'étude onomastique, quoique difficile, n'est pas encore achevée.

DEUXIEME MISSION

Introduction

Organisée par Mlle Sylvie Bacquey et M. Frédéric Imbert, avec le concours du C.N.R.S. de Marseille, le G.R.E.P.O. et l'Université de Provence, cette mission avait tout d'abord pour but de compléter la première mission dont nous venons de parler.

Parallèlement à cela, notre intention était d'effectuer une prospection plus large sur les sites omeyyades les plus importants comme Qusayr 'Amra et Qasr Kharaneh, afin de découvrir, le cas échéant les nécropoles se rapportant à ces châteaux.

En effet, nous partons de l'hypothèse simple selon laquelle tout châteaux omayyade doit être accompagné de sa propre nécropole.

Ces sites ont été l'objet de divers peuplements, omeyyades et abbassides sans doute, puis laissés aux mains des populations locales bédouines.

Selon une logique des plus évidentes, ces

populations devaient enterrer leurs morts à une distance plus ou moins grande du château; la nécropole de Qastal étant, elle, située à 312 m du mur d'enceinte. L'étude de la nécropole de Qastal, qui nous intéresse plus précisément ici, met en avant l'importance de la nécropole sur un site islamique au même titre que le château et la mosquée, pour une étude plus approfondie des châteaux omeyyades de Jordanie.

Les différentes prospections effectuées

Notre mission étant centrée sur la nécropole de Qastal, nous avons donc commencé par la prospection de ce site.

Celle-ci s'est avérée difficile du fait qu'aucune stèle n'était apparente. Il nous a fallu donc déterrer systématiquement chaque pierre ayant l'aspect d'une stèle; c'est-à-dire rectangulaire, ou carrée, et aplanie.

Puis nous avons étendu la prospection aux alentours du château de Qastal, plus exactement à l'extérieur du mur sud où se trouve un petit cimetière.

De même une prospection a été effectuée au-delà de l'autoroute qui mène au Queen Alia International Airport, dans les cultures où un certain nombre d'inscriptions nous avaient été signalées. En dehors du site de Qastal, nous avons été gracieusement invités à visiter le site de qasr al-Kharaneh par Dr. Ghazi Bishe, que nous tenons à remercier vivement ici, au même titre que Fawzi Zayadine pour leur collaboration.

Puis nous avons effectué une prospection autour du château de Qusayr 'Amra dans le but de découvrir des traces de nécropole comme nous l'avons déjà signalé.

Le résultat des recherches

Sur le site de Qastal, les découvertes peuvent être réparties en deux catégories:

- 1) D'abord sur la nécropole elle-même, trois nouvelles stèles ont été découvertes et viennent s'ajouter aux 13 stèles mises à jour lors de la précédente mission; Leur étude est en cours; nous présentons donc les premiers résultats qui ne sont pas complets.

Qastal 15 (Plan H 4)

Stèle en calcaire, rectangulaire, aplanie.
Dimensions = 64.5 × 51.5 cm.
Epaisseur = 20 cm.

Elle fut découverte le 05/07/86, la face enterrée, entre Q2 et Q3 et appartient sans doute à la troisième tombe (cf. plan). Très érodée, elle est endommagée par des trous et des fissures. Les quatre angles sont cassés. Elle comporte 7 lignes d'écriture anguleuse évoluant vers le cursif.

- 1 - بسم الله الرحمن الرحيم
- 2 - ... شهد (؟) محمد
- 3 - ... ان .. و
- 4 - ..
- 5 - الحق بنبيه محمد
- 6 - صلى الله عليه و
- 7 - سلم

Qastal 16 (Plan H 7)

Stèle en calcaire, rectangulaire, aplanie.
Dimensions = 108 × 45 cm.
Epaisseur = 26 cm.
Surface écrite = 49 × 45 cm.

Découverte le 09/07/86, le soir grâce à la lumière rasante du soleil, couchée sur le dos. Les 3/4 supérieurs sont mutilés. Présence de trous, de lichens et une entaille sur le bord gauche. Elle comporte 3 ou 4 lignes d'écriture².

- 1 - ...
- 2 - ... ليد
- 3 - الله
- 4 - ...

Qastal 17 (Plan I 3)

Stèle en calcaire, rectangulaire, aplanie
(Pl. XCVIII, 3,4)
Dimensions = 57.5 × 38.5 cm.
Epaisseur = 15 cm.
Surface écrite = 20 × 36 cm.

Découverte dressée le 13/07/86; les 3/4

supérieurs sont complètement érodés, l'angle inférieur gauche est cassé et ampute la fin des deux dernières lignes. Elle comporte 4 lignes d'écriture anguleuse.

- 1 - لمثكة (Sic) و [اولوا] العلم
- 2 - قائم (Sic) بالقسط
- 3 - لا اله الا هو
- 4 - العزيز [الحكيم]

2) Sur la nécropole, et surtout dans le cimetière au sud du château, plusieurs pierres ont été mises à jour, gravées peut-être d'inscriptions sémitiques (?). D'autres pierres portent des traces de dessins sans doute anciens.

Quant aux prétendues inscriptions se situant dans les cultures du côté du barrage de Qastal, rien n'a été découvert, ce qui n'implique pas qu'aucune n'existe véritablement puisque la courte durée de notre mission ne nous a pas permis d'approfondir les recherches.

Lors de notre visite au Qasr al-Kharaneh, Dr Ghazi Bishe nous a permis de photographier et d'étudier de toutes nouvelles inscriptions omeyyades qui ont été découvertes récemment dans une des sallas à l'étage. Nous avons pu ainsi comparer ces caractères avec ceux des stèles de la nécropole de Qastal. Ainsi la forme des caractères, nettement anguleuse, correspond bien au type d'écriture omeyyade que nous retrouvons sur nos stèles (par exemple Q 7).

Quant à la prospection effectuée à Qusayr 'Amra, elle ne nous a pas permis de situer la nécropole du château qui doit logiquement exister. Par contre, une inscription nouvelle (sans doute 1 ligne) a été découverte sur un mur du puits avoisinant le château. L'étude des photographies nous permettra de déterminer ou non la valeur de cette inscription.

En résumé, cette seconde mission épigraphique à Qastal va nous permettre de compléter nos recherches en cours concernant les formulaires, les noms, et les dates figurant sur les stèles. Au travail sur le terrain, s'est ajoutée une recherche au Registration Center dont le but est double:

² Etant donnée l'ampleur de l'érosion sur la gravure, il nous est encore difficile de déterminer exactement le style de l'écriture.

- 1) Nous nous sommes plongés dans les sources arabes, afin de retrouver les personnages, hommes et femmes, cités sur les stèles dans le but précis d'éclairer l'histoire du site et du château de Qastal.
- 2) Nous avons effectué une recherche parallèle afin d'établir un corpus des inscriptions arabes de Jordanie et de Palestine; notre projet étant à long terme de relever systématiquement les inscriptions arabes de cette région.

Nous tenons à remercier le Dr. Hadidi et le Département des Antiquités de Jordanie;

Dr. Fawzi Zayadine et Dr. Ghazi Bishe pour leur gentillesse et leur compréhension face à nos problèmes.

De même nous remercions l'American Center For Oriental Research (A.C.O.R.) et Monsieur David Jacobson qui nous a apporté une aide matérielle précieuse, ainsi que l'Institut François d'Archéologie (I.F.A.P.O) et spécialement Monsieur François Villeneuve pour avoir facilité notre séjour en Jordanie.

Sylvie Bacquey
Frédéric Imbert
Université d'Aix en Provence

ARCHAEOLOGICAL NOTES & NEWS

SOUTHERN GHORS AND NORTHEAST 'ARABA ARCHAEOLOGICAL SURVEY, JORDAN 1986

by
Burton MacDonald

The Southern Ghors and Northeast 'Araba Archaeological Survey, Jordan was in the field from October 14 to December 5, 1986. A total of 39 days were spent in actual infield work. The survey team was located in a Jordan Valley Authority housing complex in Mazra' to the north of the survey area. The team consisted of G. A. Clark, Department of Anthropology, Arizona State University, Tempe; two graduate students, namely M. Gregory and M. Neeley, of the same Department and University; R. Adams, graduate student, Department of Religion and Culture, Wilfrid Laurier University, Waterloo, Ontario; N. Beqa'in, Department of Antiquities Representative; and the writer.

The survey territory extends from eṣ-Ṣafi in the north to Wadi el-Feidān in the south (Fig. 1). Geomorphologically, this area is easily divided into two sections by the pronounced, fault-bounded escarpment: 1) the north section extends from Ghor eṣ-Ṣafi and the Dead Sea as far south as Wadi Khneizir; 2) the south section extends from the edge of the escarpment, just to the south of Wadi Khneizir, to Wadi el-Feidān. From north to south, elevations vary from -392 m northwest of eṣ-Ṣafi to just above sea-level at Wadi el-Feidān. Thus, a rise of over 400 m over a distance of a little more than 40 kilometers. From west to east, the rise is even more pronounced.

For the purposes of actual infield work the territory was stratified on the basis of the Jordan 1:50,000 scale maps (Series K737) into five regions: 1) agricultural land, farms, orchards, and plantations; 2) gravels, gravel/cobble veneer, and colluvium; 3) sandy areas, including dunes; 4) piedmont (the dissected slopes of the wadi edges of *Graben*; and 5) wadi beds and their ridges. The strata frequently determined the methodology used in surveying an area. Pedestrian transects can be employed quite easily in strata one, two, and

three. However, such is not the case for strata four and five.

A total of 240 sites were surveyed. Of this number 42.5% are located in the Southern Ghors while 57.5% are located on the escarpment and southward. Both ceramics and lithics were collected at 60 (25%) sites; ceramics were collected at 123 (51%) additional sites; lithics were collected at 34 (14%) additional sites; neither ceramics nor lithics were collected at 23 (10%) architectural sites.

A preliminary analysis of the materials collected indicates that they date from the Lower/Middle Paleolithic to the Modern Period with some periods unrepresented. In the Southern Ghors, the lithic material collected is representative of the Epipaleolithic through the Early Bronze period. This material is especially abundant in the Feifa and Khneizir regions. There are no earlier lithic materials in the Southern Ghors because this area was covered by Lake Lisan up until around 16,000 B.C. In this same region ceramics from the Neolithic, Chalcolithic, Early Bronze, Iron Age, Nabataean, Roman, Byzantine, Early Islamic, and Late Islamic, especially Mamluk, are present. As is well known from work of W. E. Rast and R. T. Schaub in the area, Early Bronze material is abundant at such major sites as eṣ-Ṣafi, Feifa, and Khneizir. Frequently Chalcolithic/Early Bronze material is also associated. One, surveyed Nabataean site of great importance is that of Umm el-Ṭawabīn located high on a hill immediately to the southeast of the Wadi el-Ḥasa gorge. This site is surrounded by a wall which extends for *ca.* 2 kilometers. On the basis of the sherds collected, it appears to date from the last decades of the 1st century B.C. to the mid-2nd century A.D. Byzantine sherds have been collected from major sites as well as from camps in the area. A newly discovered site from this period is located halfway up a mountain to the north of Wadi el-Ḥasa and to the nor-

theast of the modern town of eṣ-Ṣafi. One of the structures at the site shows evidence of arches. Preliminary indications are that it could have served as a church and/or monastery during the Byzantine period. Two, well-preserved aqueducts in the Wadis Feifa and Khneizir could date to the same period. The Mamluk period is well represented in the area by the remnants of sugar mills at both eṣ-Ṣafi and Feifa. In the southern segment of the survey territory there is also material representative of the periods mentioned above as well as from earlier periods. Lithic sites, previously reported by T.D. Raikes especially in the Wadi el-Feidān gorge, have been revisited and "sherded". This material appears to date to the Lower/Middle Paleolithic, Epipaleolithic, and Neolithic Periods. At several of these sites there is present Chalcolithic, Early Bronze sherds as well. Evidence of mining and smelting from as early as the Chalcolithic-Early Bronze period is also well represented in both the Wadis el-Feidān and el-Ghuweib. (This is being investigated by a team from the German Mining Museum at Bochum, West Germany.) Moreover, there is evidence of ancient farming and camping along the terraces in these wadis. Lithic materials which appear to date from the Epipaleolithic, Neolithic, Chalcolithic, and Early Bronze were collected in significant numbers in Wadi ed-Dahal. Several major, but as yet unreported, Nabataean and Byzantine sites were surveyed along the "Old Road" between Wadi ed-Dahal and Wadi el-Ghuweib.

One desire of the survey was to relate

the work done in the Southern Ghors with that completed by the Wadi el-Ḥasa Archaeological Survey (1979-1983) on the plateau south of Wadi el-Ḥasa to the east. Two transects were carried out from the plateau to the east to the Southern Ghors: 1) between Wadi el-Ḥasa and Wadi Madsus esh-Shamali; and 2) between Wadi Madsus esh-Shamali and Wadi Umm Jufna. However, the mountains to the east of the Southern Ghors made these transects particularly difficult. The elevations range from -392 to -300 m in the Southern Ghors to more than +1000 m in the mountains to the east of the Southern Ghors and northwest of Tafila. This rise in elevation takes place over a distance of less than 10 kilometers. However, more success has been achieved in connecting the two regions especially in the area immediately south of Wadi Umm Jufna. Trails along and within the Wadis Umruq, Khneizir, Tilah, and ed-Dahal make this task much easier.

The infield work was facilitated by several contributors: Dr. A. Hadidi, Director, Department of Antiquities; and his staff, especially Dr. F. Zayadine and N. Beqa'in; Mr. D. Cimiotti, Impresit Construction Company; Mr. A.I. Ghandour, Chairman and Chief Executive Officer, Royal Jordanian; Dr. M. Haddadin, Director, Jordan Valley Authority; and Dr. D.W. McCreery, Director, American Center of Oriental Research. To these individuals and their associates the survey team expresses sincerest gratitude.

Burton MacDonald

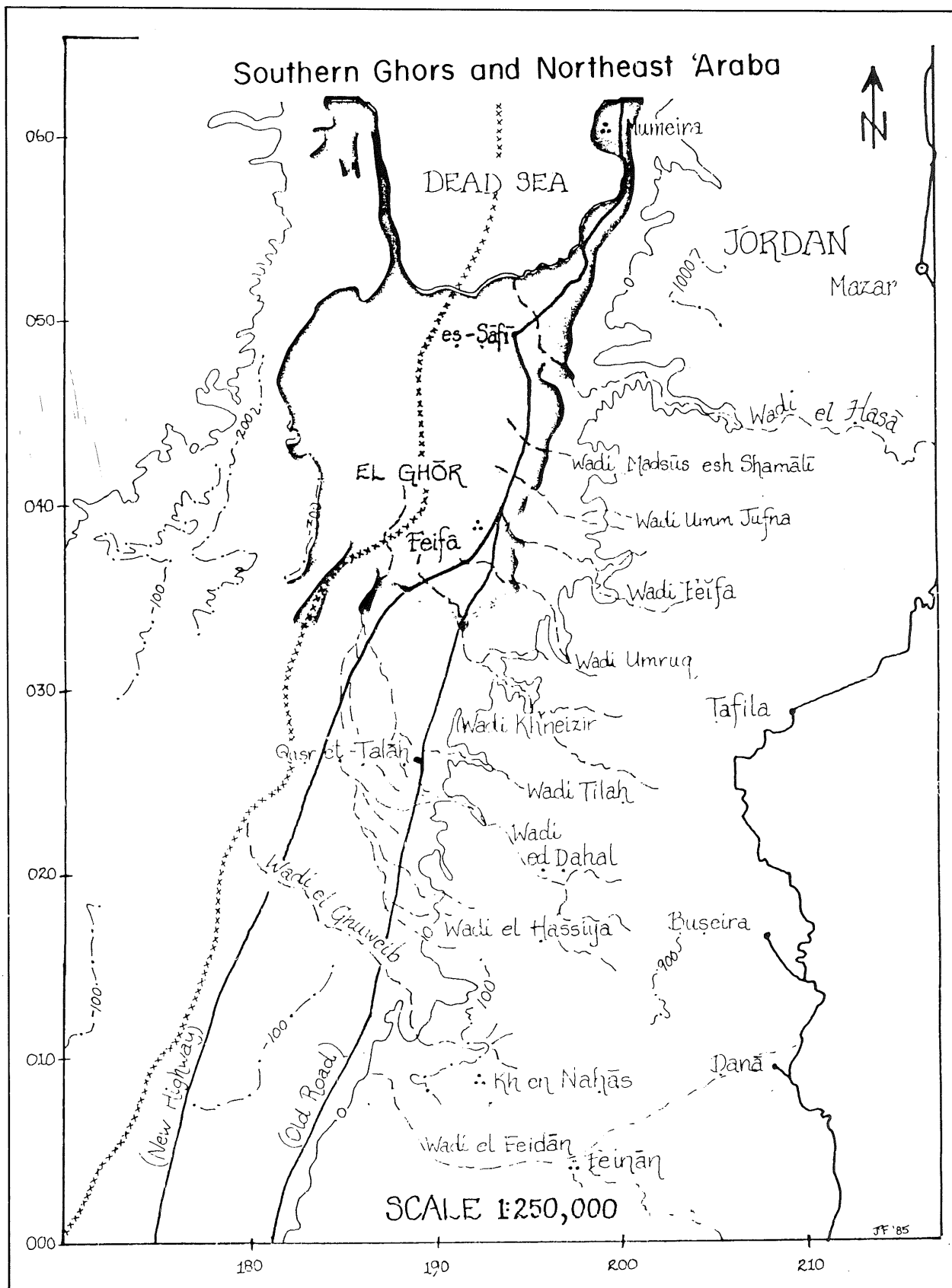


Fig. 1

SOUTHERN HAURAN SURVEY, 1985

by

David Kennedy

Henry Innes MacAdam

A preliminary survey season of some two weeks was undertaken in Spring 1985 by a joint team from the American University of Beirut and the University of Sheffield, under the aegis of the British Institute at Amman for Archaeology and History.¹

The survey area (Fig. 1) extends over some 45 km west to east and 10-15 north to south, from Šabḥa to Deir el-Qinn and the Tapline road to the international frontier with Syria. The focal point of this initial work was the large modern village of Umm el-Quttein.

The objectives of the survey were: to record the visible remains in the villages of the region; to investigate the communications systems; to map remains in the countryside; and to investigate the ancient agricultural system, traces of which, still visible on the ground, could be plotted from old aerial photographs.

In the villages, the time is ripe in several cases for re-examining remains reported to some extent by the Princeton Expedition at the turn of the century² and in some cases by subsequent visitors.³ Growing population and prosperity has led many of the beduin inhabiting the ancient remains to move out into new concrete block houses beyond the periphery of the ancient remains; this is certainly the case at Šabḥa, Quttein and Deir el-Kahf.

In Umm el-Quttein itself, the remains

of what was once clearly a considerable settlement of the Roman-early Islamic period, were examined and a start was made in preparing an overall site plan as well as plans of individual structures/complexes. The most easily intelligible remains were largely those already observed by the Princeton Expedition though now much mutilated and often scarcely recognisable. A new discovery, noted from old aerial photographs, was that the northern part of the settlement was once walled. Indeed, the clearly rectangular circuit may well have had its origin in an auxiliary fort: the size (4.5 acres/1.87 ha) would have been suitable for the *cohors equitata* named on a dedication re-used in a building in the north-eastern corner of this circuit.

The routes to the south-east and north-east were investigated. No trace could be found of the latter beyond tracks, in use now, and of any age. For the former, the known Roman road to the Azraq Oasis was probably no more than a cleared track through the boulder-strewn surface or over the flint/chert desert.⁴ To the north-west we had our most tangible results.

Just beyond the perimeter of the village, the made boulder foundation of a Roman road was discovered and traced well up towards the border and heading for Bosra. It was exactly like the remains of the much better known *Via Nova Traiana* to the west: side curbs and central rib bounding a closely packed area of boulders which

1. Funding for the survey was in part provided by the Arts and Sciences Research Committee and the University Research Board, A.U.B.; assistance to the Sheffield contingent, was provided by the British Institute at Amman for Archaeology and History, the Craven Committee, The Meyerstein Fund, and the Donald Atkinson and Hugh Last Fund.

The team consisted of ourselves, Mr. P.W.M. Freeman, Dr. D.N. Riley, Mr. I. Robinson and Mr. J. Wilson. As always we are grateful to Dr. Adnan Hadidi for kindly granting permission for the survey and to Dr.

Andrew Garrard for easing the work and making our stay in Amman so agreeable.

2. H.C. Butler, *Publications of the Princeton University Archaeological Expedition to Syria in 1904/05 and 1909*, Leyden, 1919, Division II Section A 137-142.

3. S. Gregory and D.L. Kennedy, *Sir Aurel Stein's Limes Report* (BAR, S272) Oxford, 1985, and D.L. Kennedy, *Archaeological Explorations on the Roman Frontier in North East Jordan*, (BAR, S134), Oxford, 1982, 240ff.

4. Kennedy, *op. cit.*, 169 *et seq.*

would have been overlain by beaten soil and gravel. To clinch the identification, we discovered the inscribed fragment of a milestone of the Tetrarchy beside the road 2.5 km beyond Umm el-Quttein.

Within the survey area 14 other sites were located and/or visited all of which will require further investigation. One of our team, Derrick Riley made a detailed study of selected areas of apparently ancient field systems identified on aerial photographs. He was able to formulate some criteria for differentiating the ancient, and in places very similar modern practices of land clearance. With the availability of wider aerial coverage it is hoped to be able to develop a useful study of one or more settlement sites within their agricultural setting.⁵

Many inscriptions were seen by the survey. Within Umm el-Quttein itself, 14 previously unpublished texts (nine Greek, four Nabataean, and one bilingual Greek-Nabataean) were recorded, all but one - a dated building inscription of AD 265 - being funerary. Outside Umm el-Quttein, apart from the milestone mentioned above

and another tombstone seen in ed-Dafyana, our most exciting discovery was made quite fortuitously on the first day when new team members were taken to the summit of the volcanic peak of the Jebel Qu'eis to view the region. Lying amidst the ruins on the highest point of the rim where a more recent Arab grave overlies a ruin, perhaps a small shrine, was found a Latin military building inscription in the name of *legio III Cyrenaica*. This last, together with two other fragments recorded at Azraq Oasis and the re-reading of a previously published Latin dedication from Umm el-Quttein are to be published separately.⁶

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5. D.L. Kennedy, H.I. MacAdam and D.N. Riley, "Preliminary Report on the Southern Hauran Survey, 1985", *ADAJ* (1986) forthcoming.

6. D.L. Kennedy, H.I. MacAdam, "Latin Inscriptions from Jordan, 1985", *ZPE* (1986), forthcoming.

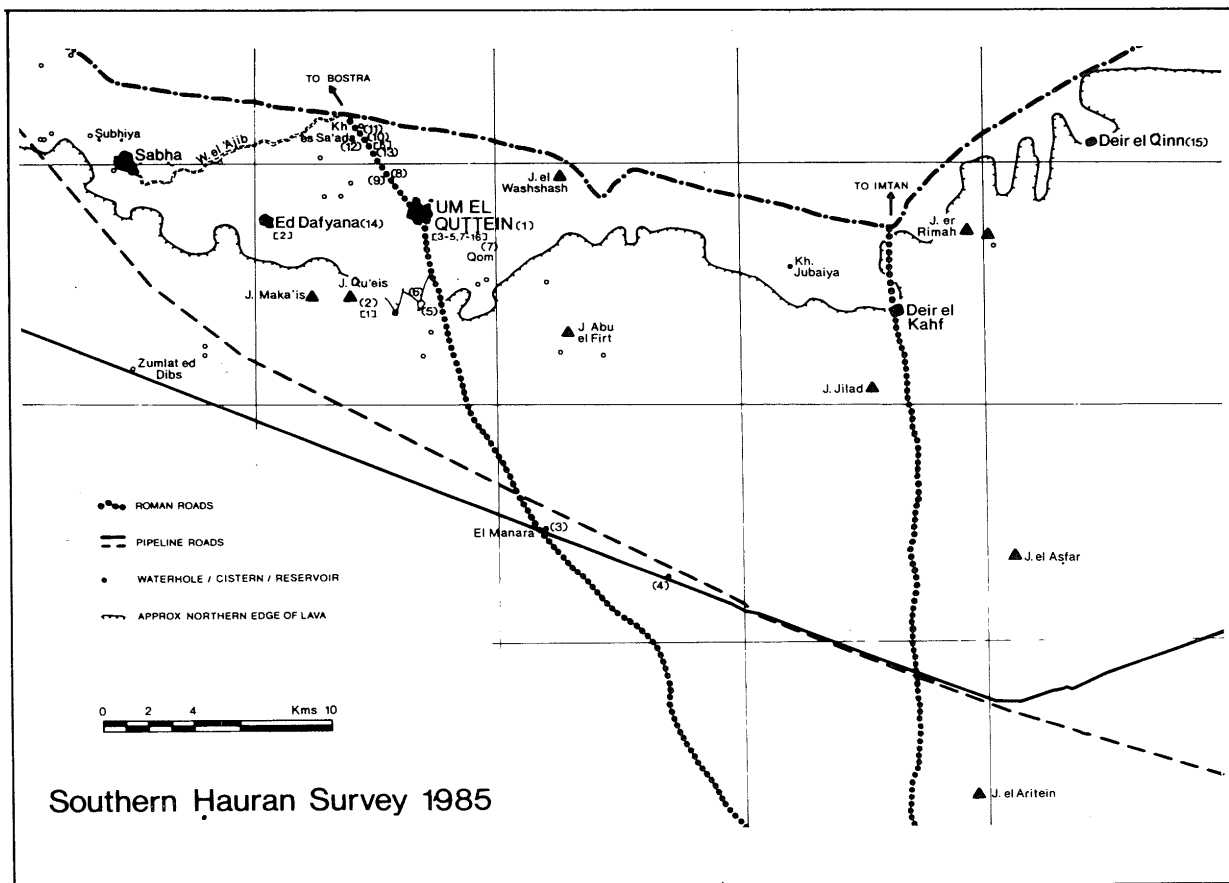


Fig. 1.

ARCHAEO-METALLURGICAL AND MINING-ARCHAEOLOGICAL STUDIES IN THE EASTERN 'ARABAH, FEINĀN AREA, 2ND SEASON

by

A. Hauptmann

The second season of the project of the German Mining Museum, Bochum, took place from February 23rd to April 26, 1986. It was carried out by grants of the Stiftung Volkswagenwerk and the permission of the Department of Antiquities of the Hashemite Kingdom of Jordan.

The project was directed by Andreas Hauptmann (mineralogy and early metallurgy). According to the complexity of problems and questions in the history of early metallurgy scientists and technicians from several faculties were involved: G. Weisgerber (mining-archaeology), Ch. Roden (archaeology, early metallurgy), G. A. Wagner (dating with scientific methods), P. Mirwald, E. Heit-kemper (ore deposits, geology), W. Frey, H. Kürschner, Ch. Jagiella, U. Baierle (botany, early fuel supply for copper smelting), G. Schneider (technical ceramics), J. Heckes (surveying, photogrammetry), S. Averbek (mining engineering), J. Kunkel (conservation, excavating technics), A. Weisgerber (drawings), A. Knauf (pottery) and Th. Henning as cook. The team was accompanied and supported by the representative of the Department of Antiquities, E. Masa'deh.

After a general survey in the Feinān area in 1984 the campaign was concentrated on a more detailed investigation of the mines, smelting sites and the problems connected with the early metal production.

The investigations conducted are at best to be explained following the way of metal production from ore via mining to the smelting and the final products.

Geology

Geological studies were carried out in some centres of early mining in Wadi Ḍana, Wadi Khalid, Qalb Ratiye and Wadi Abiad. Ores were collected and several profiles were mapped and sampled to get information on their geochemistry - the basis

not only for the reconstruction of early smelting techniques and metal amounts were produced, but also for the presently running provenance studies of metal artifacts found in Jordan from early periods.

The field work could clearly show that there are two different ore horizons in the area. The first contains mixed manganese and copper ores, the second only copper ores (*cf.* Hauptmann and Weisgerber, in *ADAJ*, 1987, in print). Measurements of the natural radioactivity of the ores showed marked differences between the two horizons. This could give important hints for the genesis of the ore deposits at Feinān and should be further studied by geologists.

Most important for the history of early metallurgy, however, is the fact that one of these ore horizons contains partly sulphur-bearing ores, while in the other only oxidic copper ores occur.

The exploitation of these different ores during different periods is a remarkable milestone insofar as it represents the development of a single step to an at least two-step smelting process. During our last campaign it was shown that this progress probably took place during Roman times.

Mining Archaeological Survey

Systematical surveying was carried out in the area of Qalb Ratiye, 2 km NW of Feinān, and in the Wadi Abiad at about 2.5 km distance. In Qalb Ratiye 58 mines were registered. Clearing work was carried out in mines 4, 6 and 12. Mines 6 and 12 were roughly mapped. Nearly on all the surfaces of the dumps of these mines chalcolithic mining tools together with pottery and flint could be collected. As also a lot of Roman pottery occurred on the same dumps, two periods of exploitation are indicated.

During Chalcolithic times the copper mineralization was exploited unsystemati-

cally. The mines grew irregular, so that the entrances of the mines were low and the galleries narrow. Picks or hammers of basalt stone have been used as tools. The use of these heavy stone tools made the walls and ceilings of the mines slightly rounded. Without exaggeration most of the nearly 60 mines at Qalb Ratiye started in the Chalcolithic or Early Bronze Age. They may represent the oldest large mining area for copper in the Near East so far known.

Nearly all these mines were reopened during Roman times after being abandoned for a period of about 2500-3000 years. First, the Roman miners cleaned the Chalcolithic mines from their wastes and took stone hammers and potsherds together with flint to the daylight. Mostly the Romans used the old mines again to reach the ore body and started to enlarge the mine inside. Only at mine no. 4 and 6 the old, narrow entrance was also enlarged and steps were hewn into the rock. Looking for copper ores not yet exploited by the Bronze Age miners the Romans enlarged the galleries near the floor (mine 12) and to the ceiling. Their most common method of prospecting for new mineralization zones was to sink shafts either from the surface of the mountains (mine no. 15, 30, 32, 35) in zones of tectonic fractions or even in the mines themselves (12, 51). This method was very successfully insofar as sometimes extraordinary large mines could be developed in the new level. It was also observed that from "new" mines shafts were sunk again to new levels, e.g. mine 12 had at least 3 floors and mine 51 four or even more. The miners climbed in the shafts up and down using step holes. In mine 51 a shaft with stairs along the wall was seen where the ore could be easily carried out, but normally ores and minerals were moved by winches or tripods with wheel. Unexpectedly we found indications that perhaps animals were used underground to carry loads. Beside the mouth of mine 51 three tanks (two with "tapping holes") were hewn out in the sandstone rock. A typical device to fix animals nearby may indicate that they were used to feed and to water animals. Obviously the ore was transported by animals to the central smelter at Feinān

town.

In the Wadi Abiad the evidence was only slightly different from Qalb Ratiye because there also Iron Age mining activities took place. At the beginning, however, in Wadi Abiad, more Chalcolithic/Bronze Age mines exploited the same low grade ore as in Qalb Ratiye. They were all reworked in Roman time, some of them on an extraordinary large scale. Prehistoric stone picks, flints, sherds and small pieces of slag lay together with Roman sherds. In Wadi Abiad there is one pure Roman prospecting tunnel. It is 2 m high, 1.50 m wide and about 40 m long. This great effort was unsuccessful and did not lead to a rich mineralization. The large size of this tunnel together with devices to fix animals show that its shape obviously was planned for transport of the ore by animals. These are extraordinary wide dimensions which make clear that nearly all other mines go back to older activities and were rarely enlarged in the entrance area.

In the Wadi Abiad like in Wadi Khalid a lot of Iron Age mines exist. Here, a completely different mineralization of copper in the shales between the sandstone was exploited. In Wadi Abiad this orebody could be reached by shafts. In one case we discovered a doubleshaft, one beside the other. So far we have no explanation for this because we could not yet enter an Iron Age mine. Both shafts are 6m deep. The larger the mines at that depth are, the worse the air for the miners became. Fresh air would be the big problem. In Wadi Khalid a shaft (17/1) was discovered at about 30 m distance to mine and shaft 17. It is situated high above mine 17 on a steep slope of the mountain. This shaft has an open depth of 30m. It had no purpose other than the ventilation of mine 17. It may be the oldest ventilation shaft of this size known for the time being.

A Chalcolithic miner's village was discovered near the mines at Qalb Ratiye. The foundations of about 17 huts partly complete, partly only in reliefs were discovered. Here also fragments of grooved or bored basalt picks or hammers so typical of the old mines were collected together with a

few Chalcolithic potsherds and flints. Details of the site were not cleared because of the Roman occupation nearby.

Another settlement in the Wadi Fidān, once discovered by T. Raikes, is also clearly attached to the Chalcolithic mining. The people here produced stone tools for the work in the mines. All stages from handy, but natural rocks up to crude sized tools with drilling holes and broken final products were discovered. From these findings, a complete set was collected for an exhibition in the Archaeological Museum in Kerak.

These two miner's settlements from Chalcolithic times are completely unique in Near Eastern Archaeology.

Other Archaeological Sites

From the many other archaeological sites discovered during the survey only the three most important are mentioned here:

- About 1 km west of Khirbet el-Feinān a low tell was remarked. It is about 1-2 m higher than the surroundings and is cut in half by the Wadi Feinān. In the profile more than 4 m of archaeological layers are visible. The level at the surface is dated to Chalcolithic times. The surface is strewn with small pieces of slag showing clear connections with the copper metallurgy. This site will probably become important for the prehistory of the Wadi 'Arabah and Southern Jordan. The Bedouins had no name for the site. Therefore it was called Tell Wadi Feinān in our records.
- On top of the 550 m high Ras Jebel Khalid, under a small abri and in a natural trench between two rocks, large amounts of ash, flint, pottery and bones from Chalcolithic, Iron Age and Roman times were discovered. We suppose a summit sanctuary, possibly of the miners working in the area around the Jebel.
- A Nabataean watch post was remarked on a rocky hill beside the pist from 'Ain el-Fidān to Feinān near the border of the two provinces of Kerak and Ma'an.

Archaeometallurgy

The work at the smelting sites from different periods in the area of Feinān included archaeological as well as scientific investigations.

Some small-scale excavations were carried out at two places of primary copper production in the vicinity of the ruins of Feinān. Both sites were selected because of their different structure of industrial remains, especially within the slag heaps and the relict of a small number of visible furnace remains. A small square was excavated at Feinān 9, a place densely scattered with intentionally broken copper slag, a small number of slagged sandstone slabs and numerous broken conical clay sticks, the so-called ladyfingers. Archaeometallurgical and archaeological work in 1984 had proved that these typical elements belonged to an early phase of copper production, dating to Chalcolithic and Early Bronze Age times.

Archaeological work in 1984 was able to show that the slag heaps at these sites have to be connected with a unique form of furnaces, consisting of a multiple relined backfront supported by stones or in contact with the ground, small side walls made of stone and clay and a horizontal semicircular bottom. Apparently no tuyeres were used for smelting, much more the metallurgical procedures were carried out by natural draught. For this purpose the small sandstone slabs may have been used to construct a grating at the frontside of the smelter to let the air pass through, while the clay sticks were set in vertically above the bottom to hinder the slag from blocking the tuyere-like spaces between the slabs. A similar technique is known from Mesoamerica, but if analytical work proves this hypothesis, it would be the first known hint on the use of natural draught in the primary copper production in prehistoric times.

At Feinān 9, 25 furnaces of this kind were excavated, but more than a dozen sites with identical features were discovered within the Feinān area.

At Feinān 5, an Iron Age smelting site

with some 10,000 tons of slag, three furnaces of different shape could be studied by small surroundings. These furnaces consist of a flat and round pit-like furnace bottom and a low dome made of slag-tempered clay. The lenticular interior of the domed furnace shows different forms of additional linings to build up a small zone of reaction and a flat pit, where the molten slag could grow stiff. Similar furnaces are known from Timna, but the state of conservation of the furnaces of Feinān 5 will allow more detailed reconstruction of the techniques of copper production.

As slags are the most important indicators of the early smelting processes and the evaluation of the amount of metal produced, samples were collected systematically not only from Feinan 5 and 9, but also from every known smelting site in the area. Also, soundings were made to get deep-sited material of slag and furnace linings for thermoluminescence dating. The furnaces excavated offered the unique possibility to take orientated samples of ceramic furnace lining and slag from decisive points of the furnace. For the first time, there is possibility to study the kind of smelting process, e.g. temperature and gas composition and distribution in ancient smelters with chemo-physical methods in the laboratory and to connect it with the archaeological evidence.

In the context especially of the main periods of copper production, the Late Iron Age and the Roman Period, the question of the fuel supply for smelting the metal is most important. Charcoal inclusions from slags were collected to determine the kind of wood used for the smelting processes. The first preliminary results are :

- in the Late Iron Age (e.g. Khirbet en-Nahas) *Tamariscus species*, *Acacia tortillis*, *Phoenix dactylifera* (palm tree) and some *Juniperus phoenicea* were favoured as fuel.
- in Roman Times (e.g. Feinan 1) especially shrubs like *Haloxylon persicum*, *Retama raetam* and trees of *Acacia tortillis* were buried.

This means that in Khirbet en-Nahās as well as in Feinān during these periods trees and shrubs occurring in the terrasses and wadis close to the smelting sites were cut down. Apparently, the more removed but rich oaks and juniper trees which were growing abundantly on the Jordan Plateau were hardly used. Following these results samples from shrubs and trees were taken in order to determine their fuel value. Also, their weight was registered for a quantitative calculation of wood supply.

It should be mentioned that for provenance studies the first metal artifacts from EB- and MB-periods as well as several ores are under study. The metal artifacts were sampled during our last trip to Jordan in October 1985. Combined neutron activation, atomic absorption and lead isotope analyses will show, if, e.g., the copper from Bab edh-Dhra', Numeira and other sites in Jordan have connection with Feinān.

Because of the distribution of the sites from different periods, the archaeological evidence and the excellent geological and metallurgical material available for scientific investigations, the Feinān area, especially the sites Feinān 5 and Feinān 9 will play a significant role in the future discussion of the archaeology and early metallurgy of the Middle East.

General Remarks

During the survey in the whole Feinān area marks of clandestine excavations were observed. Unprofessional diggings were carried out on top of Ras Jebel Khalid (550m), in the mines of Wadi Ratiye, in the Roman house near the Roman mines at Qalb Ratiye (house of the cisterns in our records from 1984 when the ruin was still untouched) and almost every cemetery from Prehistoric to Byzantine. The most dramatic damage was done to the Byzantine cemetery of Feinān where about 300 tombs (from about 600) were systematically looted. This is clearly the result of long time "excavation" and could not have been done during some days. Professional looting is obvious. This cemetery was un-

touched in 1984 except for the 8 tombs
robbed in 1932 which were reported by

Frank (*ZDPV* 1934).

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BOOK REVIEW

'LATE BRONZE PALESTINIAN PENDANTS, Innovation in a Cosmopolitan Age', by Patrick E. McGovern. 183pp., 25pls. 79 figs. 4 maps, 62 charts. JSOT Press, Sheffield, England (1986), hard cover, published price £25.00/\$35.00.

A distinctive feature of Late Bronze Age civilization is the remarkable profusion and popularity of amuletic and jewelry pendants, as witnessed by the wealth of material excavated at various sites in the country. Previously all discussion of Late Bronze Age pendants was rendered only in excavation reports or museum catalogues in a brief and restricted fashion. Apart from the critical study by O. Negbi: *'The Hoards of Goldwork from Tell el-Ajjul'*, Patrick McGovern's book is indeed the first comprehensive, adequately argued and up-to-date study of its kind. It represents the revised version of the author's doctoral dissertation, written for the Department of Oriental Studies of the University of Pennsylvania. The primary focus is a corpus of these pendants with half of the examples coming from Beth Shan, of which a great number are unpublished. The introductory chapter starts with a discussion of the present state of pendant scholarship, methodology and goals, and clarification of Beth Shan's dating criteria used in the study. Although the author tends to support the belief which says that because pendants were, like pottery, mass-produced, they may be used as dating evidence, he strongly cautions against their use as chronological indicators: as a treasured heirloom or focus of religious sentiments, a pendant's lifespan can be enormously lengthened and its distribution may be widespread.

The introduction also contains an excellent and very useful discussion of typology in relation to the archaeological context of individual specimens. This chapter is concluded with a special section on Beth Shan and its stratigraphical problems. The author's first hand knowledge of the unpublished pottery and artifacts from this site, which are in store at the University Museum, enabled him to conclude that level VII and VIII should be dated to LB IIB. The corpus excludes any unstratified surface finds and specimens bought on the

antiquities' market, which are now in museums or private collections, together with unpublished examples.

Six classes of pendants are proposed by the author. They form the subject matter of his chapters 2-7. His classification follows a short-cut course which does not dwell on "amuletic" types but rather concentrates on "natural" classes, with the exception of classes I and V in which the objects are called by their obvious name because of their Egyptian-related figures and symbols. The excellent discussion of the types is enhanced by detailed drawings and various statistical and distribution charts, which are so well done that the reader is able to obtain a great deal of information by just looking at them.

This book by Dr. McGovern gives us a clear insight into the types of Late Bronze Palestinian pendants and their chronological framework. It includes an excellent catalogue of ornamental and amuletic pendants, occupying 26 of the 183 pages of the text, divided into six types: Egyptian Deities, Human Forms, Fauna, Flora, Egyptian Hieroglyphs and Geometric Forms. The types are illustrated by excellent photographs and a rich series of drawings of designs which illustrate his analysis of the pattern work of pendant production in Late Bronze Age Palestine. This reliable catalogue is very useful for comparative studies and provides immediate aid to scholars who wish to become familiar with the Late Bronze Age period and its chronological intricacies. It is a work of synthesis, stressing cultural process as well as pendant distribution, which is of particular interest for the student working on Egypto-Palestinian contacts who needs a sound guide to Palestinian cultures with whom they interacted. At the end of this valuable book the reader finds a most useful selected bibliography followed by plates and three indexes: the first is of authors and

individuals, the second of sites, and the last is a general index.

Dr. McGovern is to be congratulated on his remarkable achievement and his book is

certainly received with a very warm welcome.

Adnan Ḥadidi

BOOK REVIEW

JERASH, A Frontier City fo the Roman East, by Rami Khouri. 144 p., 38 pls. 21 figs. 3 maps. Longmann: London and New York (1986), paper, published price £5.95.

This excellent guide-book is from the pen of the Jordanian journalist and writer Mr. Rami Khouri. He is well-known to all those who are interested or involved in the archaeology of Jordan. For several years now, he has been active in the publication of reports covering the various aspects of archaeological projects carried out in this country, both in national and international press. Mr. Khouri's earlier book on the Jordan Valley, which was published recently, proved to be one of the best written on this subject.

The reader will find this new guide-book not only refreshingly different from all previous similar guide-books both in scope and method, but also because of its use of much recently discovered archaeological material in this Roman city, and can learn something more than any one book on Jerash can teach. This guide-book on Jerash is indeed distinguished for two main aspects. Firstly, it is a thoroughly researched and perceptive sketch of the most recent archaeological investigation carried out in this ancient city, and secondly, it gives us an historical survey of other similar cities in the area with which Jerash is

compared.

The utility of this guide-book for purposes of reference is greatly enhanced by the fact that it contains a selected bibliography of books and articles on Jerash, a glossary of some thirty-two basic terms often used in the description of Classical and Roman architecture, and a general index. An up-to-date city plan and many other excellent graphic illustrations are also included.

Mr Khoury's guide-book on Jerash is indeed a handsome record of the animation and diversity of a rich Roman provincial city in which the art and architectural images survive to link the past with the present and beyond to the future. It is a warmly welcomed guide-book, and is strongly recommended for tourist, student and scholar. Mr. Khouri is to be greatly congratulated on his achievement. Many thanks are also extended to Ms. Margaret Marshall of Longman's Arab World Division for being so kind to provide us with a review copy of the above mentioned title.

Adnan Hadidi

BOOK REVIEW

A Neolithic Village at Tell el Kowm in the Syrian Desert, by Rudolph H. Dornemann. The Oriental Institute of the University of Chicago, Studies in Ancient Oriental Civilization no. 43, Chicago, Illinois. 1986. 89pp, 12 Tables. 46 Plates. Appendix.

The site of Tell el Kowm lies at 38°51' E, 39°10' N, placing it to the northeast of Palmyra. The site is comprised of a high tell and several smaller mounds. The monograph is a study of the finds from a five day sounding in the southern side of the high tell, conducted during 2-6 May 1967, under the direction of Prof. Maurits van Loon, and also includes the results of a more detailed study carried out in February and March 1971.

The sounding took the form of a step trench, following the stratigraphy of the site. All the soil from the sounding was screened.

The first section of the monograph introduces the reader to the site and its environment, the second section discusses the stratigraphy and the few architectural features revealed by the sounding, which is 56.2m along the slope, 51.5m horizontally, 19.05m vertically, and is divided into nine steps.

The following four sections describe the small finds from the tell. Section 3 deals with the plaster vessels, found at several sites in Western Asia but not published to a great extent yet. The Tell el Kowm vessels are of gypsum, their production techniques and development are discussed. It is observed that these vessels were used for a limited period of time (contemporary with the earliest stage of pottery) in a restricted geographical area. Their production was then "abandoned as an unsuccessful Neolithic experiment" with pottery taking over. Also interesting here is the presence of "burnt" plaster vessels, which the author places as part of the development of pottery technology.

The fourth section deals with the pottery finds, and some overlapping features between the pottery and the plaster vessels are noted. The fifth section describes the stone vessels and objects as well as the few bone tool fragments found. The sixth sec-

tion deals with the flint tools, which comprise the largest category of artifacts found in the sounding.

For all the finds categories mentioned, except for the stone vessels and bone tools, stratigraphic distribution tables are used to illustrate the occurrence of the different types in the various layers. Stratigraphic distribution charts are also used to compare the occurrence of plaster vessel versus pottery fragments, and blade versus flake flint tools. Although these tables and charts are quite useful illustrative methods, the mere nature of the limited sounding excavated throws some doubt on their interpretation. This was very obvious in the case of comparing the plaster vessels with the pottery from some consecutive levels, where the small percentage of pottery found was attributed to a specialised function of the building excavated at these levels. In other cases the mere fact that the area excavated at each level is small (and maybe also the speed at which it was excavated) would be expected to give biased results, even if they were not as obvious as in the case mentioned above.

The concluding section (section 7) also attempts to place Tell el Kowm in its contemporary Neolithic setting. Here a scale on the map showing some of the Neolithic sites in Western Asia would have been of convenience. The team that worked on the site included a paleobotanist and a paleozoologist. The botanical report is presented in the appendix. It indicates plant cultivation, and irrigation agriculture is proposed. No bone report is presented, but preliminary examination of the (small) sample could not give conclusive evidence of animal domestication. These environmental studies suggest that the el Kowm settlement, like its contemporary sites, was largely dependant on food production.

The chronology of the site is based on only two C14 dates, which come from two

different layers in the middle of the sequence and are very close together. Thus the more exhaustive chronological table presented seems to be somewhat tentative. Four Neolithic (dated to 6400-6050, 6050-5675, 5675-5400 and 5400-5250 B.C. respectively) and one post Neolithic (5250 B.C.-modern) phases are given. The Neolithic phases are described and compared to contemporary phases from other sites, including Wadi Shu'aib, 'Ain Ghazal and el-Beidha in Jordan. There seems to have been a smooth continuity from the "period of early villages" through the "phase of established farming villages" up to the "beginning of the period of advanced village communities". Although comparative material could be found from sites spread over a large area of the Asiatic Near East, most of the contacts seem to be with sites to the northeast, with the desert probably forming a barrier to

contacts with the west and south.

This monograph presents a good cross-section of the Neolithic at Tell el Kowm and its association with the Neolithic of the Asiatic Near East. It certainly contributes to the concordance of the artifacts of the period. But again, its limitations, due to the short period of fieldwork, are obvious. Dornemann ends his concluding section by saying "Clearly, much needs to be added to what has been presented here to provide greater insight into the many fascinating developments which occurred through the history of the settlement at Tell el Kowm". More recent surveys and excavations in the area were carried out by a French team, the references to which are given in the monograph.

Khairieh 'Amr
Department of Antiquities

EXHIBITION ON JORDAN IN PARIS

'La voie royale: 9000 ans d'art au royaume de Jordanie'

The first comprehensive exhibition on the art and archaeology of Jordan was held in Paris in the Musée du Luxembourg from November 26th, 1986 to January 25th, 1987. This cultural event was inaugurated by H.M. Queen Noor el Hussein, Mrs Danielle Mitterand and H.E. Premier Jacques Chirac on November 25th, 1986.

The exhibition which covered the cultural history of Jordan from prehistoric periods to modern times was organised by the Ministry of Tourism & Antiquities, the National Gallery of Art in cooperation with the Musée du Louvre and the "Association française d'action artistique". More than 400 objects were lent by the Jordanian Museums in addition to outstanding monuments in the Louvre such as the Mesha' Stone and the Shihān Stele. As Pr. P. Amiet pointed out in his preface, the title "The King's Highway" refers to the main artery of the Jordanian Plateau which was in use from at least the 2nd millennium B.C., when it was followed by the Five Kings who invaded the cities of the Dead Sea. King Mesha' of Moab (9th century B.C.) mentions it in his famous Stone among his constructive works. In the Persian period, it became the southern branch of the Royal Highway which connected Suza in Iran with Sardis on the Aegean coast. After the annexation of the Nabataean kingdom in 106, Trajan paved it "from the borders of Syria to the Red Sea" and called it the "*via nova traiana*". It continued to serve as a commercial and pilgrimage route between Syria and the holy cities of Arabia after the Arab conquest. Thus, it was not only a trade artery but became the symbol of religious communication between the different nations. The objective of the exhibition was indeed to focus on the cultural relations with the neighbouring countries by presenting the most recent archaeological discoveries. The most eloquent objects in this respect were the two Preceramic Neolithic statuettes of 'Ain Ghazal, Uriah (Fig. 1) and Zenith.

These unique pieces were restored with great skill and commented on by Mrs Kathryn W. Tubb of the London Institute of Archaeology and exhibited for the first time. Tuleilat el-Ghassul and Tell Abu Hamed, recently excavated by G. Dollfus and Z. Kafafi illustrated the Chalcolithic period (5th-4th century B.C.). The Early Bronze period which was well represented by pottery objects and figurines from Bab edh-Dhra' and Jericho was introduced by J.P. Thalmann. An ivory box discovered at Pella-Ṭabaqat Fahl, in 1984 and restored in the British Museum was the most intriguing object of the Middle Bronze, Hyksos period, dated to the 16th-15th century B.C. The lid is inlaid with the ivory figures of two antithetical lions with a winged sun-disc (Fig. 2). As it was indicated by T. Potts (*Antiquity*, 1986, p. 217-219), this Oriental motif is well attested in Aegean art, in particular by the Lion Gate at Mycene. The entries to the IInd millennium B.C. by J. Balensi, M. Ibrahim and Z. Kafafi enriched our knowledge of these periods, so far badly documented.

A good collection of cylinder-seals of the same period was scholarly commented on by Pr. P. Amiet, Chief Curator of the Oriental Antiquities in the Louvre, who is a specialist in glyphic art. The cultural scenes represented on these small objects reflect Mesopotemian, Syrian and Egyptian influences.

The Iron Age periods (12th-6th century B.C.) were introduced by F. Zayadine. A sarcophagus lid of the so-called Philistine type found at Sahab together with pottery and figurines from Tell Ṣafut, Jericho and el Jib (Gabaon) illustrated the Iron I period. From the Iron Age II, a large collection of Ammonite statuettes, including the famous Yerah'azar sculpture from the Amman Citadel (end of the 8th century B.C.) was a good testimony of the genuine art of Rabbat 'Ammon, which was in close contact with the Assyrians and the Phoenicians.



Fig. 1

Recent discoveries from Tell Mazar, Umm Udheinah west of Amman, and Tawilān north of Petra belonged to the Persian period (6th-5th century B.C.). This archaeological sequence was ill known in Jordan until the recent excavations. A collection of bronze bowls and an incense burner carried by a female statuette discovered at Umm Udheinah together with a treasure of gold jewelry found at Tawilān and dated by a cuneiform tablet to the accession year of Darius I (521-486 B.C.), proved that this period was rich in refined art productions.

After Alexander's conquest of the East, Jordan was confronted with Greek influence which lasted, one can say, until the Umayyad period, in the 8th century A.D. A synopsis of Hellenistic and Roman art was presented by Pr. Ernest Will. Recent excavations at the South Gate of Jerash by J. Seigne and A-M. Rasson brought to light pottery objects and an unparalleled collection of carpentry iron tools. Nabataean



Fig. 2

sculptures, fine decorated pottery and figurines formed a good selection of the hellenized art of Petra (entries by J. Starcky, F. Zayadiné and F. Baratte).

The Byzantine period was illustrated by the colourful mosaics of Khirbet es-Samra and Madaba. H. Humbert and A. Desreumaux demonstrated that a local Syrian culture existed side by side with the Greek heritage, as proved by the Syriac and Byzantine funeral steles.

Finally, the long and prosperous Islamic periods were a continuation of the art production under the Arab domination. The graphic reconstruction of the Quseir 'Amra frescoes showed the resurgence of Hellenistic-Syrian art in the 8th century. A model of the Qasṭal Umayyad palace, executed by P. Carlier and F. Morin, was a good example of the architectural techniques successfully adopted by the Califs of Damascus. Several beautiful pottery vessels of the Umayyad and Mamluk periods were well documented by Th. Bittar and M. Charitat.

The recently excavated bronze brazero at Kh. Ifdein, near Mafrq was, without any doubt, one of the best attraction of the exhibition.

A collection of 27 modern paintings were selected by Princess Wijdan 'Ali, President of the Royal society of Fine Arts, and by Mr. Suheil Bisharat, Director of the Art Gallery. In her concise and well documented introduction, H.R.H. Wijdan 'Ali traced the evolution of modern art in Jordan from 1938 to modern times. She emphasised the concept of "universal art" which predominates the productions of the young Jordanian artists such as 'Amer Khammash, 'Ali Jabri, 'Aziz 'Ammoura and others.

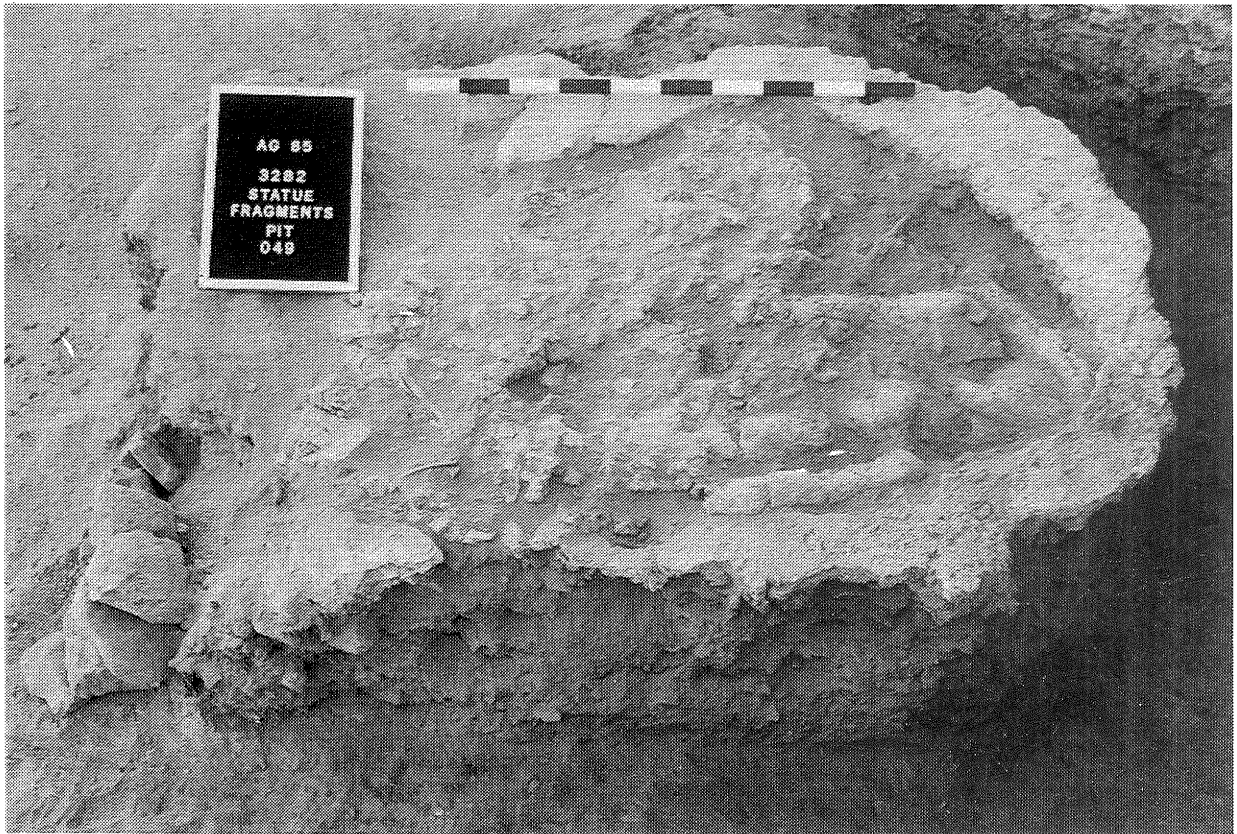
To sum up, the Paris exhibition demonstrated Jordan's effort to promote its Antiquities and the vitality of its modern art. No doubt that this cultural heritage is to be considered as part of the world's legacy. As pointed out by Dr. Adnan Hadidi, Director General of Antiquities, in his pre-

face to the catalogue, our country has been a field of intense research work since the 19th century. More recently, the Department of Antiquities has expressed its desire to cooperate with international scientific institutions by asking the help of UNESCO for the Qweilbeh-Abila painted tombs and the Petra-Jerash projects. Several teams work in Jerash for excavation and restoration in a spirit of friendly scientific collaboration. The exhibition was the model and consecration of unprejudiced attempt to develop our knowledge of the history and archaeology of Jordan.

A programme of lectures on the historical and archaeological periods mentioned above was organised by Mr. Dominique Ponnaud, Director of the Ecole du Louvre, at the Musée Rodin. Other lectures were delivered at the Musée Guimet and the Institut Catholique by the scholars who contributed to the exhibition.

F. Z.

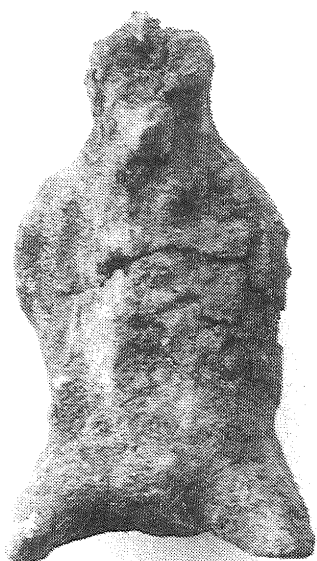
PLATES



1: Upper layer of the statuary cache in Sq 3282, still surrounded by part of Floor 053. Note the heavy damage to the SE corner of the pit at upper left. (Photo: Curt Blair).



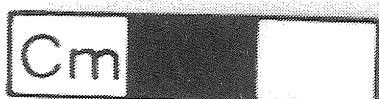
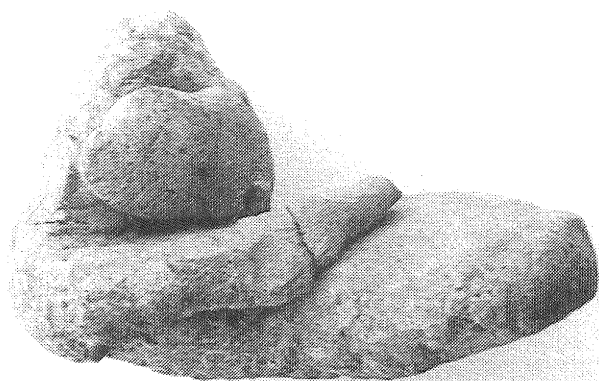
2: Lower tier of statuary in Sq 3282. (Curt Blair).



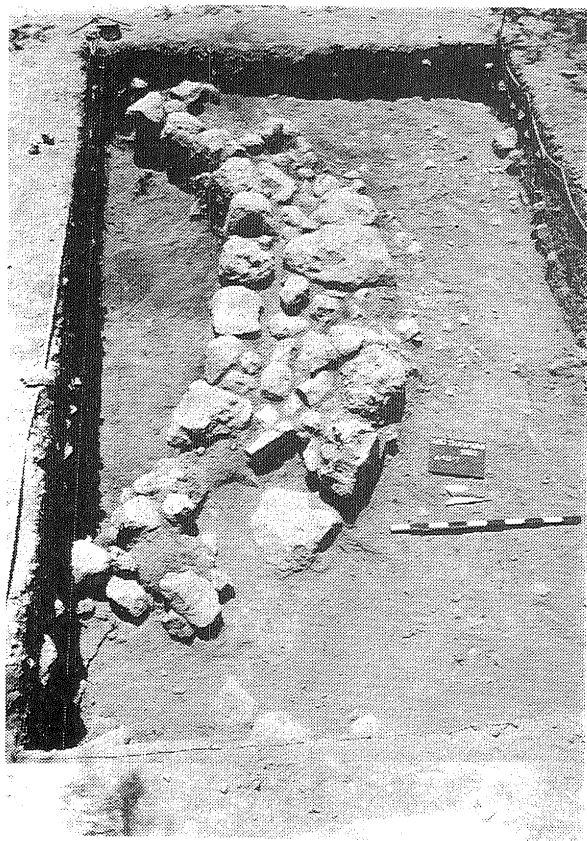
1: Frontal view of a standing human figurine of clay.
(Curt Blair).



2: Upper torso and head of "muscular" male
figurine. Note the eyes. (Curt Blair).



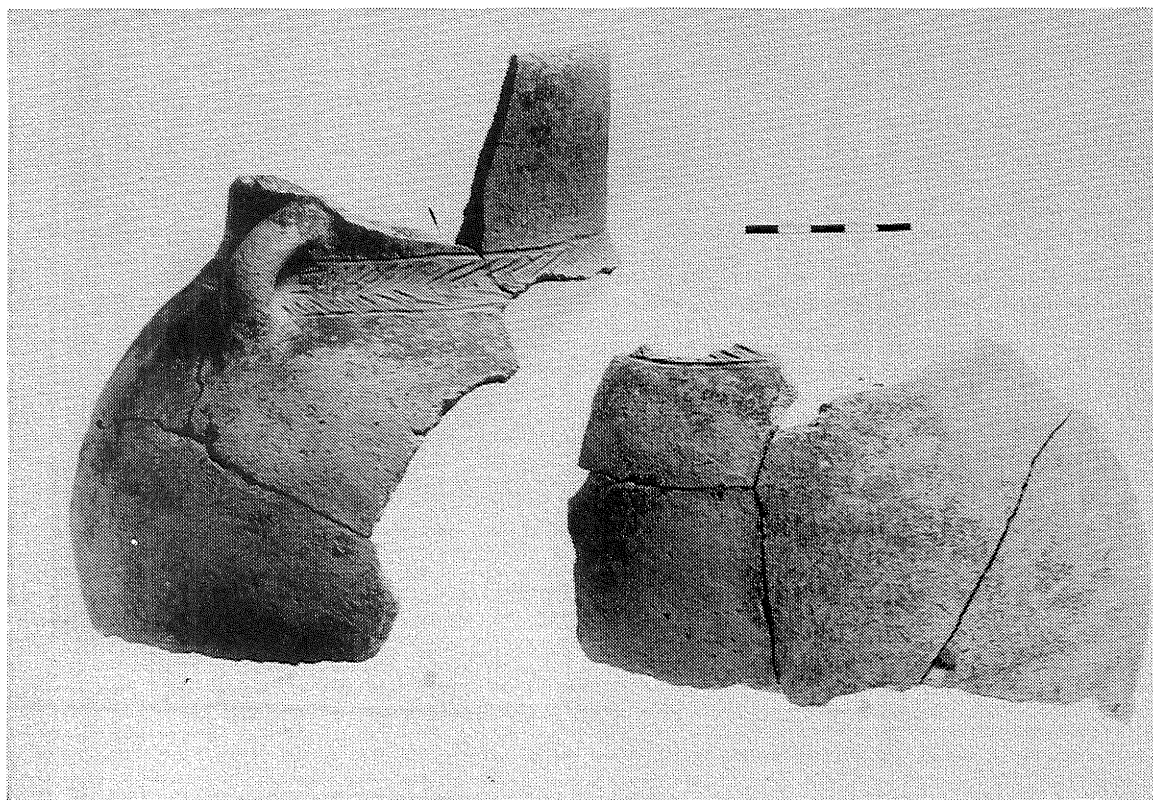
3: Side view of the tragic "Pietà" clay figurine
from 'Ain Ghazal. The right arm crosses the
abdomen while the left hand is wrapped around
the face. (Curt Blair).



1: Area A III 7 circular wall.



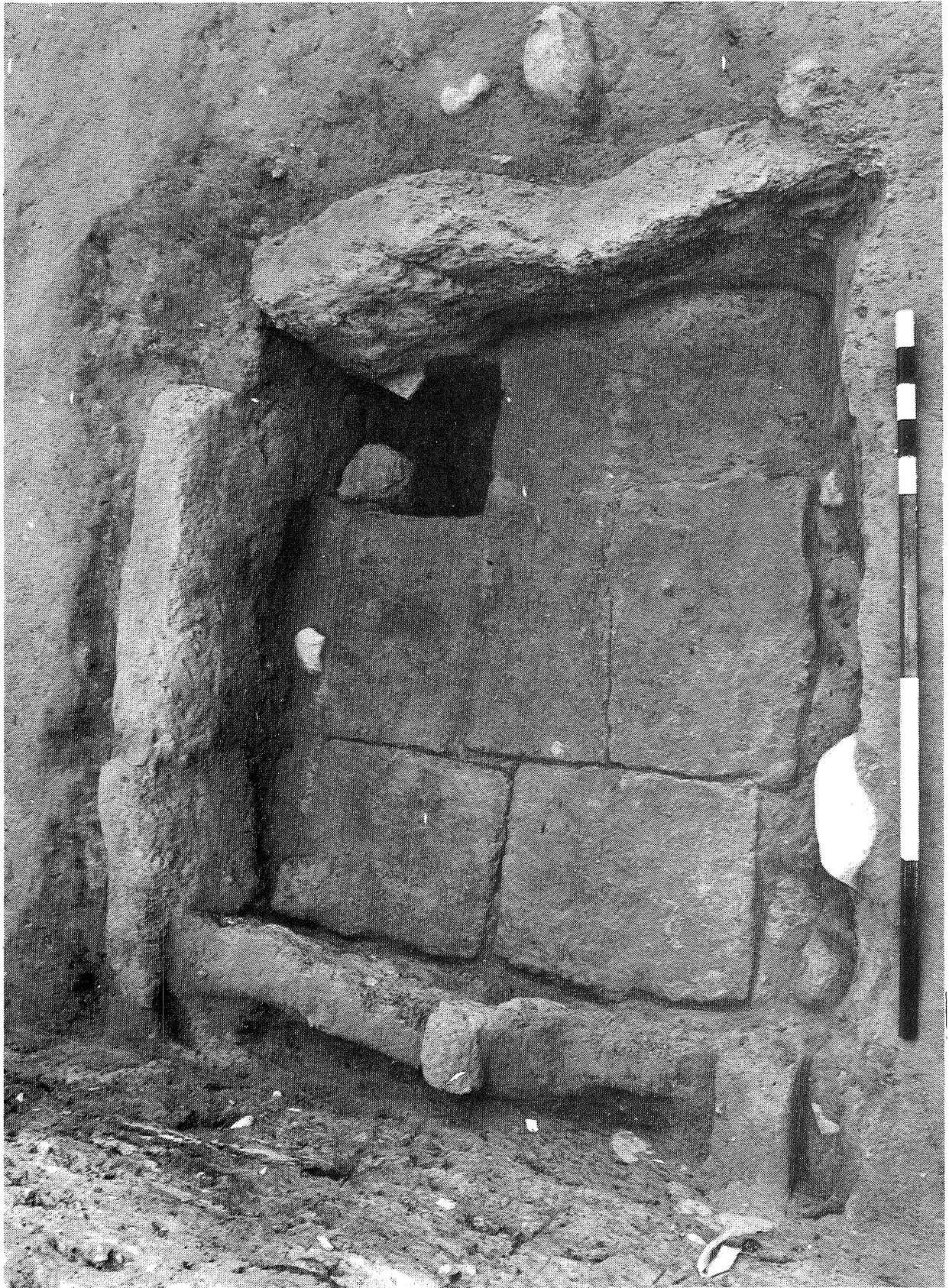
2: Area C, picture showing a D shaped construction.



1: Jar decorated with herringbone chevrons.



2: Flint arrow-heads.



Stratum VII B bath in AA 400.



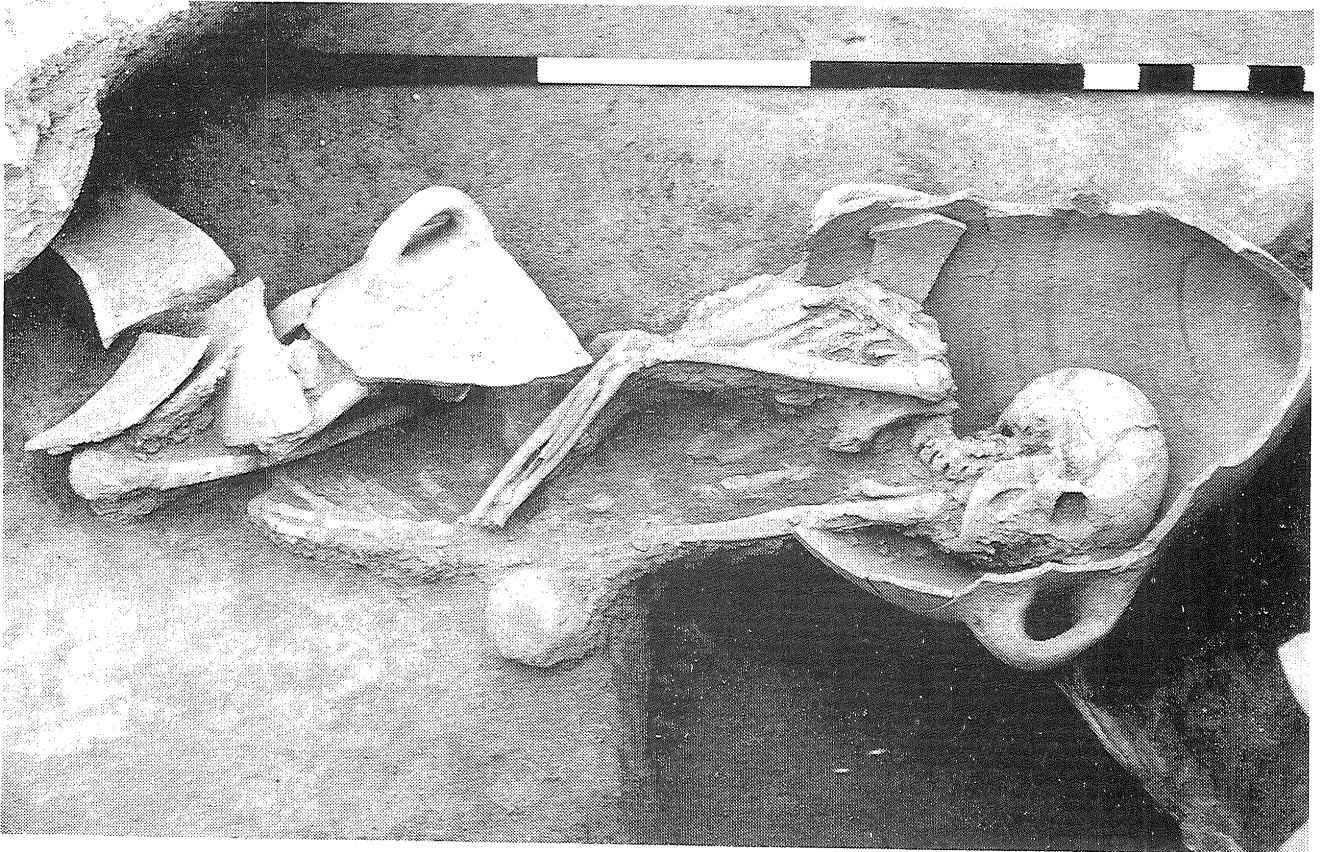
1: Lower courtyard level of stratum IX in AA 300. Note the remains of the upper pebble courtyard of IX in the section on the right and its associated drain near to the scale.



2: Small room of stratum XII. Note the preserved height of its walls and the blackening of the wall faces.



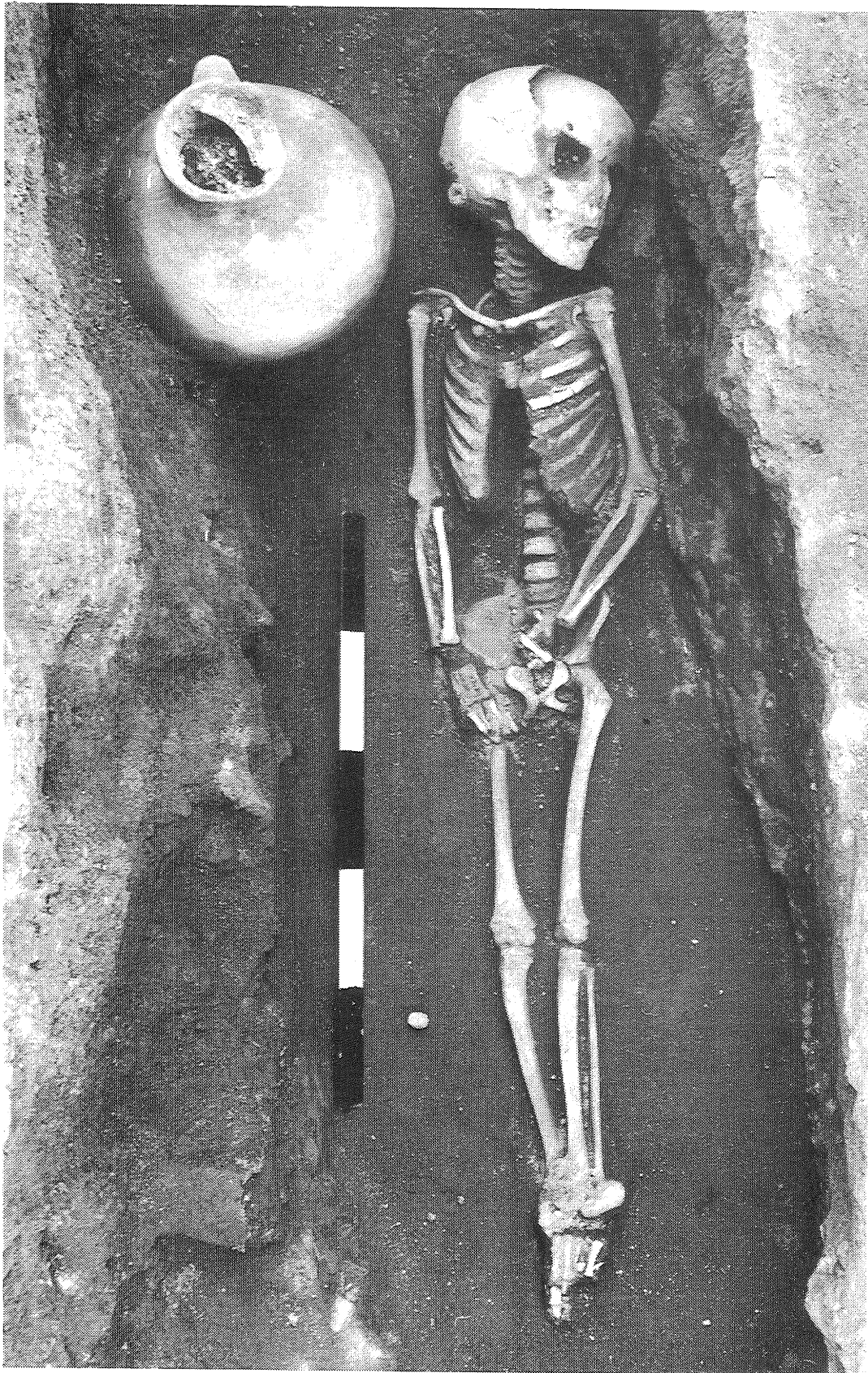
1: Area EE. Cut across the casemate wall system showing the three cross-walls and the boulder fill of the southernmost casemate.



2: Area BB. Grave 45.



Area BB. Deposit at west end of grave 46.



Area BB. Grave 53. Note the bronze earring attached to the skull and the broken mouth of the jug.



Area DD. Northern room of stratum L2 showing steps, postholes and square installation. Note also the large flat stone flanking the steps.



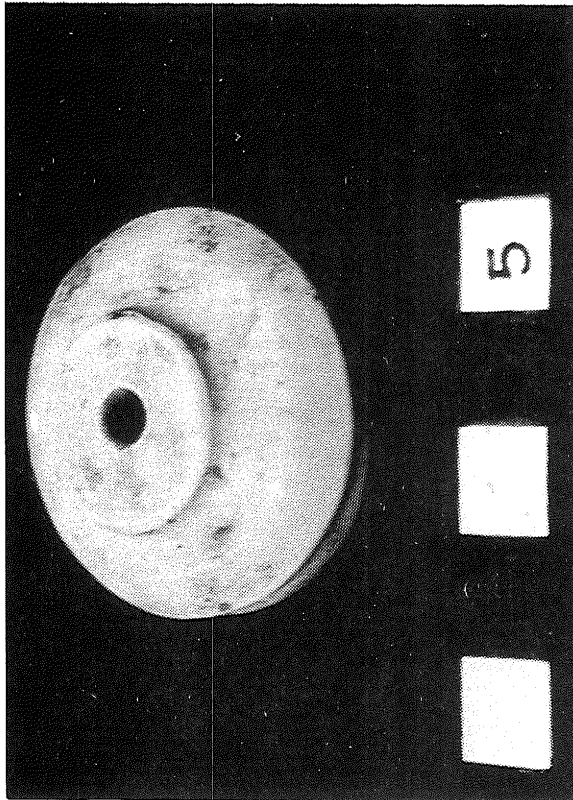
1: Area DD. General view of stratum L3 showing cobble street and building. Note also the dense sherd fill for the steps of stratum L2 in the foreground.



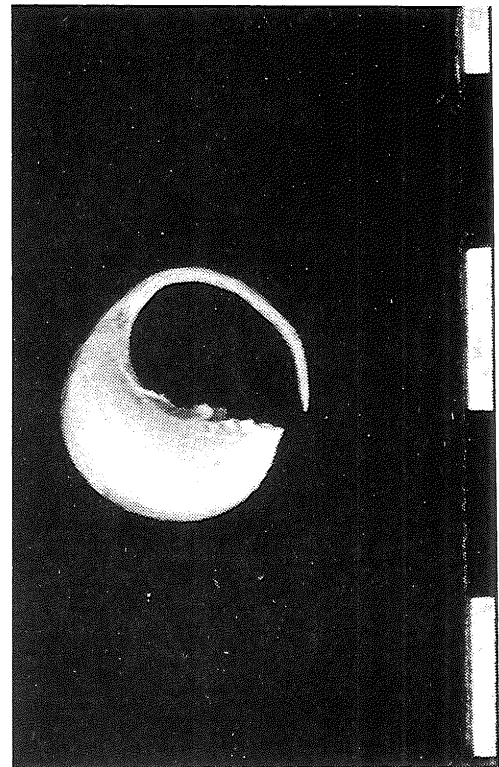
2: Area FF. General view of the "khan" from the east.



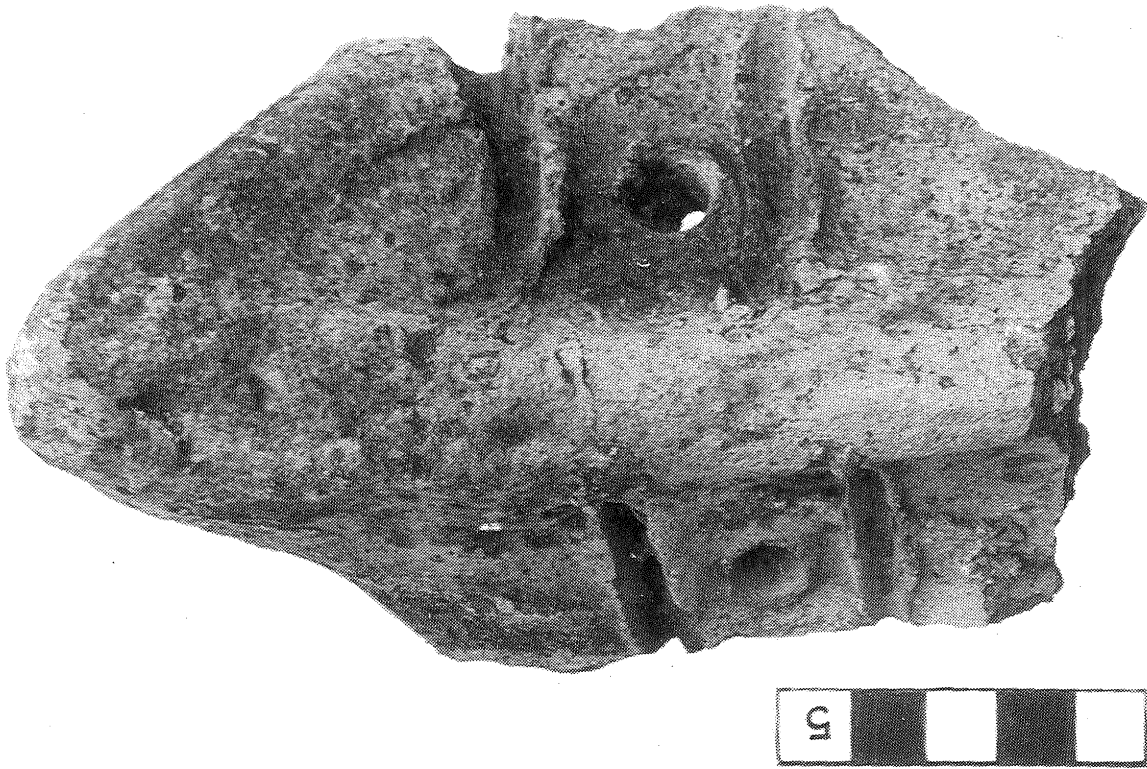
General view to the S, part of area B



1: Limestone pedestal, reg.no. 2899, Phase V/VI



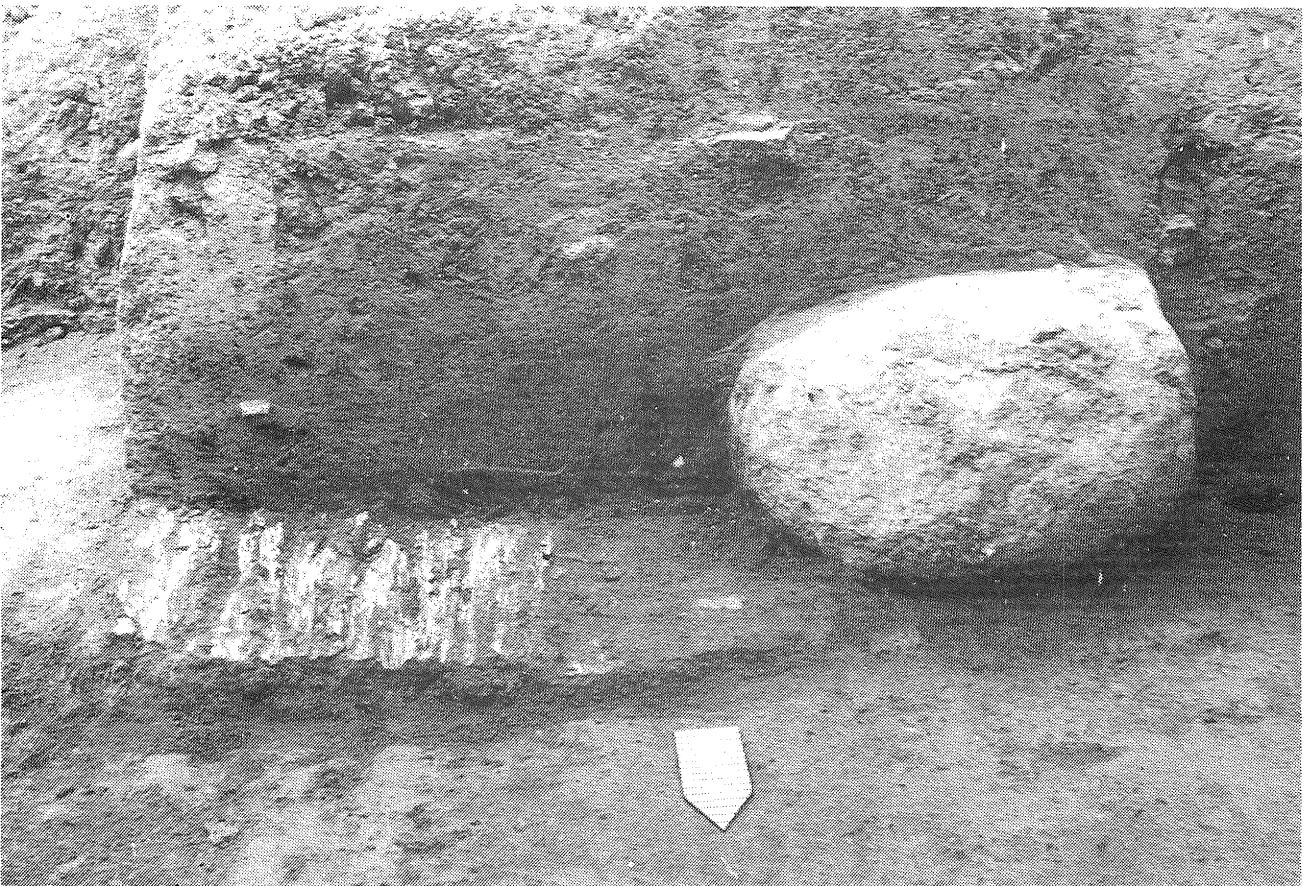
2: Golden earring, reg.no. 2790, Phase V/VI



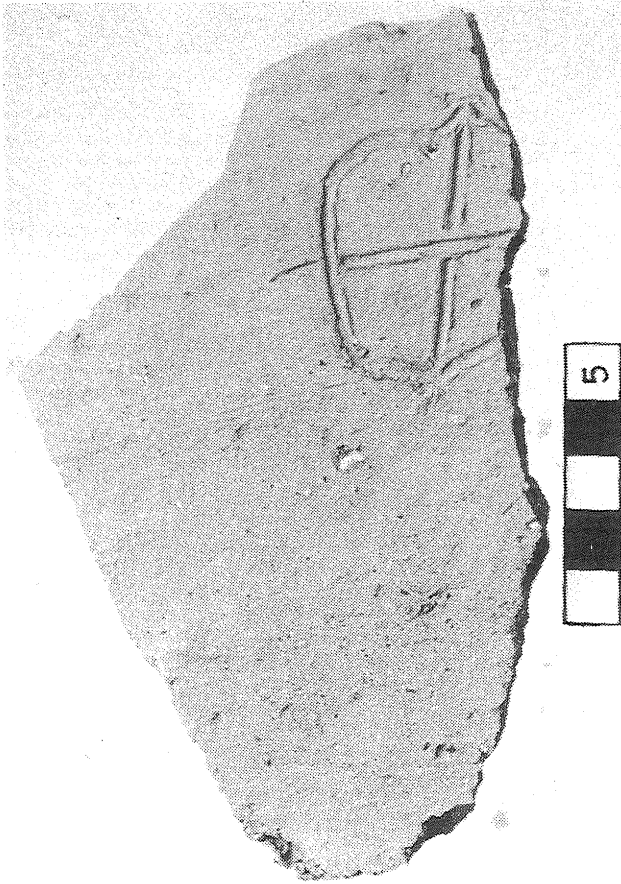
3. Fragment of a pottery model (house?), reg. no. 2900, Phase V/VI



1: Oven with a cooking pot, deposit B/B8.51, Phase VI



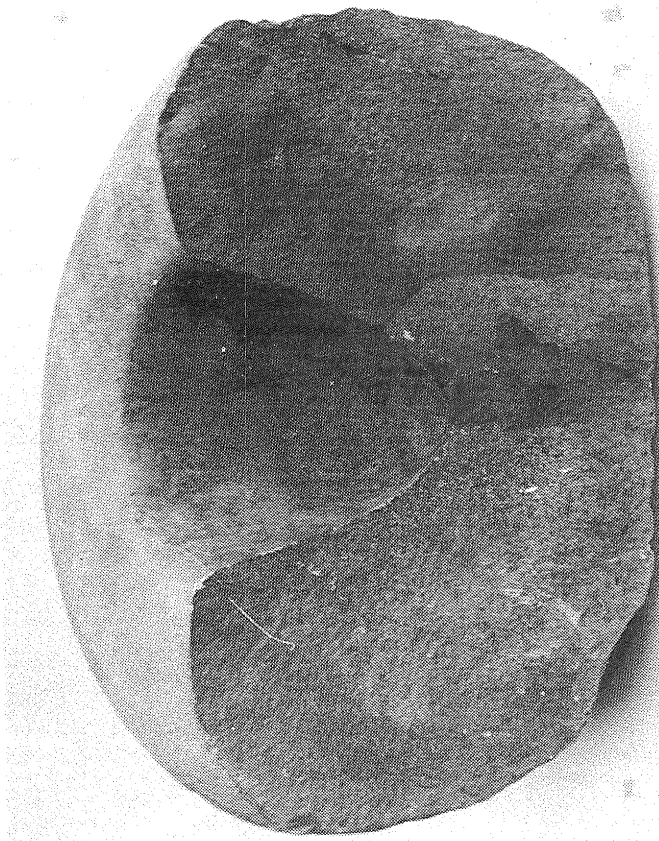
2: Foundation of N-S wall B/C10.12, Phase VI



2: Sherd with sign incised before firing, reg. no. 2792, Phase VIII



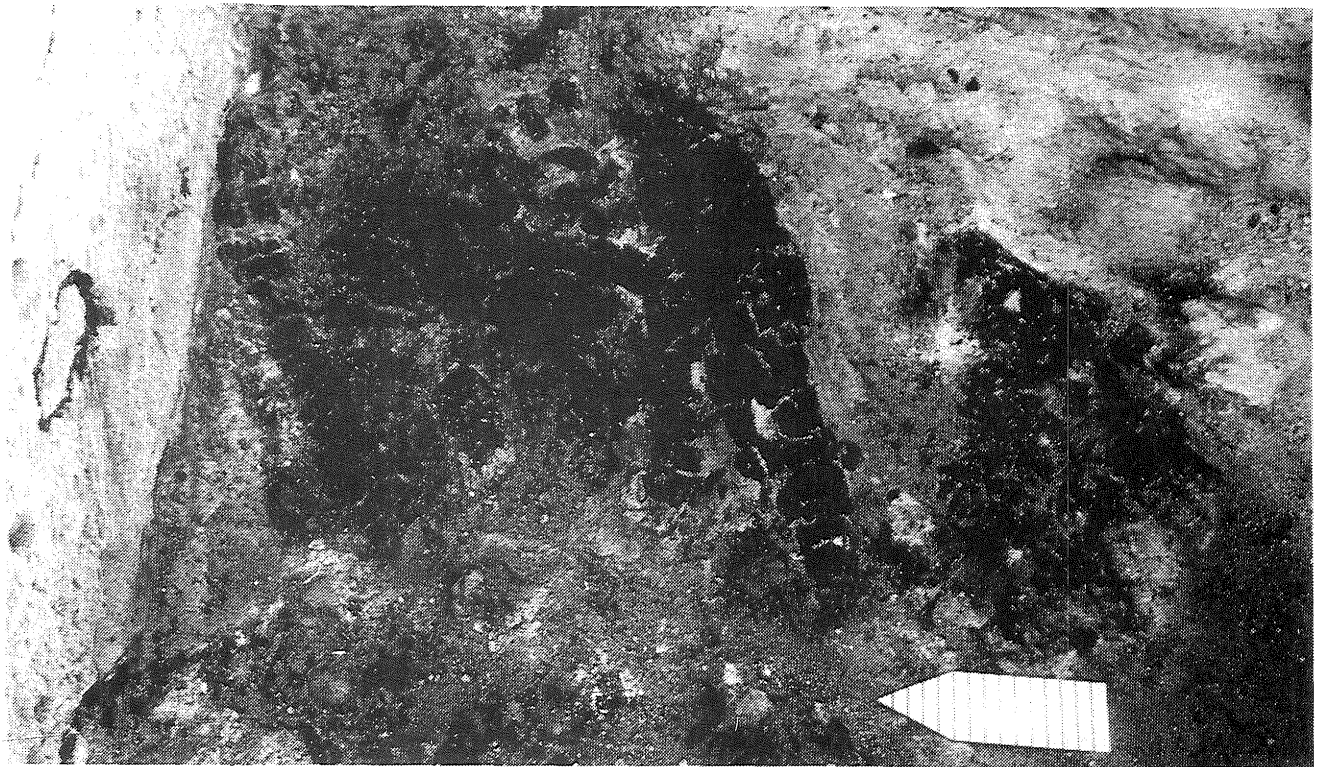
3: Fragment of 'cosmetic palette', reg. no. 2801,
Phase VII or VIII



1: Lower part of a 'potter's wheel', reg. no. 2907, Phase VI



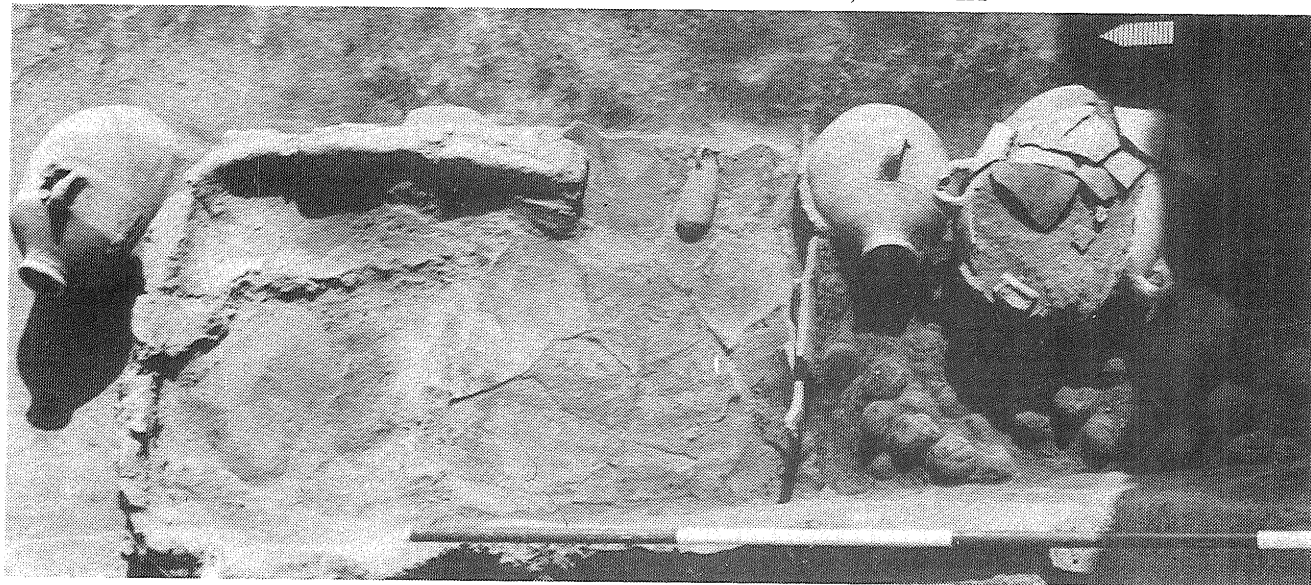
1: Rooms in B/C6 to SE; in front some white reed mat remains, Phase IX.



2: Burnt wood in B/B8, Phase IX



1: Room in B/A8 (to E), with pounding installation in front, Phase IX



2: Room in B/A8, with 'basin' of clay and sherds, Phase IX.

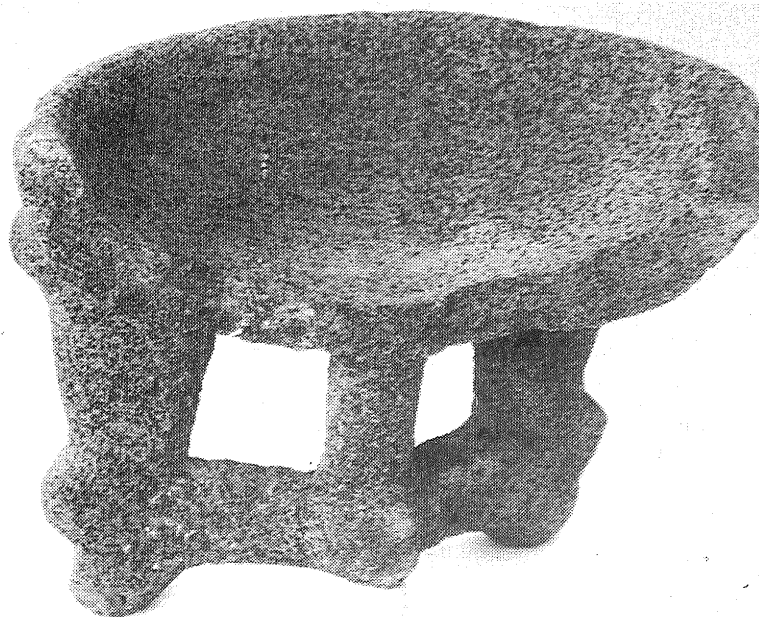


1. Pottery *in situ*, to SW (Phase IX); the stones behind the pottery are the lining of the sides of a large pit (Phase V/VI)

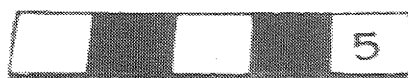
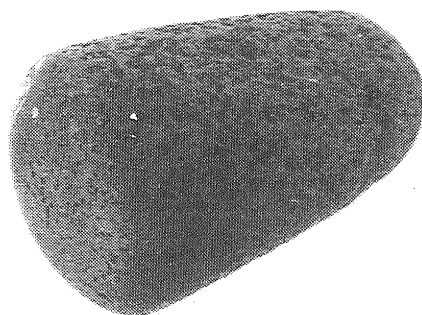


2. Strainer type bowl from B/B7, reg. no. 2870, Phase IX

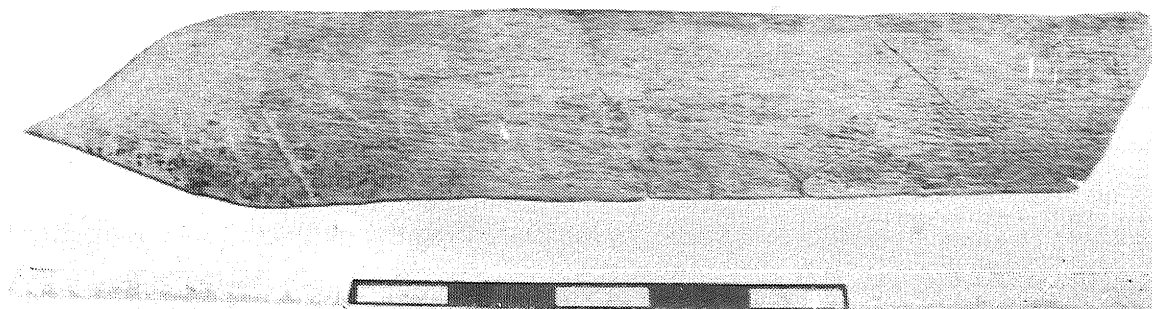




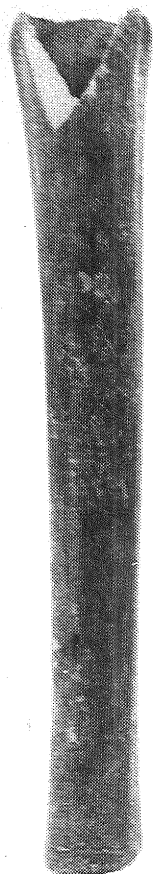
1: Basalt bowl on high feet, reg. no. 2852, Phase IX (B/A8.64)



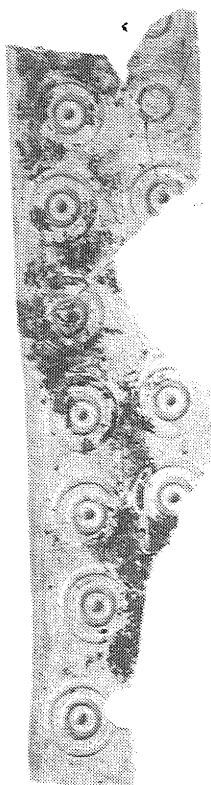
2: Basalt pestle, reg. no. 2796, Phase IX (B/B 7.64)



3: Flat bone tool, reg. no. 2905, Phase IX



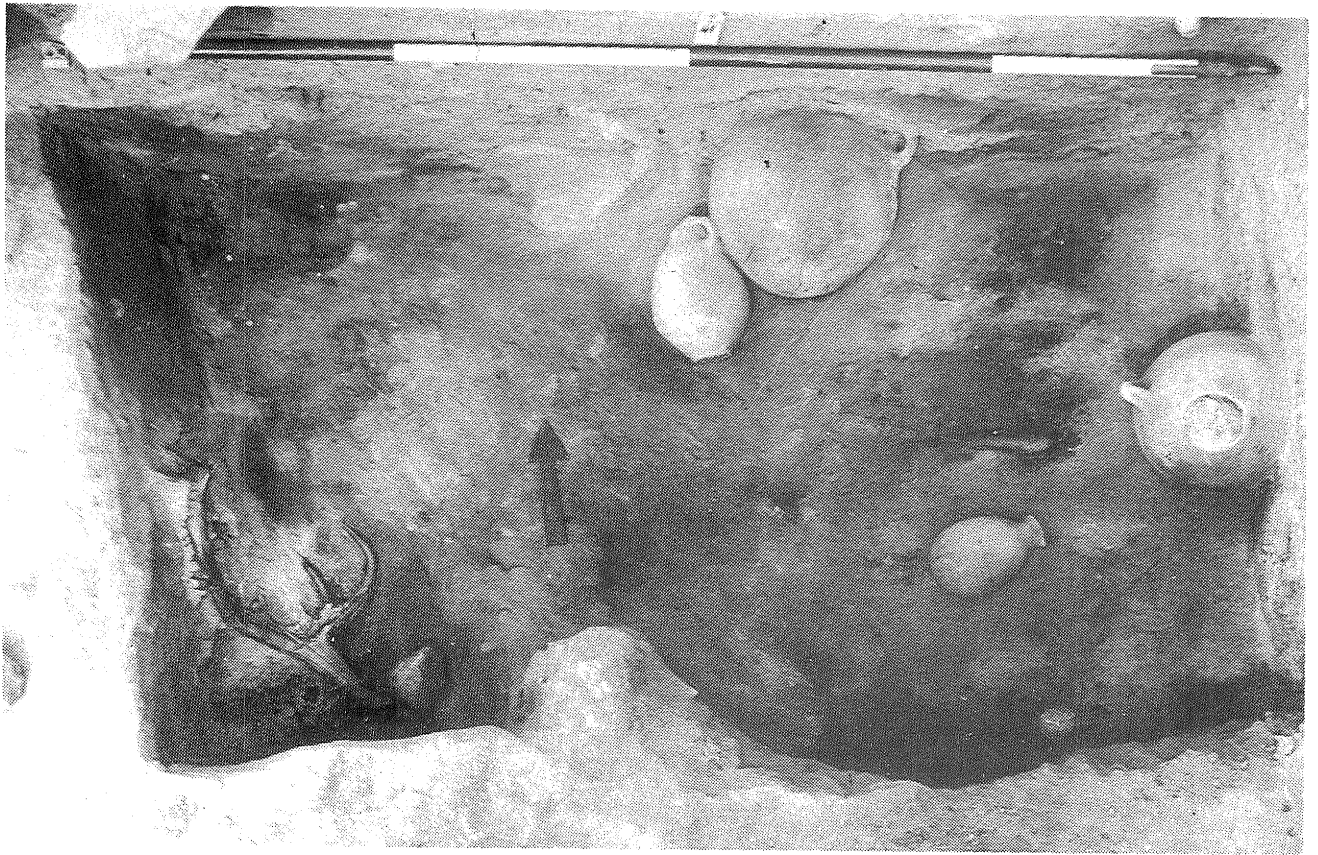
2: Bone or ivory panels, decorated, reg. no. 2891,
Phase IX (B/B7.64)



3: Double *kohl*-tube (bone or ivory) *in situ* in jug, reg. no. 2906,
Phase IX (B/B7.64)



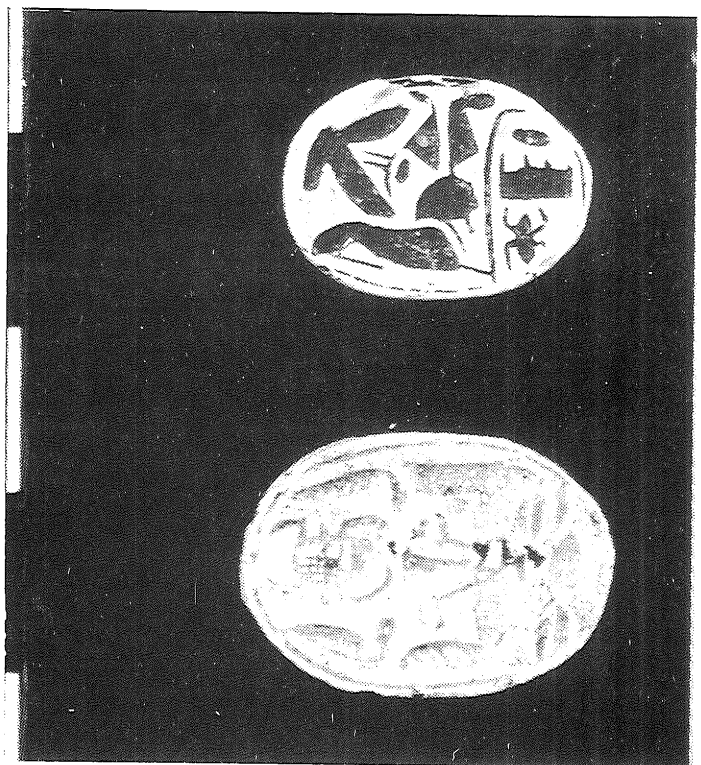
1: Bone tube, reg. no. 2838, Phase IX



1: NE room in B/A8, antler and pottery, Phase IX



2: Fragment of female figurine, reg. no. 2791, post Phase VII



3: Two scarabs; top, reg. no. 2810, bottom, reg. no. 2894.



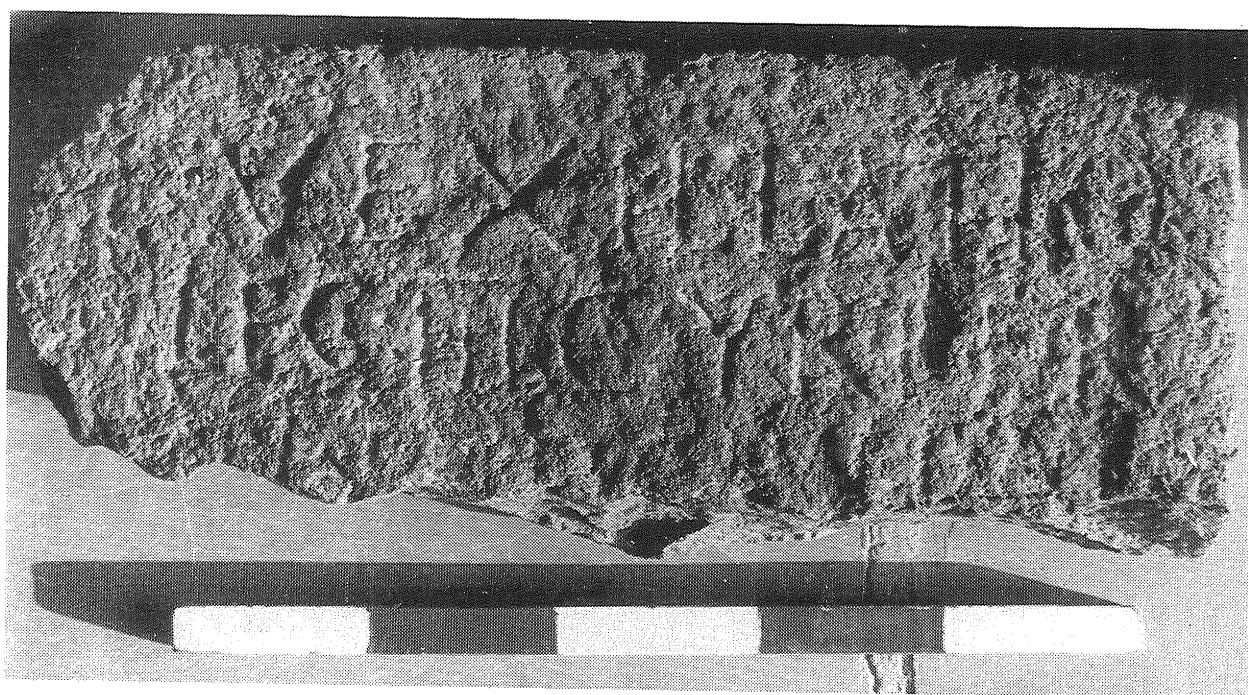
1: Southern Hauran Survey 1985: aerial view of Um el-Quttein in 1953 showing ruined town in south and 'castrum' (arrowed) in the north (Hunting Air Survey: Royal Jordanian Geographic Centre).



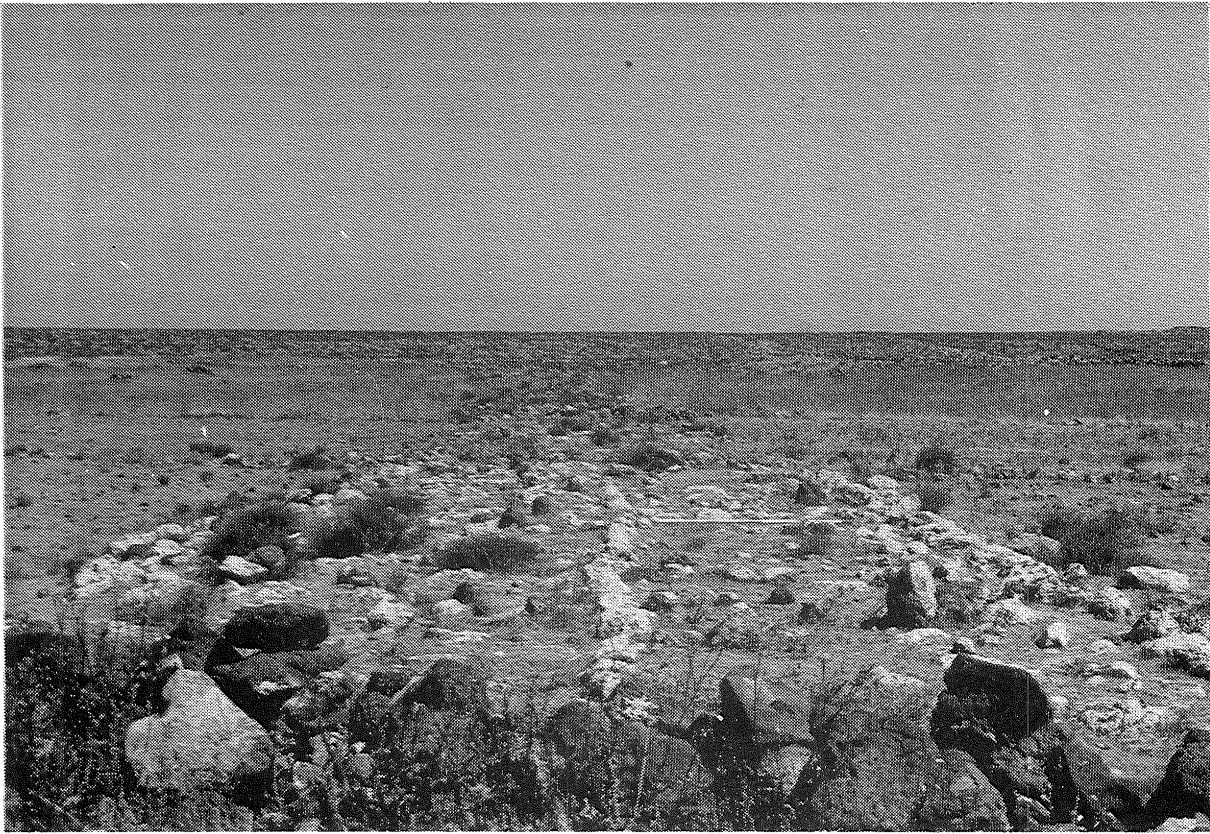
2: Southern Hauran Survey 1985: Um el-Quttein—structures on south side of church in north-west angle of 'castrum'.



1: Southern Hauran Survey 1985: looking down length of east wall of 'castrum' from north-east angle.



2: Southern Hauran Survey 1985: Latin inscription (2) found on Jebel Qu'eis (2).



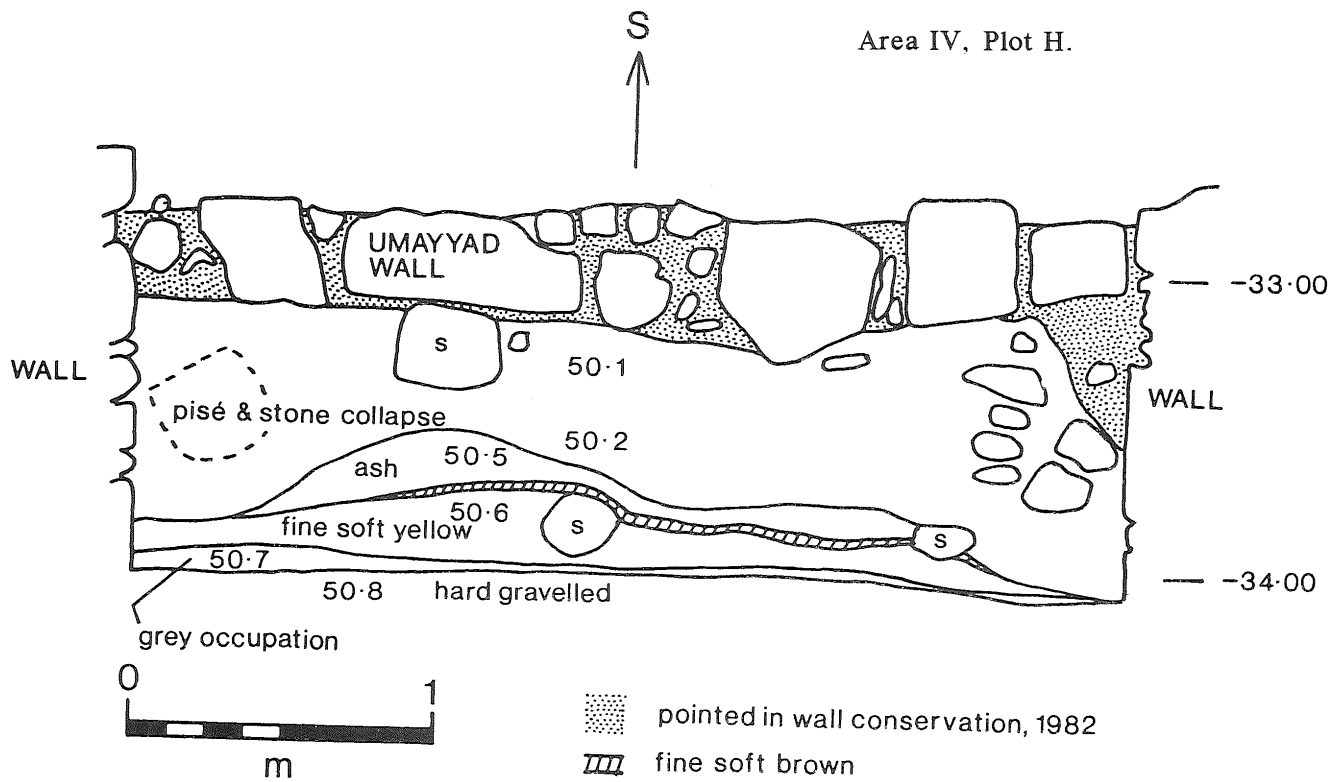
1: Southern Hauran Survey 1985: foundations of Roman road north-west of Um el-Quttein.



2: Southern Hauran Survey 1985: ancient fields to west of Um el-Quttein.



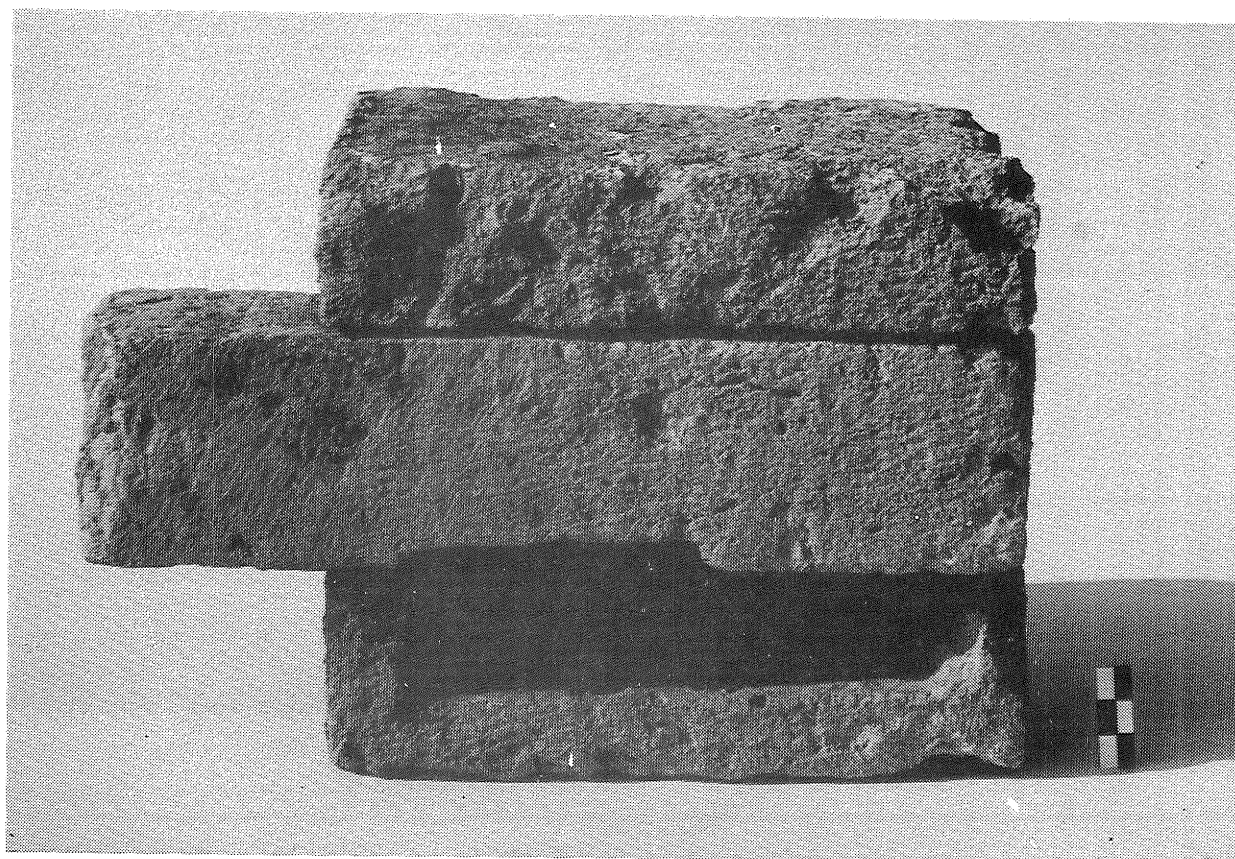
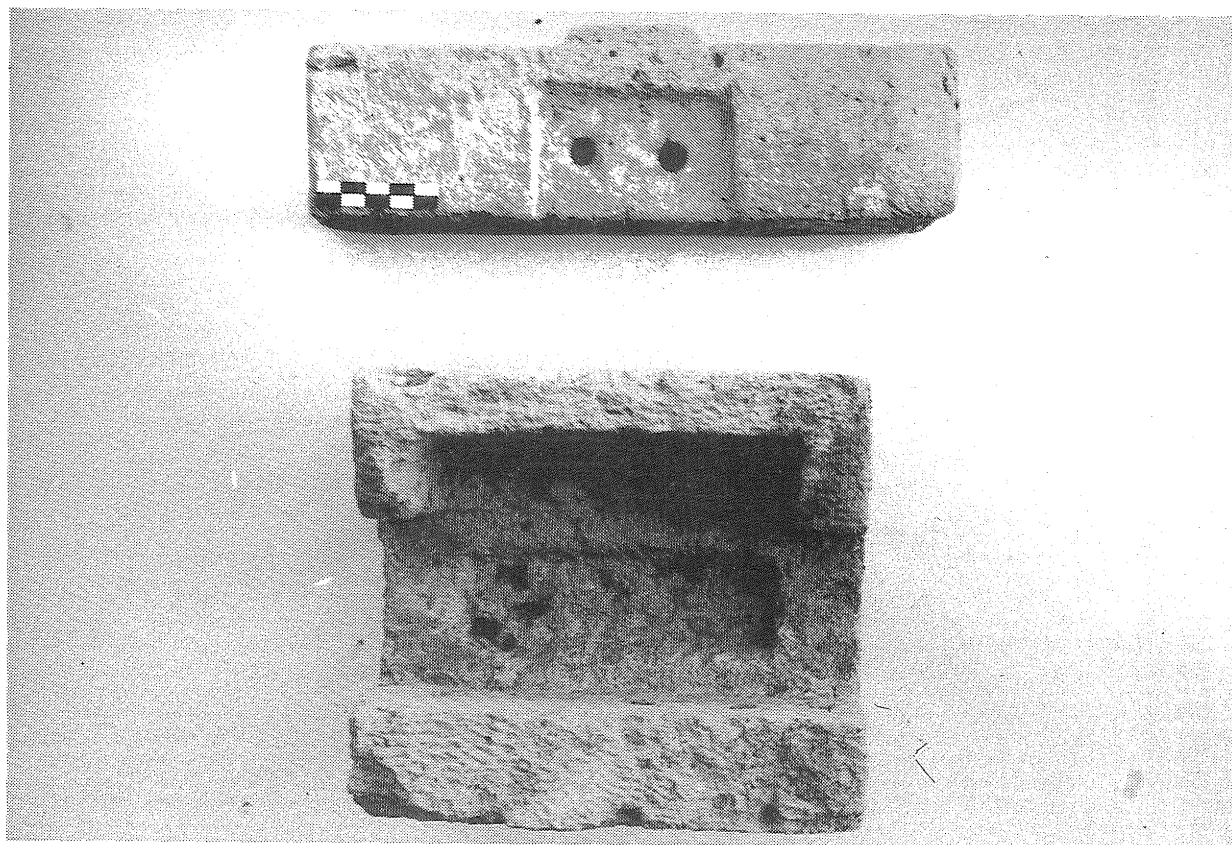
Southern Hauran Survey 1985: aerial view of 'kites' and fields south of Um el-Quttein in 1953 (Hunting Air Survey: Royal Jordanian Geographic Centre).



1: South section of Locus 50 (Room 32).

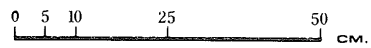
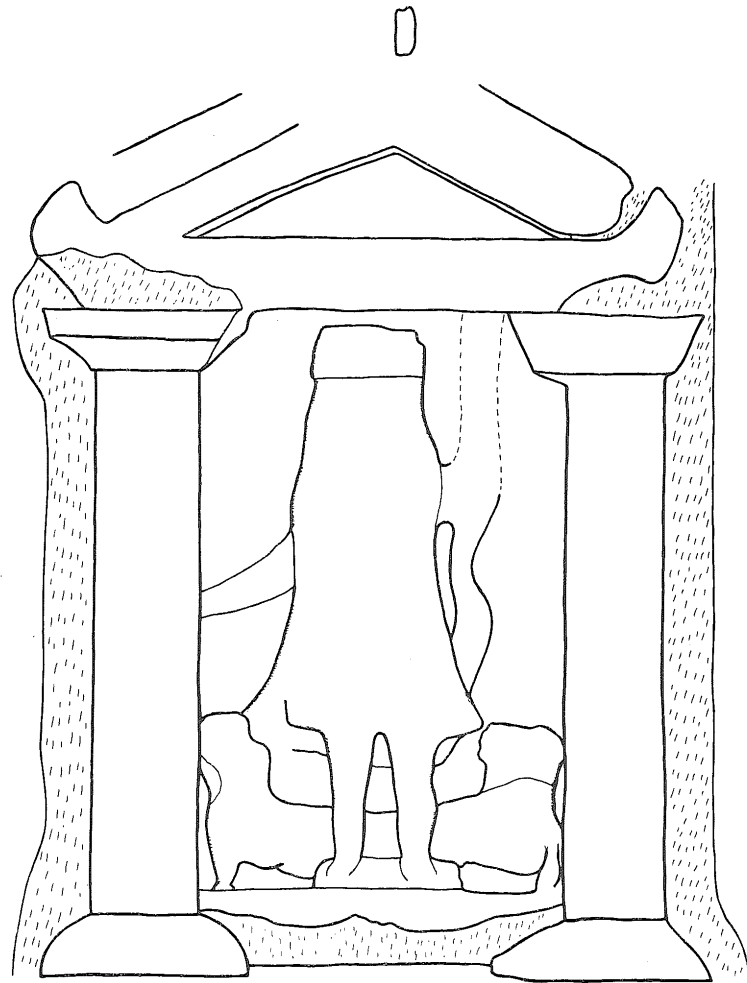


2: "Gaza" amphora within collapse deposit (50.2).



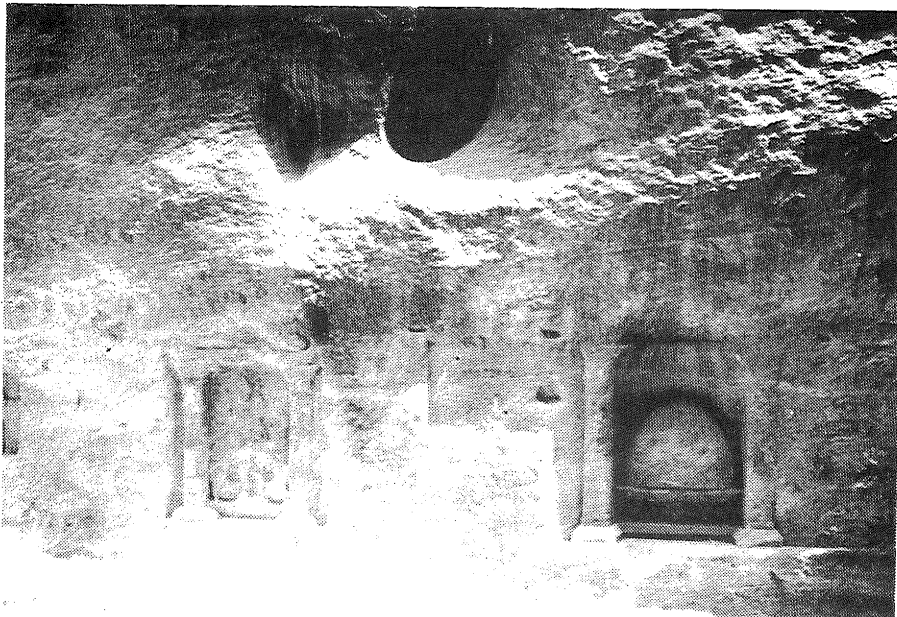
Roman tomb door lock from Tomb 56, Area VI.

CABE "K
 NI Δ P OC
 APX HC A Δ P A
 EV C E B I
 C ; ^ € Z A
 N H L Y P
 H I 3 Z E
 A Z Z
 3 K E
 E



1986 Z.T. FIEMA

1: A god standing between two animals in the Siq.



2: Baetyl in the Siq of Petra



1: Water channel and platform in the Siq



2: The inscription of Victorinus
Beneficiarius



3: The inscription of Victorinus *in situ*.



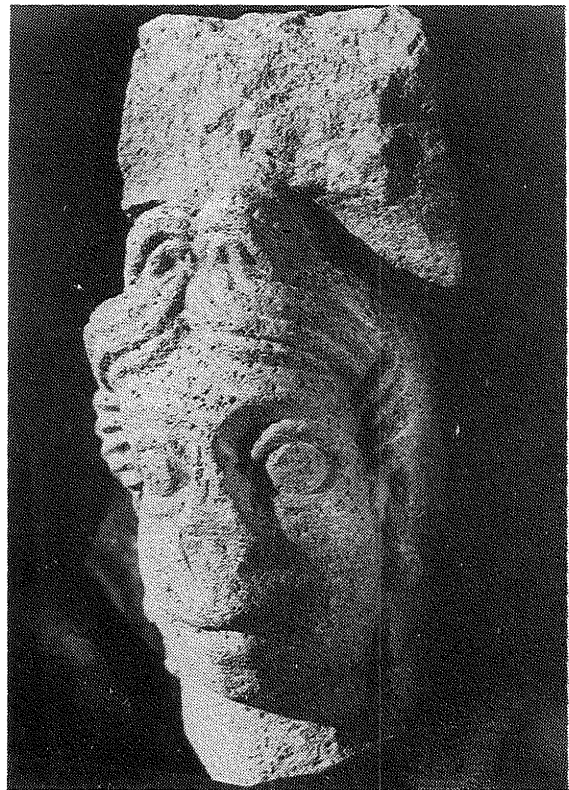
1: Sculptured head from Jerash.



2: Sculptured head from Jerash,
side view (left).



1: Sculptured head from Jerash,
side view (right).



2: Sculptured head from Qanawat.



1: Amman, Jordan University Inv.-Nr. 22/23, from Abila tomb 16.



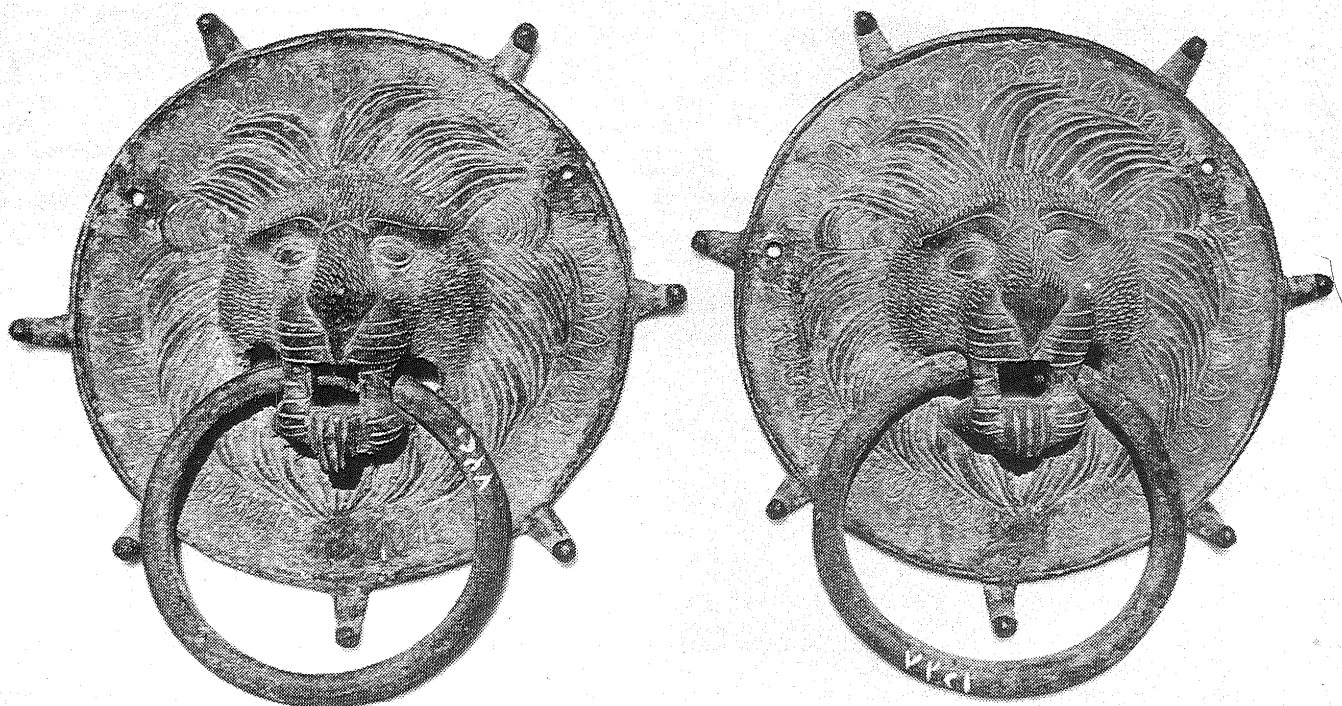
2: Paris, Louvre Inv. 3454, from Sidon.



1: Damascus, National Museum Inv. 10334/4510 and 10337/4513, from Homs/Abu Sabun tomb 10.



2: Mayence, Römisch-Germanisches Zentralmuseum Inv. 0.38422, from the environs of Aleppo.



1: Damascus, National Museum Inv. 1254/737320 and 1254/7321, from Homs.



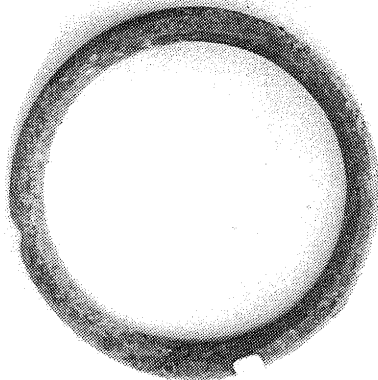
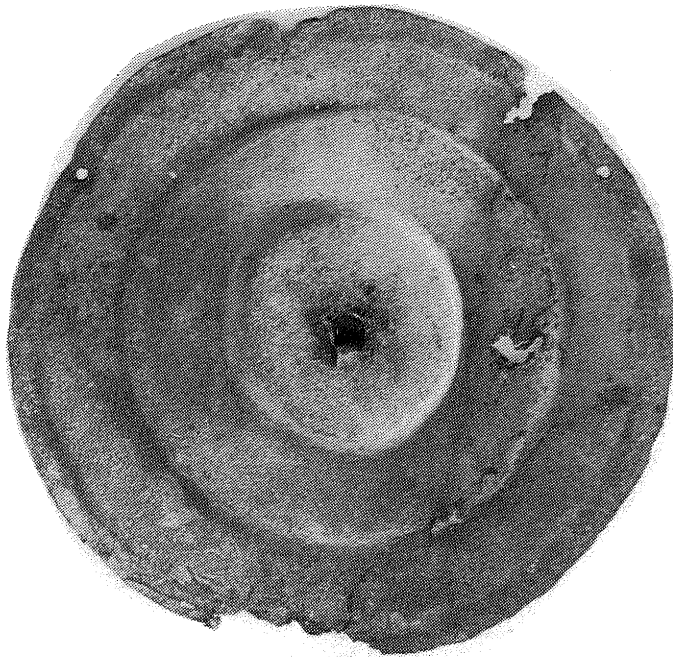
2: Aleppo, National Museum Inv. 129 (formerly: Damascus, National Museum Inv. 11991/5425) from Hama.



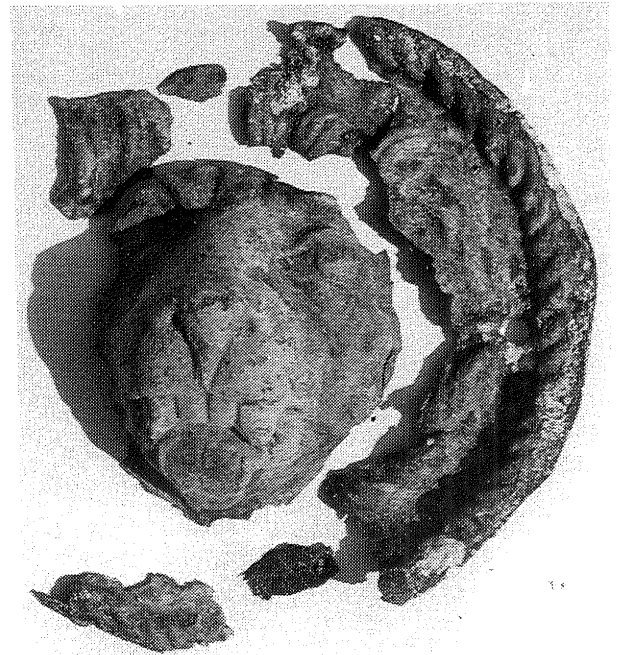
1: Bosra, Archaeological Museum 97 (C.37), from the Hauran.



2: Frankfort, Liebieghaus
Inv.1610.



1: Ibid: Yarmouk University,
Institute for Archaeology
and Anthropology Inv. 325 A
and C, from Umm Qaeis/
Gadara.



2: Jerash, Department of Anti-
quities, from Gerasa, tomb 2
near the arch of Hadrian.



3: Salt, Archaeological Muse-
um Inv. 347.



1: The Bath building, with the dominating south wall, seen from the south.



2: The fallen barrel vault of room III.



1: Room III, the eastern hot bath (*alveus* IIIa) with tubulation. To the right the floor shows repair with broken marble slabs.



2: Room III, the apse II with the hot bath (*alveus*) seen towards the south.



1: Room III, the portal of the north wall, with the two phases of blocking up, one in the second Bath Period (arrow 1), the other in the first Umayyad Period (arrow 2).



2: Room I, the semicircular hot bath (*alveus*) by the south wall from the first Bath Period, seen towards the southwest.



1: Room I, apse II, built up against the north wall of the room in the second Bath Period, seen towards the northeast.



2: Room V, the *hypocaust* and the door in the north wall. The wall added in the Umayyad Period is seen to the left (arrow).



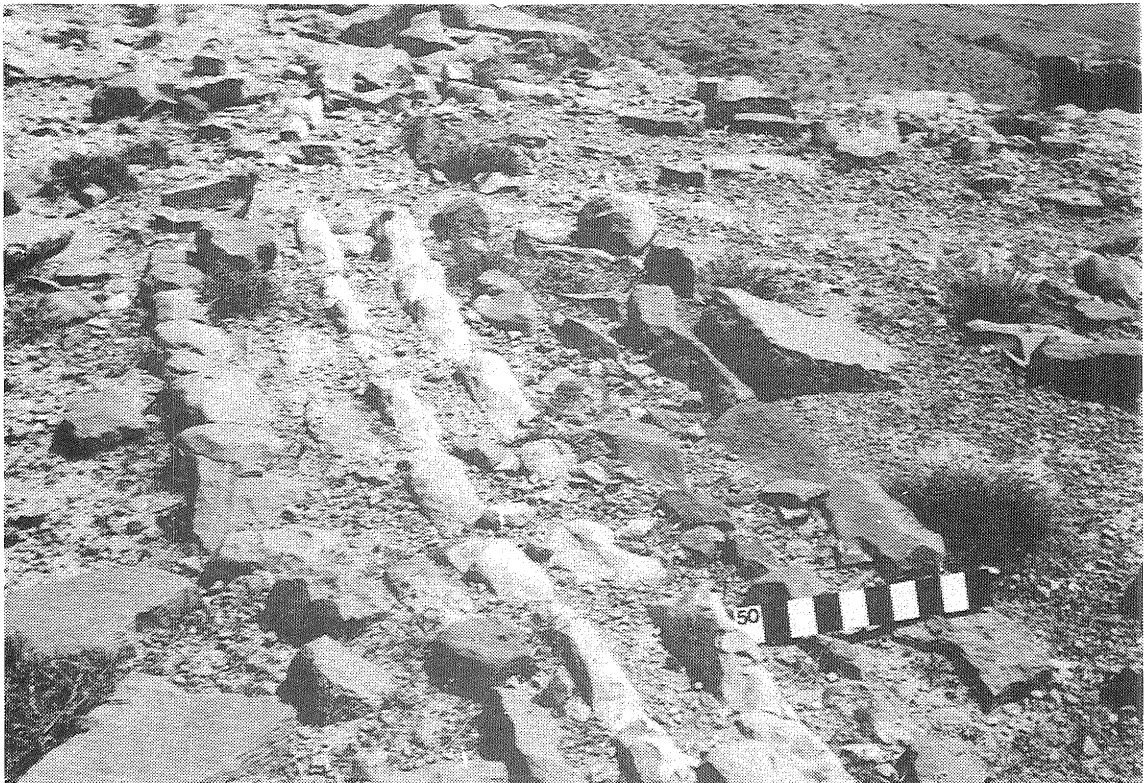
1: Room IV, the apsidal cold bath, which originally faced towards room VI, with the Umayyad blocking up, seen from the south.



2: Room VII, the south wall with the *mihrab*, seen towards the south.



1: Humayma: cistern no. 45 (Photo: Oleson).



2: Humayma: aqueduct at km 4.500. (Photo: Oleson).



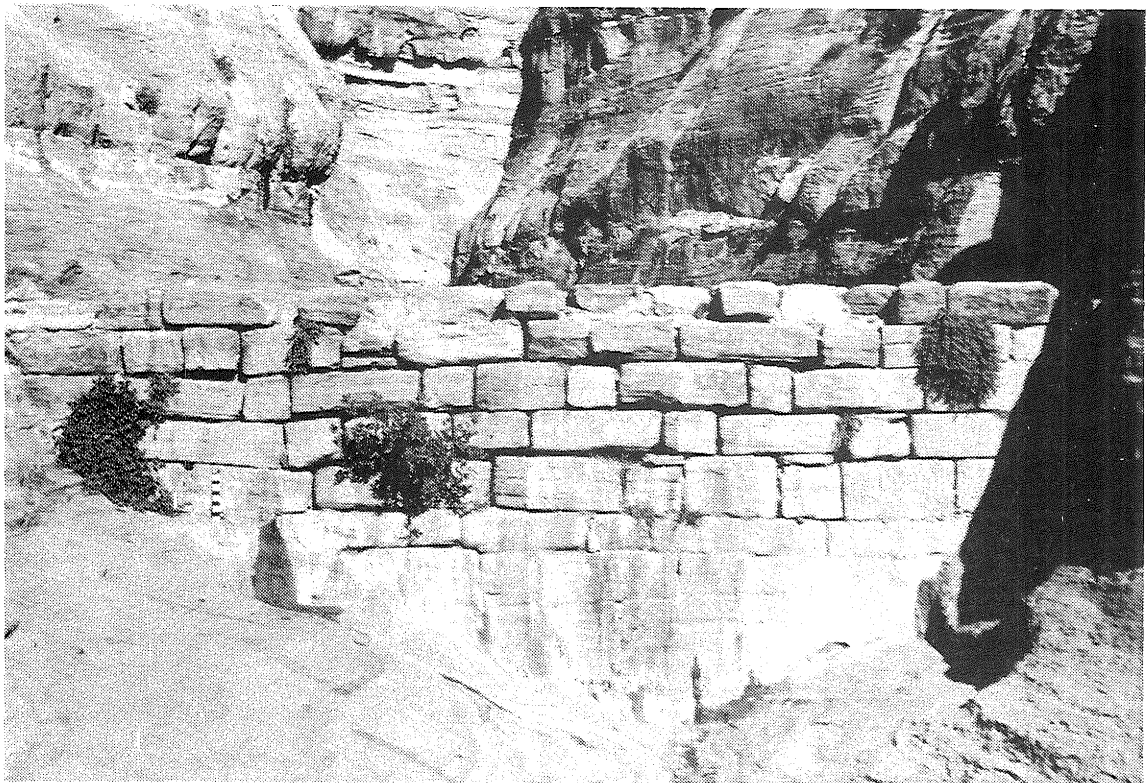
1: Ḥumayma: tiles in 'Ain el Jamam branch of aqueduct, km 7.545. (Photo: Oleson).



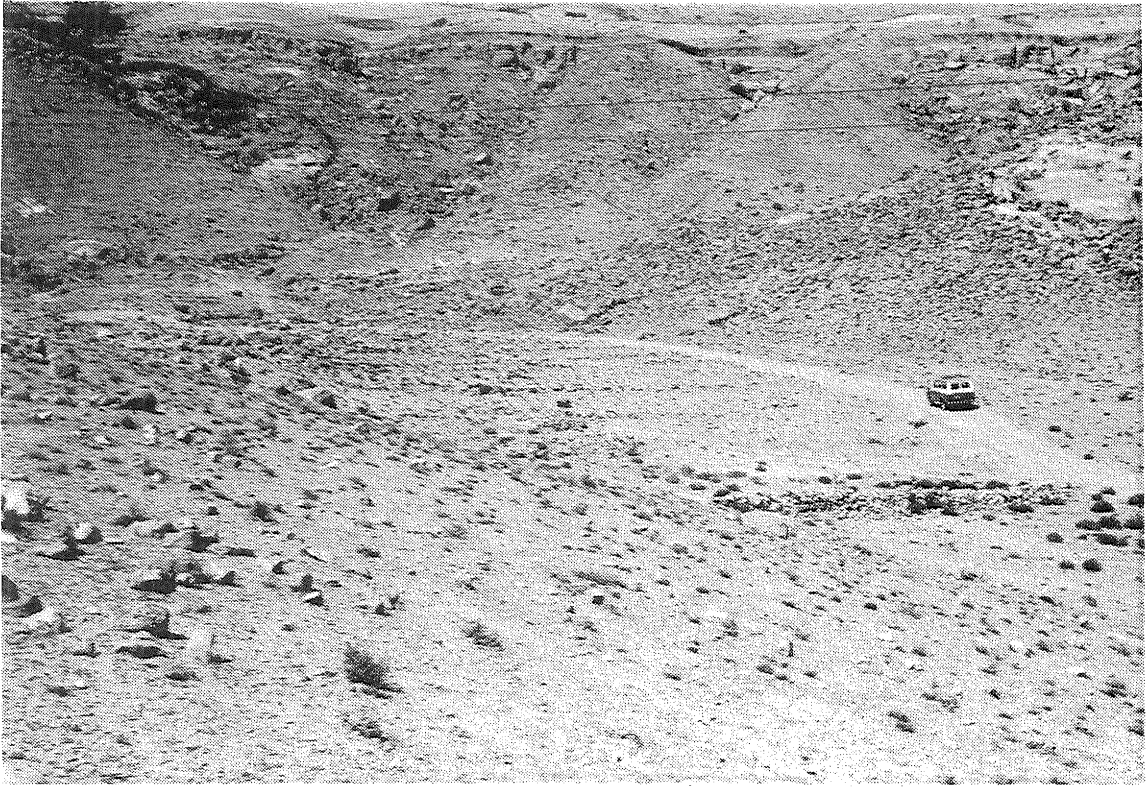
2: Ḥumayma: intact section of aqueduct at km. 6.800. (Photo: Oleson).



1: Ḥumayma: path of 'Ain el Jamam aqueduct down escarpment. (Photo:Oleson).



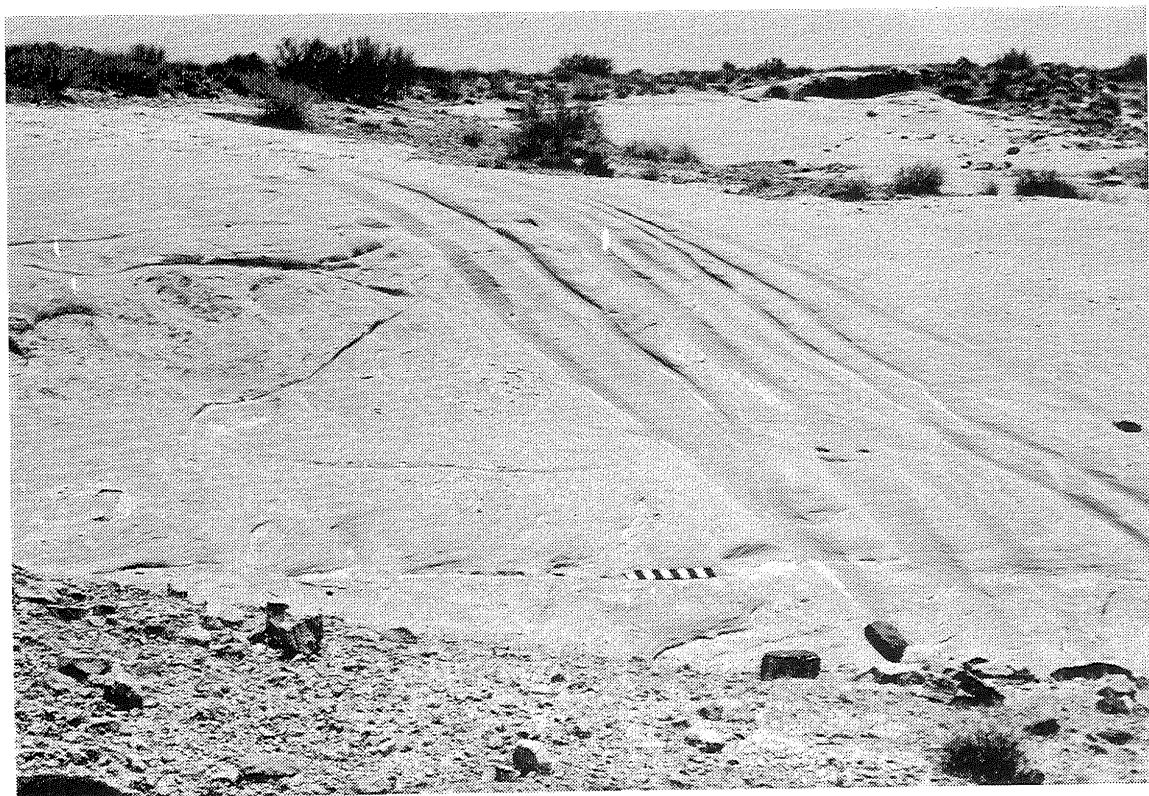
2: Ḥumayma: dam south of settlement. (Photo: Oleson)



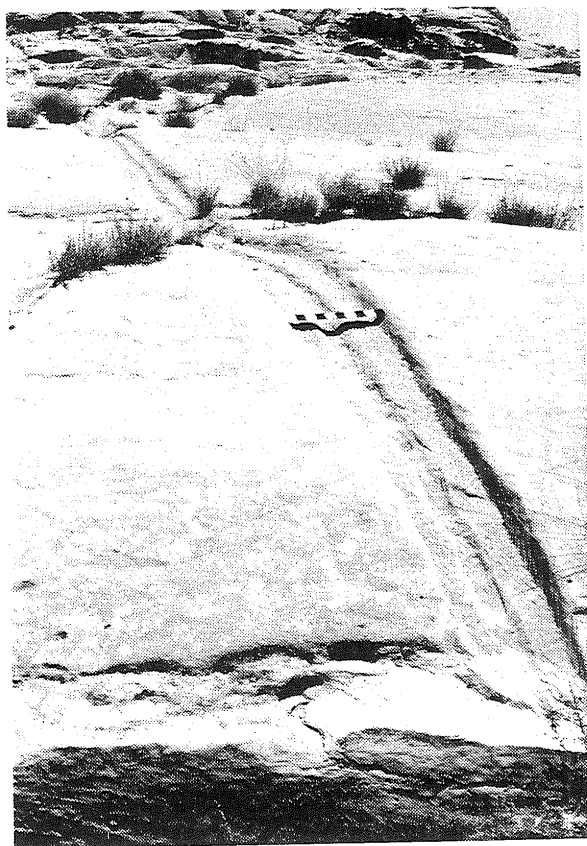
1: Ḥumayma: wadi barriers in Seyl 'Āin el Jamam. (Photo: Oleson).



2: Ḥumayma: field of stone piles west of settlement.



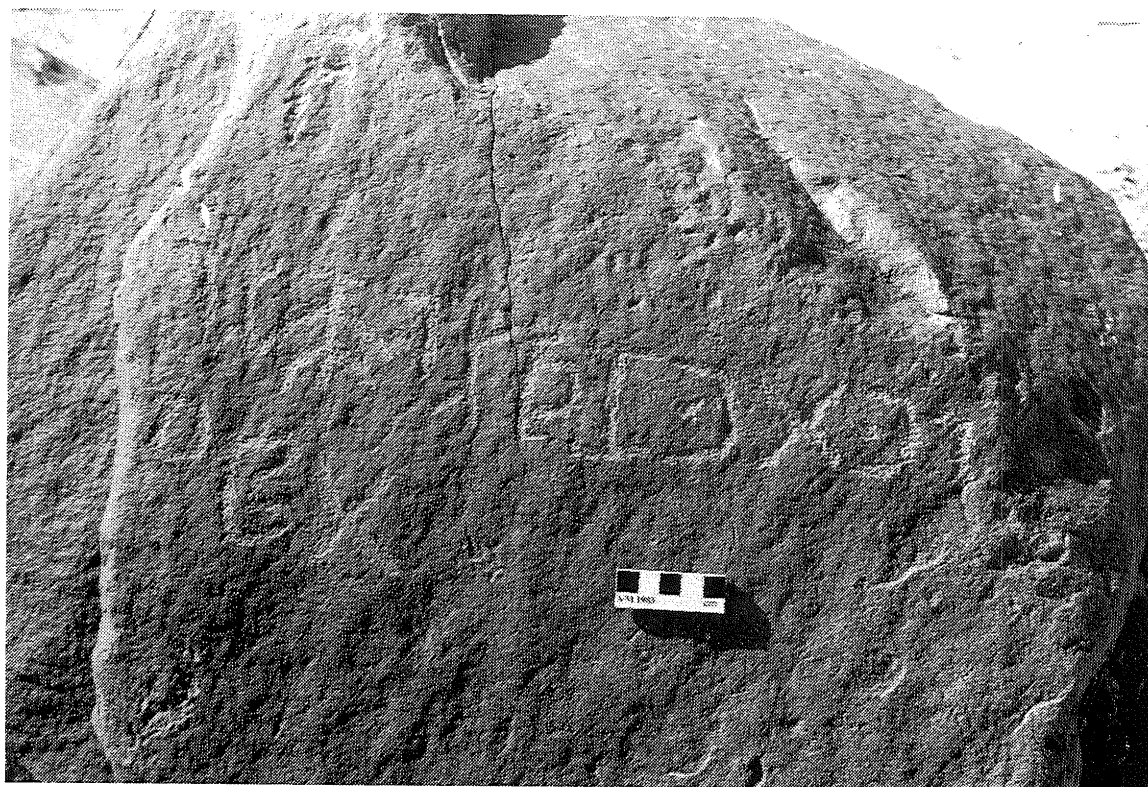
1: Humayma: group of grooves below Ras en Naqb. (Photo: Oleson).



2: Humayma: rock-cut groove below
Jebel Naqb Ishtar. (Photo: Oleson).



1: AM82/9B/15



2: AM83/32B/10



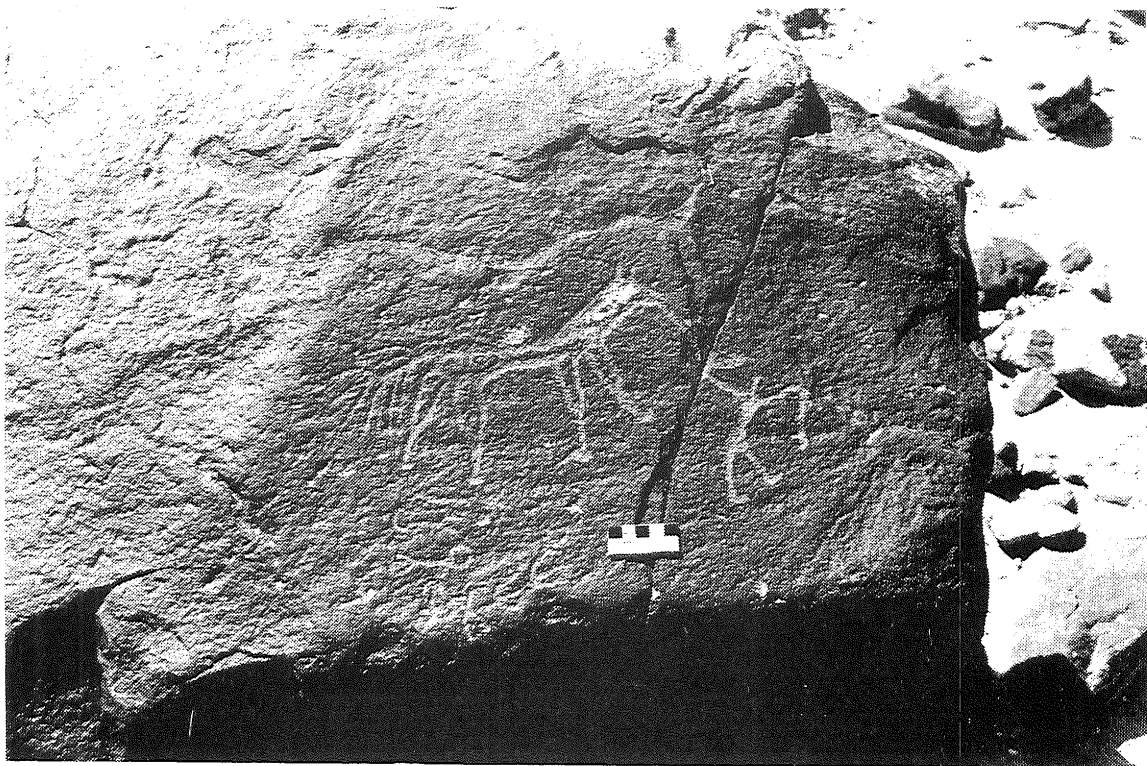
1: AM83/32B/7



2: AM83/32B/15



1: AM83/36B/26



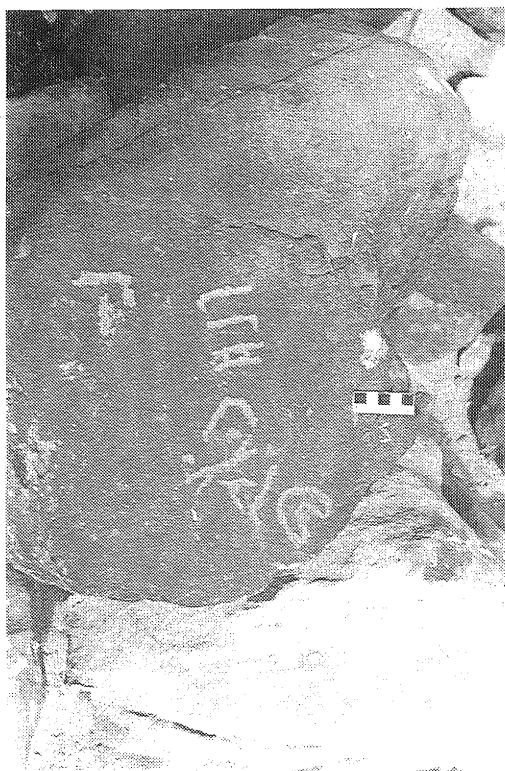
2: AM83/36B/29



1: AM85/71B/30



2: AM85/99B/21



1: AM85/83B/19



2: AM85/87B/14



1: AM85/97B/8



2: AM85/83B/27



1: AM85/96B/15



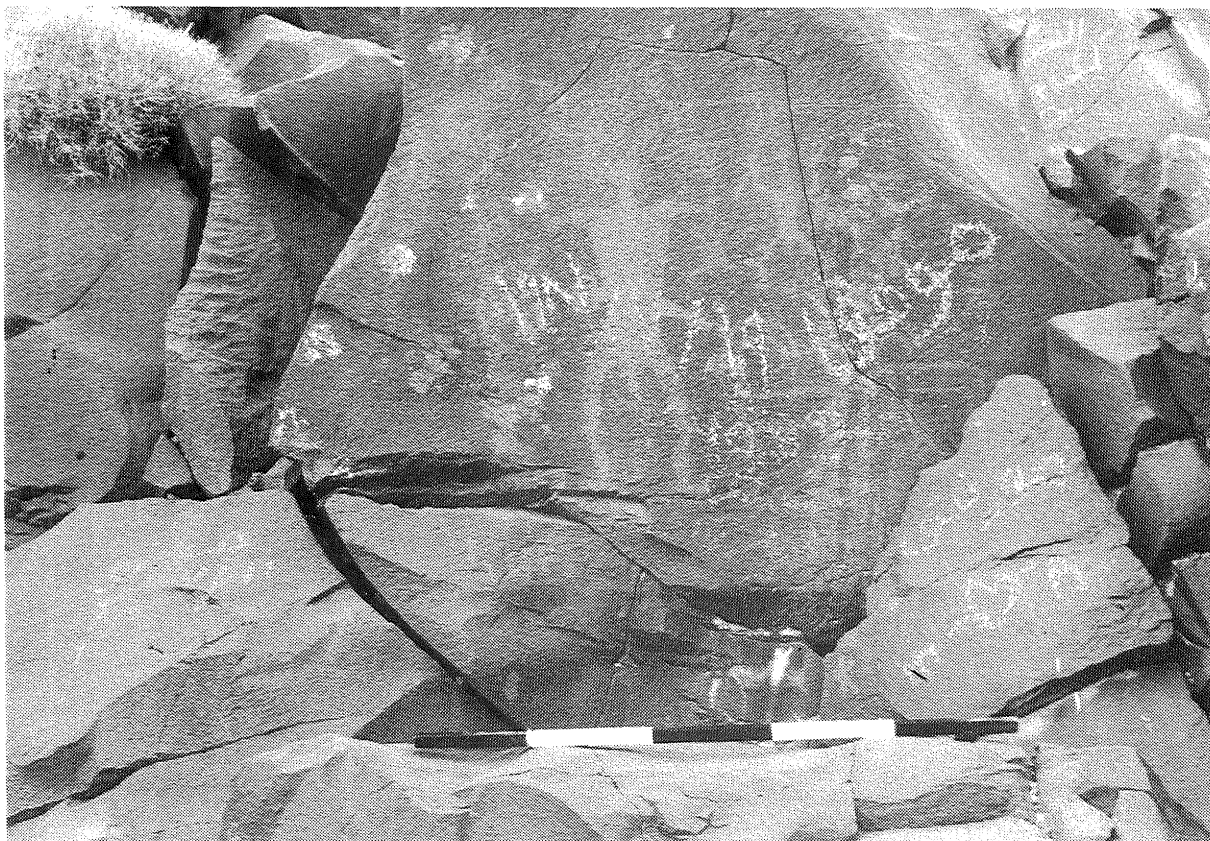
2: AM85/74B/23



1: AM85/65B/14



2: AM85/73B/15



1: Wādī Judēra - Thamudic rock drawings



2: Defence wall at Mudeyneh above Wādī Mūjib



1: Doorway leading into tower
(looking south)



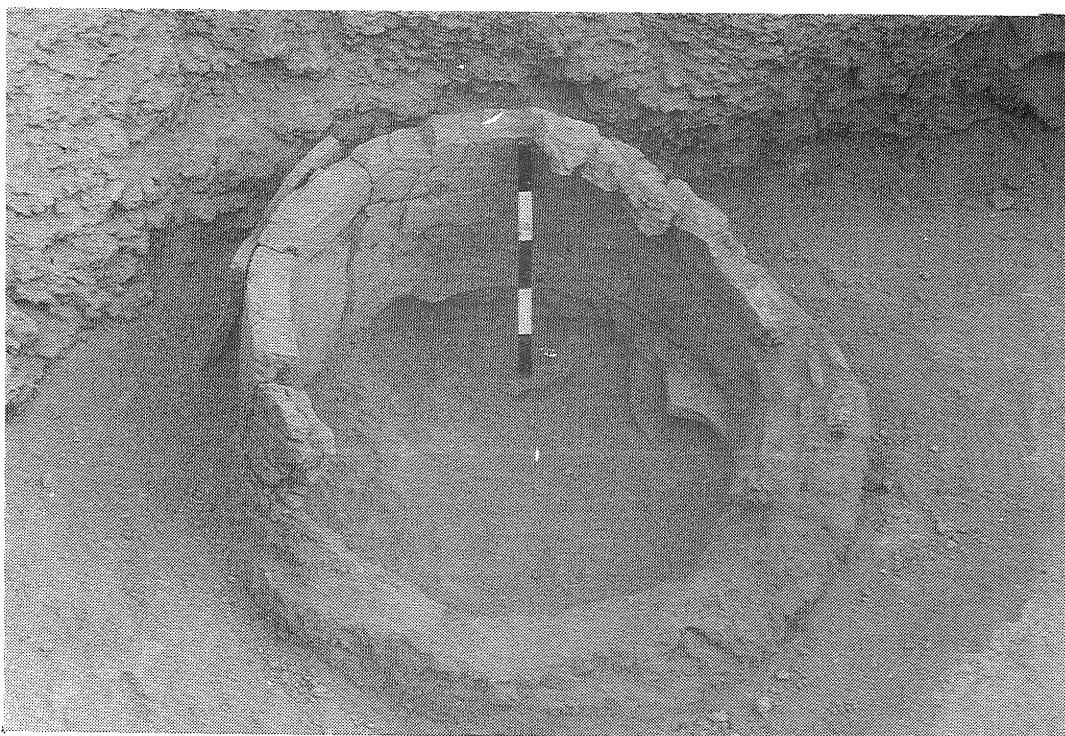
2: Partially exposed Doorway from "Kitchen area" (looking east)



1: Grinding stone on roof fall (view south) with partition wall (60) in background



2: Uncovered gateway from "Kitchen area" (looking east)



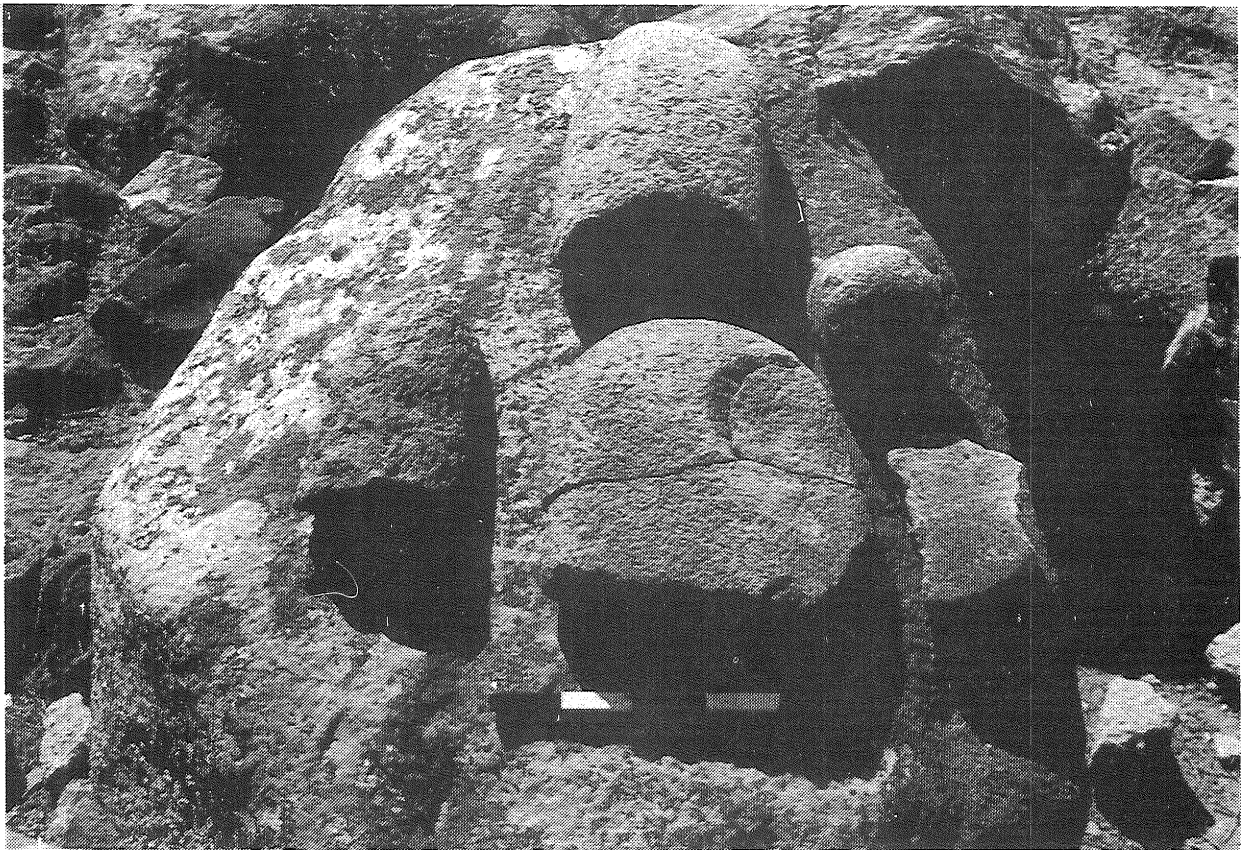
1: Tabun in south-east corner of "Kitchen area"



2: Partially exposed city-wall
(looking north)



1: Storage bin in south-west corner of "Kitchen area".



2: Grinding stones found in Area CI.



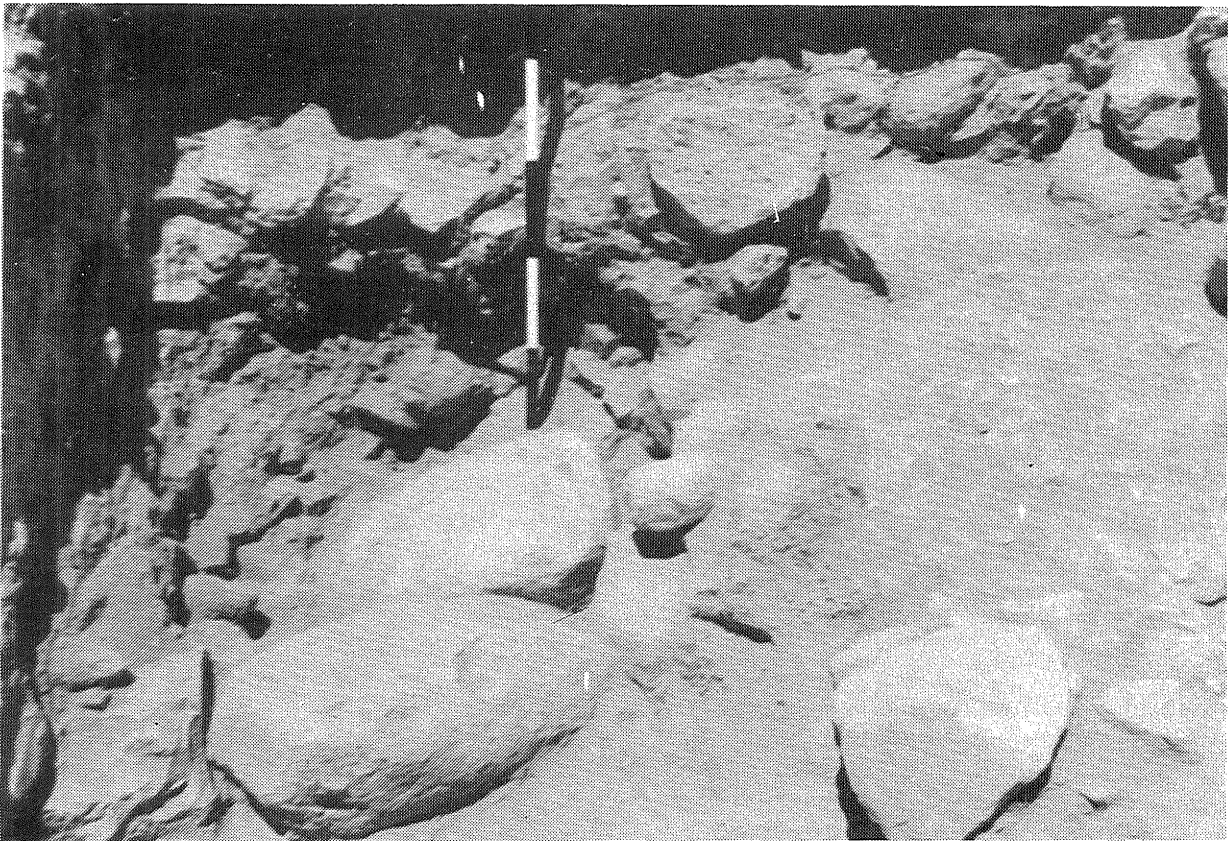
1: Spindle whorl



2: Part of a box-like object



1: Ostrakon with letter ‘‘m’’ and possible ‘‘w’’:



2: Area B square 1 - stone platform and stones underneath



1: Blade of an iron knife



2: Column base



1: Walls 100 and 200 with floor in Area CII square 2



2: Spindle-whorl (center) and pendants right and left: pierced green stone and pierced shell.



1: Moabite inscription on basalt mortar or socket (?)



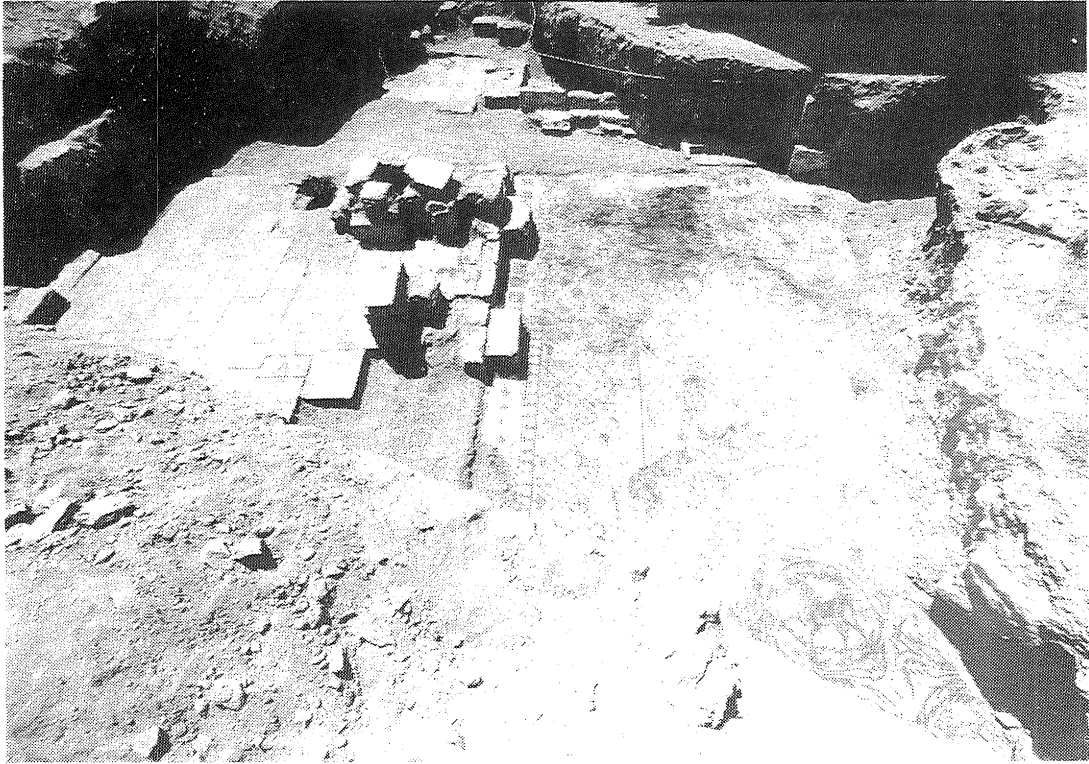
2: Large rocks forming concentric rings in Area CII,1 (bin, cistern?)



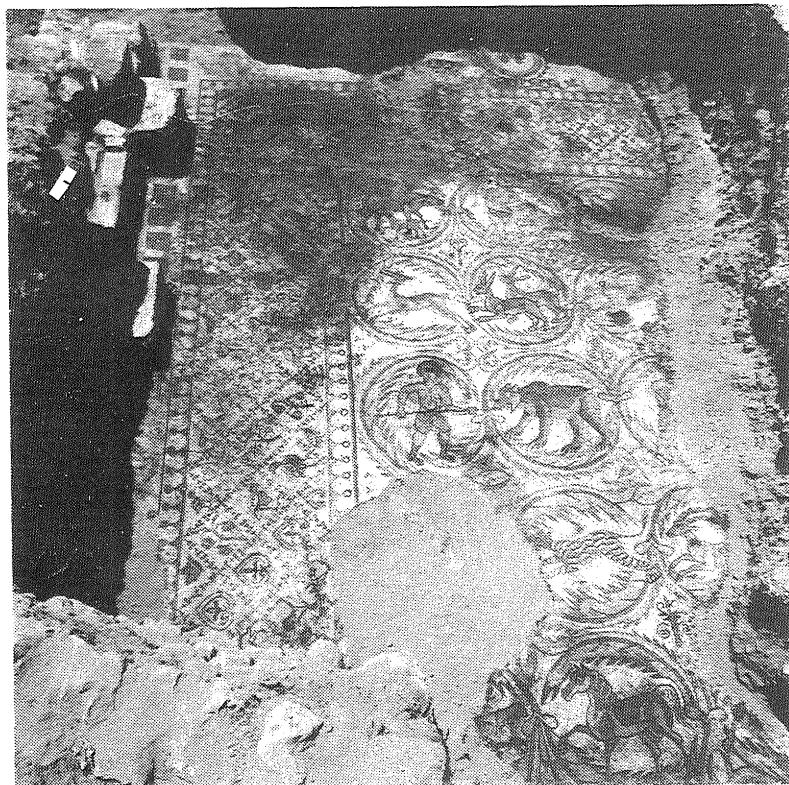
1: Petra, Nabataean Sculptor's Signature



2: Petra, Inscribed Nabataean Capital



1: The Burnt Palace in the court yard of the Ma'ay'a family.



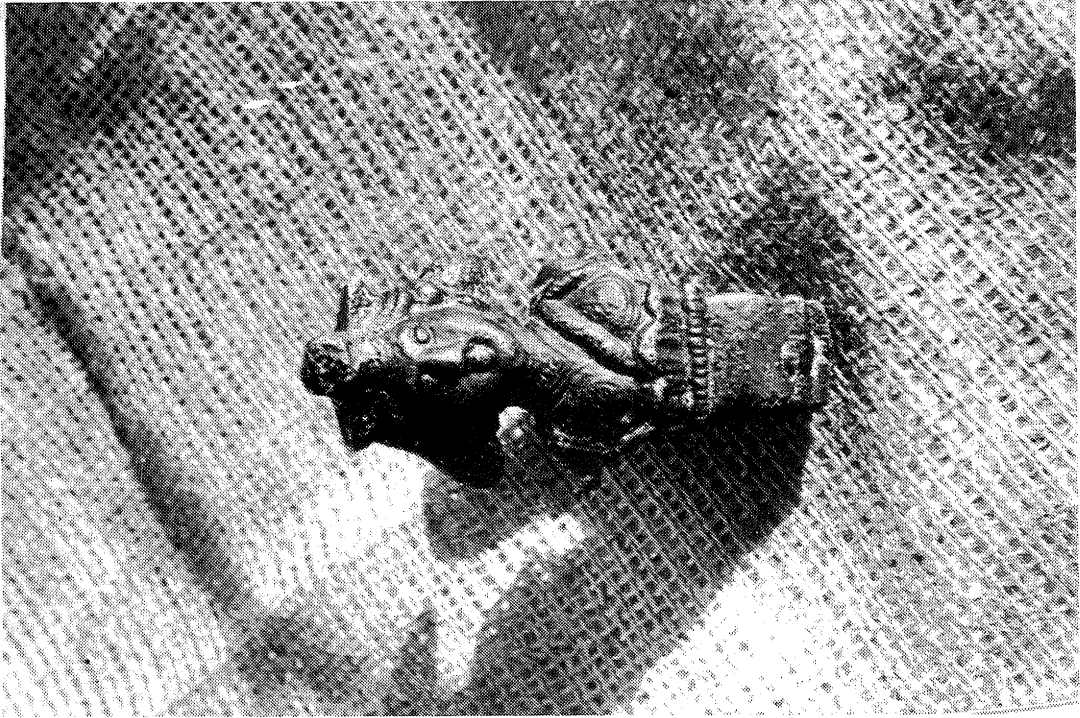
2: The mosaiced central hall.



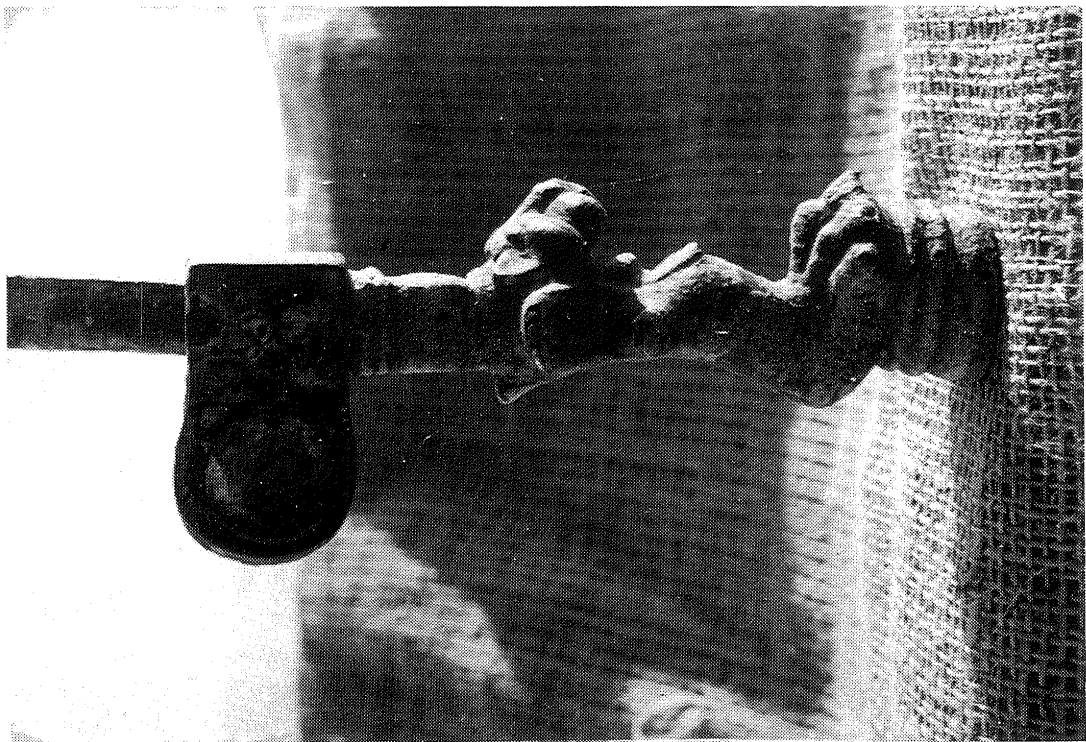
1: The door-knockers as they were found with traces of the fire.



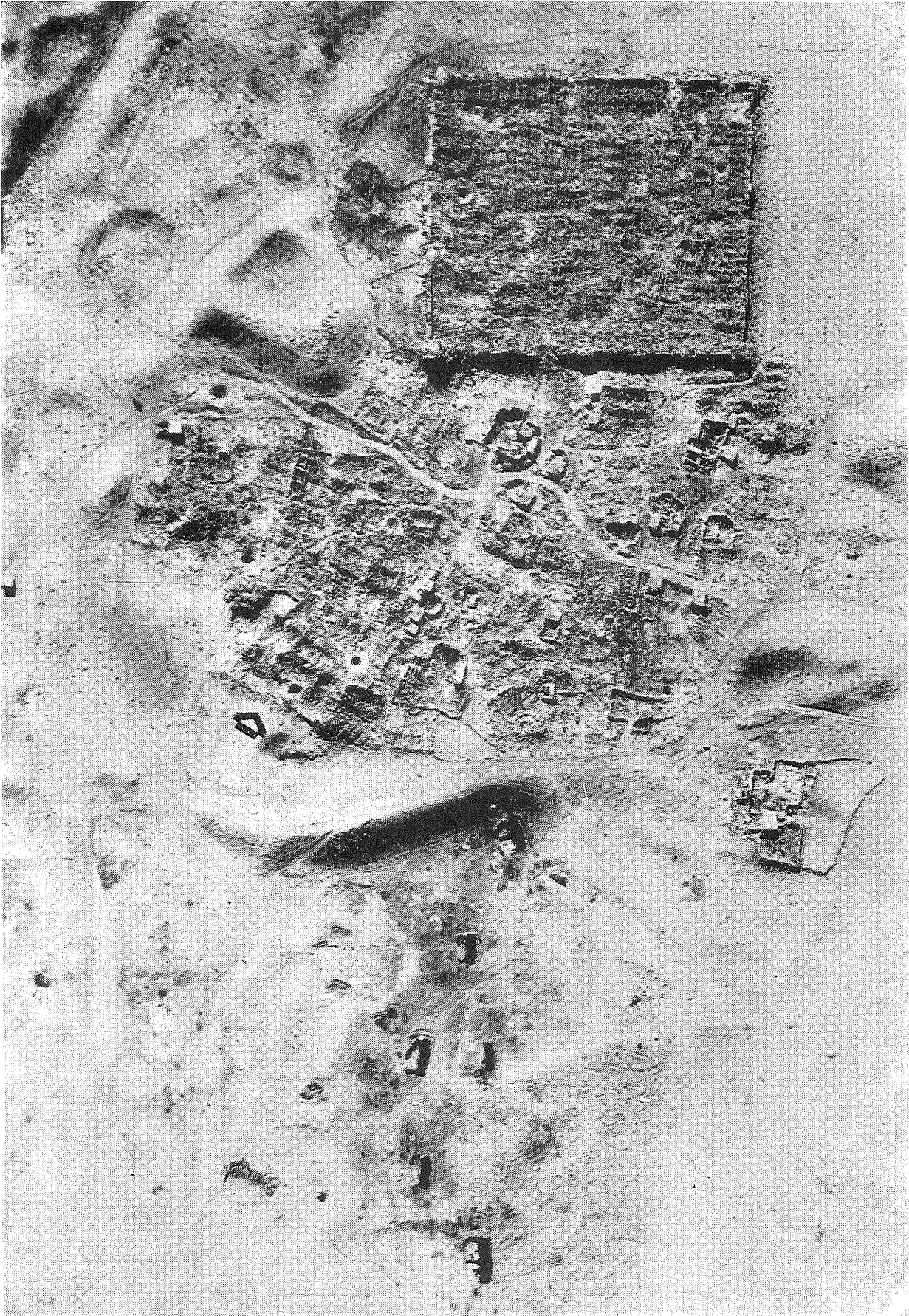
2: The central leg of the panther's bronze - tripod.



2: The human bust terminating the top.



1: The foot in the shape of a lion.



Um er-Raşāṣ. Aerial photo with the excavated area in the northern quarter (by courtesy of the National Geographic Centre).



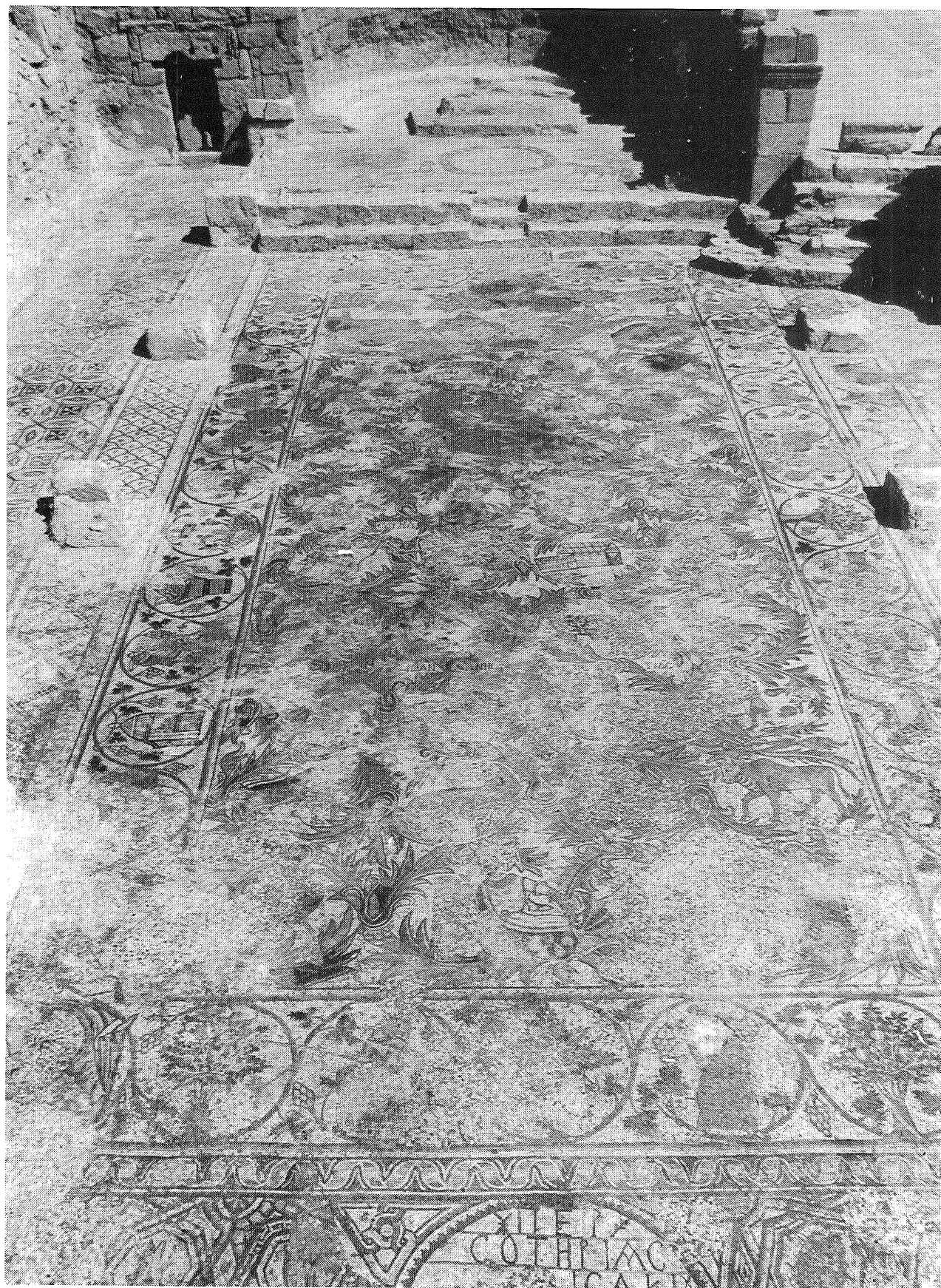
1 : The church of Bishop Sergius before excavations.



2 : The courtyard and the church of St. Stephen before excavations.



The St. Stephen complex at Umm er-Rasas.



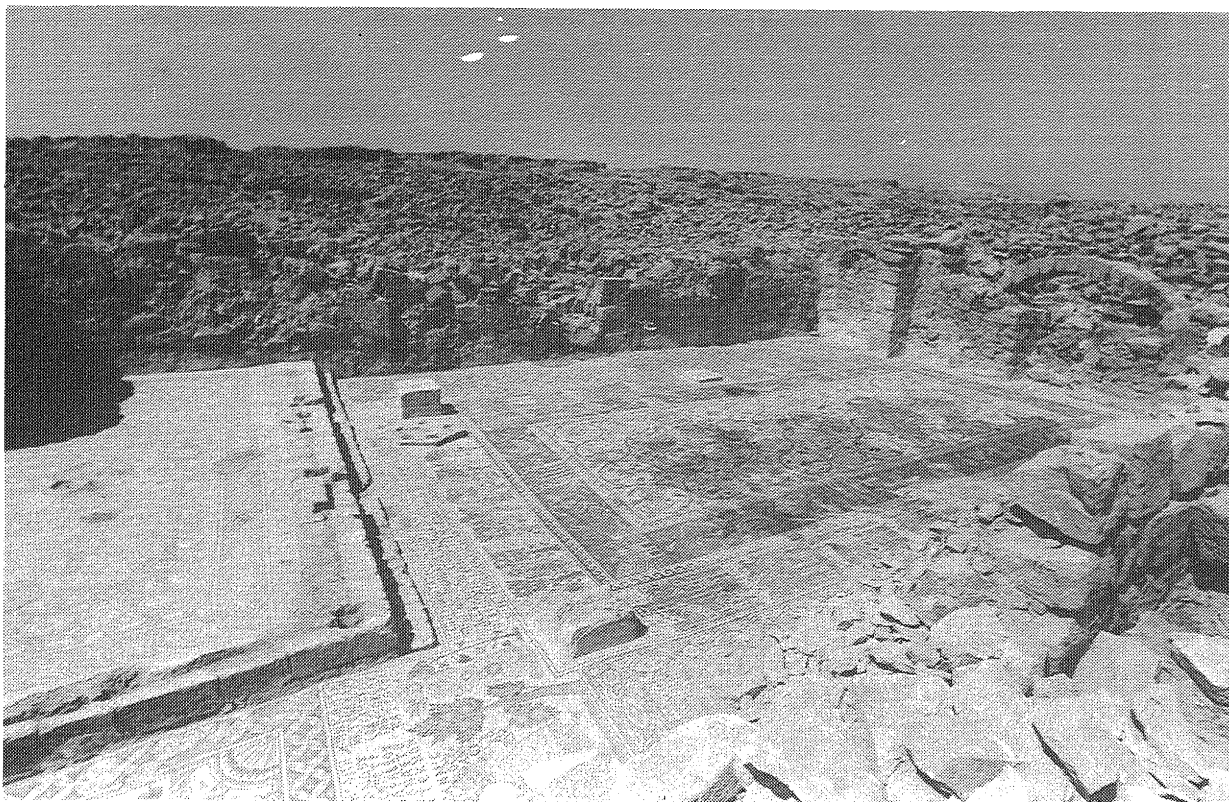
The church of Bishop Sergius seen from the west.



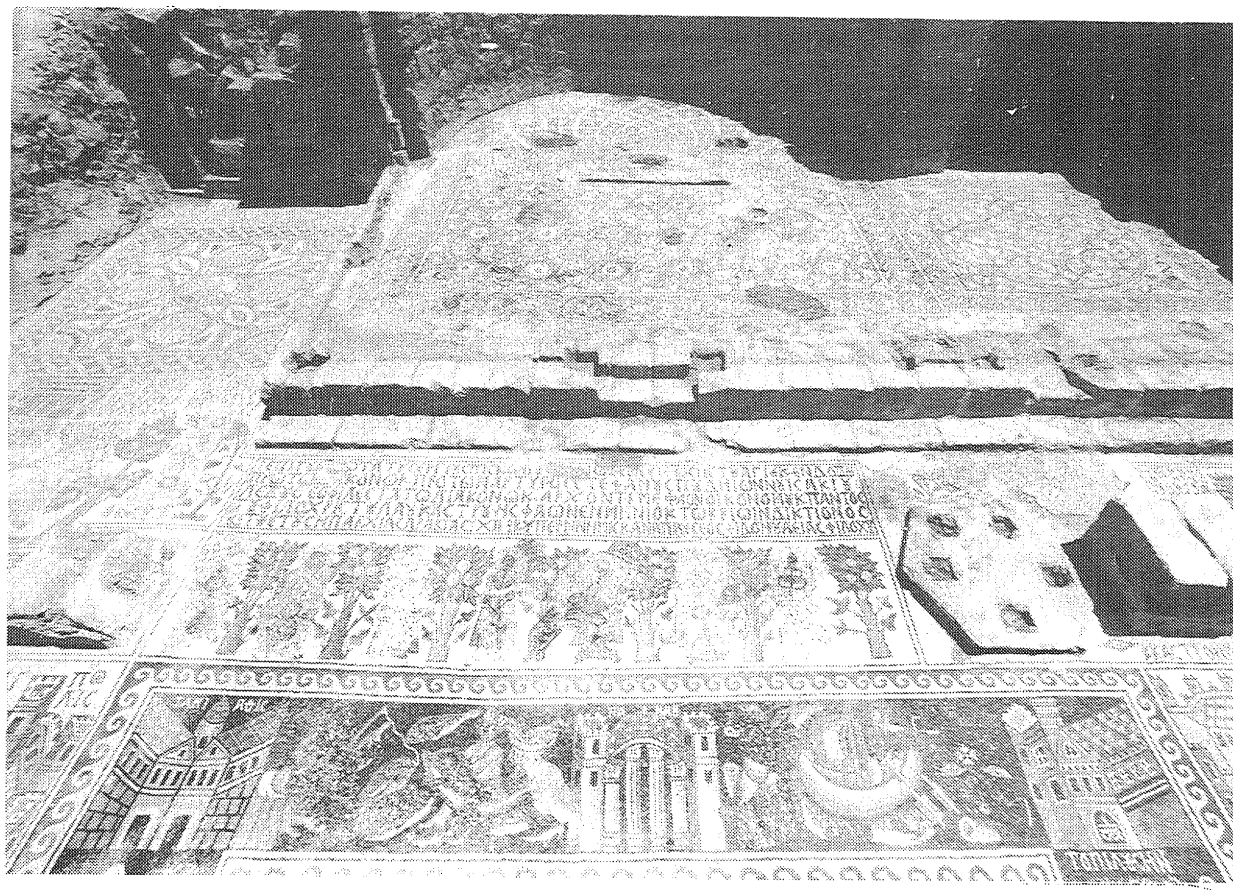
1: The dedicatory inscription in the church of Bishop Sergius.



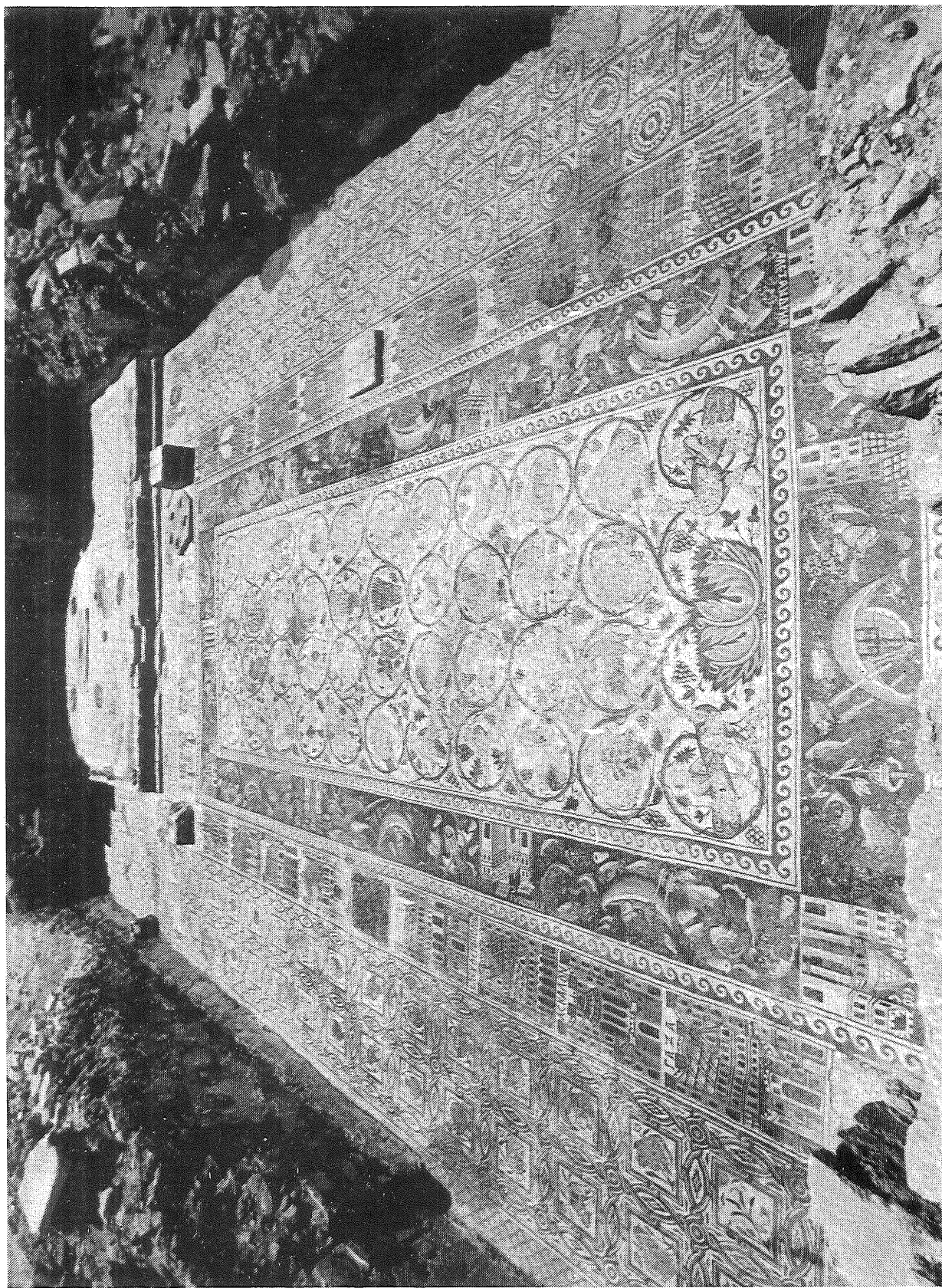
2 : A Season. Detail of the mosaic in the church of Bishop Sergius.



1 : The church of St. Stephen seen from the north.



2 : The dedicatory inscription and the presbytery of the church of St. Stephen.



1 : The church of St. Stephen seen from the west.



2 : Detail of the northern aisle.



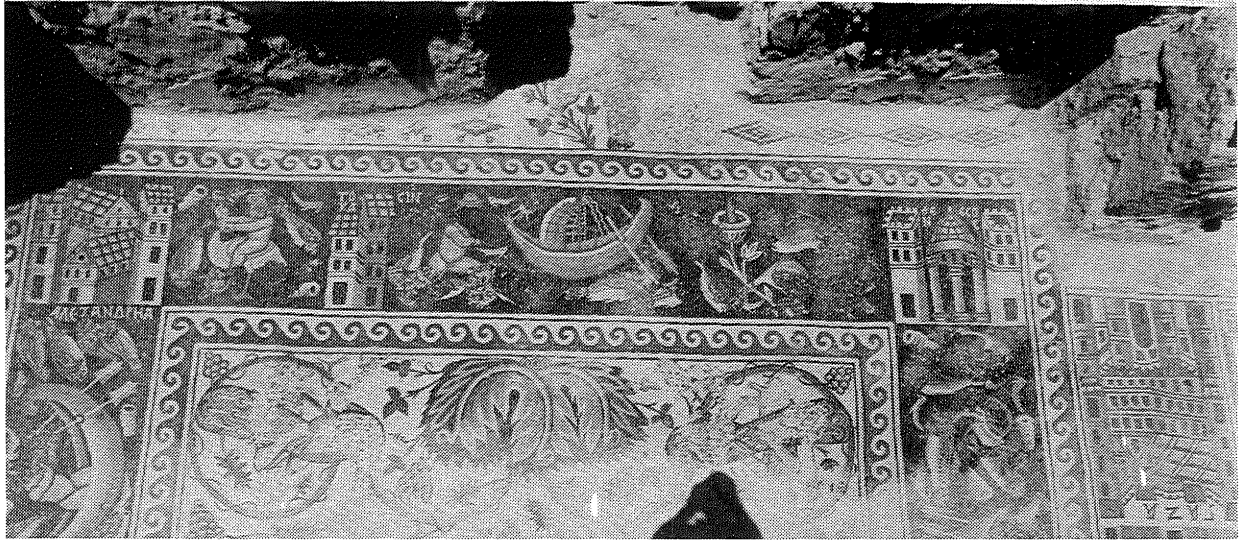
3 : Detail of the northern aisle.



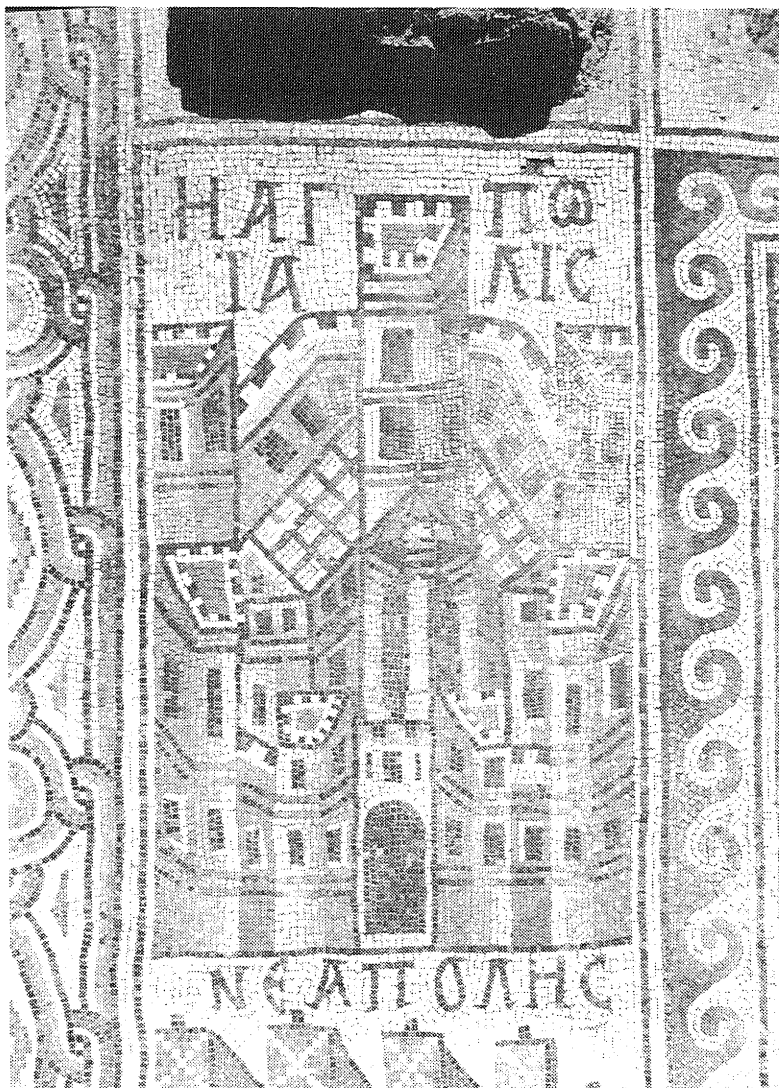
1 : Detail of the southern aisle.



2 : Detail of the southern aisle.



1: The area in front of the main door of the church.



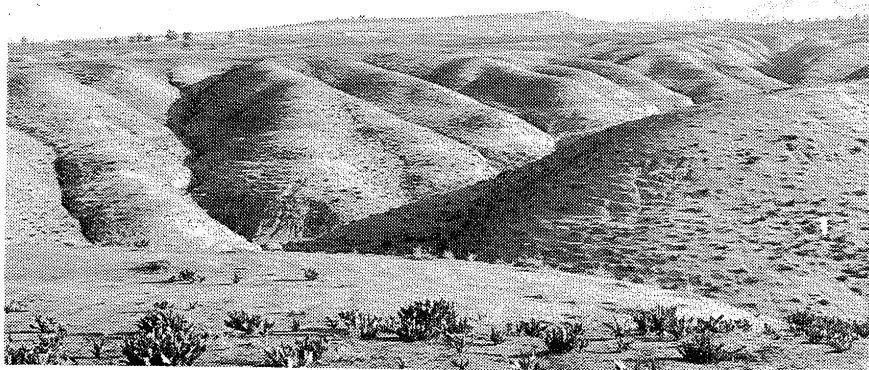
2 : The Holy City (of Jerusalem).



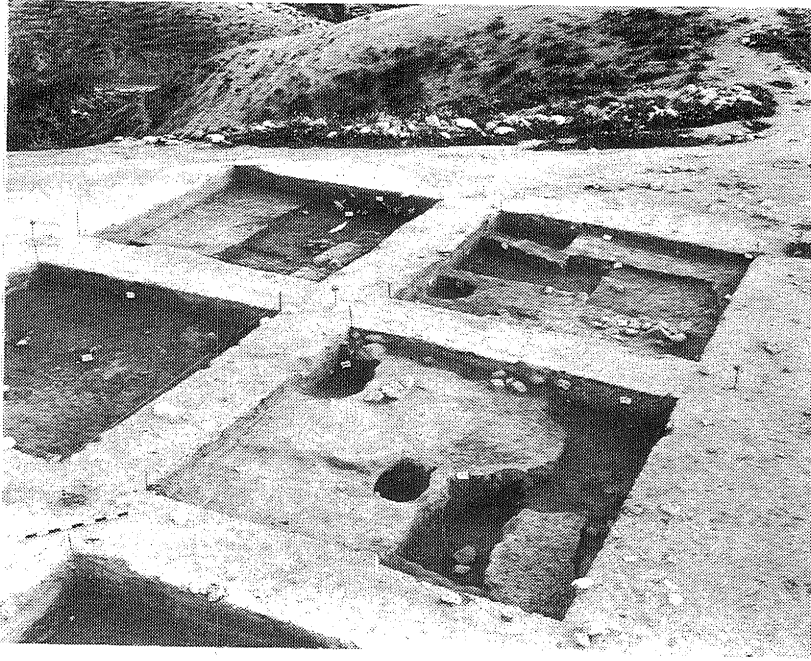
Abu Hamid 1986.

- 1- General view of the site towards the east. Note the irrigated fields on part of the site which has been bulldozed; in the background the 'Ajlun mountains.

- 2- General view of the site towards the south.



- 3- General view of the site towards the west; in the foreground the terrace; then the Jordan river valley; in the background the Samaria hills.

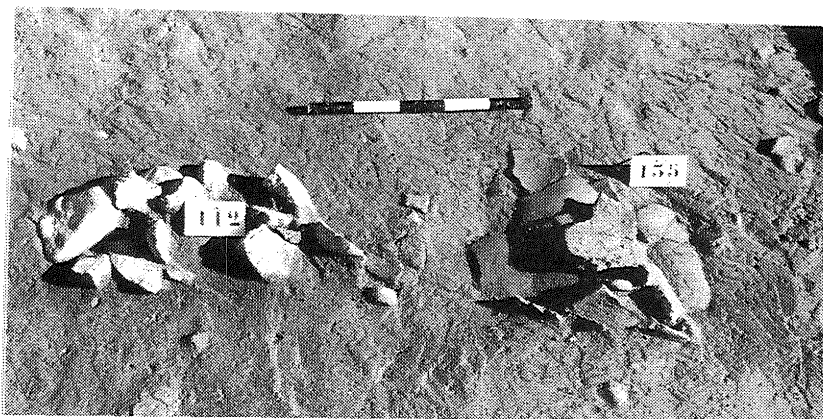


Abu Hamid 1986.

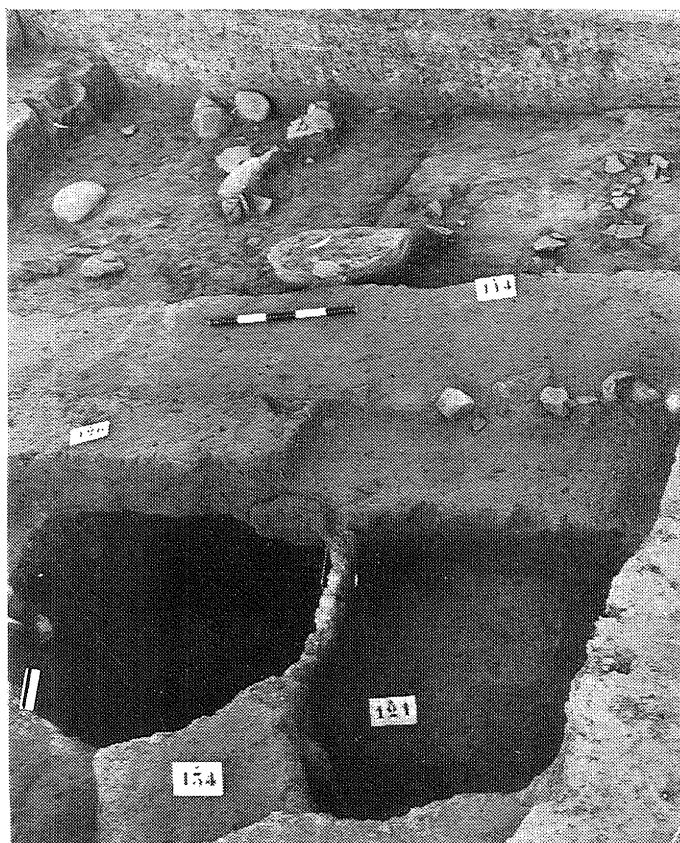
- 1- Operation 1 showing remains of some of the top level structures and pits.



- 2- Large pit filled with stones cracked by heat.

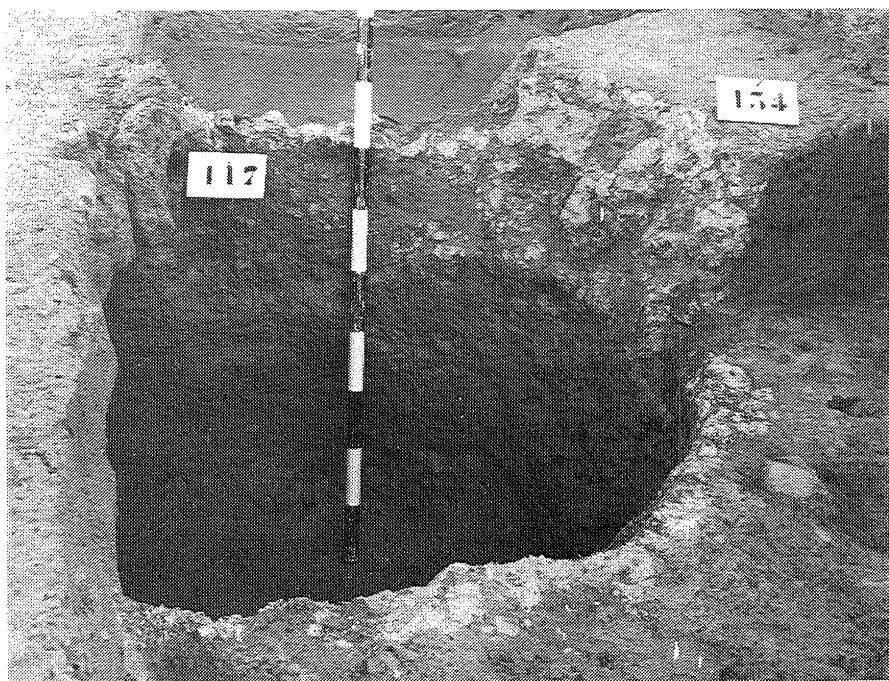


- 3- A hearth (112) and a jar vessel (135) (top level).



Abu Hamid 1986. Operation 2

Living floor with scattered items (basal level) and pits.



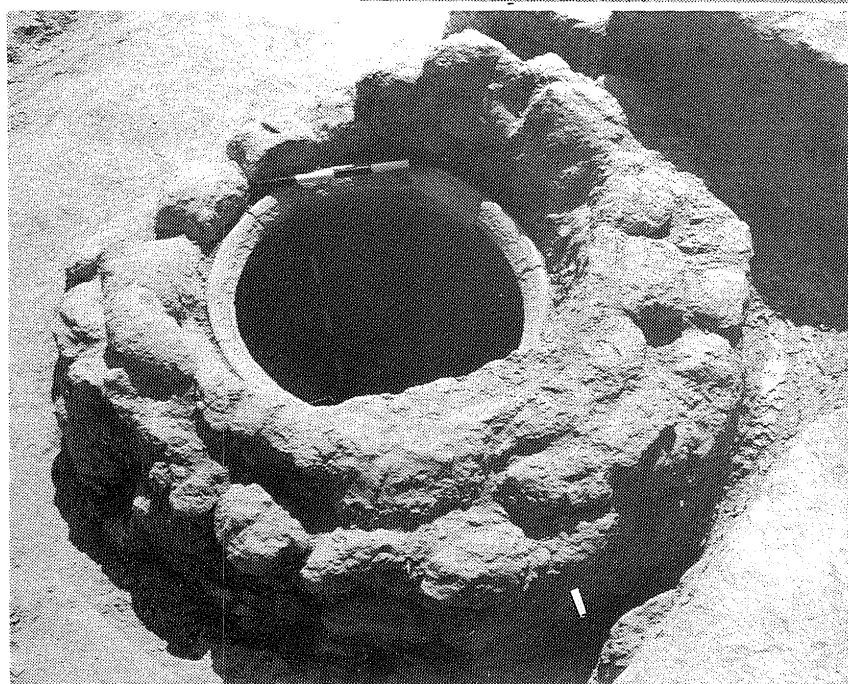
2- A clay-lined cylindrical pit (top level)

Abu Hamid 1986. Operation 3.

1- General view.

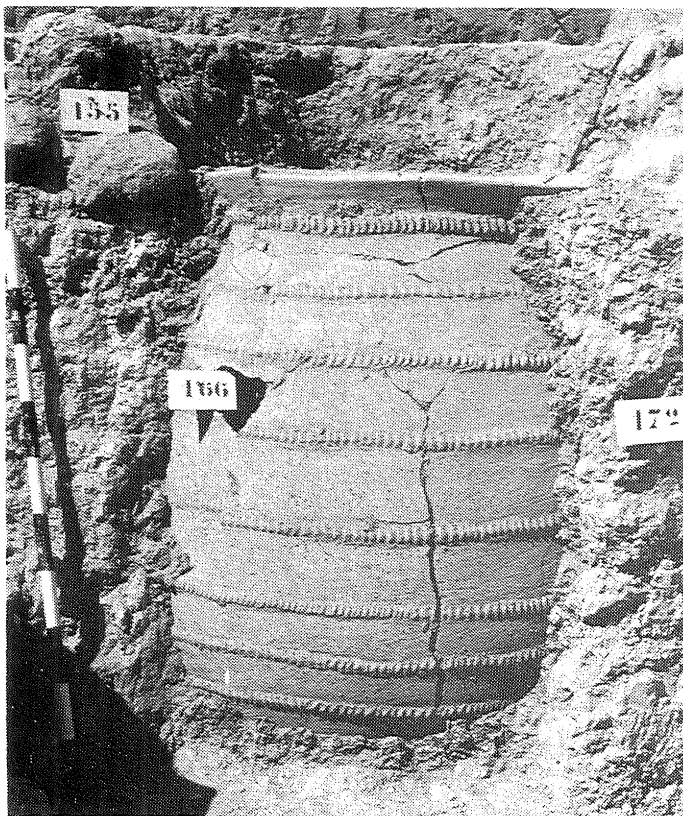


2- Remains of mud-bricks and small pebble-lined walls of rectangular rooms.



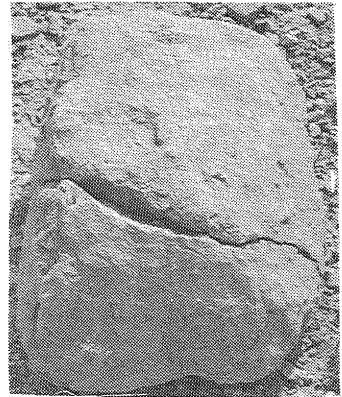
3- Jar 166 with the cover of bricks (partly removed) around and on top of its rim.

Abu Ḥamid 1986. Operation 3.

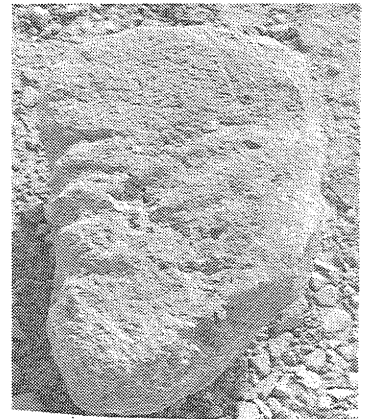


1- Jar 166 *in situ*.

2



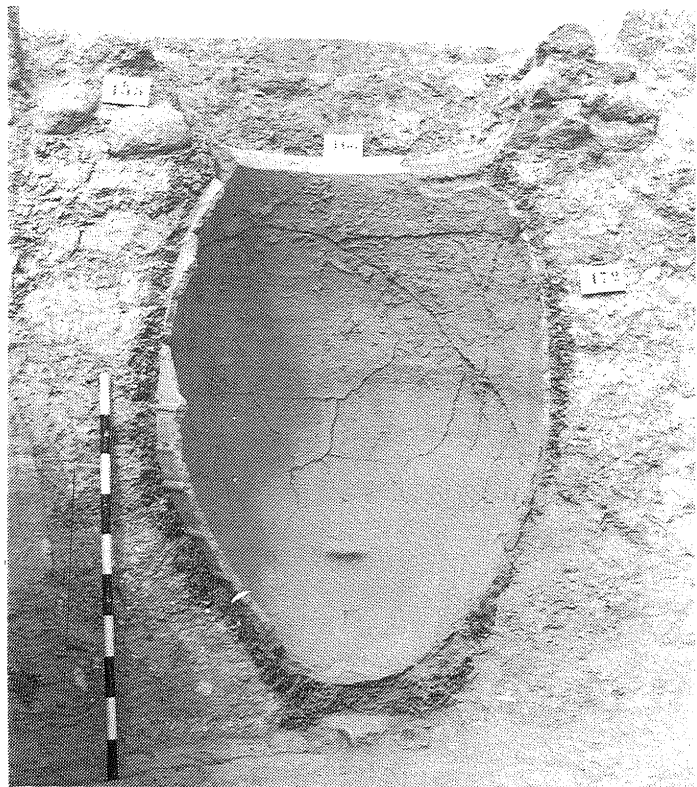
3

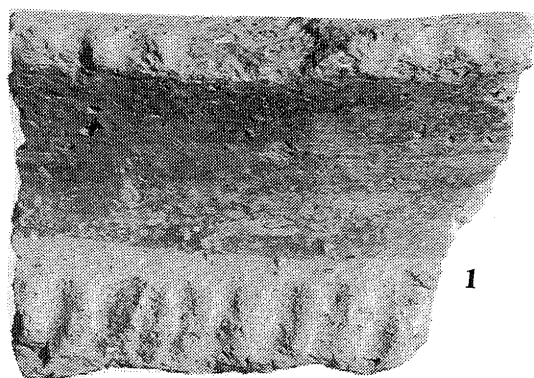


2,3 - bun-shaped bricks
with finger im-
pressions.

4- Section of pit 172 with the jar 166 and
its cover of bricks (155). Note
the ledge-handle on the inside
wall of the jar and the brown
clay coating along the outside
wall of the vessel.

4

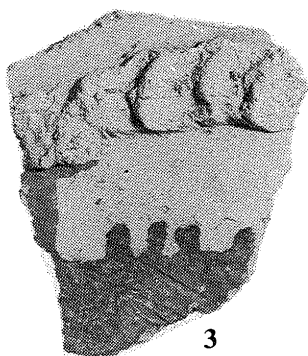




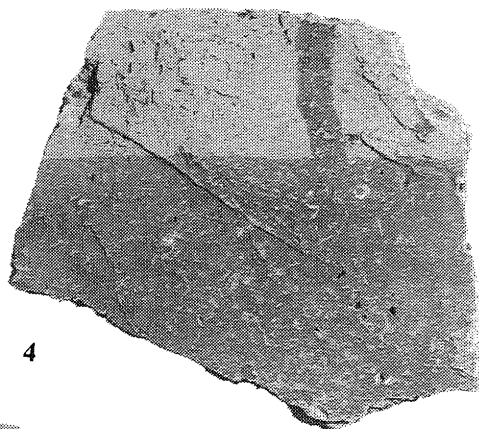
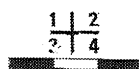
1



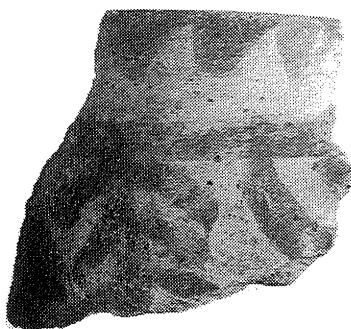
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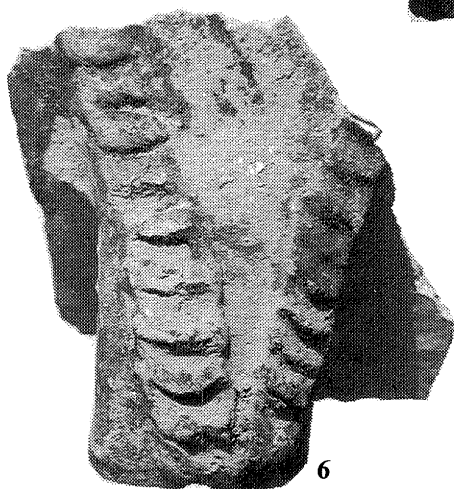
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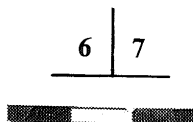
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5

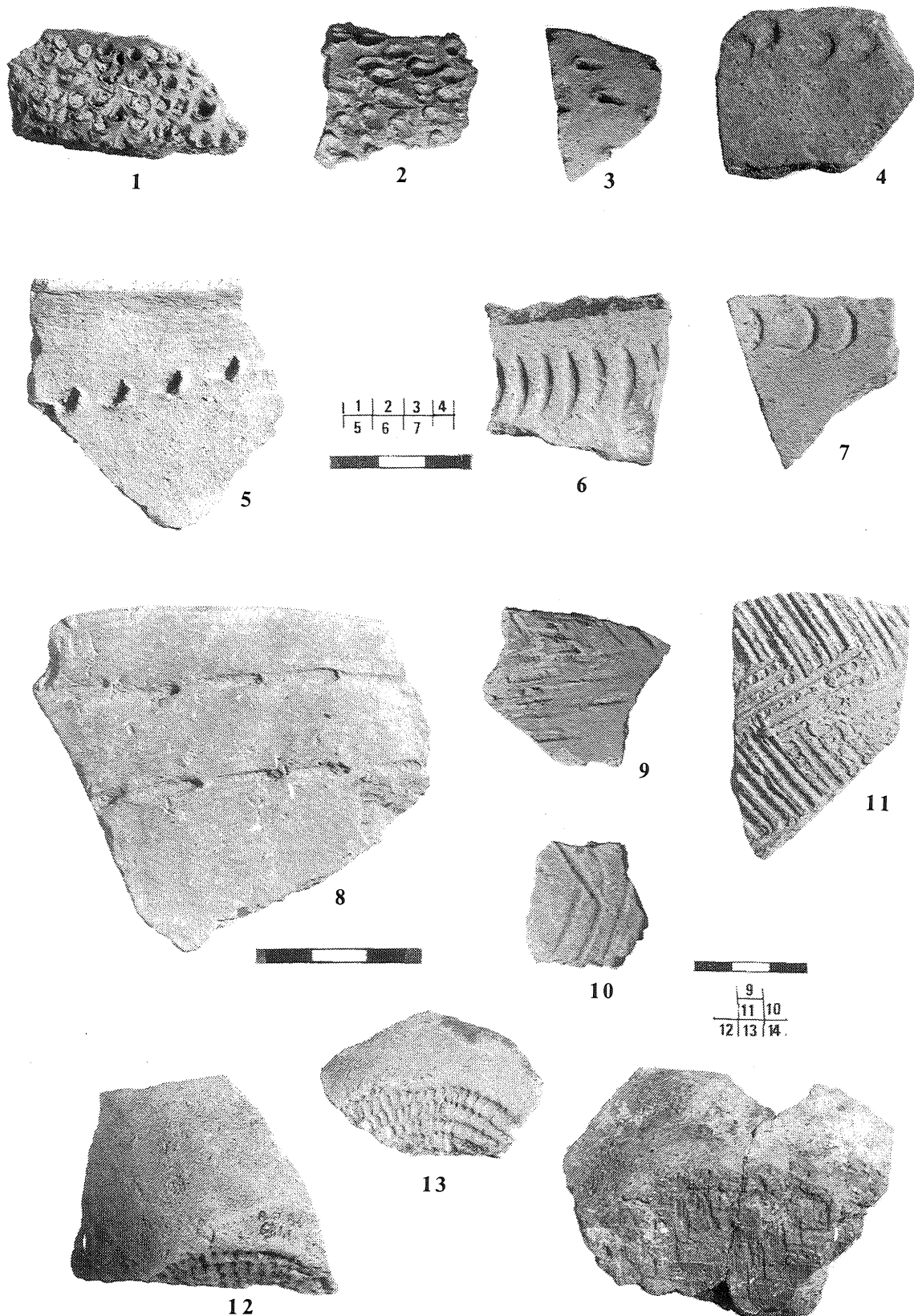


6

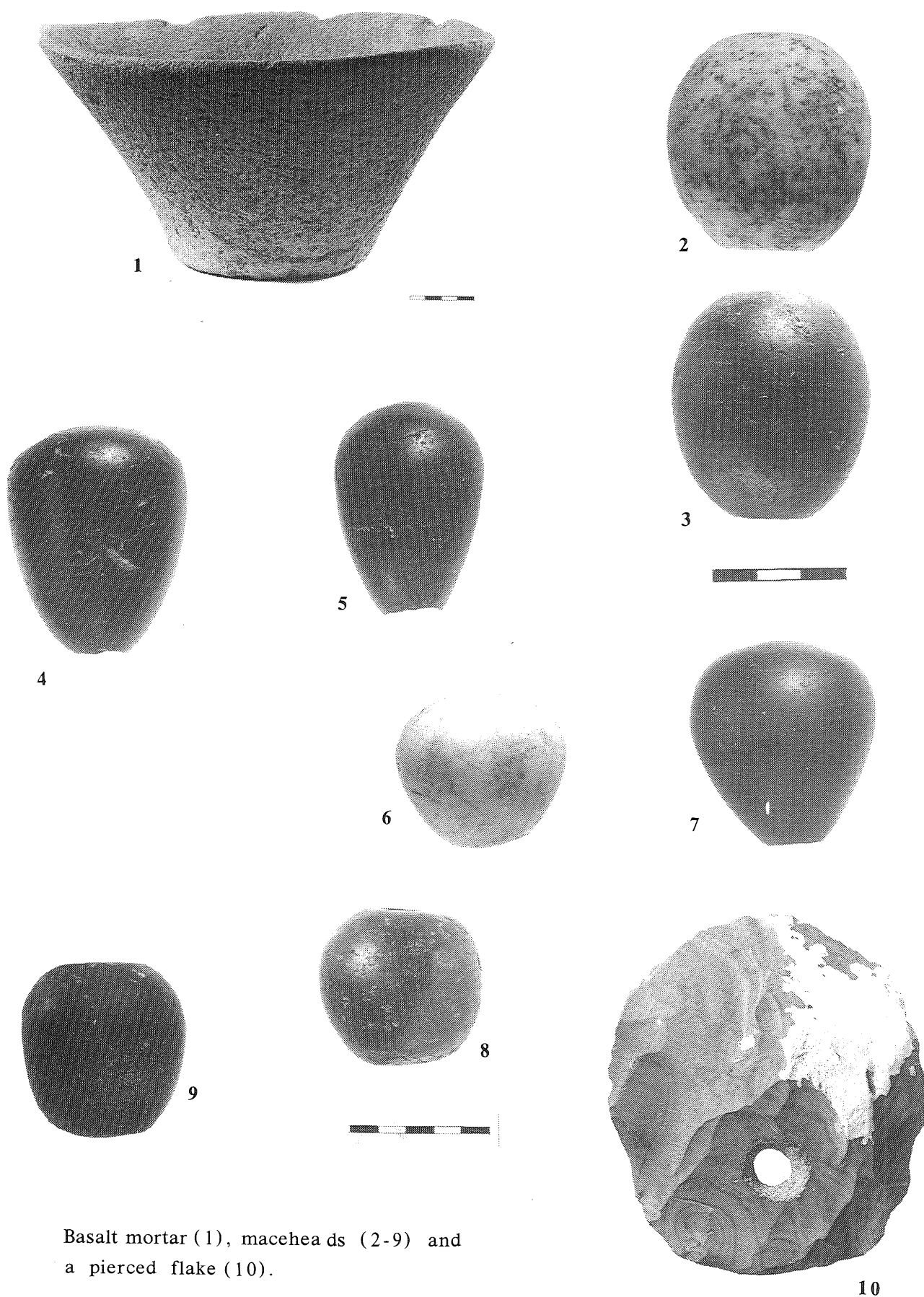


7

Abu Hamid 1986. Painted pottery.



1-11 - Pottery with incised decor;
12-13 - basket impressions on bases.
14 - mat impression on a base.



Basalt mortar (1), maceheads (2-9) and a pierced flake (10).



1: Two western terrace walls. View to the south.



2: Eastern wall of the large structure. View to the north.



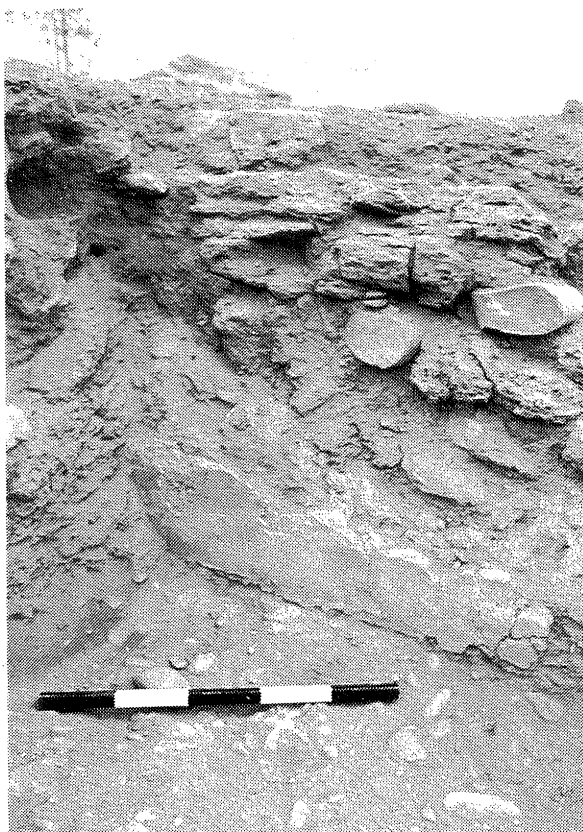
1: Trench P 17/1, south section. In the foreground an inner wall, constructed of roughly cut boulders.



2: Trench O 18/2, showing part of the plaster floor and in the NE section the geological layers.



1: Trench O 18/2, Roman wall fragment with upper courses of a later phase. View to the south.



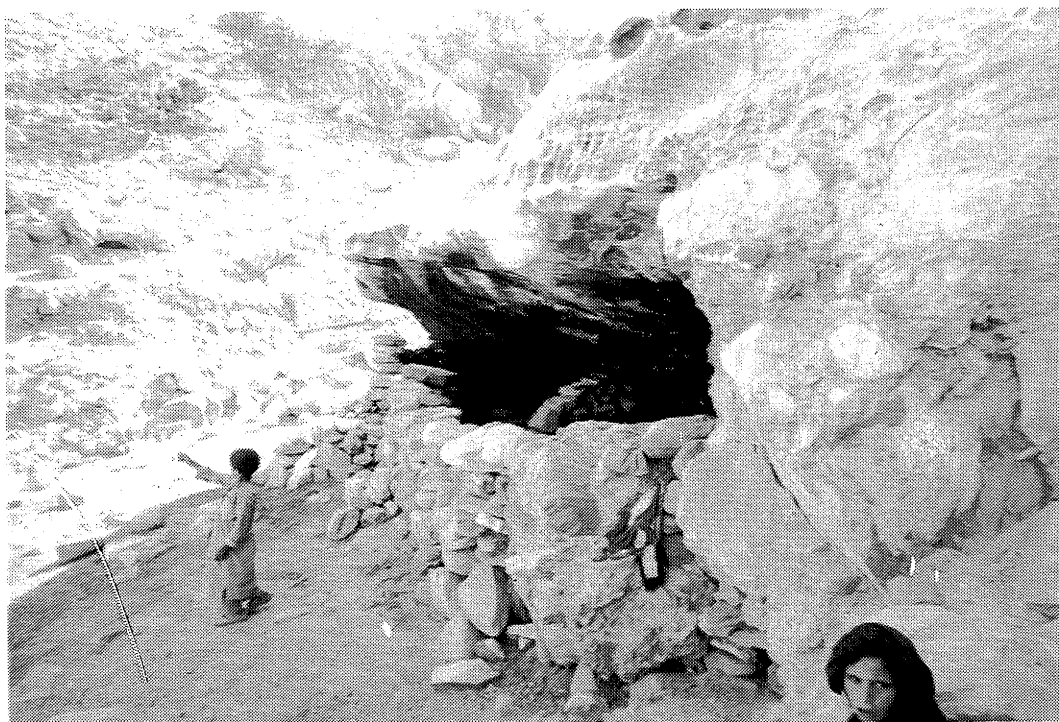
2: Trench P 17/2. Retaining wall below the figure, the level of natural gravel seen beneath.



House complex at the northern end of the terrace. View to the West.



1:



2:

1 - 2 Tor à El- Hassa



Intérieur du Tor de El-Barra avec la séparation: la partie gauche au fond réservée à la famille et celle de droite au troupeau.



1:



2:

1 et 2- Les trois grottes funéraires (encadrées) à Thoughra près de Um-El-Biyara



1: Le cimetière d'UM-KHRERIBE.



2: Un campement d'été de plein-air.



1: Une grotte de stockage.



2: Une grotte-bergerie.



1 :



2 :

1 et 2- Ensembles de grottes d'habitation.



1: L'intérieur d'une grotte pièce-d'habitation.



2: Une grotte d'habitation d'été.



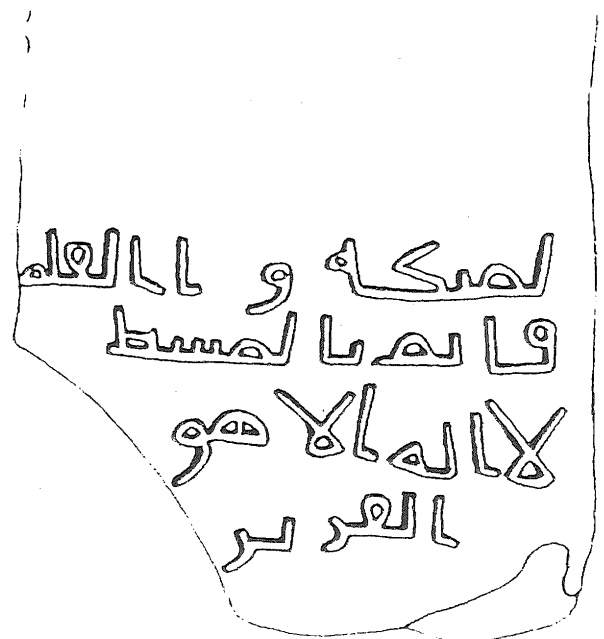
1: Ins. Q 10



2: Fac simulé de l'ins. Q 10



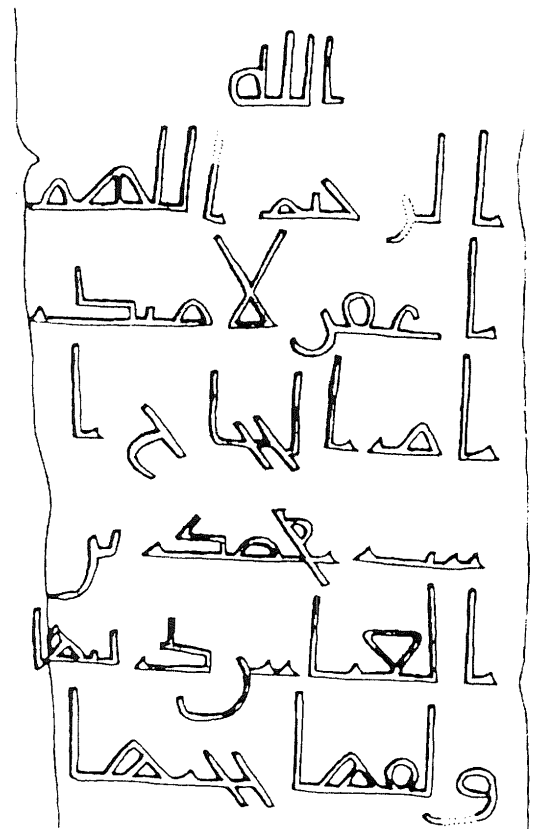
3: Ins. Q 17



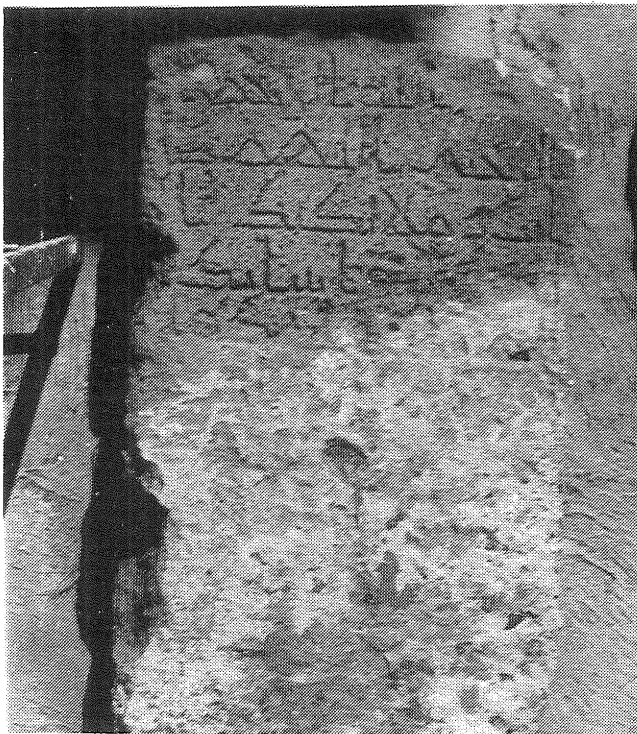
4: Fac simulé de l'ins. Q 17



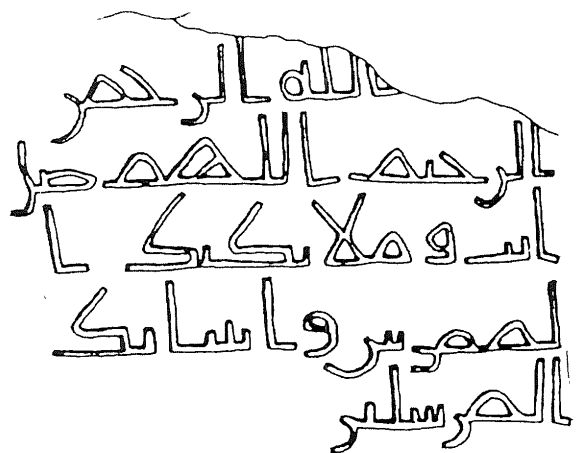
1: Ins. Q 5



2: Fac simulé de l'ins. Q 5



3: Ins. Q 7



4: Fac simulé de l'ins. Q 7

