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PRELIMINARY REPORT ON THE 1980 EXCAVATIONS AT AIN EL-ASSAD

by
Gary O. Rollefson

Introduction

In 1958 a water collection sump, approximately five meters by five meters in area, was excavated at Ain el-Assad in Jordan's eastern desert just south of Azraq. That this spring had had considerable economic value to inhabitants of the area for a very long time became evident when the excavations began to produce large numbers of stone tools, including some 400-700 handaxes of the Late Acheulian period (Harding 1958: 9; 1967: 155; Rollefson 1980). The sump excavation did not proceed according to archaeological methods, however, and consequently, beyond a selected sample of artifacts, no information regarding stratigraphy, time depth, horizontal associations, faunal data, or paleoclimatic evidence was obtained; even the collected artifacts eventually disappeared except for a small collection of bifaces and cores now on display at the archaeological museum in Amman.

Funding from the National Endowment for the Humanities as a fellowship through the American Center of Oriental Research in Amman, and the generous cooperation of Dr. Adnan Hadidi and the Department of Antiquities of Jordan, made it possible to excavate a series of soundings at Ain el-Assad in an attempt to recover as much as possible of the cultural history of the site, including the determination of the stratification of the cultural deposits, recovery of faunal material, the collection of fossil pollen and geological samples, and the determination, if possible, of the site boundaries. The excavations were carried out from July 28 to October 2, 1980.[1]

Site Setting

The Spring known as Ain el-Assad is located approximately two kilometers south of the village of Azraq Shishan and some 750 meters west of the tarmak highway leading towards the Shomari Game Preserve (Figure 1). The spring, at an elevation of approximately 505 meters above mean sea level (at Aqaba), sits on the western edge of the large mudpan expanses of the Qa el-Azraq. The horizon to the north is dominated by a peninsular ridge extending from Azraq Shishan, at ca. 510 m elevation, and rising to the northwest at increasing elevation. To the west and southwest the land rises slowly at first, but the steepness increases suddenly at Jebel Uweinid, which dominates the western horizon.

Massive basalt outcrops characterize the northern rim of the *qa* (approximately five kilometers north of Ain el-Assad), and smaller yet substantial basalt exposures lie approximately four kilometers to the west and southwest of the site. To the northeast are basalt covered heights that form the eastern rim of the Azraq Depression at Harrat es-Salahib and Jebel Umm Khushaisha, 50 and 70 kilometers away, respectively. To the south and southeast,

1. The crew this season was small, consisting of me, Mr. Gary Funkhouser (who was in charge of the West Trench), and Mr. Wa'il Rashadan, the Department of Antiquities inspector. The Department of Antiquities also furnished two workmen for the season (and a third for two weeks). In addition, Mr. Mujahed Muhaisen volunteered his fine talents for two weeks, and Dr. Ilse Köhler was an eager and very helpful volunteer for the first week of the season. I would like to thank all of these people for their very productive work.

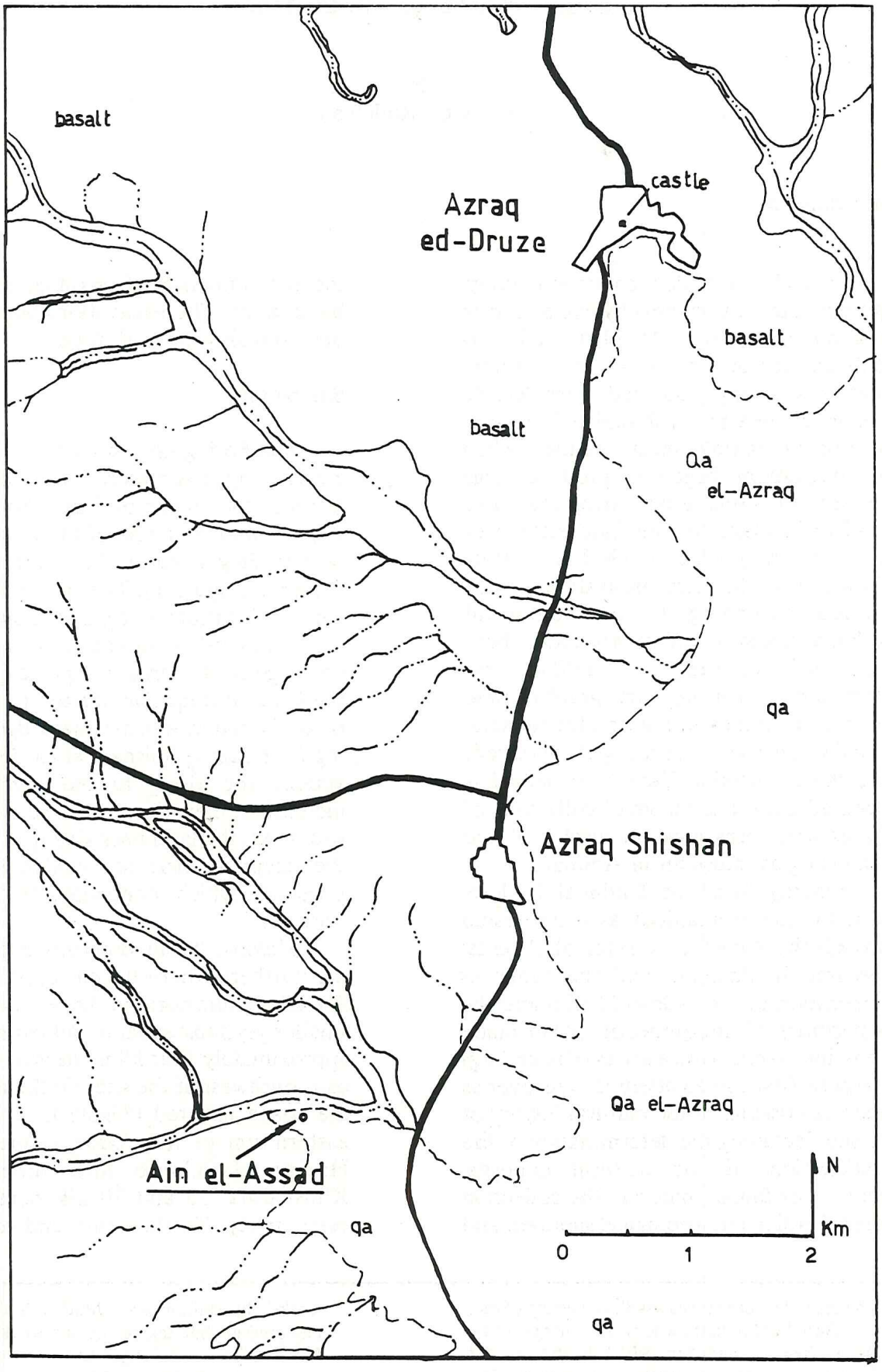

Fig. 1. Map of the Azraq area showing the location of Ain el-Assad in relation to the villages and the Qa' el-Azraq.

the horizon is very flat as it follows the shallow slopes of the broad Wadi Sirhan.

Ain el-Assad is only one of a series of emergent water sources on the northern, western, and southern edges of the Azraq Depression. Lower Tertiary chert-limestone formations and Neogene and Quaternary sandstones, sandy marls, and basalt formations form important aquifers to the Azraq Basin which drain at least 13,000 square kilometers of land around it (Garrard and Price 1977: 109). Consequently, for an area characterized by a mean annual precipitation of only 50-100 mm (Anon. 1971:11), the water table is quite high and stable.

Because of the relatively low elevation of the Azraq Basin in comparison to the surrounding terrain and the consequent drainage into it from areas which today have moderately abundant amounts of rainfall (especially to the north and west), it is not suprising that in earlier periods when regional precipitation was higher that the center of the basin was the scene of a vast lake. Van Liere contended that increased rainfall in the Syrian desert (including the Azraq Basin) during the Late Pleistocene probably was not sufficient to create a lake anywhere in the area because the clayey substrates "can easily store 350 mm of water" (Van Liere 1960-61: 66). In the case of the Azraq Basin, at least, it is not only the increase or decrease in local precipitation that governed the existence of a pluvial lake, but the regional precipitation in northern, western, and central Jordan, southern Syria, and parts of western Iraq and northern Saudi Arabia. Furthermore, recent work in the Syrian deserts has indicated that pluvial lakes did occur there in the Late Pleistocene (Endo 1978; Sakaguchi 1978).

Lacustrine beds which "floor the Azraq Depression" (Burdon 1959: 77) have been known for some time, and Huckriede and Wiesemann cite several examples wherein associated artifacts provide Late Pleistocene dates contemporary to and perhaps much earlier (Middle Pleistocene?) than the freshwater lake in the Jafr Depression (Huckriede and Wiesemann 1968:81; see also Bender 1974: 98). The Pleistocene Azraq lake would have been contemporary, at least in part, with the Late Pleistocene Lake Lisan in the Jordan Valley.

Although the catchment area of the Azraq Basin is only slightly larger than the ca. 12,000 sq km area for the Jafr Depression (Huckriede and Wiesemann 1968: 77), the maximum extent of standing water in the northern lake is estimated to have been 4,500 sq km (Garrard and Price 1977: 110), which is 2.5 to 4.5 times the maximum area of the Pleistocene lake at el-Jafr. The much larger catchment area of the Jordan Valley (ca. 40,000 sq km) fed the Pleistocene Lake Lisan which had a maximum surface area of 2850 sq km, less than two-thirds the size of the Azraq body of water. The area of the modern Dead Sea is 940 sq km, about one-fifth the projected size of the Azraq pluvial lake.

Farrand has noted that a body of water the size of Lake Jafr could have heavily affected weather patterns with the release of substantial amounts of water vapor into the atmosphere, with consequences not only for the immediately surrounding area, but for more distant regions as well (Farrand 1971: 544). The same circumstances must have been in effect in the region around the Azraq Basin as well.

The comparisons of the maximum areas of the pluvial lakes, while important on the surface, do not in themselves provide a profound insight into local responses to temporary and long term climatic changes. In a very broad sense, the Jafr and Azraq basins are similar in that the modern terrain of each is characterized by extensive expanses of low relief. In contrast, the Rift Valley terrain is a situation of comparative extremes in elevation of the surrounding landscape. With a mean depth of 135 m, the area of Lake Lisan probably did not vacillate to any great measure in response to short term reductions in rainfall as a consequence of its more or less bathtub-shaped basin. Similar drops in precipitation would probably have resulted in considerable contractions of the shorelines of the Azraq and Jafr lakes due to their shallower, plate-shaped foundations.

Current climatic conditions in and

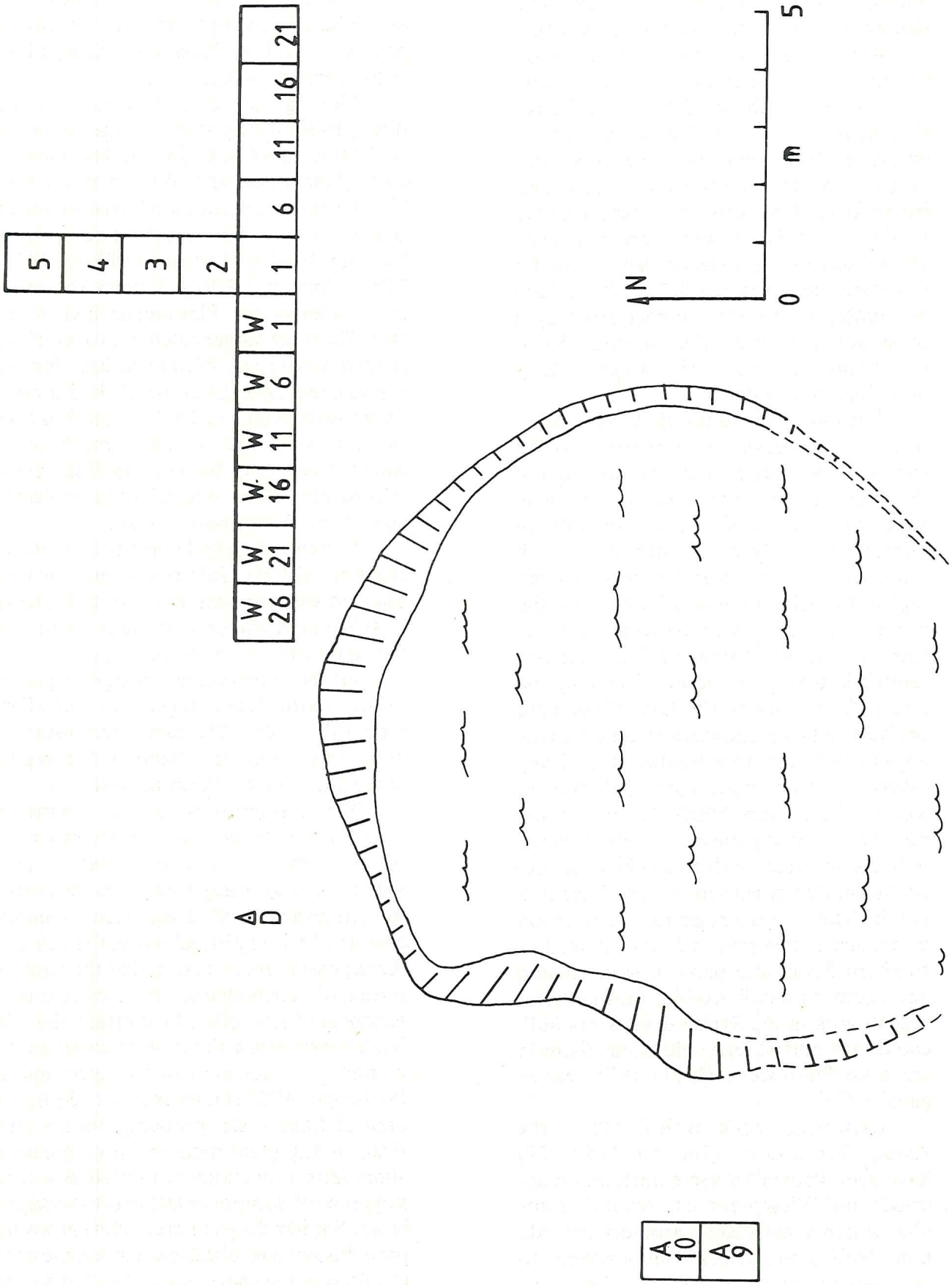

Fig. 2. Schematic map showing the relationship of the excavation trenches and the sump at Ain el-Assad. "D" indicates site datum.

near the Azraq Basin are fairly severe and account, in part at least, for the characteristics of the present soil cover and salt-loving vegetation (cf. Madany 1978). The mean annual precipitation falls between 50 and 100 mm, and this amount normally occurs in the months of December, January, and Feburary (Anon. 1971: 1-2, 10); in fact, most often the bulk of rainfall falls in one or two cloudbursts with consequent rapid runoff even in the shallower sloping parts of the basin in flash floods, and little of the water percolates into the barren soils of the surrounding countryside (cf. Garrard and Price 1977: 110).

Winds in the Azraq area blow consistently from west or northwest and are generally rather strong. Since for most of the annual cycle these winds are dry, they have a considerable dessicating effect. Occasionally the countryside is beset by hot, dry, and strong *sharkiya* conditions, when duststorms from the eastern and southeastern deserts of Saudi Arabia dominate the atmosphere for several days.

The mean temperatures at Azraq are high, relative to much of the rest of the Levant, with annual values ranging from 18-20°C. The hottest part of the year is in July, with a mean monthly temperature of between 28 and 30° C., although mean maximum daily temperatures reach 37° in both July and August. The coolest period occurs in January, when mean daily maximums range between 8 and 10° C. (Anon. 1971: 12-24).

Site Stratigraphy

The original excavation strategy for Ain el-Assad involved the sinking of three deep one-meter squares to the northeast of the spring (Sqs 1, 5, and 21 in Figure 2) to determine the nature and depth of the cultural and geological stratigraphy and to ascertain, if possible, the horizontal extent of the Acheulian site in this direction from the original location of the 1958 sump excavations. If the Acheulian occupations were located in any or all of these probes, excavations would be expanded to link these squares into an L-shaped trench and farther towards the northeast (to a hypothetical Sq 25, four meters east of Sq 5 and four meters north of Sq 21) if time allowed.

Excavation proceeded most rapidly in the SW corner of the original trench (Sq 1). Although unanticipated exposures of Neolithic and possibly later period artifact layers were encountered, by the time bedrock was reached at ca. -3.60 m, there was no indication that the obviously rich Acheulian layers evidenced in the 1958 backdirt piles existed in situ this far north and east of the spring. Excavations were therefore halted in the northern and eastern segments of the "L", and the trench was extended six meters to the west (Sqs W1-W26), where it was hoped that the northern limits of the Acheulian material might lie. At the same time that these excavations were proceeding in the westward extension of this trench (hereafter referred to as the North Trench), we decided to open another deep probe to the west of the spring, consisting of two one-meter squares (the West Trench; see Fig. 2) to increase the likelihood that we would find the Acheulian occupation layers.

Since the most complete sequence of the site stratigraphy was produced in Sq 1 (comparable depths were not reached elsewhere), and since the stratigraphic succession and geological features are redundant in the other parts of the trenches, the following descriptions will refer to the Sq 1 succession, with specific references to local anomalies in other parts of the excavation.

The surface of Sq 1 consisted of a thin veneer of a very recent (post-1958) layer composed predominantly of camel and sheep-goat dung mixed with sandy silt and characterized by patches of a saline crystalline crust. Immediately beneath this modern topping occurred deposits of reworked backdirt from the 1958 sump excavations which varied in thickness from a few centimeters in the southeast corner of the square to nearly a meter in depth in the western part of the square (Fig. 3). The identification of this as backdirt material was indicated by the sporadic occurrence of Acheulian artifacts as well as the swirled mixture of the variety of sediments visible in the backdirt piles.

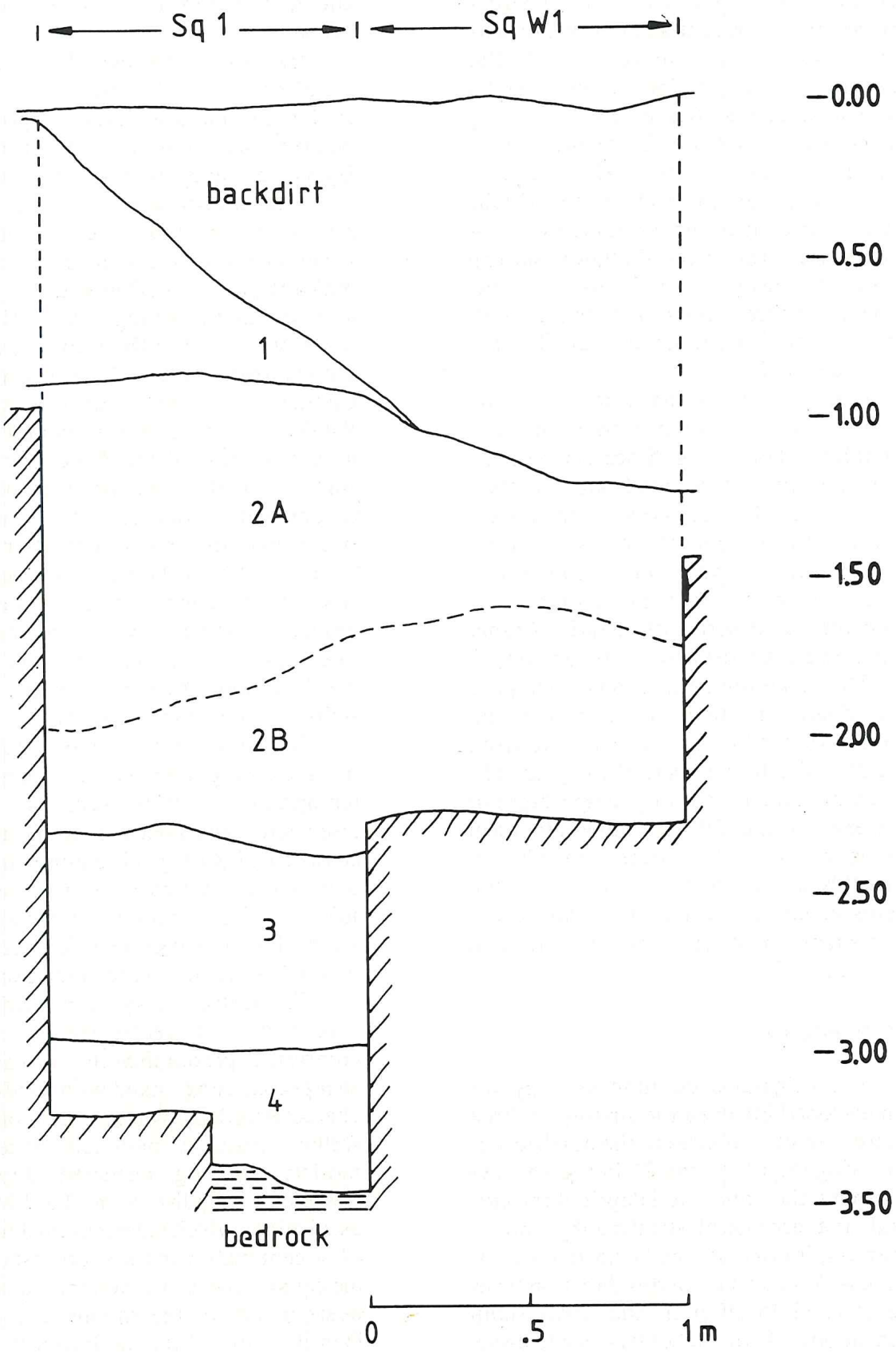

Fig. 3. Schematic representation of the south profile of Sq. 1.

Layer I. Just beneath the backdirt layer lay Layer 1, a uniform tannish-brown soil characterized by a sandy silt texture. Just to the west of Sq 1, in Sq W1, Layer 1 is truncated (as it is in the rest of the western extension of the North Trench). During the 1958 excavation, a wide trench was evidently scoured from the northern edge of the spring in a northeasterly direction (Layer 1 is also truncated in Sq 3), thoroughly removing Layer 1 in its path as well as parts of the underlying stratum.

No diagnostic artifacts were found in Layer 1, although two minute and badly eroded potsherds and two fragments of an Omayyad (?) glass bracelet were found in the upper parts of the layer in Sq W26. In addition, there were sporadic occurrences of small basalt chunks, but none of these bore any evidence of use as grinding equipment. Tentatively, a range of Early Bronze Age to very recent is assigned to this layer.

The lower contact of Layer 1 is nearly horizontal, attesting to a very level landscape just prior to its formation. Layer 1 sediments are relatively dry.

Layers 2A and 2B. The underlying complex of Layers 2A and 2B is more complex due in great part to the unique character of changes in subsurface moisture content. In Sq 1 the material immediately below Layer 1 was in stark contrast to the overlying sediment. The color of Layer 2A is a dark grayish-brown, and the texture is a mixture of fine, compact, and moist sandy silt with numerous inclusions of angular, nodular travertine. With increasing depth is a correlated increase in moisture, and the colour changes to darker hues until at a depth of from -1.65 to -1.95 m the deposits are almost black. It is also at these depths that the deposits become completely saturated, to the point that standing water accumulated on horizontal excavation surfaces.

Regarding the roughly 30 centimeter variation in absolute elevation in the appearance of the black colored sediments, it is notable that the increasing depth of this saturation level is correlated with increased distance from the spring; i.e., the farther east from the spring in the excavation trench, the deeper one must go before the black color and saturation level is reached. This effect is also evidenced in the western parts of the North Trench, where comparable levels at the SW corner of Sq W26 occurred at ca. -1.25 m. Water level in the sump itself stood at -0.93 m below the site datum.

The change in color from increasingly dark gray-brown to an eventual black formed an obscure dividing line between Layers 2A and 2B, and it must be emphasized that the subdivision of this complex is probably more reflective of differences in relative moisture content than a change in geological development. However, these differences in moisture content may have affected differentially the organic components of the sediments, with less complete decay of the vegetational and microfaunal constituents in the 2B part of the complex. Odors reminiscent of putrifying elements were noticed well into the excavations of Layer 2B, although it should be recalled that salts of sulfur may characterize the mineral content of the groundwater, and this may have contributed to the odors.

Beyond the differences in colour, moisture content, and olfactory stimulii, the sediments of Layer 2B are not much different from Layer 2A. The texture remained a compact gritty silt, although small rootlet channels with fine clayey fills were perhaps more numerous in 2B than in 2A. The angular travertine nodules remained numerous until just near the base of Layer 2B.

Three arrowheads came from near the base of Layer 2B as well as a pressure-flaked knife or lance head from the middle reaches of this layer. As is discussed more extensively below, these four pieces are inadequate to establish a firm date, since they may indicate either PPNB or Pottery Neolithic periods.

Layer 3. The sediment layer beneath Layer 2B stands out in vivid contrast to the overlying deposits in all aspects of geological composition. Absent are the dense numbers of angular travertine nodules that characterize the 2A-2B complex, and the color of Layer 3 is grayish-green with occa-

sional rust-colored mottling that appears to correspond with locally abundant rootlet cores. These rootlet cores, which are numerous throughout the layer, are often the minute sources of flowing water. The texture of the sediments is a uniform marl or clay of high elasticity, thoroughly saturated.

The contact between Layer 3 and Layer 2B is not as distinct as is indicated in Figure 3. A "transition zone" of some 10 cm or more separates the stark black 2B and the uniform gray-green of Layer 3. This subtle range of transformation could not be distinguished with precision in the field. As a consequence, some of the artifacts near this contact may have been incorrectly assigned in terms of the cultural/geological stratigraphy. However, if incorrect layer assignments were made, it is more probably that pieces from the lowermost parts of Layer 2B have been assumed mistakenly to come from Layer 3; the reverse case is less probable.

The reasons for the obscure contact are not clear, but they may all relate to the gradual change in the local environment over a fairly long period of time, as opposed to a persumed rapid change of environment between the formations of Layers 1 and 2A.

The grayish-green color of the Layer 3 sediments probably indicates accumulation during a period of relatively deep standing water: a lacustrine environment developing a slow sedimentation of marls. The black color of Layer 2B, on the other hand, suggests a situation of wet but periodically exposed soils (kept moist by the spring, as evidenced by the travertine inclusions) that supported consistent, dense stands of vegetation which became incorporated, along with associated microfaunal elements, into the sediments. The change from the climatic conditions that supported the Pleistocene and/or terminal Pleistocene lake, represented by the marls of Layer 3, to the swampy or marshy conditions of the swale near the spring which existed until the twentieth century (cf. Field 1960: Fig 73a) was probably gradual and reflected global (or at least regional) changes in weather patterns. On the other hand, the change in the local depositional environment from Layer 2A to Layer 1 probably represents more rapid and dramatic microtopographical developments in the immediate area of the spring. These relate, probably, to changes in wadi discharges of sediments along the northern fringes of the spring which appear to have created a dike through previous expanses of a marsh fed by Ain el-Assad.

Although this explanation for the gradual change from Layer 3 to Layer 2B times is speculative in view of the absence of specific paleoclimatic evidence from eastern Jordan, it is consistent with interpretations of climatic change for the Near East region (e.g. Farrand 1971; 1979). Another factor of less demonstrable or testable proportions, but one which may also have contributed substantially to a mixing of previously more discrete evidence of geological change, is the probable increased traffic of animals at the marsh and the disturbing effects of their trampling through the earlier phases of the development of Layer 2B. The relative frequencies of artifacts associated with hunting, especially the arrowheads in the lowest part of the layer, adds some support to this view.

In Sq 1, Layer 3 is culturally sterile below -2.35 m, although in Sq W26 several artifacts were found at ca. -2.60 m, and in Sq A10 artifacts came from as deep as -2.50 m. No artifacts definitely diagnostic of PPNB or Epi-Paleolithic times occur in Layer 3, although such occupations cannot be ruled out in view of the limited areal exposures of the excavations. Blades and blade cores from Layer 3 are reminiscent of the Upper Paleolithic, but which parts of this long period they may represent can't be determined. Of the four bifaces from Layer 3, one is a broken specimen typical of the Lower Paleolithic, but its abraded condition suggests that it was redeposited from earlier sediments. The Levallois pieces from Layer 3 also exhibit abrasion from probable redeposition.

Layer 4. At approximately -3.00 m, the clayey texture of Layer 3 suddenly gives way to the sandy matrix of Layer 4. The color of Layer 4 is a light olive-green, and the frequent rust-colored mottles of Layer

3 are not present. Also lacking in Layer 4 are visible traces of vegetation, at least in terms of clay-filled rootlet cores. Layer 4 was completely devoid of cultural material in Sq 1 (This layer was not reached in the other deep probes). Evidently Layer 4 represents an early fluviatile period in the history of this part of the Azraq Basin.

Bedrock. Finally, what appeared to be friable limestone bedrock was reached in Sq 1 at -3.63 m. The friability of the bedrock may explain, in part, the coarseness of the Layer 4 deposits.

The stratigraphic succession in Sqs W26 and A10 very closely followed that in Sq 1, although there are some specific variations in these disparate excavations. These anomolies concern differences in the color of Layer 2A in the deep probes, but since these are probably related to local moisture content, the similarities in texture, presence of travertine inclusions, and the presence of visible plant remains, as well as the position within the sequence, are strong support for correlating the layers.

It should be pointed out that in Sqs W26 and A10 a brief fluviatile interval in Layer 3 is indicated at ca. -2.25 to -2.65 m by patches of sandy sediments not seen in Sq 1. Additionally, a thin layer of small rounded gravels and a sparse "pavement" of artifacts occurred at -2.15 to -2.20 m in these squares, another phenomenon not witnessed in Sq 1. Both of these situations occur in the west and south parts of the excavations, but not to the east, suggesting that a lakeshore may have been close to the areas sampled by Sqs W26 and A10.

Faunal, Palaynological, and Geological Samples

A total of 96 faunal specimens was recovered from the excavations. Of this total 19 came from the backdirt layer, 20 from Layer 1, 21 from Layer 2A, 23 from Layer 2B, and 13 from Layer 3. In Layer 3, the deepest specimens come from -2.17 m in Sq 1, -2.13 m in Sq W26, and -2.25 m in Sq A10. The faunal material is currently under study and a full report will be forthcoming.[2]

Because Quaternary and early Holocene paleoenvironments are so poorly known for the eastern deserts of Jordan, it was one of the major obectives of the Ain el-Assad project to obtain as complete a pollen profile of the sediments as possible. In this effort 19 pollen samples were taken from the south face of Sq W26 and 17 samples from the eastern face of Sq A10. These two profiles provide comparative evidence for regional climatic change over the period of time represented by two meters of sediment accumulation (perhaps more than 100,000 years), as well as for variation in local pollen deposition across the ca. 12 meters that separate the two sample areas.

Three additional pollen samples were taken from outside the excavation trenches. Sample P37 consists of the matrix which enclosed a Late Acheulian biface from the backdirt of the 1958 sump excavation; the matrix is indistingquishable from the Layer 3 sediment in terms of apparent texture and color. It is hoped that the pollen spectrum from this sample may lead to a correlation of the Acheulian occupation layer with the pollen diagram from the two profiles.

Pollen samples 'NS" and "EW" were surface transect collections. Each transect was 50 meters long, with the north-south transect crossing the midpoint of the east-west transect. In these sample collections, "pinches" of surface soil were collected at every meter along the axes, and each transect produced a volume of approximately a quarter liter. The analyses of the surface samples will provide spectra of the modern pollen rain in the Azraq area. Anemophilous pollen, deriving from up to several hundred kilometres away, will provide a regional baseline for paleoclimatic interpretations, while non-anemophilous pollens will establish the foundation for the interpretation of changes in the local stands of vegetation at the spring.[3]

2. The faunal samples are currently being analyzed by Priscilla Turnbull, Field Museum of Natural History, Chicago.

3. Dr. Gerald Kelso, Department of Anthropology, Boston University, is presently conducting the analysis of the pollen samples.

Sedimentological analysis will also provide valuable information relating to not only regional and local climate, but also to indicate specific geological (physical and chemical) processes at work within the immediate area of the site. Five sedimentological samples, of approximately one kilogram (wet weight) each, were taken from the south face of Sq W26. One sample came from near the middle of the relatively thin Layer 1, one sample each from Layer 2A and Layer 2B, and one sample each from high and low in Layer 3.

Archaeological Samples

The 1980 excavations produced a total of 1,080 artifacts as well as an unmonitored number of natural chunks, nodules and tabular chunks, gravels, natural flakes, and heat spalls. Of the total number of registered material, 395 artifacts came from Layers 1-3 and the remaining 685 artifacts came from the backdirt layers.

tinction lies in the problems of determining whether the damage to an artifact edge is the result of its employment in some task(s) (true use-wear) or if some natural agency, unrelated to human activity, may have caused the visible alterations to the edge. In the following discussions, unless it is specifically mentioned otherwise, reference will be made only to the essential tool counts.

The relative frequencies of artifact classes in each layer in Table 1 show close agreement in the flake, core, and biface categories. None of these figures are significantly different in Chi-Square tests of significance. The only figures which do indicate that variations are not due solely to chance involve the *reel* tool counts. For example, the differences in the numbers of *reel* tools in Layers 2A and 2B are significant at the .05 level, suggesting that something other than chance is responsible for this disparity. Since the factors responsible for the "production" of 24 of the 61

Table 1. Absolute and relative frequencies of artifact classes in each of the layers from the 1980 excavations at Ain el-Assad.

	Layer 1		*Layer 2A*		*Layer 2B*		*Layer 3*		*Backdirt*	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
Flakes	22	78.5	55	82.1	193	81.4	44	71.0	574	83.8
Cores	6	21.4	12	17.9	41	17.3	14	22.6	70	10.2
Bifaces		0.0		0.0	3	1.3	4	6.4	41	6.0
(Tools, reel)	(4)	(14.3)	(7)	(10.4)	(61)	(25.7)	(8)	(12.9)	(147)	(21.4)
(Tools, ess.)	(1)	(3.6)	(7)	(10.4)	(31)	(13.1)	(3)	(4.8)	(85)	(12.4)
Total	28	99.9	67	100.0	237	100.0	62	100.0	685	100.0

Table 1 provides breakdown of the major artifact classes by layer. Among the tools, a distinction is made, following accepted tradition (Bordes 1961; Rollefson 1980) between flakes and blades which exhibit edge modifications of some sort (barring obviously recent breakage), including edge damage as the result of possible use ("use-wear") on the one hand (the *reel* counts), and those tools which exhibit only intentional reshaping of the edges (the *essentiel* counts). The reason for this dis-

reel tools in Layer 2B are uncertain. (Table 2), attempts to explain the reasons for the difference are not likely to be convincing. One possible factor is that the occupations in Layer 2B were more frequent and/or of longer duration. The increased traffic on the land surface may have caused damage by humans or animals stepping on previously discarded, unused flakes. It is notable, for example, that no significant differences exist among the *essentiel* tool counts of the layer samples.

Table 2. Absolute and relative frequencies of implements from Layers 1, 2A, 2B, and 3 from the 1980 excavations at Ain el-Assad.

	Layer 1		*Layer 2A*		*Layer 2B*		*Layer 3*	
Type	*n*	%	*n*	%	*n*	%	*n*	%
Levallois flake	1	33.3	.	...	1	2.8	1	20.0
Atypical Levallois flake	1	33.3	.	...	3	8.3	1	20.0
Levallois point	.	...	.	...	1	2.8	.	...
Straight racloir	.	...	.	...	1	2.8	.	...
Convex racloir	.	...	1	16.7	2	5.6	.	...
Double racloir, straight-convex	1	33.3	.	...	.	...	.	...
Canted convergent racloir	.	...	.	...	1	2.8	.	...
Convex transverse racloir	.	...	.	...	1	2.8	.	...
Simple burin	.	...	.	...	3	8.3	.	...
Notch	.	...	1	16.7	1	2.8	.	...
Denticulate	.	...	1	16.7	2	5.6	.	...
End-notched flake	.	...	.	...	1	2.8	.	...
Chopping-tool	.	...	.	...	3	8.3	.	...
Endscraper	.	...	.	...	1	2.8	.	...
Atypical endscraper	.	...	.	...	.	....	1	20.0
Percoir-grattoir	.	...	1	16.7	.	...	.	...
Atypical borer	.	...	.	...	1	2.8	.	...
(Naturally backed flake/blade)	.	...	(6)	(50.0)	(15)	(29.4)	(4)	(44.4)
Wedge	.	...	.	...	4	11.1	.	...
Diverse	.	...	1	16.7	4	11.1	2	40.0
Fanscraper	.	...	.	...	1	2.8	.	...
Projectile point	.	...	.	...	3	8.3	.	...
Sickle blade	.	...	.	...	1	2.8	.	...
Subtotal	3	99.9	6	100.2	36	100.2	5	100.0
Flakes/blades with irregular retouch	1				24		3	
Unclassifiable			1		1		.	
Total	4		7		61		8	

Typology

The typological classification of implements from the artifact samples follows the well-defined typelists of de Sonneville-Bordes and Perrot for the Upper Paleolithic and later speciments (de Sonneville-Bordes and Perrot 1954-57) and of Bordes for tools from the Middle and Lower Paleolithic (Bordes 1961).

The figures in Table 2 demonstrate the extreme paucity of tools from the *in situ* deposits, and in some cases even these figures may represent some degree of exaggeration. In Layer 1, for example, the Levallois flake, the atypical Levallois flake, and the straight-convex double racloir (fashioned on a Levallois flake) all bear a black patina, a feature more characteristic of the older speciments in the backdirt piles (especially the Acheulian bifaces) and, to some extent, in Layer 3. Although all three of these pieces were found relatively deep in Layer 1 (from 40-80 cm beneath the reworked backdirt base), the technology of flake production appears out of place with the apparent age of the sediments. The evident age of these particular specimens, in

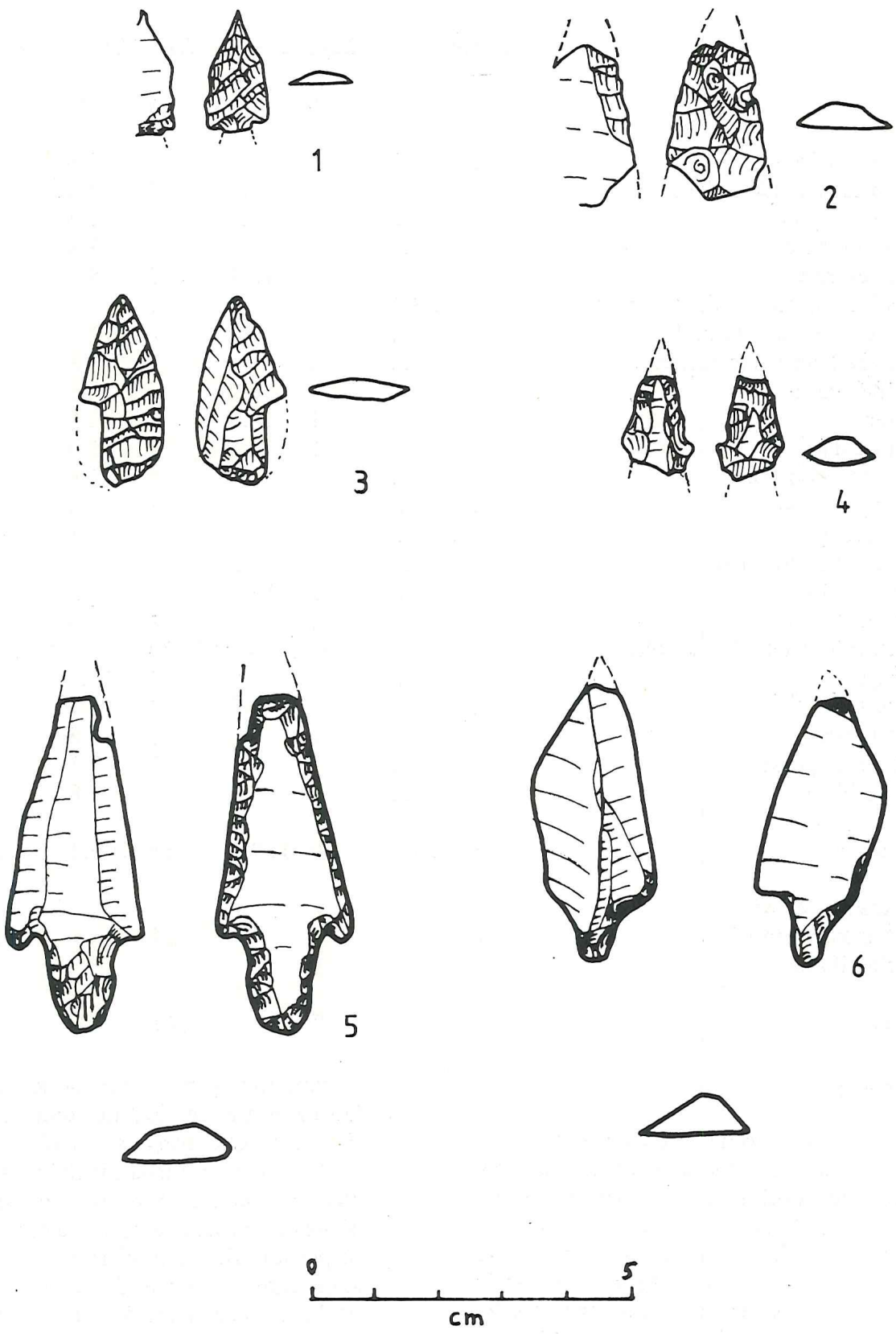

Fig. 4. Arrowheads and projectile points from Ain el-Assad. Nos. 1-3 are from Layer 2B; nos. 4-6 are from the backdirt layer.

view of the technology and patina color, suggest that they are intrusive in Layer 1. This leaves only a single flake bearing irregular and sporadic retouch, of dubious and possibly recent origin, as the sole candidate for a tool from Layer 1. The unclassifiable biface from Layer 1 (Table 5) is represented by a thick flake that derived from a very battered bifacially flake nodule and could represent either a chopper or utilized core.

The tools from Layer 2A, while few in number, are more straightforward. The convex racloir is well-made; the notch tool is on a core with one small area repeatedly retouched to form a deep concavity. A tabular piece, perhaps once a flake core, bears a well-retouched denticulate edge. On the percoir-grattoir, the blade bears a good endscraper but a poor borer, formed on the opposite end by two notches. The backed blade, partly cortical, exhibits well-formed blunting on one lateral edge. The "diverse" tool appears to be a core which was later utilized as a chopper. Finally, one flake apparently broke off some form of retouched tool, but the evidence is too fragmentary to say from which kind. Overall, the small number tools from Layer 2A is quite diverse and could represent, in spite of the small sample size, a relatively wide range of activities.

The Layer 2B sample contains the largest number of tools and obviously represents the widest range of functions to which they were directed. Of the four Levallois pieces (all flakes), one is abraded and is undoubtedly intrusive into the layer via water transport. One of the three remaining flakes (all of which are unpatinated) bears a punch-type platform which is not characterisitc of Lower and Middle Paleolithic periods. These three pieces may represent a later convergence of manufacturing technique similar to the specialized method that frequently occurs in the Post-Pleistocene. The "Levallois point" from Layer 2B could also represent a late product of normal blade production on a pyramidal core (Bordes 1980: 47).

The remaining components of the 2B sample are more typical examples of a Neolithic assemblage. Among the projectile points (Figure 4, nos. 1-3), one small example closely resembles a specimen from a recent survey of the Azraq Basin (Garrard and Price 1977: Fig. 2, no. 11); one piece may be a medial section of an Amuq-like point; and the third is a teardrop shape. Pressure flaking was the method used to retouch all of one or both surfaces. Among the diverse category of implements is a lanceolate piece bearing pressure-flaking over the entirety of both surfaces, and this may represent either a knife or lance point (Fig. 5, no. 2).

The sickle blade from this layer is not denticulated as is common for this tool type in the late Neolithic (Fig. 5, no. 1). The characteristic sheen is rather extensive on the exterior surface, but it is more restricted on the interior face. The blade was truncated at both ends.

For the other diverse tools from Layer 2B, two are scrapers of strange configuration, and another is a wedge (*piece esquillee*). This last example is actually a bidirectional blade core evidently used later in some heavy duty task that resulted in heavy battering on opposed areas of the core.

The unclassifiable implement is represented by a fragment of an implement bearing scraper retouch, but there is too little of the piece to classify it properly. Among the biface tools from Layer 2B (Table 5), two are crude picks, one of which is disilicified and badly abraded, indicating probable redeposition from an earlier occupation. The remaining biface is badly broken (the distal end is missing), but the general configuration suggests that it may be a Lower Paleolithic handaxe washed into Layer 2B, an interpretation supported by its desilicified and abraded physical state.

The tools in Layer 3 mirror the total sample size in their small number. Both Levallois pieces (one flake, one blade) in this layer bear black patina, but unlike the case for Layer 1, much of the Layer 3 sample is black, so these artifacts are not necessarily intrusions from earlier occupations. The possible "reinvention" of the Levallois flake technique noted for Layer 2B may hold also for Layer 3.

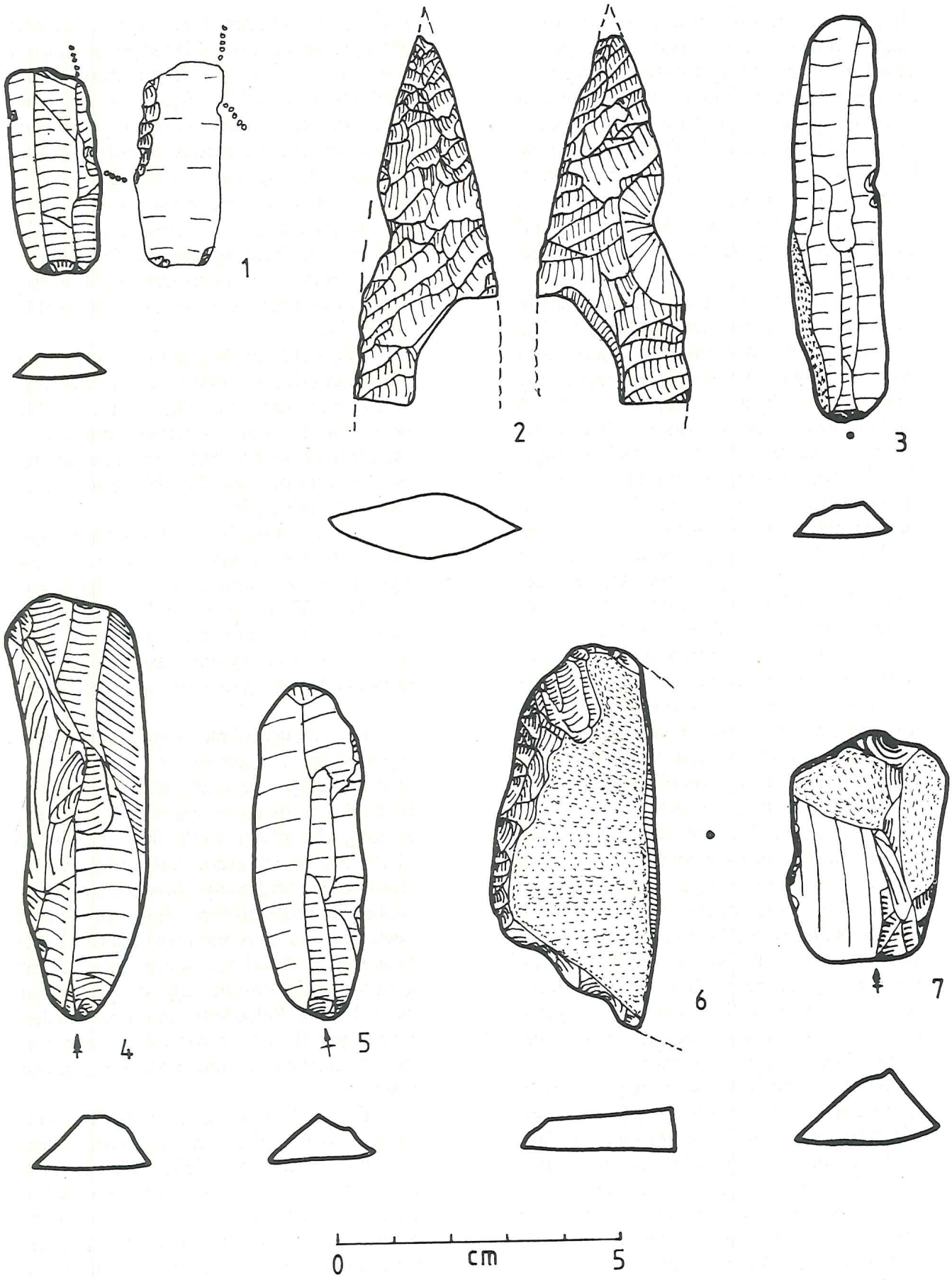

Fig. 5. Artifacts from Layer 2B. 1) sickle blade; (2) knife or lance point; 3) endscraper;6) broken fanscraper; 4) and 5) punch blades; 7) atypical endscraper.

The remainder of the small implement sample includes two wedges and one endscraper on a flake. One of the diverse tools, a badly abraded flake (probably intrusive) may have been formed into a borer by interior retouch from both lateral edges, although the diagnostic tip is missing. The other diverse tool is an endscraper on a flake, with denticulation on one lateral opposed by a convex scraper on the other. The pick from Layer 3 (Table 5) is unifacially fashioned, although the tip bears evidence of heavy bifacial battering. The unclassifiable bifaces are indicated by two flakes: one removed a biface edge and the other took off a base.

For the backdirt tools, there is an obvious problem in distinguishing pieces from general occupational episodes (i.e., Lower Paleolithic vs. Middle Paleolithic vs. Neolithic) in view of the unknown original depositional contexts. Although variations in patination might be used to distinguish different time periods (cf. discussion in Rollefson 1980), the evidence from Layer 3, especially, indicates that this approach for Ain el-Assad artifacts involves a certain amount of uncertainty. While all but one of the Acheulian bifaces are black or dark gray in color, artifacts produced in later periods also occasionally bear these patina colors. Nevertheless, certain tool types which are distinctive or characteristic of Upper Paleolithic or later periods can be separated from the Lower and Middle Paleolithic forms. It must be admitted that some tool types, such as choppers, racloirs, simple burins, etc., can be found throughout the prehistoric record.

The implements which most likely come from Upper Paleolithic or later periods are tabulated in Table 3. For the two diverse tools, one is an unpatinated but heavily rolled chunk which bears some bifacial retouch at the tip; the remaining diverse tool is a large tabular flake with a battered transverse bit, and besides exhibiting denticulation, this piece may have been used as a heavy duty scraper or an adze. Among the projectile points, one is a small medial fragment, and its original shape is difficult to imagine (Fig 4, no. 4). The second point is a proximal protion bearing alternative interior/exterior retouch to produce a tang (Fig. 4, no. 6). Finally, the last projectile point is a typical PPNB specimen with barbs and a tang (Fig 4, no. 5).

Of all the 17 classifiable implements in table 3, only three have a black patina; two wedges and the "angle burin on a break". All the rest are either unpatinated (four pieces) or have other patina colors such as brown, tan, light gray, or white.

Table 3. Absolute and relative frequencies of Upper Paleolithic and later implements from the backdirt layers in the 1980 excavations at Ain el-Assad.

Type	*n*	%
Nucleiform endscraper	1	5.9
Canted dihedral burin	1	5.9
Angle burin on break	1	5.9
Core-burin	2	11.8
Oblique truncation	1	5.9
Convex truncation	1	5.9
Wedge	5	29.4
Diverse	2	11.8
Projectile point	3	17.6
Subtotal	17	100.1
Unclassifiable	11	
Total	28	

Regarding the 11 unclassifiable tools in Table 3, these are artifacts which, although manifesting evidence of intentional shaping, are too fragmentary to type accurately. Although some of them may derive from the Lower or Middle Paleolithic, they are all included in Table 3 for the sake of convenience.

The remaining tools from the backdirt appear to conform to expected implement types from the Middle or Lower Paleolithic. The frequencies of these tools are presented in Table 4. Among the diverse tools in this table, the only non-black patinated specimen is a wedge which has a good burin facet on it, although this may have resulted from the manner in which the tool was used. The other diverse tools, all black, include a core later converted to a wedge; a core with denticulation on one lateral edge opposed by steep scraper retouch on the other lateral; a flake with a notch and burin on one edge and a straight racloir on the other edge; and a

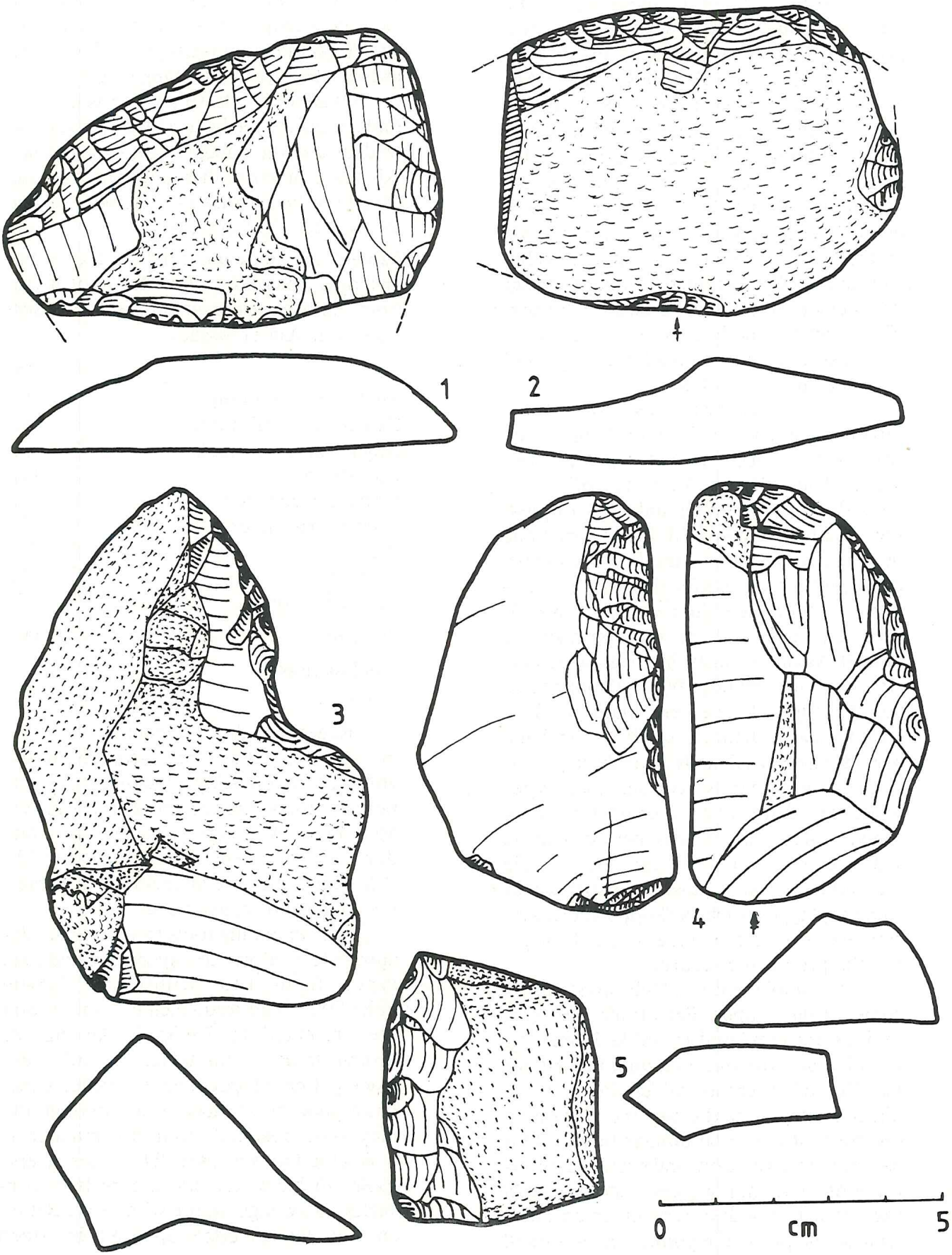

Fig. 6. Tools from the Ain el-Assad backdirt. 1) and 2) canted convergent racloirs; 3) and 5) steep racloirs; 4) alternating racloir.

blade with proximal bilateral retouch and possible interior thinning.

The unpatinated tools in Table 4 include a convex racloir, two steep scrapers, a denticulate, a chopper, and two chopping tools. Of the remaining 61 tools (excluding pieces with irregular retouch), 20 are patinated to brown, light gray, or white colors and 41 and black or dark gray.

One additional point remains to be discussed concerning the tools in Tables 2 and 4. For the Lower and Middle Paleolithic in western Europe, a least, flakes and blades with one sharp edge opposed by another that is perpendicular (or nearly so) and covered with cortex and considered to be implements by virtue of this configuration: they are termed "naturally backed knives" *(couteaux a dos naturel)*. These flakes/blades are indicated in the tables in parentheses because of the doubtful nature of their actual use as tools. (They do not, for example, bear any evident use-wear edge damage).

Biface types from the backdirt are presented in Table 5. The eight diverse types in the list constitute nearly a third of the classifiable speciments. Among the pieces, one is a broken biface subsequently used as a core. Another is a small chunky piece with extremely heavy battering at the tip, suggesting that its immediate functions as a

Table 4. Absolute and relative frequencies of Lower and Middle Paleolithic implements from the backdirt layers in the 1980 excavations at Ain el-Assad.

Type	*n*	% *reel*	% *ess.*
Levallois flake	9	7.8	
Atypical Levallois flake	3	2.6	
Pseudo-Levallois point	1	0.9	1.8
Straight racloir	1	0.9	1.8
Convex racloir	8	6.7	14.5
Concave racloir	2	1.7	3.6
Canted convergent racloir	1	1.7	3.6
Convex transverse racloir	1	0.9	1.8
Concave transverse racloir	1	0.9	1.8
Interior-face racloir	1	0.9	1.8
Steep racloir	3	2.6	5.4
Alternating racloir	1	0.9	1.8
Atypical endscraper	2	1.7	3.6
Simple burin	4	3.4	7.3
Atypical burin	1	0.9	1.8
Borer	2	1.7	3.6
Atypical borer	1	0.9	1.8
(Naturally backed flake)	(22)	(15.9)	(28.6)
Truncated piece	1	0.9	1.8
Notch	3	2.6	5.4
Denticulate	2	1.7	3.6
Tayac point	1	0.9	1.8
End-notched flake	1	0.9	1.8
Chopper	1	0.9	1.8
Chopping-tool	10	8.6	18.2
Diverse	5	4.3	9.1
Flake/blade with irregular retouch	49	42.2	
Total	116	100.3	99.5

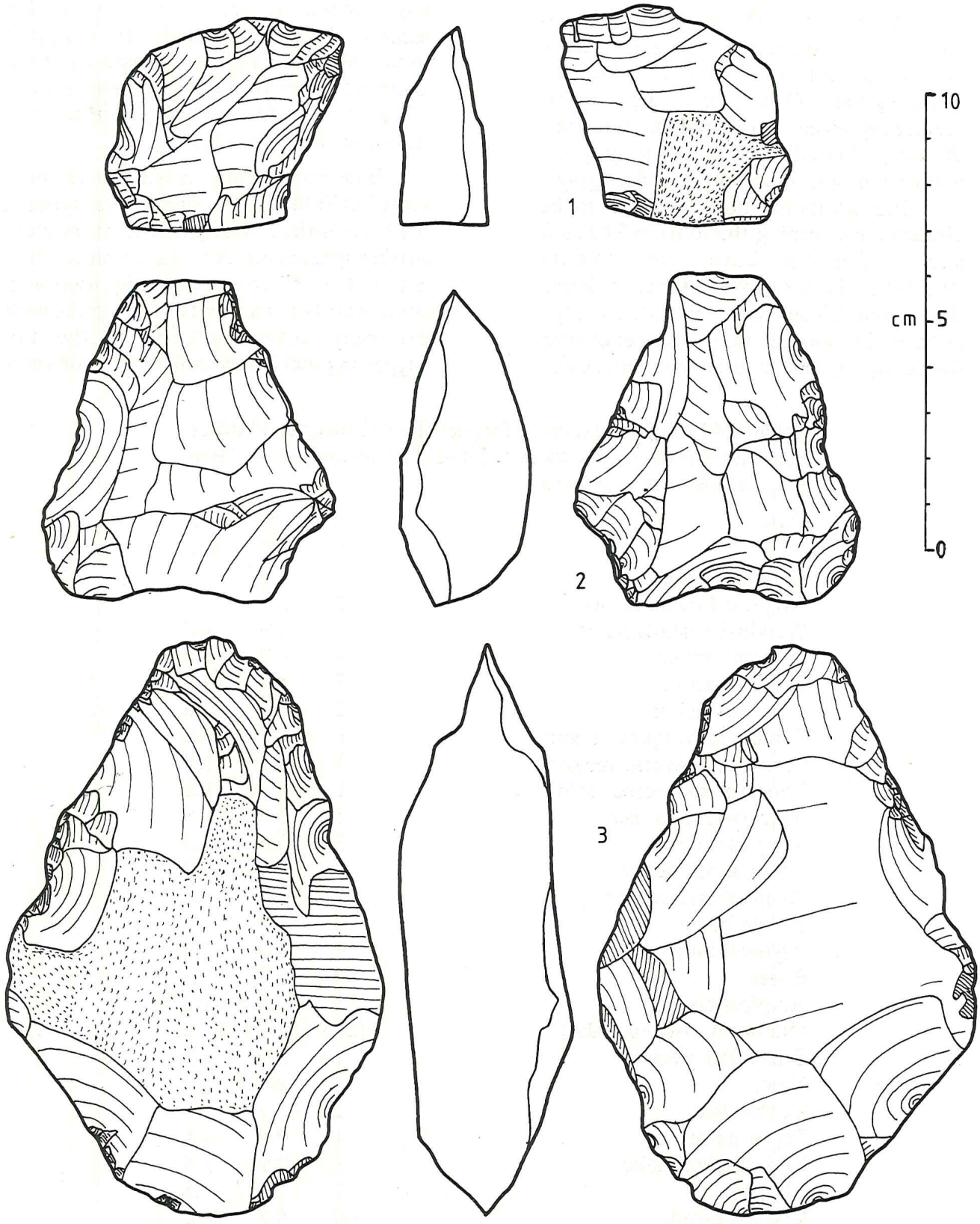

Fig. 7. Diverse bifaces from the Ain el-Assad; backdirt. 1) *biface-racloir;* 2) bifacial knife; 3) biface blank.

Table 5. Absolute and relative frequencies of biface types in the 1980 excavation samples from Ain el-Assad. percentages refer to classifiable types only (n 26).

	L1	*L2A*	*L2B*	*L3*	*Backdirt (all)*	
Type	*n*	*n*	*n*	*n*	*n*	%
Ficron	.	.	.	.	1	3.8
Amygdaloid	.	.	.	.	3	11.5
Subcordiform	.	.	.	.	2	7.7
Ovate	.	.	.	.	1	3.8
Cleaver	.	.	.	.	6	23.1
Flake Cleaver	.	.	.	.	1	1.3
Naviform	.	.	.	.	1	1.3
Diverse	.	.	.	.	8	30.8
Partial	.	.	.	.	3	11.5
Unclassifiable	1	.	.	3	14	(34.1)
Pick	.	.	2	1	.	.
Disc	.	.	.	.	1	(2.4)
Total	1	0	3	4	41	99.8

biface had expired and was later used as a wedge; the heavy damage to the tip, which in terms of patination seems to be roughly contemporary with the manufacture of the implement, prevents the classification of its original form. A third diverse biface is a large cleaver, crudely fashioned, with severe battering around its entire periphery, even though one of the laterals remained unretouched. Two other specimens are evidently biface "blanks". On one of them, one of the lateral edges seems to have become unamenable to subsequent shaping and sharpening, and the piece appears to be a failed attempt to produce a desireable bifacial implement (Fig 7, no. 3).

The remaining three diverse bifaces fit into an emerging pattern of biface production in the Near East. They may represent specific regional types of relatively common occurence that are rarer in other parts of the Old World Paleolithic. One of the three pieces from the 1980 excavations is a short *biface-racloir* (Fig 7, no. 1), a relatively common "diverse form" in the Tabun assemblages in Mt. Carmel (Rollefson 1978: 104-5). In addition to the three *biface-racloirs* from the 1979 backdirt collection (Rollefson 1980), this form constitutes 5.1% of the combined biface total, equal to the entire Lanceolate Class (Table 6).

Table 6. Absolute and relative frequencies of biface classes among the classifiable bifaces from the backdirt layers in the 1980 excavations at Ain el-Assad.

Class	*n*	%
Lanceolate	1	3.8
Cordiform	6	23.1
Ovate	1	3.8
Cleaver	6	23.1
Diverse	9	34.6
Partial	3	11.5
Total	26	99.9

The other two diverse bifaces are bifacial knives which make up 2.5% of the combined sample. Bifacial knives, also noted at Fjaje in west central Jordan (Rollefson 1981), formed another important component of the diverse types at Tabun.

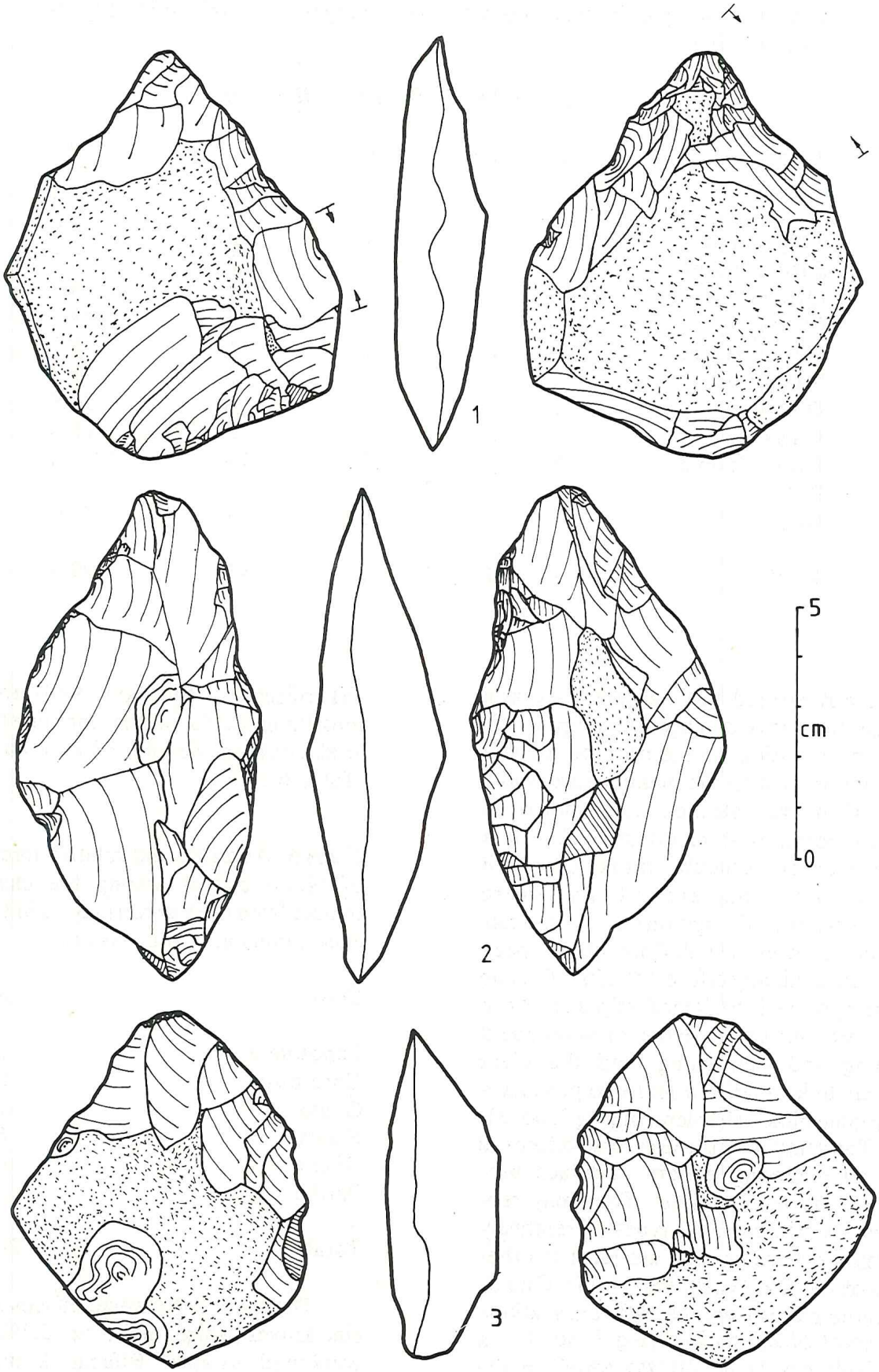

Fig. 8. Bifaces from the Ain el-Assad backdirt. 1) partial (area between the arrows indicates double patina); 2) naviform; 3) partial.

Flake Dimensions

The length, width, and thickness of each artifact was measured to the nearest millimeter. On flakes and blades, length was measured from the point of percussion along the flake axis, width was measured at a point halfway along the length measurement and perpendicular to it, and thickness was measured at the same point as width. On flakes where the axis of flaking could not be determined, the maximum dimension of the piece was adopted as the length measurement, with width and thickness measured orthogonally at the midpoint of the length measurement.

The mean dimensions and ratios of the means of analytically complete flakes are presented in Table 7. (Flakes and blades were deemed "analytically complete" if any edge damage on a specimen did not affect the original dimensions of the piece as defined in the preceeding paragraph). The figures in Table 7 reveal some temporal trends. In terms of length, there is a consistent decrease in size through time, and flakes and blades tend to become simultaneously somewhat thicker. As far as absolute widths are concerned, there is less patterning.

The ratios of the absolute dimensions, instead of concentrating on size, provide other aspects of the flake samples. The W/L ratio indicates a rough approximation of the outline shape of the artifacts, with values approaching .000 indicating extremely elongated shapes; at or near a value of 1.000 the shapes are roughly circular or square; and values increasingly larger than 1.000 indicate relatively shorter and broader outlines. Higher values of the T/L ratio indicate chunkier flakes, while lower values suggest more delicate long sections. Cross sections are broadly indicated by the T/W ratio, with higher values tending to reflect angular shapes and lower values mirroring more fragile pieces.

In Table 7 it is evident that through time the complete flake samples tend towards rounder or squarer outline shapes (despite the heavier reliance on blade techniques in Layer 2A), while becoming somewhat chunkier in terms of the T/L ratio at the same time. In contrast to the T/L development, however, flakes and blades become less angular in cross section, although the backdirt material has the lowest T/W ratio of all the samples.

While the information in Table 7 provides some insight on complete flakes, two factors should be kept in mind in assessing possible meanings. First, the sample size for most of the samples is very small, so the reliability of the patterns may be questionable; at least, the trends must be tested in the future by examining larger samples.

Second, it is probable that by measuring complete flakes, one is measuring what the flintworkers had rejected as unsuitable for use in the tasks at hand. In effect, then, the figures in Table 7 suggest that through time "rejects" became shorter, broader,

Table 7. Mean dimensions and ratios of mean dimensions of complete flakes from the excavations at Ain el-Assad, 1980.
L length, W width, T thickness, expressed in millimeters.

Layer	*L*	*w*	*T*	*W/L*	*T/L*	*T/W*	*n*
1	32.6	24.7	8.0	.758	.245	.324	6
2A	35.1	26.8	9.6	.764	.274	.358	21
2B	37.0	26.1	9.4	.705	.254	.360	81
3	41.6	24.7	9.2	.594	.221	.372	12
Backdirt	41.0	28.3	9.0	.690	.220	.318	201

chunkier, and generally less angular. Conversely, it is logical to assume that pieces selected for shaping into tools were longer, narrower, and more delicate. An obvious concomitant study to complement the information in Table 7 would involve the dimensions of implements that were produced. At Ain el-Assad, however, the quality of the tool samples is very severe: in Layer 1 there are no unbroken implements made on blades or flakes, only one in Layer 2A, 13 from the Layer 2B sample, and two from Layer 3. Investigations into this matter must await future excavations at the site.

Cores and Technological Features

Limited space prevents discussion at present concerning the cores that were recovered from the excavations as well as the technological features of lithic manufacture that were monitored during the analysis of the artifact samples. A thorough presentation and assessment of these aspects will appear in a later volume of the *Annual of the Department of Antiquities of Jordan.*

Discussion

The diagnositic elements from the stratified samples from Ain el-Assad are too few to provide a firm foundation for dating the occupations on a typological basis. In Layer 2B the projectile points could conceivably indicate a Late Neolithic period, although the fragmentary nature of two of them leaves considerable room for doubt. Moore notes that although pressure-flaking was well established as a method for retouching arrowheads in earlier Neolithic phases, the emphasis on delicate retouch and smaller size are definitive characteristics of Late Neolithic arrowheads. (Moore 1973: 46). These characteristics are present among the Layer 2B arrowheads and lend some support for the later date.

Moore also notes that, in Palestine at least, most arrowheads from earlier parts of the Neolithic were made on purplish or "honey-coloured" flint (Moore 1973: 47), suggesting that this is not the case for the Late Neolithic. The applicability of this "rule" must take into account the availability of local raw materials. At Ain el-Assad no cores of either color were recovered, nor did a large sample of natural flint nodules or chunks indicate the presence of these raw materials in the vicinity. Nevertheless, while small flakes of purple flint were found in Layer 2B, no points were fashioned in flint of this color. Instead, all three examples were made on what we termed in the field "butterscotch" flint, presumably resembling Moore's honey color. The pressure-flaked knife or lance point and the sickle blade were also of butterscotch flint.

In a recent survey of the Azraq region, Copeland notes that at Ain el-Assad there is a gray series of flint artifacts which includes several pressure-flaked tangs which she ascribes to the Late Neolithic (Garrard and Price 1977: 114). The only projectile points fashioned on gray flint from the 1980 season came from the backdirt layers, and while one of them may be a medial segment of a small winged Late Neolithic arrowhead, the other two appear to represent PPNB shapes (Fig 4, nos. 5 and 6; compared with Mortensen 1970: Figs 13, 14, and 17; Perrot 1952: Plate X; Cauvin 1972: Figs 5 and 6).

The bifacially pressure-flaked knife or lancehead is evidently unknown at Beidha, but similar forms are reported from Sha'ar Hagolan (Stekelis 1972: Plate 24-4). The sickle blade from Ain el-Assad is not denticulated as is the normal case for this tool type in the Late Neolithic (Moore 1973: 46, Fig 2), but instead is more like the unretouched sickle blades from Beidha (Mortensen 1970: Fig 37; Kirkbride 1966: Fig 12).

Moore mentions that a major distinction between the PPNB and Late Neolithic stone industries is the reliance on "double-ended, hogbacked" cores are absent in Late Neolithic occupations (Moore 1973: 51). Such bidirectional, single face blade cores account for 25% of the core inventory in the Ain el-Assad Layer 2B.

The PPNB assemblages from Beidha

resemble, in general technological terms, the evidence from Ain el-Assad. At Beidha blade cores of all kinds average only 6.2% of the total core inventory, ranging from 1.7 to 9.6% among the various levels (Mortensen 1970: 4, Table 1). At Ain el-Assad blade cores range from 8.3% in Layer 2A to 14.6% in Layer 2B (including core fragments, rejected cores, and unclassifiable cores). At Beidha blades constitute an average of 25.7% of the flakes (excluding chips), ranging from 3.4 to 32.3% in each level. At Ain el-Assad blades range from 12.0% in Layer 2B to 24.0% in 2A. Similar breakdowns of artifact classes are less directly comparable in other PPNB and Late Neolithic site reports.

In connection with techniques of flake production, Stekelis points out that the Sha'ar Hagolan cores characteristically exhibit steep platform angles of approximately 45° to the core axis (Stekelis 1972: 43). Similar platform configurations characterize the Beidha cores (Mortensen 1970: Fig 6). Although core platform angles were not monitored in the Ain el-Assad samples, the high percentages of high angle techniques on blades in Layers 2A and 2B indicate similar core platforms.

In summary, the general age of the *in situ* materials from Ain el-Assad remains obscure, with evidence pointing towards either PPNB or Late Neolithic for Layer 2A and 2B on the bases of typological and technological comprisons. It is not impossible that the deposits at Ain el-Assad represent a period of transition from the one to the other, but Moore notes that such sites in the Levant are either absent or poorly documented.

Whatever the age of the occupations in Layers 2A and 2B, which can be resolved only with a larger sample of diagnostics in future excavations, what is just as important as the kinds of artifacts which were recovered is the absence of other expectable artifact types. No grinding stones were found (with the possible exception of the basalt spheroid from Layer 2A), nor were there any axes, chisels, pottery, or housing constructions. Overall, the artifact inventories are consistent with a limited focus occupation of the site, with emphasis on hunting and butchering as evidenced by the arrowheads and utilitarian flint tools. The single sickle blade may indicate a restricted degree of harvesting, but this does not mean that either wild or domestic grain was harvested at the spring (cf. Moore 1973: 43). Relatively recent house construction in the Azraq villages still utilizes great quantities of cane reeds, especially for the roofs. Neolithic visitors undoubtedly utilized what must have been an abundant resource at Ain el-Assad, wielding sickles to disptach a task which would have been difficult to accomplish by hand in view of the massive root systems of *Phragmites* (cf. Anderson 1980: 183-8).

The preliminary sedimentary evidence lends support to the idea that the occupations sampled in the 1980 season were unlikely to have produced a wide variety of domestic artifacts. The color, texture, and travertine inclusions in the 2A-2B complex indicate that the artifacts found their way into marshy if not swampy conditions. While such a setting would have been a lucrative hunting focus, as a location of permanent or semi-permanent habitation, the Neolithic people must have had more comfortable options. Well-drained areas may have existed within a relatively close distance to the marsh borders.

If the temporal status for Layers 2A and 2B are in question, the situation is even more ambiguous for Layer 3, for typologically diagnostic artifacts were not found in the stratum. The lacustrine matrix of Layer 3 indicates a Pleistocene age, while the general technological aspects of the small artifact sample suggest an occupation near the end of this long period. Evidence from the Jafr Depression indicates that a period of dessication began sometime around 26,000 b.c. (Huckriede and Wiesemann 1968: 81-2), although how rapidly the dessication set in has not been determined. The lake at Azraq may have continued to exist until the end of the Pleistocene. Lake Lisan in the Jordan Valley was suddenly reduced in area and volume at approximately 18,000 b.c., but since the reduction was due primarily to tectonic activity, the temporal relationship of the demise of Lake Lisan with the contraction of the

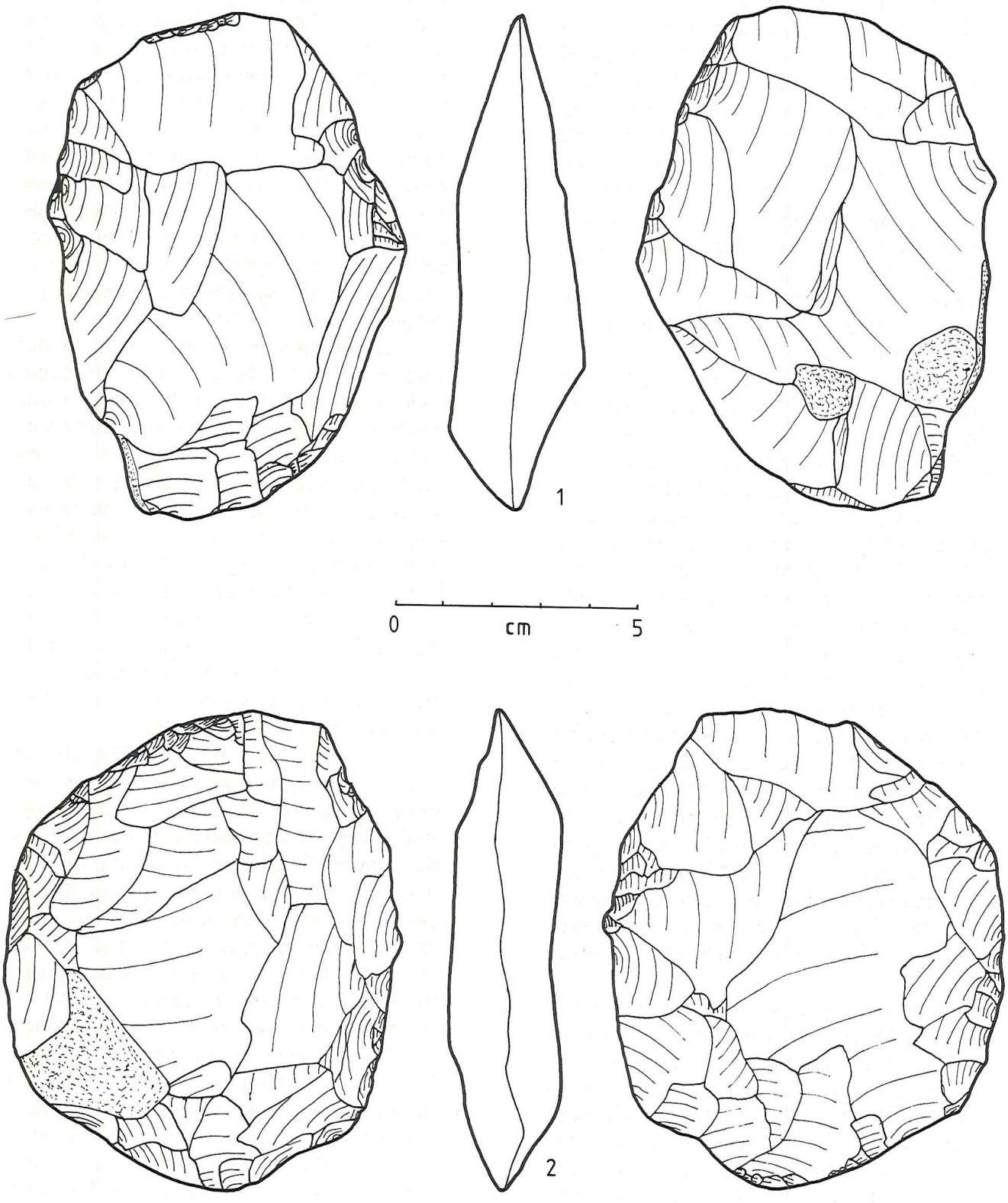

Fig. 9. Cleavers from the Ain el-Assad backdirt. Note: 1) is the only unpatinated biface found in the backdirt.

Azraq pluvial lake is spurious (cf. Farrand 1971: 542, 559).

Earlier occupations at Ain el-Assad are evidenced only in the backdirt, where the Late Acheulian is well represented by relatively large numbers of handaxes and cleavers. There remains the problem of whether any Middle Paleolithic occupations occured at Ain el-Assad, and because the tool types and general technological configurations are rather similar in the Lower and Middle Paleolithic, distinguishing them in the backdirt melange would be very hard to achieve. An extensive Levalloiso-Mousterian occupation is claimed at Spring C in Azraq Shishan (Clutton-Brock 1970: 19-20), and site Azraq 16 also appears to be a Middle Paleolithic site (Garrard and Price 1977: 116). Evidence for other Middle Paleolithic sites in the Azraq Basin is poor. There certainly was no major Levalloiso-Mousterian occupation at Ain el-Assad, testified by the small amount of Levallois material among the backdirt samples.

As was the case with the earlier analysis of bifaces from Ain el-Assad (Rollefson 1980), cleavers continue to play a very large role among the bifaces, emphasizing the butchering activities that took place at the spring/lake 100-150,000 years ago. The possibility that even earlier occupations, from the Middle Acheulian, may be represented among the backdirt artifacts is suggested by relatively crude retouch on a large number of bifaces (excluding almost all of the cleavers, which for the most part are very finely executed). Crude retouch is not unknown in the Late Acheulian, however, so the resolution of this possibility must await the location of in situ Acheulian layers.

Table 8 shows that the combined 1979-1980 biface sample is diversified in terms of biface types, with Cordiform, Ovate, Cleaver, and Diverse classes dominating the inventory. The 1980 sample was relatively higher among the cordiform, diverse, and partial biface types compared to the 1979 sample, with corresponding reductions in the importance of ovate and cleaver types. In the combined sample, the Cleaver class remains high, surpassed only by the site of Jisr Banat Yaqub, near Lake Tiberias, and unchallenged by any other Near East biface assemblage. As a consequence, relative frequencies of other classes (except Diverse) are reduced, and more extensive comparisons with other biface assemblages are difficult to effect. The average length of 49 complete bifaces from the combined sample is 96.6 mm, which may indicate that the material comes from a later part of the Late Acheulian (cf. Rollefson 1980).

In terms of the essential Bordes typelist, two major differences emerged in a comparison of the 1979 and 1980 samples. The more recent group included significantly lower numbers of scrapers (especially simple convex racloirs) on the one hand but a much higher incidence of choppers and chopping tools on the other.

The typological and technological features of the individual and combined backdirt samples are presented in Table 9. In terms of the essential counts, the combined sample is characterized as rich in scrapers, poor in denticulates and retouched Levallois elements, and moderately strong in the presence of the Upper Paleolithic group. Among the wealth of scrapers, the Charentian character is moderately strong with only a small contribution by canted convergent scrapers (which indicate the strength of the Yabrudian nature of the scraper complex). Convergent scrapers are generally few in number, and the representation of types 25-29 is comparatively strong. In terms of technique, the debitage is non-Levallois, with little facetting of platforms, and blade techniques are used only moderately.

In conclusion, the 1980 excavations at Ain el-Assad, while small in areal sampling, provide a foundation for a better understanding of the Late Pleistocene prehistoric occupations of a part of the Near East that has been effectively ignored by prehistorians in the past. Analysis of the palynological, geological, and faunal samples will provide valuable information concerning the changing local and regional climates and environment. For the Neolithic period, the areas sampled by the

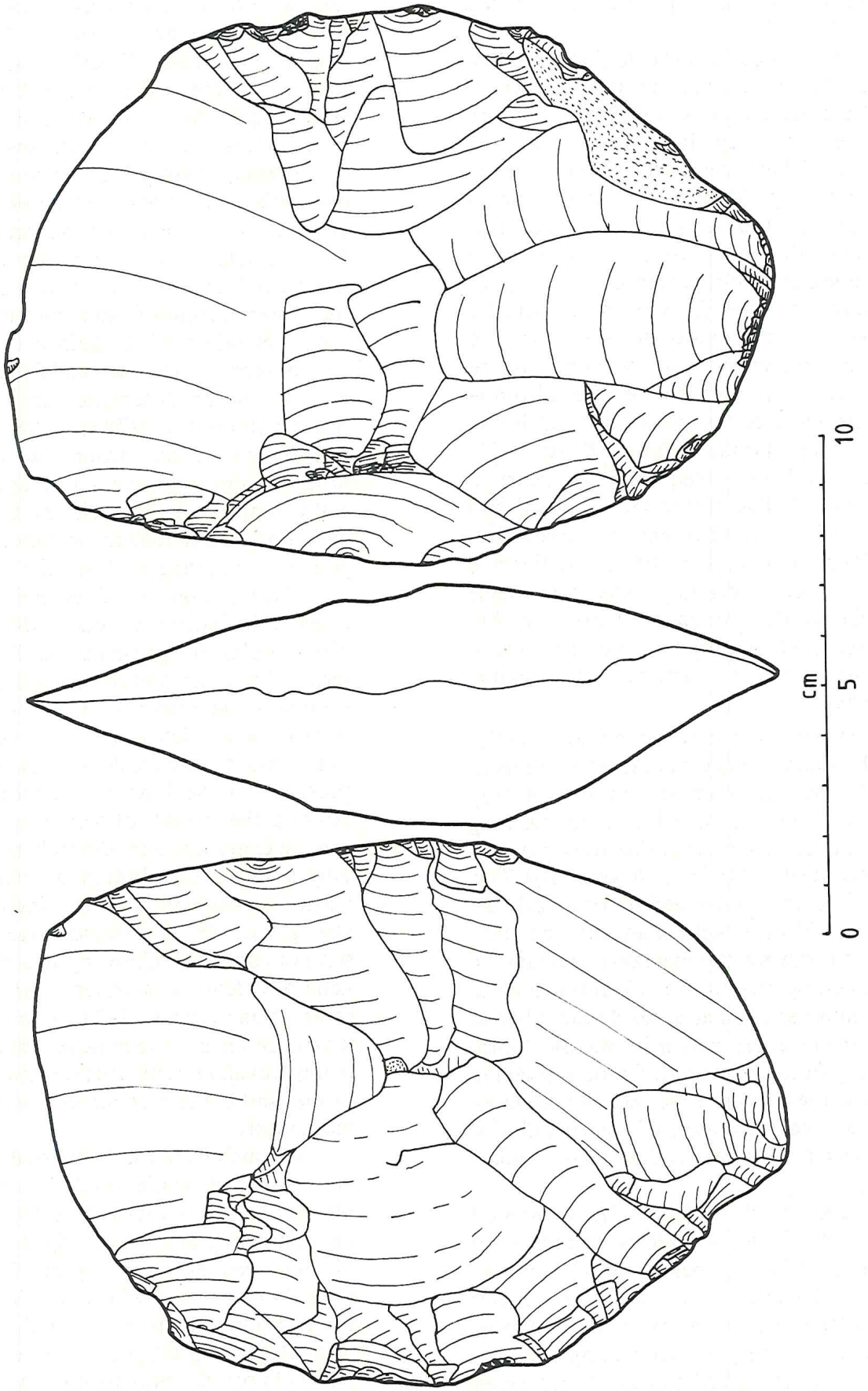

Fig. 10. Cleaver from the Ain el-Assad backdirt.

trenches suggest that the area around the spring was a marsh or swamp, a potentially lucrative hunting area for game which exploited local water and vegetational resources; no evidence of domestic habitation was produced. In contrast, earlier occupations took place near a large Pleistocene pluvial lake which had inundated the spring proper.

But whatever the 1980 season has contributed, much work remains to be done at the site, since so many questions are still unanswered and new ones have arisen. A much broader exposure of the Neolithic layers is called for, as well as more extensive sampling of the Upper Paleolithic-like parts of Layer 3. The elusive Acheulian layers are still a tantalizing goal for future

Table 8. Biface types and classes from the 1980 excavations and from the 1979 backdirt sample. Percentages refer only to the classifiable specimens.

	1980	*1979*	*Combined*	
Type	*n*	*n*	*n*	%
Lanceolate	.	1	1	1.3
Ficron	1	2	3	3.8
Cordiform	.	1	1	1.3
Anygdaloid	3	5	8	10.1
Subcordiform	2	2	4	5.1
Ovate	1	8	9	11.4
Discoidal	.	1	1	1.3
Cleaver	6	16	22	27.8
Flake cleaver	1	.	1	1.3
Naviform	1	.	1	1.3
Diverse	8	13	21	26.6
Partial	3	3	6	7.6
Abbevillian	.	1	1	1.3
Subtotal	26	53	79	100.2
Unclassifiable	14	8	22	
Disc	1	1	2	
Total	41	62	103	
Class				
Lanceolate	1	3	4	5.1
Cordiform	5	8	13	16.4
Ovate	1	9	10	12.6
Cleaver	7	16	23	29.1
Non-classic	1	.	1	1.3
Diverse	8	13	21	26.6
Partial	3	3	6	7.6
Abbevillian	.	1	1	1.3
Total	26	53	79	100.0

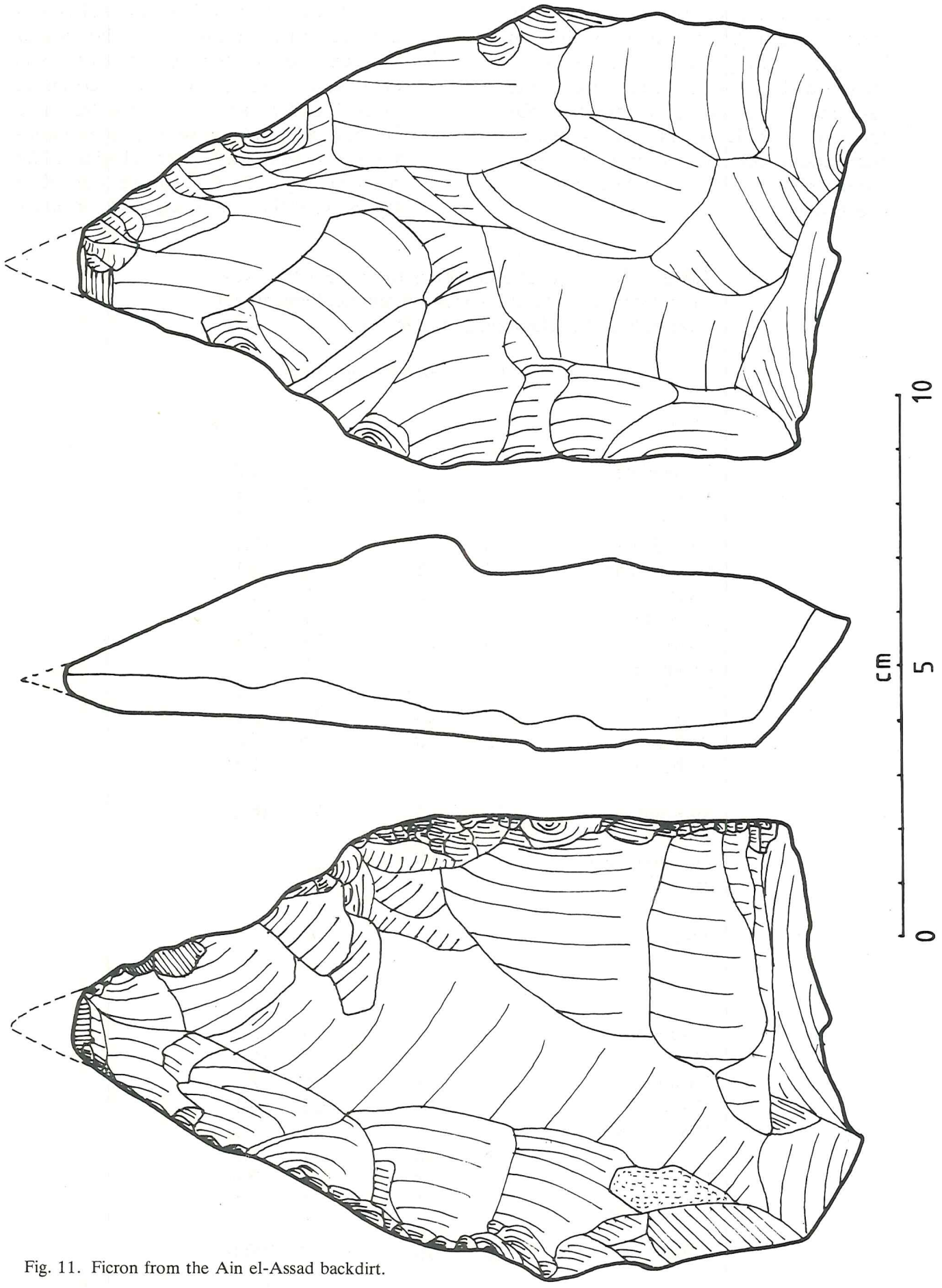

Fig. 11. Ficron from the Ain el-Assad backdirt.

excavations. A more complete set of pollen, geological, and faunal samples is also a primary goal of continued work at Ain el-Assad. Funding to achieve these aims has been raised, and another season of excavation will commence in October of 1981.

Table 9. Group indices, typological indices, and technological indices of the 1980, 1979, and combined backdirt samples. The group and typological indices for 1979 have been recalculated, excluding naturally backed flakes.

Group Indices

	1980		*1979*		*Combined*	
	reel	*ess.*	*reel*	*ess.*	*reel*	*ess.*
Group I	10.3	0.0	3.8	0.0	7.2	0.0
Group II	18.1	38.2	31.4	62.3	24.4	50.0
Group III	9.5	20.0	2.8	5.7	6.3	13.0
Group IV	1.7	3.6	3.8	7.5	2.7	5.5

Typological Indices (Essential)

	1980	*1979*	*Combined*
Racloir	36.4	58.5	48.1
Charentian	18.2	28.3	23.1
Yabrudian	21.8	32.1	26.8
Backed knife	0.0	0.0	0.0
Naturally backed knife	28.6	11.7	21.2

Technological Indices

	1980	*1979*	*Combined*
Levallois	2.1	1.0	1.6
Facetting (IF)	26.7	29.6	28.0
IF (strict)	11.9	10.4	11.3
Laminar	13.7	6.2	10.4

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I owe many thanks to Dr. James Sauer and the ACOR staff for all their help and support prior to, during, and after the excavations. Dr. Adnan Hadidi, Director-General of the Department of Antiquities of Jordan, was very generous with help for the project, and Dr. Ghazi Bisha and the Department staff were very cooperative during my term in Jordan. I owe a special debt of gratitude to Dr. Albert E. Glock and his wife Lois for their kindness and generosity; through them I was provided with an excellent environment in which to write this report. I would also like to acknowledge my sincere thanks to Scott Rolston and Laura Hess for their support and generosity. I consulted with a large number of prehistorians during and after the field work, too numerous to name, whose comments and suggestions are warmly appreciated.

Gary O. Rollefson

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THE DECAPOLIS SURVEY PROJECT: ABILA, 1980 BACKGROUND AND ANALYTICAL DESCRIPTION OF ABILA OF THE DECAPOLIS, AND THE METHODOLOGY USED IN THE 1980 SURVEY

by

W. Harold Mare, C.J. Lenzen, Michael J. Fuller, Myra A. Mare and Abraham Terian

Background

The 1980 archaeological survey of Abila, one of the ancient cities of the Decapolis, was conducted from July 9 to August 6. Dr. Adnan Hadidi, Director of Antiquities, and the Department of Antiquities of Jordan, were of great assistance to the staff of the Survey throughout the season, and we express our deep appreciation to them. The staff consisted of: Dr. W. Harold Mare, Director of the Abila Project; Cherie J. Lenzen, Typologist; Michael J. Fuller, Architect and Surveyor; and Myra A. Mare, Pottery and Objects Registrar. Assistants in the survey were Miss Anne Undeland, Damascus, Syria, and Mr. Erik Harrell, Amman, Jordan, both recommended by Dr. James A. Sauer, Director of the American Center of Oriental Research and the Survey's consultant on ceramics. We also had the fine assistance of Mr. Sultan Shureidah, District Director at Irbid for the Department of Antiquities of Jordan. Mr. Shureidah served as our Department Representative.

Abila, proposed to be at the site of modern Quailibah, is located about thirteen kilometers north and slightly northeast of the modern city of Irbid. The site is composed of a tell called Tell Abila in its north section, a lower saddle area in the center and a tell to the south called Khirbet Umm el 'Amad ("Mother of the Columns"). On a part of Umm el 'Amad are located the scattered columns of an ancient temple and on the north edge of this sector is located the cavea of the "theater" which borders the south edge of the central saddle. In the central saddle part of a wall runs north part way across the saddle toward Tell Abila; building ruins are also located in it. To the west of the "theater" and north of the temple ruins is an olive orchard, on the north edge of which project ruins of the west "bridge" or possible gate; to its north projects a vault or wall extending toward the crest of Tell Abila. Along the south crest of Tell Abila run the remains of an ancient wall, probably the acropolis wall of the city. On the top of Tell Abila in its south central sector are located ruins of what has been designated a "public building," and over toward the northeast slope of the tell is a small semi-circular cavea that may be remains of an ancient odeion. Numerous other ruins of walls and buildings are to be found on the top of Tell Abila and its slopes as well as elsewhere on the site on the south (Figure 1 and Figure 2).



Figure 1. The Site of Abila

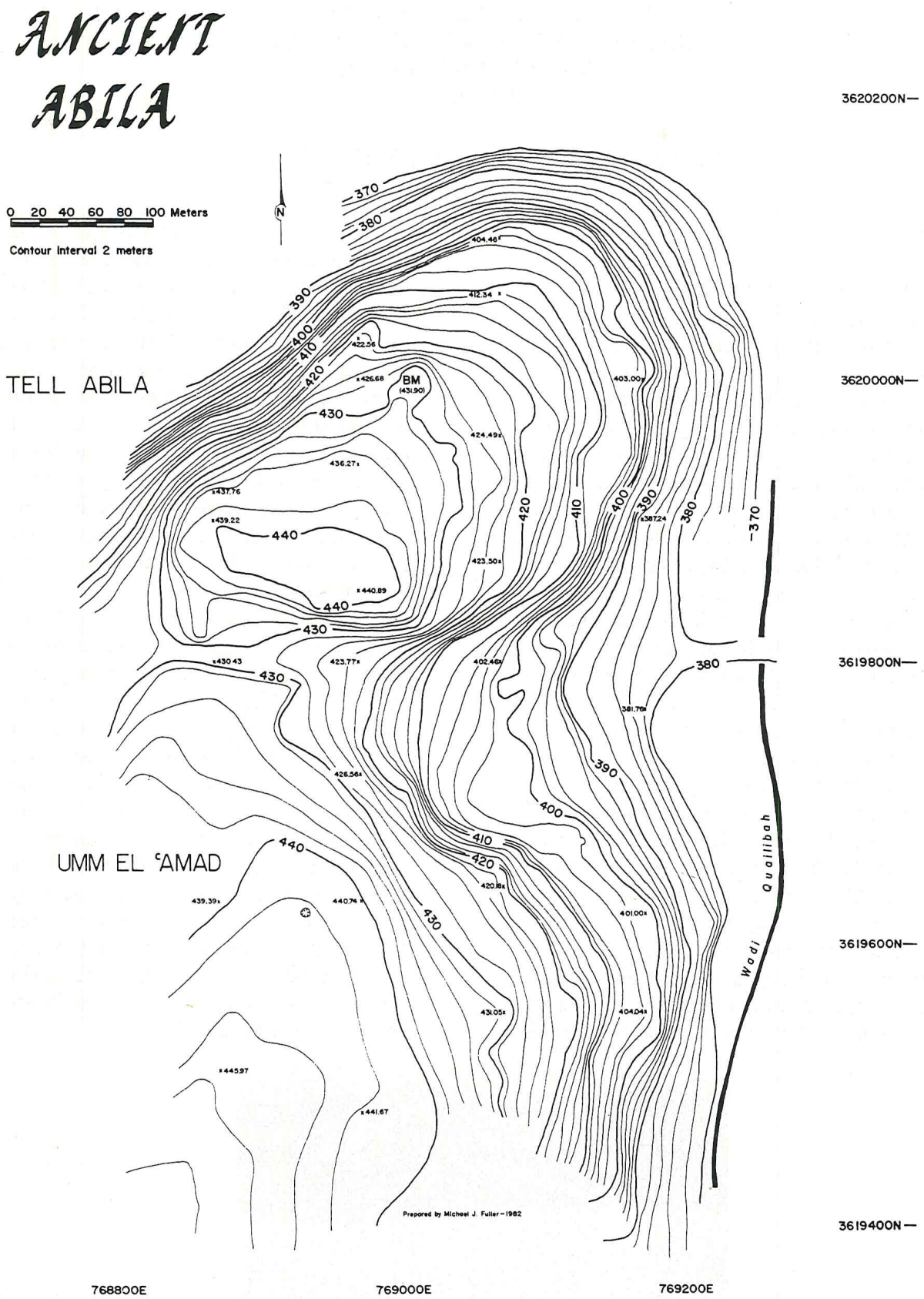

Figure 2. Contour Map

Tell Abila is bordered on the north by Wadi Abila, and Tell Abila and Khirbet Umm el 'Amad are bordered on the east by Wadi Quailibah. The cemetery areas for the site of Abila extend along the slopes of Wadi Quailibah to the south of Khirbet Umm el 'Amad about three-fourths of a kilometer, and then southwest around the wadi wall to a perennial spring, Ain Quaílibah. The waters of this spring run north in Wadi Quailibah to Abila, where they have helped produce a grove of trees. The water continues to flow north under the ancient stone bridge which connected Abila with cities and communities to the east, and then flows on to the Yarmouk River about 5.3 kilometers north of Abila. Further cemetery areas are to be found east and northeast of Tell Abila along the slopes of Wadi Quailibah and along the north slope of Wadi Abila.

The evidence from the 1980 survey thus far shows that the archaeological history of Abila extends from post-classical times back at least as far as the Early Bronze period. The ancient written sources focus attention on one part of that history, the site's importance in later classical and post-classical times and its connection with the Decapolis cities.

The meaning and significance of the term Decapolis and the cities connected with it have long intrigued students. Linguistically and etymologically the term Decapolis (Δεκάπολις) means "ten cities," but according to ancient sources the number of cities in the group varied from ten to eighteen or nineteen. Pliny in his *Natural History* (5,74) under the heading Decapolis lists Damascus, Philadelphia, Raphana, Scythopolis, Gadara, Hippos, Dion, Pella, Galasa (i.e., Gerasa), and Canatha, and then mentions what he calls Tetrarchies-kingdoms, listing among them Trachonitis, Panias ("in which is Caeserea with the aforesaid spring"), Abila, etc. Inasmuch as this Abila is mentioned in connection with Trachonitis and Panias-Caesarea, both located in the north of the Palestine area near the Sea of Galilee, it is likely that the Abila referred to is the Abila near Gadara and Capitolias and not the Abila located farther south in Peraea near Livias. Pliny then goes on to suggest *(N.H.,* 5,74) that not all writers have the same cities on their list under the term, Decapolis. Evidence of this is seen in the list given in the second century A.D. by the geographer Ptolemy (*Geography,* 5,14,22) who, while omitting Raphana which was given by Pliny, includes the other nine listed by the latter and adds nine more of his own, as follows: Heliopolis (presumably Baalbek), Abila (Quailibah), Saana (Sanamyn), Ina, Abila of Lysanias, Capitolias (Beit Ras), Adra (Edrei, Der'a), Gadora and Samoulis. This makes a total of nineteen cities, but if Raphana is the same as Capitolias, as some have argued,[1] then there are at least eighteen cities to be included as part of the Decapolis.

In the light of the above listings we posit that the Decapolis group of cities was located geographically east of the Jordan River and the Sea of Galilee (except for Nysa-Scythopolis) in Transjordan and ancient Syria.

As for "Abila of the Decapolis," reference to it has been made by the ancient written sources and records. Evidence that it is to be connected with the Decapolis is seen in the inscription found in Tayibeh, located northeast of Palmyra dated to A.D. 133/134 which mentions an Αγαθάνγελος Αβιληνὸς τῆς Δεκαπολεος("Good Messenger or Well Heralded Abila of the Decapolis"),[2] and the reference to it by the second century A.D. geographer Ptolemy *(Geography,*[5], 14)[3] who lists it separately from Abila of Lysanias to the north near Damascus, and by Hierokles (sixth century A.D.; *Synekdemos,* 720-721), the latter of whom lists it as a part of Provincia Secunda in connection with Scythopolis, Sella

1. Emil Schürer, *A History of the Jewish People in the Time of Jesus Christ,* div. 2, part 1 (London: Hodder and Stoughton, 1894), p. 106.
2. W.H. Waddington, *Inscriptions Grecques et Latines,* III, 1870, 609: No. 2631; Augustus Spijkerman, *The Coins of the Decapolis and Provincia Arabia,* ed., with historical and geographical introductions by Michele Piccirillo, (Jerusalem: Franciscan Press, 1978), p. 31.
3. Spijkerman, *The Coins of the Decapolis....., p. 31.*

(Pella), Gadara and Capitolias.[4] Further, that it fits the location of our Abila at Quailibah is evidenced, according to Ritter *(Erdkunde,* XV. p. 1060), by Jerome's identification of an Abila 12 Roman miles from Gadara.[5] Also, according to Burckhardt (1812) in his *Travels in Palestine* (Vol. 1, p. 537, Note to p. 425) Eusebius, too, links the name 'Abel (Abel) to the city and locates it twelve miles east of Gadara,[6] which is in the vicinity of our site. In more modern times Seetzen in 1806 rediscovered Abila,[7] the site located at modern Quailibah, about thirteen kilometres north-northeast of the city of Irbid, in north Jordan. Eighty years later Schumacher briefly visited Abila, described its ruins and drew a map of the site, all of which he published in 1889.[8] Aside from the 1959 excavation of the chamber and shaft tombs by the Department of Antiquities of Jordan, in an area isolated some 500 metres northeast of the Abila ruins,[9] no work has been done at the site until our 1980 survey.

Abila became a Decapolis city (Figure 3) somewhere between the time of Alexander's conquests and the zenith of Seleucid power (c. 198 B.C.). Polybius (second century B.C. historian; *Historiae* V. 69-70) describes how Antiochus III, the Seleucid king, conquered (c. 218 B.C.), among other cities, Abila, Pella, and Gadara; and, Josephus *(Antiquities* XII 3, 3, 135, 136) tells us, citing Polybius *(Historiae* XVI, 39, 1, 3), that Antiochus captured Batanaea and Samaria as well as Abila. [10] Later, in the beginning of the first century B.C., Abila was conquered by Alexander Jannaeus.[11] Besides Ptolemy's *(Geography* 5, 14) second century A.D. reference to Abila, there is further note of it in the Byzantine period. As we have seen, Hierokles lists it, as does also Georgios Cyprios *(Descriptio Orbis Romani,* 1028 - 1042; c. A.D. 575). Supportive of this Byzantine written record is the strong Byzantine ceramic evidence from the 1980 survey.

In the seventh century A.D. the Umayyads gained power in Palestine and Syria, and, among other victories, they conquered the Byzantine army at the Battle of the Yarmouk in A.D. 637/16 under the Arab generals Abu 'Ubayda and Khalid b. al-Walid. This was during the reign of Caliph 'Umar b. al-Khattab. M.A. Shaban comments about the battle: "The Arabs won a decisive victory which induced the Byzantines to relinquish Syria altogether."[12] The ceramics from the 1980 Survey at Abila bear testimony to the strong Umayyad influence at the site.

The 1980 Survey's ceramic evidence for the Abbasid period (A.D. 750-969) at Abila is minimal; yet the writer Ibn Khurdadhbeh *(Kitab al Masalik wa' l-Mamalik,* 78 middle ninth century A.D.) lists Abil (Abila) as one of the districts of Jordan

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4. *Le Synekdèmos de'Hierokles et L Opuscule géographique de Georges de Chypre,* Texte, Introduction, Commentaire et Cartes par E. Honigmann, Corpus Bruxellense Historiae Byzantinae, Forma Imperii Byzantini Fasciculus (Bruxelles, 1939), pp. 42, 43; Spijkerman, *The Coins of the Decapolis,* p. 42.
5. Gottlieb Schumacher, *Abila of the Decapolis,* (London: Palestine Exploration Fund, 1889), p. 45.
6. Schumacher, *Abila of the Decapolis,* (London: Palestine Exploration Fund, 1889), p. 45.
7. U.J. Seetzen, *Travels in Syria, Palestine,* etc., Vol. I, p. 372; Schumacher, *Abila of the Decapolis,* pp. 21, 22, 45, 46.
8. Schumacher, *Abila of the Decapolis.*
9. "Recent Archaeological Discoveries in Jordan," *ADAJ,* vols. IV, V (1960), pp. 115, 116, plates V, VI, *Revue Biblique,* April, 1960, p. 229.
10. Schumacher, *Abila of the Decapolis,* p. 45. See Polybius of Megalopolis of Arcadia, born about 208 B.C., who testifies to this. For he says in the 16th book of his Histories... "When Scopas was conquerred by Antiochus, that king occupied Samaria, Abila, and Gadara, and after a short time those Jews who inhabited the holy place called Jerusalem, surrendered to him."
11. Georgios Synkellos, *Chronographia,* ed. L. Dindorfius (Parisiis, 1829), 294 D-295 A.
12. M.A. Shaban, *Islamic History,* A.D. 600-750 (A.H. 132), *A New Interpretation* (Cambridge: At the United Press, 1971), p. 31; see also M.A. Rauf, *A Brief History of Islam* (Kuala Lumpur: Oxford University Press, 1964), pp. 24, 25.

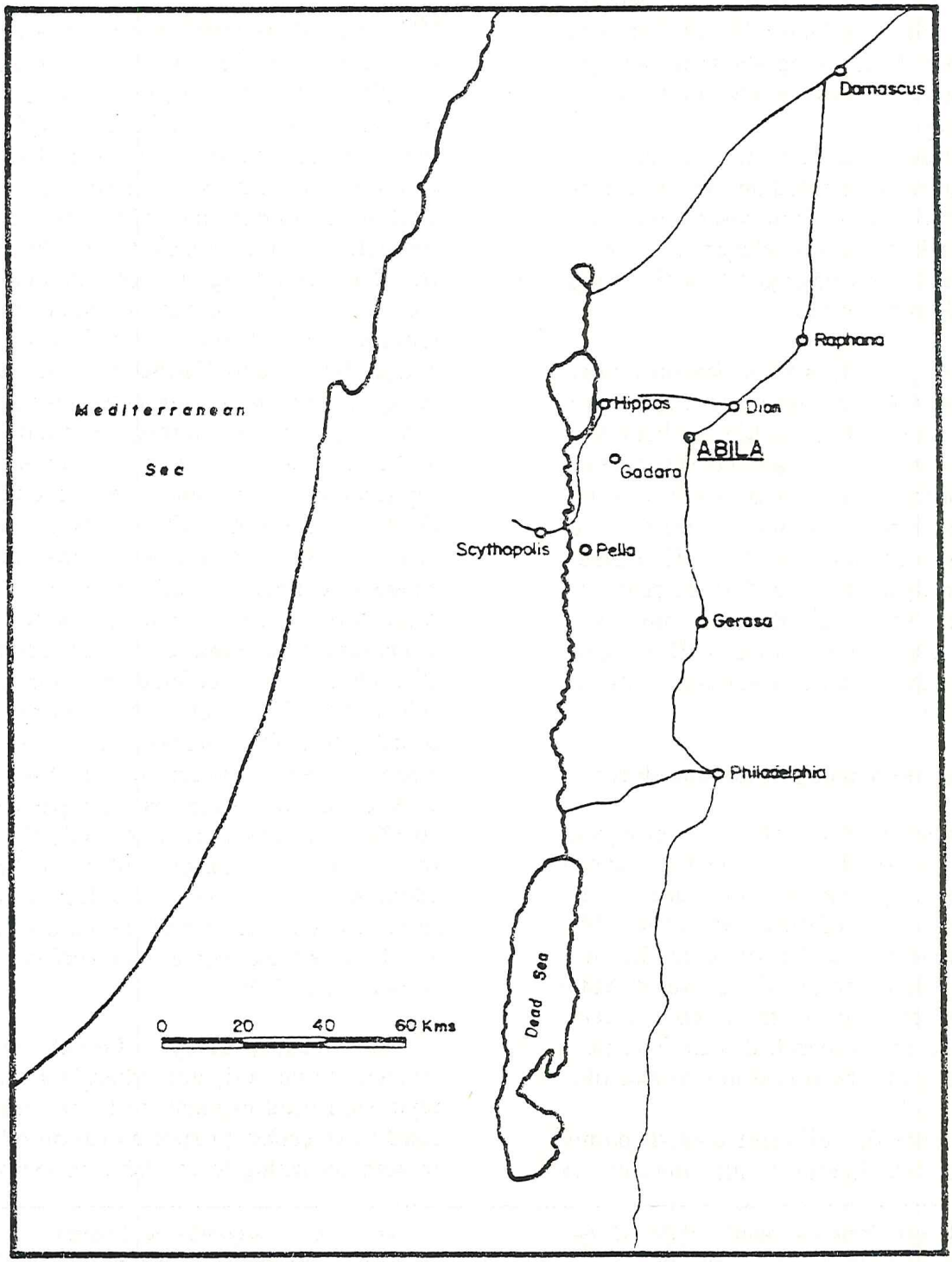

Figure 3. The location of Abila within the Decapolis. Major roads connecting the various cities are indicated as proposed by Farmer (1975)

along with Fihl (Pella), Jarash, Bayt Ras (Capitolias) and others.[13] In more modern times also Abila is depicted on maps, such as the map by Bourguignon d'Anville in 1732 and d'Anville's *Atlas Antiquus* of 1784.[14]

The territory governed by ancient Abila is not mentioned by any ancient source, but Jones suggests that through inscriptions we can gather that it was extensive. He says:

> Abila adopted the Pompeian era... (it) seems to have ruled an extensive territory; we know from inscriptions that two villages about fifteen miles east by north of it belonged to a city using the Pompeian era. [15]

Geographically we can surmise what the extent of Abila's influence might have been. On the north it would have been the Yarmouk, and on the east the Wadi Shallalah or some other nearby wadi. On the west its governance would no doubt have stopped somewhere east of el Khureibe, where the city aqueduct of Gadara began, [16] and on the south its influence may have included Capitolias (modern Beit Ras) which finally became a separate city in A.D. 97-98.[17]

Surveying Methodology and Procedures

In order to uncover the archaeological history of Abila, the 1980 Survey developed a systematic procedure for the accurate recovery of the ceramic and other cultural materials to be found on the site.

The initial survey of the site of Abila was conducted in order to collect data relevant to the research design. The purpose of the first field season was twofold:

1. To provide sufficient control points and architectural information to facilitate future intensive surveys and excavations; and,
2. The investigation of basic questions concerning the size, age, and complexity of Abila.

The original research design called for a program of stratified, systematic, unaligned sampling cells which would measure 30 by 30 meters; this would have provided an eleven percent sample of the site. The project director and architect-surveyor conducted a reconnaissance of the site early in the field season and decided that the logistics of implementing the proposed sampling technique would be very difficult. A systematic transect survey (Redman 1974; Judge, Ebert, and Hitchcock 1975: 100), using 20 meter wide transects, was deemed a more appropriate sampling technique due to the extent of the site, the amount of topographic relief, and the presence of thorny vegetation. The transects were oriented North-South and consisted of chains of connecting cells; each cell measured 20 by 20 meters. The cells were given alphanumeric designations, and the corners of each cell were defined by their UTM (Universal Transverse Mercator) grid coordinates. The interaxial distance between adjacent transects was 100 meters. This technique resulted in a sample size of 16.8% (141 cells were systematically surveyed out of a potential of 837). Seven additional cells, arbitrarily selected, were surveyed near the end of the field season, which raised the percent of surface area surveyed to 17.6%

A transit (Teledyne Gurley Model 100A), stadia rod, and fiberglass metric tape were used to measure from a nearby road intersection (a spot elevation of 438 meters according to the Irbid topographic

13. Cf. Robert Houston Smith, *Pella of the Decapolis* (Wooster, Ohio: College of Wooster, 1973), pp. 74, 75.
14. Smith, *Pella of the Decapolis,* pp. 80-82.
15. A. H.M. Jones, *The Cities of the Eastern Roman Provinces,* 2nd ed. (Oxford: Clarendon, 1971), p. 259. As a footnote to this quotation, he cites I.G.R. III, 1162, 1164 *(Inscriptiones Graecae ad res Romanas pertinentes,* R. Cagnat).
16. Gottlieb Schmacher, *Northern Ajlun, "Within the Decapolis"* (London: Palestine Exploration Fund, 1890), p. 78, 79.
17. B.V. Head, *Historia Nummorum, A Manual of Greek Numismatics* (Oxford, 1911), p. 787; Ptolemaeus, *Geographia,* V, 14, 18; *Tabula Peutingeriana; B. Hulin 80a.*

map) to a point along the eastern edge of ancient Abila. The UTM grid coordinates of the ancient stone bridge in the Wadi Quailibah were obtained from the Irbid topographic map. The distance and bearing from the elevation point to the center of the stone bridge allowed for the establishment of a temporary datum point with a known elevation (395.63 meters above mean sea level at Aqaba) and specific UTM grid coordinates (3619786N, 769148E). The accuracy of this datum, and all other grid measurements at the site, are limited by the accuracy of the Irbid (1963) topographic map which is at a scale of 1:50,000.

The west edge of the first transect was arbitrarily chosen as 769150E and the east edge was 769170E. This allowed the first transect to be adjacent to the temporary datum point and through it the eastern edge of the city was effectively sampled. The first transect was designated as the Eastern Transect and was divided into North and South numbered cells along the 7619800N grid line. The subsequent transects (located west of the Eastern Transect) were laid at 100 meter intervals across the site, running north-south from the east to west. Thus the transects were identified as East, Central East, Central, and Central West, and divided north-south from a survey point near the center of the site east-west. So the transects were then fully identified as the North East transect (NE), South East transect (SE), North Central East transect (NCE), South Central East transect (SCE), North Central transect (NC), South Central transect (SC), North Central West transect (NCW), and South Central West transect (SCW). At one point two of the North transects (North Central East and North East) were connected with an East-West transect (EW). The UTM (Universal Transverse Mercator) grid coordinates were used to define the corners of each cell (Figure 4). Each of the four points of each transect was marked with a surveying flag/pin, and orange spray paint circles were also used for marking survey points on the ground. A bench mark was placed in a rock on Tell Abila at an elevation of 431.90 meters. Elevations calculated from the transit readings were used to construct a topographic map which includes architectural features.

Each cell was surveyed by walking *all* of the surface within the cell, recording surface conditions (plants, soil, disturbances, architectural features, etc.), and then vacuuming the surface of sherds and other cultural remains from each and every one of these transect cells, allotting one man hour of work in each cell. Debris recovered from the cells included pottery sherds, roof tiles, glass sherds, glass slag, coins, metal artifacts, pieces of worked stone, unmodified pieces of imported stone, percussion-pressure flaked flint tools, flint debitage, tesserae, fragments of a single piece of sculpture and pieces of bone. On an average, six to eight cells were sherded each day for a season's total of 148 cells. A total of 33,432 sherds were collected during the season, meaning 1,500 to 2,000 sherds were gathered each day.[18]

Contour mapping was integrated with the process of "laying out" the transects. Important architectural features were referenced in the surveyor's notes, and a select number of ancient structures were carefully planned, stone-by-stone. In order to include in the artifactual analysis materials within certain structures which lay outside the established transects, special surface collections were made: cultural materials were collected from two cells (denominated PBEW, Public Building East-West) within the architectural boundaries of the so-called Public Building, and from one cell (denominated AB, Abila Basilica), from the eastern portion of what seems to be a basilica. Material was also collected from four cells in an East-West transect along the eastern slope of Tell Abila, near the top of that northern tell.

Artifact Identification

All artifacts from each sampled cell were collected in the field into bags which had been properly tagged. Information on

18. Mr. Erik Harrell, of Amman, gave assistance in the sherding on the site.

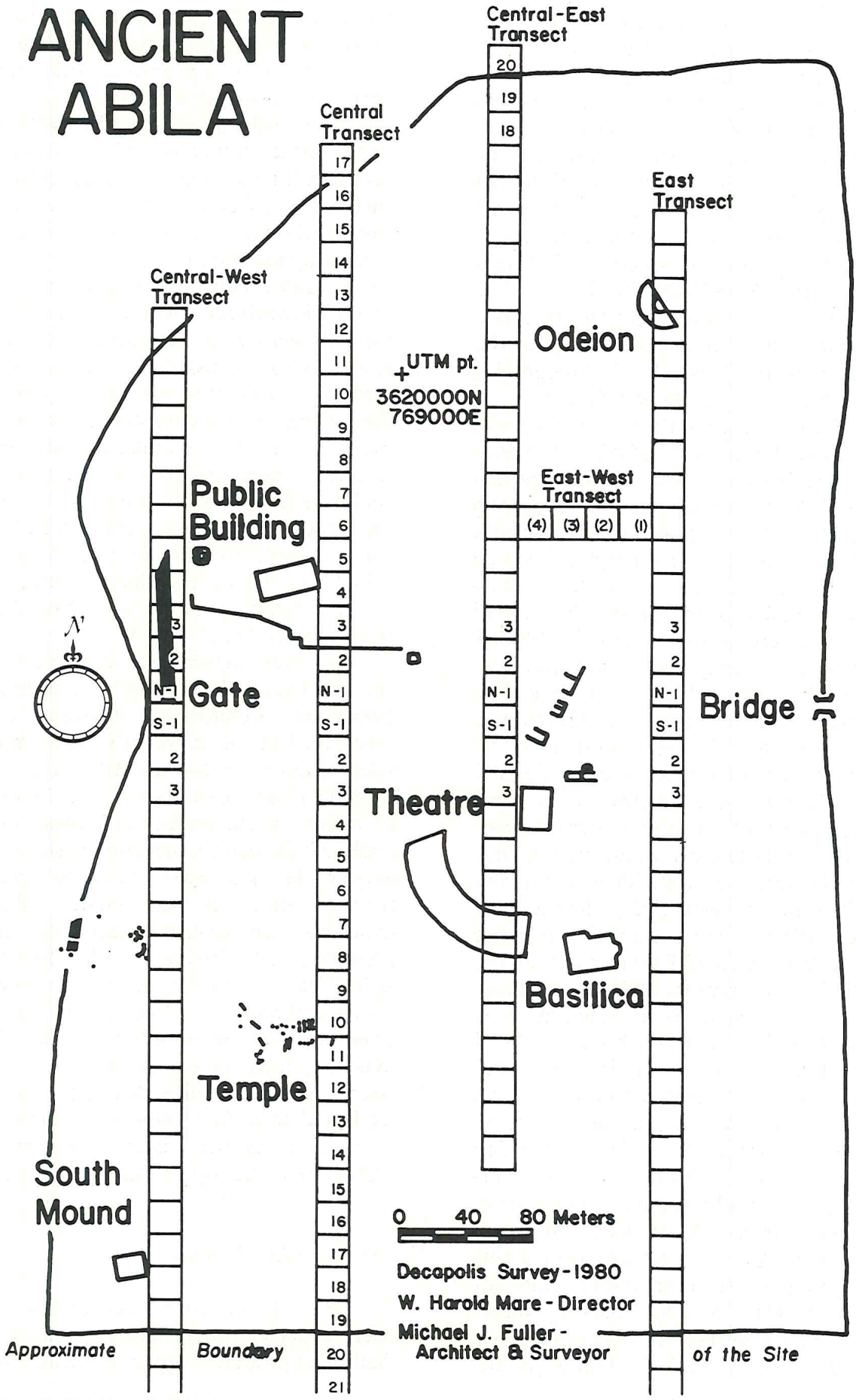

Figure 4. Transect Map

the tags for each bag of sherds included the following:

Project	D (Decapolis)
Year	'80 (1980)
Site identification	A (Abila) T (Adjoining Transects, plus compass bearing and distance numbers)
Individual numbers	1:1, etc. (Individual cell and bag numbers)

This and other pertinent information were recorded in the field on registration sheets and in the Pottery Record Book provided. Eventually after artifacts from each cell, other than sherds, were separated out, they were tagged and identified with the following information:

Project	D (Decapolis)
Year	'80 (1980)
Site identification	A (Abila) T (Adjoining Transects, plus compass bearing and distance numbers)
Individual numbers	0-1 (Individual object cell number) 0-2, etc.

As the above information was required for the pottery bag tags, the survey field registration sheets included space for the pottery bag tag information noted above and for additional data (if available), as follows: Project name (Decapolis), season (1980), site (Abila), cell identification, geographical location (UTM), architectural feature number, pottery bag numbers, object numbers, recorder and other workers and date. Additional items included: site names, site size, type of site, kinds of structures, water installations, terrain, condition of ground and type of soil, sketch of each cell with identifying features, comments on environmental aspects, erosion, any man-caused destruction and changes, site significance, other description, and interpretation. On a separate second field sheet was recorded information on the associated pottery (by archaeological periods), objects, ecofacts (bone, charcoal, uncharred wood, shell, seeds, etc.), numismatics and seals, and photographs.

Members of the staff were expected to keep invdividual notebooks for recording pertinent information and items needing further investigation.

Photographic Recording Procedures

A special photographic recording form was prepared and included in the field registration sheets for the photographer's use. For each photograph of a phenomenon or object in the field, the photographer assigned a photo number. These numbers ran in a series beginning with the first photograph taken in the season and continuing until the last photograph was completed in the processing of the field work.

For each photograph taken in the field, data was recorded in the photographer's individual field notebook and then later transferred to the form in the field regist-

Photographs chart

Project	Year	Date	Site	Cell	Supervisor	Time	View	Camera	Lens

Speed	Flash	Distance	Kind of Film Color B/W	Photographer	Subject

ration sheets which included space for the following information:

Ceramic Methodology, Procedures and Analysis

The sherds and other material cultural remains were brought each day to camp where they were divided into general categories, i.e., glass, tesserae, pottery, stone, etc. The majority of the material culture remains were pottery sherds spanning the Early Bronze I period through the Modern period (ca. 3300 B.C. to the present).[19]

All pottery was carefully washed and examined prior to the daily pottery field reading. Because of the number of sherds and the fact that there was no sorting of pottery on the site, it was necessary to do an initial sorting of the sherds prior to the reading.[20] The initial sorting consisted of dividing indicator sherds from non-indicator sherds. The standard definition of indicator sherds was utilized as follows: an indicator sherd is one which has a distinguishing feature(s), such as rim, handle, base fragment, decorated feature, and/or any unusual form which would distinguish it from a body sherd. Thus are included all "problem pieces" which may provide clues to special forms or unique styles and which are therefore of more importance than simple body sherds. It is from these "indicator sherds" that a representative number were saved for registration and drawing. As a consequence, the Abila sherds saved for registration consisted of handles, rims, bases, other distinctive parts of vessels (e.g., carination) and sherds with decoration or designs on them and, in some cases, body sherds. The Registered Pottery List, which is on file in the Survey director's

19. The typologist wishes to thank Dr. James Sauer, American Center of Oriental Research, Amman, for his expertise and support during the summer.

20. The possibility of missing indicator sherds at the time of the reading would have been too high because of time pressures had an initial sorting not been done. The initial sorting and subsequent frequency counts also gave the typologist the opportunity to examine every sherd for uniqueness and, for example, the possibility of an ostracon. Ms. Anne Undeland assisted the typologist throughout the season with frequency counts and the basic typological division of the sherds.

office and also in the office of the Director of Antiquities of Jordan in Amman, gives the field indentification of the registered sherds. In order to have a representative sample of the sherds collected from each cell, body sherds were registered where no indicator sherds were available. [21] Following the soaking and scrubbing process, the sherds were examined for initial sorting and then dated as to their archaeological periods at the daily pottery field reading.

From the 148 cells, 33,432 sherds were collected. Of these sherds, 2,958 or 8.85% were registered. All of these registered sherds, with the permission of the Department of Antiquities of Jordan, were brought back in August to the United States for further study, drawing, and publication.[22] The remainder of the sherds are being stored at the Prebyterian Anoor Hospital in Mafraq, Jordan. These latter non-registered sherds were stored in order to have them available for further interpretive study and comparison with other sherds found in future surveying at the site, for possible chemical analysis to check on any questionable dating, and for study collections for teaching purposes. No inscriptions were discovered during the survey, but two coins were found, as were also several parts of objects (as part of a bracelet, etc.), glass pieces and worked stone.[23]

Through the field analysis of the sherds collected, a preliminary understanding of the occupational history of Abila was reached. The site was inhabited or occupied in the Early Bronze, Iron I and II, Roman, Byzantine, and Umayyad periods; occasionally there were found sherds representing the Middle Bronze, Late Bronze, Hellenistic, Abbasid, Fatimid, Ottoman Turkish, and Modern periods. Specifically, it is to be noted that the large majority of the sherds collected, some 32,028, belong to the Byzantine and Umayyad periods.[24]

The large number of Byzantine/ Umayyad sherds can be accounted for by the fact that the decision was made to place all body sherds and most indicators of the following two types of vessels into the this category:

1. Bag Jars identified as Late Byzantine and/or Umayyad.[25] The jars have two handles, range in color from black to orange/red, are often painted with white paint, and are of a coarse ware with small inclusions.
2. Jars identified as Late Byzantine and/or Umayyad that are of a well-levigated composition with few inclusions and thar range in color from pink to white. The Umayyad examples of this vessel have a folded rim; however, the change in the rim form is not clearly known presently.

Only 2.17%, or 726 sherds, are representative of the Roman and pre-Roman periods of occupation. Of these sherds sixty-five were identified as Roman/ Byzantine (.194% of the total number of sherds); 267 were identified as Early Roman, Late Roman or Roman (.799% of the total); fourteen sherds were identified as Hellenistic; 232 as Iron II sherds (twenty-four of which were Iron IIA) or .69% of the total; and only three sherds were identified as Iron I(C), possibly, with 97 sherds falling into the general Iron category (.29%). Those periods earlier than Iron are not well represented. Except for the general designation of Early Bronze, in which twenty-three sherds were placed, or .069% of the total, there are few sherds before the Iron II period. This number of Early Bronze sherds cannot,

21. Partial indicators were not registered where other examples were available.

22. The continued study of the sherds will consist of finding published parallels, identifying unique sherds, and chemical analysis of the clay.

23. The few objects found and the two coins are described on page 13. There were found an inscription and a Late Byzantine pottery lamp in a painted tomb a distance north of the Abila ruins, but these were discovered on a random reconnaissance on a day subsequent to the end of the survey's official field work. These will be noted in our records, but not counted as a part of the 1980 survey.

24. It should be noted that only general comments, tentative in nature, are being made at this point.

25. Smith, *Pella of the Decapolis,* Plates 31, 45, 85.

however, really be considered significant in comparison to the high percentage of sherds coming from the Byzantine through the Umayyad periods. [26] In contrast to the pre-Byzantine periods, considerably fewer sherds, namely twenty-six, come from the Abbasid through the Modern periods, a negligible .078% of the total number of sherds. The 652 undifferentiated sherds represent 1.95% of the total number of sherds. After further study, it may be possible to place some of the questionable sherds within specific periods.

In preliminary observation and interpretation, it is to be noted that:

1. Three rims were found at Abila of the "bag jar" or bag amphorae type that are reported on by John Riley and referred to as "Gaza" jars.[27] The author is aware of this type of bag jar with clay seemingly slapped against the neck and the rim, a jar coming from the site of Caesarea Maritima and found frequently in all of the fields excavated by the Joint Expedition there. The examples found in the Abila survey were "dusty brown" in color and better levigated than those mentioned above.
2. Approximately twenty rims of the "Galilean bowl" type were gathered at Abila in 1980. The rims vary in color and thickness.
3. A number of cookpot rims were identified that were clearly Byzantine in ware and resembled variations of Late Roman forms.
4. Approximately thirty sherds were identified and assigned to particular periods based on their resemblance to published sherds (i.e., published by J. Sauer or R. Amiran); however, these sherds are not totally consistent with these published materials.
5. Of the fourteen Hellenistic sherds, two should be noted here: (a) a well-preserved amphora fragment; and (b) and rim fragment from a late Hellenistic molded bowl with a heart pattern and brown slip.[28]
6. Two examples of late Byzantine "Jarash" ware were found.
7. Unexpectedly, a large number of Late Roman fineware sherds were found during the survey. Preliminarily, it can be said that the indicators seem mostly to be Cypriot Red Slip forms and LRC forms, according to J. Hayes' designations.[29]

Preliminary Comments on Pottery Distribution

As to distribution, this season's survey showed that the northern transects, NE, NCE, NC, and NCW, have a larger number of pre-Byzatine sherds than were found in the southern transects, whereas the sherds of the Byzantine through the Umayyad periods have a relatively similar distribution throughout the transects, both North and South. The North Central East transect demonstrated the highest concentration of sherds; this transect is the one proceeding north from the central saddle up over the crest and eastern edge and slope of Tell Abila.

It would appear that no clear concentration of sherds has been found to indicate an isolated area of occupation. One can conclude that the surveyed portion of the site was heavily occupied during the Byzantine through Umayyad periods and that there is at least minimal evidence for occupation during the Roman, Hellenistic,

26. One must also keep in mind that it is often difficult to identify sherds specifically from surface sherding because of weathering. It should be noted, however, that the lack of Roman and Hellenistic sherds, pre-Byzantine sherds in general, may only be a result of where the expedition surveyed. The information from the 1980 season will have to be compared carefully with evidence from future survey and excavation seasons in order to make more definitive statements about occupational patterns in antiquity.
27. John A. Riley, "The Pottery from the First Session of Excavation in the Caesarea Hippodrome," *BASOR* 218, April, 1975, pp. 25-63; John Hayes aided in the analysis discussed in this article.
28. Frederick O. Waage, *Antioch on the Orontes,* Vol. IV, Part I: *Ceramics and Islamic Coins* Princeton: Princeton University Press, 1948),
29. John W. Hayes, *Late Roman Fineware* (London: The British School at Rome, 1972). Fig. 9.

Iron II, and Early Bronze periods; however, the areas of concentration for these periods of occupation is not identifiable based on the ceramic frequencies.

Architectural Methodology and Procedure, and Analysis of the Architectural Remains Studied

The Scope of Architectural Studies at Ancient Abila

Stone foundations of several large buildings and innumerable small structures are exposed on the surface of ancient Abila. The small structures probably reflect domestic structures (living rooms, storage rooms, animal pens, courtyard walls, etc.); these walls are generally interrupted by stone robbing and/or burial by later occupation. Architectural studies conducted during the summer of 1980 concentrated on the larger buildings and three tombs.

Three of the large buildings, which were planned measured and drawn stone by stone, will be discussed in this article: the Public Building, the Basilica, and the Temple. The architectural plans and descriptions are still being perfected for the Odeion, Theatre, Temple, Cistern, West Bridge or Gate, and Painted Tomb. To begin with, we will briefly discuss the theater.

The Theater

Although in depth-work was not done at the Theater, enough survey work was accomplished to determine the approximate dimensions of the structure (Figure 5).

The cavea of the Theater located on the north edge of Khirbet Umm El 'Amad, the south tell, and opening out to the northeast, shows a structure considerable in size, measuring in diameter across the seating area a distance of about 80 m. At the time of his visit in 1888 Schumacher observed that there were still a few theater seats visible. He states:

> The configuration of the slope (of the Theater) was made use of to form the amphitheater; the seats - of which but few remained - were placed on a masoned foundation, for the reception of which the soft rock had been prepared. No ornament or cornices of any kind in this interesting monument were sufficiently preserved to be sketched for the crumbling of the limestone soon destroys all traces of tool work. I found the diameter of this theater to be 240 feet, measured at its widest part; the rows of seats faced north-east.[30]

The Public Building

The Public Building, so-called for its large rectangular size and want of particular features which would identify it more specifically (Figure 6), is a rectangular shaped structure which measures 34.5 by 19.0 meters; it is located on the summit of Tell Abila. The axis of the building is oriented North 82° East; the UTM grid coordinates for the building's corners are:

Northwest corner = 3619881N, 768923E
Northeast corner = 3619887N, 768947E
Southeast corner = 3619868N, 768950E
Southwest corner = 3619863N, 768916E

The surface remains of this building were discovered while surveying the North-Central Transect. Schumacher (1889) neither described nor planned this building during his 1888 survey of Abila (Figure 7, Schumacher's plan of Abila). Some of the building stones project 20-30 cm. above the ground, but most of the stones are barely exposed. The foundation has been damaged in several locations by stone robbing.

The stones exposed above the ground consist of a lower course(s) of ashlar basalt and upper courses of roughly shaped limestone and basalt blocks. Five ashlar basalt blocks are exposed on the east side of the northern wall. They are all partially buried in the soil; their length and breadth average

30. Schumacher, *Abila of the Decapolis,* p. 30.

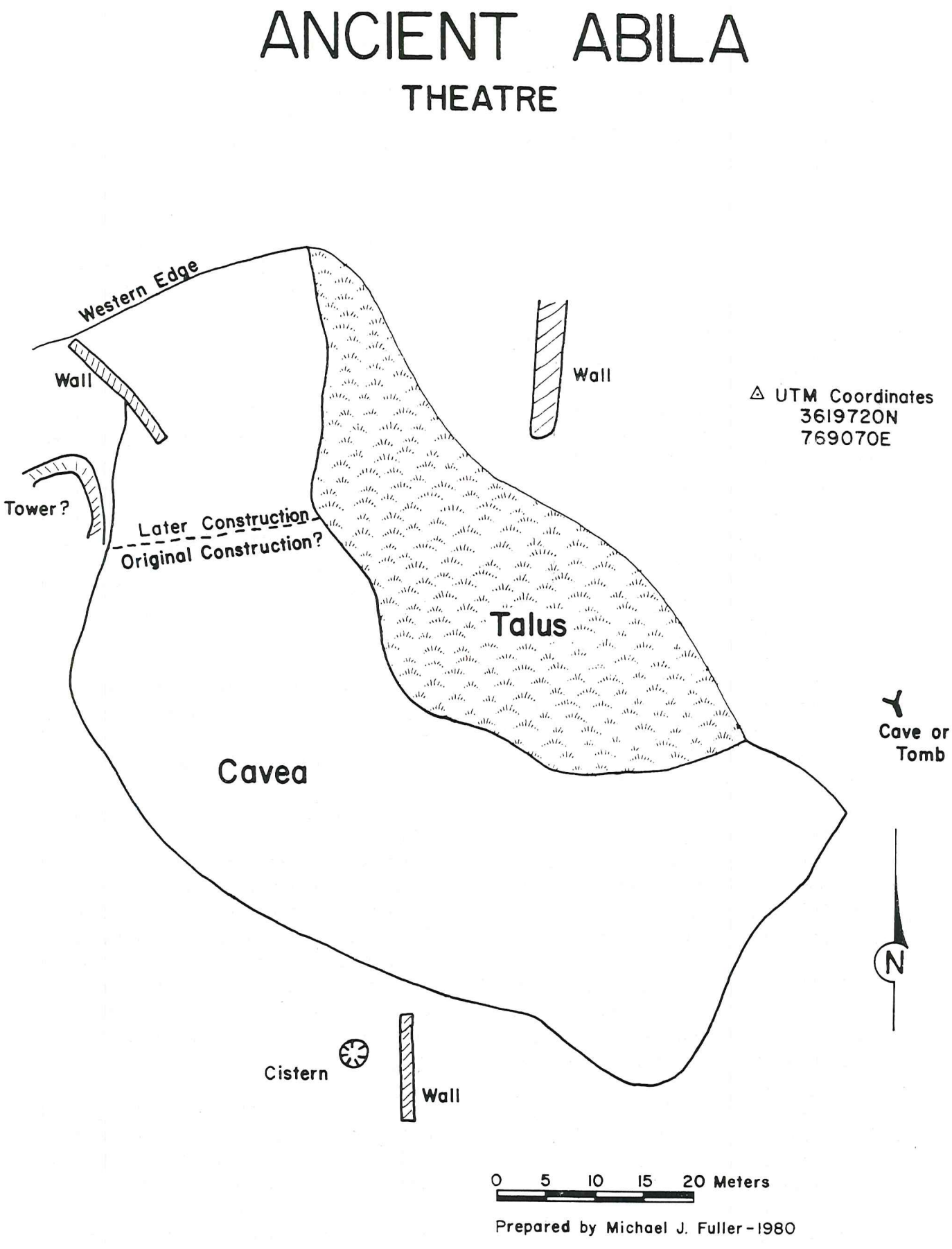
ANCIENT ABILA
THEATRE
Western Edge
Wall
Wall
Tower?
Later Construction
Original Construction?
Talus
Cavea
Cistern
Wall
UTM Coordinates
3619720N
769070E
Cave or
Tomb
N
0 5 10 15 20 Meters
Prepared by Michael J. Fuller - 1980

Figure 5.

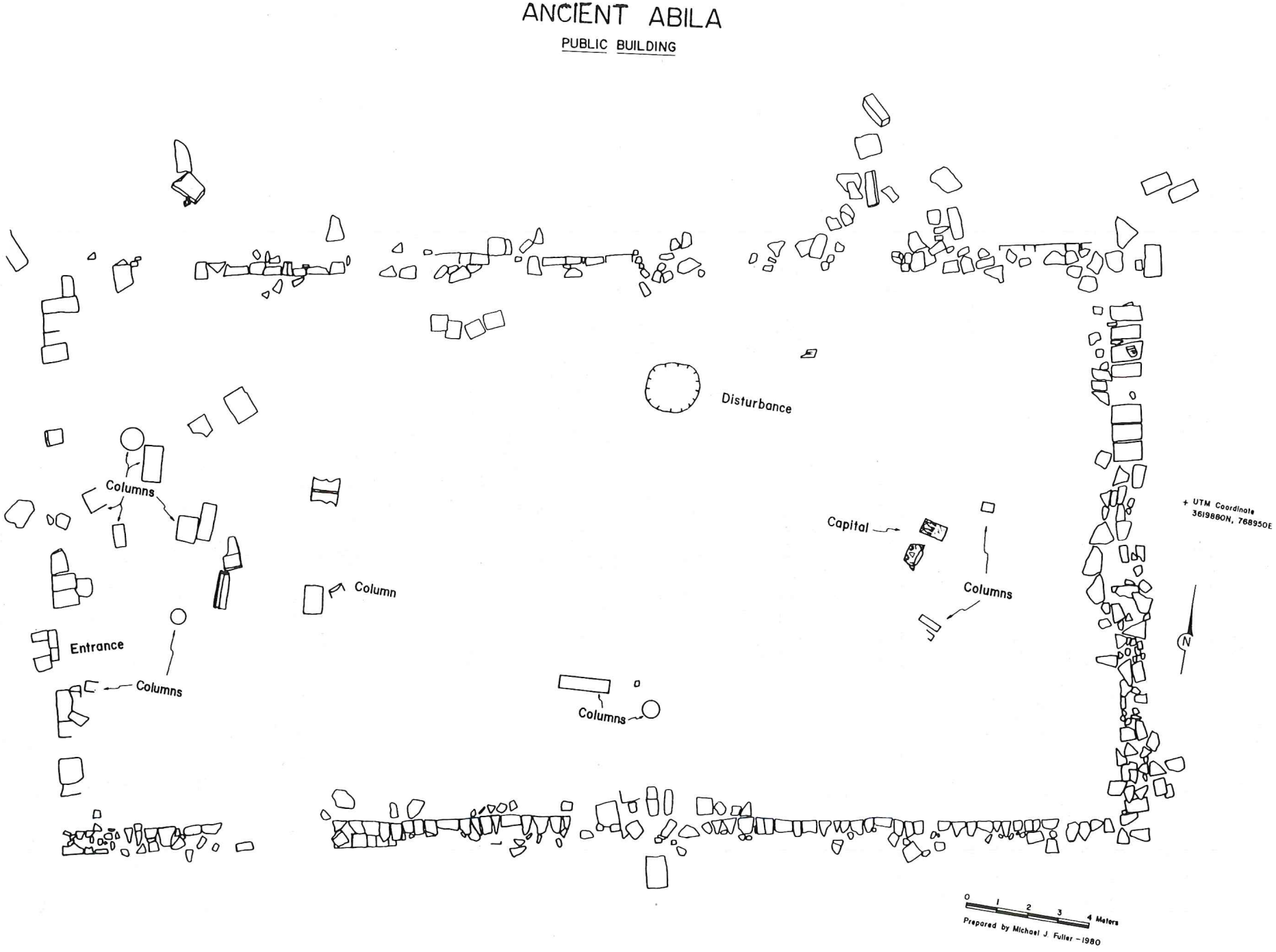
ANCIENT ABILA
PUBLIC BUILDING
Disturbance
Columns
Column
Entrance
Columns
Columns
Capital
Columns
+ UTM Coordinate
3619880N, 768950E
N
0 1 2 3 4 Meters
Prepared by Michael J. Fuller - 1980

Figure 6.

95 by 50 cm. The ashlar blocks along the north wall show evidence of careful cutting and masonry; roughly shaped ashlar blocks are located along the east and west walls. They measure 95 by 60 cm. The stones resting upon the ashlar blocks are irregularly shaped and usually have only one trimmed face. They rarely exceed 60 cm. in length of breadth. Average wall thickness for the building is 80 cm.

Evidence suggests that one entrance to the so-called Public Building may have been on the west side of the structure, where two basalt stones were found, perhaps door jambs. Near the west wall of the building are situated three basalt column drums, several ashlar basalt blocks and fragments of sculptured molding. Other basalt and limestone column drums are to be seen in the central and eastern sectors of the building, as well as a Corinthian capital, constructed as two drums and decorated with acanthus leaves.

The Basilica

A rectangular structure (Figure 8), located immediately east of the Theater,

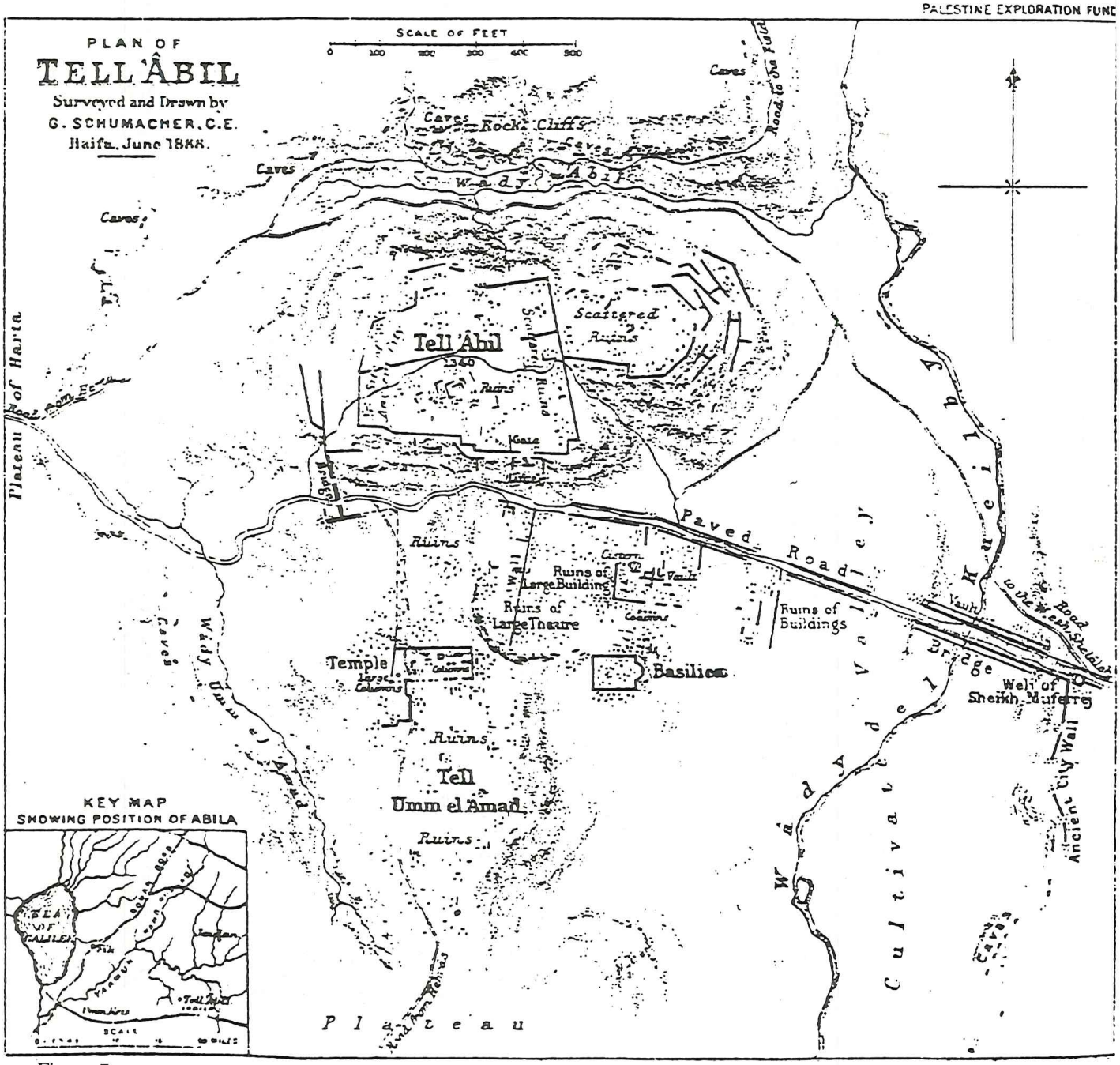

Figure 7.

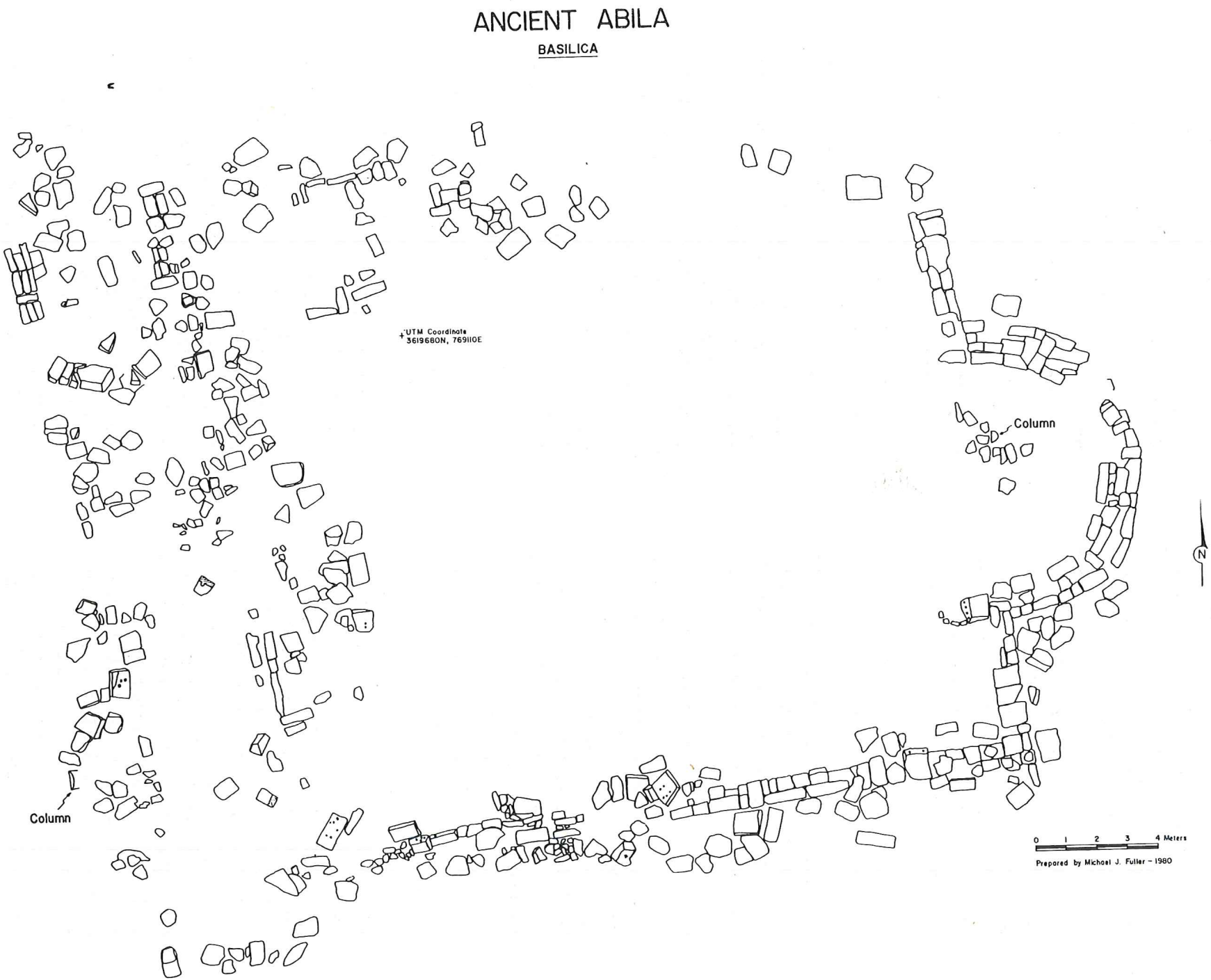
ANCIENT ABILA
BASILICA
UTM Coordinate
3619680N, 769110E
Column
Column
N
0 1 2 3 4 Meters
Prepared by Michael J. Fuller - 1980

Figure 8.

was discovered and described as a basilica by Gottlieb Schumacher [31] during his brief survey of the site in 1888. He described the building as one large chamber with an apse projecting from the east wall. He measured the large chamber and reported it to be 81 ft. (24.7 m) by 62 ft. (18.9 m.); the radius of the apse was reported as 16 ft. 1 inch (4.9 m.) and the main axis of the building was reported as North 89° East. Schumacher states that the building was built of carefully hewn limestone and lacked any columns or other forms of ornamentation.

The UTM grid coordinates for the corners of the Basilica are:

Northwest corner = 3619662N, 769097E
Northeast corner = 3619663N, 769127E
Southeast corner = 3619644N, 769130E
Southwest corner = 3619640N, 769102E

In the stone-by-stone mapping of the Basilica, it was discovered that the building is a far more complex structure than indicated by Schumacher's description and plan. The building consists of a central large chamber, an apse, what appears to be a narthex along the west side of the central chamber, and an attached storeroom or small chapel along the north side of the central chamber. Over 99% of the building stone consists of limestone.

The large chamber of the Basilica measures 24.5 by 18.7 meters, and the radius of the apse is 4.85 meters; these measurements, taken during the summer of 1980, vary from Schumacher's measurements by only a few centimeters. The orientation of the building's axis is North 82° East. The difference in orientation (Schumacher's measurements vs. those of the 1980 Survey) probably relates to the greater precision of the Teledyne transit and the fact that the 1980 Survey corrected for the magnetic declination. The "Public Building" and the Basilica have identical orientations. This may be part of a city-wide urban plan; the orientation of the colonnade of the Temple is North 81° East (a difference of only one degree from the Public Building and the Basilica).

Two basalt blocks were identified durig the stone-by-stone mapping of the Basilica. These were located along the west wall of the central chamber; they appear to be fragments of an exterior facade - possibly part of the entryway between the narthex and the central chamber. The narthex extends 4.5 meters to the west of the outer wall of the central chamber, and extends 4.5 meters north of the outer wall of the central chamber. Millingen[32] noted that the addition of a narthex was a favourite method of increasing the size of Byzantine churches in Constantinople. A partially buried limestone column drum with diameter of ca. 60 cm. was discovered along the west wall of the narthex. A second limestone column fragment, measuring 32 cm. in diameter, was discovered near the apse in the central chamber.

The exact nature of the room/chapel attached to the north side of the Basilica was difficult to define because only a few stones were exposed on the surface. This room appears to be 11.2 meters in length, but it may extend as far as 12.8 meters along the north wall of the central chamber. This attached structure measures 3.6 meters in width.

The Basilica was constructed from both ashlar blocks, and blocks of stone which had been dressed on only one surface. The south wall of the structure averages 80 cm. in width, while the east wall, exclusive of the apse, averages 95 cm. in thickness. The apse wall averages 140 cm. thick and was constructed with several blocks which range between 110-140 cm. in length, and average 40 cm. in width and thickness. The walls of the narthex and attached room range between 70 and 80 cm. in thickness, and include several ashlar blocks which are slightly smaller (70 by 25 cm.) than the ashlar blocks used in the central chamber and apse.

Scuhmacher reported that the interior of the Basilica "is filled with heaps of building material." The interior of the central chamber was remarkably clear of building material during the survey in 1980; the

31. Schumacher, *Abila of the Decapolis,* pp. 32-33.

32. Alexander Van Millingen, *Byzantine Churches*

chamber had been recently used as a tenting pad and animal pen by the local Bedouin. These activities may have deposited soil within the central chamber and resulted in the burial of the rubble mentioned by Schumacher. Such an explanation seems unlikely. An alternate explanation is that the interior of the central chamber has been cleared of the rubble. A nearby olive grove is enclosed by a 1.5 meter high wall of limestone blocks. Schumacher does not indicate this wall on his plan of Abila, so it may have been built after his visit and constructed in part of stones from the Basilica.

The Temple

Gottlieb Schumacher spent a considerable amount of time surveying a building which he designated as a "Temple." He examined the fallen colonnade, some nearby walls, and a cistern. He concluded that the building measured 152 ft. (46.3 m.) by 65 ft. (19.8 m.) and was oriented North 86° East. Schumacher's site plan indicates that the Temple is situated approximately 120 ft. (36.6 m.) southwest of the Theatre.[33]

In the topographic mapping of the vicinity of the Theater, no traces of a structure were discovered at the location given by Schumacher. A fallen colonnade (Figure 9) was discovered approximately 110 meters southwest of the Theater. These columns have Corinthian capitals identical to the capitals illustrated by Schumacher. Furthermore, the orientation of the colonnade and a basalt sarcophagus correspond to Schumacher's plan. The discovery of a large cistern (Figure 10) nearby served as the final confirmation that the Decapolis Survey team had rediscovered the location of the Temple. The UTM coordinates for the center of the colonnade are 3619603N, 768931E.

Schumacher erred in his description of the Temple's location; he may have overestimated its size. The limits of the colonnade are very distinct, but it is not clear that the walls situated several meters east of the colonnade are part of the Temple. A more reasonable estimation of the Temple size, based solely on the extent of the colonnade, is 36.5 meters by 20 meters with the long axis oriented North 81° East.

After an accurate location of the Temple structure and a defining of its dimensions, as noted above, the building fragments were then identified, measured, described, and analyzed as follows.

The ruins on the west side of the Temple consist of a set of large limestone columns with elaborate Corinthian capitals. These columns were composed of drums measuring up to 4.5 meters in length and 96 cm. in diameter. The diameter of the large drums ranges from 80 to 95 cm.; the drums had been held together with center pins. Motifs found on some of the capitals suggest that they may have manufactured during the Byzantine Period. The large columns on the west suggest that the entrance was oriented towards the west. Classical temples had their entrances oriented towards the east, while Christian churches had theirs on the west. It is possible that the Christian population at Abila in the Byzantine period modified the "Temple" into a church, a procedure that happened at other places in antiquity.

East of the large columns are two parallel rows of basalt and limestone columns. The arrangement of the drums suggest that there may have been an alternating pattern of basalt and limestone columns; spacing between the two parallel rows of columns is approximately 10 meters. The interaxial spacing between columns is approximately 2 meters. The diameter of the limestone and basalt columns ranges from 44 cm. to 62 cm.; the median diameter is 55 cm. and the mode is tied between 54 and 55 cm.

Two architectural features in the Temple are of particular interest. A marble column was discovered near the large limestone columns; the marble column has red veins and clearly represents an imported piece of stone. The temple also contains a column base manufactured from

33. Schumacher, *Abila of the Decapolis,* pp. 24-30. *in Constantinople* (London: MacMillan, 1912), p. 12.

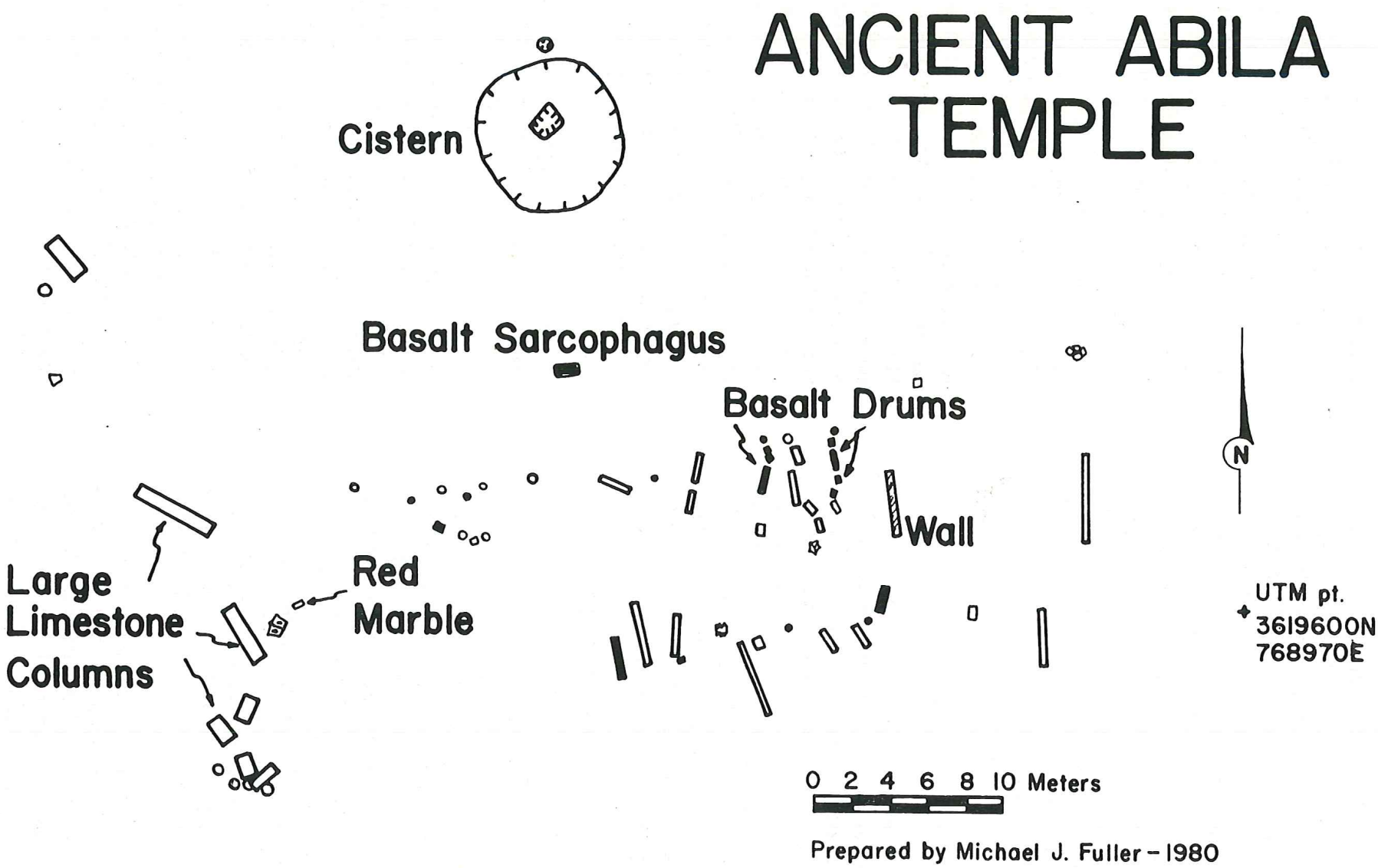
ANCIENT ABILA
TEMPLE
Cistern
Basalt Sarcophagus
Basalt Drums
Wall
Large
Limestone
Columns
Red
Marble
N
UTM pt.
3619600N
768970E
0 2 4 6 8 10 Meters
Prepared by Michael J. Fuller – 1980

Figure 9.

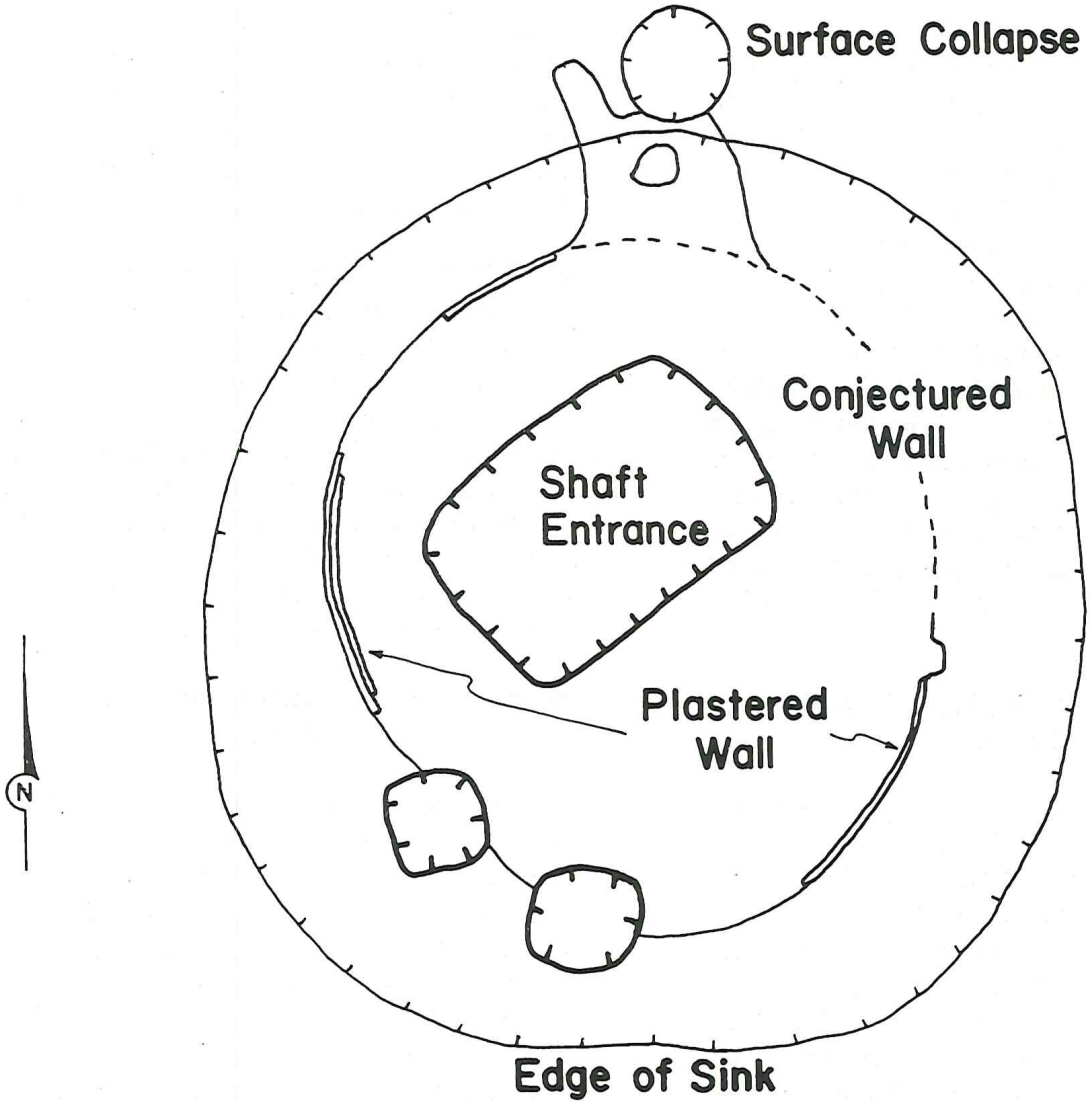

Figure 10. Large cistern associated with the Temple at Ancient Abila. The cistern has been almost entirely filled with recent trash from the village of Harta.

calcareous conglomerate; the color and texture of the stone closely resembles the exposures of calcareous conglomerate in Wadi Quailibah.

The painted Tomb

A few comments concerning the Painted Tomb, located about 500 meters northeast of the ancient ruins of Abila, are appropriate, considering two discoveries made in the lowest chamber. It was visited following the end of the 1980 field season by the architect-surveyor; he prepared a sketch-map (Figure 11) of the tomb. There are several fascinating features in the tomb, the most important of which is a shallow inscription (Figure 12). A Byzantine lamp (Figure 13) was discovered in a small room located to the right of the Greek inscription.[34] The painted Tomb is situated along the east wall of Wadi Quailibah near UTM grid coordinates 3620300N, 769400E.

The Geological Setting of Abila and Analysis of that Setting

A preliminary investigation of the geological setting of Abila and its environs was conducted and the following observations were made.

The ruins of ancient Abila are situated within the Yarmuk Drainage in the Transjordan Plateau. The site lies approximately 5.3 kilometers south of the Yarmuk River in the Wadi Quailibah. The wadis in this portion of the Yarmuk Drainage have elongated watersheds with relatively incomplete dendritic drainage patterns; simulation studies identify this as the initial stages in the pattern of rapid growth occurring on a naturally sloping land surface.[35] Wadi Quailibah drains a watershed measuring approximately 12 kilometers in length; the watershed is approximately 3 kilometers wide at its headwaters, and narrows to 2 kilometers at its mouth. It is bounded on the east by Wadi esh Shallalah, and on the west by Wadi Ballit Iya.

Geologically the region of Abila is composed of limestone bedrock capped with varying amounts of light colored soil as deep, at points, as three meters, and interspersed with limestone, chert, and basalt cobbles. The limestone is white to light gray in color. The chalky limestone blocks used in construction at Abila are of the same color and texture as the limestone beds that are to be observed along the eastern wall and wadi bed in Wadi Quailibah; it is to be presumed, therefore, that these blocks were quarried locally. Of the several varieties of stone and metal that were found at Abila clearly some were not from the locality. The 1980 survey produced no evidence of metallic ores, nor of marble. Marble that had been used at Abila consisted of the white crystalline variety and gray and red marble. A number of stone samples were taken back to the United States for further analysis.

Registration and Analysis of Pottery and Objects

Following the reading of pottery sherds each day, the next task was to register in a systematic and meaningful way the indicator sherds to be saved. The registration process included an identification of the sherds saved by the day in which they were collected, together with the cell number on the tell from which the sherds came and the number of the bag from which they came. The sherds of each bag of a cell were numbered from number 1, consecutively, and were identified as to archaeological period and form (i.e., base, handle, rim, body sherd, etc). There were tabulated in this way approximately 8.85% of the sherds collected, or about 2,958 of the 33,432 sherds found.

The following pertinent information was inscribed on each sherd with India ink: A(bila), '80 (date), Transect (NE,etc.),

34. The above were found on a random reconnaissance after the official field season was completed. They are only briefly referred to here and will be considered an official part of the next season's work.

35. Stanley A. Schumm, *The Fuvial System* New York: John Wiley & Sons, 1977), pp. 63-69.

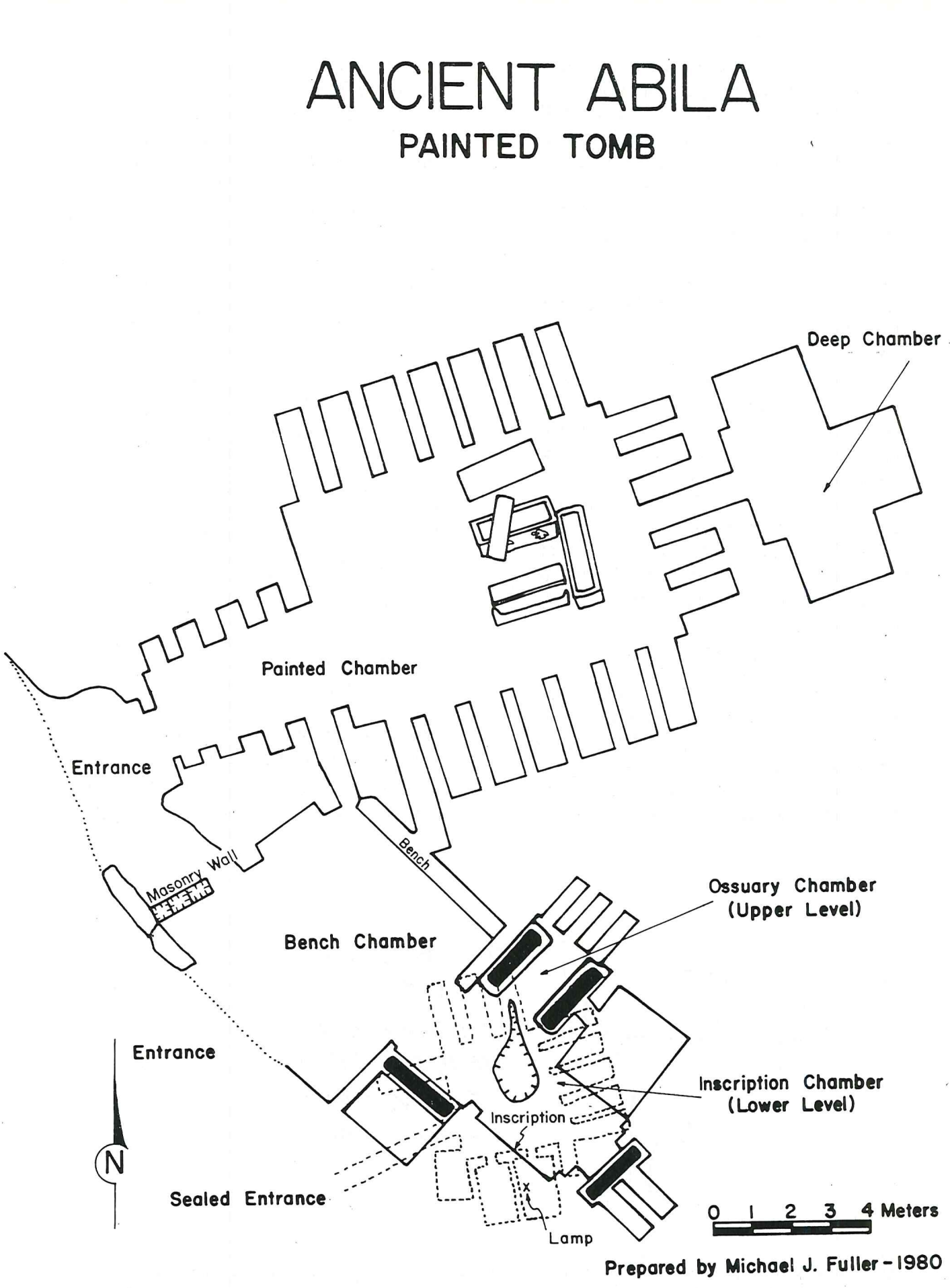

Figure 11. Sketchmap of Painted Tomb in Wadi Quailibah.

Cell number (1, etc), Bag number (1, etc.), and individual sherd registry number (1,2, etc.). When the ink was dry, it was sealed with clear nail polish. All of this information and identification as to archaeological period (Umayyad, Byzantine, Roman, etc.), and form (i.e., base, handle, rim, body sherd, etc.), were recorded on the pottery registration sheets which included: the date sherded, cell number, bag number, registration number, dating (as to archaeological period) and form.

A few parts of objects found in this 1980 Survey at Abila were also registered in the same fashion as the pottery sherds and were given an artifact number. These objects only included a metal glob of lead (?), part of a nail, part of a copper bracelet, part of a door hinge (possibly), three small pieces of wall plaster, and two coins, which were sent to Dr. Abraham Terian, of Andrews University, the numismatist for the Abila Survey.

The two coins just referred to were carefully brushed and scrubbed and then treated with oil to help preserve the delicate metal. The inscriptions on the smaller of the two coins (identification number A. NCE11.1, N.1), measuring 1.4 centimeters in diameter and 0.2 cm. in thickness are basically illegible, but enough can be made out of the coin to indicate that it is of the Roman aes IV type, ca. AD 400; it is a copper coin. The larger of the coins (number A. SCW2.1, N.1), 2.4 cm. by 1.75 cm. in diameter and 0.1 cm. in thickness is better preserved and is an Umayyad coin of the eighth century A.D. On the obverse of the coin the inscription reads, La ilah/illa lla/Wahdahu ("There is no God but God alone"), with an obliterated inscription around the edges. On the reverse there reads, Muhammad/rasul/allah ("Mohammad is the prophet of God (Allah)", with an obliterated inscription around the edges.

The whole Byzantine lamp (Figure 13), found in the painted tomb in Wadi Quailibah near Abila to which reference was made earlier, was drawn and recorded. Since the lamp was discovered on a day subsequent to the end of the survey's official field work, it is not counted as a part of the 1980 survey.

One further bit of registration had to do with the number of worked basalt, marble, and other stone pieces found on the site, pieces which were identified as to their geologic content. Where possible they were identified as to their function and use.

The above results of the Survey have shown that progress was made in beginning

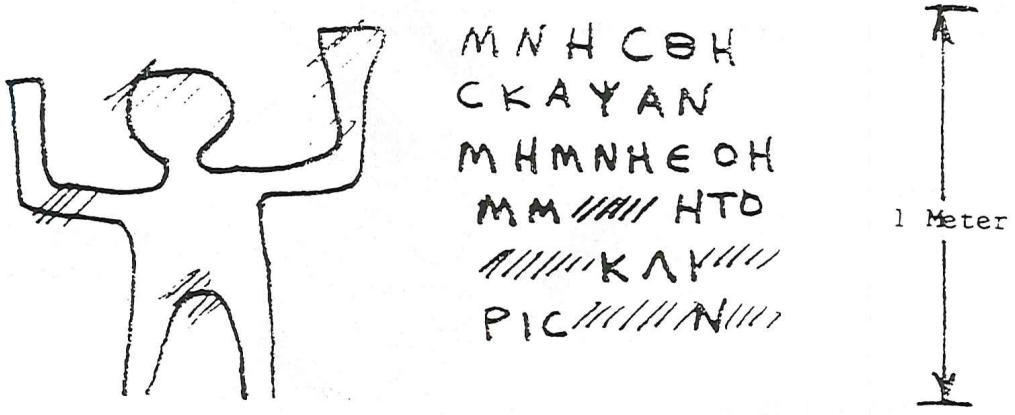

Figure 12. Greek inscription and associated raised relief figure discovered in the Painted Tomb. Some portions of the inscription were obscured by fungus and dirt. The inscription was not cleaned; obscure portions are shown as slash marks.

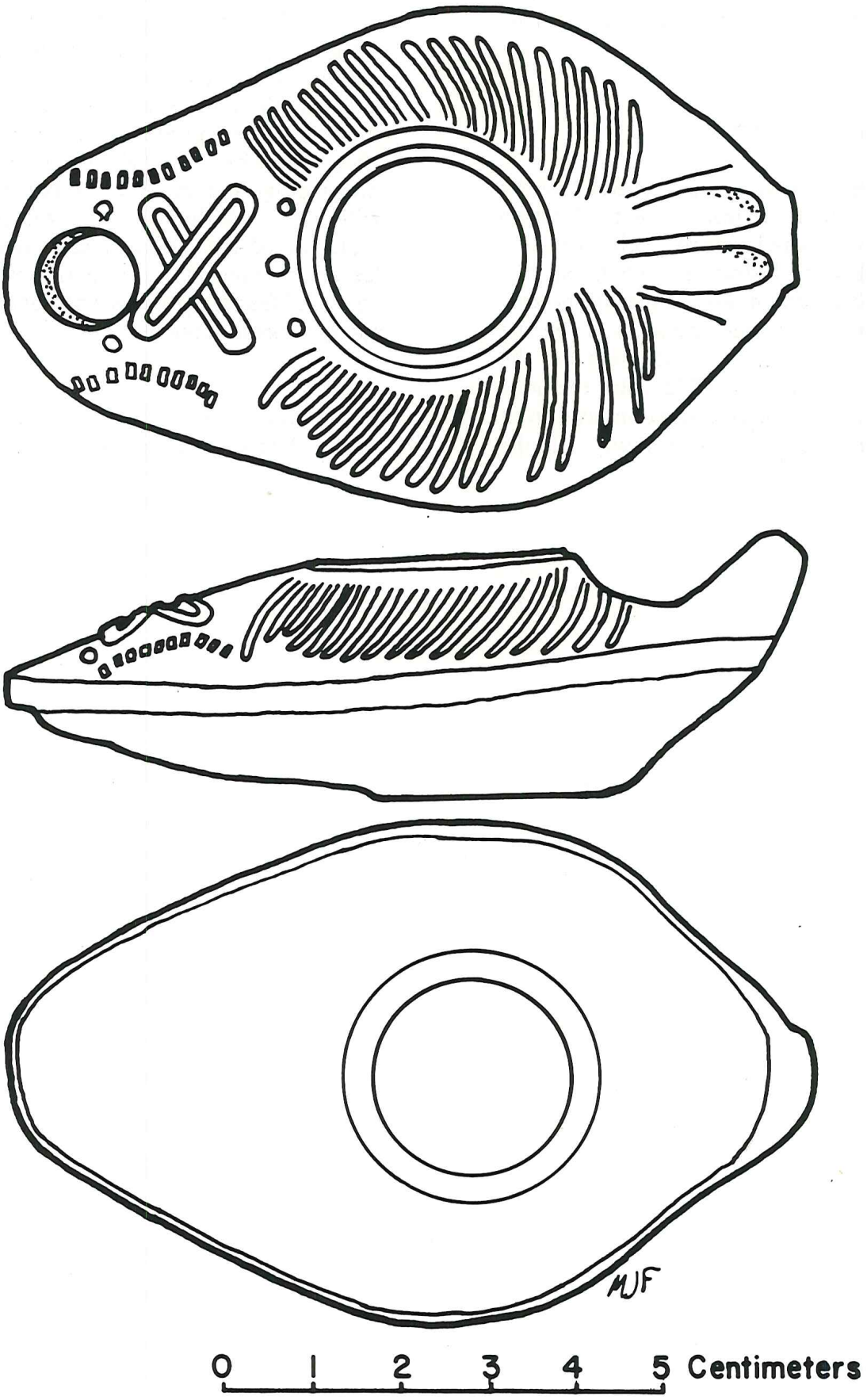

Figure 13. Byzantine lamp discovered in the Painted Tomb. The exterior surface color of the lamp ranges from pink (5YR7/4) to reddish yellow (5YR6/6). The bottom of the lamp is pink (5YR7/3). The lamp was burnt as indicated by a very dark gray (5YR3/1) area around the opening for the wick. Drawing prepared in the field by Michael J. Fuller; the scale is 1:1.

to understand the archaeological history of Abila.

Projections for 1982

Further survey, architectural drawing and an archaeological probe at Abila in 1982 will shed more light on the archaeological history of Abila, on the geographical extent and culture of the site, and on the settlement patterns at the site and its environs. An extension of the surface sherding in 1982 into the area around Abila will give some indication of the continuity or discontinuity of the surrounding area as it relates to the various archaeological periods represented at Abila. Any inscriptional and further numismatic materials to be found on the surface in the environs of Abila will make their contribution, and, of course, the archaeological excavation probes in 1982, will help establish the stratigraphic sequence of the archaeological materials (ceramics, objects, numismatic materials, floral and faunal materials, anthropological and geological remains).

W. Harold Mare, C.J. Lenzen, Michael J. Fuller, Myra A. Mare, Abraham Terian.

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TOMBEAUX PEINTS DU NORD DE LA JORDANIE A L'EPOQUE ROMAINE

par
Cl. Vibert-Guigue
et
A. Barbet

(I)

Premier rapport sur les travaux engagés dans la nécropole d'Abila

par
Cl. Vibert-Guigue

Introduction

La découverte de nombreux tombeaux peints dans la nécropole d'Abila est venue récemment enrichir la partie Nord de la Jordanie. Ces grottes dont plusieurs avaient déjà été trouvées depuis 1939 aux alentours de la ville d'Irbid, permettront de mieux définir le domaine de la peinture murale antique, peu connu au Moyen-Orient, et aussi de mieux nous faire connaître les coutumes funéraires à l'époque gréco-romaine. L'étude de la nécropole nous permettra par conséquent de compléter nos connaissances sur les villes de la Décapole.

Le rapport qui suit, après une rapide présentation des travaux engagés et de leur origine, présentera les principales caractéristiques des tombeaux. Le lecteur pourra consulter parallèlement le rapport établi par Mme A. Barbet pour le projet de restauration.

L'origine des recherches entreprises remonte à Juin 1981, lorsqu'un groupe d'archéologues américains visita des tombeaux en cours de pillage dans le Wadi Qweilbeh non loin du tell d'Abila. Intrigués par les peintures des parois, ils firent part de cette découverte à F. Larché, sachant que les membres de l'Institut Français d'Archéologie du Proche Orient s'intéressaient à ce sujet. Une visite fut organisée peu de temps après avec M. G. Bisheh et M.B. Bowen qui voulut bien nous y conduire. Sur place, force était de constater l'importance de la découverte et l'urgence des travaux à entreprendre.

La Direction des Antiquités, en la personne du Dr. A. Hadidi, prit rapidement les décisions nécessaires. Une équipe d'ouvriers entreprit le dégagement des accès aux tombeaux et le gardiennage du site fut accru. La surveillance des travaux me fut confiée ainsi que la réalisation d'une couverture graphique et photographique. Par la suite Mme A. Barbet, chargée de recherches au C.N.R.S., a établi un programme de restauration et de protection des peintures. Un projet de publication fut aussi décidé sous notre responsabilité commune. Rappelons ici que le site d'Abila avait d'abord été attribué à la mission américaine conduite par le Dr. W. Harold Mare. Comme la spécificité du sujet exigeait une intervention rapide de spécialistes, l'intérêt d'une collaboration apparaissait évident, qui fut rapidement conclue sous l'égide de la Direction des Antiquités Jordaniennes, après agrément du Dr. H. Mare.

PREMIERE PARTIE

1) Rappel des études précédentes

Une première liste des tombeaux peints du Nord de la Jordanie avait été dressée par F. Zayadine lors de sa pub-

lication du tombeau de Beit-Ras[1]. Trois aménagements étaient en effet déjà connus. Le premier du genre, découvert à Marwa, fut publié par C.C. Mac Cown quelques années après sa découverte en 1935[2]. Le second se trouve à Som, village à l'Ouest d'Irbid, mais nous n'avons aucune information sur sa découverte et sa fouille, qui doivent remonter apparemment aux années soixante. Le dernier tombeau peint, situé, lui, dans la nécropole d'Abila était connu par un court rapport publié par Hassan Qutshan dans *l'ADAJ.* de 1960. Un cliché montrait un rinceau sur une paroi. Cela fait au total quatre tombeaux y compris celui de Beit-Ras publié en 1976.

2) La prospection et le pillage des tombeaux de la nécropole de Qweilbeh

La prospection, pour le moment non systématique, a été réalisée sur la pente Est de la vallée. Un seul tombeau peint a toutefois été remarqué sur l'autre versant. Chaque tombeau présente une originalité, soit dans son architecture soit par ses aménagements intérieurs décorés ou non, et mériterait d'être étudié même s'il n'est pas peint. Pour le moment nous pouvons estimer à deux cents le nombre des tombeaux comme les traces de pillage semblent nous l'indiquer. Sur près de 1 Km 500 on voit en effet le long de plusieurs courbes de niveau des trous qui se remarquent surtout par la proximité d'un monticule de terre plus ou moins fraîchement remuée. Certains sont d'ailleurs déjà remblayés et peuvent nous faire penser que le pillage remonte à plus de cinquante ans. Cette continuité tend à prouver la présence abondante d'objets de trafic.

Le pilleur a plusieurs possibilités pour pénétrer à l'intérieur des tombeaux. Le plus souvent il pratique un sondage qui découvre le roc. Il est alors possible de le frapper avec une lourde barre métallique et de déterminer suivant la sonorité obtenue la présence plus ou moins proche d'une cavité. Ou bien il sonde tous les fonds de loculi d'un tombeau déjà connu. Les aménagements se suivent souvent de si près qu'il est en effet possible de passer de l'un à l'autre de cette manière (Exemple des tombeaux Q2, Q3, Q6).

L'intérieur des tombeaux pillés est toujours désolant (Pl. I,1). Non seulement tous les loculi ont été vidés, mais les pilleurs ont brisé les sarcophages, d'une part pour ramasser le matériel et d'autre part pour emporter les reliefs décorés. Une fois dégagé du remblai intérieur le tombeau retrouve un plus bel aspect. (Pl. I,2).

3) Les travaux de relevés graphiques et photographiques

La découverte d'un tombeau peint nécessite de toute urgence la réalisation d'une couverture graphique et photographique afin de parer à toute destruction. Ce travail se poursuit depuis septembre 1981. Plus de 500 clichés ont déjà enregistré la totalité des peintures ainsi que les diverses phases des travaux. Le relevé du décor peint a été fait systématiquement sur feuilles de matière plastique transparente. A l'aide de stylos feutres à alcool qui marquent bien le plastique il est possible de reprendre tous les détails du décor, les graffiti, les tracés préparatoires et toutes les informations lisibles sur l'enduit. Réalisé à l'échelle un sur un il permet un archivage de la documentation facile à manipuler, peu fragile et précieux si la peinture vient à disparaître ou à se fragmenter.

Sur place ces feuilles plastiques s'accrochent sans problème sur les parois verticales. Pour les plafonds et les voûtes, de grosses punaises ne suffisent pas. Le rocher est si humide qu'il devient mou et il est alors très difficile d'y poser des punaises, le poids du plastique les décrochant le plus souvent. Les ouvriers qui travaillent en permanence sur le site m'ont souvent aidé dans ces cas difficiles. Il faut, en fait, pour faciliter ce genre de travail veiller à ce que les tombeaux ne soient pas vidés de leur remblai. Ce dernier

1. F. Zayadine, "Une tombe peinte de Beit-Ras (Capitolias)", *Studia Hierosolymitana in onore di B. Bagatti, I, Studi archeologici,* Jerusalem, 1976, p. 285-294.
2. C.C. Mac Cown, A painted Tomb at Marwa, *QDAP,* IX, 1, 1939, p. 1-30.

permet souvent en effet de s'approcher à un mètre du décor et de bien pouvoir l'observer [3]. Le Département des Antiquités a financé la réduction des relevés grandeur nature, que le Jordan National Geographic Center a effectuée.

DEUXIEME PARTIE

Les tombeaux peints de Marwa, Som et Beit-Ras (Capitolias).

Remarquons d'abord que ces tombeaux se trouvent dans des nécropoles d'importance inégale. On ignore par ailleurs à quelle cité (Abila, Capitolias,...) les deux premières étaient rattachées.

1) La nécropole de Marwa

Cette petite nécropole située sur la pente d'une colline présentait en 1935 deux tombeaux peints, dont un, mieux conservé et publié par C.C. Mac Cown, fut daté du troisième ou dernier quart du second siècle ap.J-C. Actuellement les peintures ne sont plus visibles. Elles ont été recouvertes de badigeon lors d'une réoccupation moderne et se trouvent inaccessibles. Le tombeau, réutilisé comme séchoir à feuilles de tabac, est fermé à clef.

Peu de matériel avait été découvert lors de la fouille. L'éditeur s'est surtout fondé sur les vêtements des personnages, Hades et Perséphone, pour la datation. Trois masques reliés par des guirlandes décorent le bas de l' alcôve.

2) La nécropole de Som (Pl. I, 3) (Figure 1).

Les limites de la nécropole ne sont pas connues. Seuls trois tombeaux, dont un entièrement peint, sont actuellement visibles. Celui qui nous intéresse se situe dans un champ d'oliviers. [4]

Le seuil antique se trouve à quelques mètres au-dessous du niveau actuel. Le linteau d'encadrement de la porte montre une inscription grecque et latine que S. Mittmann publia en partie en 1970 [5]. Les colonnes à demi-cannelées supportent des chapiteaux corinthiens auxquels sont suspendues des guirlandes surmontées d'un oiseau. Il faut remarquer la présence de deux petits bustes peints au-dessus de deux loculi.

L'alcôve taillée dans la paroi du fond a conservé une banquette rehaussée de rayurs noires donnant l'illusion d'un tissu à bandes. Là aussi le décor est remarquablement conservé dans son ensemble Sur les parois on peut en effet voir successivement de droite à gauche, une panthère, une sphinge et un griffon qui tient sous sa patte une roue,ce qui évoque le culte de Némésis. Des roses et des guirlandes recouvrent le reste de la surface.

Le plafond a perdu son décor sous la poussée de racines s'enfonçant dans le rocher. Quelques traces d'enduit sont visibles mais il est impossible de lire le décor.

Ce tombeau certainement utilisé comme lieu de culte funéraire pourra sans doute être daté avec précision grâce à l'inscription du linteau qui mentionne un vétéran de la Xème légion Fretensis.

3) La nécropole de Beit-Ras (Capitolias) Pl. I,4).

Les routes actuelles passent à travers cette nécropole qui semble assez étendue. Pour le petit tombeau peint nous pouvons renvoyer le lecteur à la publication de F. Zayadine. Notons toutefois qu'un nettoyage a mieux fait apparaître les deux lions séparés par un canthare et que celui de droite lance des "éclairs" de ses yeux. Sur la gauche se devine le pelage d'une panthère. Pour mémoire rappelons aussi que le décor représente des scènes de la vie d'Achille, et le mythe de Prométhée.

Ce tombeau a été daté de la seconde moitié du second siècle.

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3. A l'intérieur des tombeaux, l'éclairage se fait à l'aide d'une grosse lampe à piles, munie d'un néon qui donne une lumière blanche et consomme moins de batterie. Les lampes à gaz ou pétrole sont à déconseiller, étant donné le dégagement de chaleur et de fumée.
4. Cette grotte bénéficie d'un entretien et d'une surveillance efficaces dus au propriétaire de la maison située á proximité.
5. S. Mittmann, *Beiträge zur Siedlungs-und* Territorialgeschichte der nördlichen *Ostjordanlandes,* Wiesbaden, 1970, p. 173.

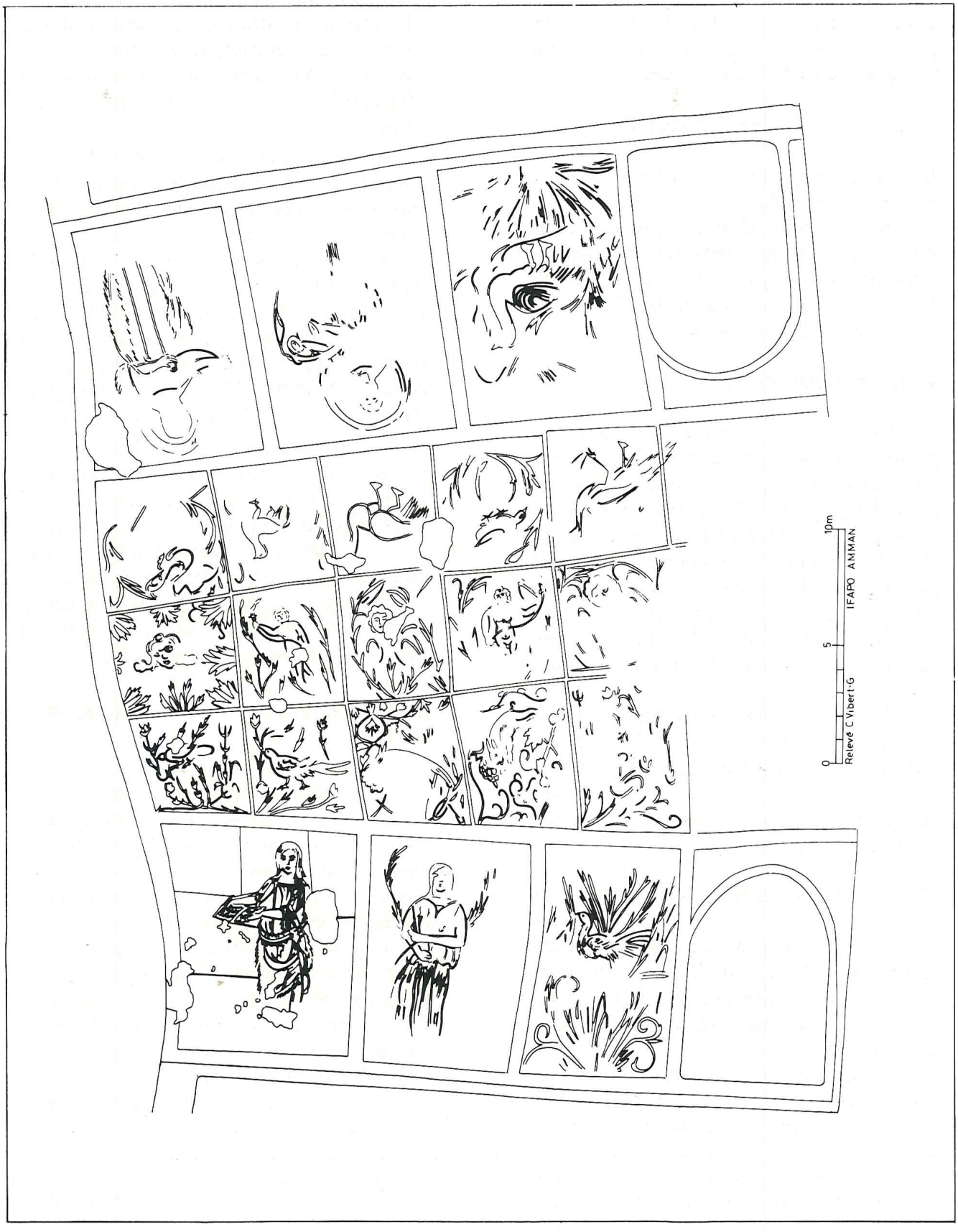

Fig. 6 Dessin représentant en développé le décor peint de l'alcôve du tombeau Q 1.

TROISIEME PARTIE

La nécropole du Wadi Qweilbeh

Dès septembre 1981 une prospection rapide du site (Pl. II), nous donnait une idée du nombre de tombeaux à protéger. Au fur et à mesure, une dizaine de tombeaux devait être recensée. Depuis cette période et jusqu'à maintenant les ouvriers du Dép. des Antiquités procèdent au dégagement des tombeaux. Une porte métallique ferme déjà six grottes. M. Sultan Shureidah, inspecteur des Antiquités à Irbid, et M. Abourandi supervisent les travaux.

Les tombeaux repérés se répartissent actuellement dans deux zones (voir fig. 2) au Nord et au Sud. Mais cette répartition ne peut être significative car elle est en partie due à un moindre degré de pillage dans la zone médiane.

Les dégagements de la zone Sud montrent que l'entrée des tombeaux est souvent équipée d'une banquette sur les côtés et plus rarement d'un canal au niveau même du rocher aplani. Il est possible de penser qu'il y avait des paliers de circulation taillés dans la pente de la vallée, et par conséquent une certaine organisation que le dégagement du remblai permettrait de mieux connaître.

Au-dessus du tombeau Q1 une construction a été partiellement dégagée. Il s'agit du podium d'un monument dont trois assises sont visibles. Une base moulurée de pilastre d'angle est encore en place (Pl. III, 1). L'ensemble est adossé au rocher et présente une cavité en son centre [6].

Dans la zone Nord, la nécropole semble s'organiser le long d'une route taillée aussi dans le rocher et qui descend assez rapidement au fond de la vallée. Les tombeaux s'alignent le long de ce chemin qui semble assez important. On peut remarquer aussi la différence de nature du rocher. Il est ici crayeux, blanc et facile à tailler [7] alors qu'il est en général plus dur et gris. L'aménagement intérieur de ces tombeaux accuse une légère différence avec celui des tombeaux de la zone Sud. La paroi supérieure est parfois traitée en double pente, les parois sont en général mieux taillées et l'on trouve souvent des figurines sculptées, actuellement toutes mutilées.

Ces quelques différences pourront peut-être nous aider à retrouver les phases d'évolution de la nécropole.

1) L'architecture des tombeaux et leurs aménagements intérieurs

Pour le moment nous n'avons que l'exemple de tombeaux taillés dans le roc. L'entrée, le plus souvent orientée à l'Ouest, montre un encadrement de pierre calcaire ou de basalte. L'intérieur se compose généralement d'une grande salle avec une alcôve taillée dans la paroi du fond (voir Fig. 3). Un remblai comble, en général par moitié, le volume intérieur des tombeaux.

Les aménagements funéraires pour les corps des défunts sont très variés. Nous avons deux catégories de loculi à section carrée ou taillée en voûte (voir Fig. 4). Dans les alcôves on retrouve souvent des fosses aménagées dans les banquettes. Les tombes du type à arcosolia sont les moins fréquentes pour le moment. On trouve ce dernier type dans de petits tombeaux de 3 à 6 personnes par exemple, alors que les autres tombeaux accueillent de 20 à 30 corps.

Au centre des grandes salles subsistent souvent des fonds de sarcophage entourés de nombreux fragments. Pour un seul tombeau nous avons vu un sarcophage à l'intérieur d'un loculus (Q4). Nous n'avons aucune trace de sarcophage en plomb ou en bois.

Le tombeau Q1, dégagé en premier, apparaît déjà comme exemplaire par son

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6. La fonction de ce bâtiment reste à trouver; mausolée, temple ou édicule?

7. Des blocs de pierre plus dure à l'intérieure même de cette roche crayeuse ou bien des couches de silex n'ont pas permis dans certains cas de bien égaliser la surface des parois. L'exemple le plus étonnant se trouve dans le tombeau Q7, où l'on voit un enduit décoré d'une imitation de marbre peint suivre ces irrégularités qui suppriment l'effet de réalisme.

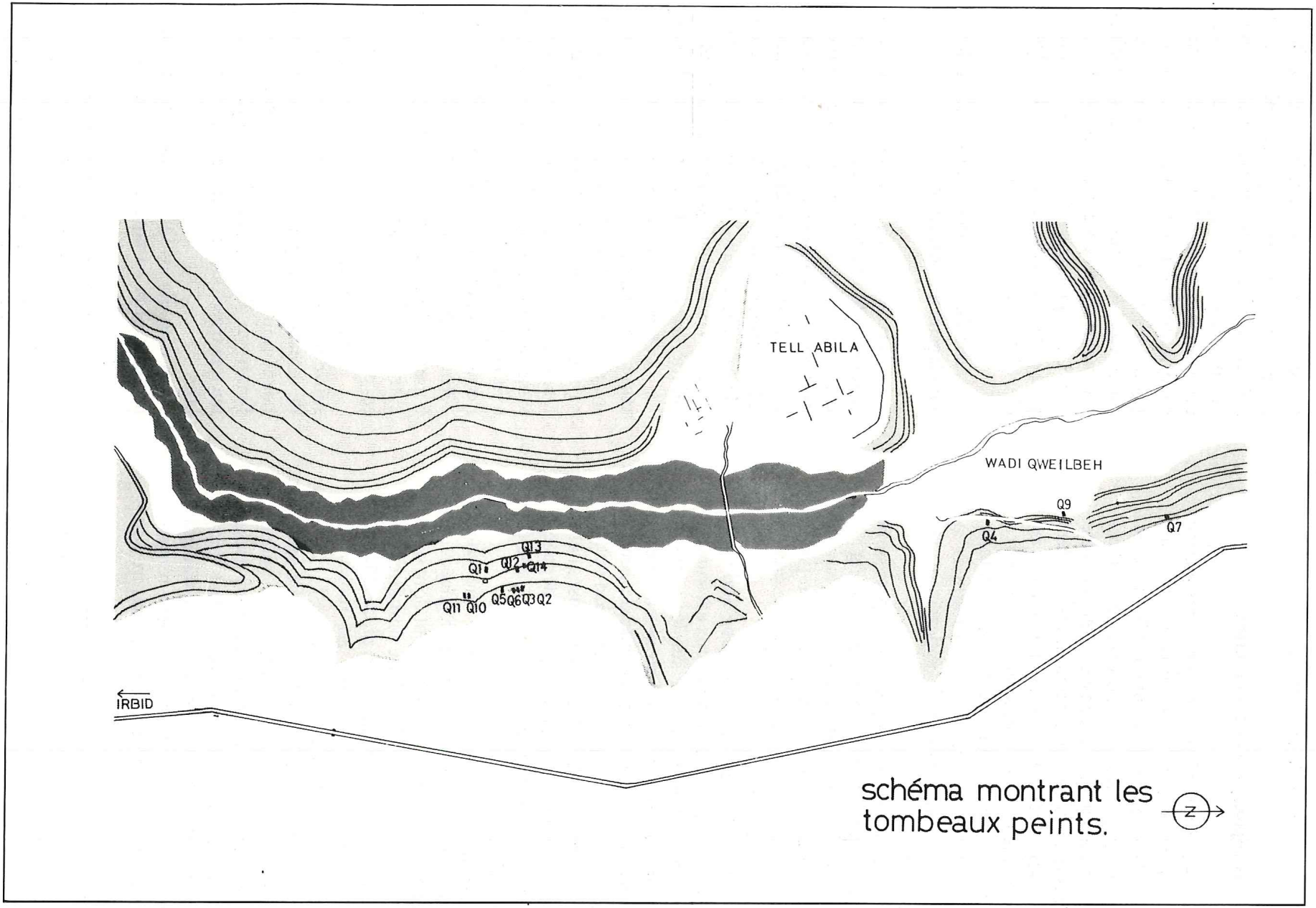

Fig. 2 Plan schématique de la vallée avec la situation approximative des tombeaux peints déjà repérés.

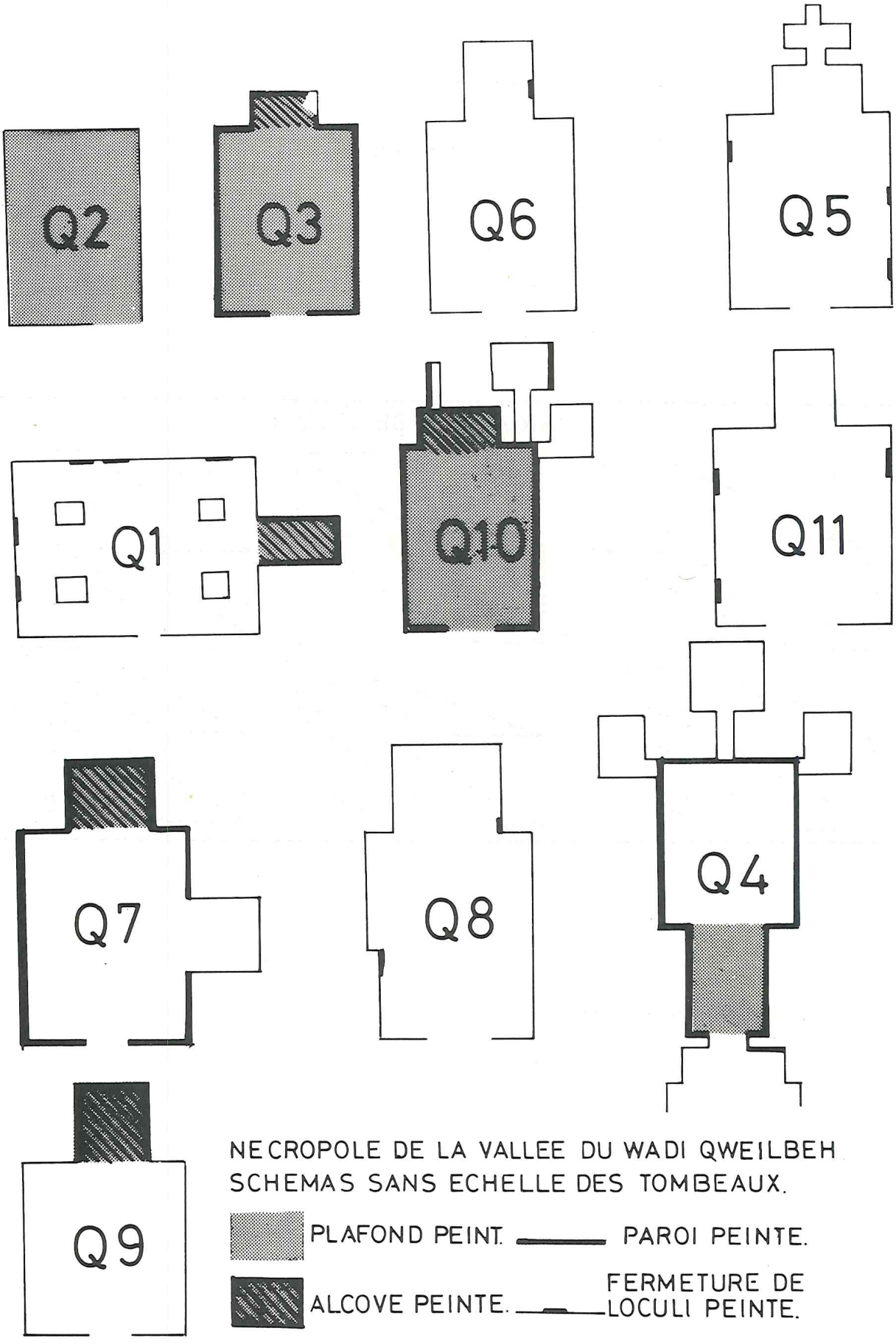

Fig. 3 Plans schématiques des tombeaux avec indications pour les zones peintes.

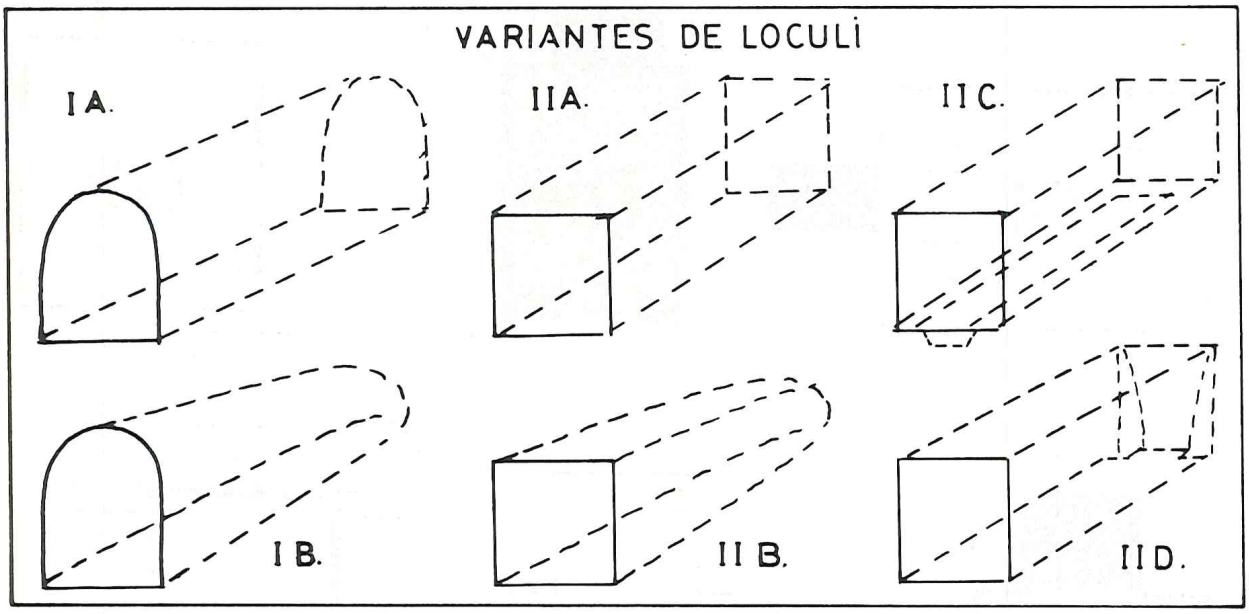

Fig. 4 Formes les plus courantes de loculi.

état de conservation et son aménagement (Fig. 5). Les ouvriers ont dû faire un sondage de plus de 6m de profondeur pour atteindre l'accès antique (Pl. III,2). Les pilleurs s'étaient contentés d'un trou d'un mètre de profondeur et avaient percé le plafond. La porte en basalte est encore en place. Dans l'un des compartiments est sculpté un heurtoir suspendu à son anneau (Pl. III, 3).

On pénètre, après deux marches, à l'intérieur d'une grande salle de 55m² avec quatre piliers massifs réservés dans la masse du rocher (Pl. IV, 1). Cette précaution n'était en fait pas inutile car nombre de plafonds sont actuellement effondrés. On compte près de 30 loculi dans cette salle. La paroi sud possède une alcôve (Pl. IV, 2) entièrement peinte avec trois "fosses-sarcophages" et cinq loculi à section voûtée.

2) Le décor peint

Sur la figure 3 ont été représentés schématiquement les plans des tombeaux avec indications des zones peintes. La zone privilégiée est l'alcôve puis les parois de la salle principale (Q3, Q4, Q7, Q10), et les plafonds (Q2, Q7, Q10). Cinq tombeaux montrent encore des fermetures de loculi peintes.

A) Les alcôves

Nous retrouvons le plus souvent des personnages ou figures mythologiques comme dans les tombeaux Q1 (Fig. 6 et Pl. IV, 3), Q7 (Pl. IV, 4), et Q10. Sinon nous avons des représentations de défunts (tombeau Q3, Pl. V, 1et2). Dans l'alcôve du tombeau Q1 les deux registres sont mélangés puisqu'on voit aussi deux figures, l'une écrivant sur des tablettes, l'autre déroulant un volumen, qui paraissent représenter deux défuntes. Toutes ces figures se dressent dans des cadres rouges.

Les voûtes sont souvent ornées de compositions géométriques avec des méandres (Q10), ou des cercles sécants qui dessinent des quatre-feuilles et des carrés curvilignes agrémentés d'oiseaux. On remarquera des tracés préparatoires peints en jaune, très visibles. Dans l'alcôve de Q1 nous avons un quadrillage, très contrarié par les irrégularités du rocher, dans lequel s' inscrivent des oiseaux, des fleurs, un lapin mangeant du raisin, des nymphes, des gorgones, etc... (Pl. V,3). Mais le décor le plus commun se compose simplement d'un "semis" de fleurs avec des oiseaux. Ajoutons à ce dernier type de décor un aigle aux ailes éployées pour Q7 et une couronne avec une inscription pour le tombeau Q9.

Pour less lunettes ou parois du fond nous retrouvons des oiseaux et des fleurs. Il peut y avoir un décor d'architecture (par exemple l'ordre corinthien dans Q3) des masques sur des panneaux de couleur, ou plus rarement des imitations de marbre.

B) Les Parois de la grande salle

La découpe des ouvertures de loculi a limité les possibilités de décor peint sur les parois. Un style s'est largement développé dans le monde gréco-romain imitant un ordre architectural. Les décors verticaux comprennent, par exemple dans le tombeau Q3, des colonnettes entourées de lierre, surmontées de chapiteaux et l'entablement se compose le plus souvent de plusieurs bandes de couleurs et d'une tresse à deux brins. En Q10 se développe une imitation de corniche denticulée avec un décor composé d'un rang d'oves (Pl. VI). Sur les intervalles horizontaux, nous voyons des scènes animales (gazelles, lions etc...) Le tombeau Q7 a ses parois décorées de fines colonnettes sur des champs de couleurs variées en plinthe (Pl. VIII, 1). L'absence de loculi sur cette partie des parois le permettait. Le tombeau Q4 présente lui une alternance de deux types de candélabres dont un bien conservé (Pl. VII. 2), surmontée d'une frise de petits chevaux.

La paroi où se trouve taillée l'alcôve est souvent décorée différemment ou avec des éléments rajoutés, tels des coqs dans le tombeau Q10. L'archivolte de l'alcôve du tombeau Q1 est décorée d'une imitation de lattis de bois avec des feuilles et grappes de raisins. Le rinceau de la paroi du fond du tombeau Q4 a été endommagé après que le tombeau eut été fouillé en 1959 et transformé en étable (Pl. VII, 3).

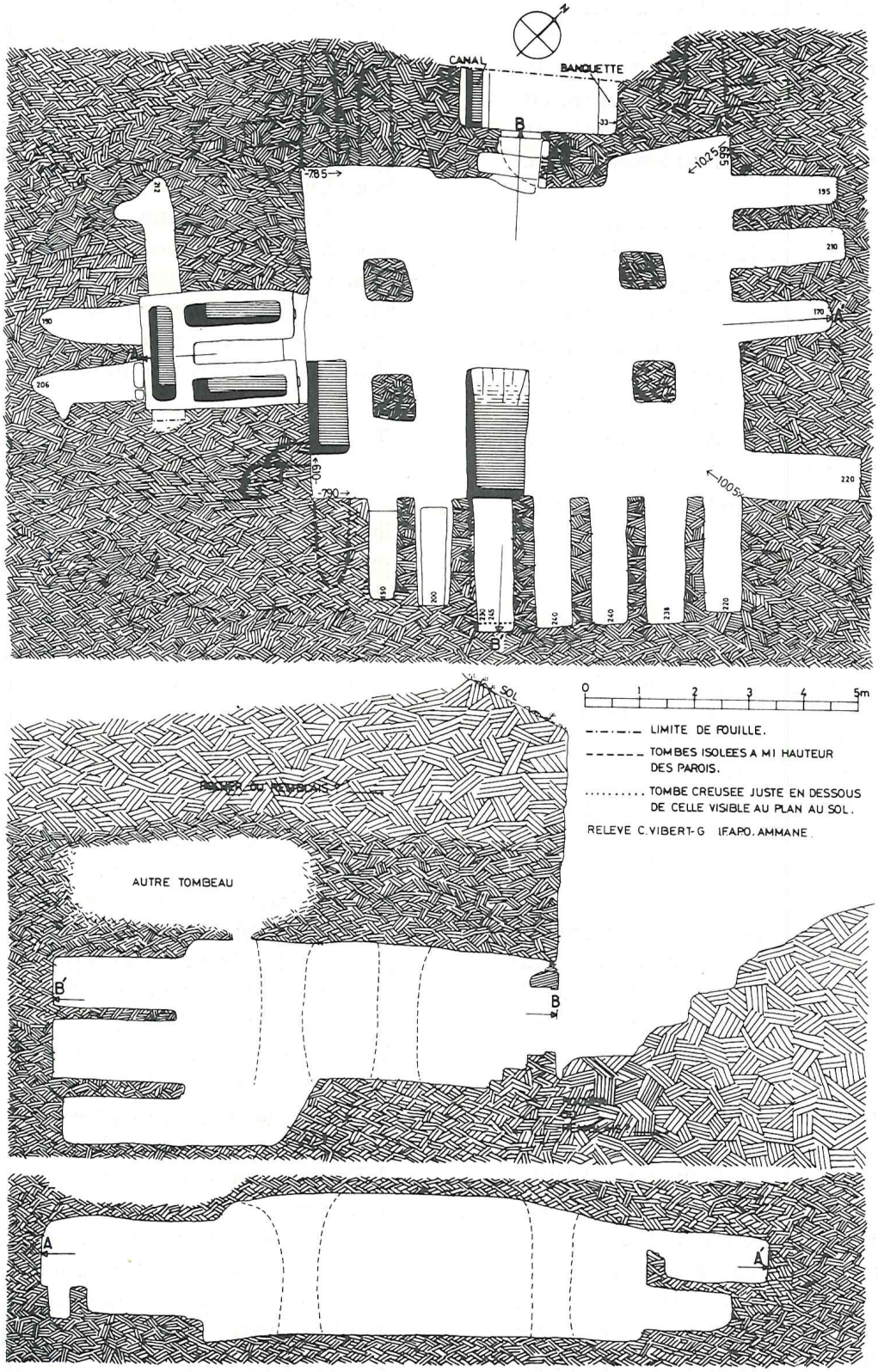

Fig. 5 Plan et coupes du tombeau Q1.



Fig. 1 Dessin montrant en développé le décor peint de l'alcôve du tombeau de Som.

C) Les plafonds

Seuls trois tombeaux ont leur plafond peint. Le plus remarquable est celui du tombeau Q2 (Pl. VIII). Des guirlandes forment des octogones qui encadrent des visages de grandes dimensions, tous orientés au Nord. Les têtes sont coiffées soit d'un bonnet phrygien soit d'un bandeau. Des attributs tels que *pedum,* thyrse (?) ou tambourin et flûtes sont représentés obliquement derrière chaque visage. Des dauphins tournent tout autour de ces Muses ou de ces allégories.

Le plafond du tombeau Q3 (Pl. IX,1) une fois dégagé d'une mousse verte qui le recouvrait comme le reste des parois, montrait aussi une composition géométrique à base de guirlandes avec des masques munis de rubans pendants. Le plafond du tombeau Q10 est du même type mais presque totalement détruit.

D) Les fermetures de loculi

Les plus intéressantes se trouvent dans le tombeau Q1. Le motif le plus courant est la couronne, souvent accompagnée d'une inscription sur une *tabula ansata* [8]. Pour ces inscriptions, on note l'absence de date, la présence de quelques noms et formules funéraires de graphies variées dans la forme des lettres.

3) Le mobilier mis au jour.

Il faut constater la faible quantité de matériel trouvé lors des dégagements. Seuls quelques tessons et des lampes brisées ont été ramassés. Cette absence se comprend puisque les pilleurs s'emparent des objets intacts. Dans de nombreuses grottes subsistent toutefois des bustes sculptés en ronde bosse, qui se divisent en deux groupes. Le premier se compose de blocs rectangulaires surmontés d'un disque (Pl. IX,2,A,B). Aucune trace de peinture ou gravure n'est visible. Ils prennent l'aspect de *nefesh,* et contrastent avec les autres bustes, décorés et souvent plus petits. Les traits du visage et la coiffure sont taillés plutôt naïvement et rehaussés de couleur rouge et noire (Pl, IX3). Les plis du vêtement sont aussi indiqués, mais non les bras. Il est impossible de dire où ils étaient placés dans les tombeaux. Il est peut-être curieux de trouver les deux catégories dans un même tombeau. S'agit-il d'une évolution dans les formes?

QUATRIEME PARTIE

Premiéres généralités sur les nécropoles

1) Les aménagements

Nous venons surtout de voir les tombeaux situés dans la vallée du Wadi Qweilbeh: d'autres aménagements situés en fait tout autour du tell Abila montrent une plus grande étendue de cette nécropole. Plusieurs centaines de tombeaux pourraient être dénombrées. Pour ceux qui sont déjà connus nous pouvons établir un classement provisoire d'après leurs aménagements intérieurs. On pourrait distinguer les tombeaux où la pratique d'un culte est clairement attestée (le meilleur exemple se situant dans la nécropole de Som), les tombeaux souvent visités pour des rites et enfin les tombeaux où apparemment on se bornait à déposer les défunts et où l'on ne retrouve aucun aménagement particulier. La variété des formes de loculi, le recours éventuel à des fosses et à des sarcophages sont caractéristiques de ces nécropoles. Dans le tombeau Q1 plusieurs fermetures de loculi nous interdisent de penser qu'ils aient contenu un sarcophage en pierre ou en plomb. Les pilleurs auraient été en effet obligés de

8. Les inscriptions seront étudiées par P.L. Gatier, chargé du Corpus des inscriptions grecques et latines du Nord-Ouest de la Jordanie.

Pour la chronologie on dispose de deux données importantes. A Som, le nom du vétéran T. Flavius permet d'attribuer sa tombe au dernier tiers du premier siècle ap.J-C. Dans la tombe Q13, on peut lire, sur une inscription peinte nommant Marcia, 215 (soit, selon l'ère pompéienne, 151 de notre ère), bien que le chiffre des centaines ne soit pas absolument sûr.

détruire complètement la fermeture, ce qui n'est pas le cas.

2) Le décor peint

Ce domaine est sans doute celui qui demandera le plus de développement dans la suite de l'étude. Une quinzaine de tombeaux décorés nous ont permis de recueillir une importante documentation qui ne cessera de croître au fur et à mesure des découvertes. Deux caractéristiques majeures sont à retenir. Nous avons en effet remarqué que le nombre élevé d'alcôves peintes contraste avec la rareté des tombeaux entièment peints. Il faut donc s'habituer à ne voir que certaines parois peintes qui contrastent avec le reste des surfaces laissées nues. Une certaine homogénéité apparaît dans les décors peints et permet des comparaisons aisées. Les nécropoles de Tyr,de Palmyre, de la mer Noire, de Touhnah el Djebel et du monde romain en général nous offrent de très nombreux parallèles. Pour le moment la fourchette de datation peut-être fixée de la seconde moitié du deuxième siècle au début du quatrième ap. J-C.

Conclusions

Les nécropoles du Nord de la Jordanie avec surtout celle d'Abila constituent déjà un complément intéressant pour l'étude des villes de la Décapole. Une publication exhaustive des travaux engagés pourrait aboutir assez rapidement pour une première série de tombeaux.

L'exploitation scientifique du site étant assurée, des solutions pratiques devraient être envisagées pour faciliter la visite du site. Elles apparaissent d'ailleurs urgentes pour prévenir tous risques de dégradation ou de pillage, toujours possibles sur un site peu fréquenté. La présence en permanence de gardiens dans une maison de fouille serait souhaitable à court terme.

Addendum

Depuis la rédaction de cet article ont été trouvés d'autres tombeaux peints, portant leur nombre à treize. Le dernier en date présente un décor exceptionnel. On y voit de nombreuses représentations de défunts, des oiseaux et des poissons. L'ordre architectural peint est conservé sur deux niveaux. Notons aussi la présence, pour le moment unique, d'une couronne stuquée sur la dalle de fermeture d'un loculus. Une inscription peinte avec une date est en cours d'étude. Ce tombeau, décoré de peintures aussi à l'extérieur, pose le problème crucial de la consolidation des parois et des plafonds de ces grottes. Des effondrements sont malheureusement à prévoir et nécessiteraient d'urgentes mesures de protection.

Un quatorzième tombeau, entièrement décoré de sculptures, doit être aussi rapidement décrit. A l'extérieur il s'orne d'un fronton flanqué de niches abritant des personnages tandis qu'à l'intérieur nous avons un ordre ionique taillé à même le rocher.

Cl. VIBERT-G.

II

Premier rapport sur l'état de conservation et des travaux à engager

par
A. Barbet

L'intérêt des sites du nord de la Jordanie qui recèlent plusieurs ensembles de tombeaux peints, découverts de plus en plus souvent, et décrits par M.C. Vibert-Guigue, impose un plan de conservation et une réflexion qui doivent aboutir à leur mise en valeur.

D'une part se posent les problèmes de la restauration des vestiges et d'autre part ceux de leur compréhension en vue d'une publication scientifique qui ne laissera de côté aucun des aspects intéressants, aussi bien les solutions architecturales choisies, les décors que le mobilier retrouvés.

1) L'état actuel des peintures:

L'état des structures et des décors diffère d'un lieu à un autre, d'une tombe à l'autre même dans un site donné. Ces variations proviennent à la fois de l'état de la roche et de l'épaisseur d'humus qui se trouvent au-dessus, de la texture du mortier qui n'est pas identique, et de surcroît de la nature et de l'étendue des pillages opérés par des fouilleurs clandestins.

A) Les destructions des pilleurs de tombes:

Les dégats sont nombreux; sarcophages brisés pour emporter le mobilier, destruction de certains décors, comme les fermetures de *loculi* (Pl. IV, 1). En effet ceux-ci étaient clos par une couche de mortier portant généralement le nom et l'âge du défunt. La destruction de l'obturation, pour une recherche hypothétique de trésor, nous prive d'informations fondamentales sur la population enterrée dans ces tombeaux. Il est à noter d'ailleurs, qu'on trouve rarement les débris de ces destructions et il faut penser que les pillages ne sont pas tous modernes et que certains d'entre eux ont eu lieu il y a fort longtemps[1].

Autres traces de vandalisme, par exemple dans la tombe des Masques où l'enduit est particulièrement mou, en raison de l'humidité ambiante, où les pilleurs ont rayé et endommagé certaines figures, simplement au doigt (Pl.X,1).

B) Dégats causés par l'humidité:

L'humidité ambiante des tombeaux est considérable et entretenue par deux voies. Tout d'abord, après les pluies, la roche perméable laisse passer beaucoup d'eau et ces eaux d'infiltration forment des gouttes serrées sur les plafonds, avant de couler le long des parois. Une visite des tombeaux le lendemain d'une forte pluie atteste l'urgence d'une isolation.

A ces eaux qui s'écoulent périodiquement s'ajoutent les remontées d'eau par le sol et le bas des parois, qui se manifestent parfaitement par la présence de zones verdâtres, qui font disparaître la décoration des plinthes, comme dans la tombe de Som ou le tombeau aux imitations de marbres à Qweilbeh (Q7). En outre l'atmosphère confinée a permis le développement de champignons gris, surtout dans les tombeaux n°s Q2 et Q3.

La présence de remblais qui se collent aux parois entretient cette humidité et rend

1. C. Vibert-G a bien observé ces restes d'enduit autour des obturations de loculi disparues et dont l'absence de débris ne s'explique que par une destruction très ancienne dont les éléments subsistants se sont écrasés dans les déblais, ou par un commerce de plaques de peintures, qui auraient été soigneusement découpées par les pilleurs.

difficile le dégagement des peintures dont le pigment et l'enduit fragilisés se détachent parfois. M.C. Vibert-Guigue a noté cette difficulté due à une terre très grasse qui a compliqué sa tâche.

C) L'état des structures:

Les tombeaux sont creusés dans une roche de qualité inégale, que ce soit à Qweilbeh, à Som ou à Beit-Ras. C'est d'ailleurs au cours de travaux menés dans la cour d'une école à Beit-Ras que le plafond s'est partiellement effondré révélant le tombeau (Pl.X.2). A Som une grande crevasse traverse le mur du fond sans que nous sachions si elle est due aux traumatismes occasionnés lors de la découverte (Pl.X.3). Quant à Qweilbeh il a déjà été souligné certains effondrements de plafonds, la disposition de piliers laissés en réserve dans la roche pour la plus grande des tombes, celle de la porte en basalte (Q1) (Pl. III, 3 et fig. 5).

L'entrée des tombes est révélatrice du fendillement de la roche, de la minceur alarmante parfois de cette roche et des couches de terre qui ne protègent que faiblement les structures (Pl. XI, 1). Les percements sauvages opérés par les pilleurs ont aggravé la situation dans certains cas. Outre les effondrements nouveaux à craindre, les crevasses laissent passer de grandes quantités d'eau et les peintures sont fracturées, des plaques entières risquant encore de tomber (Pl. XI, 2).

2) Les travaux de conservation envisagés:

A) Les observations préliminaires:

Une première campagne d'observations et de tests est prévue avec la participation de restaurateurs professionnels dirigés par Melle I. Dangas. Les données climatologiques doivent être relevées concernant le régime des pluies, l'exposition des tombes, les températures et le régime des vents. En ce qui concerne plus particulièrement les tombeaux, les mesures enregistrées à l'intérieur sur les températures et le degré d'humidité nous guideront pour établir un plan de travail. Enfin les prélèvements en éprouvettes stérilisées des types de micro-organismes repérés nous permettront de choisir pour chaque cas le produit à mettre en action.

En fonction du dossier clinique établi et des tests de produits effectués sur place, seront décidées les interventions à venir, selon un programme détaillé.

B) La consolidation des structures.

Des relevés d'architecture sont attendus pour connaître les épaisseurs réelles subsistantes, afin d'envisager, dans certains cas, un soutien par piliers de roche par exemple là où il ne subsiste plus de peinture au plafond (Pl. VI, 1). Dans les cas de fendillement extrême il faudra peut-être envisager des imprégnations de résine, des "brochages" de types divers. Ce sont là des interventions lourdes et graves de conséquences sur la tenue des enduits eux-mêmes qui seront perturbés.

C) La lutte contre l'humidité:

Il nous faut combattre l'humidité due au ruissellement des eaux tout d'abord, cause directe du ramollissement des mortiers gorgés d'eau. Pour cela il convient d'établir des drains au-dessus des tombes, pour canaliser ces eaux et de désherber soigneusement pour éviter à l'humidité de stagner.

Dans un deuxième temps il est envisagé d'imperméabiliser totalement la roche au-dessus et d'employer pour cela des feuilles d'aluminium bitumisé, recouvertes de roches concassées, tant pour l'esthétique que pour créer un matelas anti-thermique protecteur.

Il va sans dire, que cette deuxième opération, qui devrait éléminer les infiltrations d'eau verticales et partiellement les infiltrations latérales, modifiera profondément les taux d'humidité des tombeaux et qu'il faut procéder progressivement, par paliers.

En effet, une modification trop brutale des conditions d'hygrométrie et de température serait fatale aux peintures. Une partie des enduits, asséchés trop fortement pourrait s'effriter et tomber, une autre se couvrir de sels, de calcite, par remontée d'humidité chassée de l'intérieur. Le même phénomène que l'on a observé dans la partie de la tombe de Som risque de

se produire: la couche picturale sera alors complètement cachée par un voile blanchâtre, extrêment dur à gratter, au péril du décor lui-même. En effet, à Som, l'arrière de la tombe est située juste sur le seuil de la ferme disposée au-dessus, ce qui lui assure une bonne isolation et une moindre humidité que vers l'entrée. C'est justement vers le fond que les remontées de sels ont occulté une partie du décor des pilastres peints que l'on devine encore à peine (Pl. I, 3 et Pl. XII, 1).

D) Nettoyage et désinfection:

On comprend que les opérations de nettoyage et de désinfection des enduits doivent être menées parallèlement à l'isolation des tombes. Selon les altérations repérées, des produits différents seront testés pour comparer leur efficacité. Le problème majeur reste la lutte contre les champignons et les algues et l'élimination des sels minéraux qui se formeront au fur et à mesure de l'assèchement des parois.

Un nettoyage local des surfaces salies, des sels déjà apparents dans certaines zones nous permettront une meilleure lisibilité des sujets traités et dans certains cas de compléter les relevés graphiques et photographiques. De cette maniere certains points d'interprétation obscurs encore seront à modifier.

E) Fixage des mortiers et de la pellicule picturale.

Après avoir assuré stabilité aux tombes, une hygrométrie convenable et en veillant également à limiter les trop grands écarts de température on peut espérer une meilleure tenue des mortiers, que l'on renforcera avec des produits appropriés et une conservation de la pellicule picturale assurée par un adhésif adéquat (Pl. XII, 2).

3) La préservation future:

Les travaux de conservation sont multiples et délicats à mener; ils exigent beaucoup de temps vue l'ampleur de la nécropole de Qweilbeh et la dispersion des autres tombes dans le secteur nord de la Jordanie. Pourtant ces travaux sont urgents car les dégagements actuels ont modifié l'environnement en destabilisant le milieu ambiant. Les tombes dégagées doivent aussi être protégées d'un futur vandalisme et les grilles posées devant l'entrée restent une protection insuffisante. Un gardiennage renforcé est souhaitable.

Par ailleurs on peut se demander si les mesures conservatoires qui vont être mises en oeuvre seront efficaces et si l'on ne risque pas d'aller tout de même vers une détérioration progressive des peintures en place, comme plusieurs sites archéologiques qui connaissent le même type de problème le montrent malheureusement, que ce soit les tombes étrusques ou égyptiennes, les maisons peintes de Pompéi, ou les grottes de Lascaux.

Une solution drastique sera-t-elle à envisager à terme, soit la dépose des peintures pour les replacer en un milieu stable mais artificiel, celui des Musées? L'opération a été menée par exemple pour la tombe de Tyr[2] et ceux qui ont pu l'admirer dans le musée de Beyrouth reconnaissent l'intérêt d'un tel sauvetage. Cependant, ce qui est possible pour une tombe isolée devient impossible pour une nécropole entière, qui serait de surcroît à jamais défigurée après ce démembrement extrêmement coûteux et qui entrainerait des pertes de peintures inévitables, dans l'état actuel des techniques de dépose utilisées.

C'est en tout cas une question à se poser, de même qu'il ne faudra pas oublier un entretien régulier et des contrôles sévères pour agir immédiatement si l'on constate une modification de l'état des tombes. Si l'établissement d'un circuit touristique, après des aménagements bien pensés, présente des avantages pour la mise en valeur du site de Qweilbeh par exemple, il présente aussi des inconvénients qu'il ne faudra pas sous-estimer.

Conclusion:

La mise en valeur des vestiges est aussi

2. cf.M. Dunand, Tombe peinte dans la campagne de Tyr, *Bulletin du Musée de Beyrouth,* XVIII, 1965.

celle d'une meilleure connaissance de leur genèse et de leur importance dans la civilisation antique. Du fait de leur fragilité il faut tenter d'en analyser tout de suite tous les aspects en utilisant toutes les techniques à notre disposition.

Une quinzaine de tombeaux pour le Nord de la Jordanie constitue déjà une documentation considérable qu'il nous faut enregister et qui va s'accroître encore, à en juger par les dernières découvertes faites encore récemment. Nous avons là un champ d'observation privilégié, qu'il nous faut comparer aux autres nécropoles mises au jour dans le monde romain, afin d'en saisir les points communs et les aspects originaux. De plus, les éléments de datation nous manquent dans beaucoup de cas mais nous espérons que l'analyse des inscriptions retrouvées, celles des quelques tessons de céramique, nous éclaireront sur la période d'utilisation de ces nécropoles dont l'étendue nous sera progressivement révélée par les nouvelles fouilles.

Notons, pour l'instant, l'absence de toute trace de Christianisme, une ressemblance évidente avec des nécropoles de Turquie (*Anemurium)* ou de Russie méridionale (Kertch) où des thèmes décoratifs sont employés de la même façon, ainsi les semis de boutons de roses ou les plaques d'imitation de marbre [3]. Ces derniers points de comparaisons, et les indices déjà recueillis permettent de proposer une durée d'utilisation vraisembablement de la fin du IIème siècle au début du IVème siècle, pour la nécropole de Qweilbeh.

Pour sauver ce patrimoine et exploiter du point de vue scientifique ces découvertes récentes, il convient de mettre en oeuvre tous les moyens à notre disposition, et ces premiers rapports sur les travaux engagés sont le témoignage de cette volonté.

A. Barbet.

3. Voir l'étude récente de E. Alföldi-Rosenbaum, *The necropolis of Anemurium,* Ankara, 1971; cf. également le vieil ouvrage de M. I. Rostowzeff, *Peinture décorative ancienne de la Russie du Sud,* (en russe) St. Petersbourg, 1914.

PRELIMINARY REPORT ON A SURVEY OF BYZANTINE AND ISLAMIC SITES IN JORDAN 1980

by
Geoffrey King

In June-August 1980 a number of sites in eastern and north-eastern Jordan were surveyed, primarily to examine the Byzantine and Islamic presence in the area. Attention was concentrated on the area from Azraq through Qasr Uwaynid, Qusayr Amra, Qasr Harana to Qasr Mushash, and although this area was dealt with only briefly, Qasr Mushash in fact was the single most important discovery of the season. The second main area of attention was the line of towns and villages stretching from Mafraq to Deir el-Qinn on the southern slopes of Jabal Hawran, as far as the border with Syria; and Qasr Burqu to the east. The sites in Jabal Hawran were studied in detail by the Princeton Expedition early in the century[1], and were subsequently re-examined by Glueck[2], Lankester Harding[3], de Vries [4], and Parker[5]. For the Christian period, Butler's Princeton Expedition publications remain the main source for the area, although the Islamic period is inadequately dealt with. Only Qasr Burqu has been carefully published from among the Islamic sites of the *harra* area of Jordan [6]. Using the Princeton Expedition reports as a basis for the survey, it was found that there were discrepancies of some importance, and that several sites, or buildings at particular sites, were overlooked. This season's survey suggests that important information was ignored at Umm al-Surab and Sama, while some confusion surrounds the account of Umm al-Quttayn. Saba Siyar and Khirbat Amra apparently have not been noted before. The evidence of sherds is rather confusing for the Islamic period, for while a sequence of Byzantine and Umayyad surface sherds is reported from the Jordanian sites of Jabal Hawran, there is also evidence of Ayyubid and Mamluk sherds, and an Ayyubid and Mamluk presence in the area attested by historical sources. As a result, alterations undertaken to Byzantine buildings in the Islamic period might be attributable to the early Islamic period, or the Ayyubid or Mamluk presence in the area. A complicating factor in the Jabal Hawran, noted by all visitors to the area, is the destruction of monuments caused initially by the settlement of the Druze in the 19th century. Prior to this, the sites appear to have been abandoned, and indeed, many remained abandoned during much of this century until settlement by bedouin led to further destruction of ancient buildings. Very confusingly, Druze and bedouin have built new buildings with earlier materials in good imitation of the anc-

1. **H.C. Butler** *et al., Princeton University Archaeological Expeditions to Syria in 1904-5 and 1909,* Leyden II.A.2 (1909); III. A (1910-1921); also see R. Dussaud and F. Macler, *Voyage Archeologique au Safa et dans le Djebel ed-Druz,* Paris (1901); *idem.,* "Rapport sur une Mission Scientifique dans les Regions Desertiques de la Syrie moyenne", *Nouvelles Archives des Missions Scientifiques* (1902) X, pp. 411-744; G. Schumacher, "Unsere Arbeit im Ostjordanlande VII", *Zeitschirft des Deutschen Palastina-Vereins* (1915) XXXVIII, pp. 136-49; S. Mittmann, *Beitrage zur Siedlungs- und Territorialgeschichte des nordlichen Ostjordanlandes,* Wiesbaden (1970).

2. N. Glueck, "Explorations in Eastern Palestine IV, part 1: text", *The Annual of the American Schools of Oriental Research* (1945-1949), XXV-XXVIII, pp. 1-45.

3. G. Lankester Harding, unpublished Notebooks in the Documentation Centre, Department of Antiquities, Amman.

4. B. de Vries, "Research at Umm el-Jimal, Jordan, 1972-1977", *Biblical Archaeologist* (winter, 1979), vol. 42, no. 1, pp. 49-55.

5. S. Thomas Parker, "Archaeological Survey of the *Limes Arabicus:* A Preliminary Report", ADAJ (1976), XXI, pp. 19-31.

6. H. Gaube, "An examination of the ruins of Qasr Burqu", ADAJ (1974) XIX, pp. 93-100.

   A.M.H. Shboul, "On the later Arabic inscriptions in Qasr Burqu", ADAJ (1975) XX, pp. 95-98.

ient local techniques throughout the basalt country; this sometimes makes the identification of early buildings difficult, but occasionally it has the advantage of clearing stones and revealing earlier foundations.

Qasr Mushash (Pls. XIII-XVI, 1-7)

Qasr Mushash was visited on 20th August [7] in the course of a journey from Azraq to Muwaqqar, via Qasr Uwaynid, Qusayr Amra and Qasr Harana. It is just over 16kms. north-west of Harrana which is visible from Mushash; Muwaqqar is about 20 kms. to the west. The site is situated on the edge of the north bank of Wadi Mushash which runs eastwards like other *wadis* in the vicinity towards Azraq. Qasr Mushash does not appear to have been described hitherto, although it is mentioned on several maps [8]. The name is something of a misnomer, inasmuch as it consists of several units rather than a single qasr, stretched out in a roughly east-west line: the easternmost unit is a square stone-built enclosure, preserved in several courses (smaller enclosure); a second larger enclosure, west of the small enclosure (large enclosure); and finally, to the west, a large *birka* and possible remains of a furnace beside it.

a) The smaller enclosure (Pls. XIII-XV, 1-5)

This easternmost unit is the best preserved part of the complex, and it is situated on the very edge of the *wadi.* The enclosure is marked off carefully as a square and it is oriented generally towards the cardinal points. Only the south-west corner of the qasr is difficult to measure as it has collapsed, being on the edge of the *wadi* bank: indeed, to prevent such erosion, this corner was reinforced from below by the use of well-cut stones set into the face of the *wadi* (Plate XIV). The building material of the small enclosure is quite well-cut limestone, some probably reused, and a natural concrete-like aggregate which also appears at the base of the *wadi* cliff beneath. The walls of the enclosure survive to several courses, and the interior sub-division of the building into rooms around a courtyard is clear, although there is also a great deal of collapsed stone. There is a single entrance to the enclosure, set in the centre of the eastern side. The partition walls of the rooms around the courtyard seem to break bond in some cases with the enclosure wall. There also seem to be traces of the springing of arches that would have originally supported the fallen roofing of the rooms.

On the exterior of the north wall of the enclosure there is a trace of a wall running parallel to the *qasr,* extending for much of the width, although its significance is not immediately obvious. On the western side of the enclosure, there have been collapses of the wall because of undermining by the *wadi.* The movement of the *wadi* bank that caused this collapse appears to have been recent; it results perhaps from the rains of the winter of 1979-80. However, although the *wadi* bank has recently moved close to the west wall at these points of collapse, the reinforcing of the south-west corner of the enclosure indicates that the enclosure was originally intended to stand on the edge of Wadi Mushash.

Some distance north-east of the small enclosure is a roughly circular stone-lined *birka.* It was once spanned by three arches, all lying parallel to each other: of these, two remain intact, but the third has collapsed.

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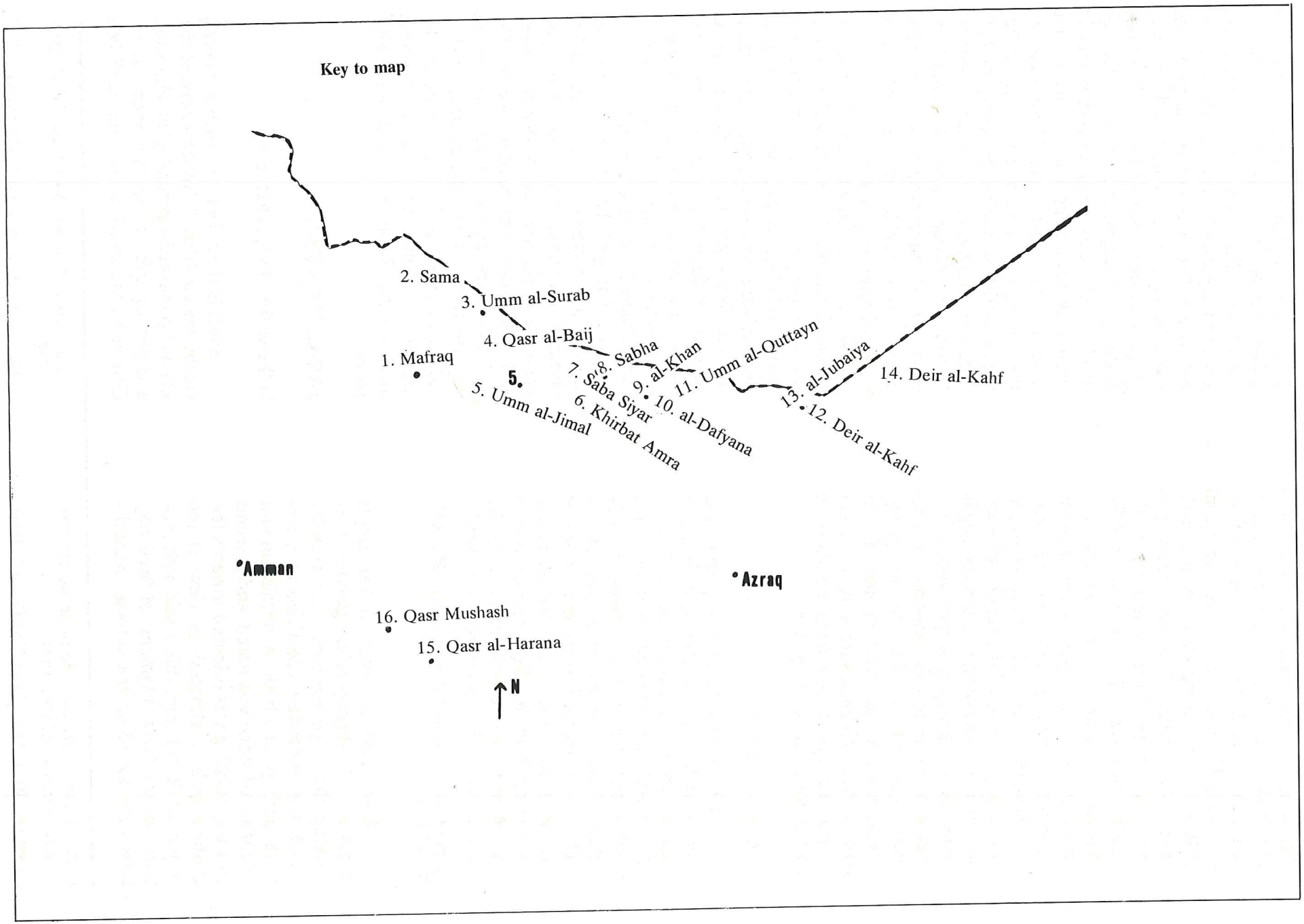
7. For the field survey, the Jordan 1:50,000 maps were used. For Qasr Mushash see sheet 3253 1, series K 737: reference BR 458 232. Qasr Mushash was visited with Dr. Ghazi Bishah and Mr. Brian Bowen.

8. Qasr Mushash is mentioned in *The Archaeological Heritage of Jordan,* Amman (1973), part 1, no. 288a and appears in the following maps in the same volume:
Map1: General Map of Sites
Map 2: Prehistoric
Map 3: Chalcolithic
Map 11: Early and Medieval Arabic and Crusaders
However, the site is not incorporated in the various period listings. Also indicated on the 1:500,000 series 1404, Sheet 446-A, edition 2-GSGS, "El Azraq", War Office and Air Ministry, 1960; and the Road Map, Jordan National Geographic Center, Directorate of Military Survey (1979).


Key to map
2. Sama
3. Umm al-Surab
4. Qasr al-Baij
1. Mafraq
5.
5. Umm al-Jimal
6. Khirbat Amra
7. Saba Siyar
8. Sabha
9. al-Khan
10. al-Dafyana
11. Umm al-Quttayn
12. Deir al-Kahf
13. al-Jubaiya
14. Deir al-Kahf
Amman
Azraq
16. Qasr Mushash
15. Qasr al-Harana
N

The voussoirs are stone, some cuadrated and rusticated. The arches are round-headed and are akin to those familiar from the Jabal Hawran, or the west at Umm al-Rasas. The roofing stones of the *birka* have either collapsed or have been removed, like much of the stone-work of the smaller enclosure. To the east of Qasr Mushash a number of bedouin enampments have sheep-pens whose well-cut stone may well have come from the Qasr.

Running generally north-westerly from the north side of the small enclosure, there is a long line of stones, terminating in an incoherent group of larger stones. It is unclear whether this line marked the enclosure wall of a *hayr* like that at Qusayr Amra, or a covered water channel. To the east of the small enclosure were a number of worked stones and large numbers of sherds concentrated together.

b) Large enclosure

The large enclosure was not examined in any detail. It lies a short distance west of the small enclosure, near to the *wadi* bank, but not as close as the small enclosure. It is much larger in size, but its sides are indicated by earth ramps rather than stone-walls. There seemed to be some trace of internal subdivisions when the enclosure was viewed from the slight prominence to the west by the western *birka:* however, the central area of the enclosure is very level.

c) Furnace (?) and western birka **(Pls XV, XVI, 6,7)**

These units lie west of the larger enclosure. On slightly raised ground overlooking the large enclosure are remains which are tentatively identified as a furnace, perhaps of a bath. A certain amount of collapsed stone was noted, and it seems that the building was oriented towards the cardinal points, although in view of the degree of destruction, this is said with caution. Several large fragments of fired clay pipe were found on the surface; remarkably, there was a heavy deposit of blackish ash on the inside of these pipes, but not on the exterior. There was no evidence of any fires on the ground in the vicinity, recent or otherwise. The presence of the pipes and the ashy substance, as well as the rectangular *birka* immediately west of the ruined building, all suggest that this was a furnace of a bath. Close to the pipes, fragments of a fired brick were found which it was possible to reconstruct; it measured 70 cm. a side. In the same place, several fragments of fine highly polished marble panelling of four different thicknesses (14mm., 16mm., 18mm., and 27mm.) were also found; the fragments of 16mm. thickness had rounded edges. Considerable numbers of sherds were collected in this area [9].

West of the remains identified as the furnace is a *birka.* It is rectangular, its longer sides lying on an east-west axis. It is empty and close to its original floor level. The walls are stone-lined, and at the foot of the walls is a slight step. Corbels are set at an angle bridging the corners of the *birka.* At the south-west corner there has been some collapse. Immediately west, a stone-lined channel runs into the *birka.*

The dating of the site in the apparent absence of inscriptions must await further research. However, the heavy Umayyad presence in the area at Mushatta, Qastal, and Muwaqqar immediately westwards, and also to the east at Harana and Amra suggests that an Umayyad occupation should be expected, a view confirmed by the presence of Umayyad sherds at the site; interestingly, Byzantine sherds were also noted.

JABAL HAWRAN

I) Sama (Pls XVI, XVII, 8,9)

Sama is about 14 kms. north of Mafraq via the road to Irbid [10]. Butler described the site and published a ground-plan, elevation and photograph of the Monastery of St. George [11]; the inscriptions were published

9. The sherds, marble and pipe-fragments are presently stored at ACOR, Amman.

10. Map ref. BR 404 958, Sheet 3254 IV, ed. 2. Sama was visited 23rd July, 30th July, 17th August, 1980.

11. Butler, op. cit., II. A. 2, pp. 83-87; **III. 64, III. 65.**

by the Princeton Expedition [12] and also by Mittmann [13]. Attention was concentrated on the church and the monastery dedicated to St. George according to its foundation inscription. The monastery is dated by an inscription on a lintel which is still in place to the year 519 of the Province (624-625 A.D.)[14]. Butler expressed surprise at the date of the inscription, so late in the Byzantine period in the area, and instead suggested that the church and its dependenices were in fact 5th or 6th century, while the dating inscription was added later.

Examination of the church, the monastery complex against the north wall of the church, and the church tower built against the north-east side of the church and its apse, indicates that these represent successive stages of work on the site. The church is of well-cut basalt; the original building was a simple rectangle with an apse but no tower or other appendages, and in quality sufficiently good to be of a 5th or 6th century date as Butler suggests, rather than the 7th century date mentioned in the foundation inscription in the monastery.

Subsequently, the complex of buildings to the north of the church was added. The walls of these structures are of more roughly cut basalt than the church, and they uniformly break bond at those points where they abut the north wall of the church and the apse. There seems every reason to accept that the inscription provides the date at which the monastery where the inscription is situated was added to the earlier church. The late date of 624-5 A.D. seems appropriate for the poor building quality of the monastery. In general, the ground-plan published by Butler is correct as far as the church itself is concerned, but some hesitation must be expressed regarding the extent of the complex to the north as described by Butler; those rooms which may be considered with certainty as appendages of the church were perhaps fewer than he suggested. Furthermore, monastery walls which abut the apse and the tower break bond, contrary to the indications of Butler's plan.

The third stage of building in the complex is represented by the addition of the tower which is built resting on the surviving north side of the church's apse, and on the north-east corner of the church; on the east side, the tower rests on top of a wall of the monastery. This method of constructing the tower caused a considerable amount of disturbance to the walls beneath it. This is marked in the apse, most of which was pulled down either before or at the time that the tower was added. The chancel arch preceding the apse has been closed off by a wall which Butler does not mention, but whose construction is apparently contemporary with the reconstruction in the ruined apse that was necessary to support the new tower. As to the base of the tower, the means by which it is inserted into the pre-existing church and monastery is such that it was necessary to make the lower part of the tower solid; its entrance is on the west, approached from within the church. Butler noticed a staircase of corbels approaching this entrance, but they have now vanished. He also states that the staircase inside the tower is crude and attributable to the early Islamic period, while the tower itself he regarded as early Christian. There is no evidence to suggest that the tower and the staircase are of different dates. It seems reasonable in fact to attribute the entire tower and the walling off of the destroyed apse to the Islamic period. It is therefore to be assumed that the well-built tower is a minaret, and that the church was transformed into a mosque, although there is no *mihrab*. Nevertheless, there is a space in the centre of the south wall of the church, very precisely set, with much fallen stone inside the church in front of it. If it was a *mihrab* perhaps built on the site of an earlier door to the church, nothing remains of it, but in an area where inscribed, deco-

12. Ibid., III. A. 2, pp. 44-46.

13. Mittmann, op. cit., pp. 196-199.
Also S.J. Saller and B. Bagatti, *The Town of Nebo,* Jerusalem (1949), p. 223; K.A.C. Creswell, *Early Muslim Architecture,* Oxford (1969), I, part 2, p. 492.

14. For confirmation of the view taken by Littmann in Butler, op. cit., III. A. 2, p. 45, no. 25 on the issue of the dating of the monastery of St. George, see Mittmann, op. cit., p. 196, no. 33.

rated or otherwise distinguished stones are removed, this would not be unusual. The problem of dating the change of the church into a mosque is more difficult. There are Byzantine and Umayyad sherds at Sama, and the monastery shows that it was occupied until the eve of the Muslim conquest. On the other hand, the presence of the Ayyubids and the Mamluks in the area is well-attested, so the work could belong to either an earlier or later period on the evidence so far available.

II) Umm Al-Surab (Pls XVII, XVIII, 10,11,12)

Umm al-Surab lies about 13 kms. north-east of Mafraq and 8 kms. south-east of Sama.[15] It was visited by the Princeton Expedition and Butler produced a description, ground-plan, elevation and photograph of the main antiquity, the Church and Monastery of Saints Sergius and Bacchus[16]; the inscriptions have also been published[17]. There are a number of other brief references to the site[18]. Although Umm al-Surab was deserted when Butler visited it, it is now populated; the church and monastery are protected by a fence erected by the Department of Antiquities, and are in a remarkably good state of preservation.

The church of Sergius and Bacchus is dated by a foundation inscription over the main west door to the year 384(?) of the Province (489 A.D.). Re-examination of the church and the monastery on the north side of the church indicates that again Butler's descriptions and his plan are generally correct, but with serious omissions and misinterpretations. The most important of these are the following:

1. Whereas Butler shows the church with a complex identified as a monastery on the north side, there are also wall traces of rooms to the south whose precise chronological relationship to the church remains a matter of doubt.
2. The walled-up apse, the destruction of the apse and the addition of the tower should all be attributed to the Islamic period. As at Sama, the church tower appears to be a minaret.
3. There is evidence that plain mosaics formed part of the decoration of the interior walls of the church. There is also evidence of polychrome stone and glass mosaics. A small fragment of polished marble was found a few meters west of the church.

Structures south of the Church

South of the church are further basalt-built structures which appears to form an enclosure around an open courtyard, although breaks in bond at key points make it impossible to state that this southern enclosure was originally an extension of the church. Built against the southern side of the apse, and bonding with it, is a room identified by Butler as a *diaconicon.* This is a part of the original church. Built against the south wall of the *diaconicon,* but not bonded with it, are a pair of rooms on a north-south axis which may well have been of more than one storey. However, the quality of their construction is poor and they may be late. Parallel to the south wall of the church at just under 11m. the foundations of three related rooms, apparently built in a single campaign, are visible. If this is indeed a courtyard enclosure, then it would seem that this group of rooms marks its southern boundary, but the date of this addition remains at present uncertain. Against the exterior of the south wall of the church, at the west end, is a large amount of collapsed rubble. There is a doorway in the south wall of the church that gives access to this area, but it is not shown on Butler's plan. It is

15. Map ref., BR 473 911, Sheet 3254, I, ed. 1. Umm al-Surab was visited 23rd July, 27th July, 29th July, 17th August, 19th August, 1980.

16. Butler, op. cit., II. A. 2, pp. 94-99; fig. 78, III. 79.

17. Ibid., III. A. 2, pp. 57-59.

18. Mittmann, op. cit., pp. 199-200. Also Saller and Bagatti, op. cit., p. 223; R. Krautheimer, *Early Christian and Byzantine Architecture,* Pelican (1965), p. 108 and fig. 41 (after Butler); Creswell, op. cit., I, part 2, p. 491 and fig. 549 (after Butler); Lankester Harding, unpublished Notebooks.

possible that this southern doorway indicates some appendage of the church built against its south side. There has been a great deal of destruction in this southern area which has been exacerbated by quarrying among the fallen masses of stone; there are quantities of stone-chippings which result from this work. The same work has possibly uncovered the south wall of the church to a greater extent than when Butler's plan was made. There is a space just over 2 m. wide in the centre of the wall. West of the church are a number of structures which it would be unwise to associate with the original church; indeed, some may be of the present century.

The tower and the apse

Butler regards the tower as being of one fabric with the rest of the church; this is only true of its base. The tapering walls of the upper part were added later. He regards the staircase as being later Muslim work, but it is quite clear that staircase and upper tower are one period of building. Furthermore, he makes little of the fact that the apse has been largely demolished and walled-off in its chancel arch, with a doorway set in the centre of the additional wall. The sequence of work appears to have been as follows. The original church had an apse which was flanked on either side by a rectangular room entered by a door from the church; the south-eastern room (identified by Butler as a *diaconicon)* survives, while the north-eastern room (identified by Butler as a *prothesis)* provides the base of the tower and its west doorway is blocked up. Both of these rooms had rectangular openings facing west, perhaps doors to galleries, on the upper floor, that of the *diaconicon* still having its base and one corner intact, while the opening of the *prothesis* is *in situ* but blocked up, again as a result of the construction of the tower. The tower was built along with its staircase of corbels, steps and platforms inside the old *prothesis,* with the result that the earlier lower door and upper storey opening were blocked off, and a new door was set in the south side of the tower. However, contrary to Butler's ground-plan, this new door is not one with the north wall of the apse. It would appear that the apse was demolished, if it had not already fallen, to make way for the new door to the tower. Access to the tower from the church interior was now through the doorway in the walled-off chancel arch. The assumption is that the destruction and walling-off the apse took place when the church was transformed into a mosque, with the tower added to serve as a minaret. As with St. George at Sama, there is a damaged area in the southern wall of the church where the *mihrab* may have been, but there is no trace of any *mihrab* recess as such [19].

Mosaic decoration

Within the church several mosaic cubes were found, mainly loose but some fixed in plaster, apparently from the wall of the church. These were fairly large and plain white. However, on the roof of the northern enclosure room immediately beneath the tower numerous smaller polychrome *tesserae* were found, including

19. An interesting point arises in the case of two churches at Umm al-Jimal, the West Church and the Numerianos Church. The West Church has a walled-off apse, but the southern wall of the church in the direction of the *qibla* is visible only in foundation traces; excavations might determine if there had once been a *mihrab* there. Butler was quite certain, and with some reason, that the Numerianos Church was converted for use as a mosque (II. A. 3, 191-194; III. 171-3). He suggests that were the southern *(qibla)* wall of the church not ruined, a mihrab would be found. In fact, in examining the inner face of the south wall on 28th and 30th August, what seemed to be a rectangular recess was identified at approximately its midpoint, made by removing stones from the inner surface of the wall. As Butler points out, the apse has been walled off, but not with the high wall of Umm al-Surab or Sama. The passage from the complex north of the church has also been sealed with carefully placed stones.

Assuming that this recess is indeed a *mihrab,* it may illustrated the means whereby *mihrab* recesses were inserted in the southern walls of churches throughout the region. Dr. B. de Vries plans to excavate the Nemerianos Church in 1981 and it is hoped that his findings will throw further light on the possible use of this church as a mosque.

some glass cubes. They were mixed with earth and had been thrown there in the process of re-roofing the building. These *tesserae* presumably came from the church.

As at Sama, the transformation of the church into a mosque is difficult to date. Sherds of the Byzantine period abound, with some Umayyad, at Umm as-Surab, but there are also less frequent sherds of Ayyubid and Mamluk date. The possibility of a later rather than earlier Islamic rebuilding must therefore be considered; nevertheless, the intensity of the Umayyad presence in the region is well attested.

Qasr al-Baij (al-Baiq)

Qasr al-Baij [20] was visited by Butler [21] when it was still intact: even when Glueck visited it in 1944 it was occupied by only a single family, although the site was destroyed. Since then, the place has been rebuilt and is well-inhabited. As a result, Butler's plan of the Roman fortress of 411 A.D. is unrecognisable. Only parts of the chapel could be identified with any certainty. Much of the floor of the chapel and its western end have vanished. The apse is no longer visible. Nor are the fortress walls which Butler describes. Numerous plain white *tessarae* were found and mosaic floors were mentioned by the local people, but it was said that they had been destroyed. Butler also noted a number of mosaic fragments.

Khirbat 'Amra

Khirbat 'Amra [22] does not seem to have been noted previously. It lies 6.5 kms east-south-west of Umm al-Jimal. It is an extensive ruined site with a number of recent buildings constructed from the basalt of earlier buildings. Traces of an apse of a church exist, although any other remains of the church are obscured by the recent enclosures for animals that have been constructed.

Saba Asir

Saba Asir is about 8.5 kms east of Umm al-Jimal and apparently has not been mentioned by other visitors [23]. The site is largely ruined, but it has a number of inhabitants living in recent houses which are built with earlier basalt. The village has several cisterns of earlier houses, now generally disused. Among the overturned basalt blocks, traces are visible of a building whose foundations indicate that it is oriented on its longer side on an east-west axis, but it lacks a curved apse. This building is rather tentatively identified as a church and from such as can be seen of its foundations might have been a double church. (PL. XIX, 13).

Sabha (Pl. XIX, 13)

Sabha lies about 11 kms east of Umm al-Jimal, beyond Saba Asir [24]. Butler visited it and regarded the town as one of the larger sites of Jabal Hawran, although it was deserted at the time.[25]. Glueck visited it about forty years ago and found that the ancient carved basalt was being re-used, a process that has continued so that now it is a sizeable inhabited village. Butler published a photograph of the skyline in which a tower appears, but this has now vanished.

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20. Map ref. BR 500 845, Sheet 3254 1, ed. 1. Qasr al-Baij was visited on 23rd July and 29th July, 1980.

21. Butler, op. cit., II. A. 2, pp. 80-83.
Ibid., III. A. 2, pp. 42-44.
Parker, op. cit., p. 23.
Glueck, op. cit., pp. 18-19.
Mittmann, pp. 200-201.

22. Map ref. BR 588 773, Sheet 3254 I, ed. 1. Khirbat Amra was visited on 3rd August, 1980.

23. Map ref., BR 612 810, Sheet 3254 I, ed. 1. Saba Siyar was visited on 23rd July and 4th August, 1980.

24. Map ref. BR 648 802, Sheet 3354 IV, Series K 737. Sabha was visited on 23rd July, 4th August and 19th August.

25. Butler, op. cit., II. A. 2, pp. 112-115.
Ibid., III. A. 2, 73 ff.
Saller and Bagatti, op. cit., p. 224.
Glueck, op. cit., pp. 19-24.
Mittmann, op. cit., p. 201.

He also published ground-plans of a small church and a double church in the north-east of Sabha, but only one could be identified. Instead, a quite different church was found, or at least, its foundations; it is to the south of the village, with its apse surviving to several courses, but the rest of the church to the west has disappeared. A second larger church was found to the north, close to the post-office: it was destroyed some fifty years ago by a local *shaykh* who had then built a new construction above using ancient stones and sometimes incorporating part of the foundations of the earlier church and parts of its walls. Thus, traces of the southern wall of the church are visible in front of the modern building, whereas the western wall of the church is actually incorporated into the west end of the modern building. The north wall and the east end of the church are built over. The west wall is very clearly delineated by breaks in bond indicating the corners of the original church, and sealed entrances in this end are also visible. A broken *colymbium* for holy water also projects from the wall. A number of *tessarae* were found south and west of the church. All these *tessarae* were plain white, but our Department Representative, Mr. Mufleh al-Ghuraibi, said that one of the destroyed mosaic floors had been of polychrome *tessarae*. This northern church might at first sight seem to coincide with Butler's church on the north-east side of Sabha but his measurements do not entirely coincide with any available from the present ruin.

Among the ruins of Sabha are the remains of a number of quite substantial buildings, although their date and individual purposes are not clear. In the courtyard of the modern post-office building there are several column capitals and bases of good workmanship. Being close to the north church beneath the modern house of the *shaykh,* it is tempting to suggest that they came from this church, although there is no knowledge among the local people about the origin of these capitals.

Al-Khan

Al-Khan is 4 kms east of Sabha [26] and it is no more than a few modern buildings and a ruined structure, north of the road. Butler mentions a building with some pointed arches which he took to be of the "middle ages", but there was no sign of such a structure[27] . Today, there are modern buildings and threshing floors; there is also a single storey basalt building without a roof of indeterminate date but probably modern. This was shown as "al-Khan" but it did not coincide with Butler's description. However, north of this second building there are the foundations of yet another building, constructed of large roughly shaped blocks of basalt. It is rectangular, subdivided internally into a number of chambers. Its roof-bearing arches have all collapsed. It is possible that this is all that remains of the building that Butler saw at the site. North of these ruins and to the north-west are further mounds, wall-traces, and possible water storage tanks. Although never extensively settled, al-Khan once was more important than it has been in recent times.

Al-Dafyana

Al-Dafyana is a little over 6 kms east-south-east of Sabha and just under 3 kms south-east of al-Khan[28]. Butler and Glueck refer to it [29]. The site has numerous recent houses built in re-used basalt blocks, and it is difficult to distinguish recent from earlier buildings. At least some recent buildings rest on earlier foundations and may incorporate earlier walls into their construction. Extensive areas of collapsed

26. Map ref. BR 690 802, Sheet 3354 IV, Series K 737.
Al-Khan was visited on 23rd July and 4th August, 1980.

27. Butler, op. cit., II. A. 2, pp. 114-115.

28. Map. Ref. BR 703 775, Sheet 3354 IV, series K 737.
Al-Dafyana was visited on 26th July, and 4th August, 1980.

29. Butler, op. cit., II. A. 2, p. 116.
Glueck, op. cit., p. 24.

stone-work indicate the degree to which the place was once settled, although it is a site of limited extent. A tower which Butler recorded as ruined and which he attributed to the Islamic period is no longer visible. He states that it was south-east of al-Dafyana, but it must have vanished not long after his visit as Glueck did not see it. Butler considers that there was an occupation of the site in the "middle ages".

Umm al-Quttayn (Pls. XIX-XXI, 14-17)

Umm al-Quttayn is about 12 kms east of Sabha.[30] It has been described by Butler[31] and at the time of his visit he described it as a large village and it seems to have been comparable to Umm al-Jimal. When Butler saw it, Umm al-Quttayn was entirely deserted, as it was when Glueck visited it in 1944, except for a police post. However, Lankester Harding found it destroyed and could not identify Butler's buildings. Today it is clear that it was once a large site but it is badly damaged and not one of Butler's buildings can be identified with any confidence. Some of the local people claimed to remember a tower-house that was demolished some years ago, but otherwise surprise was expressed at the photographs published of the town by Butler.

Although Butler's churches could not (with one possible exception) be identified, four quite different churches or chapels were found. Only the Monastery mentioned by Butler is a matter of some doubt, for an extremely badly damaged church with extensive appendages is known locally as *"al-Deir."*: it is reduced to its foundations, and densely covered by collapsed stones which impeded measuring the plan, but such measurements as could be made had no relation to those of Butler's Monastery. The other four churches located are as follows: one lies on the southern edge of the town, a second is opposite the *Umda's* house to the east; a third is in the north-eastern part of the town near the house of Shaykh Muhammad Bakhayt Maara; and a fourth is to the north, which may have been re-constructed recently, but which is flanked on either side by ancient buildings. These are in addition to *"al-Deir"*:

Al-Jubaiya

Al-Jubaiya is about 4 kms north-west of Deir al-Kahf[32]. It is recorded by Butler[33]. Its interest lay in a 12m. high church tower with the ruins of the church and an apse which Butler believed belonged to a monastery. The place is now a scattered hamlet with a number of buildings constructed recently in re-used basalt. This modern building activity may well explain the complete absence of Butler's tower or church. The local people remembered an ancient tower and pointed out its former position on the northern side of al-Jubaiya.

Deir al-Kahf (Pls. XXI-XXII, 18,19)

Deir al-Kahf [34] is one of more the easterly *castella* of the *Limes Arabicus* within Jordan, and is the furthest point east within Jordanian territory reached by Butler and his colleagues [35]. Like Baij, which is also a Roman *castellum,* the site has changed since Butler's visit and it is now no longer possible to identify major elements that are included in his ground-plan. It is dated by inscriptions once on the site to 306 A.D. and 367-375 A.D., although the chapel which Butler marks in the courtyard was

30. Map ref. BR 770 780, Sheet 3354 IV, Series K 737. Umm al-Quttayn was visited on 26th July and 18th August, 1980.

31. Butler, op. cit., II. A. 2, pp. 137-142.
Ibid., III. A. 2, pp. 116-121.
Glueck, op. cit., pp. 24-25.
Saller and Bagatti, op. cit., p. 224.
Lankester Harding, unpublished Notebooks.
Mittmann, op. cit., pp. 201-207.

32. Map ref. BR 927 757, Sheet 3354 I, Series K 737. Al-Jubaiya was visited on 27th August, 1980.

33. Butler, op. cit., II. A. 2, p. 145.

34. Map ref. BR 964 739, Sheet 3354 I, Series K 737. Deir al-Kahf was visited on 26th July and 27th August, 1980.

35. Butler, op. cit., II, A. 2, pp. 145-148.
Ibid., III. A. 2, pp. 126-129.
Glueck, op. cit., pp. 25-30.
Parker, op. cit., p. 23.

perhaps a still later addition. While the enclosure walls of the *castellum* are intact, the chapel has vanished: traces of the side walls seemed visible but not the apse. Considerable re-building inside the *castellum* has taken place, using the material of the enclosure walls and the chapel. Inscriptions in the enclosure walls have been carefully removed from the positions in which Butler saw them, although the spaces from which they came can be identified. The pool south of the enclosure has been improved for use and covered. To the east of the *castellum,* overlooking a *birka* is a guard tower on the northern side of the *birka.*

Deir al-Qinn (Pls. XXII-XXIV, 20, 23)

Deir al-Qinn is about 10.5 kms. north-east of Deir el-Kahf and it seems to have been generally ignored[36]. It is a basalt-built site with a few inhabitants. It stands on high ground overlooking a large *birka* to the north which is thus securely defended. The present inhabitants are concentrated to the southern and eastern sides of the site. Deir al-Qinn consists of a rectangular enclosure, its western and northern walls surviving in elevation and in fairly good condition. The enclosure is in poorer condition to the south and east. Internally, room partition walls are visible against the western wall, with the springing of roof-bearing arches still intact, although the arches themselves have fallen. The central area of the enclosure is dominated by a well-constructed stone wall (Pl. XXII, 20), built with ashlar, cuadrated and rusticated on the exposed faces. A stone with an incised cross was found among stone debris on the top of the mound.

Acknowledgement

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36. Map ref. CR 045 808, Sheet 3354 I, Series K 737. Deir al-Qinn was visited on 27th August, 1980. Butler's map of his 1904-1905 expedition in the Jabal Hawran mentions "Der il-kunn", but he seems to have passed the site by without visiting it.
A. Poidbard, *La Trace de Rome dans le Desert de Syrie,* Paris (1934), pp. 60,97.

THE UMM EL-JIMAL PROJECT 1972- 1977

by
Bert De Vries

Umm el-Jimal, located twenty kilometers east of Mafraq in the semi-arid lava region of the southern Hauran (fig. 1), ranks behind Petra and Jerash in size and state of preservation among Jordan's archeological monuments. However, it differs dramatically from those two monuments because it is built entirely of somber-colored steel basalt which gives it the appearance of a bombed out and burned modern city from a distance. The great strength of the basalt stone lent itself to an unusual style of architecture: corbeling. The ancient builders were able to construct ceilings and roofs by laying stone beams two to three meters long on cantilevered supports protruding from the walls (fig. 2). The application of cantilevering to the construction of stairways eliminated the need for cumbersome and costly support structures and increased useable living space on the lower floors (figs. 3,4). The success of this building method impresses itself on the visitor by the fact that numerous buildings are still standing two to three stories high with some of their ceilings intact after fifteen hundred years.

The city was founded in the Early Roman period when it enjoyed considerable Nabataean influence, flourished as a frontier city of the Roman and Byzantine Empires, and continued to prosper in the Umayyad period, perhaps because of its proximity to the Desert Castles. Umm el-Jimal was destroyed by earthquake at the end of this period and not rebuilt because the region of the Hauran lost its preeminence when the seat of government shifted to Baghdad under the Abbasid Caliphs.

Most visitors to Umm el-Jimal are surprised to learn that its ancient citizens were not Roman or Greek, but Arab. Numerous gravestones, although written in the Latin and Greek scripts, have given us a catalogue of names of the inhabitants which indicates that the residents were local Arabic nomads who settled in this region and built Umm el-Jimal under the security providied by the Roman Empire -- a process that has been repeated by their modern descendents under the security of the Jordanian Government.

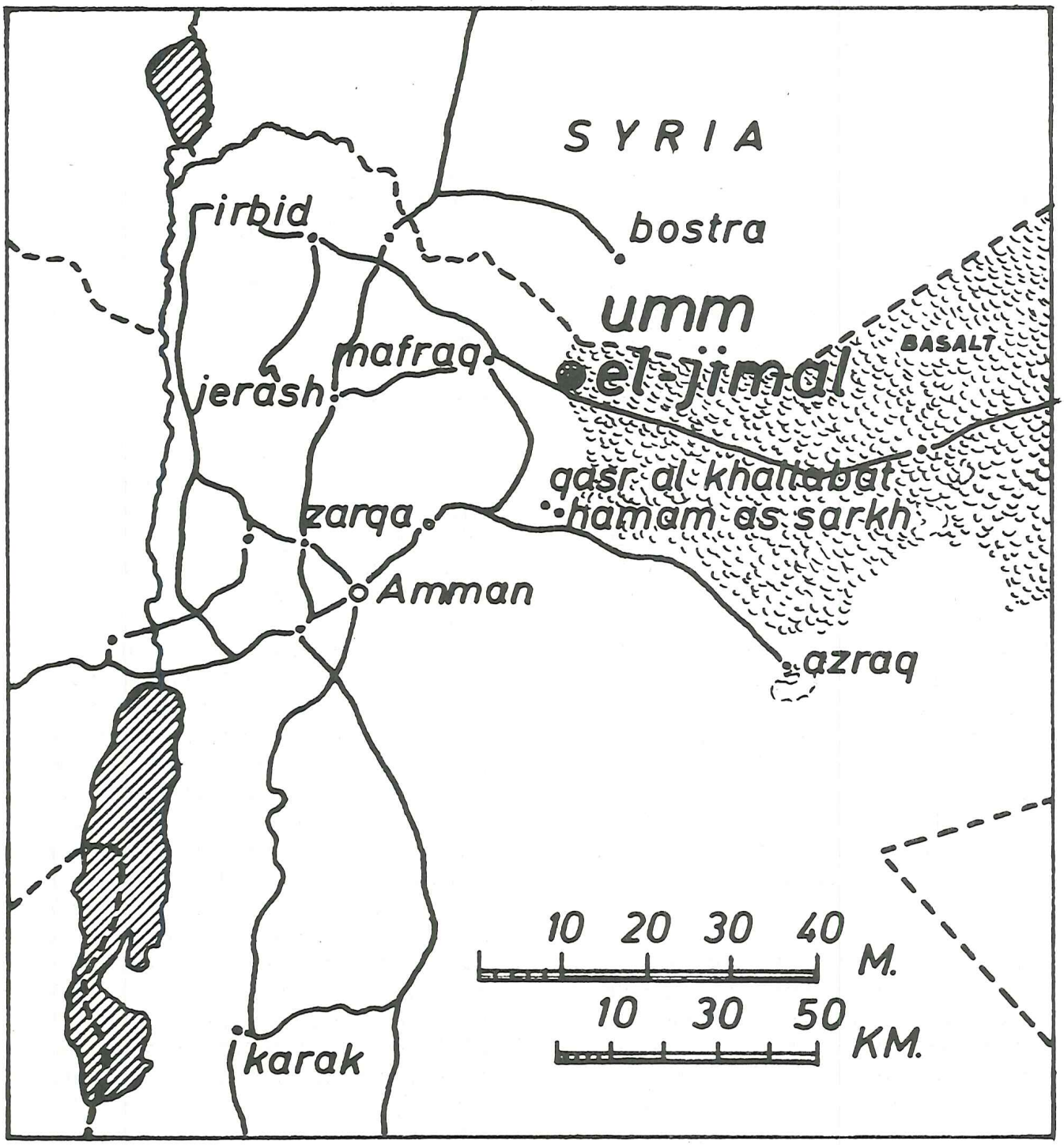
Previous Research

Prior to 1972 a minimal amount of work had been done at Umm el-Jimal. The first major project was the survey by the Princeton University Archeological Expedition to Southern Syria in 1904-5 and 1909 directed by Howard C. Butler (Butler (1913). This expedition produced a map of the city including plans of 40 major buildings. The resulting publication included detailed architectural and historical analysis of the buildings surveyed and a record of the numerous inscriptions found in and around the city. This publication has served as the basic reference on the site ever since.

In the late 1930's and early 40's Nelson Glueck made several visits to Umm el-Jimal in search of evidence for his thesis that the city was a major link on the Nabataean trade route from Southern Jordan to Syria via the Wadi Sirhan (Glueck 1939: 140-146, 1942:3-8, 1944:7-17, 1951:1-34.) From the absence of Nabataean pottery at Umm el-Jimal and other Syrian sites he concluded that Nabataean influence (attested by numerous inscriptions) there was in the form of commercial and strategic interest rather than in the form of dense settlement (Glueck 1951: 13, 17).

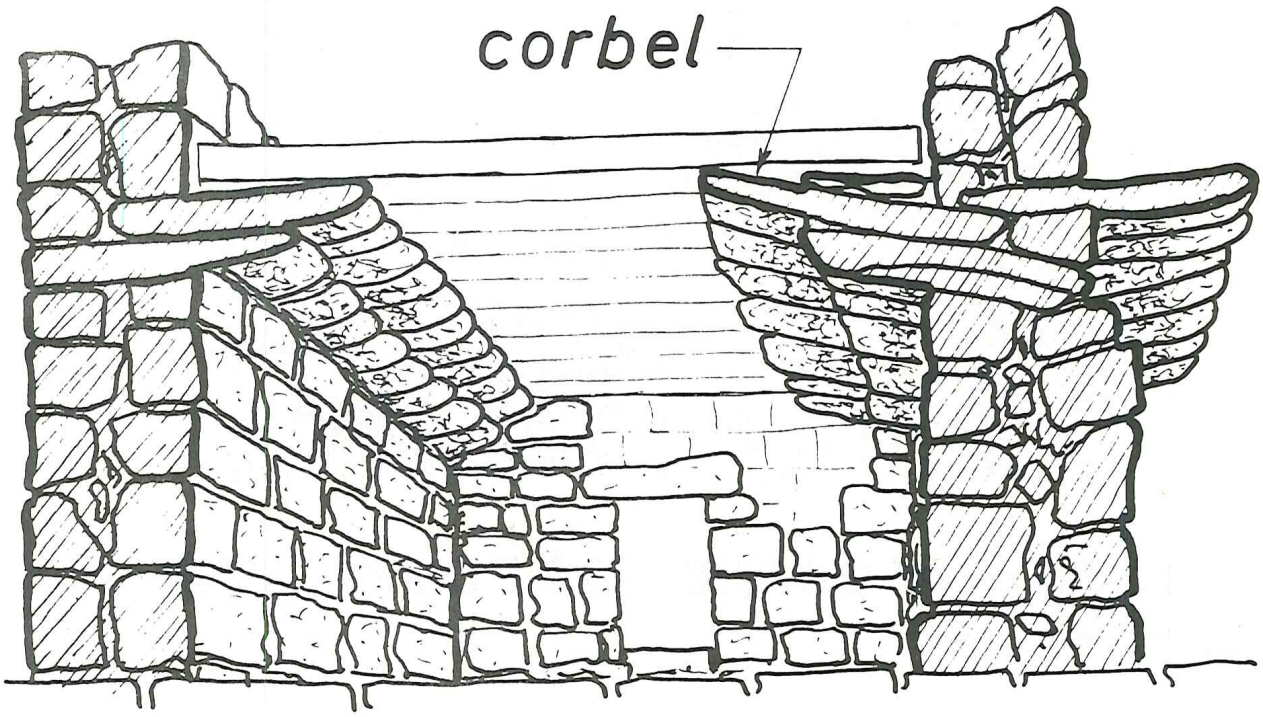
In 1937 G. Horsfeld published aerial photographs of Umm el-Jimal that are extremely useful for studying the process of decay and human alteration that has taken place from the time of Butler's survey to the present (Horsfeld 1937:456-60).

In 1956 G.U.S. Corbett did an architec-

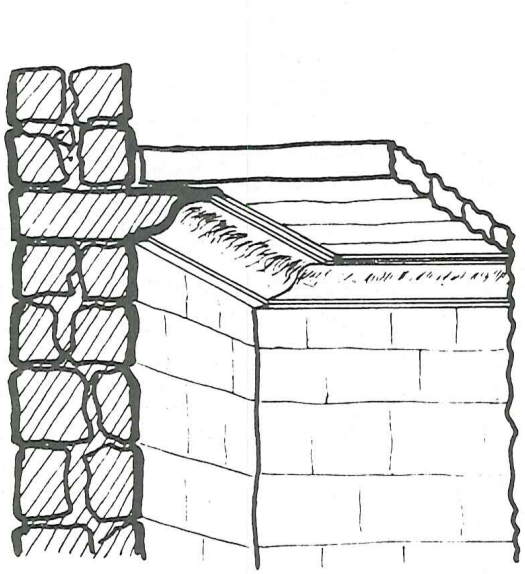


North Jordan

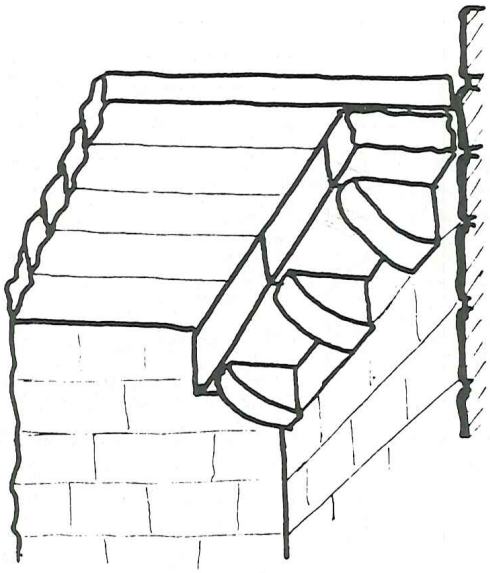
figure 1



room above gate of house XVI

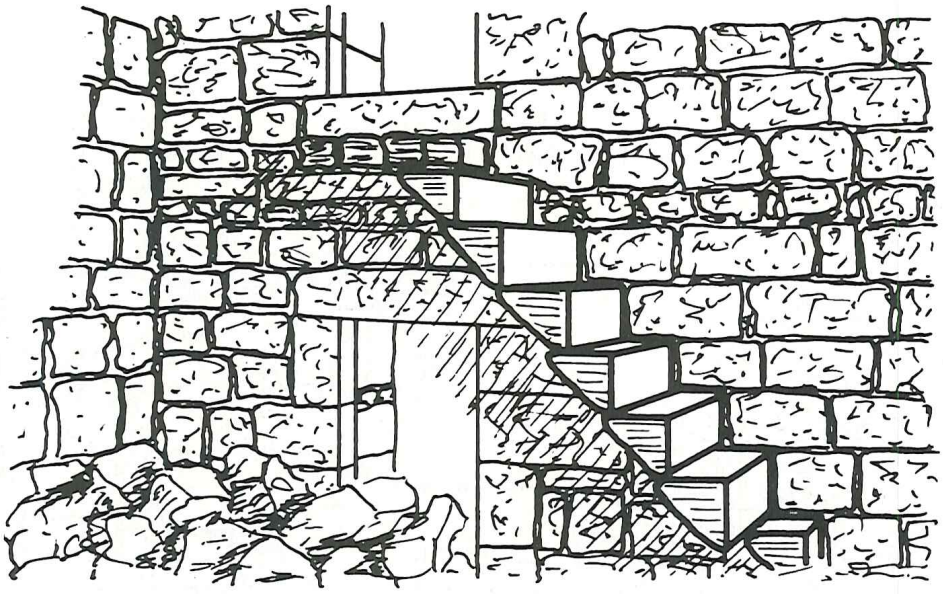


house XVIII

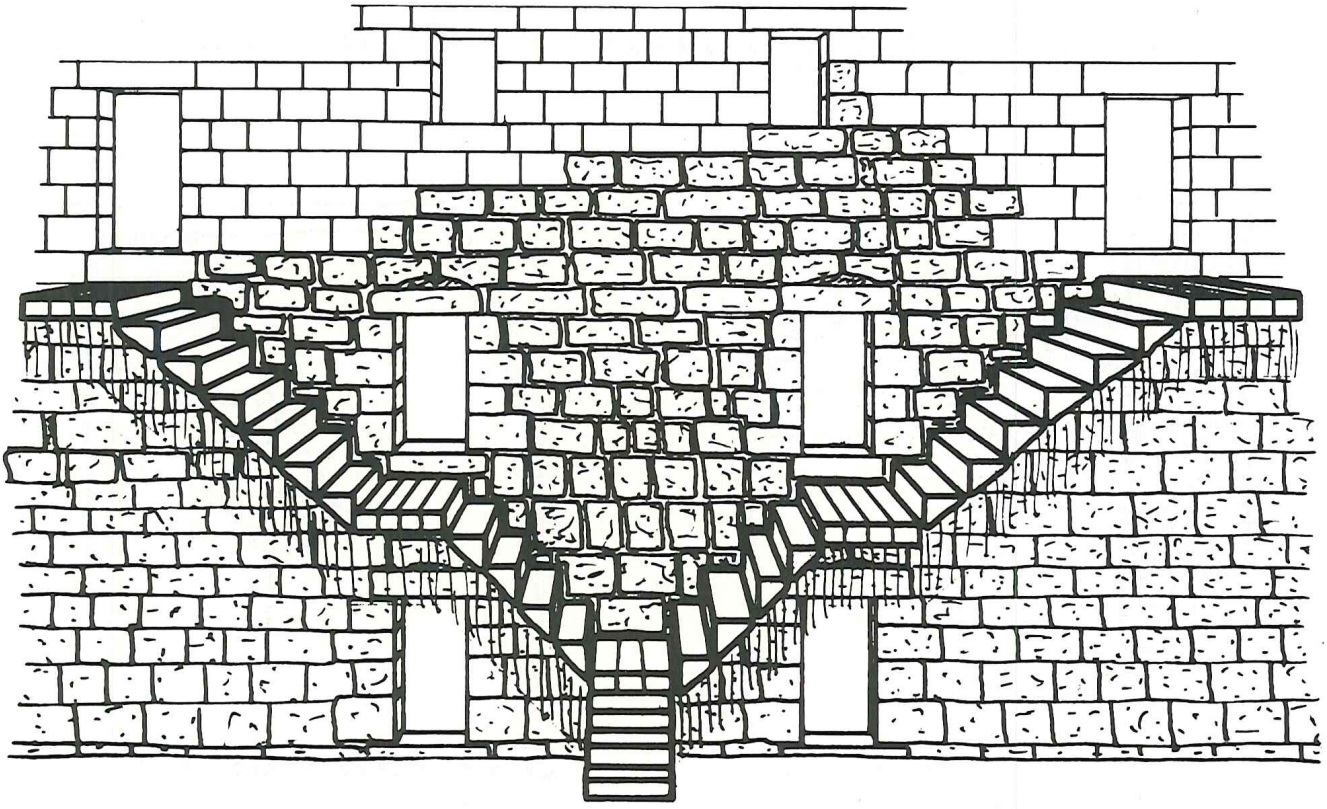


s.w. corner of barracks

figure 2 methods of corbeling



stairs, n.w. corner of court XVIII
figure 3



reconstruction of stairs in east wall of court XVIII
figure 4

tural study of the "Julianos" Church in order to test Butler's conclusion that this church had been built in A.D. 344. Corbett concluded that the Julainos Inscription from which the date was derived was actually a funerary inscription reused secondarily in the building and revised the building date of the church to the early 5th century on the basis of architectural parallels (Corbett 1957:39-66).

Purpose of Present Research

During his first visit in 1971 the author was amazed that a site of this magnitude and in such an excellent state of preservation was not being worked on and he decided it needed to be "rescued" from oblivion. The first step was the completion (and correction, if necessary), of the Princeton Survey which had dealt with only one fourth of the existing architecture. Next, it was necessary to begin stratigraphic excavation in order to test the various chronological, historical and cultural conclusions that the above scholars had drawn from their study of remains above the surface. Finally, it was important to study the historical-geographic context of Umm el-Jimal as one of many similar settlements in the Southern Hauran. The effort to complete these goals developed into a five phased project over an eleven year period, 1972 to 1983:

1. The Architectural Survey, 1972-74.
2. Stratigraphic Soundings, July, 1974.
3. Excavations in the Southern half of the City, Summer 1977.
4. Excavations in the Northern half of the City, planned for Summer, 1981.
5. Regional Survey, planned for Summer, 1983.

The results of the three completed phases will be summarized below.

The Architectural Survey

The survey was carried out on a part time basis from 1972 to 1974 while the author was Albright Fellow of the American Schools of Oriental Research (1972-3) and Research Associate of the American Centre of Oriental Research (1973-4). It was financed with the stipend of the Albright Fellowship of the American Schools, the author's salary as director of the Christian Reformed World Relief Committee and his wife's salary as teacher at the American Community School and a grant from the Calvin Foundation. Thanks is in order to these organizations for their support, to the Department of Antiquities for its cooperation and to the succession of volunteers on the other end of the measuring tape, especially former student Gary Rozeboom.

The Southeast quadrant of the city, including all of the buildings south of the main reservoir and east of the central open space (fig. 5) was mapped wall for wall with theodolite and tape with the help of one assistant. In the spring of 1973 the author and Aero-Precisa Co. of Beirut completed an aerial survey of the site, under the auspices of the Ministry of Municipalities and Rural Affairs and with funding from the Department of Antiquities. After this it was possible to complete the mapping of the remaining two thirds of the city much more rapidly by combining the photograph and topographical map produced by Aero-Precisa with ground control measurements.

The results of this two-fold process are the maps published with this article, one (fig. 5) showing the city plan in detail while the second (fig. 6) shows the buildings schematically for identification purposes. For ease of cross reference the names given to buildings by Butler have been kept. In cases in which these reflect a now questioned interpretation these names have been put in parentheses. For the twenty housing complexes mapped by Butler his Roman numerals have been retained, but for the rest it was necessary to switch to Arabic numerals to conserve space.

In comparing the results of the new survey with that of the Princeton Expedition (fig. 7) it must be stressed that the author considers his survey completion rather than correction of that expedition's work. The main impression of the earlier survey is that the fieldwork was generally accurate and that the published drawings are of outstanding quality. In this respect the major


MODERN DAM
WADI
UMM EL-JIMAL
ARCHITECT: BERT DEVRIES
MARCH 1978
0
50
100
150 M.
WATER CHANNEL
RESERVOIR
MODERN ROAD

figure 5

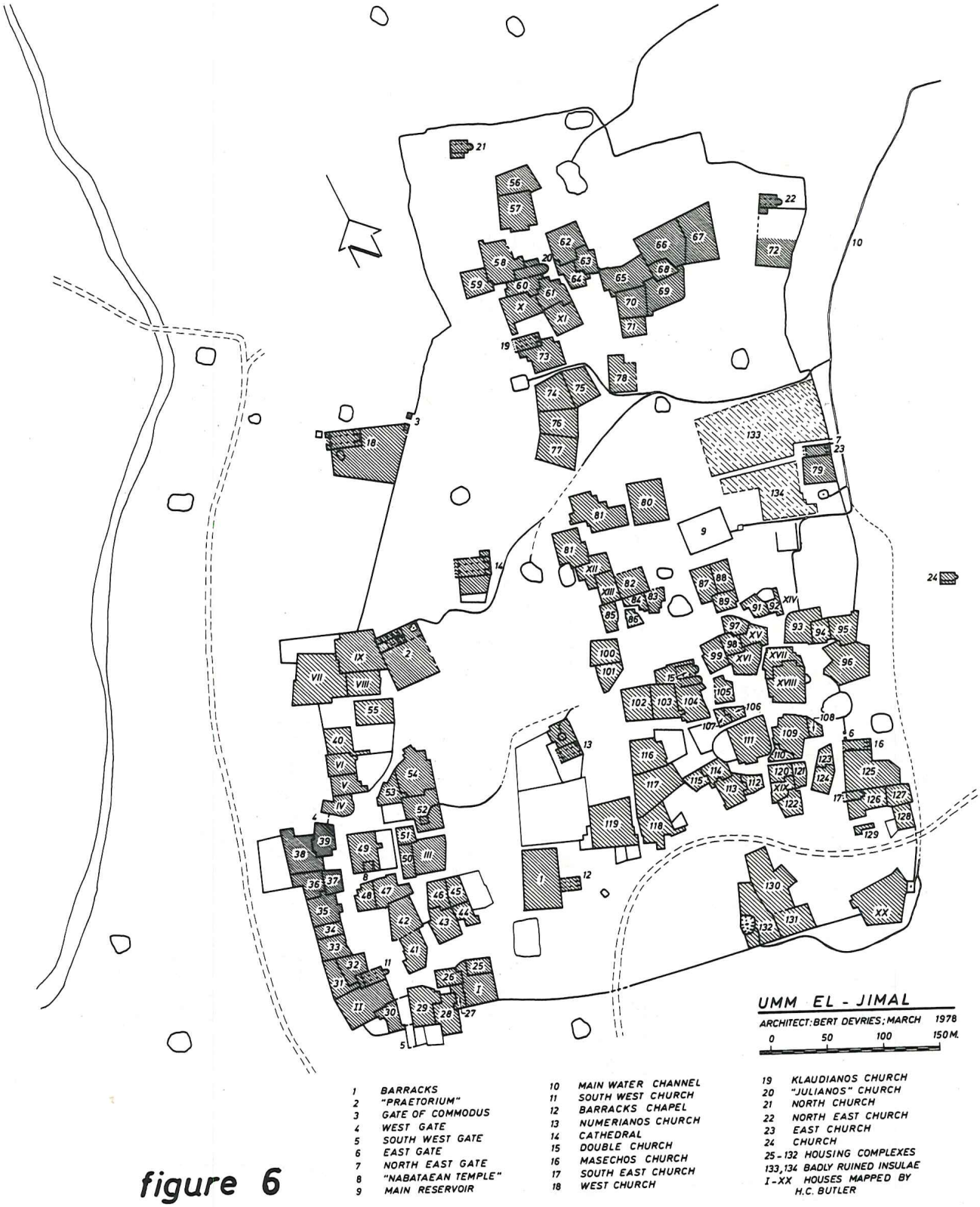

UMM EL - JIMAL
ARCHITECT: BERT DEVRIES; MARCH 1978
0 50 100 150 M.
1 BARRACKS
2 "PRAETORIUM"
3 GATE OF COMMODUS
4 WEST GATE
5 SOUTH WEST GATE
6 EAST GATE
7 NORTH EAST GATE
8 "NABATAEAN TEMPLE"
9 MAIN RESERVOIR
10 MAIN WATER CHANNEL
11 SOUTH WEST CHURCH
12 BARRACKS CHAPEL
13 NUMERIANOS CHURCH
14 CATHEDRAL
15 DOUBLE CHURCH
16 MASECHOS CHURCH
17 SOUTH EAST CHURCH
18 WEST CHURCH
19 KLAUDIANOS CHURCH
20 "JULIANOS" CHURCH
21 NORTH CHURCH
22 NORTH EAST CHURCH
23 EAST CHURCH
24 CHURCH
25-132 HOUSING COMPLEXES
133,134 BADLY RUINED INSULAE
I-XX HOUSES MAPPED BY H.C. BUTLER

figure 6

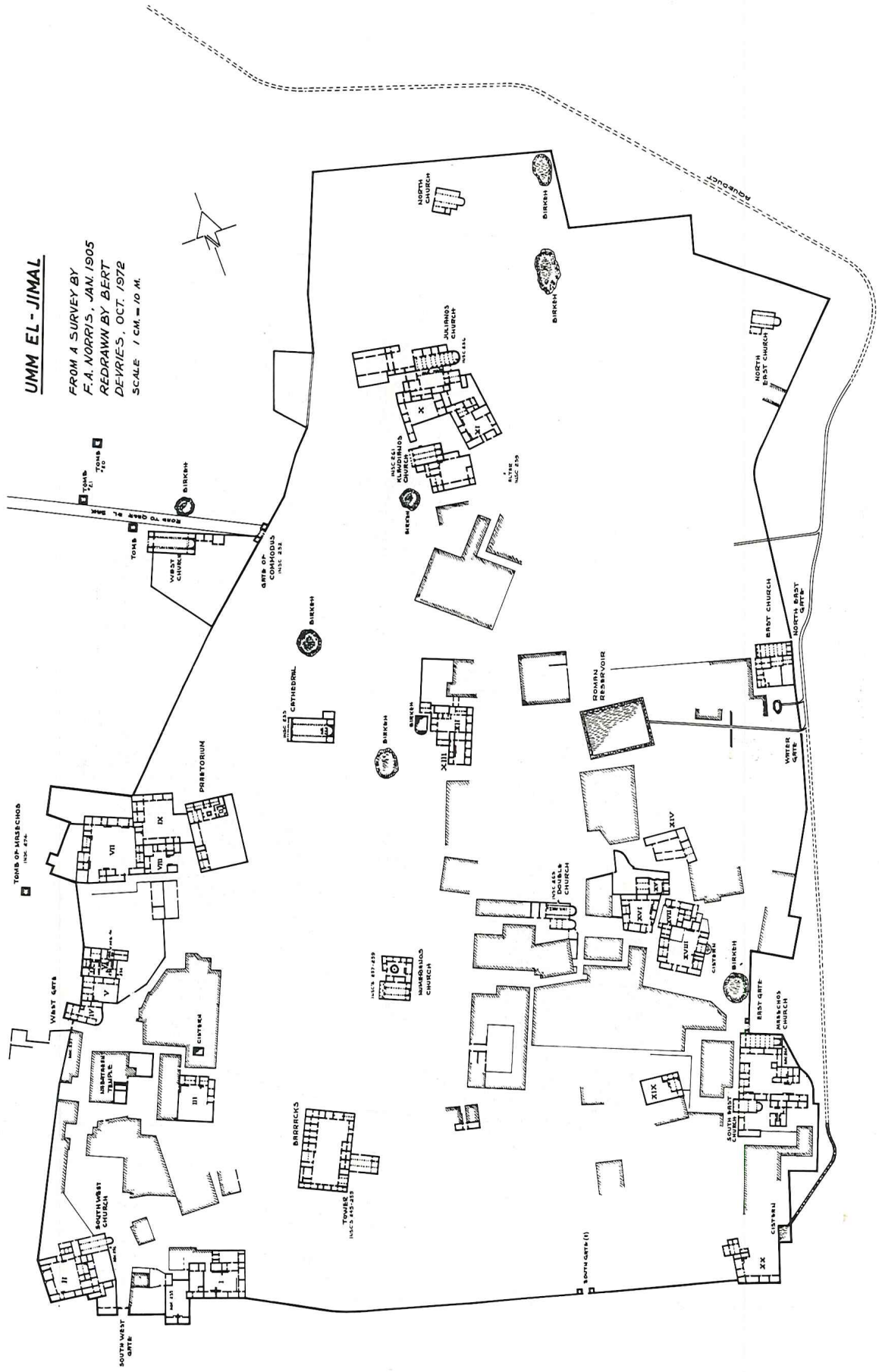

UMM EL-JIMAL
FROM A SURVEY BY
F.A. NORRIS, JAN. 1905
REDRAWN BY BERT
DEVRIES, OCT. 1972
SCALE 1 CM. = 10 M.
AQUEDUCT
NORTH CHURCH
BIRKEH
JULIANOS CHURCH
NORTH EAST CHURCH
TOMB
WEST CHURCH
GATE OF COMMODUS
CATHEDRAL
ROMAN RESERVOIR
EAST CHURCH
NORTH EAST GATE
WATER GATE
PRAETORIUM
TOMB OF MASECHOS
WEST GATE
CISTERN
NUMERIANOS CHURCH
DOUBLE CHURCH
EAST GATE
MASECHOS CHURCH
SOUTH EAST CHURCH
BARRACKS
TOWER
SOUTH WEST CHURCH
SOUTH WEST GATE
SOUTH GATE (1)

figure 7

change in the new map is the addition of 107 housing complexes and two housing insulae (133 and 134) which were too badly ruined to survey in detail.

The shape and size of the overall city plan drawn by Butler is generally identical with the new one with several important exceptions. The location of the city wall between the Southwest and West Gates was misplaced, due, perhaps, to the incompleteness of the survey at that point. The Princeton map shows the main aqueduct originating from behind the dam to the northwest of the city. Actually, this aqueduct was fed by a channel that runs for many kilometres up the sloping terrain to the northeast. A second channel from the northeast supplied reservoirs in the northern part of the city. At the southern end the aqueduct does not end in the cistern of House XX, but continues to the cistern in House 132. The aqueduct crosses the city wall at the approximate point of the South Gate on the Princeton map. Because there is no evidence for a gate anywhere in this section of the wall, it may be possible that Butler mistook the entry of the aqueduct for a city gate.

In the plans of individual buildings the Butler map shows a geneal tendency toward layout on a ninety degree grid. However, with the exception of the "Praetorium" and several churches, almost all buildings are laid out haphazardly. This is sometimes due to the carelessness of the builders (the Barracks), but most often in order to take advantage of available space (many housing complexes). There are a few cases of discrepancy concerning the locations of walls and doorways. It is often impossible to determine whether these are the product of inaccuracy or of remodelling since the Princeton Survey was completed.

The most significant differences between the Princeton Survey and the author's are due to reconstruction and quarrying activity in this century. From both the Princeton publication and analysis of surface artifacts it is clear that between the Umayyad Period and 1904 the city remained nearly totally undisturbed. In the past seventy years, on the other hand, a variety of human actions have caused major changes at Umm el-Jimal. The fact that Bulter had the opportunity to study the city before these modern changes took place make his publication an invaluable record that cannot be duplicated today.

Major alterations in the structure of many buildings resulted from a Druze settlement of the site that began between 1905 and 1909 (Norris and Stever 1930:34, 91), and lasted for three decades. This Druze community worked energetically at the reconstruction of the ancient buildings in order to make them habitable. This work is most obvious in the numerous ceilings and roofs that are still intact today. These are often mistaken to be ancient because the Druze were adept at copying the ancient methods of corbeling and erection of arched partitis. Their work can usually be distinguished from the ancients' by the irregular masonry at the tops of walls, mixed shapes of corbels and ceilings beams and fresh cut marks on the voussoirs of the arches.

In some cases, identification of Druze construction is also possible by comparison with the Princeton publication. Butler's plan and photograph of the room with the screened west wall in House XIII (Butler 1913: 203, fig. 205:183) is without the transverse arch that covers the middle of the screened wall and supports the ceiling today (fig. 8). Butler's plan shows the "Nabataean Temple" as a simple rectangular room with a two-columned pro-style porch (Butler 1913:fig. 155: 131). Today the room contains two transverse arches which support the ceiling, while the porch is no longer apparent on the surface. Examination of the standing architecture leads one to conclude that everything except the front wall with the triple doorway is contemporary with the Druze reconstruction of the building.

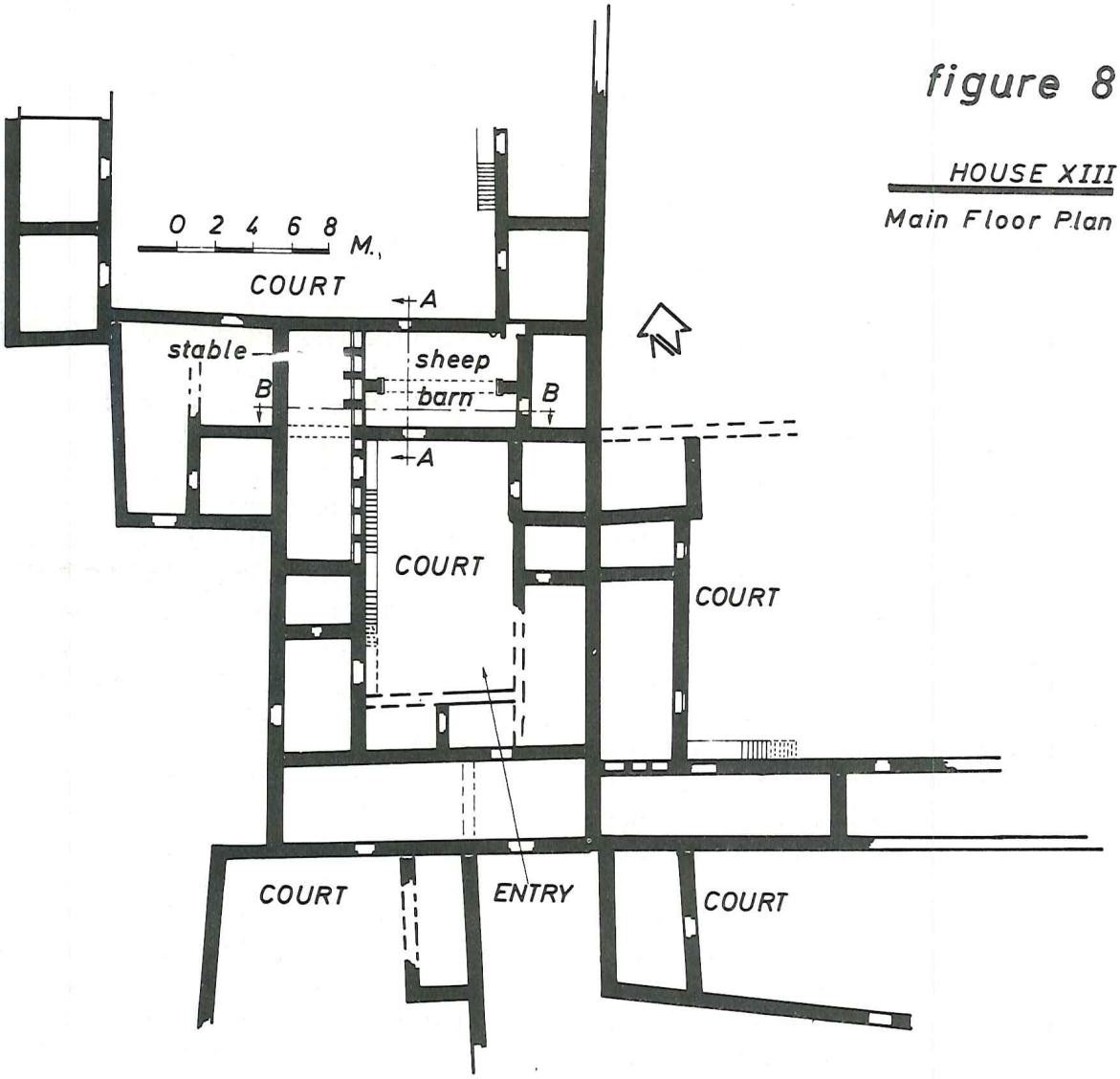
The survival in several buildings of temporary walls used to support voussoirs during arch construction is evidence that the remodelling was still in process when the Druze abandoned the city in the 1930's.

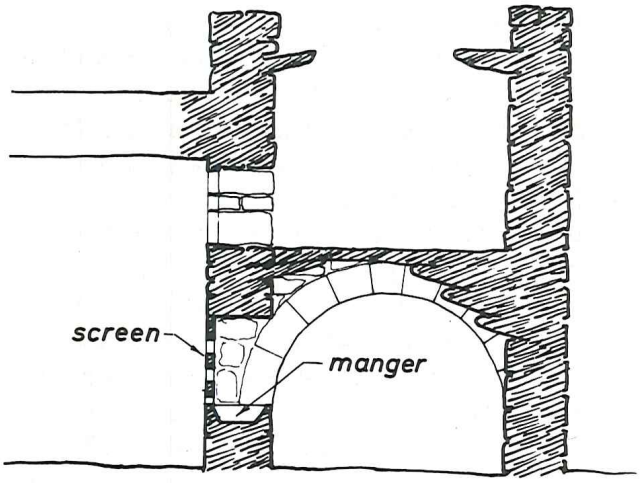
In the 1920's before agreement was reached on the Mandate border a French army detachment was camped in and near the Barracks, according to the present vil-

figure 8

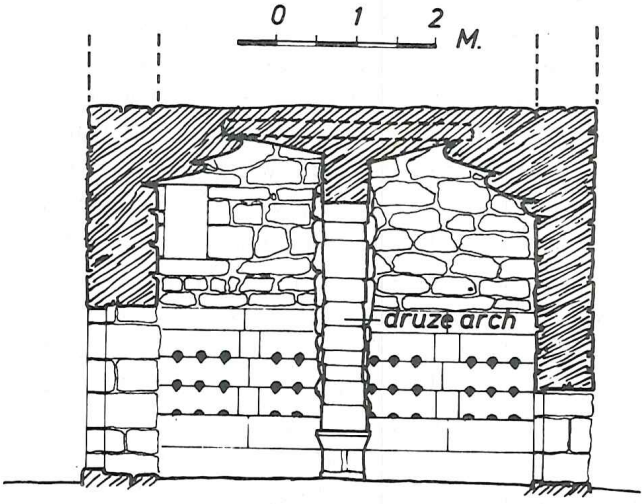
HOUSE XIII

Main Floor Plan





SECTION B - B



SECTION A - A

lagers. It left behind raised tent platforms and a basalt walk in the Barracks courtyard as well as whitewash on some doorposts and lintels in rooms near the tower. Similar tent bases also remain in House 47. About the same time the tribe of the present villagers began to settle in the area. Most rooms restored by the Druze were used as stables and barns until the government fenced off the site in 1975. Recent government construction includes the paving of the road through the southeast corner, the restoration of the main reservoir (9) and the building of a dam in the wadi several meters to the south of the remains of the ancient dam. Although domestic water is now supplied to the villagers from the Azraq line the reservoir is still in great demand for the watering of flocks of sheep, goats and camel.

Significant changes have also taken place since 1904 as the result of natural collapse and quarrying. The Numerianos Church, today ruined almost to ground level, was preserved to roof height at the time of the Princeton Survey (Butler 1913: figs. 192: 171-173). Some accessible wall sections of quality masonry, such as the south wall of the "Praetorium" courtyard (Butler 1913: fig. 160:140) and the east city wall near the East Gate (Butler 1913: fig. 158:137) have almost entirely disappeared. The Barracks especially has suffered much recent damage. The interior tower floors and stairs were destroyed in 1970; a section of roof adjacent to the tower collapsed in 1973, and the large V-shaped gap in the north enclosure wall was created by a combination of recent collapse and quarrying. Sections of the exterior aqueduct, described as intact by Butler (Bulter 1913: fig. 160: 139), are now only detectable as depression in the terrain.

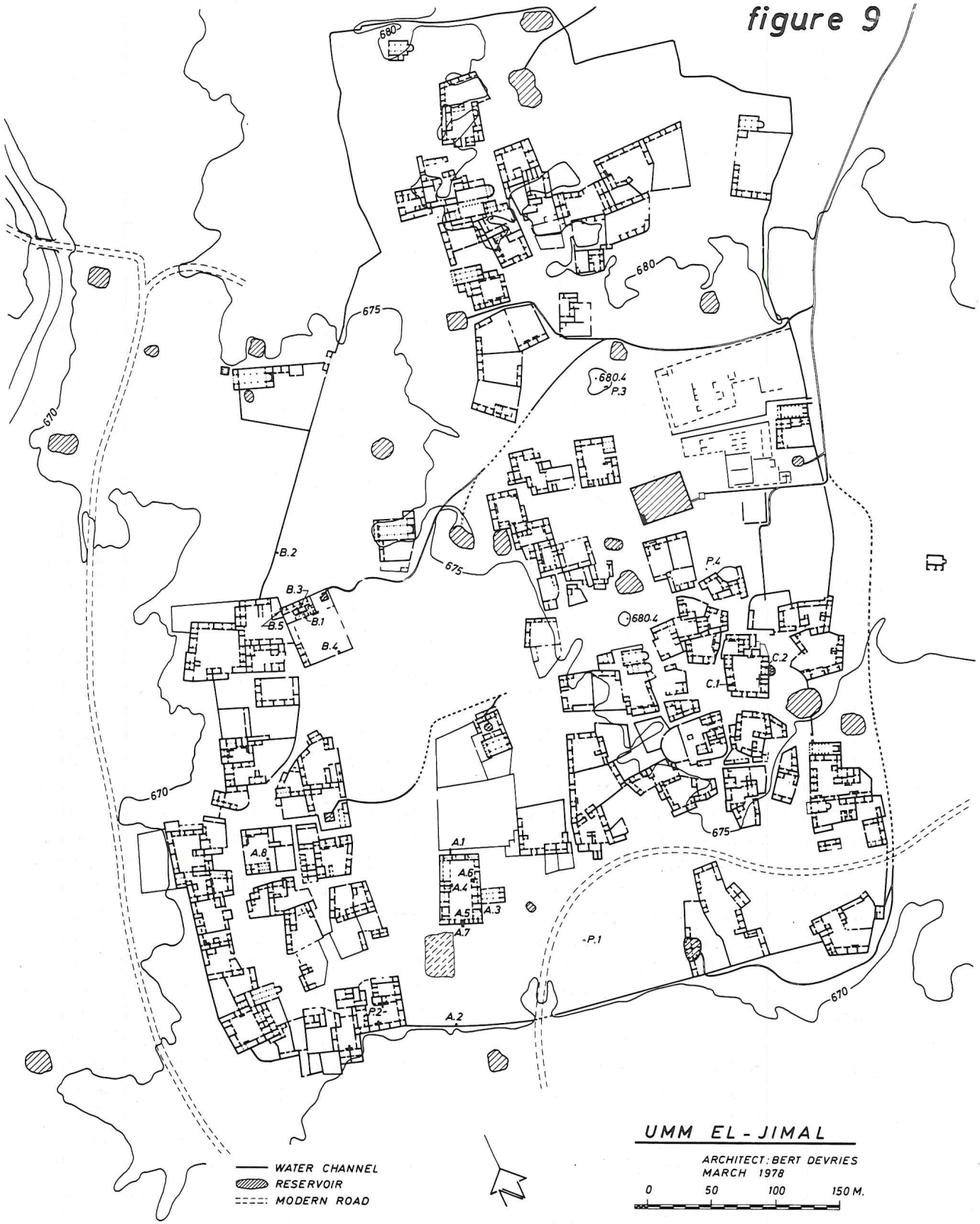
Howard Butler's estimate that most of the domestic architecture dates from the Late Byzantine period is correct (Butler 1913:196. See below for stratigraphic evidence). In fact, the completed map (fig. 5) represents the city as it was inhabited in the 6th, 7th and 8th centuries. Because of extensive remodeling of apparently older structures not much can be said about the nature and extent of the earlier Roman and Nabataean settlements.

Butler's interpretation of the function of the domestic architecture and his population estimate based on that can now be revised on the basis of the more complete survey. His conclusion that "only a few houses have stables, and there is no evidence that any considerable number of domestic animals were housed within the city gates" (Butler 1913:195) is substantially incorrect. It is in fact difficult to find housing complexes that do not include at least one stable with a row of five to ten mangers built in. These long, narrow, low ceilinged stables are usually adjacent to a large, arched room with which they form an L-shape and share a set of mangers. Corbett's interpretation of these large rooms as barns or stables (Corbett 1957: 43-45, fig. 44:3) is more plausible than Butler's view that they are the core room of a family's living quarters (Butler 1913: 195). The fact that many of these large rooms have a latrine built into one corner need not preclude their use as barns. One can imagine the advantage of locating such a facility away from the living quarters.

An especially fine example of this stable-barn combination is in House XIII (Butler 1913: fig. 203: 182). In this case a row of four well built managers is separated from the large room by means of a screen constructed of well dressed, thin slabs of basalt perforated by cone shaped openings (fig. 8). Butler's attempt to identify these rooms as a small industrial establishment (Butler 1913: 204) ignores the numerous parallels of the stable-barn arrangement, of which this is merely a more elaborate version. The perforations in the partition were simply necessary to supply air to the animals tethered in this otherwise closed section of the stable. The doorway from the large room to the courtyard of House XII (shown much too large in Butler's drawing) is too small for people or larger animals, but adequate for sheep and goats. It seems likely, therefore, that the long stable with the mangers was used for larger animals (cattle, horses), while the large room provided indoor shelter for sheep and goats.

From the above it is clear that in a typical housing complex much of the

figure 9


680
675
670
680.4
P.3
B.2
B.3
B.5
B.1
B.4
P.4
C.2
C.1
A.8
A.1
A.6
A.4
A.5
A.3
A.7
P.1
P.2
A.2
UMM EL-JIMAL
ARCHITECT: BERT DEVRIES
MARCH 1978
0 50 100 150 M.
WATER CHANNEL
RESERVOIR
MODERN ROAD

ground floor space was devoted to animals. The people lived on the second and higher floors and had access to their living quarters by the exterior stairways. One would have to agree with Corbett "that cattle-dealing was one of the principal occupations of the inhabitants" (Corbett 1957:40) at least in the Byzatine period. Further substantiation for this is in the fact that much of the open space in the city was taken up by walled enclosures. Many of these enclosure walls have not been included on the map because they are barely visible at ground level. However, the walls enclosing the area between the Barracks, the Numerianos Church and House 119 are typical (fig. 5). It is possible that what appears as open space today was partitioned in the Byzantine period and served as outdoor animal pens.

Butler's population estimate of from seven to ten thousand people (Butler 1913: 195) will have to be reduced because it is based on the inclusion of numerous stables and barns as living space for people. Even with a conservative estimate that twenty five percent of this space was devoted to animals would lead to a new figure of about five thousand as the population of Umm el-Jimal within the city walls in the Late Byzantine period.

Stratigraphic Soundings, UJ74

In the week of June 16-22, 1974 four small probes were excavated in order to obtain a stratigraphic check on the periods apparently represented by both the architecture and inscriptions on the surface and to test the feasibility of carrying out more extensive excavation in the future.

The project was carried out under the same sponsorship and financing as the architectural survey. In addition to the author the staff consisted of Jim Sauer, co-director and ceramicist; Hikmat Ta'ani, department representative; Zee Aime, Dick Dorsett, Gordon Malarckey and Sue Sauer, square supervisors.

The four probes were located (fig. 9) in various types of open spaces throughout the city. They were deliberately placed away from architecture in order to be able to achieve rapid progress in simple soil layers. P. 1 was located 80 meters east-south-east of the Barracks Tower in the Large open space now intersected by the modern pavement. The 2 x 2 m. square was excavated to bedrock 0.30 m. below the surface. P. 2 was located in the courtyard of House I in the southwest corner of the city. This 1x2 m. square was excavated to virgin soil 1.60 m. below the surface. P. 3 was located 80 meters north of the large reservoir (no. 9) on a three meter high mound in the open space between houses 76, 78, 80 and 133. This 1x2 m. probe. was excavated to virgin soil 2.70 m. below the surface. P. 4 was located 50 meters south of the south east corner of the large reservoir (no. 9) in a raised area contained by a retainer wall and adjacent to an artificial pool on the north of houses 91 and 92 XIV. This 1x2 m. probe was partially excavated to a depth of 1.10 m. below the surface.

On the basis of Jim Sauer's pottery analysis the following outline of the occupational history of Umm el-Jimal could be determined:

Pre-stratum 7. There is no evidence of pre-Roman pottery in any of the trenches. This suggests very strongly that the site was occupied for the first time in the Roman period.

Stratum 7, Early Roman (63 B.C.-A.D. 135). Early Roman pottery was found in all four probes, but always with later pottery in the same locus. No soil layer could be identified as having been deposited in the Early Roman period.

Stratum 6, Late Roman (A.D. 135-324). While Late Roman pottery was found mixed with later pottery in P. 2, 3 and 4, it was clearly the latest pottery in P. 1:2 and 3, the soil layers between the surface soil and shallow bedrock.

Stratum 5, Early Byzantine (A.D. 324-491). Early Byzantine pottery was clearly the earliest in P. 2:1-8, all loci from the surface to virgin soil. This evidence may suggest that House I enjoyed its most intense occupation during this period. P.

4:10-13 also had no pottery later than Early Byzantine.

Stratum 4, Late Byznatine (A.D. 491-ca 636). Clearly identifiable Late Byzantine pottery was the latest only in P. 4:5-9. It was impossible to fit P. 3:1-18, all loci above virgin soil into the stratigraphic sequence from Early Roman to Late Byzantine. "Ceramic analysis revealed that loci 1-18 were probably deposited fairly rapidly in a fill manner, not over a long time, because some late pottery was also found in lower layers. The latest pottery was Byzantine, but Late Roman and Early Roman sherds were also well attested" (Sauer 1981). Explanation for the deposit of this mound as well as refinement of the date of the deposit will require more excavation.

Stratum 3, Umayyad ca. A.D. 636-750). P. 4: 1-4 yielded Umayyad pottery as the latest. No Umayyad pottery was found in any loci in P. 1, 2 and 3.

Post-stratum 3 gap (A.D. 750-ca. 1900). The absence of Post-Umayyad pottery in any of the probes indicates total abandonment of the site until the modern era.

Stratum 2, Late Ottoman-Mandate (ca. A.D. 1900-1940). No pottery from this period is included in the corpus form P. 1-4. However, the stratum is added to this list on the basis of surface evidence elsewhere and to round out the stratigraphic scheme to be used for future seasons of excavation.

Stratum 1, Modern (ca. A.D. 1940-present). See notation for stratum 2.

Excavations in the Southern Half of the City, UJ77

The 1977 season of excavation, carried out in July, was part of a six month project done jointly by the author and the Department of Antiquities of Jordan. In addition to the excavation the project included the consolidation of the Barracks. In exchange for the author's services on the restoration project the Department hired the laborers needed on the excavation. In addition to the Department's generous contribution the excavation was funded by grants from the Kyle Kelso Fund and the Calvin Foundation, participants' camps fees and course tuition, Sally De Vries' salary at the American Community School and the author's sabbatical pay from Calvin College. The project was affiliated with ASOR and received a great deal of assistance from ACOR, ranging from excavation equipment to logistical support and advice on pottery analysis from Director Jim Sauer. The financial support and personal involvement of so many organizations and individuals was overwhelming. I am deeply grateful to all.

The core staff was a talented group of excavators and specialists, almost all of whom did double duty by supervising the digging in addition to their speciality. Robin Brown and S. Thomas Parker teamed up as chief stratigraphers with Robin taking responsibility for the "Praetorium" and House XIII, while Tom supervised the Barracks, the City Wall and the so-called Nabataean Temple. In addition Tom Parker did the ceramic analysis.

The rest of the core staff and their specialities were: Salley De Vries, administrative director; Jennifer Groot, object registrar; Bud Haggard, pottery registrar; Frank Koucky, geologist; Paul McDermott, epigrapher; Jim Sauer, ACOR advisor; Hikmat Ta'ani,Department representative and foreman; Mike Toplyn, osteologist. There were assisted by a very able group of novices, six of whom participated for course credit at Calvin College. They were: Richard Abma, photographer and square supervisor; Roger Brummel, photographer; Craig Bultsma, square supervisor; Laurette De Veaux, square superivisor; Shelley Dunn, square supervisor; Charles Fondse, surveyor; Barbara Oppewall, square supervisor; Keith Vander Laan, surveyor. Daughters Tara and Tanya De Vries also participated full time as assistant square supervisors and pottery registrars . The marvelous cooking of Mohammed Adawi contributed to both the good health and morale of this group.

The goal of the excavation was to study a representative sample of buildings in the southern half of the city, with the northern half to be done in a future season. Specific structures were selected according to three functional motifs: public buildings except churches (also left for a future season), the city's defense, domestic buildings. With this in mind six squares were opened in the Barracks, A.1, 3-7 (figures 9, 10), in order to verify its building date, study the history of its remodelling, and, if possible, determine the function of the various components of the structure. Two squares were placed against the city wall, one, A.2 (fig. 9), against the south wall and the other B.2 (fig. 9), against the west wall in order to determine the building date and reconstruction phases. One square, A.8 (fig. 9) was placed on the location of the porch of a building Butler had called a Nabataean Temple (Butler 1913: 155-56) in order to test that thesis. Three squares were placed in the "Praetorium," B.1, 3,5 (figures 9, 11) in order to determine the building date and history of usage and to test Butler's guess that the building was a praetorium (Butler 1913: 164-66). One square, B.4 (fig. 9) was placed against the "Praetorium" courtyard wall in order to check its chronological relationship to the building proper. Two squares were located in House XVIII. This particular domestic complex was selected not only because it is a typical house, but also because its outstanding quality of construction and decoration make it a primary candidate for consolidation and reconstruction. The first square, C.1 (fig. 9) was located in a west room in order to check floor construction while the second, C.2, was placed in a basement reservoir under the main floor of an east room (Plate XXV No.: 1). All of these squares were treated as soundings for stratigraphic sampling. They were, therefore, kept as small as was practically possible, for in no case was the clearing of an entire building or room an excavation objective.

The brief summary of the results will follow the stratigraphic scheme determined by the 1974 soundings. This summary will follow the interpretations of area supervisor Tom Parker for the Barracks, the City Walls and the so-called Nabataean Temple (Parker 1978) and those of area supervisor Robin Brown for the "Praetorium" and House XVIII (Brown 1978). It should be noted that the almost total absence of foundation trenches made the dating of walls difficult. In some cases dates were based on that of the soil layer under the foundations, and, where possible, dismantling was resorted to.

Stratum 7, Early Roman. Although numerous early Roman and a few distinctly Nabataean sherds occurred mixed in with later pottery, no soil layers were dated to this period. If a settlement existed at all before the end of the Nabataean kingdom, it must have been much smaller than the current city which began to develop in the Late Roman period.

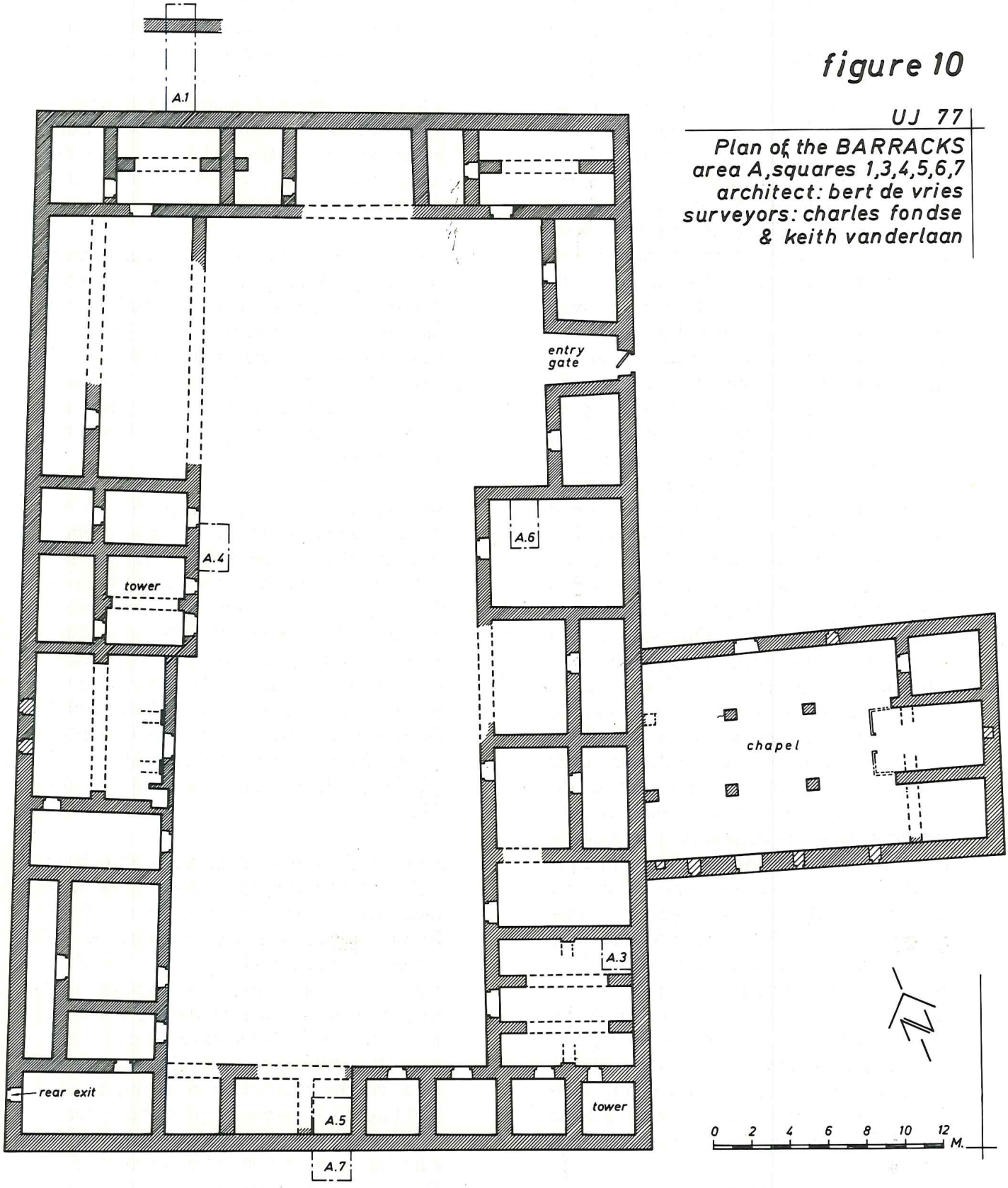
Stratum 6, Late Roman. Even though the pottery sample from the city wall probes, A.2 and B.2, is very small, it points to a Late Roman founding date. In both cases the soil layers on which the walls were founded (A. 2:8 and B. 2:6) were Late Roman, as was the pottery in the bottom two courses of wall B. 2:10. This evidence bears out the inscriptional evidence which dates the construction of the Commodus Gate, 150m. north of B.2, to A.D. 176-80 (Butler 1913:157, Littmann 1913: 131, no. 232).

Stratum 5, Early Byzantine. Soil layer A.1:19 under the north wall of the Barracks (A. 1:13) was dated to the Early Byzantine period, as was soil layer A. 7:7 under the south wall (A. 7:2 A. 5:2). Hence those sections of the Barracks wall that have survived remodelling originate from this period. This makes Butler's dating of the building to A.D. 412 on the basis of a nearby inscription referring to the building of a *castellum* plausible (Butler 1913: 171). The excavation of A.5 exposed a *latrina* or toilet bonded into wall A. 5:2. This installation consists of a basin below two protruding stones (the right one is broken off; see (plate XXV No: 2) which actually could have served as the seat. The

figure 10

UJ 77

Plan of the BARRACKS
area A, squares 1,3,4,5,6,7
architect: bert de vries
surveyors: charles fondse
& keith vanderlaan



back side of the wall above. A.7 has the other side of this toilet-drain protruding (plate XXVI No: 3). A similar installation was later built into the second floor of the corner tower.

Stratum 4, Late Byzantine. Extensive occupational evidence came to light in the Barracks for this period. Of particular interest is the construction of corral wall A. 1:2 to the north of the north Barracks wall. The resulting space between the two walls became a street or roadway (A. 1:14, 18). The Barracks also enjoyed extensive Late Byzantine remodelling. From the dating of soil layer A. 4:11, which lies under interior tower wall A. 4:2, it is clear that this smoothly finished tower was built then. By using careful architectural phasing it can be concluded that the corner tower with its Christian inscriptions and symbols was built at the same time, as well as the current gate and possibly the chapel. The small rear gate (fig. 10), exposed in clearing of tumble for consolidation in September of 1977, was almost certainly also added in this reconstruction phase. The Christian texts, symbols and structure make conversion to monastic use a possible alternative to continued military use. The top two courses of the west city wall, B. 2:9 and 8 contained Late Byzantine pottery, indicating that the city defenses were also rebuilt.

Excavation of A.8 revealed the existence of column support base A.8:3 and flag stone step A.8:6 (Plate XXVI No: 4) both components of the porch shown by Butler on his plan of the so-called Nabataean Temple (Butler 1913: 155, 111, 131). However, these architectural remains were founded on occupation debris layer A. 8:9, which had accumulated on Late Byzantine floor A. 8:12. This makes the porch several centuries too late to belong to a Nabataean temple. The date of the building itself will have to be checked in a future season before this issue can be settled completely.
Of all the structures both the "Praetorium" and House XVIII have been most difficult to date. It is fairly certain, however, that both emerged in the flurry of building and remodelling of the Late Byzantine period. The main difficulty is that in both cases later floors (Umayyad) were constructed after the earlier floors and occupation layers were removed. A good stratigraphic occupational history is therefore difficult to come by. However, in the northwest corner of the "Praetorium" Late Byzantine plaster floor B. 5:12 was plastered against the wall with a vertical lip (B. 5:14) at foundation level. Enough of this survived the Umayyad reflooring to make it clear that this was the earliest floor in the room. In the atrium a support base for an atrium roof column in the southwest corner of B.3 a late Byzantine foundation trench. The building of House XVIII cannot yet be clearly dated. Pottery in the bottom part of sedimentation layer C.2:5 revealed that the basement cistern was in use in this period. In C.1, however, all pre-Umayyad occupational evidence has been removed. Further study of this and other domestic complexes will be necessary in a future season.

Stratum 3, Umayyad. Perhaps the most sensational result of our investigation is the discovery that Umm el-Jimal continued to flourish as a rural town well into the eighth century, possibly to the end of the Umayyad period.
The roadway that originated between the north Barracks wall and corral wall A. 1:2 continued in use as surface A. 1:7. Inside the Barracks, however, there was collapse. The roof of the *latrina* caved in (A. 5:6) on top of Late Byzantine occupation debris. This collapse is followed by evidence of crude squatting (wall A. 5:11 and camp fire A. 5:12).
In the "Praetorium" much more sophisticated remodelling took place. It was also possible to refine the stratigraphy by separating the remains into a Byzantine-Umayyad transitional phase (A.D. 636-696) and a Late Umayyad phase (A.D. 696-750). The transitional phase was represented in both the atrium and the northwest room by sedimentation layers (B. 3:23 and B. 5:4) containing fallen (Late Byzantine?) wall plaster and a mixture of Late Byzantine and Umayyad transitional pottery. The Late Umayyad phase was represented by a systematic cobblestone

UJ 77

the "PRAETORIUM"
area B sq. 1,3,5

ARCHITECT: BERT DE VRIES
SURVEYORS:
CHARLES FONDSE
KEITH VANDERLAAN

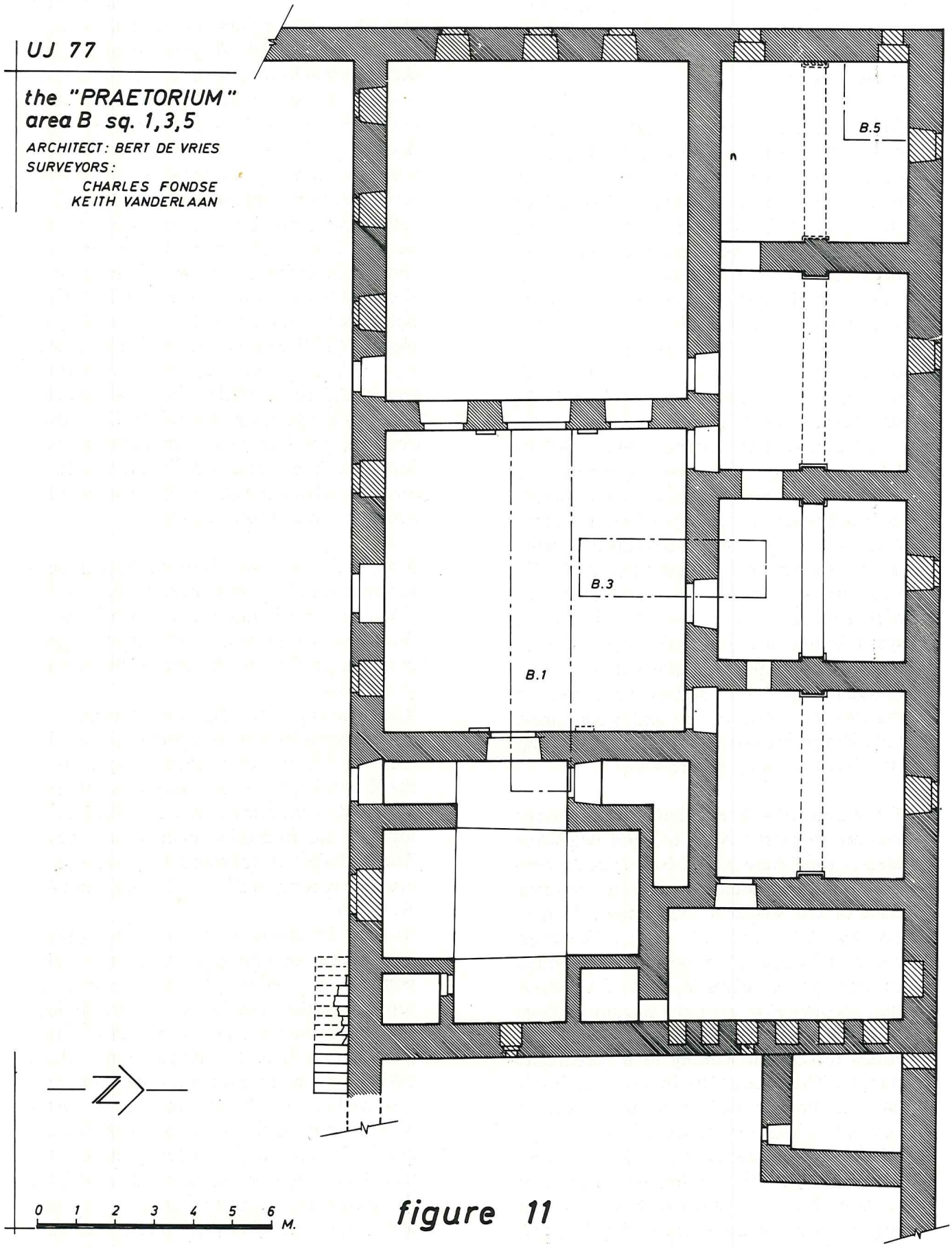


figure 11

reflooring in the atrium (B. 1:10,11; plate XXVII, No: 5) and the northwest room (B. 5:8,9; plate XXVII, No: 6) The West room of House XVIII had two phases of similar cobble floors (C.1:13, the earlier, C.1:11 the later). This room suffered roof collapse later in the Umayyad period C.1:9). That the basement cistern continued to hold water is evident from the fact that the waterlaid sediment layer C.2:5, which began to be deposited in the Late Byzantine period continued to accumulate through the Umayyad period.

It appears therefore, that while the Barracks building in the south of the city suffered from some neglect, more centrally located buildings like the "Praetorium" and House XVIII continued to flourish with quality maintenance throughout this period.

Post-stratum 3 Gap. Umm el-Jimal was almost totally abandoned after the Umayyad period. The one possible exception is debris pit B. 1:14 in the atrium, which contained one Ayyubid-Mamluk sherd.

Stratum 2, Late Ottoman. No attempts at resettlement were made until the second decade of the Twentieth Century, so that H.C. Butler had the advantage of visiting a still undisturbed site. Three phases of post 1910 resettlement attempts could be made out from local oral tradition and were recognizable in the stratified remains. Attempts by a group of Druze to resetle and rebuild the city took place for several decades after 1910. Typical of their remodelling is the so-called Nabataean temple, in which all walls except the facade, the two interior arches and the roof are their work. In the west room of House XVIII locus C.1:5 consists of Late Ottoman squatter debris. This is probably contemporary with the partially completed arch for which the temporary wall, necessary to support the voussoirs until the keystone is in place, is still standing.

A second occupation phase is the French army encampment in the Barracks immediately after World War II before the Mandate borders were drawn. Locus A. 4:3 was a rough stone platform filled with late Ottoman soil (A. 4:4,5,7) containing bullet cartridges and a French army uniform button. Local tradition has it that this platform as well as the larger one at the south end of the courtyard and the stone pathway connecting them to the entrance was constructed by the French for tent bases and traffic.

Stratum 1, Modern. The latest occupation of Umm el-Jimal resulted from the migration into the area of the tribe that still resides in the village around the now protected antiquities site. Squatting evidence, dung accumulation and modern debris is present in all surface loci of the squares excavated.

In looking back at the above chronological summary of the excavated remains two concluding observations are worth making: First, the city's long standing reputation as a significant Nabataean site has obscured the fact that it really prospered in the Late Byzantine and Umayyad periods. Second, enough problems remain with the so-called Nabataean temple, the "Praetorium" and House XVIII to warrant continued investigation in the next season. Refined definition of the various strata of occupation will be the major goal of the 1981 season of excavation.

Bert De Vries

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THE WADI EL HASA SURVEY 1981
A Preliminary Report

by
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Introduction

The Wadi el Hasa archaeological survey was in the field for its second season between 20 April - 29 May, 1981.[1] The team members for the 1981 season were Burton MacDonald, Gary O. Rollefson and Duane W. Roller. Munawer Rwashdeh acted as representative of the Department of Antiquities of Jordan. Mujahed Muhaisen, a doctoral candidate in the Department of Prehistory at the University of Bordeaux and an employee of the Department of Antiquities of Jordan, joined the team for the fourth week of the infield season. Rollefson did the lithic analysis while James A. Sauer, Director of the American Center of Oriental Research (ACOR), Amman did the pottery analysis. The project was licenced by the Department of Antiquities of Jordan under the Directorship of Dr. Adnan Hadidi, and was an affiliated project of the American Schools of Oriental Research. Financing was provided by the social sciences and Humanities Research Council of Canada (Grant No. 410-80-0735-R1). A grant to develop a computer program for the storage and retrieval of the information gathered by the survey was received from the St. Francis Xavier University's Council for Research (Grant No. CC/80). Following the infield season the team members spent four weeks in residence at ACOR working on a detailed report for the Department of Antiquities and a preliminary report for the *Annual of the Department of Antiquities of Jordan.*

During the 1979 or first season of infield work efforts were concentrated on the area along the south bank of the Wadi el Hasa from the western edge of the plateau where a steep descent begins towards the southeastern plain (Ghor) of the Dead Sea eastward to the ridge overlooking the Wadi La'ban. The 1981 season continued eastward from where the 1979 season had left off, that is, at the western slope of the Wadi La'ban. Work continued eastward as far as the ridge overlooking the Wadi el Ali. A total of 338 sites (Sites 215-552) were located (Fig. 1). During both the 1979 and 1981 seasons the area south of the Wadi el Hasa for a distance of 8-12 km. was surveyed. In each season of work approximately 110 sq. km. were covered (Plate XXVIII, No. 1).

Methodology

Before the infield work a study of previous archaeological work, explorations and surveys of the area was made. The work done in the 1930's by Glueck was

1. For a report on the first season of the survey see B. MacDonald, E.B. Banning and L.A. Pavlish, "The Wadi el Hasa Survey, 1979: A Preliminary Report "*ADAJ* XXIV (1980): 169-183, pls. CIII-CX. Brief reports on the 1979 phase of the survey have appeared in the *Bulletin of the Canadian Society for Archaeology Abroad* 19 (1980): 19-23, in the "Notes and News" segment of the *Biblical Archaeologist 44* (1, 1981): 60-61, and in the *American Schools of Oriental Research Newsletter,* Number 3, December 1980, pp. 5-12. A report on Site 104 of the survey has appeared in *Liber Annuus* (Studii Biblici Franciscani), XXX (1980): 351-364, pls. 59-70, under the title "The Hermitage of John the Abbot at Hammam 'Afra, Southern Jordan".

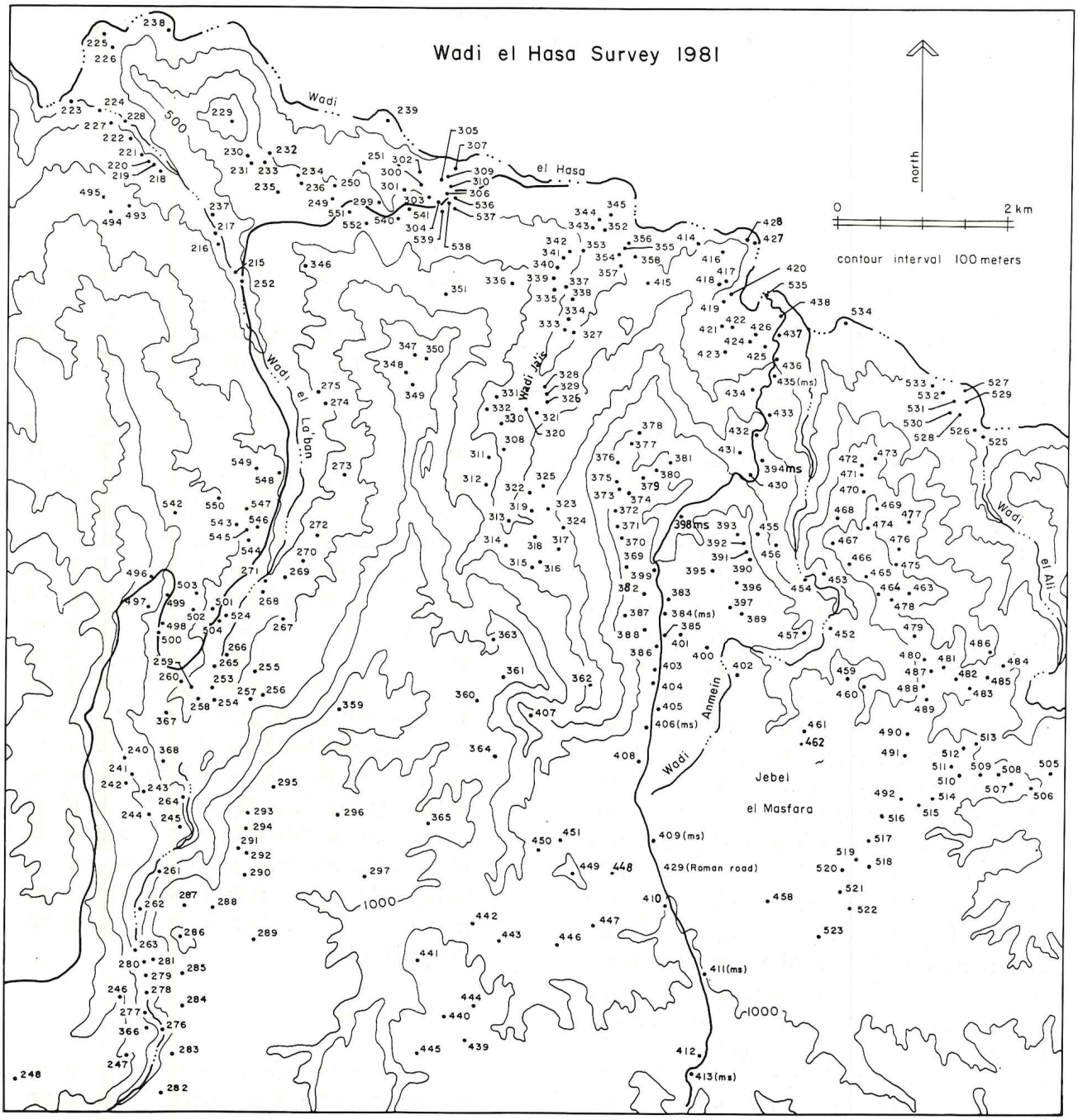

Figure 1: Map of the Sites of the 1981 Season (Site 298 is off the map to the southwest).

especially important for us.[2]

We systematically surveyed the area for study by foot and vehicle. The west and east slopes of the wadis in the area, namely, the Wadis La'ban, Ja'is and Anmein were walked by the team members. The ridges overlooking these wadis as well as the plateau areas between and to the south were covered in a similar fashion. Every visible indication of man's activities in the area from prehistoric times to A.D. 1918 was noted. These indications consisted of lithic and sherd scatters, places of burial, watchtowers, roads — and in association with the Roman Road, Site 429, milestones— aqueducts, mills, terraces, and major architectural sites. An effort was made at each site to collect artifacts, especially lithics and sherds. Sampling was purposive, total, or random depending on the site. The sites were described and sketched, where feasible, and their locations were plotted on 1:25,000 scale maps.[3] All sites were given an inventory rating to aid the Department of Antiquities in selecting sites which have the greatest potential for excavation based on their archaeological importance, the urgency for excavation due to natural or human threat, their excavation practicability, and their touristic potential.

All information gathered during the two seasons is stored at the Registration Center of the Department of Antiquities in Amman and on computer tape at St. Francis Xavier University, Antigonish, Nova Scotia, Canada. This information is available for use by interested researchers. The collected lithics and sherds are stored at the Museum of the Department of Antiquities at Karak under the Directorship of Mr. Sami Rabadi.

The Prehistoric Materials of the 1981 Season

The 1981 survey season located 164 sites from which lithics samples were taken. Eight of these sites were predominantly ceramic in nature and the lithics samples were too small (ranging from one to four pieces in number) to indicate a prehistoric presence of any appreciable degree, or they contained only unidentifiable chips or flakes. For the remaining 156 sites, the preliminary analysis of the 5,796 stone tools and debitage entailed typological identification of tools and cores, identification of the probable age of each artifact, and the calculation of the relative frequencies of tools and cores for each site.

Since the chronological placement of lithic artifacts depends heavily on associated tool types, there was much uncertainty in the age determination of samples when diagnostic tool types were absent. Although some technological features can delinate between some of the major periods, many of the phases of stone tool production share virtually indistinguishable technologies. This is especially true for post-Pleistocene occupations in the survey area. Furthermore, detailed analyses of the lithic technology for the Chalcolithic and Early Bronze periods have not been published, if undertaken at all. This situation presents considerable problems when samples from these periods do not contain specific stone tools or associated diagnostic ceramic assemblages. In samples of moderate or large size, variations in the degree and quality of artifact patina was sometimes useful to establish a relative chronology within each sample, but this method of dating has many limitations for the accurate chronological placement of artifacts.

Because of all of these factors, a large proportion of most of the lithics samples is indeterminate as to the cultural periods they represent. Nevertheless, the reliance on blade production, microblade man-

2. N. Glueck, *Explorations in Eastern Palestine, II. AASOR,* Vol. XV for 1934-1935. New Haven: American Schools of Oriental Research, 1935; *Explorations in Eastern Palestine, III. AASOR,* Vols. XVIII-XIX for 1937-1939. New Haven: American Schools of Oriental Research, 1939; R.E. Brunnow and A. von Domaszewski, *Die Provincia Arabia auf Grund Zweier in den Jahren 1897 und 1898 unternommenen Resisen und der Berichte fruherer Reisender,* 3 vols. Strassburg: Karl J. Trubner, 1904-9; A. Musil, *Arabia Petraea.* Kaiserliche Akademie der Wissenscaften, 2 vols. Wien: Alfred Holder, 1907-8; P. Thomsen "Die romischen Meilensteine der Provinzen Syria, Arabia, und Palaestine," *ZDPV* 40 (1917): 1-103.

3. Map sheets at the 1:25,000 scale used to date are: 210/025 (Buteina), 210/035 (El'Aina), 225/025 (Qal'at El Hasa), and 225/035 (Muhai).

ufacture, the use of punch technique, overall artifact size and relative degree of patination were often sufficient to indicate that many of the otherwise undatable artifacts did not come from the Lower, Middle or early Upper Paleolithic periods and they were, therefore, classified as "Late" in date. This leaves a great deal of imprecision, of course, since the dates of these artifacts probably fall somewhere between ca. 20,000 to 2,000 B.C. (late Upper Paleolithic through Early Bronze), but at least the occupations they represent are distinguishable from the earlier half-million years of human presence in the survey area.

Chronology of the Lithic Materials[4]

Overall, the sites averaged more than 37 artifacts each (excluding indeterminate flakes, chips and debris). An average of three tools was found at each site, although the actual number of tools ranged from zero at 42 sites up to 29 at Site 506. More than five cores could be expected to be found at the "average site", with an absolute range of zero cores at 16 sites up to 35 at Sites 506 and 514. This leaves an average of slightly less than 29 flakes and blades for each site in the survey area.

The Lower Paleolithic (older than ca. 80,000 B.C.) was found at 17 sites.[5] One handaxe from Site 337, on the western slopes of the lower Wadi Ja'is, is a crude amygdaloid which evidently dates to the Middle Acheulian and is as much as a half-million years old. Altogether, the Lower Paleolithic was found at roughly one-tenth of the sites, although the number of artifacts that could be assigned confidently to this very long period of human development was absolutely low (only 19 pieces). Another 22 artifacts from eight sites could have come from either the Lower Paleolithic or the Middle Paleolithic. Even if all of these artifacts were from the earlier cultural period, the combined total of 41 artifacts represents only 0.7% of the total artifact sample.

Artifacts from the Middle Paleolithic (ca. 80,000 - 35,000 B.C.) were found at 102 sites, nearly two-thirds of all those located during the survey. Although this is evidence of very extensive occupation during this time, the 750 artifacts assigned to this period constitute only 13% of the total artifact sample. Material which could have come from the later phases of the Middle Paleolithic or the earlier parts of the Upper Paleolithic were found at 38 sites (443 artifacts, 7.6% of the total sample). At least three of the sites (Sites 215 and 221, on the terraces of the lower Wadi La'ban, and Site 335 on the slopes of the lower Wadi Ja'is) have truly transitional Middle-Upper Paleolithic occupations, evidenced by the diagnostic Emireh point (Garrod 1938: 14).

The Upper Paleolithic (ca. 35,000 - 14,000 B.C.) was found at roughly one-third of the sites (n = 54). The 395 artifacts assigned to this period, which comprise only 6.8% of the sample, probably do not adequately reflect the real Upper Paleolithic presence in this part of Jordan. Very likely a large proportion of the numerous "Late" lithics come from the later stages of Upper Paleolithic development. The same may be true for the Upper Paleolithic-Epipaleolithic assignments, which total only 99 pieces (1.7%) and appear at only five sites in the survey area.

The Epipaleolithic period (ca. 14,000 - 8,000 B.C.) was not adequately represented among the sites. The absence of evidence of the use of microburin technique (Henry 1974), microburins, and retouched geometric microliths in any of the artifact samples precluded conclusive assignment of any of the collections to this important phase of cultural change in the Near East. The technological similarities between the Epipaleolithic and Early Neolithic periods are such that more than a thousand artifacts (nearly a fifth of the total samples) from 36 sites (nearly one-fourth of the lithics sites) could have come from either or both periods. Additionally, many of the "Late" artifacts could represent Epi-

4. Table 1 provides a summary of the results of the preliminary analysis of the lithic collections from the 1981 season.

5. Table 2 provides a breakdown of the periods represented among the sites.

paleolithic occupations.

The Early Neolithic (ca. 8,000 — 6,000 B.C.) evidence is easier to detect among the lithic samples, for diagnostic elements from this period were more abundant. Pressure-flaked lance points and arrowheads, as well as occasionally frequent burins on concave truncations, were found at seven sites, although many of the "Late" and Epipaleolithic-Early Neolithic assignments probably belong to this cultural period. Two of the Early Neolithic surface scatters appear to derive from *in situ* deposits: Site 257, on the slopes to the east of Khirbet edh-Dherih (Site 254) in the upper Wadi La'ban, and Site 326 on the eastern terrace in the central Wadi Ja'is. Site 329, near the latter site, which was classified to the Epipaleolithic-Early Neolithic and Late" periods, also appears to be an essentially intact occupation and may be related to site 326. Site 318, on a terrace in the upper reaches of the Wadi Ja'is, might also contain undisturbed deposits from this period, although the lack of diagnostic elements in the collection resulted in a Epipaleolithic-Early Neolithic age ascription.[6]

Because two sites, viz. Sites 307 and 524, produced abundant and conclusive ceramic evidence, the lithics samples in association can be assigned to the Late Neolithic (ca. 6,000 - 4,250 B.C.). Both sites are *in situ* villages of at least a semi-permanent nature. Lithics were collected from only the lower portions of Site 307 which is located on a terrace complex just above the Wadi el Hasa, and although this restricted sample did not yield any evidence of equipment to grind seeds and grain, one unserrated sickle blade was found. The 568 sherds collected from Site 307 are predominantly from the Late Neolithic. Site 524, in the upper Wadi La'ban, produced a basalt grinding stone fragment in addition to a wide range of chipped stone material, and a road cut along the site has exposed up to two metres of stratified ash deposits. A total of 146 Late Neolithic sherds were collected at the site. One gazelle and several sheep/goat bones were collected from the ash layer in the road cut (Pl. XXVIII, No. 2). The lithic material which might reflect Chalcolithic occupations (ca. 4,250 - 3,3000 B.C.) was scanty. One small pressure-flaked arrowhead was found at Site 346, high above the Wadi el Hasa between the Wadi La'ban and the Wadi Ja'is, but the vast majority of the artifacts from this site was Middle Paleolithic and/or Middle-Upper Paleolithic in date. Site 308, which consists of stone enclosures, stone piles and possible terrace walls in the central Wadi Ja'is, produced 63 Late Chalcolithic sherds. This ceramic sample is associated with rarer chipped stone artifacts, many of which are of Middle Paleolithic origin; the remainder of the lithic artifacts are very nondescript and could represent any of the periods entailed in the "Late" classification.

Besides the above-mentioned sites Late Chalcolithic-Early Bronze I period (ca. 3,750 - 2,900 B.C.) sherds were found at three sites, viz. Sites 414, 422 and 462, and possibly at Site 453. Both Sites 414 and 422 are located on terraces along the south bank of the Wadi el Hasa while Site 462 is located on the NE end of Jebel el Masfara.

Artifacts ascribed to the "Late" periods of lithic manufacture turned up on 95 of the 156 sites (61%), making this category of artifacts almost as extensive as Middle Paleolithic distributions. In absolute terms, however, the number of "Late" artifacts is nearly doubled the figure for the Middle Paleolithic.

Distributional Comparisons of the Lithic Materials

Tables 1 and 2 also provide evidence which may indicate differential use of the land forms in the survey area through time. If one considers the landscape in terms of a dichotomy between the plateau on the one hand and all of the wadis on the other, the much higher relative frequencies of cores and tools from the plateau sites are sig-

6. A sample collected from Site 149, Khirbet Hammam, which was discovered during the 1979 season, contained a broken lance point with unifacial pressure-flaking retouch. This artifact is strong evidence that the *in situ* village site dates to the Early Neolithic.

TABLE 1 Distribution lithics of sites and artifacts by general location, from the 1981 Wadi el Hasa Survey season.

Location	*No. Sites*	*Total Artifacts*	*Average*	*Average Tools*	*% Tools*	*Average Cores*	*% Cores*
Wadi el Hasa	35	1157	33.0	1.7	5.2	3.0	9.1
Wadi La'ban	24	779	32.4	2.8	8.7	4.2	2.8
Wadi Ja'is	20	782	39.1	1.4	3.6	3.2	8.0
All Wadi Sites	79	2718	34.4	2.0	5.7	3.4	9.9
All Plateau Sites	77	3078	40.0	4.0	10.1	7.6	18.9
All Sites	156	5796	37.2	3.0	8.0	5.4	14.7

TABLE 2 Absolute and relative frequencies of sites containing artifacts from specific cultural periods by general location.

Location	*(n/%) LP*	*L-MP*	*MP*	*M-UP*	*UP*	*UP-Epi*	*Epi-EN*	*EN*	*LN*	*Ch*	*EB*	*Late*
Wadi el Hasa	5	3	23	12	14	2	0	1	1	1	1	25
	14.3	8.6	65.7	34.3	40.0	5.7	0.0	2.8	2.8	2.8	2.8	71.4
Wadi La'ban	5	1	14	3	10	1	2	5	1	0	0	19
	20.8	4.2	58.3	12.5	41.7	4.2	8.3	20.8	4.2	0.0	0.0	79.2
Wadi Ja'is	1	0	14	10	3	0	3	1	0	1	0	10
	5.0	0.0	70.0	50.0	15.0	0.0	15.0	5.0	0.0	5.0	0.0	50.0
All Wadi Sites	11	4	51	26	27	3	5	7	2	2	1	54
	13.9	5.1	64.6	32.9	3.8	6.3	6.3	8.9	2.5	2.5	1.3	68.4
All Plateau Sites	6	4	51	12	27	2	31	12	0	0	0	41
	7.8	5.2	66.2	15.6	35.1	2.6	40.3	15.6	0.0	0.0	0.0	52.6
All Sites	17	8	102	38	54	5	36	19	2	2	1	95
	10.9	5.1	65.4	24.4	34.6	3.2	23.1	12.2	1.3	1.3	0.6	60.9

nificantly different than the same ratios for the wadi sites in Chi-Square comparisons.

For both tools and cores, the percentages of these artifacts are nearly double those of the combined wadi collections. In general, the plateau sites are probably the loci of somewhat more permanent occupations and represent a wider variety of tasks than is the case for the wadi sites, at least for the Lower, Middle and Upper Paleolithic periods. There are several notable exceptions to this generalization, however, for large *in situ* Early Neolithic, Late Neolithic and Epipaleolithic-Early Neolithic sites, discussed above, occur in the Wadi el Hasa, Wadi La'ban and Wadi Ja'is (Pl. XXIX, No. 3).

Several noteworthy features also emerge when one considers the relative dis-

tributions of sites on the plateau versus the wadis in each major cultural period. Nearly two-thirds of the Lower Paleolithic sites lie in the wadis while only one-third occur on the plateau. This difference is not statistically significant, but this may be related to the absolutely small number of Lower Paleolithic sites on the plateau.

The reverse of this situation is descriptive of the Early Neolithic sites, with two-thirds of them located on the plateau. Once again, however, this disparity is not significant in a statistical sense. On the other hand, the roughly similar distribution of Epipaleolithic-Early Neolithic sites (one-seventh in the wadis, six-sevenths on the plateau) is statistically different beyond the .0001 level of significance.

The distribution of sites from the Lower-Middle Paleolithic, the Middle Paleolithic and the Upper Paleolithic periods parellel each other in that roughly half of them is located in the wadis and half on the plateau. For the Middle-Upper Paleolithic, however, two-thirds of the sites are in the wadis and one-third on the plateau, a difference significant at beyond the .02 level. For this same period of time, sites are significantly more numerous in the Wadi el Hasa and Wadi Ja'is compared to the plateau, but Middle-Upper Paleolithic sites in the Wadi La'ban are of comparable relative frequency.

Some of the significance of the differences in the distributions of sites according to period become obscured when the plateau sites are compared with sites from the individual wadis.[7] Much of this obfuscation is due to the small numbers of sites from certain periods in the wadis, where statistical tests of significance cannot be applied. For example, Epipaleolithic sites are relatively rare in the Wadi La'ban and Wadi Ja'is and absent in the Wadi el Hasa, while they occur in 40% of the plateau sites. One cannot demonstrate the significance of this disparity, beyond appealing to logic, with samples totalling two cases for the Wadi La'ban and three for the Wadi Ja'is.

There is some considerable variation in the exploitation of individual wadis as evidenced by comparing the relative frequencies of cores and tools. The percentage of tools from sites in the Wadi La'ban is significantly higher than in both the Wadi Ja'is and the Wadi el Hasa, although sites from the latter wadis are not significantly different from each other. The same relationship holds for core percentages. In terms of these percentages, the Wadi La'ban sites behave somewhat like the plateau sites: for the tool percentages, the plateau sites are significantly higher than the Wadi el Hasa and Wadi Ja'is sites, but not compared to the sites in the Wadi La'ban. The plateau core percentages are also higher than those in the Wadi el Hasa and the Wadi Ja'is, but the same is also true for the Wadi La'ban.

One can also detect some variability within some of the wadis in terms of core and tool relative frequencies. For example, the 35 sites which overlook the Wadi el Hasa group into clusters of 25 sites in the vicinity of Jebel eth-Tannur, a cluster of five sites near the confluence with the Wadi Anmein, and a third cluster of five sites near the Wadi el Ali debouchement. While none of these clusters differs in terms of the tool ratios, the very low core percentages in the central cluster differs significantly from the easternmost cluster beyond the .02 level. This suggests that the central cluster of sites, at least, represents very brief, unsubstantial occupations.

For the Wadi Ja'is, nine sites form a local cluster in the lower reaches where it joins the Wadi el Hasa, while a cluster of 11 sites occurs in the larger areas of the middle and upper reaches of the drainage. These two clusters are similar in their core and tool ratios, although the number of tools from the lower cluster is too small ($n = 4$) for tests of significance. Nevertheless, this small number of tools, compared with the 24 from the upper Wadi Ja'is, suggests a more limited focus of activity for the lower sites.

The Wadi La'ban sites cluster into three

7. No lithic sites were recorded for the relatively small Wadi Anmein, although it must be admitted that the survey of this wadi was conducted while the lithics specialist was unavoidably out of the the country.

regional groups,[8] with 10 sites in the lower reaches of the wadi, seven in the middle part of the valley, and seven more in the upper sections of the drainage. Of these 24 sites' total artifact sample, 55.0% of the cores and 33.8% of the tools come from a single site: the Late Neolithic village at Site 524. Since this site could severely distort the patterns of variability among the sample from the Wadi La'ban, only the other 23 sites were compared. No significant differences were noted among the core ratios for the three clusters, but a steadily decreasing percentage of tools occurs from the uppermost cluster (not far below the plateau) to the lowermost cluster in the north. The 13% figure for tools from the uppermost cluster is significantly different from the 6.5% value from the lowest one. This is an indication that sites in the lower portions of the wadi were more specific in nature (as was the case in the Wadi Ja'is), and that the sites from higher up the wadi witnessed a variety of activities similar in nature to the general pattern of the plateau sites.

Whereas the sites in the wadis clustered into two or three major groups for each physiographic feature, the situation on the plateau is more complex, and the resulting differences among the highland site clusters become more difficult to interpret on the basis of the present evidence. The 77 sites on the plateau fall into six clusters as follows: the Rujm Muhawish "cluster" consists of the isolated Site 248, a predominantly Early Neolithic site in the far southwest corner of this season's survey area. The "western Plateau" cluster is made up of eight sites along the Jebel Abu Usba' ridge; the "Central Plateau" group consists of 26 sites around Jebel en-Namin; the "South-Central Plateau" cluster is comprised of a loose association of seven sites in the highlands between Jebel Abu Usba' and Jebel el Masfara; seven sites to the northeast of Jebel el Masfara make up the "Northeast Plateau" group, between Wadi Anmein and Wadi el 'Ali; and the final cluster is the "Southeast Plateau" group, formed by 28 sites between the Jebel el Masfara and Wadi el 'Ali.[9]

Comparisons of the relative frequencies of tools among these clusters show that the Southeast Plateau sites differ significantly from *all* of the other clusters even though the other clusters are statistically similar to each other in this aspect. One reason for this stark differentiation is undoubtedly due to the seven dense Early Neolithic sites (and 13 other sites ascribed to the Epipaleolithic-Early Neolithic) in the Southeast Plateau Group. For reasons unknown on the basis of the present evidence, this part of the uplands seems to have been particularly favoured by social groups during this period: 58% of the Early Neolithic sites on the plateau are found in this southeastern group, leaving only five others to be distributed among the other five clusters. Of the Epipaleolithic-Early Neolithic sites, 42% of these are also found in this large cluster.

Core percentages are complexly distributed: in terms of this artifact ratio, only the Northeast Plateau and the Central Plateau clusters are statistically similar, but all of the other individual comparisons are significantly different. One reason for the similarities between the Northeast and Central Plateau groups of sites may relate to the relatively extensive Middle Paleolithic occupations in each cluster, while the extreme diversity among the other clusters of sites is undoubtedly connected to corresponding

8. The cultural and geological processes that have been operative here may belie the apparent three-fold clustering of sites in the Wadi La'ban, and the other wadis may have suffered similar effects, although probably to lesser degrees. The Wadi La'ban is characterized by extensive terraces, especially on its western margins, which have trapped eroding sediments from the adjacent steep slopes. Much of this wadi, therefore, probably contains numerous *in situ* sites from many major periods that were not evident to the survey staff. On all of these terraces, sporadic, isolated chipped stone artifacts had been exposed on the surface as the result of cultivation, yet these artifact densities were so low that it was not possible to detect a concentration that indicated a "site" of prehistoric human occupation/habitation.

9. As was the case in Note 7, the survey of Jebel en-Namim concentrated on the Roman road sector while the lithics specialist was in the United States. The large number of sites along this restricted portion of the plateau suggests that the Jebel en-Namim was even more densely occupied in prehistoric periods.

diversity in the periods of occupation represented on those sites.

Concluding Remarks on the Lithic Materials

In summary, the lithic materials from the 1981 Wadi el Hasa survey span as much as a half-million years of human cultural development. The analysis for this preliminary report has been of necessity brief and rather superficial, but nevertheless some significant clues have emerged that point to substantial differences in the way human societies exploited the macro-and microenvironments in the area adjacent to the southern banks of the Wadi el Hasa. Some of these differences must reflect changes in available resources according to responses to changing climatic conditions, while others probably indicate shifts in socio-economic structures and efficiency in resource extraction and processing.

Resolving the questions that these differences raise concerning the prehistoric use of the area will require information from sources beyond the artifact collections *per se,* such as geological assessments of the changes of soil configurations, data relating to stability and change of paleoclimates, more intensive investigations of present and past plant communities in the area, and more extensive use of geographical methods of relating weather, water and food factors to site locations.

But the lithic artifacts themselves still contain much untapped information that is vital to understand changing patterns of human exploitation of the local region. More thorough examination of the collections in terms of the technology employed in lithic manufacture might refine the identification of periods of cultural development now subsumed under the "Late" classification as well as perhaps reduce the numbers of the stifling "indeterminate" batch of artifacts. Beyond this, the collections from the Wadi el Hasa Survey project also provide a valuable resource to begin a concerted effort to establish subphases within much of the prehistoric record for Jordan; at the present time, such temporal distinctions are known only for Palestine and parts of Lebanon, but the implications of these distinctions for the different environmental regimes of highland Jordan remain to be investigated and determined.

Consequently, continuing analyses of the chipped stone tools and debitage from the 1981 survey collections will continue through the coming year (as well as the material from the 1979 season). These analyses will include metric measurements, detailed technological investigation, and more refined typlological examination (Cf. Rollefson 1981; Rollefson n.d.; Rollefson and Sauer n.d.). By these means, not only will our assessment of the prehistoric uses of the survey area be enhanced, but a sound foundation for our understanding of much of Jordan's prehistory might be established.

The Materials from the Historic Periods

Pottery sherds (n = 13,662) were collected from 148 of the 338 sites surveyed. The number of sherds ranges from 1226 collected at Site 406, Rujm Faridiyyeh, to three sherds collected at Site 375, a group of five tower/tombs. However, generally speaking, sites which yielded only four or five sherds are not included in the 148 sites mentioned above. When no more sherds than this number could be found at a site they were generally not saved and, therefore, they were not counted. However, their presence at the site was mentioned in the data collection sheets.

The sherds collected at each site were used as a basis for assigning the site to a particular period or periods. Caution, however, must be taken about putting too much reliance for dating purposes on a very small number of sherds at a particular site.

As for the lithic materials the materials from the historic periods will be treated chronologically.

Besides the Early Bronze I sherds found in association with the above-mentioned, Late Chalcolithic-Early Bronze I sites several Early Bronze I period (ca. 3,300 - 2,9000 B.C.) sites were surveyed, viz. Sites 260, 328, 360, 361, 366, 367 and two possibly or probably contemporaneous sites, viz. Sites 369 and 390.

Site 260 is a sherd and lithic scatter on a modern, man-made terrace which is used today as a parking lot for picnickers and visitors to 'Ayn Dhir el La'ban in the upper segments of the Wadi La'ban. The pottery is predominantly from the Early Bronze I period and pottery from this period was found in an ash layer in a modern road-cut.

Moreover, Early Bronze pottery was found at two sites, viz. Site 405 where the pottery was read as Early Bronze-Iron Age body sherds and at Site 287. There were also several other sites at which the pottery reading was Early Bronze (?), possible, or probable. At two other sites, viz. Site 476 and 536 the pottery was read as either Early Bronze or Ottoman/Modern. At this stage in the study of the pottery there is none which can be definitely associated with Early Bronze II-IV.

Although stone tools and debitage constituted important components of Early Bronze Age remains and even later periods (McConaughy 1979; Rollefson and Funkhouser n.d.;), diagnostic typological evidence was not found in the 1981 season. Many "Late" lithic artifacts could come from Early Bronze Age contexts.

The Middle Bronze period (ca. 1950 - 1550 B.C.) is unrepresented in the survey area except for the presence of one possible Middle Bronze sherd found at Site 362. There were no sherds collected which we can presently date to the Late Bronze period (ca. 1550 - 1200 B.C.).

There are four sites, viz. Sites 270,283,284 and 362 at which Iron IA period (ca. 1200 - 1000 B.C.) pottery was collected. Site 270, on the east side of the Wadi La'ban, yielded 19 sherds from this period. It consists of a modern house, possibly rebuilt from ancient remains, approximately 30 m. square, built of ashlar blocks. Foundation walls extending beyond the area of the modern house are visible. The site commands an excellent view of the central segment of the Wadi Laban (Pl. XXIX, No. 4).

An extremely interesting site which yielded 72 Iron Age sherds plus seven sherds probably from the same period is Site 362, Khirbet al-Faridiyyeh. The site has predominant Mamluk/Ottoman pottery and is either a very large farm or village. It is located on a terrace on the west side of the upper Wadi Ja'is opposite 'Ain al-Faridiyyeh. Modern paddocks have been constructed which evidently used the stone of earlier structures. Fifty-nine Iron Age body sherds, 11 Iron I-IIA, one fragment on an Iron IA "collared-rim" jar, and one possible Middle Bronze or Iron I sherds were collected at the site, mostly from the east slope.

Site 367, Ed-Dair, is a major Iron I-II site on the west slopes of the Wadi La'ban just to the southwest of Site 260. At the north side of the site there appears to be a tower and a major building measuring approximately 25 x 10 m. and is apparently divided into three rooms. The larger building is constructed of well-laid, roughly-hewn-blocks, and is located immediately to the south of the tower. There may be another similar building to the west, and to the east there is a series of terraces.

An important site from the Iron IIA-B period (ca. 918 - 605 B.C.) is Site 311, Rujm Ja'is. The 209 sherds collected at this site all date to the same period. The site is probably to be identified with Glueck's Rujm Ja'ez or his Site 217 (Glueck 1935:102), one of his Edomite fortresses or border sites (Glueck 1935:105-106). It is located on a terrace on the west side of the Wadi Ja'is, central segment. A spring is located below the site. The site commands an excellent view of the Wadi Ja'is, the Wadi el Hasa to the north and El 'Aina across the Wadi el Hasa to the northeast. There are many foundation walls still visible in the midst of a great deal of stonefall. There appears to be a tower measuring ca. 9 x 9 m. at the eastern extremity of the site. There also appear to have been several other structures at this very ruined but impressive site, and it could very well have been a fort-site. There is also evidence of ancient agriculture in the area.

This site ought to be considered in conjunction with Site 248, Rujm Muhawish, which also appears to be a large fortress from the Iron II period. It is located on one of the highest points (1198 m.) in the plateau area west of the Wadi La'ban. The structure consists of a polygonal building

with towers at the corners and long, narrow structures, measuring 4-5 m., running between the towers. None of the structures are preserved to more than one meter above the present ground level. The site commands an excellent view in all directions.

Three predominantly Iron II sites, viz. Sites 282 (Khirbet al-Draj), 283 (Khirbet al-Mdhaywit[10]), and 284 (Khirbet Abu 'Usba') are located to the east and northeast of Site 248 on the east side of the upper Wadi La'ban. All these sites were probably villages.

In summary, both the Iron I and Iron II periods are extremely well represented in the area. However, they are generally speaking present on the western side of the territory. Sites from these periods on the eastern segment of the survey area are represented by several sherds at the most.

No pottery or other occupational remains were found which dated definitely to the Persian period (539 - 332 B.C.). However, this is not unusual for this part of southern Jordan.

A small amount of Hellenistic period (332 - 63 B.C.) pottery was found in the area. This pottery consists of a maximum of 70 sherds scattered through 10 possible sites. However, only five of these sherds are indubitably Hellenistic. None of the 10 sites can be said to be distinctly Hellenistic in any way and most have other periods dominating. The only one which is in any way unusual is Site 419, a large rectangular olive press in an agricultural area along the Wadi el Hasa, where seven Hellenistic/ Early Roman sherds were collected. However, associated Site 420 has a predominance of Nabataean pottery and has neither Hellenistic or Early Roman pottery present (Pl. XXX, No. 5).

As the area of the survey lies within ancient Nabataea, it was not unexpected that Nabataean pottery was the most common found and that Nabataean sites were the most numerous. Of the 148 pottery-yielding sites 80 had some Nabataean pottery and that pottery was dominant at 40 of these sites. Besides these 80 sites the reading from 20 other sites was Nabataean/ Late Roman and from one site, viz. Site 313, the reading was Hellenistic/Early Nabataean/Byzantine.

The major Nabatean population center found in the 1981 season was in the Wadi La'ban. At its mouth is the prominent site of Khirbet eth-Tannur, Site 229, rising on a summit nearly 400m. above the wadi bed. This major Nabataean sanctuary was excavated in 1937 and has been thoroughly published (Glueck 1965; 1978). The 1981 visit did not add to the earlier findings.

Ten kilometers up the Wadi La'ban, however, is another major Nabataean center, only briefly mentioned by previous explorers (Gluck 1965: 48). This is Site 253, Qasr edh-Dherih, which seems to be a smaller version of the temple at Khirbet eth-Tannur. Qasr edh-Dherih is a temple with a cella within a walled courtyard in a typical Hellenistic-Oriental pattern, standing on a prominent bluff overlooking the Wadi La'ban at 'Ayn Dhir el La'ban. There seems to be a large agora or forum to the south of the temple and various related structures to the east; the entire complex is enclosed by terrace walls, especially on the western and northern sides where the wadi curves around the base of the bluff. A number of decorated architectural fragments was visible at the site, some of which are in a delicate vine-and-tendril style invoking comparisons with Roman art of the early Julio-Claudian period (Glueck 1939: Fig 26, p. 47; Schmidt-Colinet 1980: 189-230) (Pl. XXX, No. 6).

Qasr edh-Dherih seems to have been the civic center of a major Nabataean settlement whose ruins are known today as Khirbet edh-Dherih, Site 254 (Glueck 1939: 46-48). It was a sizeable settlement, covering several thousand square meters, curving in an arc south and east of the Qasr. Little detail is visible today, however, because of erosion.

Another major Nabataean site lies about 1500 m. south of Khirbet Edh-

10. This site is identified as Rujm Muhawish on the 1:25,000 scale maps. However, the locals refer to Site 248 by the same name.

Dherih. This is Khirbet al-Baqarah, Site 368 (Glueck 1935: 107). Although the ruins themselves are scanty and not impressive, the pottery found was exclusively Nabataean.

Farther south 350 m., above 'Ain Zara, is a recently abandoned village, Site 366, lying on the cliff slopes on the west side of the Wadi La'ban. This site also yielded a high concentration of Nabatean pottery - 206 sherds.

Nabatean occupation along the Wadi el Hasa itself is not well documented, except for Khirbet eth-Tannur. There was probably a number of farmsteads, but erosion and flooding have wiped away most of the evidence. Agricultural terraces which may represent such a farmstead were found east of Jebel eth-Tannur at Site 239. Another major Nabatean farmstead, Site 420, lay in a lush basin along the south bank of the Wadi el Hasa, approximately five kilometers east of Site 239. There are foundations of a large structure which may have been the farmhouse itself (Glueck 1935: 106).

The Wadi Ja'is, a major tributary, enters the Wadi el Hasa seven kilometers to the east of the Wadi La'ban. Although never as precipitous as the Wadi La'ban, the Wadi Ja'is has a flat valley well suited to agriculture. It was another Nabatean population center: the major Nabatean site was Khirbet Ja'is, Site 321 (Glueck 1935: 102), a settlement on the east slopes of the Wadi about three kilometers above its mouth. There seems to have been no other Nabatean village in the wadi although there were a number of Nabatean sherd scatters, e.g. Site 326.

There was probably Nabataean occupation on the plateaus between these wadis. The standard type of site on the plateaus, especially their northern reaches, where promontories stand high above precipitous cliffs, is a small watchtower, either square or round, about four meters in maximum dimension, and frequently reused as a tomb. In addition, there are many other tombs, built in a similar fashion to the watchtowers, and often indistingushable from them. Both towers and tombs are constructed of ashlar masonry and rarely have survived beyond one or two courses. Surface pottery was inevitably too scanty to be used for dating purposes, although it often included Nabatean pieces.

The advent of Roman control in A.D. 106 meant little change for the inhabitants of the area. Most of the major Nabataean sites continued to be occupied, and there seem to have been no major new sites except those associated with the construction of the Via Nova, built by Trajan in A.D. 111 - 114.

Over eight miles of the Via Nova were explored during the 1981 season, from the bridge, Site 535, across the Wadi el Hasa to the northern flanks of Jebel el-'Idham, or from south of Mile 63 to Mile 55 from Petra. At each mile, Sites 435, 394, 398, 384, 406, 409, 411 and 413, up to 10 milestones were still visible, although their condition had deteriorated dramatically since they were examined by Thomsen in the early years of this century. The inscriptions recorded by Thomsen were in most cases faint or completely obliterated (Thomsen 1917: 1-103)[11] (Pl. XXXI, No. 7).

The roadway crossed the Wadi el Hasa on an arched bridge, Site 535, of which only a small portion of the northernmost arch remains. (Pl. XXXI, No. 8). From the wadi the road climbs in graceful turns and loops to the summit of the plateau, Jebel el Masfara, reaching the summit, a rise of approximately 470 m., in six kilometers. The grade varies between 6% and 10%, and the engineering work is remarkably limited, with few embankments or cuttings. At times bedrock was chiselled away to form the road surface itself, and in two places gentle steps were constructed (Pl. XXXII, No. 9).

The roadway was made of hard and durable field stones, with raised curbs on either side. The width of the roadway is three m., although on the plateau the width was doubled at some time after the original

11. Thomsen recorded inscriptions along this stretch of road dating from A.D. 111 (at Mile 58, Site 406, and Mile 59, Site 384) to A.D. 305-306 (at Mile 63, north of Site 535). On this see Thomsen 1917: 1-103, especially 52-53 (mile-stones 134-142).

construction. It is not known how long the road remained in use: the last milestone inscription near the Wadi el Hasa is Tetrarchic in date, [12] but in the Madaba region are two Constantinian inscriptions.[13].

A number of structures was surveyed along the road and are to be associated with it. The most important is known today as Rujm Faridiyyeh, Site 406, at Mile 58 (Glueck 1965: Pl. 89). Although the structure cannot be dated precisely, it seems to have been a fort or garrison. It is located near a spring, 'Ain Faridiyyeh, and is oriented with its east face parallel to the roadway. The structure is 45 m. on a side and has a doorway south of center on the east side. The east wall is preserved to six courses of well-laid pseudo-isodomic masonry. The interior seems to have rooms on three sides (Pl. XXXII, No. 10). About three kilometers to the southwest, in the center of Jebel 'Abu Usba', is a similar structure, Site 296, which commands a view to the north, especially towards the Dat Ras area, which is not visible from Rujm Faridiyyeh (Pl. XXXIII, No. 11).

Some of the nondescript towers near the Via Nova, especially those on the slopes north of the plateau proper, may be associated with the road. Of special note are Site 432, a fort or way-station lying in a saddle between Mile 60 (Site 394) and Mile 61 (Site 435), and Site 386, approximately one kilometer north of Rujm Faridiyyeh, which may have been an outpost of the large fortress, as it controls an area hidden from Rujm Faridiyyeh.

Late Roman-Byzantine period (A.D. 135-640) sherds were found at five sites, viz. Sites 273, 288, 374, 441, 501, and at one possible site, viz. Site 484. These sites do not fall into any one category and a study of their location within the survey area leads to no significant conclusion(s).

The number of Byzantine period (A.D. 324 - 640) sites in the area was surprisingly low (n = 11). The Byzantine sites surveyed this season are small, generally speaking, and for the most part they are located in the western portion of the survey area. At least two, viz. Sites 223 and 313, of the Byzantine sites appear to be tower sites, and they are located at the confluence of the Wadi el Hasa and the Wadi La'ban, and the Wadi Ja'is and the Wadi Zabda respectively. The positioning of these two sites is similar to that of Site 169, Mu'afa, surveyed in the 1979 season and located at the confluence of the Wadi 'Afra and the Wadi el Hasa (MacDonald, Banning, and Pavlish 1980: 179).

Early Islamic period (A.D. 630 - 1174) habitation in the area appears to be virtually nonexistent on the basis of the sherds gathered. Only one Fatimid-Mamluk sherd was found during the entire season and that was a small, purple-glazed body sherd found at Site 452 which is located on the east bank of the upper Wadi Anmein. Nothing else from this period was noted.

Pottery sherds which were read as Mamluk/Ottoman were found at only one site, viz. Site 362, and it was the predominant pottery at that site. Twenty-four Ottoman/Modern sherds were found at the same site which has been described above in the section on the Iron I-II periods.

Pottery from four sites, viz. Sites 226, 245, 247 and 255, and from two other possibly/probably contemporaneous sites, viz. Sites 225 and 254 was read or assigned to the Ottoman period (A.D. 1516 - 1918). All these sites are located in the western portion of the survey area and in close relation to the Wadi La'ban.

Pottery from 50 sites was read as Ottoman/Modern period (A.D. 1516 to the present) material, from one site, viz. Site 282, as possible Ottoman/Modern or Early Bronze. Ottoman/Modern pottery was dominant at 15 of the above-mentioned 50 sites (Pl. XXXIII, No. 12). Nothing of significance can be concluded about these sites. This pottery is associated with villages, e.g. Sites 283, and 284, tower/tombs, e.g. Sites, 273, 360, 441, 483, 484, stone enclosures, e.g. Sites 549, 548, and sherd

12. At Mile 58, Site 406, is an inscription of A.D. 305-306. See Thomsen 1917: no. 134b.

13. At Mile 8 from Madaba and Mile 13 from Madaba are inscriptions of A.D. 334-335. See Thomsen 1917: nos. 116a1 and 119b1.

scatters, e.g. Sites 503, 500 and 499. Moreover, these sites were found throughout the survey area and are not concentrated in one specific geographical sector. These sites are generally small in size and with the exception of several sites, e.g. Sites 496 and 499, the number of associated sherds is small as well.

On any survey there are always a number of sites which cannot be dated. Many of the tombs surveyed had no associated pottery. Thus it is difficult to say to which period(s) they ought to be assigned. The seven mill sites, viz. Sites 258, 265, 276, 277, 278, 279 and 281, in the Wadi La'ban and the one mill site, viz. Site 427, in the Wadi el Hasa had no associated pottery (Pl. XXXIV, No. 13). Thus investigation of their construction is necessary before they can be assigned to a definite period. Furthermore, aqueduct sites, e.g. Sites 238 and 262 and cave sites, e.g. Sites 263 and 264 cause the same problems as far as dating is concerned (Pl. XXXIV, No. 14).

Further study is necessary on the pottery sherds collected in the 1981 season. Also a more detailed study of the association between pottery and site will lead to more definite conclusions regarding the occupational history of the territory surveyed.

Acknowledgements

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THE SECOND SEASON OF EXCAVATIONS AT HALLABAT, 1980

I

by
Ghazi Bisheh

The second excavation season at Qasr al-Hallabat began September 20th and ended October 15th, 1980[1]. The goals set for that season were as follows:-

1. To continue the clearance of the two rooms in the southeastern corner of the castle (nos. 3 & 4) Fig. 1.
2. To investigate the walled enclosure situated approximately 400m. to the west of the castle in order to discover evidence pertaining to is function and date.
3. To uncover additional Greek inscriptions for the forthcoming publication of a corpus of Latin and Greek inscriptions in Jordan. These inscriptions which formed part of the edict of Anastasius, were engraved on basalt blocks of stone and incorporated as building stone in the Umayyad reconstruction of the castle.[2]

The Castle

The visitor to whom we owe the great part of available information about the castle is H.C. Butler. He visited the site in 1905 and 1909 and made plans of the castle and the adjacent mosque[3]. Butler's plan of some 75 years ago is basically correct, but a number of minor modifications were introduced in the new plan (Fig. 1). For instance there are only two rooms, not three, (17,18) on the east side of the inner courtyard (court 2). Of these two rooms, the smaller one (18) seems to have served as a kind of vestibule leading into inner the structure. Furthermore, rooms 3,6,10,12 and 24 do not seem to have transverse arches as indicated in Butler's plan. One intriguing question presented itself while clearing room 4 concerning the height of the roof and the existence of a second storey. Assuming that the height of the transverse arches will be half the width of the room plus the height of the impost block from which the arches sprang, we arrive at the figure 5.15 m. for the height of the arches, provided that they were semicircular[4]. Unfortunately no roofs or upper floors remain, but the indications are that the roofs were flat and not all at the same level. The implication is that the castle was not two strories high, but rather that the roofs were provided with low parapets and were used as outdoor sleeping spaces during the hot summer nights. This point, however, still needs further investigation. The roof was reached by a flight of stone steps, the remains of which can still be seen in the northeastern corner of the courtyard.

The clearance of the two rooms in the southeastern corner (3 & 4) yielded pottery sherds and carved stucco fragments characteristic of the Umayyad period, similar to those which came out of the excavations

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1) I would like to express my sincere thanks and gratitude to architect Suzan M. Balderstone who did all the plans and drawings with a devotion much beyond her duties. I also like to thank Prof. Jean MARCILLET - JAUBERT of Lyon university who has constantly been willing to share his knowledge of the site and the Greek inscriptions. A special debt is owed to Mr. Hussein al-Yamani who took care of all details of organization and of the daily running of our work.

2) G. Bisheh, "Excavations at Qasr al-Hallabat, 1979," *ADAJ,* vol. XXIV (1980) PP. 69 f. J. Marcillet - Jaubert, "Recherches au Qasr el-Hallabat," *ADAJ,* vol. XXIV (1980) PP. 121-24

3) H.C. Butler, *Ancient Architecture in Syria,* Div. 2, Sect. A (Leyden, 1909) PP. 70.77; Appendix PP. XVII-XIX.

4) Room 4 measures 8.37m. long and 7.12m. wide. The height of the impost block from which the arches sprang is 1.50 m.

carried out in the spring of 1979.[5] An interesting feature of these two rooms is the survival of original timber, both in the doorsills of the entrances leading to room 3 and to the passageway (2) (pl.XXXV No. 1-2) as well as a beam inserted between the two lintel stones of the doorway which opens into the souhteastern tower (1). In addition to these timbers a few delicately carved wooden fragments were recovered[6] (pl. XXXVI No. 1-3). They are decorated with floral motifs based on the vine scroll and acanthus leaves.

The most surprising discovery was a complete lamp found in room 4 under several meters of fallen stones and debris (Pl. XXXVII No. 1-3). Two molds were used for the lamp: one for the upper half and another for the lower half; the two halves being separated by a ridge. The shape of the lamp is oval, pointed at the nozzle's end. The central filling hole is surrounded by a narrow circular channel which opens into a straight trough extending to the wick hole. The area around the filling hole and the trough is decorated with half volutes each containing a circle. On each side of the upper part is a dove, a fish, and a cross with circles between its four arms. On one side, however, the circles terminate the four arms of the cross, and a tree (palm branches?) is added between the cross and the fish. The rest is decorated with wavy lines and vertical strokes. The handle is tall, curving, and terminates in a mutilated animal head[7]. Thumb impression is still visible on the upper part of the handle which indicate that it was finished off by pinching. The sides of the lower part are decorated with alternate circles and plam branches. The base is oval pointed and decorated with a chalice within which is a schematically represented sequence of fish carved in low-relief. A similar red pottery lamp was found in the side Stairway of the Fountain Court in Jearsh and was assigned to the Byzantine period.[8] The decorations on the lamp bear obvious christian connotations, but these are not sufficient justification for a Byzantine date. A similar lamp type was found in abundance at Jerash, two with kufic inscriptions. One lamp, which had a cross on the base, was signed by Theodoros and made in A.H. 125 (A.D. 741-42).[9] Another lamp signed by Ibn Hassan, also of the year A.H. 125, is typologically similar to our lamp; it has a kufic inscription, together with two or three birds.[10] A third lamp, also excavated at Jerash and decorated with birds and fish, bears two inscriptions: one in Greek and another in kufic written in reverse.[11] These few examples show that both in type and in decoration there are stylistic affinities between some of the lamps excavated at Jerash and the one uncovered at Hallabat. The presence of Christian symbols or Greek inscriptions on these lamps merely indicate the tenacity of Byzantine

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5) Bisheh. *Op. cit.* PP. 71-72; PLs. XLIX-L.

6) Those carved wooden fragments and the complete lamp were recovered from Room 4 during the three-week Excavations carried out in the spring of 1980. I am grateful to Prof. Jaubert and Mr. Abd-Allah al-Hmud for allowing me to include them in this report.

7) Dr. James Sauer pointed out to me that the animal's head was not mutilated, rather that all similar lamp types had the same crude finishing off.

8) M. Avi-Yohan, "Oriental elements in the Art of Palestine in the Roman and Byzantine periods," *QDAP* vol. XIII (1948) Pl. XLI, 7 and P. 144.
E.R. Goodenough, *Jewish Symbols in the Greco-Roman Period,* Bollingen series XXXVII P. 163.
I am indebted to Prof. J. Marcillet-Jaubert for this reference.

9) G. Clermont-ganneau, "Le Lychnarion arabe de Djerach," *Revue Archeologique,* vol. XXX (1897) PP. 246-50.

Idem, *Recueil d'Archeologie Orientale,* vol. II (Paris, 1898) PP. 19-21; 47-51; vol. III (Paris, 1900) PP. 283-85, Pl. VII. B-C
The reading of the name "Theodorus," however, is suspect Cf.
P.B. Bagatti, I Monumenti di Emmaus el-Qubeibeh, (Jerusalem, 1947) P. 140; Fig 34:1-3.
I am grateful to Father Michele Piccirillo for directing my attention to this source.

10) Ronzevalle, "Lampe Chrétienne arabe de Géras," *Mélange de la Faculte Orientale* (Univ. Saint-Joseph, Beirut) vol. VII. PP. 166-69: Pls. XV:3-6; XVI.

11) F.E. Day, "Early Islamic and Christian lamps," *BERYTUS* vol. VII, fasc 1, P. 78; P1. XIV:1.

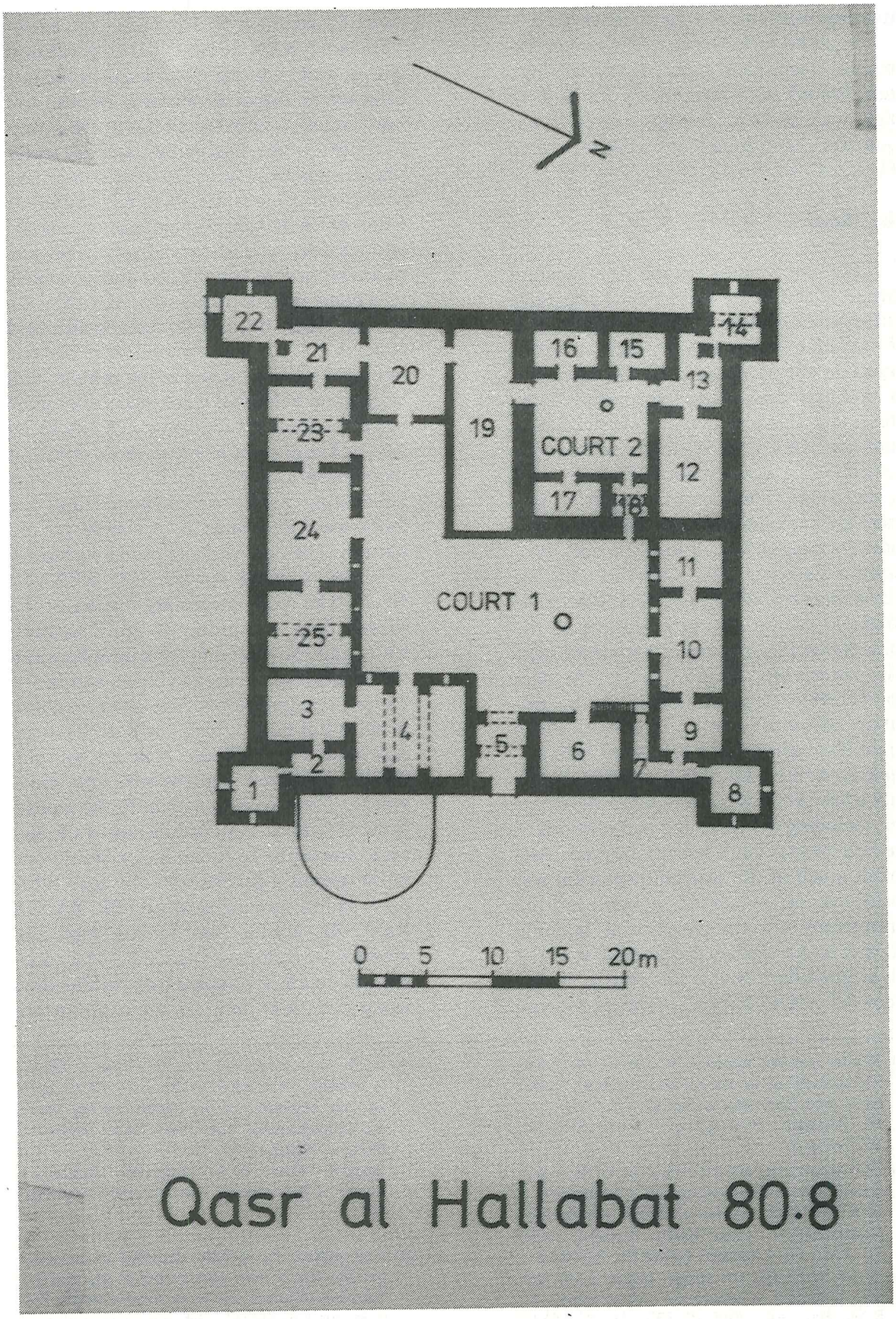
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Fig. 1

influence well into the eigth-century.

In addition to the carved wooden fragments, stucco, and painted plaster, three crenellations with undercut sides and an eagle with outspread wings carved in the round on a limestone block were recovered (Pl. XXXVIII No.1).

The Mosaics

The two rooms in the southeastern corner of the castle were paved originally with colored mosaics. Considering the size of the fallen stones and the mass of debris found on the pavements, we are fortunate to have portions of the two mosaic floors preserved. In room 3 only two small portions near the entrances are preserved: one in front of the wooden door sill which leads to the room. This design consists of intersecting diagonal rows of dark brown tesserae forming indented squares, each enclosing a diamond[12] (Pl. XXXV No.1). The second portion, which is preserved near the threshold of the entrance leading to the passageway (2), consists of a rainbow matting pattern (Pl. XXXV No.2). The decorative effect depends largely on the gradation of color tones.[13] Room 4, which might have served as a reception hall, was decorated more elaborately. Unfortunately only a few sections in the southeastern corner, including the surround and portions of the field proper, have been preserved. Although much of the original pavement was destroyed, the preserved sections and the impressions left on the mortar bedding allow us to reconstruct the general layout of the original floor with a fair degree of accuracy (Pl. XXXVIII No.2). The layout consists of a surround 0.75m. wide (Pls. XXXVIII No.3-XXXIX No.1). It is decorated with geometrical patterns based on the interlacing of diagonal squares, circles, and half circles. Within the circles at the points of contact of the diagonal squares are sprigs placed stem to stem.[14] The circles inscribed within the squares are filled with different fruits which include pomegranates, lemons, and another type of citrus fruit.[15] The surround is bordered on the east and west sides by a band of lotus buds enclosed within two double black lines. The rectangular field (6.65x5.25 m.) was divided into circular and oval compartments in the middle; half circles and half ovals were placed along the borders except at the corners (Pl. XXXVIII No.2). These compartments were linked at their points of contact by loops. The bands delineating these compartments and the loops were decorated by a simple plaited pattern. The field was enclosed by a border of black running spirals. (Pl. XXXVIII No.2). The most interesting feature of the mosaic floor is a group of lively animals, birds, and fish placed in the spaces between the interlacing circles and ovals, and in the various compartments. The preserved animals reveal both a high level of technical skill and a remarkable concern for placticity, animated expressions, and movement. These qualities identify the mosaic floor of Qasr al-Hallabat as one of the finest examples to be found in Jordan. In one of the panels a gazelle with the head lifted up is shown moving slowly[16] (Pls. XXXIX No.2, XL No.1). The hooves, legs, and muscles are clearly brought out. Other anatomical details are depicted by parallel lines along the belly and by an oval on the

12) Similar pattern appears in one of the small rooms flanking the central alcove of both Qusair Amra and Hammam al-Sarakh. Cf.. M. Almagro, et-al, *Qusayr Amra,* (Madrid, 1975) Fig. 9.

13) This decorative pattern formed one of the major decorations in the mosaics at Kh. al-Mafjar. R.W. Hamilton, *khirbat al-Mafjar, An Arabian Mansion in the Jordan Valley,* (Oxford, 1959) PP. 334f. Pls. LXXXIII-LXXXIV; XCVII.C

14) At kh. al-Mafjar the sprigs constitute the principal element of decoration on four panels. cf. R.W. Hamilton, *Ibid* P. 333; Pls. LXXXII; LXXXV.

15) In the mosaic excavated on the Mount of Olives in Jerusalem and dated to the end of the seventh and the beginning of the eighth-century, there are pomegranates and other fruits similar to those at Hallabat. Cf. Bagatti, "Scavo di un Monastero al'dominus Flevit," *Liber Annuus,* vol. VI (1955-56) Figs. 5-7.

16) The animal was initially identified as an oryx; but Ms. Ilse Kohler pointed out to me that the Oryx has different and more straight horns. She is inclined to identify the animal as a Dorcas Gazelle (Gazella Dorcas).

thigh.[17] A feeling of spatial depth is attained by punctuating the background with small plants. In the oval compartment above the gazelle scence there are two preserved sections. One represents the hind legs of an animal, perhaps a deer depicted within a square; the other is a fish (Pls. XXXIX No.2, XL No. 1) The fish is represented in a lively manner, but the water in which it swims is not depicted.[18] In the area above, to the right of this compartment is a fierce-looking wolf running at full speed Pl. XL No.2). The sense of vigor is enhanced by the piquant expression of the wolf. Above the ferocious wolf is a hare nibbling grape cluster depicted within a square panel (Pl. XLI No. 1). The hare seems to be concentrating intently on the grapes. Its outlines are rather heavy and the anatomical details are brought out by color shading. The motif of a hare eating grapes is common in both late Antique Art and Byzantine mosaic pavements[19]. Another hare partially preserved in a half circular compartment in the northeastern corner, is represented running at full speed with its long ears flapping backward (Pl. XLI No.2). In the southeastern corner of the field are two partially preserved animals (Pls. XXXVIII No.3, XLII No. 1). The one on the left may represent an antelope as suggested by the legs and hooves. The animal appears to be dragging his legs slowly in contrast to the leopard which is depicted in an aggressive attitude. In the semi-circular panel between these two animals is a pair of partridges facing each other (Pl. XLII No.2). Their bodies are rounded and fully fleshed; the wings are clearly outlined by dark lines. Although the legs indicate movement, the birds appear static. Another similar panel in the southeastern corner of the field contains a pair of pheasants placed in a formalized disposition (Pls. XXXIX-XL). Only one of these birds remains. Other animals can barely be traced on the mortar bedding of the mosaic floor:- a prancing horse with the head turned backward, deer, antelope, and fish. As far as we are able to tell no human figures were included in the mosaic decoration.

It is regrettable that the larger portions of the mosaic pavement have been destroyed. Nevertheless, the remaining sections are sufficient to show that the floor was divided into a series of independant spatial units containing animals, and that each unit was meant to be seen separately. The animals do not interact in any way but rather seem to have been placed freely to provide a colorful carpet filled with various animals. It is true that both tame and wild animals were represented, but this is not a hunting scene or a scene associated with rural life; nor is it a variation of the theme of the animal paradise in the Messianic Age (Isaiah 11:6-7)" the wolf shall dwell with the lamb, and the leopard shall lie down with the kid, and the calf and the lion and the fatling together". In a christian context these animals, which include birds and fish as well as tame and wild animals, might be understood as representing the creatures of the air, sea, and land.[20] However, we cannot be sure if such a meaning was intended for the mosaic of Hallabat.

In many of the Byzantine churches of Jordan and Palestine we find symbolic pairs

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17) It may by noticed that the legs, hooves, and especially the oval pattern on the thigh of the animal are reminiscent of the gazelles in the famous mosaic panel from Kh. al-Mafjar. Cf. R.W. Hamilton, *Op. cit.*
I am grateful to Suzan Balderstonefor this observation.

18) The fish motif has a long history extending from the Hellenistic to the Byzantine and later periods. cf. M.E. Blake, "Roman mosaics of the second century in Italy," *Memoirs of the American Academy in Rome,* vol. XIII (1936) PP. 139-54
D. Levi, *Antioch mosaic pavements,* (Princeton, 1947) PP. 596-603.

19) M. Avi-Yohan, "Mosaic pavements at el-Hammam, Beisan," *QADP,* vol. V (1935) Pl. XIV
M. Barasch, "Animal Imagery in the Hanita Mosaics," *IEJ,* vol. XXIV (1074) PP. 225f.; Fig. 2 and references cited there.

20) Such a meaning is spelled out by the inscription which frame the circular medallion in the nave of the Church of Apostles at Madaba finished in 578-89. Ute Lux, "Die Apostel-kirche in Madaba," *ZDPV,* vol. 84 (1968) PP. 106-29.

of animals facing each other, but those differ from what we have at Qasr al-Hallabat both in their symbolism and artistic style. The pictorial realism of the animals at Hallabat differentiates them from the conventional animals of the Byzantine churches, and brings them closer to the animals used in the decoration of private houses in Syria.[21] Consideration of the archaeological evidence and of the artistic style of the animals indicate that the mosaic pavement at Hallabat was part of the Umayyad reconstruction of the castle.

The elaborate decorations with stucco, mural paintings, and mosaics at Qasr al-Hallabat illustrate a major change in at least one aspect of the building: it no longer functioned as a military structure. This significant transformation permitted the systematic agricultural exploitation of the area. But before we begin discussing the agricultural aspect of Hallabat few remarks need to be made to enable one to understand and geography of the site and how it relates to the agricultural development in the area. Although the castle itself is situated on an elevated knoll commanding a panoramic view on all sides, the greater part of the surrounding area is a plain. Bounding this plain on the west and southwest are low plateaus interrupted by wadis which are dry for most of the year. The long summer draught makes irrigation necessary for most crops except wheat and barley. In an area characterized by the lack of water sources, and limited and unreliable rainfall,[22] such irrigation was not possible without devising a reliable system to maximize conservation of rainfall. These adverse conditions forced the inhabitants of the site to rely heavily on stored water in order to support the settled community and its subsistence agriculture. Thus in addition to the huge water reservoir situated to the southwest of the castle, two cisterns were dug within the catle and another seven were cut into the northern and western slopes of the hill on which the castle stands (Fig.2). These cisterns are roughly rectangular in shape. They all had plastered sides and a roof to minimize evaporation. In one cistern the roof is supported by a massive square pier. The cisterns were fed by conduits which captured runoff from the slopes above. These conduits, traces of which can still be seen, were actually no more than ditches cut into the slopes of the hill. From these brief remarks it becomes clear that the arid climate and the topographical characteristics of the area largely determined the system of cultivation at Hallabat.

The Walled Enclosure[23]

Approximately 400m. to the west of the castle, in a flat area, is a walled enclosure. The total extent of the area is 270m. north to south, by 220 m. along its widest east-west axis. A puzzling aspect of the enclosure is its irregular shape which forms a triangle on the lowest point of the ground elevation at the north side (Fig. 3)

The perimeter wall is poorly built of two rows of rough field stones, the space between the two rows being filled with small stones, earth, and gravel. There is no evidence of a foundation trench, and the wall seems to have been laid directly on the ground surface. The wall is presently one course high, the top of which is 0.30m. above ground level. In some places along the wall line many displaced field stones suggest that at least two additional courses once existed. The existence of a gateway which opens into the enclosure (Cf. below) also argues for the presence of now lost upper courses. The wall line preserves a series of unidentified semi-circular structures of varying sizes which are built on

21) J. Balty *Mosaiques Antiques de Syrie,* (Bruxelles, 1977) PP. 62-66.

22) The mean annul rainfall at Hallabat is less than 100mm. Now and then some rain falls as early as October, but most of it comes in November-April, with the heaviest precipitation occuring between December and March.

23) The walled enclosure was first noted in June, 1979 during excavations in the castle and the adjacent mosque. It was briefly mentioned in the preliminary report of the first season of excavations. cf. Bisheh, *OP. cit.* P. 70.

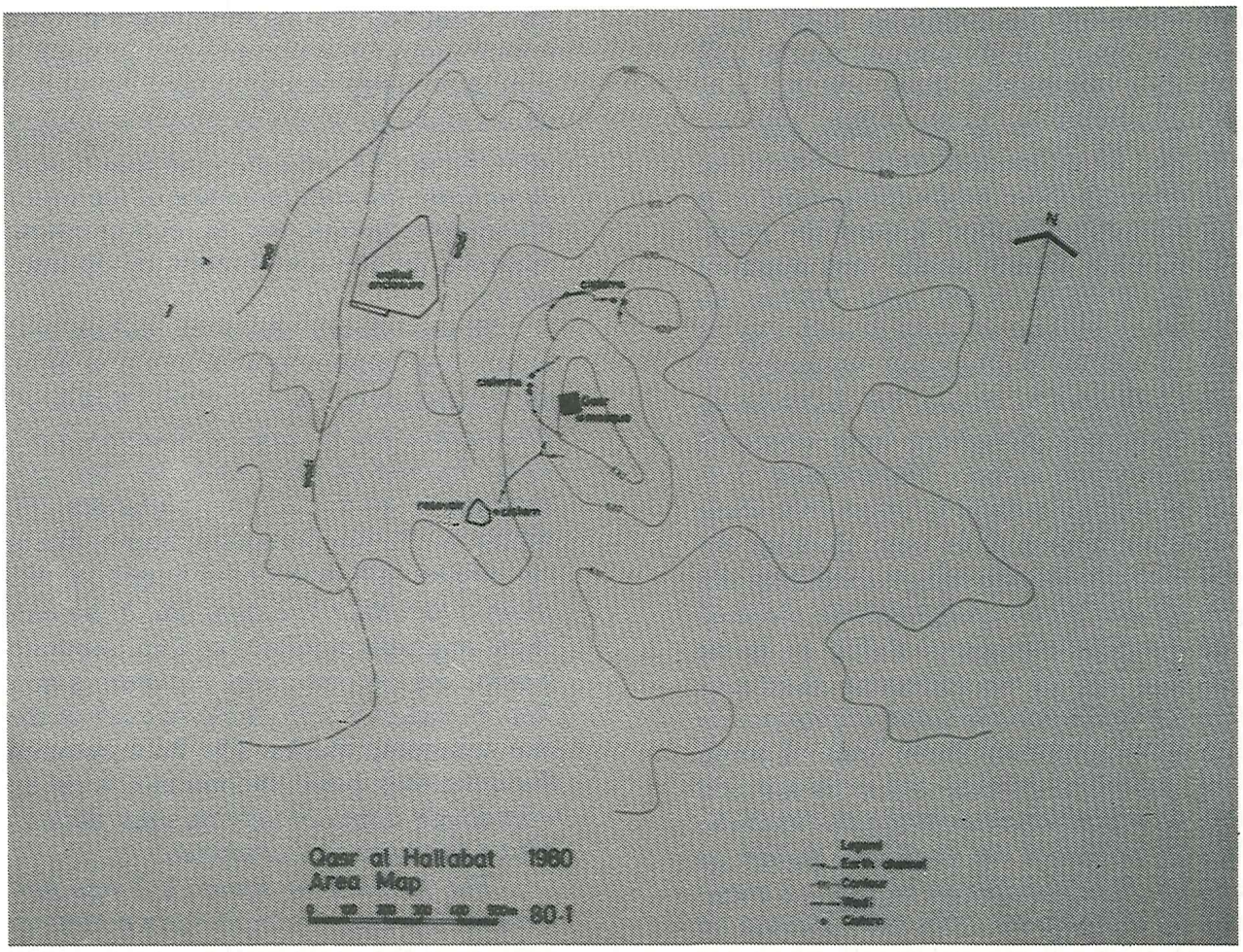
Qasr al Hallabat 1980
Area Map
80·1

Fig. 2

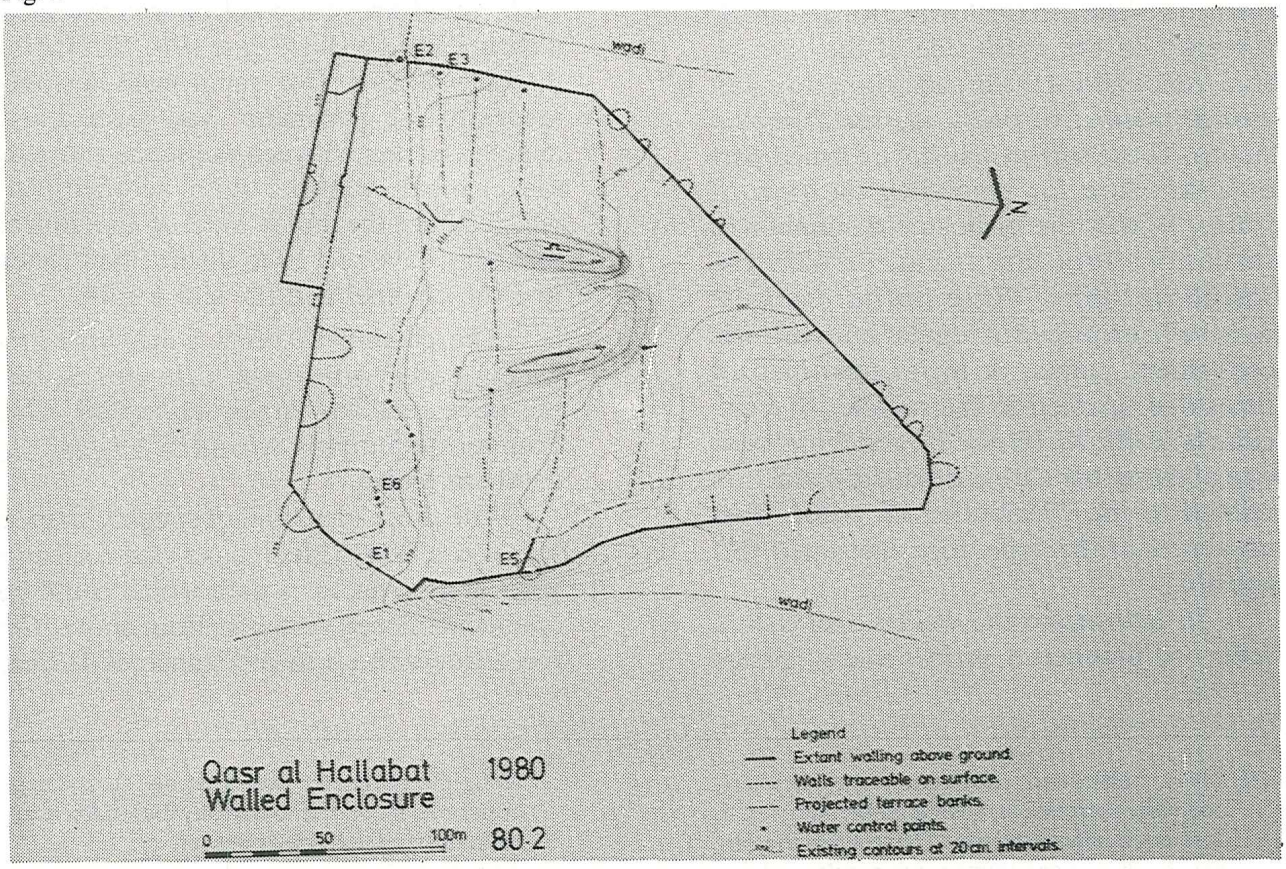
E2
E3
E6
E1
E5
Wadi
Wadi
N
Qasr al Hallabat 1980
Walled Enclosure
0 50 100m
80·2
Legend
Extant walling above ground.
Walls traceable on surface.
Projected terrace banks.
Water control points.
Existing contours at 20cm. intervals.

Fig. 3

both faces of the enclosure wall.[24] Surrounding the walled enclosure on the east and west are shallow wadis. On the west and southwest are gently rolling hills interrupted by ridges and wadis. During the rainy season these wadis carry water in a northeasterly direction toward the plain. Appreciable runoff would thus augment the scanty rains of the area. Within the enclosure sections of several walls can be seen at the level of topsoil. Remnants of these walls can be traced, but depredation and extensive ploughing have obscured their original extent. Nevertheless sufficient lengths remain to show that these walls ran from east to west, dividing the walled enclosure into a series of rectangular plots. Each plot is progressively elevated above the one adjacent to it (Fig. 3). In the southern half of the enclosure, short sections of double lines of stone are preserved. Excavation between these lines of stone have failed to provide any evidence that they ever functioned as irrigation channels. In the middle of the enclosure stands an earthen dam constructed of two low mounds of compact silt. This dam created an area for the collection of runoff, which was then channelled to the lower plots, through a breach on the north side of the dam. A trial trench laid at the breach point revealed a large number of finely dressed, tumbled stones. These stones may have formed part of a structure for regulating the flow of water. Within the enclosure a number of small stone structures remain partially visible above topsoil. These structures appear to have been placed at regular intervals and convenient points. A rectangular slab of limestone, pierced in the middle by a circular hole (Pl. XLIII No. 1), and found near one of these structures, indicated a function related to the distribution of water. Two structures of this type were excavated (E3 and E6).

To investigate the walled enclosure a series of numbered probes were opened and collectively designated Area E. The trial trenches were laid along the perimeter wall and inside the enclosure at points where finely cut stones indicated significant architecture. The objectives of area E were to increase the understanding of the water distribution system, and to recover dating evidence for the construction of the enclosure.

E1 was opened along the eastern perimeter wall, approximately 45.00 m. from the southeastern corner of the enclosure. The excavation revealed a doorway 1.62. wide, framed on the inside by two rectangular (1.40 x 1.20 m.) buttresses (Pl. XLIII No.2). The buttresses, built of finely cut stones, still stand to a height of two courses (0.60m.) The door sill of the entrance originally consisted of three separate blocks, the northernmost of which is now lost. A socket is still visible in each of the two remaining blocks. The floor between the buttresses inside the entrance is paved with rough stones of varying sizes, most of which are worn and crumbled.

The location of square E2 was determined by a gap on the western perimeter wall, near the southwestern corner of the enclosure. Excavation in this area revealed a channel and a sluice gate (Pls. XLIII No. 3, XLIV No.1). Two small walls set obliquely to the perimeter wall form a triangular section between the sluice gate and the channel; together with another wall which abuts the north side of the sluice, they may have served to divert flood water into the channel and the sluice gate.

The channel (0.65m. wide) was originally paved with rough field stones, but the pavement has largely crumbled. This channel apparently served to irrigate the southern plots.

The sluice gate built of roughly shaped stones is 1.72m. wide; it has a raised sill and vertical grooves for a gate which could be opened or closed vertically from above. On the inside and up to a distance of 1.50m.

24) These half-round structures have been erroneously described in the first preliminary report as semi-circular buttresses. The fact that they are of varying sizes and they are not regularly placed along the perimeter wall, rule out such a description. I am unable to find any reasonable explanation for these structures. cf. Bisheh, *Ibid.*

from the sill, the floor was paved with smooth slabs. Two rectangular stones standing in the middle, on the top of each other may have been intended to support a roof. Along the north side of the sluice gate, a solid wall of an inner and outer facing of quadrated limestone and baslat blocks, extends in an easterly direction to a distance of 8.90m. At a distance between 6.10-7.00m. the wall is interrupted by a sluice in the shape of an encased box (Pls. XLIV No.2-XLV No.1). It has a bevelled and slanting top to receive some kind of a cover. This sluice (0.90m. wide) has a channel (0.30m. wide) cut through its raised sill (pl. XLV No.1), and could have been closed with a stone plug. The floor inside this sluice is paved with smooth stone slabs. A key discovery near this sluice was a basalt block of stone engraved with Greek inscriptions (pls. XLV No. 1-2). The inscribed block was incorporated in the wall and was placed upsidedown. Furthermore, the inscribed block was originally concealed under a coat of plaster, traces of which can still be seen on the wall surface. The inscription as analyzed by prof. J. Marcillet-Jaubert of Lyon University is part of the edict of Anastasius (A.D. 491-518) and therefore must have been taken from the castle.[25] The inscribed block certainly suggests a secondary placement which allows us to assume that the walled enclosure was planned and built when the castle was reconstructed in the Umayyad period. This Umayyad attribution is further supported by the discovery of fragments of ribbed cooking-pots and three large fragments of a jar of well-levigated creamy ware similar to wares found at Umm Qais in northern Jordan[26]. These pottery fragments were found in the trial trench (E4) opened to investigate the double-line of stones which suggested a channel. Unfortunately, all of the other trenches put down within the enclosure were sterile and did not yield any remains of ceramics.

An intriguing question has been raised as a result of the discovery of the sluice gate and the channel: where did the water come from and how was it brought to the sluice gate? There are no surface clues to the presence of channels; in an area that had been extensively ploughed for decades, all such clues have entirely disappeared. Consequently we cannot say that we understand the water adduction system in all its details. However, it is reasonable to assume that the winter runoff for irrigation came from the wadi to the west. At a distance of some 20m. to the west of the sluice gate is the remains of what appears to be a wall built across the gully. This wall might have served as a kind of barrage for impounding flood water and deflecting it towards the sluice gate. Another wadi has its starting point high on the adjacent hills to the west, and moves to a northeasterly direction across the gently sloping ground. In this wadi, there are two sturdy walls built along the northern embankment of the water course. One is some 800m. to the west and the other a short distance from it. It is likely that water was brought from this wadi to the sluice gate by means of a ditch. Actually one of the older workmen who lives in the area said he still remembers the existence of such a ditch, and tried to trace its course on the ploughed surface.

The placement of areas E3 and E6 was governed by important surface features; examination of these features gave some basis for suspecting a water-control structure. Chief evidence for such a function was a partially submerged rectangular limestone slab with a hole in its middle. Two such structures (E3, E6) were excavated where they appeared to be best preserved. These robust structures (pl. XLVI No. 1-2, XLVII No. 1-2), are composed of two walls of finely dressed stones, the space between the rows being filled with earth and medium size rough stones. The outer or southern walls are set at obligue angles forming a V-shapes section; these walls obviously served as water deflectors to dir-

25) So far about 124 inscriptions have been recovered from the castle. The vast majority of these inscriptions form part of the edict of Anastasius. cf. J. Marcillet-Jaubert, *OP. cit.*

26) The pottery from Umm Qais, which was found in an Umayyad context, still awaits publication.

ect water into the channel cut in the middle. At the mouth of the channel was a rectangular slab bevelled at the top and pierced in the middle by a hole (pl. XLVII No. 2). The hole could have been blocked by a round stone when it was deemed necessary to stop the flow of water into the adjacent plots. Thus these structures provided a system of sluices for regulating the volume of incoming water. By placing them at suitable intervals (Fig. 3). The farmers controlled efficiently the distribution of water to the various plots.

A final trial trench was put down in the sunken ground defined from the east by the perimeter wall, and from the north by a solid wall 0.85m. thick. It consists of an inner and outer facing of finely dressed limestone blocks with a core of lumps of stone, rubble, and ashy mortar. The masonry recalls that of the little mosque built some 15m. to the southwest of the castle. As the excavation proceeded it became apparent that the sunken ground was a water basin. The water entered this basin by a channel cut into the perimeter wall (pl. XLVIII No.1), and by a drain cut through the solid wall (pl. XLVIII No. 2). The drain was fed by the surplus water irrigating the upper plots through a hole set vertically above the drain (pl. XLIX). The channel, whose bed was paved with rough slabs of stone, obviously collected water from the wadi which runs along it, and drained it into the basin. There is presently no evidence of a barrage across the wadi which would have been necessary to raise the level of water which flowed through the channel into the basin.

The supply of water must have been irregular, so that it was necessary to build an earthen dam and a sunken basin within the enclosure in order to store water for distribution in the erratic rainly months. This may also explain the relatively small size of the enclosure.

It is obvious from the preceding that the water distribution system within the enclosure was carefully planned. After the runoff water from the neighbouring hills was delivered to the enclosure, it was distributed to the various plots rhrough a carefully planned system of sluices. The slight gradient of the field was sufficient to insure the gravity flow of water from the upper plots in the south to the lower ones in the north.

It is clear that this enclsoure with obvious concern for the adduction, storage, and distribution of water was an agricultural enclosure[27]. It is described by the present inhabitants of Hallabat as *Huwaytah* (diminutive of *Ha'it*). The word means both a wall and the area enclosed by a wall. It occurs frequently in Medieval Arabic texts especially in the topographical descriptions of Mecca and Medina, where the word refers to cultivated areas or gardens around the towns[28]. One such occurence of the word refers to the caliph Hisham b. 'Abd al-Malik (A.H. 105-25/A.D. 724-43) as stopping near a *Ha'it* which belonged to him and which was covered with olive trees[29]. No cultivated plant was found in the agricultural enclosure. However, the existence of two stone vats in one of the ruined buildings to the west of the water reservoir might suggest that the enclosure was devoted to the cultivation of orchards, mainly olives and vines; other fruits such as those represented on the mosaic floor of Room 4 might have also been grown. That the soil was potentially productive is indicated by the numerous farms which sprang up in the area. Thanks to private investment, the farmed area has been extended considerably with the help of irr-

27) A close parallel to this agricultural enclosure is the garden of Qasr al-Hir west in Syria which is provided with a system of water distribution to the Various plots. The garden of Qasr al-Hir, however, is of a larger size measuring 1050 m.x 442 m. cf.
D. Schlumberger, "Les Fouilles de Qasr el-Heir el-Gharbi (1936-38). "*SYRIA*, vol. XX (1939) PP. 205 ff.

28) For a discussion of the significance of the word *Ha'it* cf.
O. Grabar, et-al, *City in the desert, Qasr Al-Hayr East,* (Cambridge, Mass. 1978) P. 104 where the relevant sources are given.

29) al-Tabari, *Annales,* (Leiden, 1879-1980) vol. II, P. 1737. Quoted from Grabar, *Ibid.*

igation projects. These projects have created in the past decade a major agricultural zone in Jordan.

It may be concluded that in the Umayyad period the castle and the whole area of Hallabat underwent a major transformation and was significant for more than just military reasons. Indications of this transformation and its extent are the elaborate decorations of the castle with fancy carved stucco, mural paintings, and mosaics, and the introduction of new buildings such as the Mosque[30], the bath[31], the agricultural enclosure, and perhaps even the huge water reservoir[32].

The reason for this transformation and the development of the sources of revenue may have been the need to maintain close communication with the tribes settled in the region, who were vehement supporters of the Umayyad dynasty. These Umayyad creations, however, were not economically a meaningful enterprise. Their maintenance required a constant flow of funds, and once the funds ceased to flow, they were abandoned shortly after the fall of the Umayyad dynasty around the middle of the eighth-century.

Ghazi Bisheh

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30) Bisheh, OP Cit. PP. 73 ff.

31) Bisheh, *Ibid,* P. 76, note 13

33) *Ibid.* P. 70.

LES INSCRIPTIONS GRECQUES DE HALLABAT

II

par
J. Marcillet-Jaubert

Les deux campagnes menées en 1980 à Hallabat, la première en juin, en compagnie de M. Abdallah el-Hmud, la seconde avec le Dr. Ghazi Bisheh en septembre et octobre, ont permis d'augmenter sensiblement le nombre des inscriptions grecques découvertes sur le site. Une précédente note, parue dans *ADAJ*, XXIV, 1980, p. 121-124 et planches LXXVI-LXXX, a donné un aperçu des résultats de 1979 ; il s'est malheureusement glissé quelques erreurs matérielles dans cet article, que le présent rapport rend caduc. 37 fragments nouveaux ont été trouvés en 1980 ; certains nous donnent l'occasion de compléter et de corriger une partie de l'édit d'Anastase Ier qui fut réutilisé dans les murs du *qasr* lors de la réfection omeyyade. L'ensemble ainsi réuni, pour mutilé et encore incomplet qu'il soit, est en cours d'étude ; les prochaines campagnes devraient nous permettre d'accroître le matériel et de mieux comprendre ce texte capital. On ne saurait trop rendre hommage à H.C. Butler, Enno Littmann et David Magie Jr., membres des *Princeton University Archaeological Expeditions to Syria in 1904-1905 and 1909 (PAES)*, qui, dans des conditions difficiles, ont copié, le 1er février 1905 et du 27 au 30 mars 1909, 68 fragments, édités dès 1910 par Magie et D.R. Stuart, dans *PAES*, III, A, 2, n° 20, p. 24-41 avec 5 planches hors texte de dessins au 1/10.

Nous donnerons ici quelques-unes des restitutions auxquelles nous sommes parvenu grâce aux éléments nouveaux retrouvés depuis le début des fouilles, d'une part, et à la comparaison, d'autre part, avec les fragments d'un texte identique, mais bien plus lacunaire, copiés à Bosra, à Imtan et à Salkhad.

Les vestiges de l'édit de Bosra (*Bostra*) ont été publiés par U.J. Seetzen, *Reisen durch Syrien, Palästina, Phönicien, die Transjordan-Länder, Arabia Petraea und Unter-Aegypten*, 5 vol., Leipzig, 1854-1859, dans le vol. I, p. 69 et 72, avec un commentaire de F. Kruse et H.L. Fleischer dans le vol. IV, *Commentare zu Ulrich Jasper Seetzen's Reisen...*, p. 49 ; par J. Berggren, *Resor i Europa och Österländerne*, 3 vol., Stockholm, 1826-1828, dans le vol. III, table hors texte non paginée (d'où *CIG*, 8798) ; par J.G. Wetzstein, «Ausgewählte griechische und lateinische Inschriften...», dans *Philol. und histor. Abhandlungen der königl. Akad. der Wissenschaften zu Berlin*, 1863, p. 288-289, n° 81 à n° 85 ; par W.H. Waddington, dans le Bas-Waddington, *Inscriptions grecques et latines recueillies en Grèce et Asie Mineure*, III, 1, 6, n° 1906 = Waddington, *Inscriptions grecques et latines de la Syrie*, n° 1906 ; par A.G. Wright et A. Souter, sur copie de W. Ewing, dans *Palestine Exploration Fund, Quaterly Stattment*, 1895, p. 351, n° 178 et n° 179 ; par E. Littmann dans *PAES*, III, A, 2, n° 562 dont j'ai repris le dessin dans *ADAJ*, XXIV, p. 124 ; ils seront plus complètement publiés par M. Sartre dans le fascicule XIII des *IGLS*.

Les fragments d'Imtan (*Motha* ou *Mothana*), au nombre de 6, ont été publiés par Wetzstein, *o. l.*, n° 65 à n° 68 et par Waddington, *o. l.*, n° 2033 ; je les ai en partie repris dans *ADAJ*, XXIV, p. 124.

Le fragment de Salkhad, ou plus précisément Qasr el Baghiq (peut-être *Tricomias*) a été publié par Robinson Lees, dans *Geographical Journal*, 5, 1895, p. 26, n° 1 et par R. Dussaud, *Nouvelles Archives des Missions Scientifiques*, 10, 1902, p. 655, n° 35, avec dessin.

Les recoupements de mots entre les vestiges de Hallabat et celui de Salkhad montrent que ce dernier avait une disposition régulière d'environ 300 signes à la ligne, pour 250 à Imtan et 12 à Bosra. On trouvera ci-après une possibilité de restitution des fragments d'Imtan, le dessin du fragment de Salkhad et un dessin d'un des éléments de Bosra.

ΑΡΑΝΑCΤΑCΙΟCΕΥCΕ...
ΟΠΟΤΑΜΙΑΚΑΙΑΠΟΤΟΥΚΛΥ
ΕΤΑΠΡΑΚΤΙΑΤΩΝΔΟΥΙΔΙΚΩ
ΕΧΕΙΝΤΟΠΟΝΙCΑΙΓΗΝΙΔΙΑΝ

ΟΝCΙCΡΙΝV.Ρ
ΕΠΙΤΟΑΥΤΟ
.ΤΟΙCΤΗCΑΟΥ
CTINON.<ΤΕ
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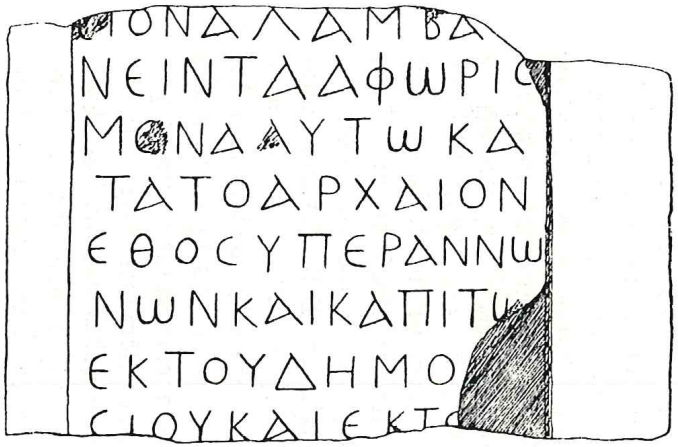
ΙΩΟΜΕΝ.ΔΟ
.ΗCΕΝΕCΤ.C

ΛΕCΘΑΙΚΑΙΕΚ
ΙΝΟΝΕΝΟΝΔΟΜΕ
ΥΔΟΜΕCΤΙΚΟΥΧΕ
ΕΝΤΕΤΟΥΧΡΥCΙΟΥ
ΝΠΟCΟΤΗΤΑΤΩΝ
ΤΗΝΑΝΑΓΚΗΝΕ

}ΗCΡΟΡΙΟΥΚΑΙCΟΥΒCΚ
CΤΟΝ ΑΥΤΩΝΕΠΙ
ΤΙΚΩΗ ΚΑΙΤΩΑΥΤΩΕΡ
ΙΡΙCΩΗΤΑΠΕΝΤΕΧΡΥ
ΧΙΤΡΩΝΠΡΟCΤΙΗΟΝ
ΔΡΟΓ ΩΝΑΡΙΩΝΚΑΤ
ΠΟΤΟ ΥCΗCΑΖΙΟΠΙC

IMTAN



BOSRA



SALKHAD

J'indiquerai dans l'apparat critique des lignes 1 à 73 ce que nous devons aux vestiges recueillis dans ces trois cités, garnisons bien connues par la *Notitia dignitatum*. On notera que les fragments identifiés dans ces établissements appartiennent au début de l'édit.

On a pensé que deux fragments relevés à Umm el Jimal (*Tanthia* ?) par Waddington, *o. l.*, n° 2059 et n° 2060, pouvaient appartenir à une ampliation du même édit impérial ; ils sont inutilisables dans les copies qui nous sont parvenues, et je ne saurais non plus attribuer avec certitude à l'édit d'Anastase un fragment que j'ai copié dans les mêmes ruines, même si son aspect matériel, voire ce qu'on devine de son vocabulaire, rappelle fortement l'inscription de Hallabat.

Les éléments que nous présentons ici sont identifiés par un système numérique double ; le premier élément représente soit le numéro d'ordre de *PAES*, 20, soit l'année de découverte, 79 ou 80 ; le second correspond à la numérotation individuelle des pierres. Nous rassemblons un groupe de 25 fragments qui répond aux lignes 1 à 73 de l'édit, selon le schéma suivant qui n'a de valeur qu'indicative et ne préjuge pas de l'aspect matériel du monument. Remarquons seulement pour l'instant qu'il y a une marge de 3 cm au-dessous de la ligne 52, et que les trois blocs 20/1, 20/4 et 79/17 ont à gauche des marges de différente largeur.

1) fragment 80/19 ; L. : 21 ; H. : 12,5 ; lettres de 2 à 2,5 cm. Se place vers la fin des lignes 10-11. (Fig. 1)

2) fragment 80/13 ; L. : 18 ; H. : 5,5 ; lettres de 2 cm. Se place au début des lignes 11-12. (Fig. 2)

3) fragment 80/25 ; L. : 34 ; H. : 47 ; lettres de 2,5 à 1,5 cm. Se place entre le fragment *PAES* 20/4 et le fragment 79/20 ; il figure dans notre restitution aux lignes 13-29. (Fig. 3)

4) fragment 79/20 ; L. : 12 ; H. : 30 ; lettres de 2 à 1,5 cm. Appartient aux lignes 13-22. (Fig. 4)

5) fragment 80/29 ; L. : 34 ; H. : 32 ; lettres de 2 cm. Se place au-dessous du fragment *PAES* 20/6 et se complète, avec décalage d'une ligne, par *PAES* 20/7 ; il (Fig. 5) donc en fin des lignes 30-39.

6) fragment 79/17 ; L. : 56 ; H. : 35,5 ; lettres de 2,5 cm ; à gauche, marge de 32,5 cm, et de 3,5 au bas. La première ligne est mutilée, mais la restitution est assurée et permet de placer ce fragment aux lignes 42-52. (Fig. 6)

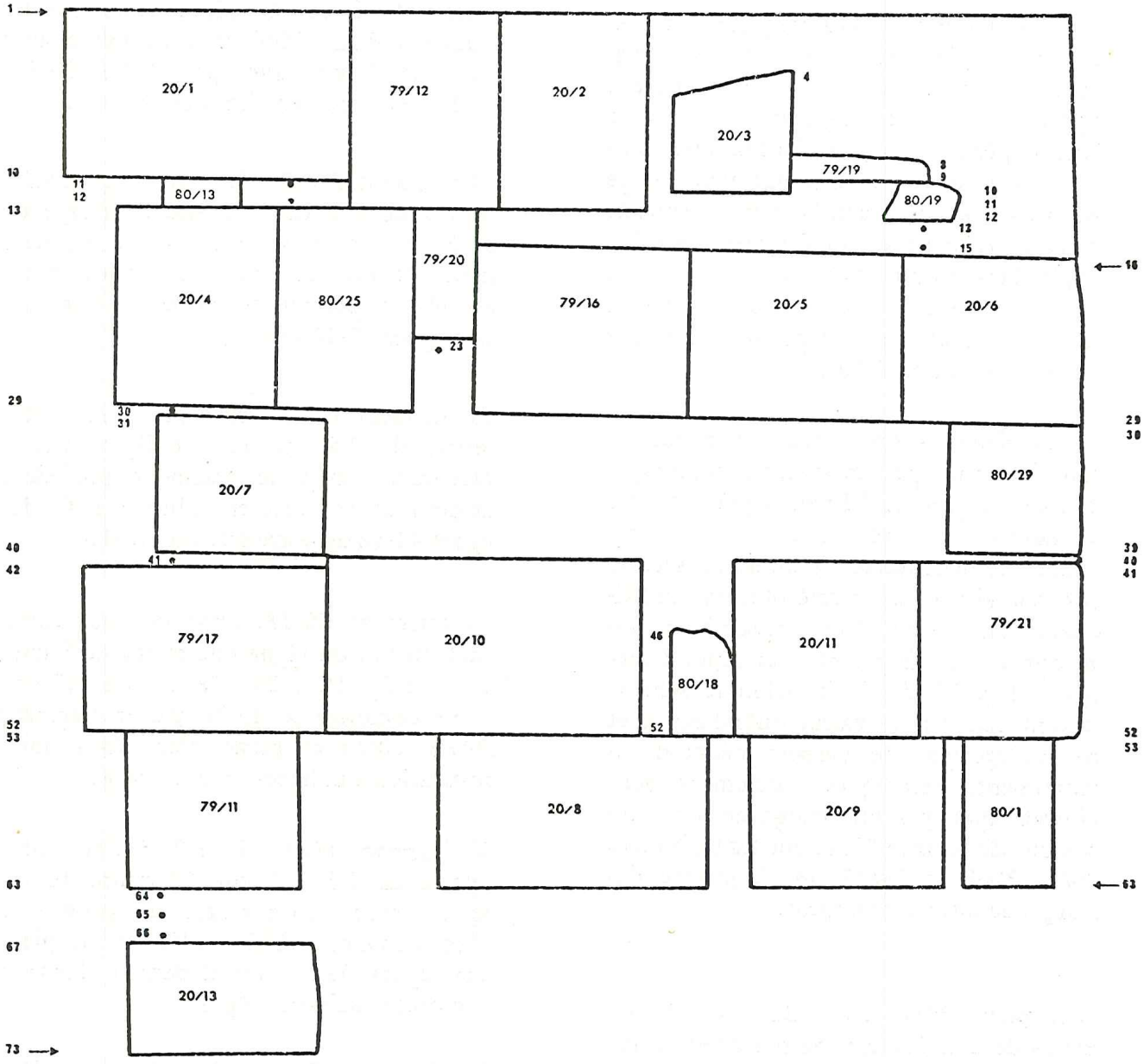
7) fragment 79/21 ; L. : 35,5 ; H. : 30 ; lettres de 2,5 cm. Fin de lignes qui se raccordent avec le fragment précédent et permettent de situer ce bloc à la fin des lignes 41-52 de notre restitution. (Fig. 7)

8) fragment 80/18, brisé de tous côtés, sauf au bas où règne une marge de 3 cm ; L. : 13,5 ; H. : 24 ; lettres de 2,5 cm. Se complète à droite par le fragment *PAES* 20/11 et prend place dans notre restitution aux lignes 46-52. (Fig. 8)

9) fragment 80/1 ; L. : 22,5 ; H. : 36 ; lettres de 2,5 à 3 cm. C'est une fin de lignes, avec petite marge à droite ; ce bloc complète *PAES* 20/9 et se place aux lignes 53-63, où il permet d'insérer le morceau suivant. (Fig. 9)

10) fragment 79/11 ; L. : 40 ; H. : 38 ; lettres de 2,5 cm. Les lignes 2 et suivantes correspondent aux fins des lignes 1 et suivantes du fragment 80/1 ; l'ensemble se place au début des lignes 53-63 de notre restitution. (Fig. 10)

Signalons que le fragment *PAES* 20/1 a été revu, estampé et photographié par nous, avec d'autres blocs déjà connus, à l'aérodrome militaire d'Amman. (Fig. 12)


1
20/1
79/12
20/2
4
20/3
79/19
8
9
80/19
10
11
12
10
11
13
80/13
12
15
16
20/4
80/25
79/20
79/16
20/5
20/6
23
29
30
31
29
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20/7
80/29
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41
39
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41
42
79/17
20/10
46
80/18
20/11
79/21
52
52
53
53
79/11
20/8
20/9
80/1
63
63
64
65
66
67
20/13
73

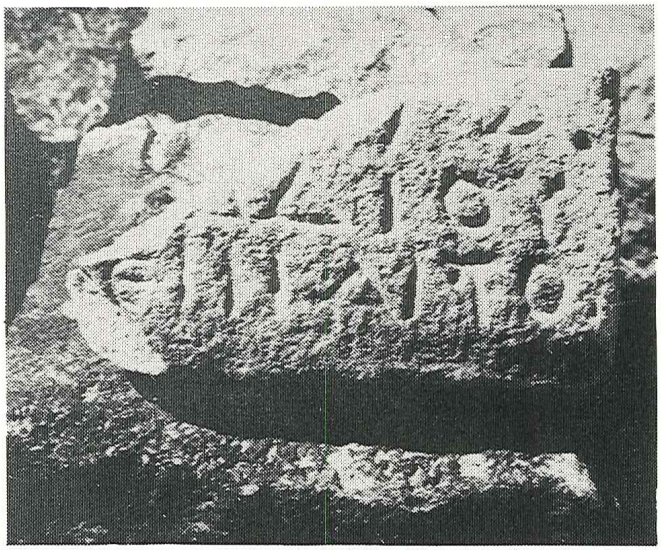


Fig. 1: Fragment 80/19

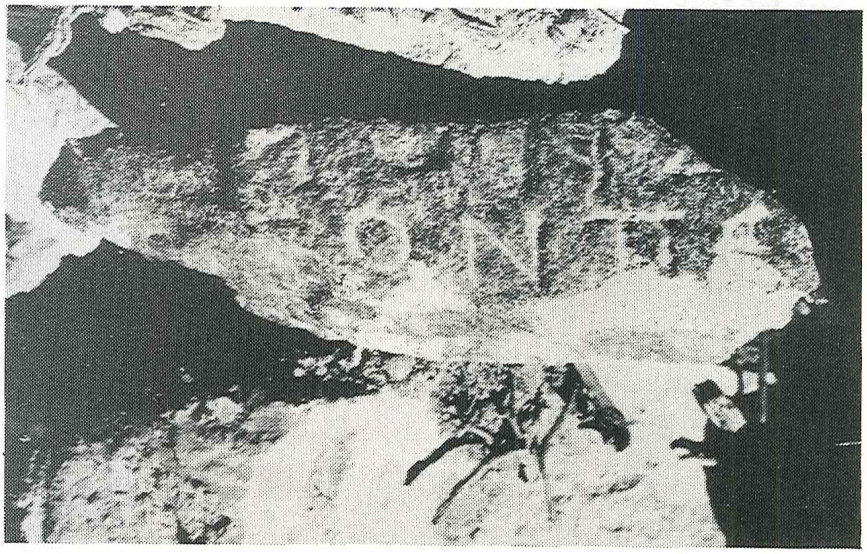


Fig. 2: Fragment 80/13

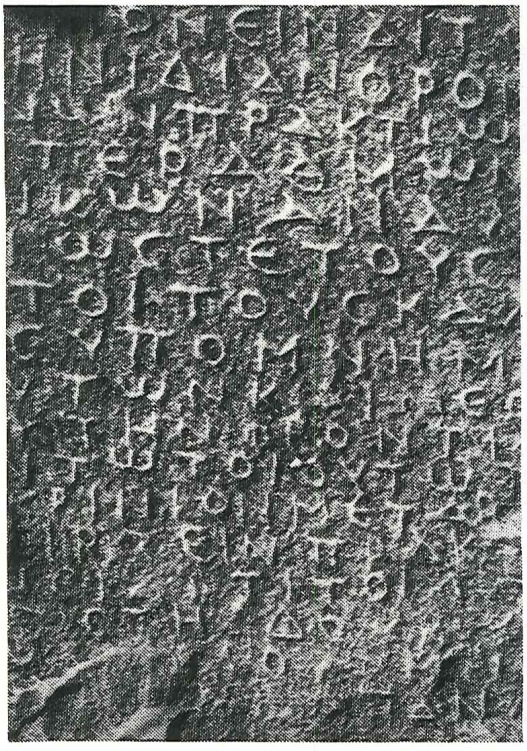


Fig. 3: Fragment 80/25

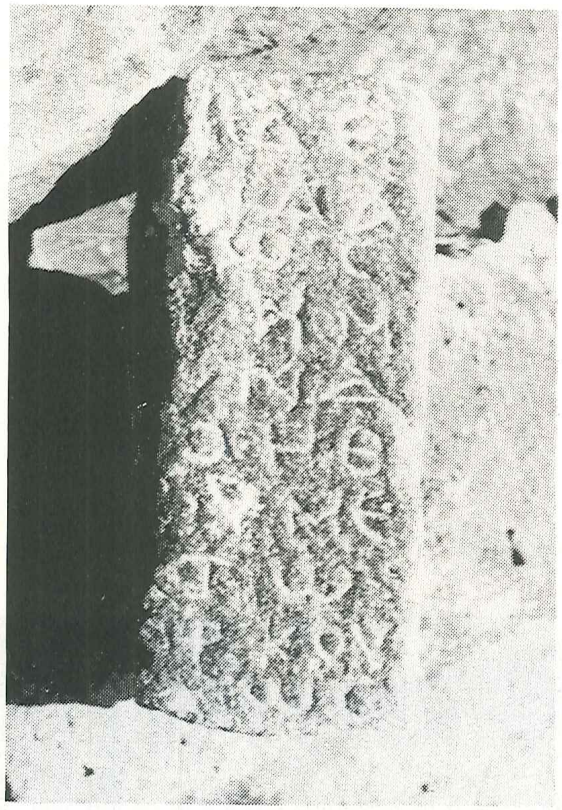


Fig. 4: Fragment 79/20



Fig. 5: Fragment 80/29



Fig. 6: Fragment 79/17



Fig. 7: Fragment 79/21



Fig. 8: Fragment 80/18

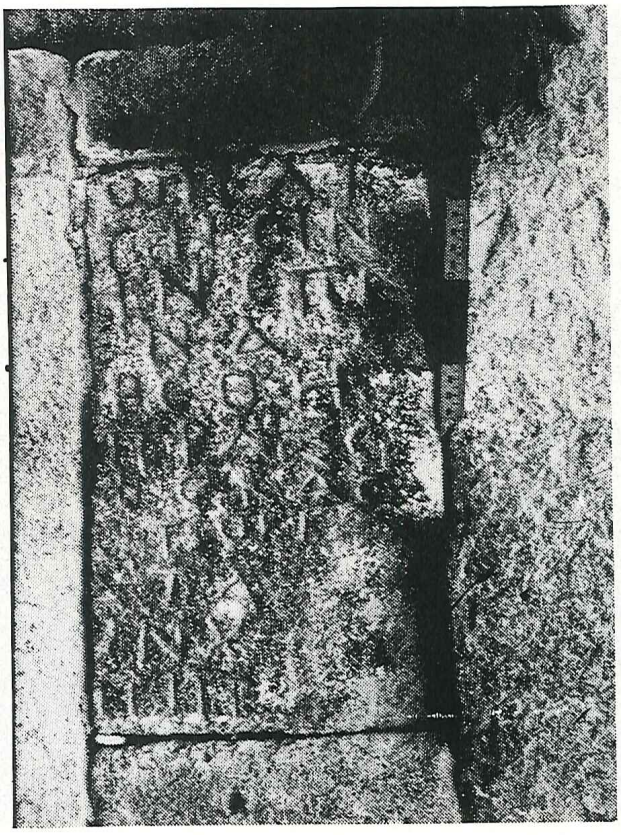


Fig. 9: Fragment 80/1



Fig. 10: Fragment 79/11

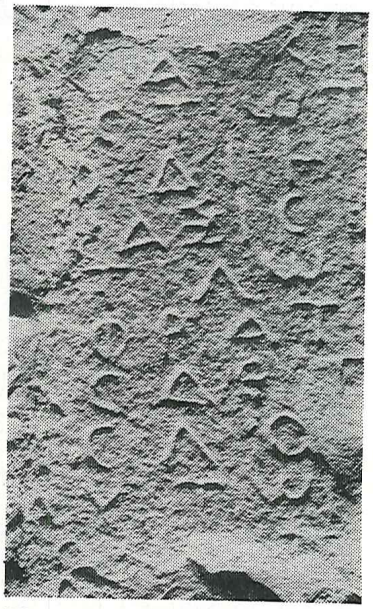


Fig. 11: Fragment 80/31

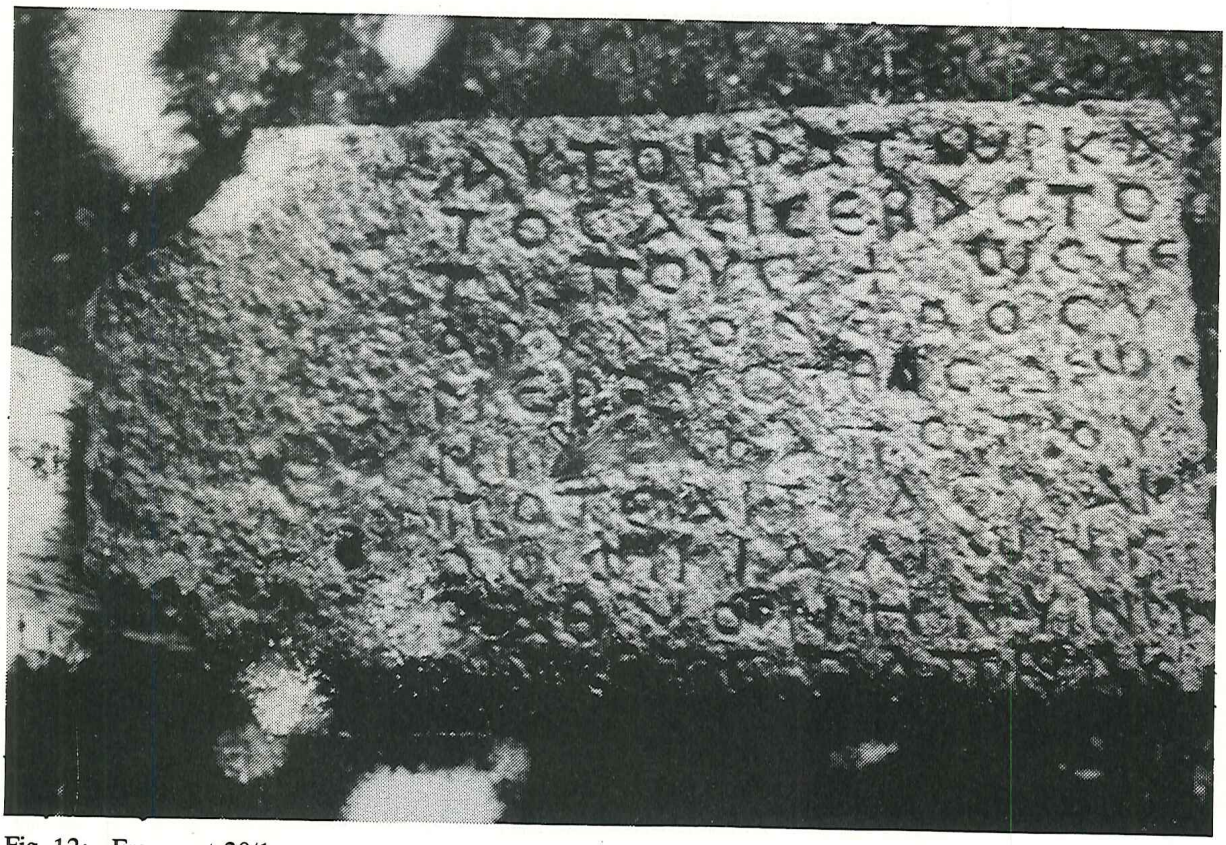


Fig. 12: Fragment 20/1

Αὐτοκράτωρ Καῖσαρ Ἀναστάσιος, Εὐσε[βής, Νικητής, Τροπαιοῦχος Μέγισ]-
τος, ἀεὶ Σεβαστός, Αὔγουστος, δέδωκεν τ[οὺς ὑπογεγραμμένους θείους]
τύπους † Ὥστε τὸν δοῦκα μόνα λαμβάν[ειν τὰ ἀφωρισμένα αὐτῷ κατὰ τὸ]
ἀρχαῖον ἔθος ὑπὲρ ἀννωνῶν καὶ καπ[ίτω]ν ἐκ το[ῦ δημοσίου καὶ ἐκ τοῦ]
μέρους τῆς δωδεκάτης κα[ὶ] ἀπὸ <τοῦ> κομμ[ερ]κιαρίου [τε τὸν ἐν Μεσοποτα]-
μίᾳ καὶ ἀπὸ τοῦ [Κ]λύσματος [τ]ὸν ἐν Παλ[αισ]τίνῃ, καὶ μ[ηδὲν ἄλλο ἐξ οἵας δή]-
ποτε αἰτίας λαμ[β]άνειν † Ὥ[σ]τε ἕκαστον [τ]ῶν δουκ[ικῶν καὶ σκρινιαρίων καὶ]
ὀφφικιαλίων καὶ <τὴν> ἐν ταῖς μάτριξειν ὁρδ[ιν]ατίονα φ[υλά]ττειν κ[αὶ μηδένα]
βαθμὸν ἢ νῦν <ἦ> μετὰ ταῦτα ἐναλλάτει[ν] παρὰ τὴν τάξιν τῆς [μάτρικος].
† Ὥστε τὰ πρακτία τῶν δουκικῶν μηκέ[τι] πιπράσκ[εσθαι ἀ]λλὰ [κατὰ βαθ]-
μὸν ἀ[νύεσθαι ο]ὕτως· ὥστε τὸν σὺν τῷ πρ[.....]^[.... ἀ]διού[τορα εἶναι]
τὸν πέ[μπτον, ἀδι]ούτορα εἶναι τὸν τέταρτον, [- - *ca.10* - -]εἶναι τὸ[ν τρίτον, σου]-
βσκριβενδάριον εἶναι τὸν δε[ύτερον, - - - - - - - - - - εἶναι τὸν πρῶτον, - - ἔχειν]
τόπον καὶ τὴν ἰδίαν φρον[τ]ίδα [- - - - - - - - - - *38-40* - - - - - - - - - - -]
τῶν εἰρημένων πρακτίων. Ὥσ[τε - - - - - - - - - - - *38-40* - - - - - - - - - - -]
ἐκ τῶν πέντε βαθμῶν, [ὁ]ημοσίαις παραμυ[θία]ις ἱκαναῖς οὔσαις, [κ]αὶ μηδὲν ἐκ τῶν
στρατιωτικῶν ἀναλ[ω]μάτων λαμβάνει[ν, μ]ήτε δὲ ἄλλου τινὸς κέρδους μετα-
ποιεῖσθαι. Ὥστε τοὺς [β]οηθοὺς τοῦ νουμερ[αρίο]υ καὶ σουβσκριβενδαρίου καὶ κομμετ-
ταρησίου [ἤ]τοι τοὺς καλουμένους πριμισκρινί[ους] ἀνὰ δύο καθ' ἕκαστον σκρίνιον ἐ-
πὶ πράξεως ὑπομνημάτων παρὰ τοῦ κοινοῦ [τῶ]ν σκρινιαρίων τῆς δουκικῆς τάξεως
κινδύνῳ αὐτῶν καὶ μεθ' [ὅ]ρκου προβάλλεσθαι καὶ ἕ[κασ]τον αὐτῶν ἐπὶ πενταετίαν μόνην δια-
νύειν τὴν αὐτὴν φροντίδα. Ὥστε τοὺς αὐτοὺς βοηθο[ὺς] ἤτοι πριμισκρινίους μήτε ὑπὲρ πενταετί-
αν μένειν ἐν τῷ τοιούτῳ π[ρακτ]ίῳ μήτε μετὰ ταῦτα ἔ[ρ]χεσθαι ἐπὶ τὸ αὐτὸ π[ρ]ακτῖον ἢ [ἀ]πὸ σκρινί-
ου εἰς ἄλλο[ν σ]κρίνιον μεταρ[ρεῖν]. Ὥστε τὸν κατὰ καιρὸν [γ]ινόμενον δομέστικον καὶ τῷ αὐτ[ῷ] ἔργῳ

τὸ τοιοῦτο [χε]ιρίζειν πρακτ[ῖο]ν μηδένα δύνασθαι δ[ι]ὰ παρενθέτου προσώπου τὴν τοιαύτην ἀ-
νύειν χρεί[α]ν· ἐ«ι»άν τι τοιοῦτ[ο γέν]ηται τὸν μὲν ὀνομασθέντα δομέστικον ἅμα τοῖς αὐτοῦ ὀνομαστα-
ῖς καὶ πᾶσιν [τ]οῖς τῆς οὐκικῆ[ς τάξε]ως τὸν κίνδυνον τὸν ἐντεῦθεν ὑπομένειν, [τ]ὸν δὲ δι᾽ ἄλλου τὴν
28 χρίαν τοῦ δο[μεστ]ίκου χειρίσ[οντα] πέντ(ε) χρυσίου λιτρῶν πρόστιμον μεθοδεύεσθαι περὶ τὴν ἀνανέ-
ωσιν τῶν κάσ[τρων] πάν[τα τὸν τρόπ]ον καὶ αὐτῆς μέντοι τῆ[ς] στρατιᾶς καὶ τοῦ βαθμοῦ ἐκπίπ-
[τειν – *ca. 60* – – – – – – – – – – – –] ἀν(δ)εχομέ-
νῳ ἑαυτ[– – – – – – – – – – – – – – – – – πρόστιμον. Ὥστε – – – – – – – – – –]τε δὶς τὸν [αὐ]-
32 τὸν μήπ[οτε – – – – – – – – – – *ca. 45* – – – – – – – – – – – – – μεθοδεύε]σθαι τὸ αὐτὸ [τ]-
ῶν πέντε το[ῦ χρυσίου λιτρῶν πρόστιμον καὶ τῆς στρατιᾶς καὶ τοῦ βαθμοῦ ἐκ]πίπτ(ε)ιν. Ὥ[στ]-
ε τοὺς τελευ[ταίους – – – – – – – – – – *ca. 45* – – – – – – – – – – – – –]τους εἶναι κ[αὶ]
τοῖς πρὸ αὐτ[– – – – – – – – *ca. 35* – – – – – – – – – – – παρὰ τὴν τάξιν τ]ῆς μάτρικος [έ]-
36 πὶ τοὺς λοιπ[οὺς – – – – – – – – – – – – *ca. 40* – – – – – – – – – – – – – ην τ]ῶν δρακω[ν]-
αρίων ἀξία[ν – – – – – – – – – – – – – – *ca. 45* – – – – – – – – – – – – – – –]νους τελευ-
ταίους κιρκ[ίτορας – – – – – – – – – – – – – – τὴν ποσότητα τῶν δρακωναρίων κ]ατὰ τὴν (δ)ικ-
αιότητα εἰ μ[ὴ – – – – – – – – – – – – – – *ca. 45* – – – – – – – – – – – – – –] τὸν γινόμε[νο]-
40 ν κατὰ βαθμ[ὸν – – – – – – – – – – – – – – – *ca. 50* –]
[μηδὲν ἄλ]λο τι κέρδος παρ᾽ αὐτοῦ ἐπ[– – – *ca. 18* – – – – – κατὰ τὸ]ν εἰρημένον
[βα]θμὸν [τῷ] γινομένῳ δρακοναρίῳ [– – – – – – – – ἐ]πιτήδιος εἰ (μὴ) [ἀνα]γκῆς καὶ-
ρῷ καὶ μέχρει μόνης τῆς χρείας τὴ[ν αὐτὴν ἀνάγκη]ν ἐπαγαγο[ύσ]ης ἀξιοπισ-
44 τὸν παραλαμβάνειν βοηθόν. Ὥ[στε τὸν ἡρογ](ά)τορ(α) μηκέτι [τῇ ἀ]ναβολῇ κε-
χρ(ῆ)σθαι περὶ τὴν ἀπαίτησιν τῶν [παραλειπο]μένων τοῖς λ[ιμι]ταναίοις
μήτε τόκους ἢ ἄλλην ἐπίνοιαν [– *9/10* – –] α[ὐ]τῷ περιποιεῖ[ν ἀ]λλ᾽ ἐπὶ μὲν
τῆς ἐνεστώσης πεντεκαιδεκάτη[ς νεμήσ]εως τῷ Αὐγούστῳ [μ]ηνὶ τοῖς ἡ-
48 ρογάτορσιν εἰς ὁλόκληρον παρα [.....] λόγῳ τῆς αὐτῆ[ς ἐ]πινημέσε-
ως δηληγατευθέντα τοῖς λι[μιταναί]οις χρήματα κ[αὶ ἐ]ν αὐτῷ τῷ

Αὐγούστῳ μηνὶ τῆς κατα[βολῆς ἕν]εκεν πάσης τῆς [πο]σότητος
ἀναφορὰς πεμφθῆναι παρὰ [τῶν ἀρχ]όντων τῶν ἐπα[ρχ]ειῶν πρὸς
52 τοὺς περιβλέπτους δοῦκα[ς καὶ ἐν π]ροοιμίῳ τῆς ἐ[πι]ούσης πρώ-
της ἰνδικτ[ιῶνος καὶ] ἐν μηνὶ Σεμπτεμ[βρί]ῳ τὴν ῥόγαν [τ]ῶν λι-
μιταναίω[ν καὶ τῶν στρα]τιωτῶν ὑπὲρ τῆ[ς π]εντεκαιδεκ[ά]της ἰν-
δικτιῶνος [– *10–12* –]θαι ἀρχὴν κατὰ δὲ [τὴ]ν αὐτὴν πρώ[τ]ην ἐπι-
56 νέμησιν τ(ὰ) [χρήματα ?] τῆς αὐτῆς πρώτη[ς δ]ηληγατευό[μ]ενα
τοῖς λιμιτ[αναίοις ...]ις εἰς τρεῖς ἴσας τε[τρα]μην(ι)αίας δι[η]ρεθῆ-
ναι καταβο[λὴν ..... γε]νέσθαι δὲ ἑκάστη[ν κ]αταβολὴν ἐπ[ὶ] πράξε-
ως ὑπομνη[μάτων ἐπι]πληρουμένης τῆ[ς τε]τραμηνιαίου [ἐ]φ' ἑκάσ-
60 [τ]ῃ ἐπαρχείᾳ [– *6/7* – δ]ηλη‹γα›τεύονται τὰ χρ[ήμ]ατα τῷ δὲ [Α]ὐγο[ύ]στῳ μ[η]-
νὶ τῆς αὐτῆς [ἐπιούση]ς ἰνδικτιῶνος τὴν τ[ρίτ]ην τελευταία[ν κ]ατὰ
[τ]ὴν ἐξ ὁλοκ[λήρου γ]ενέσθαι καὶ τῷ αὐτῷ [ἐν Α]ὐγούστῳ μην[ὶ τ]ῶν χ[ρη]-
[μ]άτων ἐξ ὁ[λοκλήρο]υ καταβληθέντων ἕ[κα]στον ἡρογάτο[ρα] πιπ[:]-
64 [-]
[- - - - - - - - - - - - - - - - - σθαι τὰ χρήματα - - - - - - - - -]
[-]
[-]υ π[- ἀνα]-
68 φοραῖς τῶν αι[-]
ἐνφανίζζεσ[θαι -]
αν κατὰ τὴ[ν -]
καὶ δῆλον εἶ[ναι - τῶ]-
72 ν χρημάτων [-]
ἡρογα(τι)όνω[ν -]
- - - - - - - - - -

L. 1-2 : la restitution de la titulature est fondée, pour Νικητής sur le texte de Bosra ; Τροπαιοῦχος Μέγιστος est la restitution de *PAES* ; l'adjectif n'apparaît pas jusqu'ici dans la titulature grecque ou latine d'Anastase, dit seulement Τροπαιοῦχος ou *Triumfator* dans les documents sur pierre, *CIG*, 5187 (= *SEG*, IX, 356), *MAMA*, III, 197, A, *An. Ep.* 1976, 623 ou sur papyrus, *Archiv f. Urk.*, V, 277, 6, *P. Ryl.* 609, 3 et *P. Ness.* 17, 1. La fin de la ligne 2 est celle que propose *PAES*.

L. 3-4 : restitutions fondées sur le texte de Bosra.

L. 5 : τοῦ figure à Bosra ; à γ]ε τὸν ἐν de Bosra, je préfère τε ; Μεσοποταμίᾳ est attesté à Bosra et à Imtan.

L. 6 : ἐξ οἵας δήποτε à Bosra.

L. 7-10 : restitutions fondées sur le texte de Bosra où il y a, l. 8, haplographie de καὶ au début ; le ἤ omis à la ligne 9 figure à Bosra.

L. 11 : ἀνύεσθαι figure à Bosra ; σὺν τῷ πρ[ιμισκρινίῳ..., *PAES* ; les vestiges, non indiqués sur *PAES* 20/3, de deux lettres, probablement un sommet de lettre triangulaire et un élément de barre horizontale, ne semblent pas permettre cette restitution.

L. 12 : πέμπτον et τρίτον se justifient par τέταρτον qui suit et par δεύτερον de la ligne 13 ; la ligne 16 indique qu'il y avait cinq degrés hiérarchiques.

L. 13 : ἔχειν, en fin de ligne, se retrouve dans le texte d'Imtan.

L. 26 : *iota* intrus, peut-être révélateur d'une dictée.

L. 28 : la pierre porte πέντη.

L. 29 : ma restitution κάσ[τρων] est entraînée par un passage de l'édit d'Anastase relatif à la province de Cyrénaïque, *CIG* 5187, Waddington 1906*a* et mieux G. Oliverio, *Documenti antichi dell' Africa romana,* II, 1936, p. 135-163 (*SEG*, IX, 356), lignes 53-56 ; d'autres fragments du même édit sont connus à Tocra (*SEG*, IX, 414) et à Apollonia (*SEG*, XXVII, 1139) : «que le contrevenant à quelqu'une de ces règles soit puni d'une amende de cinquante livres d'or, et que cette somme soit dépensée pour la surveillance des frontières». Par ailleurs, la lecture βαθμοῦ est sûre, au lieu d'ἀριθμοῦ admis jusqu'ici ; le sens le veut aussi puisque le personnage susceptible d'être condamné n'appartient pas à l'armée, comme le précise le même édit de Cyrénaïque, aux lignes 4-6 : «que les fonctionnaires ducaux présents et à venir, et ceux qui ont accompli ou accomplissent le service civil (στρατία, *militia*) ne reçoivent pas la solde militaire et ne soient pas portés sur les matricules militaires». Dans l'édit plus général de Hallabat, un des éléments de la sanction consiste à être chassé de la *militia* et à perdre son rang hiérarchique, βαθμός. La même restitution paraît s'imposer à la ligne 33.

L. 30-31 : La pierre porte ἀναεχομένῳ.

L. 31 : la restitution est fondée sur CTINON.<TЄ copié à Imtan.

L. 33 : restitution en partie fondée sur les fragments d'Imtan : ... π]έντε τοῦ χρυσίου λιτρῶν πρόστιμον [...

L. 36 : ...]ην τῶν δρακ[... à Imtan.

L. 38 : ...]ν ποσότητα τῶν δρακωναρίων κατ[... à Imtan ; à la fin de la ligne, la pierre porte αικ|αιότητα.

L. 42 : à la fin, *PAES* donne εἴη ε...

L. 43 : ...] τὴν ἀνάγκην ἐποτούσης ἀξιοπισ[... à Imtan, avec probablement une erreur de lecture *tau* pour *gamma*, un fait de langue ou une erreur de gravure dans la confusion entre *omicron* et *alpha*, et très certainement une haplographie. On peut

désormais faire l'économie des corrections injustifiées que j'ai proposées en 1980.

L. 44 : *ἠρογ]ότ̣ρ̣ο* sur le dessin *PAES* 20/11.

L. 45 : *χρνσθαι* sur la pierre.

L. 47 : *PAES* n'a pas reconnu *τ]ῆς ἐνεσ-τ[ώ]σ[ης]* du texte d'Imtan et a complété le fragment 20/10 en *ἐφε]στώσης*.

L. 48 : interversion d'*epsilon* et d'*éta* dans *ἐπινημέσεως*, d'*ἐπινέμησις* ; l'orthographe est respectée à la ligne 56. Un verbe en *παρα...* semble nécessaire ici.

L. 55 : passage d'*oméga* à *omicron* dans *ἰνδικτιῶνος*.

L. 56 : *το* sur la pierre ; le neutre pluriel paraît s'imposer à raison du participe en fin de ligne.

L. 57 : *τετραμηνβαίας* sur la pierre.

L. 60 : *δ]ηλητεύονται* sur la pierre.

L. 65 : le complément isolé représente la ligne 4, *---]σθαι τὰ χρήμα[τα*, du fragment de Salkhad ; c'est grâce à ce vestige de cinq lignes que nous pouvons évaluer la lacune des trois lignes 64 à 66 et placer à la suite le fragment 20/13.

L. 71 : *δῆλον εἶναι* forme la ligne 5 de Salkhad.

L. 73 : *ἠρογαπόνων* sur la pierre.

Parmi les autres débris que nous avons pu regrouper, donnons ici :

11) fragment 80/31, retrouvé par le Dr. Bisheh dans le système hydraulique de l'enclos N.O. (cf. *supra*) L. : 32 ; H. : 41 ; lettres de 3,5 cm (Fig. 11)

Se place à droite de *PAES* 20/15, juste avant 20/16-19, et permet de restituer un groupe suivi de 10 lignes en 6 éléments.

[..... τὴ]ν ἀρχὴ[ν] ἐδέξατο, τοῦ αὐτοῦ τύ̣που κρατ[ο]ῦντος
[ἀεὶ ἐν ἑκά]στῳ τ[ῶ]ν μελλόντων ἐνιαυτῶν καὶ ἰνδι[κ]τιόνω-
ν, καὶ ε[ἰς τ]ὸ διη[ν]εκές. Ὥστε τοὺς ἄρχοντας τῶν ἐπαρχειῶν
4 εἰ μὴ τ[ὰς τ]άξις κ[α]θ΄ ὃ διετυπώθη συνστήσωνται, ἢ τὰς ἀνα-
φορὰς [ἀν]τί(δ)ωσ[ι]ν πρὸς τοὺς δοῦκας ἐν μὲν τῷ Πα[λ]αιστί-
νης κ[αὶ Εὐ]φρατησίας λιμίτῳ, αὐτοὺς ἀνὰ εἴκοσι [χ]ρυσίου
λίτρας, [τ]ὰς δὲ τάξις τὰς αὐτῶν ἀνὰ τριάκο[ν]«α»τα, ἐν
8 «ἑν» δὲ [το]ῖς λο[ιπ]οῖς λιμίτοις τοὺς ἄρχοντας [ἀ]νὰ δέκα
καὶ τὰ[ς] αὐτῶν [τ]άξις ἀνὰ εἴκοσι προστίμ(ου) λόγῳ κ[α]τὰ πάν-
τα τρό[π]ον [ἀ]π[ο]τ[ίνειν. Ὥστε π]ᾶν διὰ [ἀν]α[φο]ρᾶς τοῦ δουκὸ-
[ς - - - - - -

L. 2 : [διὰ πάντων τῶ]ν, *PAES.*

L. 4 : εἰ μὴ τ[ὰς δίκας (?), *PAES.*

L. 5 : ἀν]τίλωσ[ι]ν, la pierre ; [ποιήσωσι]ν, *PAES.*

L. 7 : λίτρας [καὶ τὰς τ](ά)ξις, *PAES* ; *alpha* intrus dans τριακό[ν]ατα.

L. 8 : dittographie de ἐν à l'alinea ; [τοῖς ἄλλ]οις λιμίτοι[ς], *PAES.*

L. 9 : προστίμω λόγῳ sur la pierre.

L. 10 : au lieu d'[ἀ]π[ο]τ[ίνειν], on pourrait proposer [ὑ]π[ο]μ[ένειν].

Peut-être des spécialistes de l'Antiquité tardive voudront-ils s'intéresser à ces documents et nous aider à les mieux comprendre.

J. Marcillet-Jaubert

THE INSCRIPTIONS AND ROCK-DRAWINGS OF THE JAWA AREA: A PRELIMINARY REPORT ON THE FIRST SEASON OF FIELD-WORK OF THE CORPUS OF THE INSCRIPTIONS OF JORDAN PROJECT

by
M.C.A. Macdonald
with a contribution by Ann Searight Macdonald

Some years ago Professor Mahmud al-Ghul first put forward the idea of attempting a complete epigraphical survey of Jordan. The first steps towards realising this proposal were taken in 1978, when, at a series of meetings between Professor Ghul, Dr. Adnan Hadidi the Director-General of Antiquities, Dr. Fawzi Zayadine, Mr. Gerald Lankester Harding and myself, the first firm plans for this Project were laid. It was decided that it should be a joint venture of the Department of Antiquities and the Centre for Jordanian Studies, of Yarmouk University, and I was asked to organise and direct it.

It is obviously impossible to make an accurate estimate of the number of inscriptions and rock-drawings in Jordan since relatively few areas of the country have been searched. However, the amount of material already discovered in those regions suggests that Jordan's epigraphic heritage is extremely rich and that the number of inscriptions alone almost certainly runs into the tens of thousands. The need for such a Project is, therefore, obvious, but the logistics of accomplishing it are somewhat daunting. Not only is the amount of material to be handled enormous, but possibly 80% of it is in the desert areas which are often difficult of access.

Based on the material already discovered it is possible to give a very rough estimate of the relative quantities of the different types of inscription in Jordan. Expressed as percentages this would be as follows: 65% Safaitic and Thamudic, 15% Arabic, 10% Greek, 3% Nabataean and 7% other (e.g. Latin, Syriac, Palmyrene, South Arabian, Aramaic, Hebrew, etc.). Of the total, about 80% are graffiti, most of which are to be found in the desert regions, and 20% monumental inscriptions.

Another problem stems from the fact that many of the inscriptions already published from Jordan (as from many other areas) were originally recorded in what, by modern standards, might be considered a somewhat unsystematic manner. This is not intended as a slur on the magnificent efforts of the pioneers, to whom we owe our very awareness of Jordan's rich epigraphic heritage, but is a reflection of the increasing sophistication of the field of which their efforts laid the foundations. The case of the rock-drawings is even worse. Very little work has been done on Jordan's rock-art and those drawings which have been recorded have almost always been treated merely as adjuncts to inscriptions. Indeed, many people have been astonished to learn that there is a large body of rock-art in Jordan.

Taking all these factors into account, I suggested the following basic principles for the Project:

1). that it cover the whole country, working systematically from east to west, square kilometre by square kilometre. This will obviously be an undertaking of several decades;
2). that the survey of each area be as complete and comprehensive as possible: i.e. it would record all the inscriptions, rock-drawings and *wusûm* (tribal marks) found and would be so organised as to minimise the chances of missing anything;
3). that every find be recorded with the greatest accuracy and the maximum of information and, especially, that its provenance be recorded as exactly as possible. This is something which, particularly in the case of the North Arabian inscriptions, has very rarely been done before and which, with full photographic coverage of every find, is of fundamental importance to the study

of these texts;

4). Since the ultimate aim of the Project is the publication of a *Corpus,* it should be concerned both with new texts and with those already published. Wherever possible, the re-recording of these latter in a full and accurate manner, should be considered as important as the gathering of new material.

These proposals were accepted and it was further decided that the publication should be in two parts. The results of each season's work should be made available as quickly as possible in the form of a *Répertoire.* The final publication, at the end of the Project, will be the *Corpus* itself.

The translation of these proposals into concrete action necessarily involved the devising of a new methodology. It seemed advisable to test these new techniques in a "pilot-scheme" in a limited and clearly defined area, so that the "teething problems" could be sorted out and any necessary adaptations made without interfering with the main Project. The results of this "pilot-scheme" would then be published in a separate work. For the reasons outlined below, the area around the site of Jawa, near H5, was chosen for this scheme.

The ancient site of Jawa[1] lies on the Wadi Râjil, approximately half-way along its course between Jebal Druze and Azraq. Its position is 120796 on sheet 3454 IV of the 1:50,000 maps of Jordan. At this point in its course, Wadi Rajil becomes a deep ravine for some two kilometres upstream and a similar distance downstream of the site. Jawa lies in the heart of the *harra,* the wilderness of basalt boulders so graphically described by many travellers[2]. Inhospitable though this region appears, it has been the home of bedouin tribes from time immemorial. Equally, the Wadi Râjil has been used as a route by travellers for millenia. Both these groups have left their inscriptions and their drawings in great profusion on the rocks of the Wadi and the surrounding area.

I had already worked in this area, with Dr. Helms in 1975 and 1976, and with my wife in 1978, and knew that it would be rewarding both in the quantity and the variety of the material we would find. Moreover, Professor F.V. Winnett's 1951 expedition had visited the area downstream of the site and had recorded over 400 Safaitic and 100 Arabic inscriptions[3]. It was also an area with well-defined limits, both geographically and in terms of the material to be found there, and yet it had a variety of topographical features on which to try out our methods of searching. Thus, in the diversity of its material, its mixture of new and previously published texts and its topographical variety, it was a microcosm of what we might expect to find in our later work.

The Project's first field-season at Jawa lasted from 14th. May to 12th. August 1981. We are most grateful to the Director-General of Antiquities, Dr. Adnan Hadidi, for granting us permission to work in the area and for extending our permit for a third month. I should also like to thank Dr. Ghazi Bisheh and Dr. Fawzi Zayadine, the Assistant Directors of Antiquities, for their great interest in the Project's work and the very considerable help they gave us.

The bulk of the finance and most of the equipment and transport were provided by the Yarmouk University, through the Centre for Jordanian Studies. I should like to express our great gratitude to the

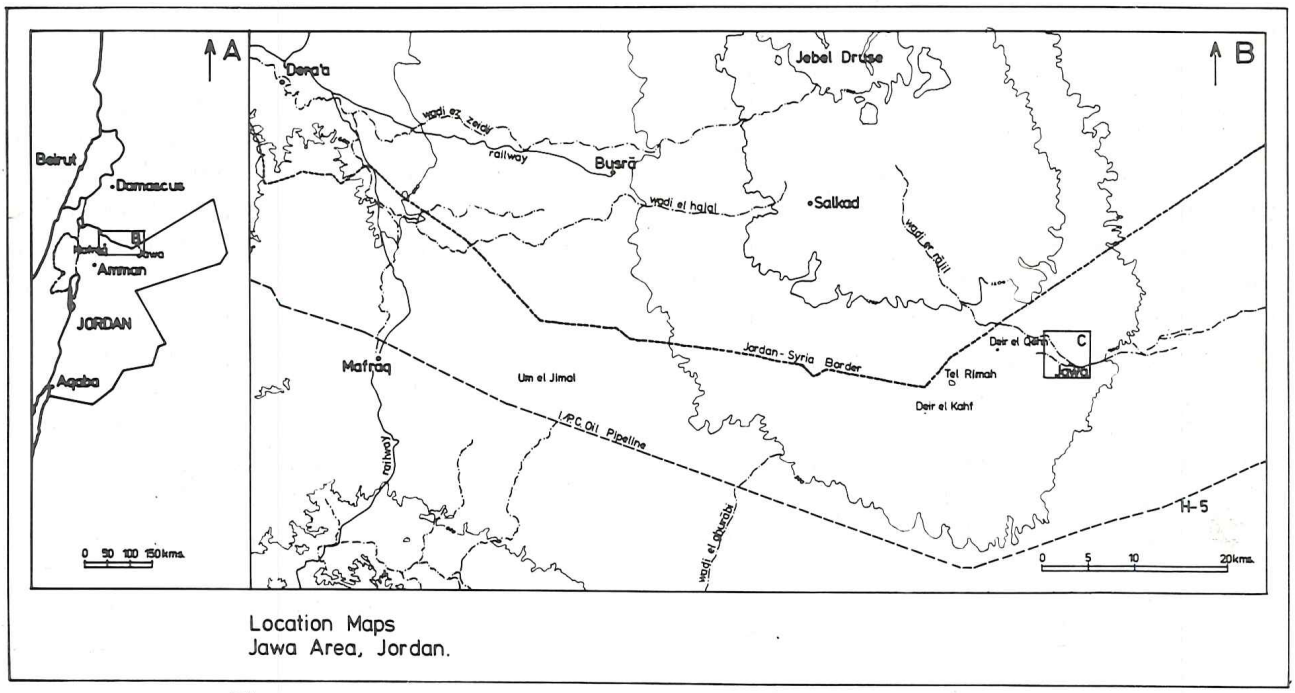
1. For this site see S.W. Helms: *Jawa, Lost City of the Black Desert* (Methuen, London, 1981). For its location and the area in which we were to work see figs. 1-2 of this report. I am most grateful to Mrs. Balderstone for drawing these maps and plans.
2. See Plate *L* 1 and, for example, Yâqût: *Mu'jam al-Buldân* (Leipzig 1866-1873) II, p. 247 and N. Glueck: *Explorations in Eastern Palestine* IV, Part 1, p. 30f. (Annual of the American Schools of Oriental Research, vols. 25-28, 1951) who described it as "an excellent setting for Dante's *Inferno*".
3. See F.V. Winnett: *Safaitic Inscriptions from Jordan* (Toronto, 1957) and D.C. Baramki: *al-nuqûs al-'arabiyya fî al-bâdiyya al-sûriyya* (Al-Abhâth, vol. 17, 1964, pp. 317-346). Only some of the Arabic inscriptions from Jawa were published in this work. The expedition also recorded some Greek inscriptions at Jawa but these were never published. I am most grateful to Professor Winnett for this information.

University Authorities and, in particular, to Professor Mahmud al-Ghul, director of the Centre and founder of the Project, and to Dr. Mu'awiyah Ibrahim, Dean of Humanities and Science, for their constant help and support at every stage of the Project's work.

The Engineering Departments of the Yarmouk University and the Jordan University lent us surveying equipment and the British Institute at Amman for Archaeology and History lent us surveying and camp equipment. To all these we are most grateful.

Our work at Jawa would have been impossible without the enormous kindness and assistance of the Jordanian Army. They provided us with a field-kitchen, with water, often with food, and with tents, as well as helping us set up and strike camp. Whenever we encountered difficulties they were ready with help and proved the friendliest and most hospitable of neighbours in the desert. In particular I should like to thank General 'Abd al-Hafiz al-Sayyid, General Shafiq 'Ajeilat, General Mahmud al-Tarawnah, General Fawzi 'Abeidan, Major Muhammad Jamal, Major Muhammad Sirhan, Major Salih Abu Darwish and the officers and men of the 5th. Battalion Prince Talal of Tank Bridgade 99 al-Shahid Wasfi Tall. We are also very grateful to the Army's Surveying Corps who repeatedly brought their extensive knowledge and sophisticated equipment to help us with some of our mapping problems.

Apart from myself, the staff, in alphabetical order, was as follows: Dr. Sabri 'Abbadi (Department of Antiquities Representative for the third month), who generously gave us the benefit of his expertise in semitic onomastics; Mrs. Susan Balderstone, to whose skill and hard work we owe the system of fixed points outlined below and all the surveying and planning; Mr. Chris Clarke made detailed analyses of a selection of the most important and/or representative rock-drawings and was extremely helpful in a great many aspects of the survey; to Miss Geraldine King fell most of the searching for and recording of the inscriptions, particularly after I badly sprained my ankle, and it is largely due to her meticulous and unstinting hard work that so much was found and recorded; Mrs. Ann Searight Macdonald worked with tremendous care and dedication providing the *comprehensive* aspect of the rock-art survey (see her report below); the considerable part played by Mr. 'Isa Madi Departments of Antiquities.



Location Maps
Jawa Area, Jordan.

Fig. 1. A: Map of Jordan showing general position of Jawa.
B: Map of the H5 area showing position of Jawa more exactly.

Representative for the first two months) will be described below, but I should mention here that his tireless efforts and good-humoured flexibility contributed greatly to the success of the season. To all these I am exceedingly grateful for their extremely hard work, so willingly given, and their great dedication under often very trying conditions. The team was completed by Mr. Fayyez Tarawnah who helped with the administration, two drivers, Abu Samir and Abu Muhammad from the Yarmouk University, and our cook Hasan Sherif Hasan.

In this first field-season we were attempting to test a new method of finding and recording inscriptions and rock-drawings. As so often, this grew partly out of techniques already tried and partly from needs which had become apparent. It was to fulfil the latter, as described in the basic principles outlined above, that the new method was developed.

As a first step I had arranged for the relevant sections of the 1:50,000 maps of Jordan (the largest scale maps available for this area) to be enlarged to a scale of 1:10,000. I would like to thank Jordan's National Geographical Centre and, in particular its Director, Colonel Rif at Majali and its Assistant Director Major Ghazi Fayyez, for doing this for us. From these enlargements Mrs. Susan Balderstone and Mrs. Ann Searight Macdonald traced off the features of the area which concerned us. Although, of course, this enlargement of the map gave us no more detail than was on the original, it gave us the makings of a large scale map, with the basic topographical features and contour lines, to which could be added more detailed information as well as the locations of the various finds.

The limits of our area were defined to the east and the west by 'Ain Jawa[4] and a "Waterfall"[5] in Wadi Râjil respectively. This covers roughly four kilometres in which the wadi runs through a rather dramatic gorge. To the north the area is defined by a ridge, running parallel with the wadi, down the southern slopes of which runs a tributary wadi. Only to the south was the area not so clearly defined, though a natural border of sorts is apparent in the change in the quality of the basalt from the smooth to the sponge-like, which is unsuitable for inscribing. Along this southern boundary, therefore, we drew an artificially straight line to include the "wadi Jawa" i.e. the wadi dammed by the ancient inhabitants of the site (see Helms, *op. cit.* fig. 13, p.30).

Once the area to be covered had been defined. Mrs. Balderstone devised a simple and very effective method of recording the location of finds. This consisted of placing a network of fixed points (marked on the ground by cairns) over the area, so that, wherever an inscription or drawing was found, we could take bearings to two of these points to fix its exact position. The fixed points were marked on Mrs. Balderstone's plan, drawn at a scale of 1:2,500, on which the positions of each day's finds were then plotted. The increase of scale from 1:10,000 for this plan was necessary to give enough space to plot all the locations and also to make it possible to increase the accuracy of the plotting of the positions from 10 metres on the ground to 2.5 metres.

One of the problems posed by previous expeditions (again particularly in Safaitic, which more than any other branch of epigraphy is beset with topographical problems) is that of the distribution of the inscriptions. Almost all previous expeditions have moved from landmark to landmark (rocky outcrops, cairns, etc.) recording the inscriptions they found there and only rarely seeking them elsewhere. An extreme example of the distortions which such a method can produce may be seen in W.G. Oxtoby's statement[6] that "at

4. Near the intersection of the 341 north-south and 194 east-west grid lines (Palestine grid) on the map in fig. 2.
5. This waterfall (see Plate L 2) marks the point at which the wadi, from being relatively shallow, plunges into a gorge. It is, of course, dry most of the year, though when we arrived in May there was still a large pool of water at its foot to which the bedu were bringing their flocks.
6. W.G. Oxtody: *Some Inscriptions of the Safaitic Bedouin* (New Haven, 1968, p. 1)

most... cairns and only occasionally elsewhere are found inscriptions scratched on the stones in Safaitic". This is quite patently not true. Not only is the basalt desert full of cairns, only some of which bear any inscribed stones at all, but also Safaitic inscriptions can be found in almost any part of the area where the basalt is suitable for inscribing. To link them only with cairns implies a severe limitation on the uses the Safaitic authors made of their literacy as well as limiting the building of cairns more or less to the Safaitic period. For neither of these implications have we the slightest evidence. Such a statement could only be made in the first place because Oxtoby, misled by the false distribution patterns produced by previous expeditions, believed that "to gain further information about the Safaitic tribes one's method is to explore the desert for additional cairns"[7]. From my previous field-work I was convinced that such a "method" was extremely dangerous. For not only did it result in the loss of a great many texts which did not happen to be on convenient landmarks, but it encouraged such false assumptions as those just quoted.

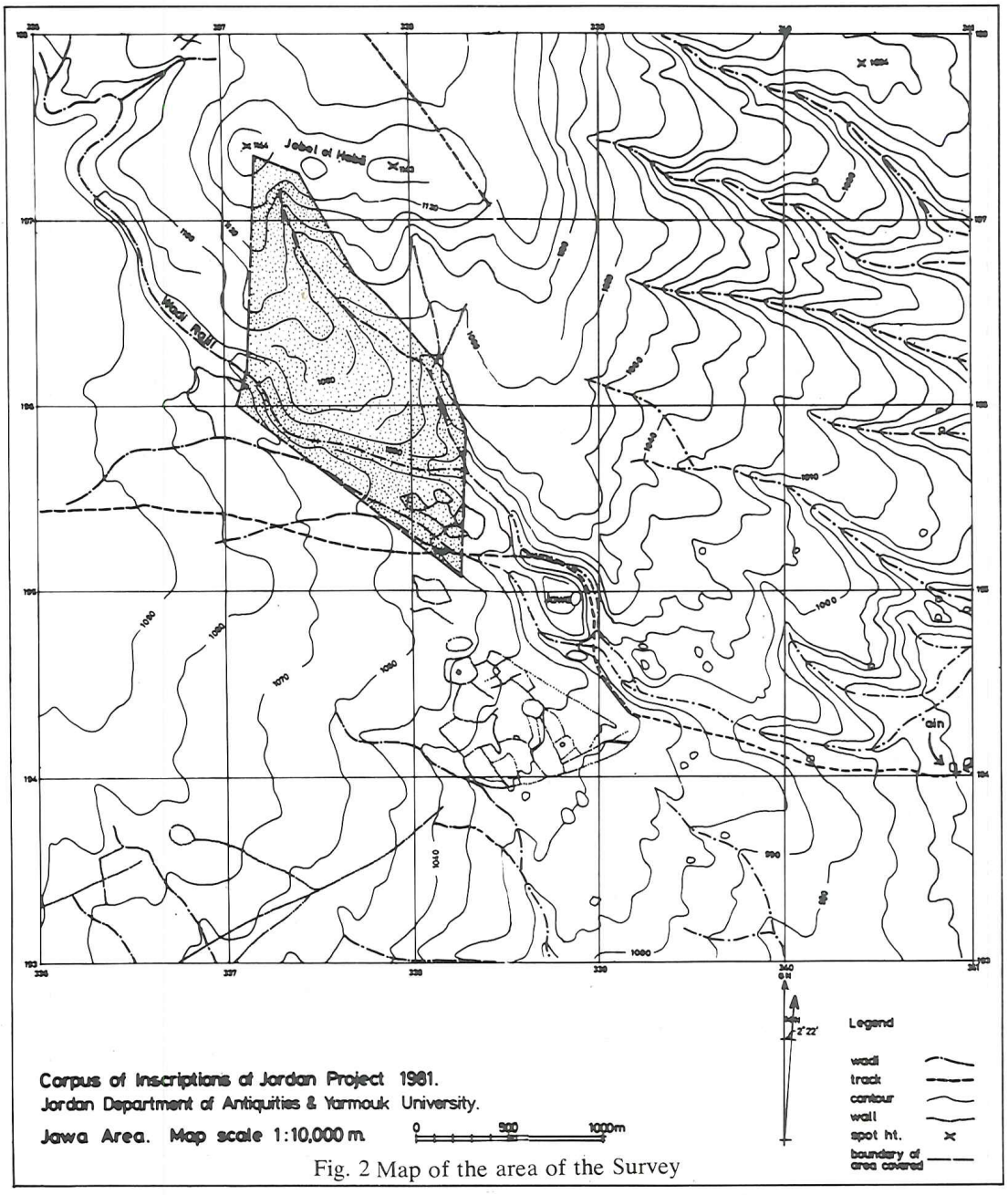


Fig. 2 Map of the area of the Survey

7. ibid. p. 2

The only solution appeared to be to take a manageable area and search it as thoroughly as humanly possible for inscriptions and drawings. To understand the extent of such an undertaking it must be remembered that this area is covered by millions of basalt stones and boulders (see Pl. L 1) any one of which may be inscribed on any face, including that on the ground. Moreover, lichen is extremely common all over this area and often obscures part or all of an inscription[8]. Finally, as anyone who has worked in this area will know, many inscriptions and drawings are virtually invisible in all but the light at one short time of day.

Faced with such obstacles it was obviously impossible to achieve absolute comprehensiveness—for instance, to have turned over every stone would have increased the length of the Project by several hundred years! However, granted these limitations, I think we may claim to have recorded the vast majority of the inscriptions and drawings of the area in which we were working.

The method I devised to cope with these problems was very simple, if rather time-consuming[9]. It consisted of dividing our area into small sub-areas and systematically "sweeping" over each of these—i.e. a line of people, in groups of two or three, roughly ten metres apart, walking slowly across the area, five metres forward, then walking towards each other, then together walking five metres forward before walking away from each other and moving five metres forward again (see diagram in fig. 3).

By this method no stone was more than five metres away from one of the searchers, and, since these looked constantly from side to side, the stones were scanned from two directions. It was also convenient since it could be used by as many or as few people as were available and could even be adapted for use by a single searcher.

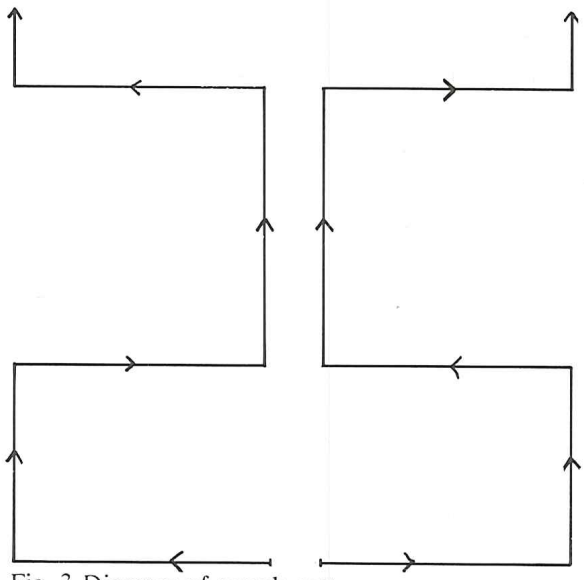


Fig. 3 Diagram of search pattern.

This method worked very well in open tracts of country, but it obviously had to be modified to deal with certain topographical features such as the wadi gorge. We treated the latter in its three component parts, i.e. the two banks and the wadi bed. Each of these was swept separately, each bank being swept "vertically" by climbing up and down along the length of the section dealt with. Large outcrops also called for particular treatment and we walked all over and around these making sure that every face of every rock, as well as all the loose stones, was examined. In certain places where there were large concentrations of inscriptions and drawings, such as the Waterfall, (See Pl. L 2), Mrs. Balderstone made a plan at a scale of 1:200 in order to show the positions of each find more clearly.

The value of this method was shown throughout the survey by the discovery of large numbers of inscriptions, drawings and *wusûm* scattered over the area on individual rocks in the "sea" of otherwise uninscribed basalt. Except by the merest accident, none of this material would have been discovered using the traditional methods.

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8. The lichen can be cleaned off fairly easily with water and a scrubbing brush. However, the acids in the lichen have usually eaten into the stone making those portions which have been covered difficult to read.
9. The practical application and adaptation of this method was largely the work of Miss Geraldine King, to whom the Project is deeply indebted.

On making an "isolated" find of this kind, the person who discovered it would detach himself or herself from the "sweep" line, which would then re-form and carry on. If a group of texts was found then the whole line would stop to record it.

The procedure, on making a find, was to take bearings with a prismatic compass to two of the fixed points in order to record its position. We would then note whether it was on a loose stone or fixed boulder and, if the latter, which face it was on; its relationship, if any, to structures or natural features and to any other drawings, inscriptions or *wusûm;* whether the inscribed surface was roughly horizontal, vertical or sloping; the type of basalt and any relevant imperfections; whether lichen had to be removed to reveal part of the text; the shade of the patina[10]; the technique used to inscribe it[10], and any other relevant details. This done, a hand copy was made and the find was photographed in black-and-white and colour (slides). Where it was helpful to do so, photographs were also taken of the inscribed rock in its topographical context. Thus for every find we were recording a great deal of information which in the past has almost always been neglected. The techniques for recording rock-art, which are necessarily somewhat different from those used for inscriptions, are discussed by Mrs. Ann Searight Macdonald in her section on the rock-art.

The disadvantage of this method is that it is very slow. Using it we covered an area of approximately two square kilometres this season. This is partly, of course, because we were experimenting with new techniques and finding solutions for new problems, as well as working with a very small team. It is to be expected that as the techniques become more routine there will be an increase in speed. Nevertheless, it is perhaps significant that while we recorded 1219 items in three months, Professor Winnett's expedition to Jawa in 1951 recorded over 500 inscriptions in two days![11]

The section covered this season was the most westerly of our area, shaded on the plan (see fig. 2). This runs from the Waterfall in Wadi Râjil to the junction with a tributary wadi, about half a kilometre upstream of the site, and takes in a large tract of land north of the Waterfall, including the whole course of the tributary wadi. This area had never been visited by epigraphists until I started exploring it in 1975 while working with Dr. Helms on his excavations at Jawa. All the finds were therefore unpublished with the exception of a handful of the rock-drawings which were included in Dr. Helms' reports and book[12].

Since the aim of the Project was a *comprehensive* survey, we recorded everything that we found: inscriptions of all types and periods, rock-drawings and *wusûm*. Of the 1219 items found this season 576 were inscriptions, 500 rock-drawings and 143 were *wusûm*. When it is remembered that all this was found in an area of approximately two square kilometres, one realises the extraordinary density of the material in this area. Since the rock-art is discussed by Mrs. Searight Macdonald, I shall confine myself to describing some of the finds of inscriptions and *wusûm* as well as some of the Project's other activities.

As was to be expected, the vast majority of the inscriptions we found were Safaitic (495). This more than doubles the number of these texts known from the Jawa area[13]. As usual the largest contribution of

10. See Appendix A for further details.
11. This figure includes the Arabic and Greek texts as well as the Safaitic.
12. S.W. Helms, *op. cit.* figs. 2, 9, 10, 12,16, Plate 8 and pp. 27-30 and L.-A. Hunt: Appendix A in S.W. Helms: *Jawa Excavations 1974: A Preliminary Report,* (Levant vol. VIII, 1976 pp. 24-29 and figs. 17-20). This Appendix also includes brief notes on some of the inscriptions. The so-called "Jawa Rider", which I published in Appendix G of S.W. Helms *op. cit. (1981),* comes from the area downstream of the site, which we hope to cover in a later season.
13. Professor Winnett published 429 in *Safaitic Inscriptions from Jordan* (see note 3) Nos. 243-672; I published 4 more in *Safaitic Inscriptions in the Amman Museum and Other Collections I* (Annual of the Department of Antiquities of Jordan, vol. 23, 1979, pp. 101-119) Nos 1-4; and another 3 in Appendix G to S.W. Helms: *op. cit. (1981)* pp. 257-258.

these inscriptions is to our knowledge of the Safaitic onomasticon. However, this is by no means their only interest. We have, for instance, two long genealogies going back to the eponymous ancestors of the two great Safaitic tribal confederations, *Df* and *'wd*, genealogies of fifteen and twelve generations respectively. The former is important because it is the first example of this genealogy being taken to four generations above *Df*. It also provides a previously unknown branch to the *Df* family-tree. The *'wd* pedigree is equally important since it too provides a new section to the known *'wd* genealogy. Moreover, it seems likely that it provides evidence for the subdivision of the great *'wd* confederation. One of the problems in Safaitic epigraphy has been that the same word, *'l*, is used in the inscriptions for all social units, thus making it extremely difficult to distinguish between tribes, sub-tribes, clans and families[14]. However, this text contains a small clue to the solution of the problem since it suggests that one of the *'l*s, the *d'f*, was in fact a sub-tribe of *'wd*. From this basis it may well be possible to find other such divisions.

As well as these texts from the two great confederations, we also found a number of inscriptions by members of the tribes of *hzy* and *hly* which appear to have been local to the H5-Jawa area[15]. The *'mrt* tribe[16] is also represented by a short but elegant text in the square script.

From both the names and the prayers we have evidence of the worship of all three of the so-called "Daughters of Allah"[17]. Allat, though as usual by far the most popular deity in the prayers, does not appear in any of our theophoric names. On the other hand, the evidence for al-'uzzâ and Manât is confined to names (*mr'h'zy*[18] and the new name *'hmnt*). We also have one of the relatively rare invocations of Allah in these texts. Deities known from Nabataean, Dushares and shai' al-qawm, are also invoked in the forms *dšr* and *š'hqm* respectively, as well as *rdw* (Palmyrene *'Arṣu*), *b'lsmn* and *yt'*. Thus a good selection of the North Arabian pantheon is represented.

Several new words and phrases occur in these texts: e.g. *wšm* in the phrase *w wjd wšm 'mh f nj'* where it presumably means some form of personal mark rather than "tattoo"; *str* used as a verb; *štt* = *šty* "to winter" (cf. *ġzz* for *ġzy*[19]); and an interesting variant of the *'wr ld y'wr* curse, viz. *w mn y'wr ly'wr*, i.e. *wa-man yu'awwiru liyu'awwar*, "and whoever effaces [the inscription] let him be blinded".

It was particularly exciting to find a group of Thamudic inscriptions at Jawa. They belong to Winnett's "B" or "Najdi" Thamudic which is generally found south of a line between Teima and Ha'il[20]. Thus

14. See G. Lankester Harding: *The Safaitic Tribes* (Al-Abhâth, vol. 22, 1969), pp. 3-5.
15. For *Hzy* see G. Lankester Harding: *The Cairn of Hani'* (Annual of the Department of Antiquities of Jordan vol. 2, 1953, pp. 8-56) p. 14 and Nos. 105, 162; F.V. Winnett: *op. cit.*, Nos. 295, 319, 320, 323, 342b, 348, 349, 361, 455, 909; Macdonald: *Safaitic Inscriptions...* No. 1. There is also one occurrence in a text of doubtful provenance see M.C.A. Macdonald and G. Lankester Harding: *More Safaitic Texts from Jordan* (Annual of the Department of Antiquities of Jordan, Vol. 21, 1976, pp. 119-130) No. 7. For *Hly*, see Harding: *The Cairn of Hani'* Nos. 106, 131, 132; and Macdonald: *Safaitic Inscriptions...* No. 16 (no provenance).
16. See M.C.A. Macdonald: *Safaitic Inscriptions in the Amman Museum and Other Collections II* (Annual of the Department of Antiquities of Jordan vol. 24, 1980, pp. 185-208), pp. 185-186; and J.T. Milik: *La Tribu des Bani 'Amrat en Jordanie de l'Époque Grècque et Romaine,* (same volume, pp. 41-54), p. 47.
17. Qur'an: 53: 19-21.
18. See F.V. Winnett and G. Lankester Harding: *Inscriptions from Fifty Safaitic Cairns* (Toronto, 1978), Nos. 1777 and 3820 and cf. *mr''zy* in Nos. 621 and 627.
19. See A.F.L. Beeston: Review of Winnett and Harding *op. cit.* (Antiquaries Journal, 1980) p. 134
20. See F.V. Winnett: *A Study of the Lihyanite and Thamudic Inscriptions,* (Toronto, 1937), p. 28 and map on Pl. IX. However, for exceptions see F.V. Winnett and W.L. Reed: *Ancient Records from North Arabia* (Toronto, 1970) Thamudic inscriptions 3-5 and 25-27 from the area of al-Jawf and G. Lankester Harding: *Some Thamudic Inscriptions from the Hashimite Kingdom of the Jordan* (Leiden, 1952) Nos. 509-512 from a wadi west of Kilwa. I am particularly grateful to Professor Winnett for his very considerable help on these texts.

Jawa is the furthest north by several hundred kilometres that texts of this type have been discovered. Moreover, one of the texts is quite long by Thamudic standards (27 letters) and is particularly interesting since it is one of the rare texts by a woman and seems to imply that she was a stranger (a slave?) working for the inhabitants of this area. All the texts are remarkable for the South Arabian form of the letters, *' b,h,s,k.*

The 63 Arabic inscriptions which we found ranged from dated Kufic texts of the first years of the 'Abbasid period[21] to the graffiti of the modern bedu. For, with the educational programmes of the Jordanian government, the bedu are now increasingly literate and are again recording their names and thoughts on the rocks of the *ḥarra.* The main interest of these modern graffiti is onomastic. Littmann has shown that "quite a number of [Safaitic names] are still used by the Bedawin and the Druses of the Hauran region" and that "some of these names are quite rare in classical Arabic, some are not known there are all".[22] Thus we hope to build up a list of modern bedu names from the area to compare with those in the earlier texts. In this we complement the recording of modern texts by questioning the bedu so that the resulting list can be as complete and accurate as possible. Several of the modern texts, however, have a more than merely onomastic interest. Three, for instance, were scratched in "mirror-writing", i.e. were written from left to right. Does this represent a severe case of dyslexia or merely *joie de vivre?!* Many of the dates are also written backwards, i.e. from right to left, thus ٤٦٩١ for 1964. However, this is probably to be explained as an attempt by the author to write the date as he would say it, i.e. starting with the thousands rather than the units.

The Kufic and the mediaeval and early modern Arabic inscriptions generally follow the common formulae, غفر الله... اللهم اغفر... etc. However, palaeographically it is useful have several dated texts, especially when taken together with our studies on the techniques and instruments of inscribing[23]–something which has too often been neglected in palaeographical studies. However, the majority of the texts are, of course, undated, though we have one, by a man from Qariyat Milḥ, which is dated simply *yawm al-ḫamîs!*

The majority of the 13 Greek inscriptions were found in and around a shallow bay in the "south" bank of Wadi Râjil close to the Waterfall. They consist mostly of names and these, as might be expected, are a mixture of Graeco-Latin and Semitic, e.g. *Πετρος, Παυλος, Ηλιοδ-, ορος, – Αμερος Ιαδουος, Αβγαρος.* The liberal sprinkling of crosses suggests a Byzantine date for these texts, as do two brief Christian prayers[24]. There are several Safaitic inscriptions written vertically among these Greek texts and at least one of them must, by its position, be later than its Greek neighbour[25]. The authors were presumably Byzantine soldiers or travellers using Wadi Râjil as a convenient route and taking what shelter they could in this bay. Ironically, only fifty metres away on the Waterfall itself, a Safaitic author records that he fled from Roman (or Byzantine) territory *(nfr mn rm).*

21. One is dated 140 A.H. (= A.D. 757/8) and another 150 A.H. (= A.D. 767/8).
22. *E. Littmann: Safaitic Inscriptions,* (being Publications of the Princeton University Archaeological Expeditions to Syria in 1904-1905 and 1909, Division IV, Section C, Leiden, 1943) pp. xxvii-xxviii; and see also E. Littmann: *Beduinen– und Drusen–Namen aus dem Haurân-Gebiet* (Nachrichten von der Königlichen Gesellschaft der Wissenchaften zu Göttingen, Phil.-Hist. Klasse, 1921, pp. 1-20).
23. See Appendix A.
24. I am most grateful to Dr. Fawzi Zayadine for his extensive work on these inscriptions in the field. I should also like to thank Dr. Pierre-Louis Gatier of the Corpus des Inscriptions Grecques et Latines de Jordanie (Institut F. Courby, Université Lyon). The two Corpus Projects are working in close co-operation. The dating to the Byzantine period has already been suggested by Professor C. Mango (see L.A. Hunt in Levant, vol. VIII, 1976, p. 25, note 7).
25. Patina comparisons (see Appendix A) were not possible in this bay because most of the surfaces were encrusted with mud and lime which had prevented normal patination.

We recorded both the ancient and the modern *wusûm* of the Jawa area. This aspect of the survey was carried out, for the most part, by Mr. 'Isa Madi of the Department of Antiquities to whom we are most grateful. Not only did he record the *wusûm* engraved on the rocks, but he also questioned the local bedu on the tribal marks now in use in the surrounding area and recorded these for comparison. Relatively little work has been done on the *wusûm* of the Syrian desert[26], so it is hoped that this collection, together with the additional information recorded by Mr. Madi, will form a useful basis for further work.

Mr. Madi was also largely responsible for another aspect of the survey's work: that of recording the traditions and dialect of the local bedu. With the advent of education, radio and television, and increased personal contact with the settled population, the traditional way of life is rapidly disappearing and the local dialects are becoming submerged in what is almost a "standard received" Arabic. The traditions and the dialects are not only interesting in themselves but, like the names, may well provide clues to the interpretation of the Safaitic texts.

From what has been said, and from what follows, it will be apparent that the survey recorded a very wide variety of material during this field-season. We hope to return to the area in late April 1982, for three months, to continue the Project's work and further refine the techniques with which we experimented this season.

THE ROCK-ART SURVEY OF THE JAWA AREA, 1981
by: Ann Searight Macdonald

This aspect of the Corpus of the Inscriptions of Jordan Project's survey was carried out by Mr. Chris Clarke and myself. While I made the comprehensive survey, i.e. recording every drawing found, Mr. Clarke selected pieces of particular interest for special study. This required the taking of lengthy notes, as well as a careful study of the methods of engraving, with detail photographs. The surfaces chosen included those on which several periods of drawing had been superimposed, and those of particular artistic or historical interest.

During surveys in Oman and Saudi Arabia, Mr. Clarke had successfully made a series of tracings of large surfaces bearing rock-drawings, and he hoped to produce similar results from some of the Jawa material. The surfaces were broken and very uneven, so the sheets of acetate used had to be small (approximately 35 x 25 cms.) and overlapping. Rolls of acetate were also used, cut to appropriate lengths. All these tracings are then retraced onto large sheets before being reduced for publication.

After the information on location, environment, patina, etc.[27] had been recorded, the surfaces had then to be washed and a preliminary note made of the best lighting for photography. This was often difficult to predict, especially for the darker patinas, and it was frequently necessary to return at different times of day to take photographs in different lights, using red or amber filters.

Careful sketches were also made of every drawing, and these will be particularly helpful with the later work on photographs.

An interesting feature of the rock-art was the variety of fauna represented. Inevitably camels predominate, but there were also cattle, sheep, goats (including ibex), oryx, gazelle, cervids and ostrich. Many of these are not easy to identify precisely, particularly if one allows for artistic licence and the difficulties of drawing on basalt. However, it is hoped that zoologists and palaeontologists may be able to assist in the identification of some of them.

The presence of cattle is significant,

26. For the most extensive collection of *wusûm* from this area and a description of previous work and the problems, see H. Field: *Camel Brands and Graffiti from Iraq, Syria, Jordan, Iran, and Arabia* (Supplement to the Journal of the American Oriental Society No. 15, 1952) particularly chapter 2 by H.A. Winkler.
27. See p. 7 above and Appendix A.

since it suggests that the environment of the Jawa area must, at the time they were drawn, have been radically different from its present aridity. Even allowing for the sophisticated hydrological systems (which S.W. Helms suggests the inhabitants of Jawa created in the late 4th. millenium[28]), it is difficult to imagine sufficient grazing being generated for more than a handful of cattle. The number of drawings, however, suggests a fairly sizeable bovine population. On the other hand, it should not be forgotten that the herding of cattle is mentioned in some of the Safaitic inscriptions from al-Hifneh, in the Wadi al-Sham (southern Syria), which, from the description, has a somewhat similar environment to that of the Wadi Râjil near Jawa[29]. It would therefore appear that even as late as the Roman and Byzantine periods parts of the *ḥarra* could support cattle.

The human figures represented are usually involved in hunting or herding. Amongst these are scenes showing confrontations with carnivores, probably wolves and lions. The former are sometimes represented with a herd of sheep/goats and a group of humans; the lions are either alone or with a single human.

Whilst the scenes involving men, flocks and carnivores tended to be drawn as stick figures, the cattle had their bodies and limbs carefully shaped in profile, outlined or infilled with pecking. It has been suggested that any spaces in the infilling were meant to indicate piebald markings, a characteristic only of domestic cattle. The heads of the cattle are always drawn as if from above, showing both horns in their circular sweep.

One of the most distinctive and common designs connected with humans was the large 'comb' head-dress (see Fig. 4). This consists of a horizontal line from which depend anything from 4 to 10 vertical strokes; the body and legs of a human protrude centrally below the tines. These 'combs' have been likened [30] to the schematic 'vultures with headless corpses' on the wall-paintings of Çatal Hüyük in Turkey, which are of a similar date to that given by Dr. Helms to the primary settlement at Jawa.

Almost certainly from a much later period were some smaller and more intricate designs, scratched on single stones on the slopes above Wadi Rajil. Associated with a Safaitic inscription was one depicting a hunting scene with camel riders using spears and nets (?) against a large ungulate (oryx?). Three others show horsemen wielding spears.

Some of the drawings of camels should also be dated to this later period, since they are mentioned in accompanying inscriptions. On the whole, however, comparatively few of the approximately 500 drawings found this year were associated with texts, and even fewer of the latter refer to the drawings.

Among the many enigmatic patterns hammered on the rocks were irregular circles, sometimes connected to each other, which have been tentatively described as enclosures (S.W. Helms: *Jawa...*, Pl. 14), while some long meandering lines and loops still seem to be meaningless.

Representations of vehicles were scarce — not surprising in such terrain. Two drawings of possible chariots or carts were found, one discovered by chance outside our survey area. Both are simple in form, having each two cross-barred (spoked) wheels connected by a 'T' bar. Neither had human figures associated, but one was attached to an animal by the vertical of the 'T' (cf. E. Anati: *L'Art Rupestre, Negev et Sinai,* Paris, 1979, pp. 52, 56 ff and two unnumbered plates from "la Grotte des chars", one of which is reproduced on the back cover).

However, it was also exciting to find one example of the latest period in the rock-art sequence, and in wheeled vehicles in particular — a very carefully executed Toyota pick-up!

Ann Searight Macdonald

28. See S.W. Helms, *op. cit., passim.* On the other hand, the number of drawings of a "bucranium" symbol might suggest that the cattle had a cultic significance.
29. See E. Littmann: *Safaitic Inscriptions...*, p. 1 and nos. 90, 155 and 159. I am most grateful to Michael Macdonald for this information.
30. See L.A. Hunt, *op. cit.,* p. 26 and S.W. Helms, *op. cit.* p. 30.



Fig. 4. Drawings of human figures with "comb" head_dresses

APPENDIX A

THE STUDY OF ENGRAVING TECHNIQUES AND PATINA

Some years ago, Mr. Lankester Harding and I suggested[31] that the methods of engraving these inscriptions and drawings should be thoroughly studied by someone with experience and knowledge of cutting inscriptions on stone. Accordingly, this season, I asked Mr. Brian Bowen who, among his many other talents, is a professional stone-engraver, to come to Jawa and study the techniques of engraving. He very kindly agreed to this and I should like to thank him for his great help. Mr. Bowen identified a considerable number of different techniques, as well as the different types of engraving instrument used, and his report on these will appear in the final publication. However, while in the field, he taught the rest of the team how to recognise the different techniques so that we could record these details for every find.

A word should also be said about patina. For those unfamiliar with the basalt desert, I should explain that the natural colour of basalt is not black but light grey. The black is a patina caused by the action of the atmosphere on the chemicals in the stone. The patina forms more or less slowly, dependent on the degree of exposure to the elements, particularly wind and water. Thus a rock in an exposed position will be perfectly black on all visible surfaces and yet the portion underground will still be the natural light-grey.

This patina is a fairly thin crust on the stone. Scratching or hammering the rock, if done firmly enough, can break through this veneer to the light-grey rock below. The immediate effect of this is an apparently white mark which shows up very clearly against the surrounding black. This is almost certainly one of the attractions of basalt as a medium for engraving[32]. Over the years this mark will itself gradually patinate through yellow, orange and red to the black of the surrounding rock.

However, while hammering will almost always produce this "white" effect, it is possible to scratch the rock without piercing the patina completely. Depending on the depth of the scratch, the effect of this will be an orange or red line against the black, i.e. an effect which is often indistinguishable from that of long patination. A dramatic example of this was found this season on a boulder on the top of a ridge in the northern section of our area. It bore two inscriptions, one with a dark orange patina and the other slightly lighter. The darker one was a hammered Safaitic inscription and the other a finely and shallowly scratched Arabic text dated 1964!

Thus, though at first sight patina might seem a convenient means of dating (at least relatively) the inscriptions and drawings, there are, in fact, so many variables that it has to be treated with great caution. Occasionally, one may be able to establish a relative chronology for the engravings on one face of one rock, but even here the depth and thickness of the individual lines must be taken into account.

Nevertheless, it seemed worth recording as much detailed information as possible on the patina, partly for the purposes of comparison between items on the same surface and partly in the hope that, when enough information has been gathered, more use can be made of patination differences than is possible at present[33]

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31. M.C.A. Macdonald and G. Lankester Harding, *op. cit.*, pp. 119-120.

32. W.G. Oxtoby, *op.cit.*, p. 3, obviously misunderstands this since he assumes that the patinated text is clearer than the newly inscribed one.

33. The present remarks may show an advance in knowledge from those of W.G. Oxtoby, *op. cit.*, p. 3.

APPENDIX B

INCIDENTAL FINDS

While we were working at Jawa, the army and the local bedu would from time to time report to us the presence of inscriptions in the surrounding area. We are most grateful to them for this, especially since two of these reports resulted in our making very exciting discoveries. These will be described briefly in this Appendix. Since they are outside the limits of the survey itself they will be published either in a separate monograph or as appendices to the final report on the Jawa survey.

1. We were told of inscriptions at an outcrop very close to the Jordanian-Syrian border. Having obtained permission from headquarters, a sergeant from the nearest army camp took us there to investigate. We found a Nabataean graffito and some interesting Safaitic texts. Among the latter was one which Miss King and I recognised as being the first known example of a Safaitic "A.B.C.", i.e the Safaitic alphabet written out. The order does not appear to resemble that of any other semitic alphabet. It is not, of course, possible to know whether this order is conventional or merely idiosyncratic until we find another example.

2. The same sergeant took us to see what he called an "inscribed cave" in the neighbourhood. When we reached it we found that it was a rock-cut family tomb of the Roman type containing several sarcophagi cut into the living rock. On each of these was an inscription in the Safaitic square script, giving the dead man's name and patronymic. Around three of the walls, just below the ceiling, was a beautifully carved Nabataean inscription[34], in the classic script of the first century A.D., which tells us that the tomb was built by one *ḫlyf br 'wšw*, or *ḫlf bn 's* as he appears in one of the Safaitic inscriptions, for "the sons of *'wšw*", *i.e.* his brothers whose names appear in the Safaitic texts on the other sarchophagi.

Although the tomb had obviously been open for a long time and all the sarcrophagi had been very thoroughly robbed, the implications of this find could be very far-reaching. It is, after all, the first time Safaitic inscriptions have been found in a "monumental" context and it is particularly interesting, therefore, that they are in the "square script"[35]. Moreover, the bilingual aspect of the find is also interesting and is a dramatic example of Cantineau's axiom "il faut se représenter le nabatéen comme une langue savante, à coté d'une vulgaire: l'arabe". Dr. Fawzi Zayadine and I plan to excavate in and around this cave in the near future. This will be combined with a thorough search of the area for other such tombs, some of which may still be undisturbed.

M.C.A. Macdonald.

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34. I am most grateful to Dr. Fawzi Zayadine for his reading and description of this Nabataean text.

35. See M.C.A. Macdonald: *Safaitic Inscriptions in the Amman Museum and Other Collections II* (cited in note 16), p. 185.

LA PREMIERE CAMPAGNE DE FOUILLES A KH. ES-SAMRA (1981)

par
A. Desreumaux et J.-B. Humbert

Menée dans le sillage du P. Savignac (1924)[1], une exploration de surface sur le site de Kh. es-Samra a eu lieu en avril 1978. Les résultats de cette exploration ont fait l'objet d'un article[2] et d'une communication dans le cadre de la Première Conférence Internationale d'Archéologie et d'Histoire de la Jordanie (Oxford 1980); c'est alors que le Service des Antiquités de Jordanie nous a invités à entreprendre des travaux sur le site et dans les environs immédiats. L'Ecole Biblique et Archéologique Française de Jérusalem a mené une première campagne sur le site du 4 juillet au 13 août 1981[3].

Programme de la Recherche

Ce sont les inscriptions en araméen syro-palestinien qui avaient attiré notre attention sur le site de Samra. L'exploration préliminaire avait amplement démontré que l'importance du site offrait une occasion unique de donner un contexte archéologique à ce lot d'inscriptions modestes mais précieuses pour la paléographie et l'histoire et, de toutes façons, témoins d'une communauté étudiée nulle part ailleurs.

Le programme de recherche sur le site de Samra a été établi pour étudier, au cours du premier millénaire de notre ère, tout spécialement la période charnière VII-VIII° s.A.D. On peut penser en effet que la ville a été fondée par les Nabatéens, avant 106, et s'est développée sous la domination romaine; devenue ensuite un témoin de l'épanouissement religieux byzantin, elle aura été abandonnée après un déclin rapide vers la fin du premier millénaire. C'était

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[1] R. Savignac, *Excursion en Transjordanie et au Kh. es-Samrâ,* RB 34 (1925), pp. 110-131 et pl. I-III.

[2] ADAJ 26 (1981), pp. 33-84 et pl. X à XX.

[3] Le P. R.J. Tournay, Directeur de l'Ecole Biblique et directeur des fouilles, avait nommé le P.J.-B. Humbert responsable scientifique du chantier; ce dernier était assisté du P. J.-M. de Tarragon pour l'administration, avec A. Desreumaux épigraphiste de la mission, A. Desreumaux, membre du Centre d'analyse pour l'histoire des origines du christianisme (Ecole Pratique des Hautes Etudes, V° section, Paris), représentait avec M. et Mme Le Bayon, l'Association pour les fouilles archéologiques de Samra, créée à Paris en 1980. M. Ya'qub Mrwed Oweis représentait le Service des Antiquités. L'équipe se composait en outre de MM. G. Thébault et J-L Le Bayon, architectes topographes; Mlle E. de Montlivault, MM. S. Maul, A. Battaglia, H. Inglebert, étudiants en histoire et archéologie participaient à la fouille. M.F. Pic accompagnait la mission en tant que médecin. Ont également participé aux travaux: Mme C. Thébault, Mme D. Le Bayon, Mlle P. Sernaglia, MM. B. Vandoolaeghe, P. Ramillon, Ph. Thévenin. M.G. Humbert était chargé de l'intendance.

Nous remercions le Service des Antiquités de Jordanie, en la personne de son Excellence le Dr. A. Hadidi, d'avoir invité l'Ecole Biblique à faire des fouilles à Samra. Nos remerciements vont tout spécialement au Dr. F. Zayadine pour son aide constante et son encouragement précieux lors des visites qu'il a faites au chantier. Nous n'omettrons pas de mentionner le soutien immédiat que nous avons reçu de l'Ambassade de France à Amman en la personne de son conseiller culturel, M. Malauzat.

Le soutien financier était assuré par l'Association pour les fouilles archéologiques de Samra dont le Président, M.M. Durand-Dubief, mérite toute notre reconnaissance, par une subvention de l'Académie des Inscriptions et Belles Lettres sous forme de bourse de recherche, et par une participation du Service des Antiquités de Jordanie. Nous avons une dette de reconnaissance personnelle envers M. J-C. Glukmann, Directeur d'entreprises à Amman, pour l'amitié qu'il nous a témoignée sans compter et sans qui le projet n'aurait pu être réalisé.

une ruine quand Saladin la traversa au XII°s.[4].

Samra est une étape sur la *Via Trajana* établie rapidement par les Romains vers 110 A.D. pour assurer un contrôle militaire et économique sur la frontière orientale de l'empire. Il est évident qu'ils reprirent le tracé de la route que pour les mêmes raisons stratégiques et économiques, les Nabatéens avaient dû contrôler et peut-être même fortifier. Il semble que la ville a pris de l'importance à la période justinienne, c'est-à-dire assez tard, à une époque où le christianisme, ayant investi la politique, l'économie, l'administration, a favorisé l'épanouissement des communautés monastiques.

La production littéraire en araméen syro-palestinien disparaît au début du XII°s.: les manuscrits en témoignent. Les quelques sites ayant fourni des inscriptions syro-palestiniennes sont datables du V° au VIII°s.; ce sont en général de petites installations pauvres en vestiges et l'araméen y est toujours concurrencé par le grec. En revanche, Samra a été une cité assez importante, où la langue araméenne était suffisamment répandue pour que bon nombre de stèles funéraires aient été gravées dans cette langue et dans cette écriture. Le lieu apparaît donc comme tout à fait favorable à une recherche archéologique visant à comprendre ce qui a pu exister dans cette région aux V°-VII°., puis ce qui a pu se passer lors de la transition vers l'époque islamique.

L'exploration américaine[5] ne s'était pas vraiment intéressée, lors de son repérage du *Limes Arabicus,* au tronçon Philadelphia-Umm el-Jimal, où elle ne mentionnait que Qala'at Zarqa. Encouragés par le Service des Antiquités de Jordanie à sortir Samra de l'oubli et à recueillir les indices qui peuvent nous faire mieux connaître la voie elle-même et la région, nous tentons ici de faire l'inventaire des témoignages anciens pour donner Samra son environnement.

Deux questions nous retiendront spécialement. D'une part, la relation de la ville à la voie romaine; d'autre part, la vocation agricole de Samra: extension du domaine cultivé, nature des cultures, systèmes d'irrigation et d'adduction d'eau, stokage de l'eau. Le problème de l'eau dans cette zone semi-désertique a été capital à Samra; il est probable qu'une partie de la ville était, comme à Umm el-Jimal, occupée par des bassins. D'après des indices de surface, nous soupçonnons qu'ils occupaient la partie orientale de la cité, à l'intérieur du périmètre loti.

La campagne de fouilles **Figure 1.**

Samra se présente comme une ville ruinée de forme ovale orientée nord-sud, longue de 300 m et large de 220 m environ. Elle occupe l'extrémité d'un plateau qui se termine à l'ouest par une pente abrupte dans un méandre du wadi Jurf. Le cimetière s'étend immédiatement à l'est, à l'extérieur de la ville. La voie romaine, avant de filer vers le nord, passe encore plus à l'est, à 500m de la ville.

L'implantation de nos chantiers a été déterminée, au sud (Chantiers A,B et C), parce que cette zone comportait des vestiges apparents de grands bâtiments aux murs bien appareillés et enduits; au nord (Chantier D), parce que, là seulement, avaient été recueillis lors de l'exploration de surface des tessons ayyubides et mamelukes, et que nous voulions définir la période de la dernière occupation. Par ailleurs, le cimetière a fait l'objet d'une prospection systématique (Chantier E). Une exploration préliminaire de la voie romaine a été conduite sur le trajet au nord de Samra. Des incursions dans des vallées avoisinantes ont permis de découvrir des

[4] Nous devons ce renseignement à l'amabilité du Dr. F. Zayadine: Saladin ayant rassemblé ses troupes à Ras el Ma' (Hauran) marche contre Renaud de Chatillon retranché dans Kerak; il traverse successivement Adra'at (Der'a), Dhleil (Wadi edh-Dhleil), Khirbet es-Sawda, etc. De toute evidence il faut assimiler Khirbet es-Sawda à Khirbet es-Samra. Cf. El Imad el Kateb el Ispahani, el Barq el Shami, mss. 78, cité dans Yousef-Darwish, *Ghawanmeh,* Amman, 1979, p. 113. (en arabe).

[5] S. Th. Parker *Archaeological Survey of the* Limes Arabicus; *a Preliminary Report,* ADAJ 21 (1976), pp. 19-31.

inscriptions rupestres et des concentrations d'industries lithiques préhistoriques.

CHANTIER A (Pl. LII No. 2)et fig. 2.

Un grand bâtiment presque entièrement construit en gros blocs de calcaire s'est révélé être une église de plan basilical à trois nefs, rectangulaire, sans abside (dimensions intérieures: 17,25 x 14,70 m). Les trois nefs sont délimitées par deux rangées de piliers carrés ou rectangulaires dont les intervalles sont irréguliers; des murs parasites joignent les piliers; devant les piliers court une plate-forme basse; on peut donc supposer que ces murs de blocage constituaient un solide appui, de hauteur limitée, à des stalles en bois surélevées ou à des banquettes en pierre revêtues de plâtre, dont on aurait retrouvé un élément contre le piliers 1.9503. Dans ce cas le blocage 1. 9501, dans l'intervalle le plus étroit, a pu réserver un passage vers la nef nord (L. II 6).

Un cancel de calcaire ne comportant qu'un passage axial ferme le choeur (L. 118) qui est vaste; des fragments de panneaux de marbre brûlé restaient *in situ* dans les rainures d'encastrement. Le choeur, dégagé sur une toute petite surface, est à la même hauteur que la nef et dallé de calcaire poli. La nef centrale est pavée d'une mosaïque dont le tapis monochrome blanc ne permet de soupçonner aucun décor, à part une inscription très abîmée, libre dans le champ, en grandes lettres rouges. Bien qu'en lettres grecques, elle atteste une titulature ecclésiastique araméenne[6]. Le Locus 117 peut être le *diakonikon;* le Locus 121 est probablement trop étroit pour être la *prothesis,* mais le mur 1.9539 est peut-être postérieur ou laissait un passage vers une autre pièce identique, limitée à la hauteur du pilier du cancel. Les travaux à venir résoudront sans doute cette question.

Deux portes ont été repérées dans la façade ouest: une petite porte ouvrait sur la nef sud. La porte centrale, dont la pierre de seuil (longueur 1,90m) est un bloc monolithe en basalte, est décalée vers le nord dans le souci d'équilibrer l'agencement de la façade, puisqu'il n'y a pas de porte ouvrant sur la nef nord. Des pilastres extérieurs non engagés et de beaux murs à l'ouest de l'église suggèrent l'existence d'un narthex dans un atrium. L'endroit n'est pas encore fouillé.

CHANTIER B/C. (pl. LI No. 2, LII No. No. 1) et fig. 3.

Ce chantier a permis de mettre rapidement au jour tout un ensemble de bâtiments. Le repérage à peu près certain de rues autorise à découper ce quartier en *insulae.* L'*insula I* se compose d'un grand édifice (84) presque carré de 18m de côté, communiquant avec une église (82), elle-même accolée à un grand hall flanqué de deux pièces (ensemble 80); enfin la petite église (81) semble être reliée à d'autres bâtiments plus au sud (83). Au-delà d'une rue qui limite au nord *l'insula I,* s'étend *l'insula II,* ainsi qu'à l'est, au-delà de la rue, *l'insula III.* Il n'est pas sûr, pour le moment, que les ensembles 80 à 84, encore incomplètement fouillés, appartiennent au même complexe.

L'ensemble 80. Le grand hall (L. 105) rectangulaire (10,10 x 7,40m en dimensions intérieures) était couvert. Huit piédroits non engagés se répartissent contre les murs. La fouille n'a pas encore permis de découvrir les deux rangées de piliers nécessaires à la couverture. Une grande pierre monolithe en basalte (longueur 2,15 m) devait être le seuil de l'entrée principale depuis le Locus 108, qui se présente comme une avant-cour au sol de terre battue. Une porte permet d'accéder par quelques marches au Locus 107 légèrement en contrebas. Celui-ci est comblé de lourdes lames de basalte qui sont les madriers d'un étage supérieur. Le Locus 107 communique avec le Locus 106 incomplètement fouillé. Ce dernier n'était pas muni d'un étage, mais, en revanche, les débris de sa destruction ont livré des fragments de tuiles plates trapézoïdales (38 x 50 cm).

[6] Les inscriptions, les mosaïques et les stèles funéraires feront l'objet d'un prochain article.

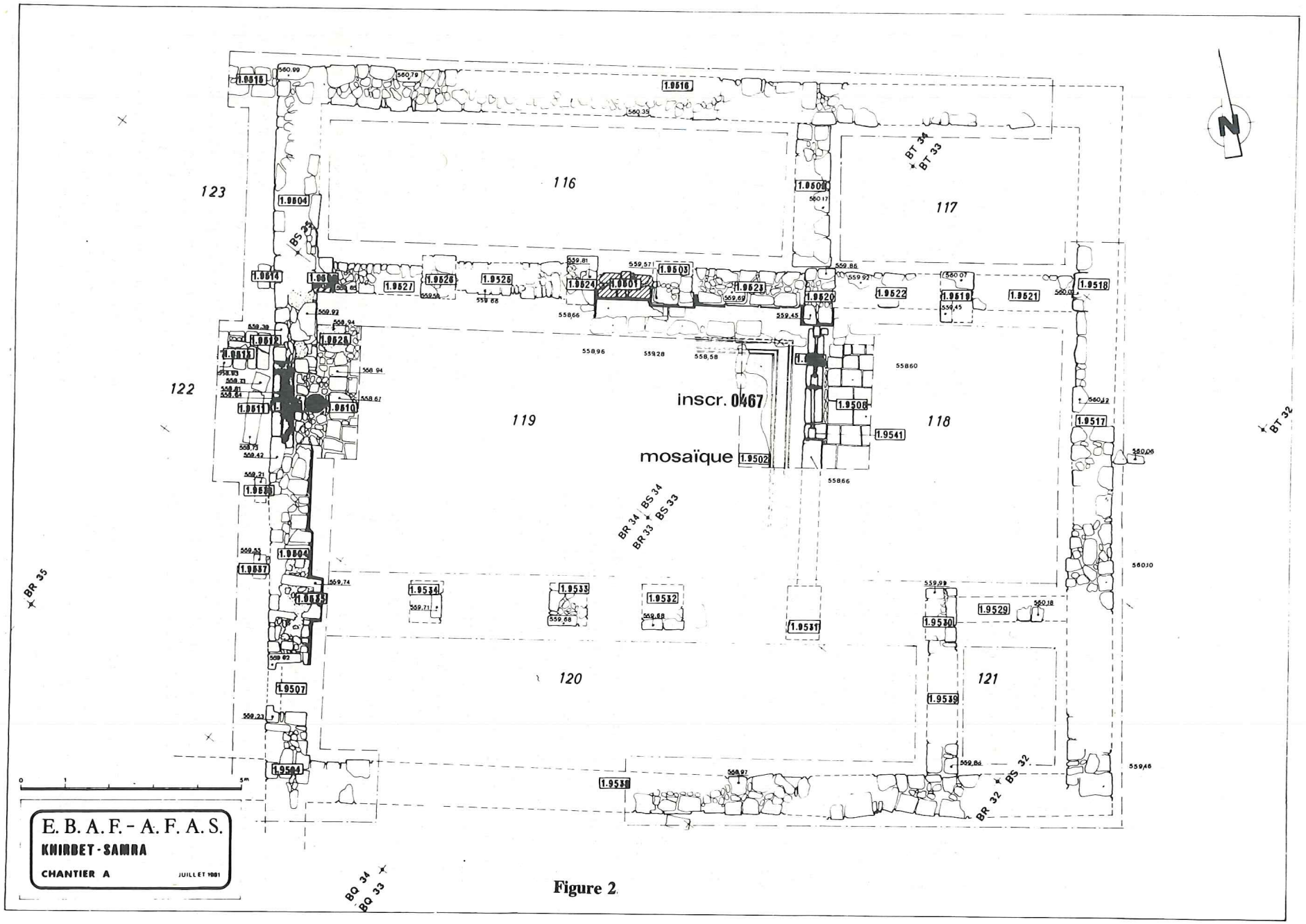

123
116
117
122
119
118
120
121
inscr. 0467
mosaïque
BT 34
BT 33
BT 32
BS 34
BS 33
BS 32
BR 34
BR 33
BR 35
BQ 34
BQ 33
N
E. B. A. F. - A. F. A. S.
KHIRBET-SAMRA
CHANTIER A
JUILLET 1981

Figure 2

L'église 81. C'est une petite eglise rectangulaire à une seule nef dont le choeur a été complètement arraché par un récent pillage de pierres. Le nef mesure vraisemblablement 11 x 6,25m en dimensions intérieures. Entre les piédroits, le long des murs, étaient aménagées des banquettes en pierres revêtues d'un enduit plâtré et poli. Le pavement de mosaîques comporte un tapis riche en couleurs dont le décor représente des rinceaux de vigne issus de canthares et déterminant des médaillons circulaires. Les médaillons originaux ont été martelés par les iconoclates. Une inscription grecque en partie détruite dans une *tabula ansata* à queues d'aronde contre un vestige du cancel mentionne un archevêque dont le nom manque[7]. Aucun accès n'a été dégagé.

L'église 82. L'édifice est une église de plan rectangulaire, sans abside, à trois nefs (dimensions intérieures; 13,10 x 8,30). Appuyée contre l'ensemble 80, elle a été construite plus tard, légèrement de guingois, aucun angle n'étant droit. L'aménagement intérieur, piliers et pavements,a tenté de corriger l'irrégularité du plan en adoptant une orientation moyenne. Bien que l'église soit incomplètement fouillée, la distance a pu être mesurée -4,10m- entre les piliers; cette portée anormalement longue, associée à la précarité de la construction des piliers, oblige à concevoir toute la partie haute de l'édifice en matériau plus léger que la pierre, c'est-à-dire en bois. Il n'est pas improbable que ce plan de sanctuaire, différent des plans avec abside, implique aussi une élévation différente.

Trois accès ont été repérés: un passage au nord, qui est l'accès principal, ouvre sur l'ensemble 84, plus haut de quelques marches; deux portes sont aménagées dans la façade ouest; l'une, décalée vers le sud, donne dans la nef principale; l'autre, dans le coin nord-ouest, ouvre en sens inverse de celle de la nef centrale, vers l'extérieur de l'église.

Tout le sol de l'église semble avoir été pavé de mosaîques. Un grand tapis dans la nef centrale montre un champ composé d'octogones avec des médaillons ornés de canthares, coupe, corbeille, et motifs floraux qui sont restés intacts tandis que les motifs animaliers ont été martelés et réparés dans le désordre par les iconoclastes. La bordure, très soignée, est constituée de tresses et de lignes de postes. Le panneau central est séparé du cancel par un panneau contenant une inscription grecque presque entièrement détruite. Les nefs latérales et le choeur sont décorées de tapis aux motifs géométriques répétés, à cinq ou six couleurs.

Nous hésitons à considérer ces constructions comme un complexe monastique, les deux églises pouvant appartenir à des ensembles architecturaux différents. La fouille des ensembles 83 et 84 permettra de résoudre cette question en localisant des constructions dévolues à l'habitation.

CHANTIER D. (pl. LI, No. 1) et fig. 4)

Ce chantier a permis de mettre au jour une quatrième église gravement endommagée par des installations médiévales et modernes. C'est un édifice de plan rectangulaire plus modeste (en dimensions intérieures: 14,50 x 6,75), mal orienté, décalé vers le sud-est comme par la contrainte de bâtiments déjà existants. La couverture de l'unique nef reposait sur cinq piédroits engagés dans chacun des deux murs; solidement fondé, il pouvait supporter des cintres. Entre les piédroits on trouve, comme dans l'église 81, des banquettes enduites au plâtre. Trois accès à l'édifice ont été repérés: la porte dans la façade ouest est décalée vers le nord et ouvrait certainement sur une rue ou sur une cour (sous laquelle serait aménagée une citerne ?); la porte nord dont le seuil a été pillé, reposait sur une solide fondation de lames de basalte et pouvait mener à des habitations; le linteau gisait dans la nef. La

[7] Le nom manque, mais il s'agit vraisemblablement de celui de l'archevêque de Bosra. Nous remercions le P.M. Piccirillo pour cette suggestion faite lors de sa visite sur le site.

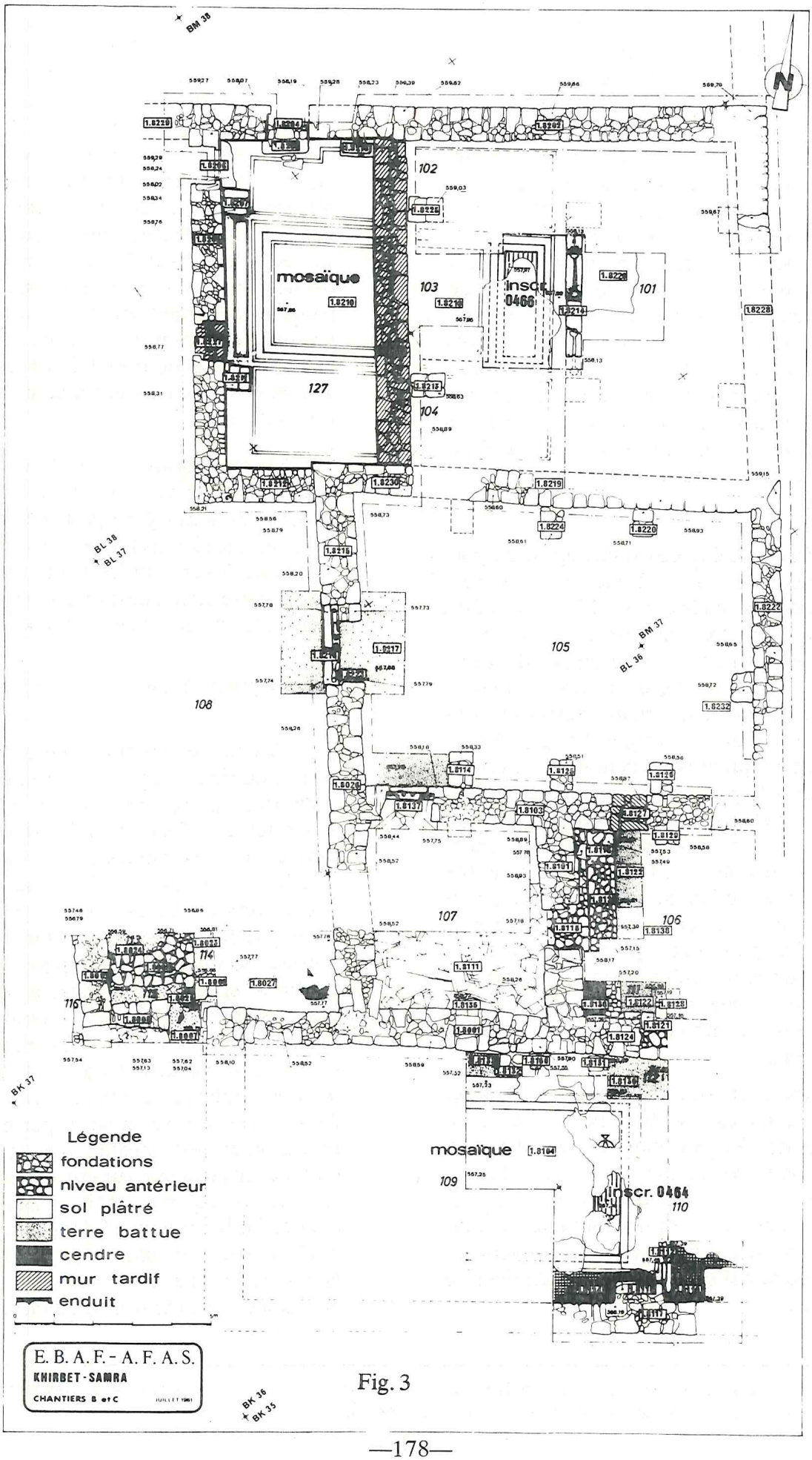
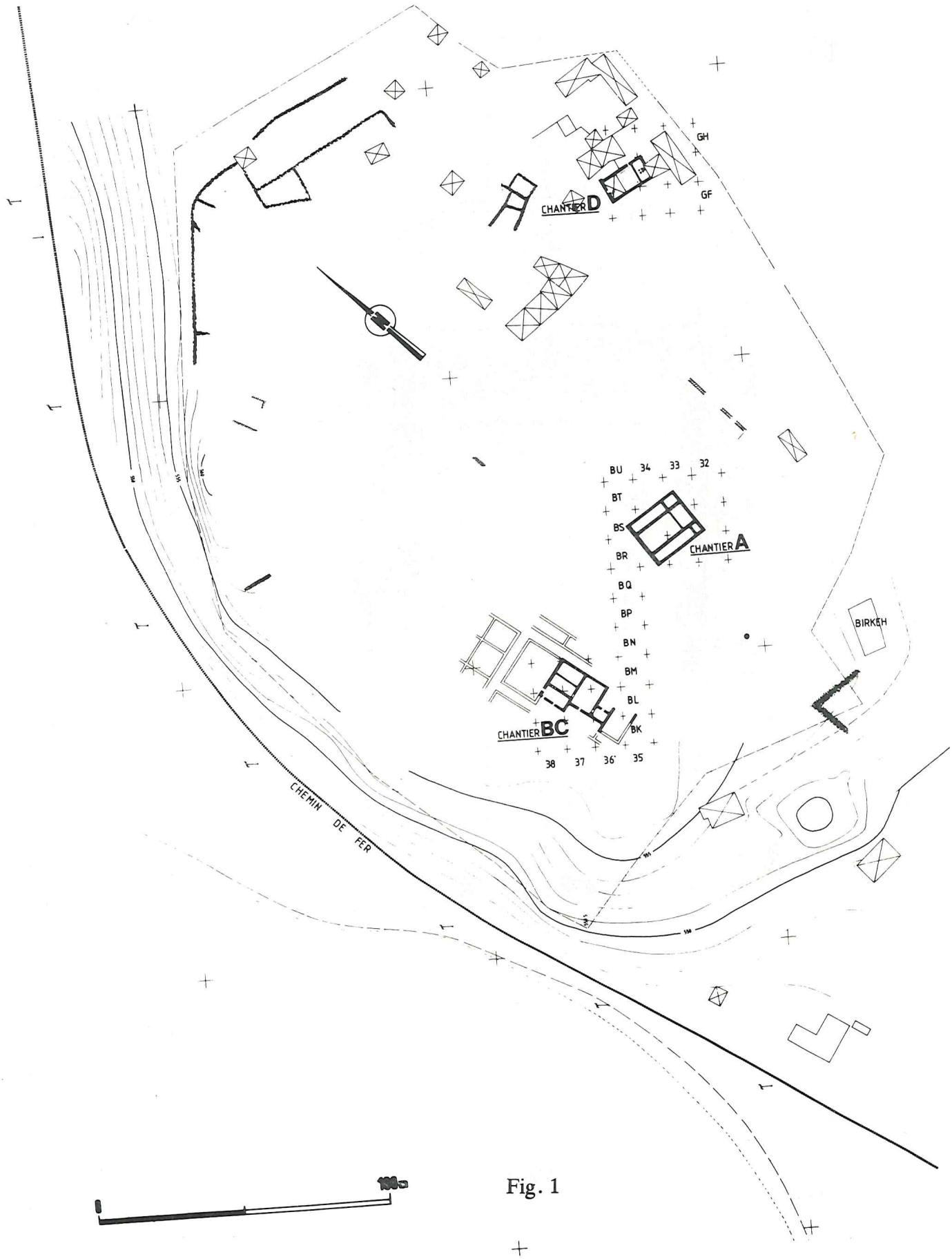

mosaïque
inscr. 0466
inscr. 0464
mosaïque
Légende
fondations
niveau antérieur
sol plâtré
terre battue
cendre
mur tardif
enduit
E. B. A. F. - A. F. A. S.
KHIRBET-SAMRA
CHANTIERS B et C

Fig. 3


GH
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CHANTIER D
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BIRKEH
CHEMIN DE FER
100m

Fig. 1

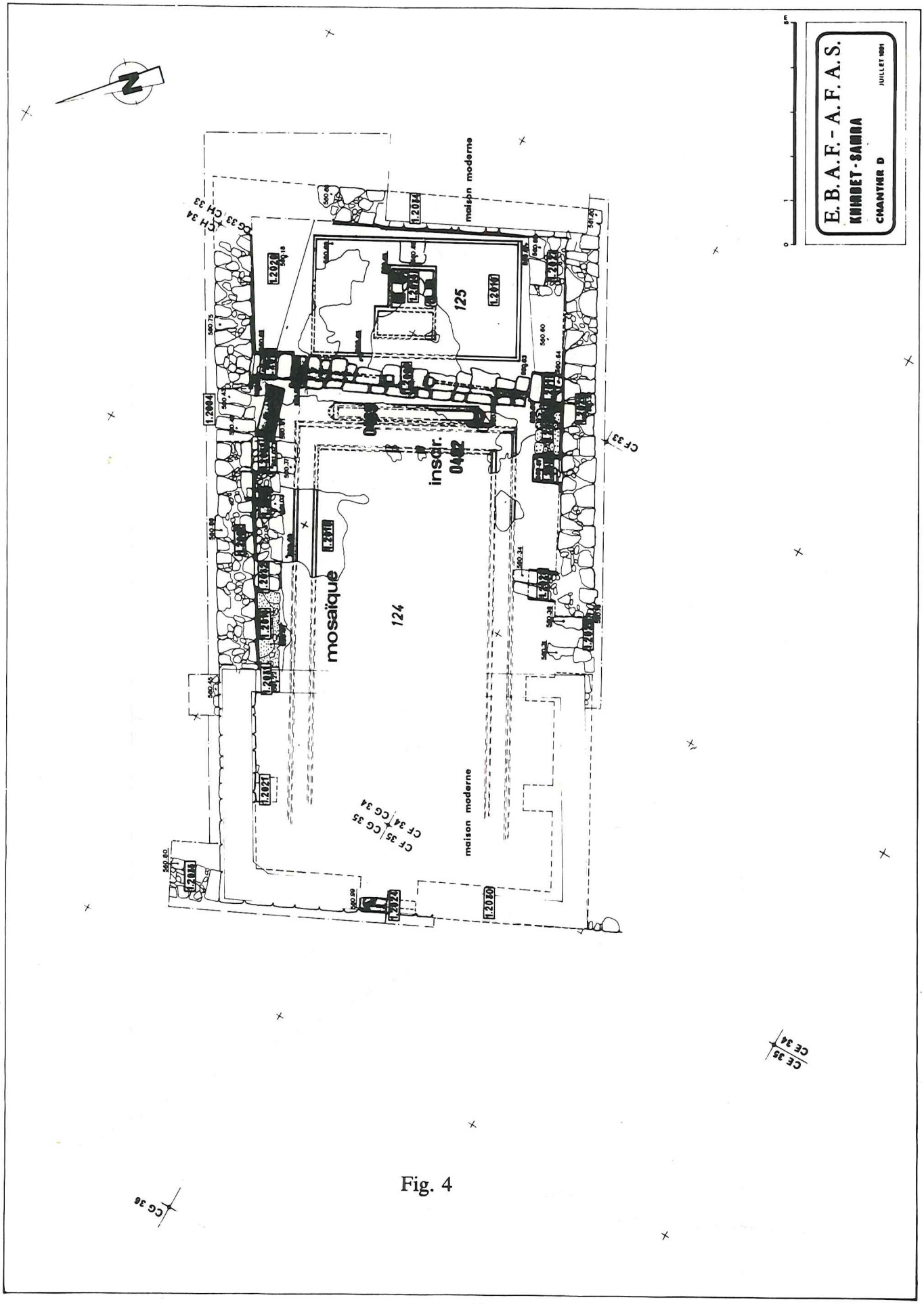
E. B. A. F. - A. F. A. S.
KHIRBET - SAMRA
CHANTIER D
JUILLET 1991
maison moderne
125
124
mosaïque
inscr.
maison moderne
CF 33
CF 34
CE 34
CE 35
CG 36
CG 33
CH 33
CH 34
CF 35
CG 35
CG 34

Fig. 4

porte sud est mal fondée, et la mosaïque à l'intérieur du seuil est une réparation grossière en larges tesselles; elle peut représenter une ouverture pratiquée après coup pour desservir un important édifice jouxtant l'église au sud. Le sol de la nef est presque complètement arraché; un seul fragment conservée permet de se rendre compte qu'il s'agissait d'un tapis richement décoré. Deux inscriptions grecques couraient le long du cancel, l'une dans un panneau, et dont il ne reste que quelques lettres, l'autre dans la bande de raccord le long du cancel. Cette dernière est une dédicace funéraire. Le choeur de cette église est le seul sur les quatre mises au jour qui soit surélevé de deux marches par rapport à la nef. Les rainures d'encastrement des plaques du cancel montrent qu'il n'y avait qu'un passage central. Le choeur est pavé d'un tapis de mosaïques aux tesselles assez grosses; le décor rudimentaire est un damier noir et blanc. Un panneau au centre du pavement marque l'emplacement d'un autel dont on a retrouve *in situ* les ambases des jambages; un autre panneau contigu est détruit. Sous l'autel, une dépression circulaire peut trahir l'addition d'une colonne de support. Derrière l'autel, une autre dépression carrée, encore soulignée par un enduit, marque la place probable du reliquaire contre le mur du fond. De chaque côté du choeur, des espèces de banquettes contemporaines de la pose de la mosaïque ne sont pas faciles à interpréter. Ces éléments pourraient faire partie de l'aménagement du choeur (banquettes, crédences..); il reste que l'enduit mural contre le mur nord du choeur plonge à plus de 50cm sous le sol de la mosaïque. L'enduit plâtré contre le pilier nord porte des impressions régulières en forme de rameaux de laurier. Ces impressions peuvent être interprétées comme une préparation à l'application d'un autre enduit (?). Il est plus difficile de les interpréter comme un décor rudimentaire, car on ne saurait à quoi il s'appliquerait. Nous avons été tentés d'interpréter ces banquettes comme des tombes qui correspondraient à l'inscription funéraire de la nef (n° 0482); mais a-t-on jamais des sépultures dans le sanctuaire d'une église byzantine?

LES NIVEAUX INFERIEURS

Deux sondages plus profonds ont été pratiqués dans l'ensemble 80 du chantier B. Ils devaient vérifier l'existence d'occupations plus anciennes sous le complexe byzantin tardif.

Une habitation a été mise au jour sous le Locus 106. Au sol 1.8122, à la cote 556,90m, est associé le mur 1.8116 sur sa fondation 1.8120; c'est le Locus III. Les murs 1.8101 et 1.8103 chevauchent ceux du Locus III., lequel semble avoir été détruit violemment par le feu: le squelette d'un gros animal s'y trouve scellé par une épaisse couche de cendres et de pisé écroulé.

Dans le Locus 108 un autre sondage a permis de découvrir l'angle arrondi à l'intérieur, d'une maison délimitant trois Loci aux sols plâtrés (L. 113 à 115). La construction semble plus fruste, épaisse, faite de galets. Une seule assise au-dessus du sol présentant un champ régulier en plan peut être la semelle d'une superstructure en terre crue. Il n'est pas possible pour le moment d'associer de façon certaine, ces vestiges avec ceux du Locus III . Bien qu'ils présentent la même orientation et qu'ils gisent à la même cote d'altitude, leur mode de construction est dissemblable.

Il n'est pas possible non plus de dater ces niveaux, l'étroitesse des sondages ayant empêché de recueillir sur les sols un matériel significatif suffisant. Pourtant, la présence de céramique romaine des II-III°s. A.D., et quelques rares tessons nabatéens permettent au moins de pressentir que le site a été occupé à partir du premier siècle.

CHANTIER E: la collecte des pierres funéraires du cimetière.

Une des raisons principales des travaux entrepris à Samra étant l'épigraphie grecque, mais surtout syro-palestinienne, un gros effort a été fait pour récolter les pierres gravées. Il s'agissait d'une opération de sauvetage; depuis trois ans, le pillage des vestiges par les villageois s'est intensifié. Deux enclos de pierres sèches ont été démantelés pour la con-

struction des routes. Nous avons donc démonté puis remonté deux enclos parmi les plus menacés. Près de 300 stèles gravées ont été inventoriées.

La plupart des stèles sont simplement ornées de croix et l'on constate le souci de varier les motifs. Treize comportent une inscription en lettres grecques et quinze en syro-palestinien. Il faut noter que quatre des inscriptions en grec ne sont pas accompagnées de croix, alors qu'aucune inscription syro-palestinienne ne se trouve sans croix. Les trois collectes de stèles, en 1924, 1978 et 1981, ont montré une constante dans la différence de forme des stèles: celles comportant une inscription en grec, sans croix, sont des blocs parallélépipédiques grossièrement équarris dont la face épigraphiée a été préparée pour la gravure. Cette différence apparemment minime peut avoir une signification. Savignac avait déjà pu discerner deux parties dans le cimetière, l'une à l'ouest *gréco-arabe,* l'autre à l'est *gréco-syrienne.* De fait le cimetière pourrait être réparti entre deux communautés, l'une païenne et plutôt *grecque,* l'autre chrétienne et sans aucun doute syro-palestinienne.

Conclusions

Maintenant nous revient la tâche de situer dans le temps les vestiges de Samra. Dans l'état actuel des recherches, certains indices laissent présumer une installation dès le premier siècle de notre ère; par ailleurs, la céramique prouve une occupation pauvre aux XII° et XIII°s. A.D. Entre ces deux termes, une cité a été construite, s'est développée et a décliné.

Nous connaissons des Loci qui sont antérieurs à son développement (phase 3); l'installation correspondant au Locus 111 (phase 2 bis) la précède presque immédiatement, tandis que celle correspondant aux Loci 113 à 115 semble plus ancienne encore (phase 1). Nous notons à l'intérieur de la phase 3 une évolution: construction de l'église 82, modifications de structures (phase 3 bis). Plus tard, l'utilisation des église à des fins non liturgiques (phase 4) se constate dans le Locus 117, avec la partition de la nef. Enfin, après une interruption de plusieurs siècles, les traces d'une installation ayyubide marquent l'abandon définitif de Samra avant l'époque de la sédentarisation récente des villageois. Il n'est pas impossible de suggérer quelques dates. Bien qu'on n'ait pas atteint le sol vierge dans les sondages et qu'on n'ait peut-être pas atteint non plus la plus ancienne installation, nous proposons de mettre en relation la phase 1 avec la construction de la voie romaine, c. 110 A.D. Les grands déplacements des tribus arabes au cours du IV°s. sont susceptibles d'avoir influencé le développement de la ville[8]. Le style plutôt géométrique des mosaïques fait assigner à la construction des pavements une date assez tardive. Ce pourrait être sous Justin ou Justinien.

L'épanouissement de Samra se situerait aux VI-VII°s. et son déclin au VIII°s. On peut mettre en relation la reconstruction de Samra avec la réorganisation de la *Provincia Arabia* par Justinien en 536, ou même peut-être avant, si l'on peut tenir compte du redressement économique et administratif de la région aux tout débuts du VI°s. La construction du palais épiscopal de Bosra serait datable de 512. La décadence progressive de la ville pourrait correspondre à l'affaiblissement démographique consécutif aux pestes qui ont ravagé la région en 638-639, 684-687 et surtout 740-750[9]. Un autre repère chronologique nous est offert par le martèlement des figures animales dû aux iconoclastes, entre 720 et 780, laps de temps où il semble bien que nos édifices religieux étaient encore en activité. On peut penser spécialement à l'édit de Yazid, en 722.

A. Desreumaux
J.B. Humbert

[8] Cf., entre autres, J.S. Trimingham, *Christianity among the Arabs in Pre-islamic Times,* London, 1979, pp. 178 ss.

[9] Cf. J.N. Biraben et J. Le Goff *La peste dans le Haut Moyen-Age,* dans *Annales,* Economies Sociétés Civilisations, Paris, EPHE, 1969, pp. 1484-1510. M.W. Dols, *The Black Death in the Middle-East,* Princeton, 1977, et, *Plague in Early Islamic History,* JAOS 94 (1974), pp. 371-383.

"JELLYFISH": PREHISTORIC DESERT SHELTERS

By
Alison Betts

For many thousands of years nomads have been building windbreaks and animal corrals in the Jordanian desert. These are mostly irregular circles and lines of rough stone walling but occasionally, for practical or perhaps even aesthetic reasons, these structures become formalised. One such type, first recognised by Helms (1981:47), for want of a more technical term has become known as a "jellyfish", because from the air the walls bear a distinct resemblance to this somewhat amorphous sea-creature. These structures have circular outer walls some 40-50 metres in diameter, often with small hut circles incorporated into them. Most have one or more central hut circles linked to the outer ring by a series of irregular radiating walls like the spokes of a cartwheel. They were first identified from aerial photographs, but recent surveys of prehistoric sites in eastern Jordan under the auspices of the British Institute at Amman for Archaeology and History have succeeded in locating and planning several examples on the ground. (Figs. 2-7)

Survey work has concentrated on the volcanic region north and east of the Azraq basin where basalt boulders weathered out

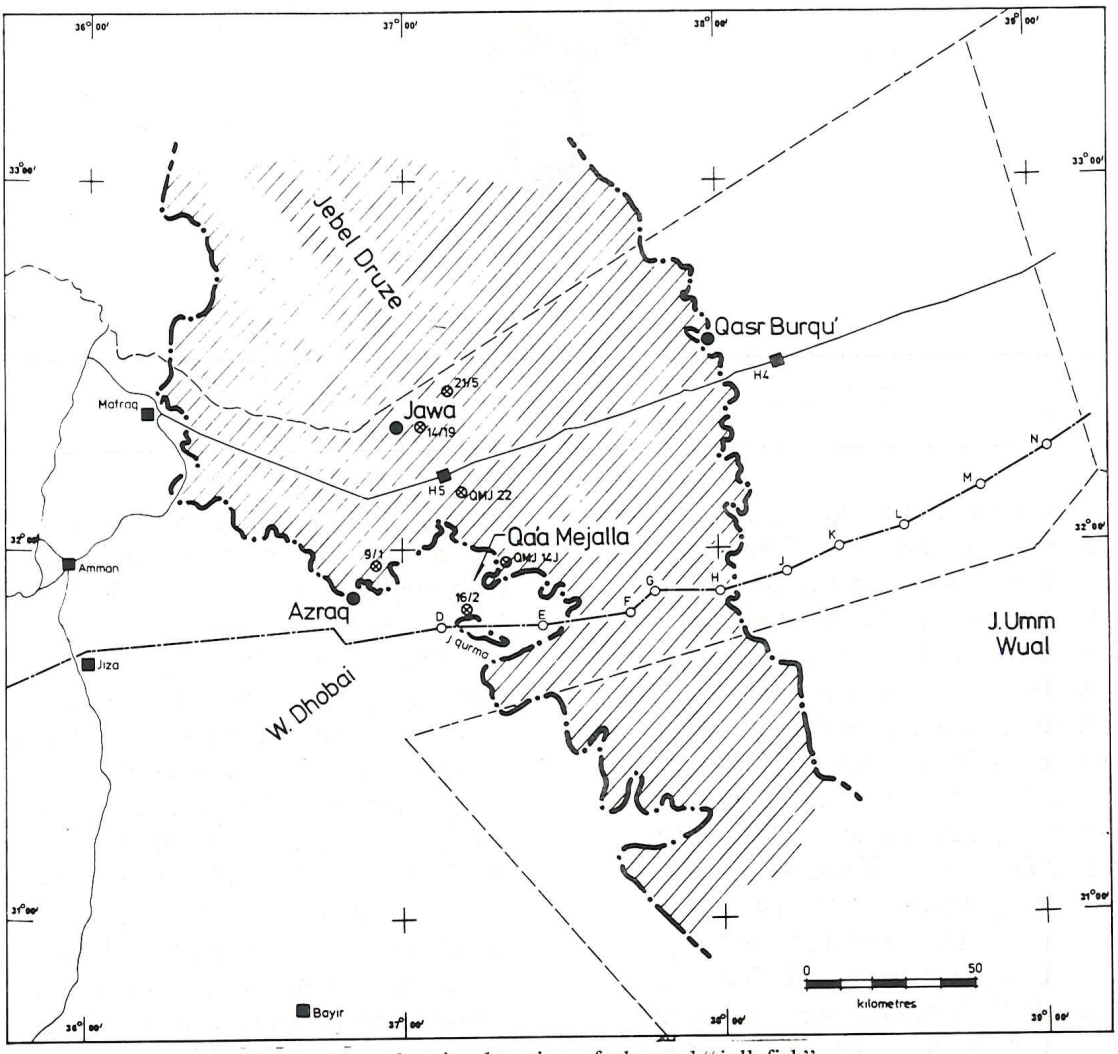

Fig. 1: Map showing location of planned "jellyfish"

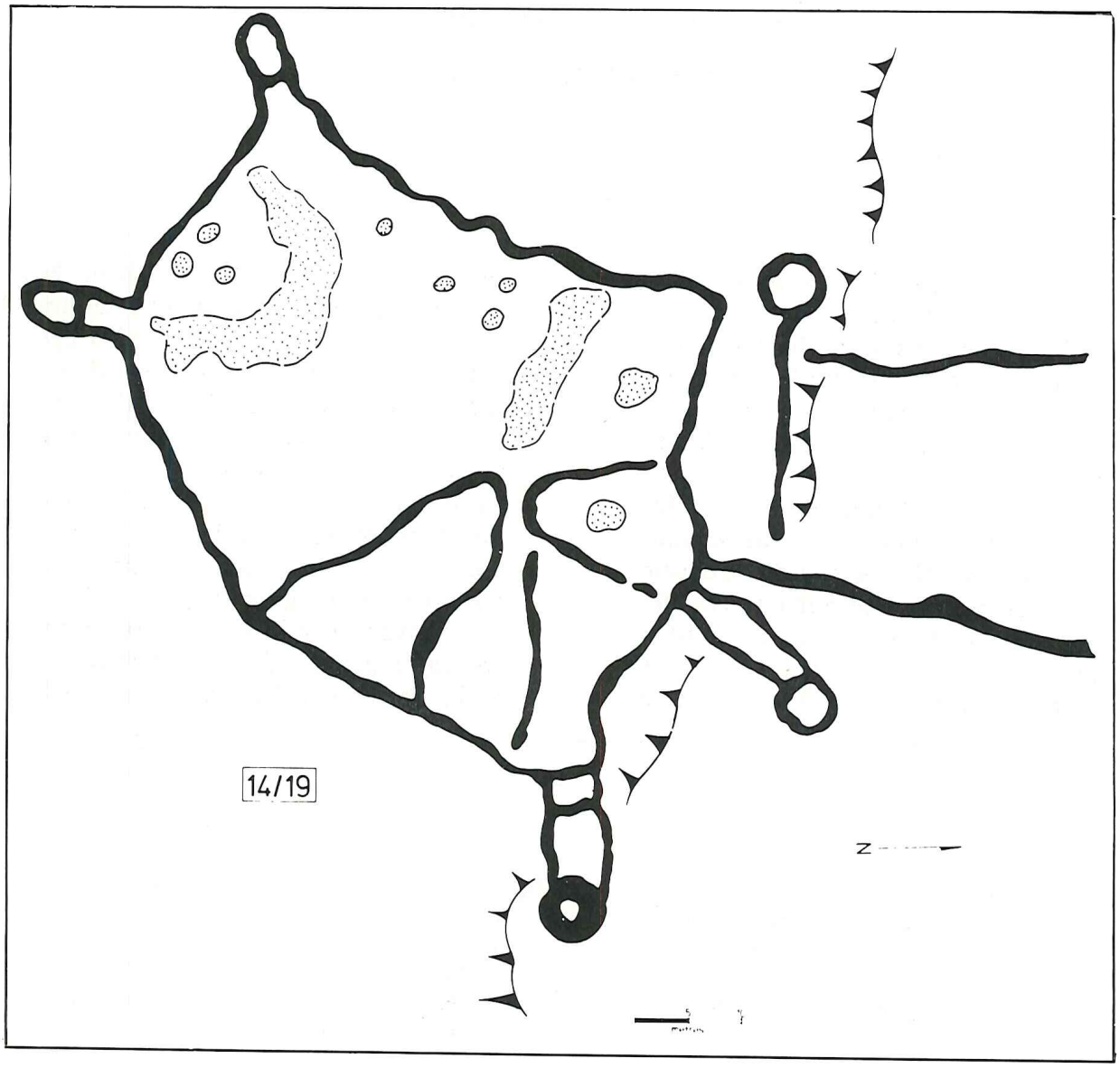

Fig. 2: Complex structure, "kite" enclosure with interior divisions.

from ancient lava flows provide an abundant supply of building stone. The area is one of low boulder-strewn plateaux broken by wadis which link together chains of mudflats. Most of the settlement, as evidenced by the remains of corrals and windbreaks, seems to have been along the margins of the mudflats where a loose scatter of boulders and a gentle slope provided ideal facilities for constructing accessable shelters just above winter flood level. These were made by means of bringing rocks together to form a wall -- rather than by clearing them away, a considerably more arduous task. Builders of the "jellyfish" however seem to have done just the opposite. They constructed their sites well onto the basalt plateau, making access extremely difficult and necessitating the clearance of rocks and stones from quite an extensive area.

One conceivable reason for this inaccessability could be that the inhabitants may have felt the need to protect themselves either from predators or from other, perhaps belligerent peoples. At least three of the known examples (fig 6; LIII No.2; Helms 1981: PL 9) appear to have had quite elaborate entrances. The right-hand example illustrated in L III No. 2 has a break in the outer wall. Two parallel walls about a metre apart form a passage which then turns abruptly at a right-angle, still

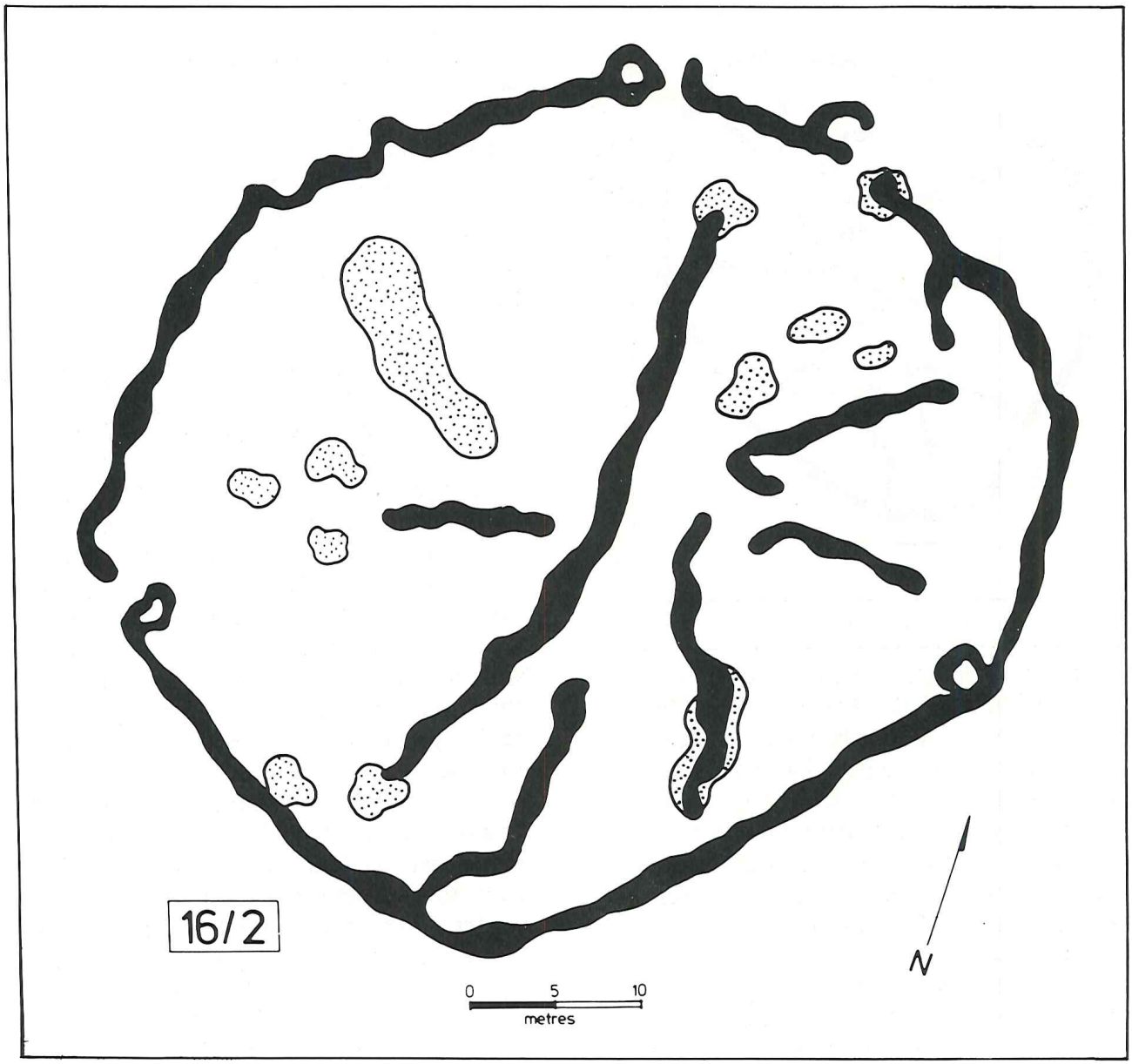

Fig. 3: "Jellyfish", Northern Wadi Rajil.

with a protecting interior wall and runs for another ten metres or so before giving access to the interior. The faint remains of a small hut circle can also be distinguished outside the entrance, possibly to protect it. An almost identical arrangement can be seen in the example illustrated by Helms (1981:pl 9). The only planned example with a similar feature is QMJ 14J (Fig 6). In this instance the interior passage is only about a metre long but particularly interesting is the fact that the opening to the interior is directly opposite the entrance to the central hut. It seems quite likely that these entrances would fulfil a protective function.

It might be assumed with regard to the overall function of these structures that they were built by pastoralists-- possibly nomadic or even transhumant -- who used the interior divisions to hold animals at night, they themselves sheltering in the central enclosure or in the small huts on the perimeter wall. An obvious parallel for this is the African kraal (pl. LV No. 1-2). Local parallels for the "jellyfish" have been suggested by both Helms (1981:50) and Rees (1929). Helms points out the resemblance

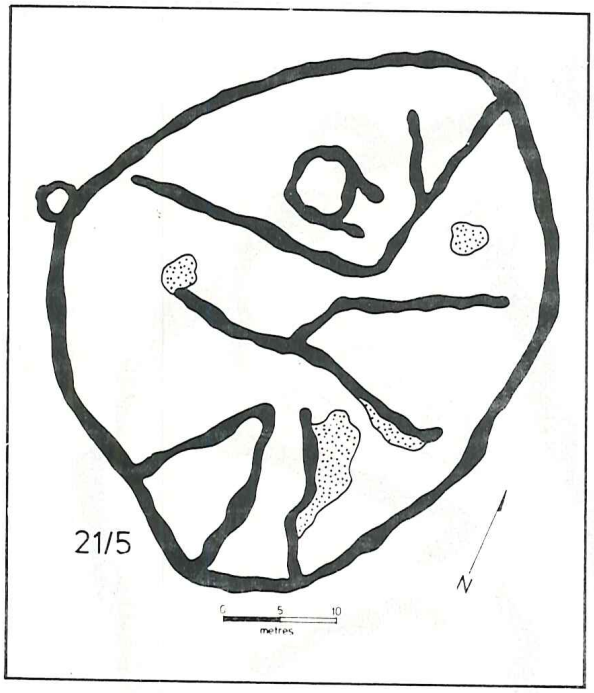

Fig. 4: "Jellyfish", Jebel Qurma

between the "jellyfish" and the round structure in Munhate III (Perrot 1964). This building is twenty metres in diameter with a large central enclosure paved with pebbles. Surrounding this lie a circle of rooms, roughly three by five and a half metres across, their backs forming the outer wall of the structure. The building belongs to the latest phase of the PPNB (pre-pottery neolithic B) at the site.

Rees did not mention "jellyfish" as such, but he both illustrates and describes very similar phenomena from the region around Azraq (pl. LIV). He mentions "circles of hut-circles" which he says are "old", that is stratified under and clearly predating cairns of the Safaitic/Roman period. These huts are now almost flush with the surface, appearing on the ground as mere heaps of stones, and Rees gives the diameter of the circles as approimately 50 paces. There is no evidence on his photographs for the radiating walls that characterise the "jellyfish" but in all other respects Rees is describing a very similar structure, right down to the standard diameter of 50 paces - just under 50 metres.

Unfortunately as yet survey work has not yielded any evidence for the date of the "jellyfish". The most positive proof that might be expected would be flint tools, but with one exception these sites have proved barren. This is not altogether unexpected since nomadic pastoralists such as even the modern beduin leave very few traces of their passing, and these mostly in the form of 'bio-degradable' objects of little use in the archaeological record. One exception is QMJ 14J. This site was located on a small basalt island whose shores are surrounded by corrals with Neolithic 'burin' material in them. A thin scatter of 'burins' was also found in the "jellyfish". This at least gives a final date for one example, though the 'final date' in this instance is merely a statement of the evidence as it has to be interpreted. The "jellyfish" may have pre-dated the 'burin site' and rather than being contemporary, was merely re-used by later Neolithic peoples. That the 'burin sites' and the "jellyfish" should be contemporary is in any event unlikely as the majority of sites with Neolithic flints on them are corrals on the mudflat margins, showing no signs that their inhabitants felt the need to defend their settlements.

A second type of prehistoric site with links to the "jellyfish" is the desert "kite" -- in this instance literally. "Kites" are animal traps to be found in great numbers in the desert. They have long trailing walls or "arms" leading to an enclosure surrounded by "hides" to conceal the hunters.

One especially ubiquitous variety has been dated to the 6th/7th millenium (Helms 1981: 38; Betts 1982). In at least two instances "jellyfish" appear to be attached to "kite" walls. This is the case for example in QMJ 22 (fig 7). The problem however is whether the builders of the "jellyfish" borrowed the pre-existing wall of a disused "kite" for one side of their structure or whether paleo-hunters constructing one of the arms of their "kite" found the "jellyfish" in the way and simply incorporated it into their own wall. This same problem arises in the case of 14/19 (Fig. 2) which appears to be a total amalgamation of a "jellyfish" with a "kite" enclusure. Due to later disturbance the relative heights of the walls help very little in deciphering this structure. At one phase of its history it clearly was a "kite" as indicated

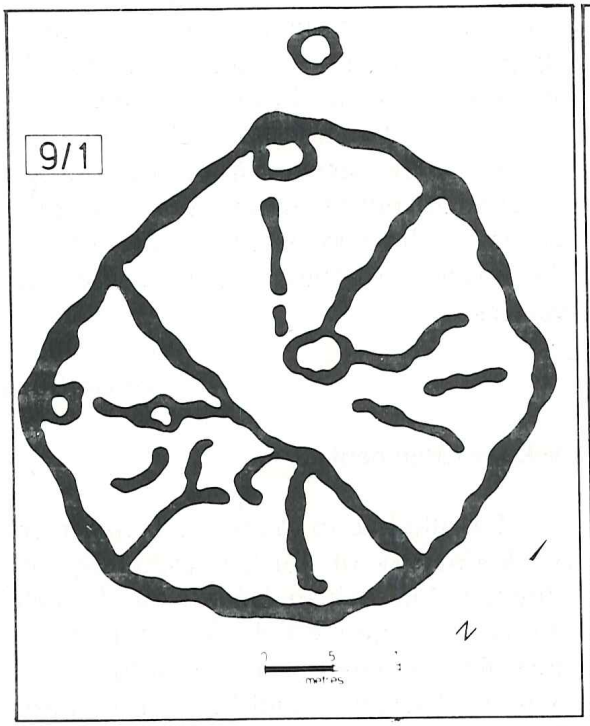

Fig. 5: "Jellyfish", Azraq area

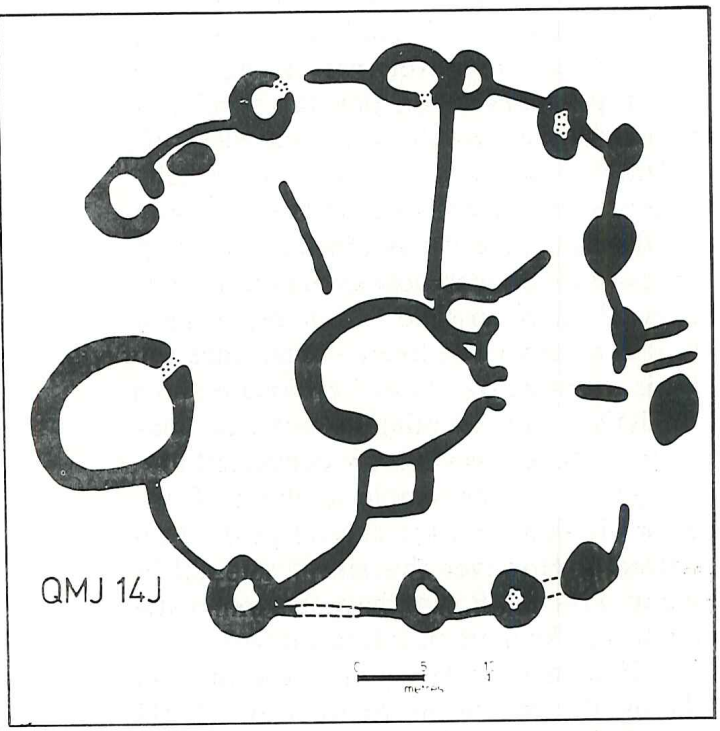

Fig. 6: "Jellyfish", Wadi Selahib

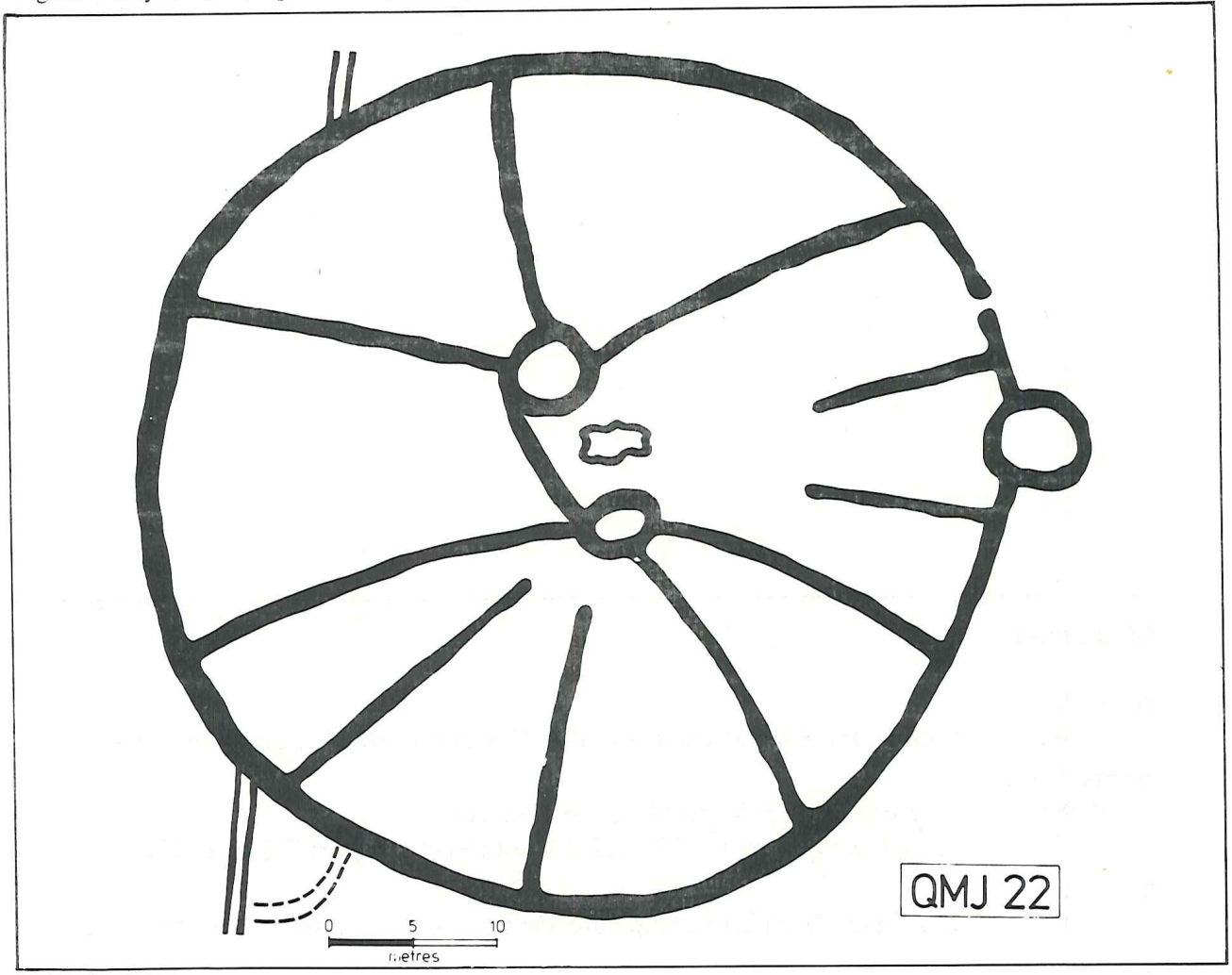

Fig. 7: "Jellyfish", Love Tree

by the trailing walls. However, the entrance to the enclosure is blocked by not only one but two walls effectively preventing its use as a trap -- unless by the time the "kite" was in use these crosswalls were degraded sufficiently as to present almost no obtacle. The converging walls within the enclosure would also make it less efficient as a trap unless they too were low enough to be ineffectual. It is possible -- but one cannot really say any more likely -- that since the basic structure of a "kite" enclosure and a "jellyfish" are essentially similar, an abandoned "kite" was merely converted to a "jellyfish" by the simple addition of interior divisions and the closure of the trap entrance. However this site is atypical in many ways and it is perhaps unwise to attempt too detailed an interpretation.

Evidence for dating then rests only on the highly tenuous information from QMJ 14J. If the theory that the "jellyfish" were built and used by pastoralists is correct -- as seems quite likely -- then they were probably not earlier than the eighth millenium. No close date is available as yet for the 'burin sites' and so a lower limit can only be set towards the middle of the 6th millenium. Sadly, because of lack of both soil cover and material remains, this may be the closest it will be possible to come in solving the problem of these rather strange structures.

Alison Betts

Acknowledgements

I would like to thank the Department of Antiquities of Jordan, especially the Director, Dr. Adnan Hadidi for the help and co-operation which made the survey possible. I am particularly grateful to Mr. Arif Abul Ghanam and Mr. Hazim Jaser, Representatives of the Department of Antiquities who worked with us in the field.

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A PPNB BURIN SITE ON JABAL UWEINID, EASTERN JORDAN

Gary O. Rollefson
Bruno Fröhlich

Jabal Uweinid "Site A" was located by accident during emergency tire repairs on the main track between Azraq and Qusayr Amra in 1979. Attention was drawn to one of us (B.F.) by the existence of human bones near a robbed out cairn-burial near the track, and similar cairns-burials were visible on the hilltops to the southeast. Around one of the undisturbed cairns, dense numbers of flint artifacts were noted on the ground surface, many of them belonging to the burin variety of tools. Because of the lateness of the hour and the necessity to keep a schedule, the site was noted in mind for future investigation.

"Burin sites" (Betts n.d.) are a notable feature of the eastern deserts of Jordan (Betts 1981; Rollefson and Sauer n.d.), but recently such sites have also been located in Jordan's western highlands in Amman (Rollefson *et al,* 1982) and in the Wadi el-Hasa area (MacDonald *et al,* 1982). Presently, these sites are ascribed to the Pre-Pottery Neolithic B phase of cultural development (Copeland in Garrard and Price 1977: 118) on the basis of typologically similar burins from Wadi Dhobai (Waechter *et al* 1938). While this chronological placement of the burin sites is not inconsistent with the current assessment of the culture history of the area, the lack of specifically diagnostic elements (which the burins are not) leaves the temporal status of these unique artifact assemblages in some appreciable degree of uncertainty. Furthermore, in environmental circumstances as divergent as these sites are now emerging, the question of intersite variability according to geographical/geophysical associations arise. Because of its size, location, and artifact density, Site A[1] seemed to be a good candidate to establish a major foundation block for understanding this highly specialized work camp.[2]

Site Location and Setting

Site A is situated on a small knoll between two relatively shallow drainages that empty into an unnamed tributary of the Wadi el-Butm. The site is located at the extreme western margin of the basalt-covered Jabal Uweinid, placing it at an interface between the volcanic territory of this prominence with the Qa el-Azraq to the east and the Wadi el-Butm to the south (Fig. 1). The Azraq qa, a major Pleistocene pluvial lake (Rollefson 1982), had withdrawn to a probably densely vegetated marsh at the end of the Pleistocene, and its swampy margins must have been a lucrative microenvironment for macro-and microfauna. The Wadi el-Butm, probably a seasonal water channel in the early Holocene, would have been a major migration route for herd animals that moved east and west in their seasonal rounds. Although there is no specific extant evidence to support the notion, the prolific number of artifacts at Site A and at other sites on this part of Jabal Uweinid (cf. Garrard and Price 1977: Map 3) indicate that the unnamed tributary of the Wadi el-Butm was profitable location for exploitation.

The site is easily reached by car and foot. Travelling on the main track from Azraq to Amra, a major fork is encountered only five to six kilometres from the tarmac, signalled by an RAF conical pylon with a metal rod extending from the top; adjacent to this maker is a small cubical piece of concrete with an Arabic "9"

1. Because local features in the Jabal Uweinid area are unnamed, "Site A" was chosen as the site name for the sake of convenience.
2. The crew consisted of Gary Rollefson, Bruno Frohlich, Christopher Albert, Jane Isaac, and Charles Parry. The authors would like to express their gratitude to the crew members for their excellent work under the harsh climatic conditions.

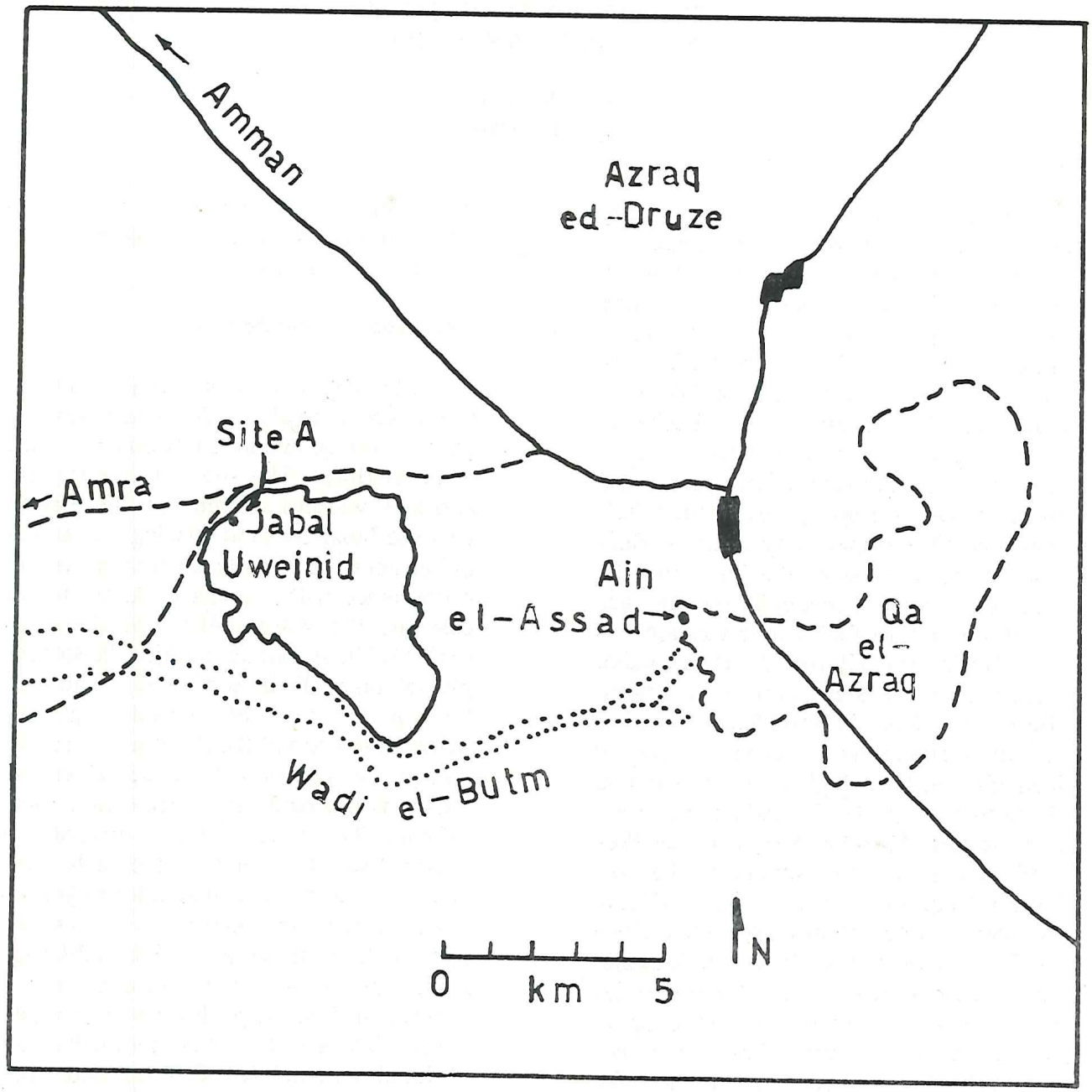

Figure 1. Map showing the location of Site A on Jabal Uweinid.

painted in red. The fork which passes to the SE passes to the east of a large cairn on a hilltop devoid of basalt. Immediately across the track, to the east, is a low hill sloping to the SW which is covered with basalt and distinguished by a single low cairn of basalt at its apex.

The boundaries of Site A are difficult to fix since the SW part of Jabal Uweinid appears to be an immense series of overlapping occupations. The major concentration at Site A, however, occurs from just NE of the hilltop to the SW, measuring 70 paces (NE-SW) by 35 paces (NW-SE). From this teardrop-shaped concentration artifact densities drop off dramatically.

Although basalt boulders are the dominant feature on the knoll where Site A lies, the boulders do not form a "pavement" as they do on the higher elevations to the east and southeast. In large part this is probably due to the relatively recent (Bedouin? earlier?) cultural disturbances which have created not only the prominent cairn on the hilltop, but also burial coverings which dot the eastern slopes of the knoll. Several instances of boulder alignments for small windbreaks for campfires and other reasons

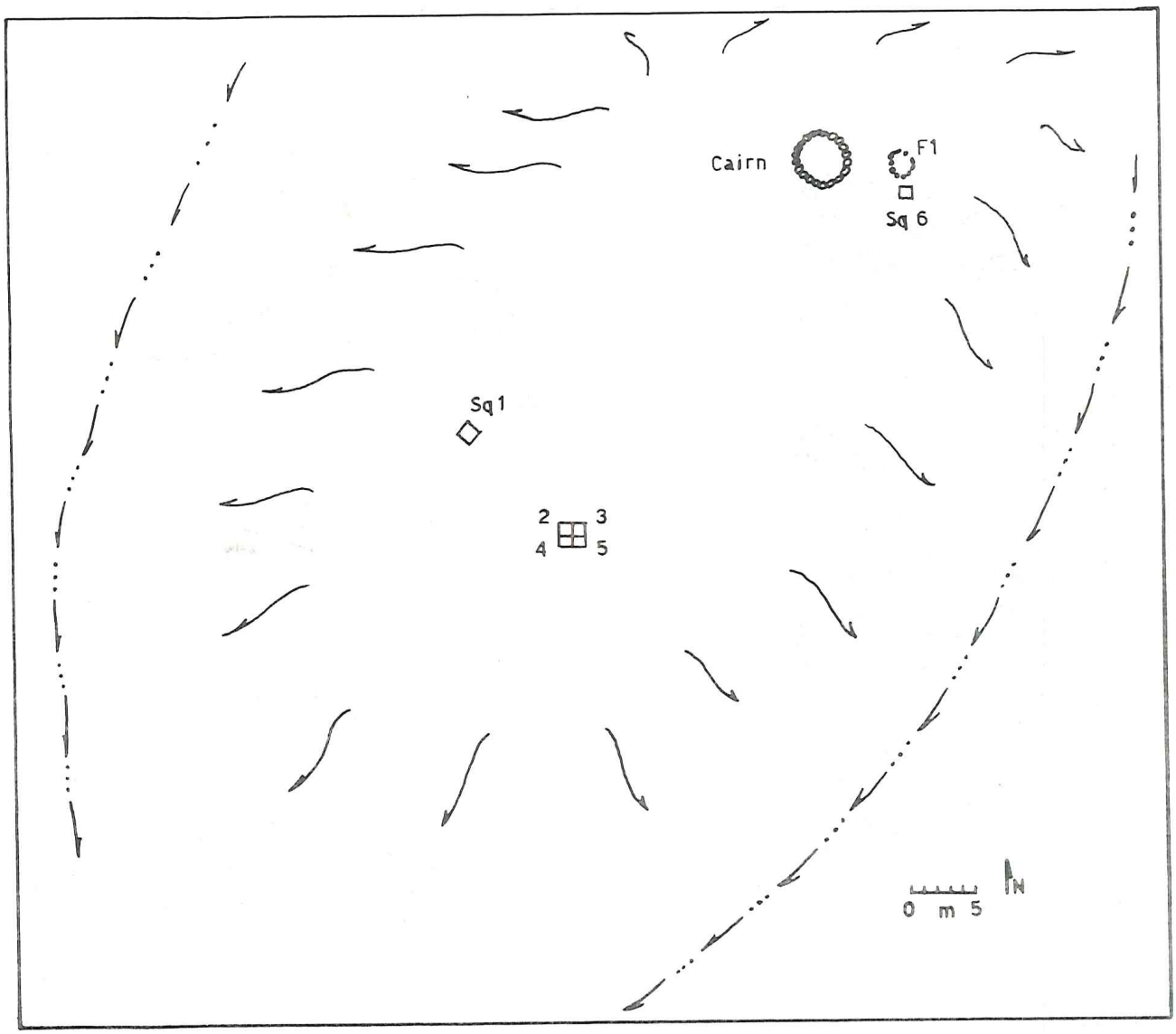

Figure 2. Schematic diagram of the main collection areas on Site A.

are evident, but one structure (Feature 1) may be a very ancient hut foundation (Fig. 2).

Figure 2 shows the major areas selected for intensive collection. Squares 1 and 2-5 were chosen because of the high density of tools which could be seen by casual inspection. All artifacts in these five square meters were collected. During the collecting efforts here, Feature 1 and a relatively dense scatter of lithics a meter to the south of it were noted, so additional total collections were made in these areas. Feature 1, which measures 1.70 m in interior diameter, constituted ca. 2.27 m² in area; with the other collection squares, a total of 8.27 m² is represented from the site area. In addition, five isolated flint artifacts were picked up, including a broken fanscraper, a broken "tile knife"[3], a diverse combination tool (Fig 4a), a bidirectional blade core, and a microblade core. (In the following discussion, these five artifacts will not be considered). Finally, one potsherd of probable Late Neolithic or Chalcolithic age[4] was collected from the site, but its location in relation to the collection squares was not noted by the crew member.

Typology

A total of 407 lithic artifacts was col-

3. The term "tile-knife" is borrowed from Copeland, in Garrard and Price 1977.

4. We would like to thank Ms. R. Brown for the reading of this sherd. The extreme poverty of the "ceramic sample" must be kept in mind.

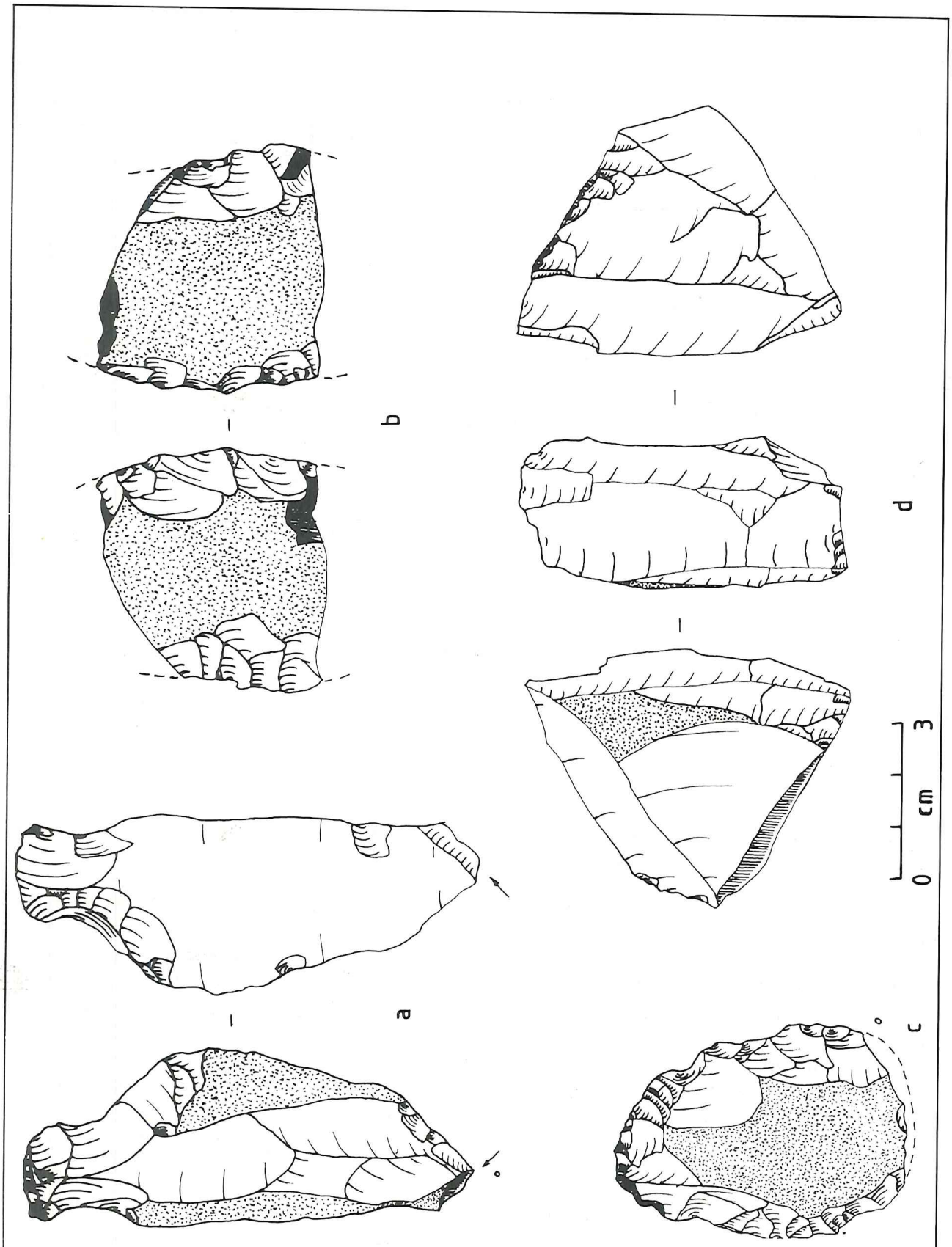

Figure 4. Tools from Site A, Jabal Uweinid. a: diverse combination tool, b: broken tile knife; c: broken fan scraper; d: bidirectional tabular blade core.

lected from the primary collection areas, including 17 cores, 144 flakes, 205 blades, and 41 pieces of debris; of these artifacts, 130 had been fashioned into implements of a very restricted nature. Artifacts densities were higher in Sqs. 1-5 (54 per sq. m) than near the top of the hill in Sq. 6 and Feature 1 (40 per square meter). As will be discussed below, features of tool typology, lithic technology, and post-depositional alterations of the artifacts all indicate that disturbance of the artifacts down the slight slope of the site is not a major factor contributing to this disparity in artifact densities.

The breakdown of the major artifact classes in the collection samples is provided in Table 1. In Chi-Square comparisons, all of the classes differ significantly in terms of relative frequency. The higher frequencies of cores and debris in Sq 6 and Feature 1 (F1), as well as the low tool counts there, suggest that this area was the locus of more intensive initial flint knapping compared to the lower area, where cores and debris are rare and where tools account for nearly half of the artifacts. Although different activity areas are to be expected in a site of this size, the reasons for the differences in Table 1 are most probably due to different cultural/temporal occupations and not to contemporary diversity of task loci. Substantiations of this interpretation are presented below.

The most striking contrast between the two collection areas is evident in the tool inventory, presented in Table 2. Very briefly, only two tool types are shared between the two areas. The outstanding feature, however, is the very high preponderence of burin types in Sqs 1-5, where they account for 93.4% of the tools (n = 113 of 121 total). Since truncation burins make up 97.0% of all the classifiable burins (99 of 102, excluding unclassifiable burin types), there is the possibility that the five truncated blades, as well as the end-notched blade, may represent "unstruck burins". In any event, the focus on burin production and use in Sqs 1-5 signals a highly specialized activity set on the lower slope (Fig. 3). On the other hand, the group of tools from the hilltop area reflects a less specialized and less intensive focus of implement use.

Core types in the collection areas are not as diverse. In Sqs 1-5 there are one single-face (flake) core, two double-face bidirectional tabular blade cores, one double-face unidirectional tabular blade core, and one core fragment too small to be typed confidently. For the hilltop area, there are one single-face (flake) core, one core on a thick flake, one double-face unidirectional blade core, and five core fragments (three of which produced blades).

Technology

The figures in Table 1 indicate that different technological methods were used in the major collection areas, with an emphasis on flakes in the hilltop area and a focus of blades downslope. Among the

Table 1. Absolute and relative frequencies of major artifact classes in the two primary collection areas of the Site A.

	Squares 1-5				*Square 6, F1*		
	n	%	%'	X^2	N	%	%'
Cores	5	1.8	1.9	.02	8	6.1	7.8
Flakes	88	32.7	34.1	.001	54	40.9	52.9
Blades	165	61.3	64.0	.0001	40	30.3	39.2
(Tools)	(121)	(45.0)	(46.9)	.0001	(6)	(4.5)	(5.9)
Debris	11	4.1		.0001	30	22.7	
Total	269	99.9	100.0		132	100.0	99.9

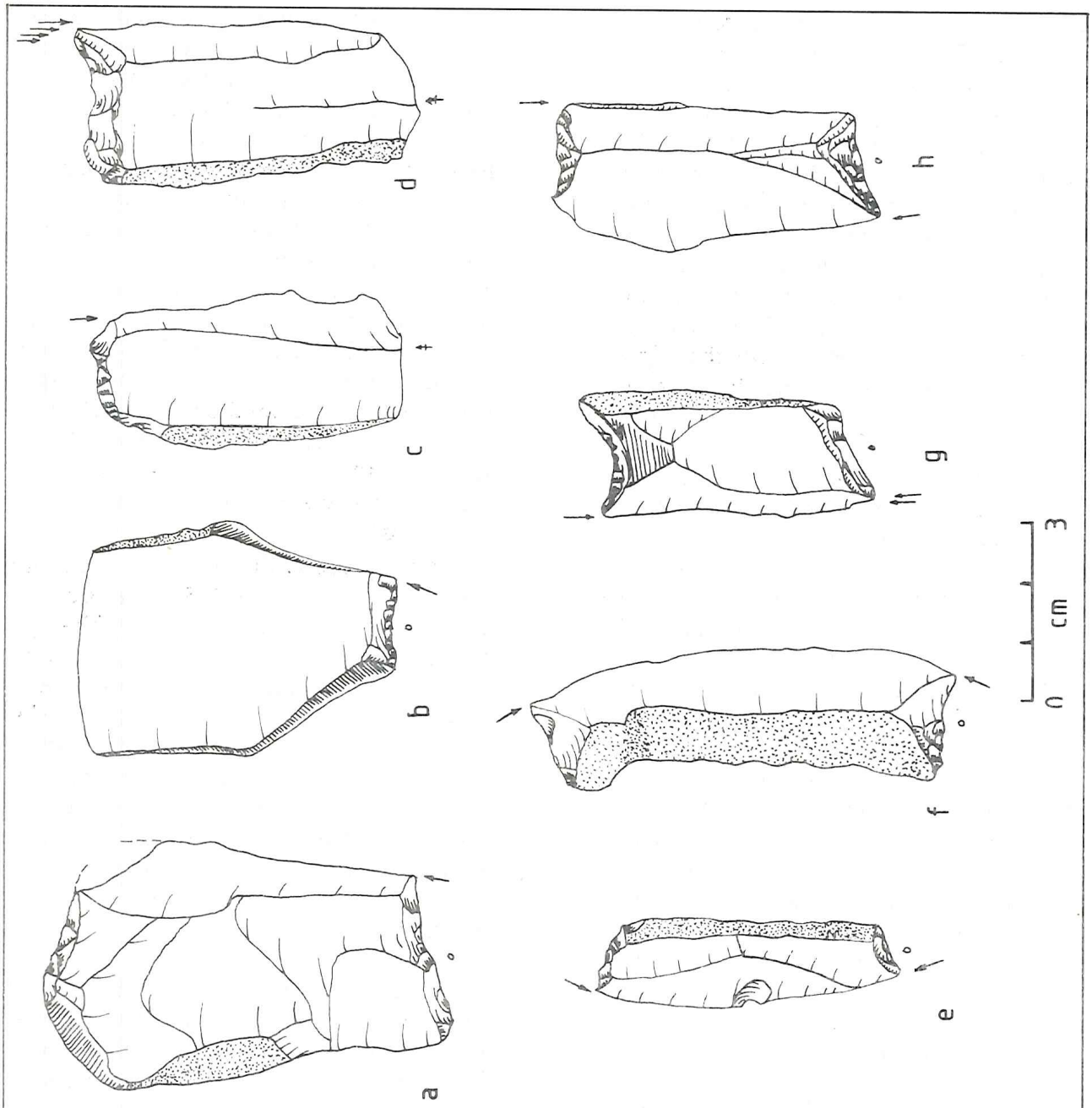

Figure 3. Burins from Square 2, Site A. a,b,d: Burins on concave truncations: c: burin on convex truncation: e: burins on opposed truncations (convex/concave): f,g: burins on opposed truncations (concave/concave): h: alternating burins on opposed truncations (concave/concave).

cores, three of the downslope pieces are on tabular nature. The relative thinness of tabular pieces of flint lends itself as an excellent medium for the consistent production of blades (although elsewhere tabular flake cores are also popular). One frequent product of the use of tabular blade cores is a naturally-backed blade, with one vertical lateral margin covered with cortex (sometimes both laterals are vertical and cortical). Erring attempts to produce blades from such cores can also result in naturally-backed flakes, especially overshot (or "plunging") pieces. Table 3 reveals a major distinction between the two collection areas in these respects. More than half of the knapping products (excluding debris) are naturally-backed blades in Sqs 1-5 while less than a fifth of these elements occur in Sq 6 and F1, a difference that is highly significant. Although naturally-backed flakes do not differ significantly, the much higher incidence of flakes and blades without natural backing

Table 2. Absolute and relative frequencies of tool types from the primary collection areas on Site A.

	Squares 1-5		*Square 6, F1*	
	n	%	*n*	%
Atypical grattoir	1	0.8	. .	0.0
Burins:				
on concave truncation with opposed convex truncation	1	0.8	. .	0.0
on a break	2	1.6	. .	0.0
on straight truncation	4	3.3	. .	0.0
on oblique truncation	11	9.1	. .	0.0
on concave truncation	48	39.7	. .	0.0
on convex truncation	9	7.4	. .	0.0
opposed multiple	26	21.5	. .	0.0
angle	1	0.8	. .	0.0
unclassifiable	11	9.1	. .	0.0
Straight truncation	0	0.0	1	16.7
Oblique truncation	1	0.8	. .	0.0
Concave truncation	3	2.5	. .	0.0
Convex truncation	1	0.8	. .	0.0
End-notched blade	1	0.8	2	33.3
Denticulate	0	0.0	1	16.7
Convex racloir	0	0.0	1	16.7
Tile-knife	1	0.8	1	16.7
Total	121	99.8	6	100.1

in Sq 6 and F1 underlines a major difference in the method of blade and flake production.

Additional technological disparities between the two collections is evident in specific features of relative cortex cover and location on flakes and blades (debris is not considered). Platforms of flakes and blades in Sqs 1-5 are more frequently entirely covered with cortex than in sq 6 and F1, and the relative number platforms with no cortex is significantly higher in the uphill location. This significant consistency is maintained in terms of the relative amounts of cortex on the exterior surfaces of flakes and blades: more cortex remains on flaking products in the lower collection area than in the hilltop region.

The meaning of these extremes in variability in lithic technology cannot be understood without additional information, however. Mitigating against these contrasts, for example, are factors that tend to indicate a sharing of lithic technologies between the two areas. The blade core samples from both collections are too meager to allow for much interpretation, but the blades (and flake mistakes) that came from blade cores are more telling. Products from bidirectional blade cores are in almost the same relative frequency in both areas as were unidirectionally produced blades and flakes, and no significant Chi-Square differences exist. Furthermore, platform angles on blades are "statistically similar" in the high angle (greater than 110° between the platform and the interior surface), low angle, and punch platform variations.

Patina Variability

Although much of the variation seen in

Table 3. Absolute and relative frequencies of a variety of technological aspects of the artifacts from the primary collection areas on Site A.

	Squares 1-5		*Square 6, F1*		
Natural backing	n	%	n	%	X^2
Naturally-backed blades	137	54.2	18	19.1	.0001
Naturally-backed flakes	41	16.2	7	7.4	—
No natural backing	75	29.6	69	73.4	.0001
Total	253	100.0	94	99.9	
Surface cortex					
None	30	11.9	33	35.1	.0001
1-10%	11	4.4	5	5.3	—
10-50%	154	61.1	45	47.9	.05
50-90%	48	19.0	8	8.5	.05
90-100%	9	3.6	3	3.2	—
Total	252	100.0	94	100.0	
Platform cortex					
Completely cortical	29	21.0	6	9.8	.05
Partially cortical	15	10.9	1	1.6	—
Non-cortical	94	68.1	54	88.5	.001
Total	138	100.0	61	99.9	
Blade scars					
Unidirectional	184	88.0	52	82.5	—
Bidirectional	18	8.6	8	12.7	—
Indeterminate	7	3.3	3	4.8	—
	209	99.9	63	100.0	
Platform angle					
Greater than 110°	65	66.3	12	46.2	—
Less than 110°	23	23.5	7	26.9	—
Punch	10	10.2	7	26.9	—
Indeterminate	(88)		(26)		
	98	100.0	26	100.0	
Desert Varnish patina					
Present	264	98.1	50	37.9	.0001
Absent	5	1.8	82	62.1	
Total	269	99.9	132	100.0	

Tables 1-3 might be viewed in terms of varying requirements for specific task objectives, with the consequent possibility that technological options were needed to meet those objectives, one basic explanatory factor remains to be investigated: that the differences that are apparent in the artifacts are due to different cultural means of using the locality at different times (both in terms of alternative seasonal exploitation and diachronic cultural development). The surface nature of both collections does not permit any confident physical stratigraphy, but one aspect of post-depositional alteration of the artifacts is sufficiently remarkable to suggest a temporal distinction of some magnitude between the two collections.

One of the characteristic features of patination in many desert environments is the development of "desert varnish" on artifacts: a glossy (wind polished?), generally brown-to-black change of the surfaces. Variations can develop, however, due to local environments and the amount of time of exposure to patinating elements. In some basalt areas, colors can be stained in a variety of red shades, for example; this is the case for the artifacts from the higher hills to the east of Site A. Extremely prolonged exposure seems to reduce the glossy texture of artifact surfaces with the onset of sand-pitting, although this feature appears to depend on the amount of available suitable materials for the pitting effects. One aspect that seems certain, however, is that artifacts which have been exposed only recently (by recent discard or erosion of overlying, protective sediments) have not developed desert varnish.

In the restricted area of Site A on Jabal Uweinid, it would seem that variations in the local environment can be disregarded, and any variation in the development of desert varnish can be ascribed primarily to the amount of time the artifacts have been exposed to the elements. In Sqs 1-5, almost all of the artifacts manifest desert varnish (Table 3), while in the hilltop location fewer than 40% are so patina ted.

In conjunction with the radical differences in tool typology and lithic technology, therefore, it is logical to propose two major cultural and temporal periods of occupation which differed significantly in terms of how the locality was used by the occupants.

Final resolution of these differences requires more research, and plans are underway to carry out a more intensive and extensive survey of the site with hopes to locate potentially rewarding areas for excavation to determine cultural and paleoenvironmental stratigraphy.

Gary Rollefson
Bruno Frolich

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AQABA-MA'AN SURVEY, JAN. - FEB. 1981

by
W.J. Jobling

The Survey this year was funded by The Australian Research Grants Committee of the Australian Department of Science and Technology and was conducted under the auspices of the Jordanian Department of Antiquities. The Survey was directed by Dr. W.J. Jobling, with the assistance of Dr. Eugene Stockton, Post Graduate Student in the Department of Semitic Studies, Sydney University and Mr. Sami Rabadi who was the Department Representative. The Bedouin guide was Abu Salem.

The Survey this year was designed to follow on the exploration and survey work conducted in 1980. Its success was due to the kindness and co-operation of the Director of Antiquties, Dr. Adnan Hadidi, the Minister for Tourism and Antiquities, His Excellency Maan Abu Nuar and the Minister of Agriculture, His Excellency Marwan Doudin, who kindly gave permission for the Survey team to use a house at the Agricultural project at Qa Disi. I particularly with to thank Mrs. C.-M. Bennett O.B.E. who provided accommodation at the British Institute of Archaeology and History in Amman, and assistance with the planning and analysis of the survey. Mrs. Bennett was kind enough to spend a few days with the survey team in the field and very generously gave of her time and wide experience on this occasion. It was an honour and a privilege to have her with us in this advisory capacity.

Thanks must also be expressed to Dr. Kher Yassin of the Department of Archaeology and his colleague, Dr. Hassan Salameh, of the Department of Geography at the Jordan University, for their co-operation and assistance. It is hoped that this relationship with the Jordan University will be sustained in the exploration and survey work planned for future years in the Aqaba-Ma'an area.

This year the following sites were inspected:

1. Ed-Derreh
2. Far'at Mahliba
3. Tur el-Kharazah
4. Ain El Qattar II - South Wadi Rum
5. Ureikit Raman
6. Rewes el Kheil
7. Hedeib el Fala
8. Abu Silwan
9. Seyl Sabit
10. Khaz Ali
11. Wadi Rum
    - Temple
    - Spring Shrine
    - Abu Sid
    - Risqeh
    - Um Sabita
    - Um Jalidah
12. Wadi Rumman
    - Sid el Rumi
    - Khishan
    - Wadi el-Layyah
    - Wadi Eleligat
    - Seyl Rumman

Some of these sites (Nos 1, 2, 3, 4, 5, 8, 9) were new sites; some had been inspected in the 1980 Aqaba-Ma'an Survey (Nos 6, 7, 10, 11, 12). These latter sites were visited again because of their significance in the light of subsequent study and research in the interim between the 1980 and 1981 Surveys (Fig. 1 - Map 1981 Aqaba-Ma'an Survey).

In particular, Khaz Ali was intensively studied and photographed because of its importance for the study of Southern Jordan Rock Art. It is proposed to produce a detailed and comparative study of the rock art of Khaz Ali. Sid El Rumi was studied again because of its significance as the place where last year's Thamudic Inscription (Reg. No. J14202) was found. No further inscriptions were found although this site became the point of departure for Far'at Mahliba (see below). Abu Sid was investigated again on several occasions because of its significance for Thamudic Inscriptions. Particular attention is drawn to the peculiar human figure (Pl. LVI No. 1) which displays an X-ray style of artistic execution. A more detailed and com-

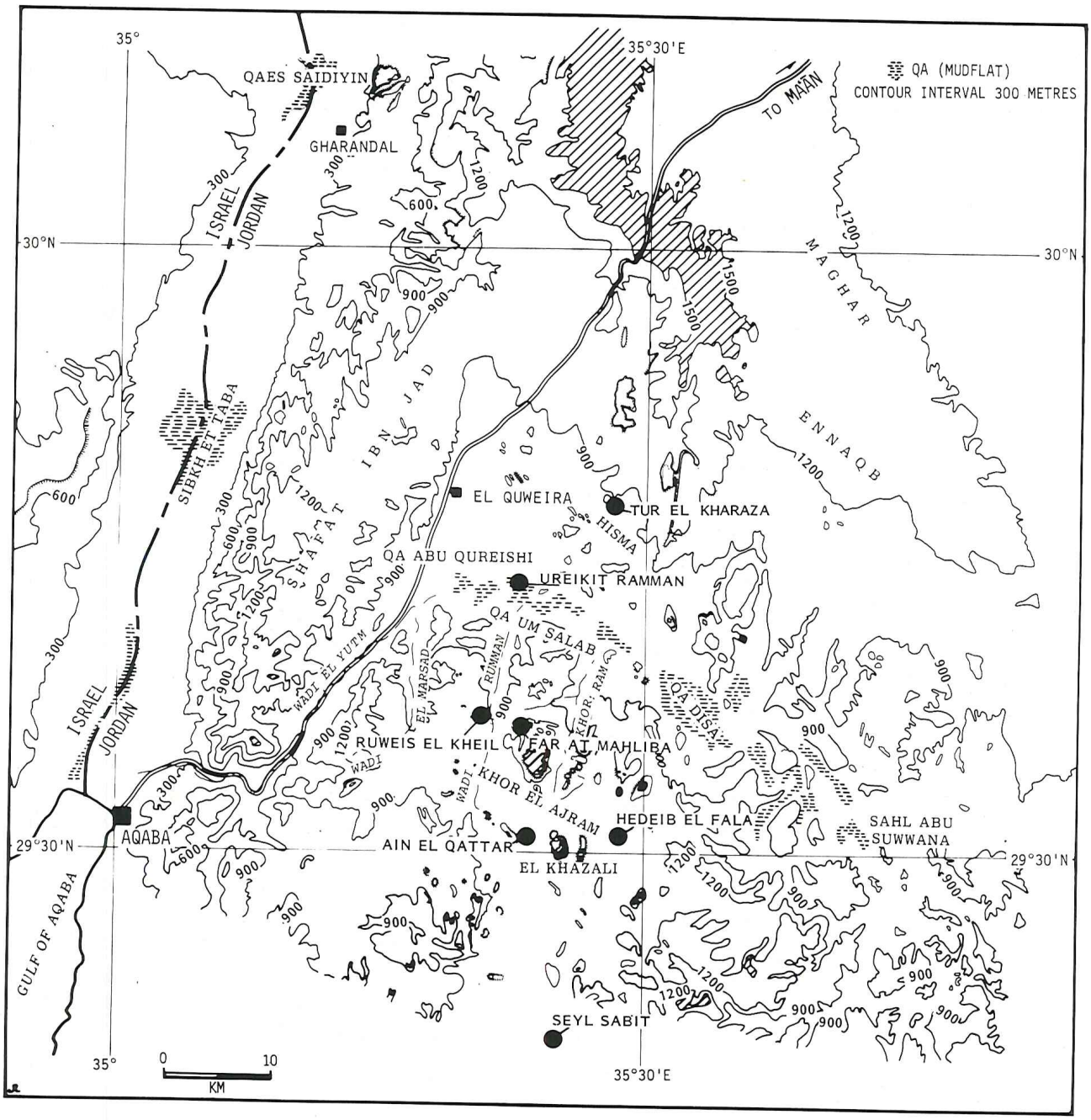

Fig. 1: Map 1981 Aqaba - Ma'an Survey

parative study of this particular rock engraving and a discussion of its significance is in preparation.

Particular attention was given to the following sites which reflect some of the more important archaeological and epigraphic aspects of the 1981 Survey:

1. Hebeib el Fala Grid Ref: 196.881*

Towards the end of the 1981 season's survey, the site of Hedeib el Fala was identified. This site which is situated to the East of Wadi Rum is a significant site of considerable dimensions (Pl. LVI No. 2).

This year a more intensive exploration and survey of the site and its environs were conducted. On the first occasion of the exploration and survey of this site, it was a privilege to have the experienced company of Mrs. C-M. Bennett O.B.E., Director of the British Institute of Archaeology and History in Amman. Not only did Mrs. Bennett lend her considerable experience to the description and evaluation of this site, she also succeeded in identifying a cluster of Thamudic, and one Nabataean, inscriptions located in the overhang of the Eastern side of Hedeib el Fala. Dr. Jobling has copied these inscriptions along with other material noticed in last year's survey, and these will be presented for publication as part of a forthcoming study of the inscriptions and rock art of Hedeib el Fala.

The site may provide an interesting parallel to Jawa in that the organisation of stone circles and wall foundations reflect characteristics of Jawa site types 4 and 8.[1] Further to this the pattern of stone circles here and at Seyl Sabit is similar to the plan on the Wadi Ghadaf stone.[2] Helms has suggested that at Jawa such larger campsites 'are better candidates for permanent settlement, but there is still little proof of this and they would have to be excavated'.[3] Helms also posits that such stone circle structures are best understood in terms of the modern bedouin tents, their superstructure having been of fabric or skin.[4]

2. Rewes el-Kheil Grid Ref: 184.892

This is the site where, in the 1980 Aqaba-Ma'an Survey, a large pot was found. South west of Qleyb Rumman this site and its environs were again studied and a significant collection of flints and pottery sherds were found. The apparent absence of such evidence in 1980 may have been due to the fact that the site had then recently been occupied by Beduin. Since 1980, deflation has exposed a considerable area around the site.

This year, a cluster of house or wall foundations was visible, quite close to where the pot was found. It is hoped that this year's contextual evidence, along with a closer and scientific analysis of the pot by Dr. Kher Yassin, will enable a final article to be written about this site, and the significance of the pottery sherds and pottery. Dr. Stockton's flint analysis will also contribute to this report.

Ṭur El-Kharaza Grid Ref: 194.912

This site is situated with a west south west aspect under a large overhang or shelter at Tur el-Kharaza. (Pl. LVII No. 3)

Although considerable deflation has reduced the area under the rock overhang to bed rock, there is still an almost perfectly preserved stratification of occupation against the rock wall. Sondages at this site should provide a clearer picture of the character of occupation. At present, it is tentatively thought that there is flint evidence stretching back to the Paleolithic period. Pottery, bones and later flint evidence,

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* All Grid references are to The Hashemite Kingdom of The Jordan, Sheet 3, 1:250,000, Department of Lands and Surveys of the Jordan 1949.

1. Helms, S.W., *Jawa, Lost City of the Black Desert,* London 1981, p48, Fig. 24.
2. *Op cit,* Fig. 25.
3. *Op cit.*
4. At Timna in Southern Palestine similar structures have been identified in areas more closely parallel to the Aqaba-Ma'an area. Beno Rothenberg has also posited such a possible fabric roof structure. This would certainly seem to accommodate the climatic demands of these semi-arid and arid areas and create an important contrast with the village and urban centre dwellings in the north. *Cf.* Rothenberg, *Timna: Valley of the Biblical Copper Miner,* London 1972, p152.

however, suggest that the site was of considerable significance in the later history of human occupation in this area.

This site has been used as a stock pen, the dung of animals having sealed the surface.

4. Far'at Mahliba Grid Ref: 180.899

Far'at Mahliba is situated not far from Sad al-Rumi in the Wadi Rumman where the 1980 Thamudic Inscription (Reg. No. J14202 - Amman Museum) was found. Good water supplies and a series of quite negotiable tracks provide Far'at Mahliba with a congenial and yet well protected environment relatively high up in the Wadi complex.

It is suggested that Far'at Mahliba provides evidence of a good example of a micro-environment which would repay closer study. In particular the area around the overhang-cave, which provided evidence of flints and pottery, could be a valuable site which may elucidate the Man - Land relationships, particularly with regard to the introduction of domesticates.

It would appear that Far'at Mahliba is a small pocket of land in which the availability of good water (two springs) and a benign protected environment may allow the investigation of the paradigm of change from a possible hunting economy to domestication of animals which then engendered the severe soil erosion now observable.

Rock art and Thamudic inscriptions were also noticed in the Wadi ascent.

It is suggested that Far'at Mahliba and Kharaza may provide two important desert sequences which could profitably be compared with the work at Beidha.

5. Seyl Sabit Grid Ref: 190.862

Situated to the east of the Wadi Dhiqa (see 1980 Survey Report), this site is the most south easterly of the sites surveyed and represents a large area which still needs thorough investigations.

Occupation evidence around the entire Seyl Sabit complex suggests that from early antiquity, this site has been in regular, if not constant, use. The main occupation area appears to be that still in use by Beduin and has a south westerly aspect.

The Wadi Sabit runs parallel to the Wadi Dhiqa and both Wadis join up with the Wadi Yutim.

Survey work in 1980 and 1981 again raises the issue of the degree of contact (in terms of general habitation situations as well as trade) of these southern desert areas and the coast. It is proposed that in future survey work a more thorough exploration of these possible links with the coast be explored.

The Thamudic inscriptions and the rock art so frequently associated with these inscriptions are part of a much wider ranging dialectal circle.[5] The epigraphic and pictorial evidence of the Aqaba-Ma'an area has contributed greatly to our understanding of the nature of the human society sustained in these semi-arid and desert areas.

While a separate and more detailed study of the Thamudic inscriptions will be published once the survey has been completed *in toto* it is pertinent to the 1980 and 1981 seasons to draw attention to the firmness and clarity of execution in the great majority of these inscriptions and rock drawings. As can be seen from the example from Wadi Rumman the definition of the script suggests a degree of primary literacy which bespeaks an artistic and literary ability which in turn raises important questions about the type of linguistic and literary community which may have generated such epigraphic skills which appear to have been current throughout the area (Pl. LVII No. 4).[6]

As well as Thamudic inscriptions the Aqaba-Ma'an area also harbours extensive epigraphic evidence of Nabataean occupation.[7] The majority of the Nabataen

5. (i) Harding, G.L. and E. Littman, *Some Thamudic Inscriptions from the Hashemite Kingdom of The Jordan,* Leiden 1952.
(ii) Winnett, F.V. and W.C. Reed, "An Archaeological-Epigraphical Survey of the Hail Area of Northern Saudi Arabia", *Berytus* XXII, 1973:53-114.
6. This inscription may be transliterated: *l rd bn tm*
7. Harding, G.L., *The Antiquities of Jordan,* London 1967.

epigraphic evidence located in previous surveys has been mainly confined to the well known Wadi Ramm. However, during the 1981 survey, at Hedeibeh el Fala, a Nabataean inscription was found by Mrs. C-M. Bennett, Director of the British Institute for Archaeology and History (Pl. LVIII No. 5):

slm zynwn br qymt klyrk btb l'lm

Although the text is badly weathered in parts it reflects several points of epigraphic and socio-linguistic importance which will be the subject of a more extensive article which is forthcoming. Particular attention is drawn to the Greek title Chiliarchos which occurs in this inscription which is tentatively dated to the first century AD.[8] This name and title shed further light on the penetration of Greek (probably as the socially superior donor language) into the linguistic strata of Nabataean culture. Together with the Thamudic inscriptions of the Aqaba-Ma'an area, as well as the bulk of similar epigraphic evidence known to us from the Sinai, Southern Palestine and Saudi Arabia, this epigraphic material raises important questions concerning multilingualism in the area.[9]

While a considerable degree of time during the 1981 survey was denoted to locating and recording the rock art of the general area special attention was focussed on the gallery at Khaz 'Ali.[10] In particular attention is drawn to the carvings of human feet (Pl. LVIII No. 6). The gallery itself provides a challenge in terms of its position. The relationship of the style of the carefully worked petroglyphs and their triangular symmetry to other rock art of the general area suggests a preoccupation with the presentation of human feet and presents an interesting challenge to our understanding of this semiotic dimension. Ancient literary traditions about the significance of feet and a variety of visual representations in the Ancient Near East are paralleled elsewhere in the world.[11] An interesting example of the general Semitic provenance of this symbol is found in the Old Testament where the prophet Ezekiel (43:7) refers to the Temple in Jerusalem as the place of the soles of Yahweh's feet and hence provides a synonym for the for the direct presence of the deity.[12] Dr. Ali Abu Assaf of the Damascus National Museum has reported that in the excavation of the tenth century BC Aramaean temple at Ein Dara in northern Syria four distinct human footprints each about 100 cms in length embedded in the temple floor have been found. Whether a specifically cultic function can be attributed to the feet in the Khaz 'Ali gallery remains unclear.

Lithic Industries of the Hisma [13].

Research into the prehistory of Jordan is still relatively undeveloped, with numerous reports of surface sites but few excavations, and those limited in sequence. Investigation has concentrated on the Jordan Valley and the adjacent plateau, where parallels have been readily drawn from the archaeologically better known areas of Palestine and Syria. Even less is known of Southern Jordan, where there have been two excavations of Late Stone Age and numerous surface finds of indeterminate age, and where parallels can be less readily drawn from the better known north and West, since the region's geology, ecology and climate link it to the largely *terra incognita* of the Arabian Peninsula.

Earlier researchers variously des-

8. I am most grateful to the Abbe Jean Starky who has kindly assisted me with the transliteration and dating of this Nabataean inscription.
9. These and other sociolinguistic issues are discussed in a forthcoming article, "Recent Exploration and Survey in Southern Jordan: Rock Art, Inscriptions and History", Berytus, based on a paper given by the Director at a conference at the American University of Beirut in May 1981.
10. Harding, G.L., *op cit,* pp12-13.
11. (i) Cirlot, V.E., *A dictionary of symbols,* New York 1962, pp106-107.
    (ii) Walker, B. *Body Magic. An Encyclopaedia of Esoteric Man,* London 1979, pp220-221.
12. Eichrodt, W., *Ezekiel,* S.C.M. Old Testament Library, London 1970, p555.
13. The commentary on the flints is a synopsis of a report by Dr. Eugene Stockton. The drawings are by Ann Searight.

ignated their sites by cultural phases from the Upper Paleolithic to the Chalcolithic, and they did so tentatively because of the lack of clearly diagnostic tool types, apart from arrowheads. Where some description of whole assemblages is provided it is patent that they are similar to the surface assemblages found during the 1981 survey. Isolated cases of cultural markers were noted, e.g. Mousterian core at Retama or Natufian crescent at Ramm, just as they have been noted by this survey. However, single items are notoriously unreliable for dating a whole assemblage, especially where severe deflation may have resulted in mixing old and new assemblages, or where an older flint may have been re-used in a later industry or where a craftsman may have accidentally duplicated an older technique or tool type. The salient recurring feature on all sites is an industry of small flakes and blades with incidental edge retouch. The size of the blades, in particular, has evoked comparison with the microlithic industries of the Epipalaeolithic (though the diagnostic microlithic backed blades have been rare or lacking), but blade size may be rather a function of distance from sources of suitable flint than of cultural tendency. Hence the comment of Stanley Price and Garrard for their site is applicable to most, if not all, in the Hisma: 'Although far from conclusive, a neolithic/chalcolithic date would appear to be most consistent with the material recovered'[14].

If such were the case, these widespread assemblages would be co-eval with Beidha and stand in contrast to it and similar Late Stone Age sites in the lack of tools associated with agriculture and specialised manufacture. The lack of cereal polish on the denticulates is perhaps also eloquent witness to the absence of agriculture. The economy at this time would therefore appear to be that of hunter-gatherers and/or herdsmen, and such would be consistent with occupation of short duration at most sites (characterised by *ad hoc* tools) or slightly longer at the rockshelter sites (allowing enough leisure to fashion finer tools). However, the numerous sites exhibiting such an assemblage might be considered more or less temporary stop-overs for nomads, and the tool kit might be designated a nomadic facies of some Late Stone Age phase, which is known from excavation of better-endowed sites to the west and north by a wider suite of tools[15].

However, this widespread assemblage does not represent the only time of man's exploitation of this desert environment. Palaeolithic flints are numerous on the heavily deflated surfaces of the limestone plateau to the north and at Tur el Kharaza there are signs of a sequence beginning back as far as the Lower Palaeolithic. Hence older assemblages can be presumed to be present and even common in the Hisma, but to be buried beneath the generally aggrading *sahel* sands of the valley floors, only to be revealed under localised conditions of very severe deflation. The limited collection at Tur el Kharaza may hint that from the Upper Paleaeolithic until the end of the Stone Age there has been little change in tool kit, except perhaps in size of material, as there was little change in arid zone economy. It remains an open question whether herding in the desert had begun before the advent of history. (See Table I and Figs. 2, 3 and 4.)

The growth in knowledge of the area as a result of the 1980-1981 surveys has been significant. Particularly, the following issues have emerged:

a) The Man - Land relationships and the understanding of the history of the Aqaba-Ma'an area in these terms. These relationships cover the prehistory and later periods of human occupation. It is thought necessary to continue a flint analysis along the lines suggested by Dr. Stockton.

14. Stanley Price, N. and A. Garrard, "A Prehistoric Site in the Rum Area of the Hisma", *Annual of the Department of Antiquities,* Jordan 20, 1975:91-3 (site 20).

15. *Cf.* Juli, H.D., *Ancient Herders of the Negev: A Study in Pastoral Archaeology,* University Microfilms International, Ann Arbor, U.S.A., 1978.

Table 1. Analysis of assemblages, 1982 Survey

Site No.	*21*	*22*	*30*	*9*	*31*	*32*
Site	*Tur el Kharaza*	*Far'at Mahliba*	*Ruweis el Kheil*	*Ain el Qatter*	*Hedeib el Fala*	*Seyl Sabit*
Total worked stone collected	420	927	98	426	353	220
Cores - large 5 cm	22	3	—	—	—	—
small 5 cm	47	55	2	15	10	8
Cores - irregular	52	38	1	9	10	6
- blade	6	16	1	6	—	1
- common platform	8	—	—	—	—	—
- alternately flanked	3	—	—	—	—	—
Blades - large 5 cm	3	2	3	—	—	—
- small 5 cm	15	173	9	140	64	9
Flakes (small, nondescript)	118	495	41	190	197	133
FLAKING RECHNIQUES						
Bipolar/scaler piece	4	4	5	2	5	4
Faceted butt	8	1	1	3	5	—
Burin spalling	4	7	—	—	3	—
Redirecting flake	3	—	—	1	4	—
Back blunting	—	4	1	2	3	—
TOOL TYPES						
Hammerstone	6	5	—	—	—	—
Anvil stone	1	—	—	—	—	—
Biface	1	—	—	—	—	—
Cleaver	2	—	—	—	—	—
Knife	2	—	—	—	—	—
Edge-ground axe	—	—	1	—	—	—
Arrowhead	1	1	—	—	1	—
Awl	1	3	1	—	1	2
Edge-retouched flakes and blades						
Retouched margin denticulate	21	26	5	8	19	5
Continuous - steep-edged	45	13	1	6	24	8
- acute edged	23	32	5	6	10	8
Retouched notch	22	24	10	16	13	6
Retouched nose	—	9	1	4	9	—
Retouched distal	1	1	—	6	—	3

b) The nature of the relationship of the Nabataean and Thamudic inhabitants of the area. The extent of links (ethnic, cultural and linguistic) between these two groups. Especially, attention is drawn to the importance of a renewed interest in Thamudic and Nabataean language studies. It is hoped that the Director, with the kind co-operation of the Department of Antiquities and Mr. Michael Macdonald, will be able to spearhead this aspect of research. A collection of the Thamudic Inscriptions from the 1980 and 1981 surveys will be published separately.

c) The trade and habitation links between

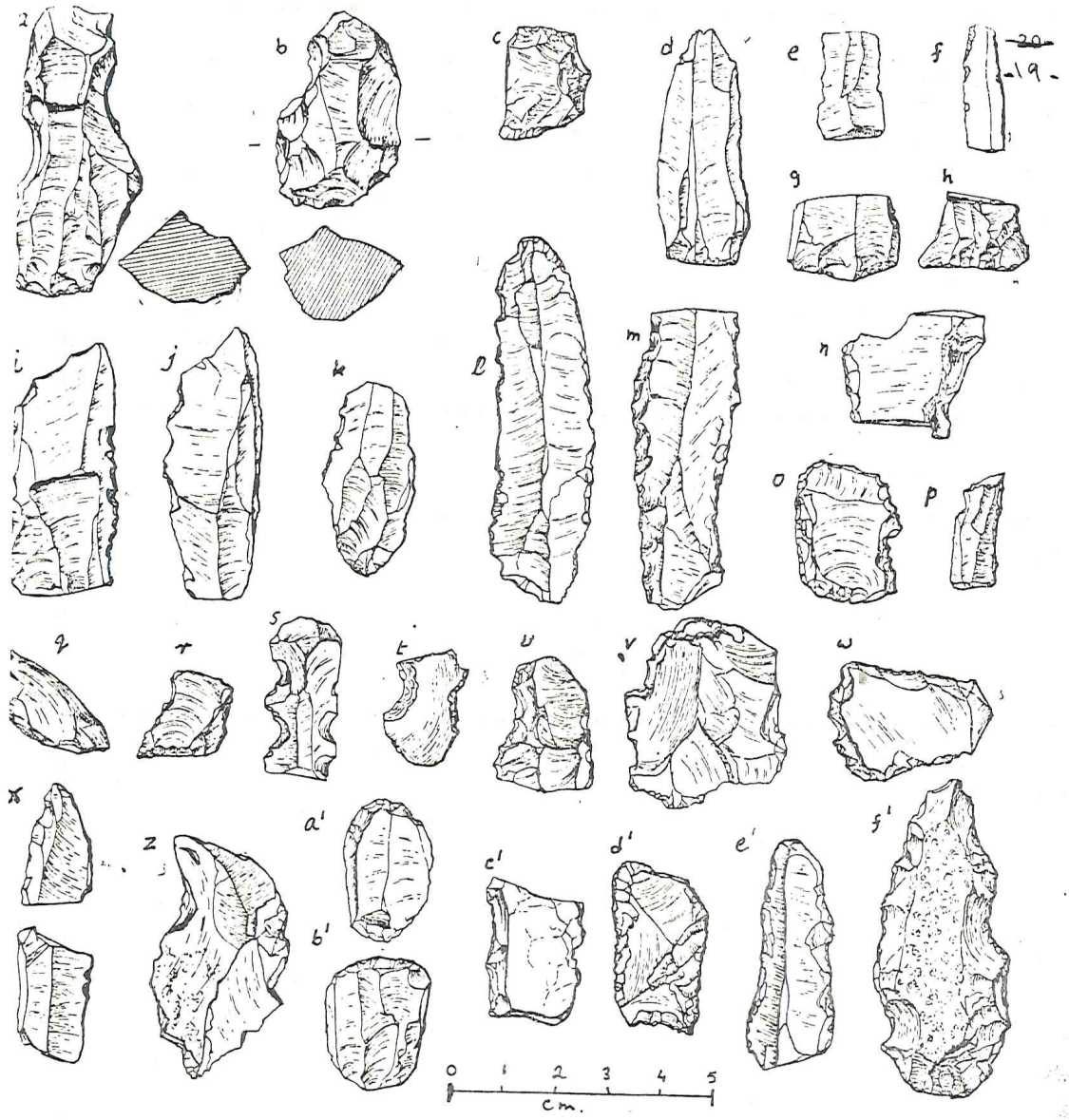

Fig. 2: Sites 23-20, 1980 collection: a blade core; b flake core; c scalar piece d-h blades (e-h snapped ends); i-z-a'-f' variously retouched edges.

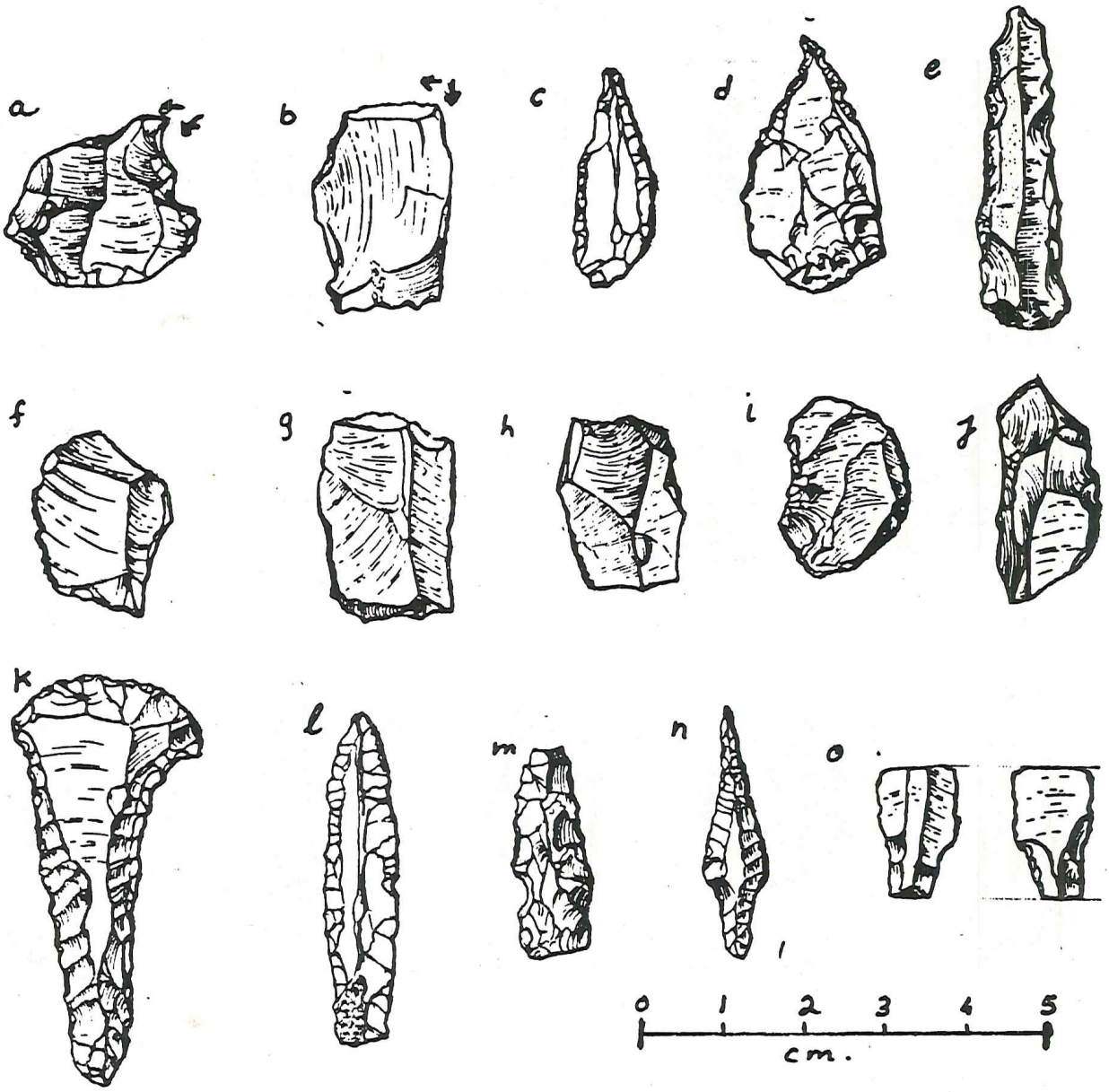

Fig. 3: Sites 23-29, 1980 collection tooltypes: a-b burins; c-e awls; f-j possible adze flakes; k-o projectile points.

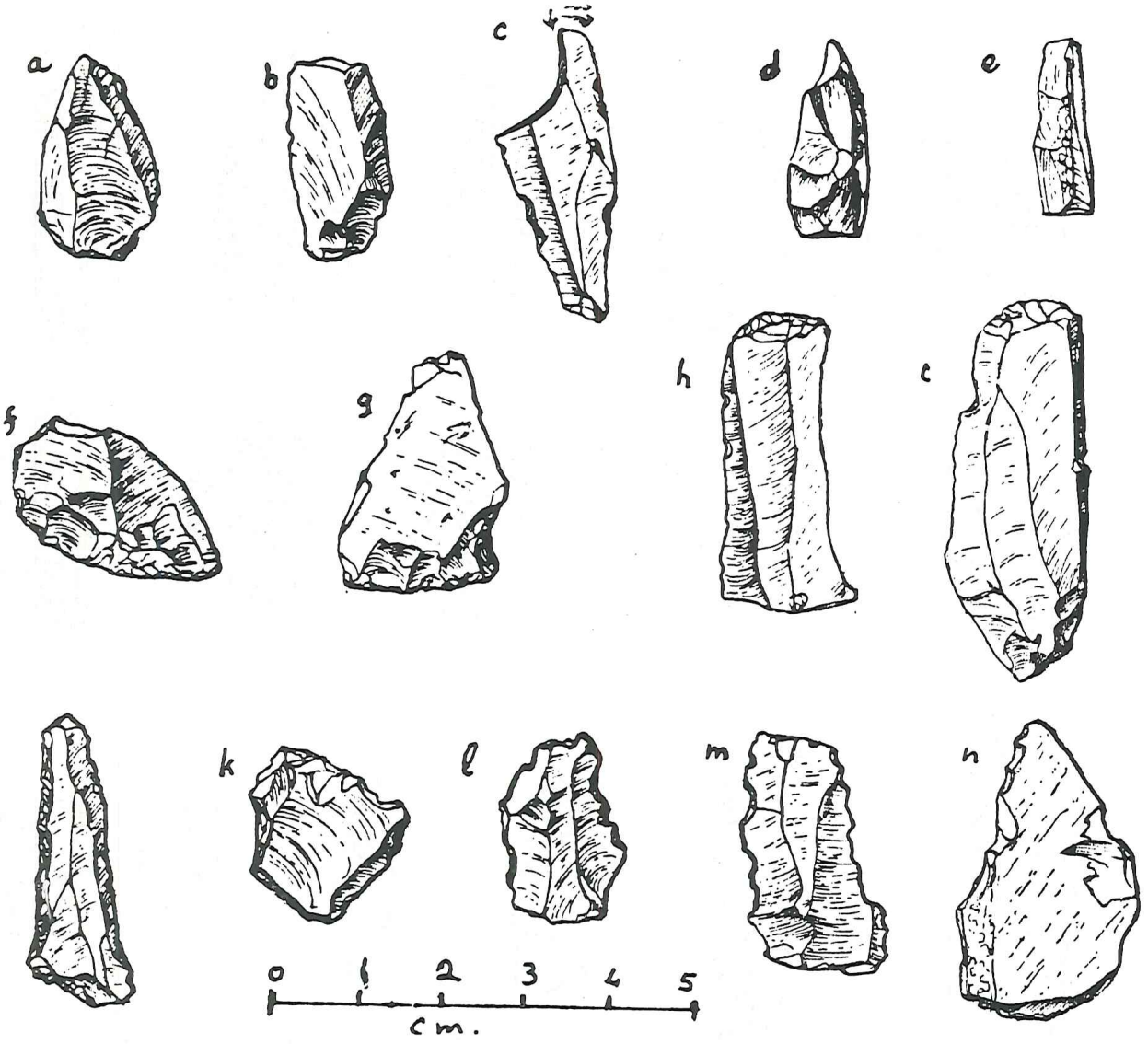

Fig. 4: Hedeib el Fala (first visit 1980): a scalar piece; b snapped blade (or adze flake); d-e redirecting flakes; f-j steep-edged marginal retouch (side view); h-i distal retouch; j-k abrupt retouch of acute margin; l-n denticulates.

the Aqaba-Red Sea coastal areas and the hinterland extending as far north as Ma'an, and following the Eastern Jordan-Saudi Border. Attention is particularly drawn to the important supply of flint and other tool-manufacturing equipment and the relationship this may have had to the prominence of the later trade routes which crossed through the area. It is proposed to survey the later Classical and Arab Historians and Geographers for further light on these issues, which have been raised by the Survey.

d) Southern Jordan rock art remains something of a fascination, in that its frequency and great variety suggests that, along with the inscriptions which occur in this area, it may be a valuable index to important aspects of understanding of the area to which its inhabitants gave expression. In particular, attention is focussed on the re-examination of the important site of Khaz Ali and it is hoped that a separate comparative study of this site and its art will be produced by the Director of this survey.

W.J. Jobling

THE WADI BAYIR PALEOANTHROPOLOGICAL SURVEY

A first Season Report
by
Scott Laird Rolston
and
Gary O. Rollefson

(I)

The Wadi Bayir Paleoanthropological Survey was begun on a limited budget in May of 1981. Field work continued, as often as other archaeological commitments would allow, into the autumn and will be resumed in the spring of 1982. The goals of the survey are as follows:

A. To discover the physical remains of fossil hominids and pre-hominid primates in the eastern desert region of Jordan.
B. To collect and classify a representative sample of the lithic artifacts of all the prehistoric and early historic periods represented in the Wadi Bayir.
C. To gather information concerning the paleoenvironment.
D. To record whatever later cultural remains are to be found, chiefly through examination of rock inscriptions and ceramics.

The Wadi Bayir and its tributaries (A.M.T.V. series K737, sheets 3351 IV, 3351 I, 3451 IV, 3452 II; Bayir Wells grid BQ 777057, scale: 1:50,000) are part of the generally eastward drainage of the Eastern Plateau into the Wadi Sirhan in northern Arabia. This land tilt resulted from tectonic shifts of the Rift Valley, especially during the Lower Miocene (Burdon, 1959, p. 59), the Oligocene, and the Late Pleistocene (Bender, 1974, p. 21-22). The limestone and chert stratigraphy of the region are sea deposits of the Tertiary, probably Paleocene and Eocene. After emergence during the Lower Pliocene followed by a re-emergence at an undetermined time, the soil of the Quarternary was removed by the prevailing westerly wind, leaving a broken chert cap over sedimentary deposits which are almost uniformly Tertiary. This state of affairs makes the first aim of the survey very difficult to attain, as the physical remains of pre-human hominids disappeared with the wind blown soil. It is hoped that intact Plio-Pleistocene deposits will be found in the lee of such substantial landforms as Jebel Waqf as Suwwan, as well as in the low-lying areas of the eastern reaches of the wadi. In the case of *Homo sapiens neanderthalensis* and collaterals, remains in the protected environment of caves have been attested elsewhere (Garrod and Bates, 1937; Garrod, 1962, p. 541-546), and it is therefore hoped that terrain containing rock shelters will be encountered closer to the Saudi Arabian frontier.

The second aim of the survey saw the greatest amount of progress during the 1981 season. The Wadi Bayir is prolific of lithic artifacts. Several isolated bifacial tool finds from the Lower Paleolithic give us cause for optimism. The area around Bayir Wells was visited by Henry Field in 1928 (Field, 1960, p. 77 and 118), who reported the discovery of numerous stone artifacts. We found that lithics from a wide range of periods were represented in the inventory of our first season. Neolithic material was well represented though no permanent habitation sites were found.

Our strategy has been to divide the Wadi Bayir and its tributaries into phases, each of which is scheduled for intensive survey during one season. The widest range of terrain types is being sought in the first two seasons in order to allow model building for likely site locations in the less accessable areas to the east. During 1981 the

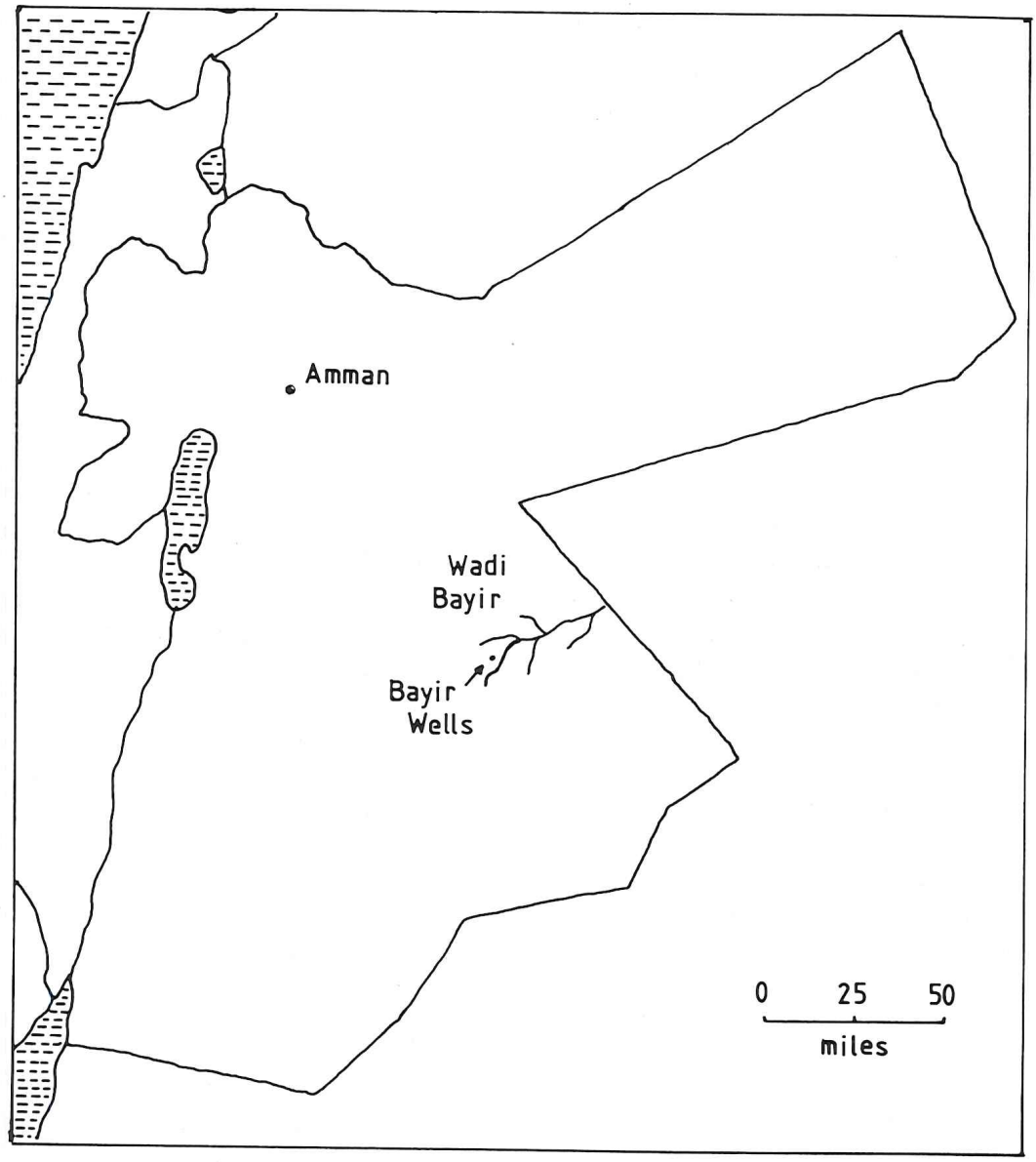

Fig. 1: Map showing the location of Wadi Bayir.

Jebal er Raha (northern boundary, BQ673205; southern boundary BQ665101) was covered. The territory was walked off on line and triangulation azimuths were made to landmarks from sites or prolific scatters. Twenty meter square samples were then taken from each. A report of the lithics by Dr. G.O. Rollefson follows this introduction.

The third aim, a reconstruction of the paleoenvironment, is proving difficult but attainable. In this, the assistance of Dr. Fritz Helmdach of the Department of Geology, Jordan University, has been of the utmost value. Early speculation on my part about a lake environment in the Bayir Basin during latter Tertiary and Quaternary times has not been confirmed or disproved. Soil and rock samples were taken at grid reference BQ659121 at 10 meter intervals in a line moving downward from an escarpment ridge at the foot of Jebel er Raha (elev. 960). Most of the samples proved to be consolidated deep water Tertiary deposits cut through by later wadi water action. The terrace was covered with unconsolidated sediments apparently laid down by relatively still, shallow water and may be the remains of a lake bed. Dr. Helmdach examined these sediments for microfossils and found them to be sterile. This was discouraging but it was pointed out that the samples had been too superficial and that rainfall often decomposes such mat-

erial. It is also possible that the water was highly saline. Next season will see settlement of the Plio-Pleistocene lake question by intensive sampling of the escarpment.

The fourth aim was furthered by two sherdings of the only historical period feature in the Jebal er Raha area, the ancient fort at Bayir Wells. A preliminary random sherd collection produced a 95% Nabatean count in a inventory of 59 indicators. The remainder were Ottoman with a small nondescript additional group of 6 Early Byzantine body sherds, possibly representing a single pot break. A second intensive sherding yielded 149 indicators which were all Nabatean.[1] The building described by Field (1960, p. 99) is no longer standing, its stone having been used to build the present Desert Police fort. Taken alone, however, the pottery suggests that Gluck (1959, p. 201) may have been correct when he suggested that there was a Nabatean caravan route through Bayir and up the Wadi Sirhan. Such a route would have offered a safe alternative to the Kings Highway and the Jordan Valley in the event of a deterioration of relations with the people in the area of the Decapolis.

Although historical period remains are not the primary goal of the Wadi Bayir survey, it is expected that a number of sites and a sample of Safaiitic inscriptions will be found. These will be reported upon as they are discovered.

Our thanks are due to Dr. Adnan Hadidi, director of the Jordanian Department of Antiquities and the staff of the Department, who have been very helpful. We also thank Alison Betts, Dr. James Flanagan, Be and Jameely Moore, Laura Hess, Dr. Geoffry King, Charles Perry, Jane Issac, James Deemer, and Dr. David and Mrs. Linda McCreery of A.C.O.R. for their participation.

Scott Laird Rolston

1. Our thanks are due to Dr. James A. Sauer, the former director of the American Center of Oriental Research in Amman, Jordan, for taking the time to read our pottery during his last hectic night in Jordan.

THE CHIPPED STONE ARTIFICATS FROM JEBEL ER RAHA

(II)

The 1981 survey season produced a total of 1749 artifacts from the Jebel er Raha area (see Table 1). The preliminary analysis of these materials stressed the sorting of cores, flakes, blades, and tools and the assessment of probable major cultural/temporal ages of the artifacts.

Temporally diagnostic elements were very rare among the artifacts, and in may cases the age determinations are admittedly tentative because of the lack of definitive reference criteria. For most of the lithic concentrations, cultural associations were determined on the basis of the specific technological features of the artifacts and the relative degree of patination and surface alteration (rolling and wind erosion) within each artifact cluster. However, since many technological aspects of lithic manufacture are shared across developmental stages, some age assignments had to remain more vague than we ideally would like to achieve. For example, where differential patination/alteration was not present among a group of flakes and blades, the cluster conceivably could have been produced anytime within the later Upper Paleolithic period or later, since no other defining parameters existed to allow for a more precise age.

In table 2, therefore, there are four categories which serve to separate the artifacts in only a very general manner, including Lower and Middle Paleolithic (L/M), Middle Paleolithic or later (M+), Upper Paleolithic or later (U+), and Neo-

Table 1 Absolute frequencies of artifacts in major artifact classes from the Jebel er Raha.

Area	*Tools*	*Flakes*	*Blades*	*Cores*	*Total*
North Bottom	3	33	25	8	66
East Bottom	5	21	21	16	58
South Bottom	28	89	57	53	199
West Bottom	3	56	24	33	113
Total Bottom	39	199	127	110	436
Total Top	27	653	442	218	1313
Grand Total	66	852	569	328	1749

Table 2 Absolute frequencies of artifact from cultural periods in the Jebel er Raha Survey collection.

L = Lower Paleolithic, M = Middle Paleolithic, U = Upper Paleolithic , N = Neolithic, and UNK = Undeterminate

Area	*L*	*L/M*	*M*	*M+*	U	U+	N	N+	UNK	Total
North Bottom						50		2	14	66
East Bottom			1	8	3	22	8	4	12	58
South Bottom	2	2	17	8	30	69	9	18	44	199
West Bottom	—	—	4	2	3	37	8	11	48	113
Bottom Totals	2	2	22	18	36	178	25	35	118	436
Top Totals	—	19	18	21	63	285	614	211	82	1313
Grand Total	2	21	40	39	99	463	639	246	200	1749

lithic or later (N +). There were those inevitable isolated artifacts or groups of nondescript elements for which no general age assessment could be made, and these are included in the "unknown" column. Since Jebel er Raha is a long (ca 8 km). butte formation, with associated butte outliers to the north and south, it seemed logical to divide the survey area into the Jebel top and the plains below. The artifacts in tables 1 and 2 are arranged by the general location of the survey area. Each of these areas will be discussed briefly.

The Lowlands around Jebel er Raha

The plains below the butte can be arbitrarily divided into four basic localities: the north, east, south, and west bottomlands. Most of the northern portion remains unsurveyed and will be completed early in 1982. In the western part of this locality is a relatively dense concentration (66 pieces) of primarily Upper Paleolithic or later chipped stone artifacts, including an endscraper on a flake, a bifacial tool, and a Neolithic to Early Bronze tabular scraper (site 9 in figure 2). Cores from the 20 sq.m. collection area contributed ca. 12% of the artifacts.

On the eastern bottomland fringes of the jebel, only 58 artifacts were found on the transects, and no major concentrations of material occurred in this part of the survey area. Although nine of the pieces may date as early as the Middle Paleolithic, the bulk of the specimens evidently come from sometime between ca. 30,000 to 3,000 B.C. One small cluster of primarily Upper Paleolithic and/or Neolithic elements included a borer and two endscrapers, and not far from this cluster there were found a Middle Paleolithic Levallois point and a chopper of roughly the same age. Cores from the eastern bottomlands constituted nearly 28% of the artifacts.

On the western plain, 113 artifacts were scattered widely along the transects, and even small clusters were rare. Once again the later periods are most heavily represented, with only 5% of the artifacts possibly dating to earlier than 35,000 B.C. The three tools included two Neolithic choppers and a steep scraper on a natural chunk, possibly as old as the Middle Paleolithic. Cores are relatively numerous, accounting for nearly 30% of the cultural material.

In absolute terms the south lowlands, including the areas around the South Promontory (cf. figure 2), produced the most material (although the unexplored northern area might be as rich). The South Promontory area in particular is rather densely populated with artifacts, and although it is once again true that the last 30,000 years are the most predominantly represented, several pieces are Late Acheulian, perhaps more than 125,000 years old. Site 1 in figure 2 is the center of a large, diffuse array of cultural remains, and it evidently reflects repeated visits to the same area over a rather long period of time. The tools from the South Promontory alone account for 44% of the entire tool sample from this season's survey, suggesting that it was a favorable area for exploitation of the available resources. Four choppers, two burins, and a core scraper date from Upper Paleolithic or later times; one chopper and a bifacial scraper and Middle Paleolithic; and three scrapers and a pick are uncertain as to date. No tools were found in the southern area except on or near the South Promontory. Cores are numerous in the southern area, making up 44% of the local inventory.

Generally, the three transect lines along the base of Jebel er Raha suggest that prehistoric occupations tended to hug closely to the butte: in the western area and eastern areas there is an evident general cline towards lower artifact densities that correlates with increased distance from the cliff faces.

Alternatively, this reduction in relative artifact frequencies away from the butte may be a reflection of natural forces which have disturbed original artifact/site distributions in two ways. First, the rare yet very real cloudbursts in this otherwise arid region could have created severe erosion over thousands of years, causing possible originally dense sites to be dispersed down slopes. Secondly, the same natural agencies may have operated to completely obscure

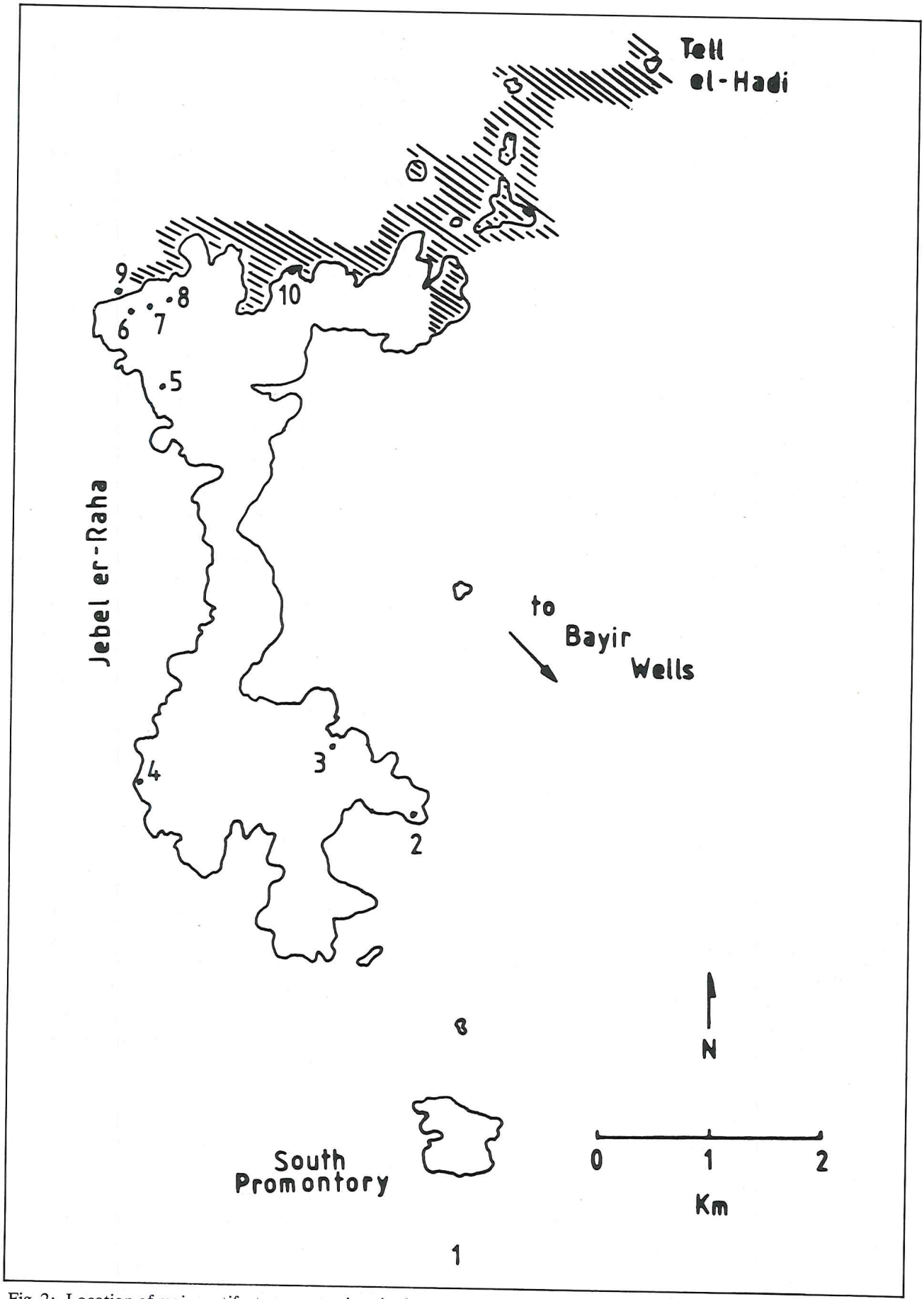

Fig. 2: Location of major artifact concentrations in the Jebel er-Raha region of Wadi Bayir. The shaded area indicates unsurveyed areas.

other sites located farther afield from the base of the butte, covering them with repeated floods of alluvial deposits. Additional survey work, especially in the wadi cuts in the eastern basin, should be able to determine whether the second factor has played an important biasing role in the visibility of prehistoric habitations of the area.

The Top of the Jebel er Raha Butte

Three-fourths of all of artifacts recovered in the 1981 season came from the top of Jebel er Raha. Eight major artifact concentrations were found, and all tended to be located nearer the edges of the butte than towards the center. Three sites are situated on the southeastern (sites 2 and 3 in figure 2) and southwestern rims (site 3) with four sites (6-8, 10) on the northern edge; site 5 is on the northwestern cliff top. The artifacts in and immediately around these eight sites account for 90% of the material from the top of Jebel er Raha, with the remaining 10% scattered more diffusely over the area.

Site 3 is by far the most densely populated site, with 514 artifacts. Of this total, only nine are tools, including a burin, a tabular scraper, three sidescrapers, an endscraper, a notch and two utilized blades, all Neolithic in age. Of the total number of artifacts, 20 came from periods earlier than the Neolithic. Cores account for only 13% of all the artifacts from this site.

Site 10 is a particularly interesting site, located on a terrace below the cliff face overlooking the plains towards the north. There are no tools at the site, and cores account for 28% of the artifacts. All of these cores are large nodules from which only a few cortical flakes have been removed, leaving one or more kilograms of excellent quality flint in each discarded core. This situation is mirrored at Jebel Ghuzeima on the northern border of the Jafr Depression, where large "plates" of thermally fractured flint have been used as cores for the detachment of cortical flakes (Rollefson, 1980: 14). Such selectivity of lithic resources for broad cortical flake production is not well-documented in the literature, but the flakes produced from such cores could have been used for Neolithic to Early Bronze fan scrapers. Of the 43 flakes from this site, eight were completely covered with cortex, and cortex constituted a substantial amount of the surfaces of the remainder of the flakes. This site appears to be a very temporally restricted quarry site for the production of a special kind of flake for subsequent manufacture of tools that were taken away for use elsewhere.

Sites 2 and 4-8 are all similar in the sense that artifacts from Upper Paleolithic, Neolithic, and possibly later periods dominate the inventories. Artifacts from earlier periods are also present, but these periods are represented by only a few examples: five pieces from site 2; two from site 4; two from site 5; one from site 6; and 15 from sites 7 and 8. Core frequencies range from 5% at site 2 to 20% at site 4. Tools from site 2 include two scrapers of probable Middle Paleolithic age and a Neolithic or later burin. The only tool from site 4 is an endscraper on a Neolithic blade. Similarly, only a single blade from site 5 has a lateral scraping edge. From site 6 there are an Upper Paleolithic burin and an endscraper of similar age plus three Neolithic or later period scrapers. Sites 7 and 8, which may in fact be two foci of a single site, include two Middle Paleolithic Levallois points and an undatable chopper.

Discussion and Comparisons

The survey collections must ultimately be viewed in terms of the contemporary environmental contexts in which they were deposited, but several factors present formidable obstacles to such an exercise. First, the paleoenvironment of the area is simply a major unknown, and although a few specific investigations (Huckriede and Wiesemann, 1968) and general observations (Farrand, 1971; 1979; and Butzer, 1978) have been published, their utility for interpreting the Jebel er Raha survey data is insufficient. Second, the evident long period of extreme aridity of the area (which need not exceed several thousands of years) has obviously contributed to a mixture of previously distinct occupational episodes in the survey area; on the top of the buttes wind deflation has collapsed discrete

occupational debris into a melange of often confusing admixture, and probably environmental forces have been acting on the lowland areas as well.

Nevertheless, a couple of features suggest that the Jebel er Raha area witnessed some major differences of utilization by prehistoric populations. Although continued survey of the northeastern section of the Jebel er Raha area might alter the present view of the circumstances, it appears that post-Pleistocene occupations on the top of the butte are significantly more important when compared to those artifacts found on the lowlands. Although Lower, Middle, and Upper Paleolithic artifacts are absolutely more numerous on the top of Jebel er Raha, for example, in relative terms these periods are more importantly represented on the plains immediately below the jebel (chi-square = 9.326, significant beyond the .01 level).

The low percentage of tools on the top of Jebel er Raha is notable (2.8% of the total artifacts), and cores account for 16.6% of the cultural material. This combination is sufficient to indicate that the sites on the butte are primarily chipping stations, areas where flint outcrops were visited to procure sufficient amounts of material for conversion into tools to be used elsewhere. This observation is substantiated by the higher tool percentages on the lower elevations, which at 8.9% is different at beyond the .001 level of statistical significance. Core percentages at the lower elevations are also higher, however (25%), which indicates that considerable flake/blade manufacture took place beneath the butte (significantly different beyond the .001 level).

The activities suggested by the categories among "highlands" artifacts include little importance towards hunting and processing of animal resources; instead, the artifacts indicate brief periods of the manufacture of tools to be used elsewhere, with a few subsidiary and minor processing of materials necessary for the short periods of habitation on the heights.

The higher percentage of tools in the flat areas around Jebel er Raha indicate that procurring and processing the necessities of life were more important. In the absence of supporting information, it might be assumed that water resources were more stable and predictable at the lower elevations at the base of the jebel, which would result in more varied and abundant floral and faunal resources to be exploited. In this scenario, the butte-top artifact clusters would reflect short-period habitations on the heights which overlooked the lowlands. This afforded opportunities to observe the (seasonal) movements of game while selecting perhaps preferable lithic outcrops for tool manufacturing in anticipation of using them for hunting herds of game spotted along the major wadi systems. The higher relative incidence of tools in the lower elevations indicated this is the general location of hunting and subsequent processing, and the high core percentage might indicate that the processing tools, as opposed to hunting implements, were manufactured from "locally" available flint nodules.

The clustering of artifact concentrations in the northern and southern reaches of Jebel er Raha deserves some preliminary comment. The clustering of sites in the northern and southern edges of the survey area (on and below the butte top) perhaps suggest that major animal migrations passed east-west of Jebel er Raha. Although the immediate drainage systems of the local area flow towards the various points of the compass, in general terms the major landforms have an east-west tilt which might relate to the season migrations of grazing animals to and from highlands to the west in the spring and autumn.

All of the implications in the preceding paragraphs are based on a very small area of investigation, and although these inferences we derive are tantalizing, they must remain tentative on the basis of the present evidence. The Jebel er Raha area is only one small section of the Wadi Bayir drainage system. What the potential difference of utilization of this section of Jordan might entail must await future investigation in this region.

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TWO PREHISTORIC BURIALS FROM QASR KHARANEH

by
Scott Laird Rolston

Mujahed Muheisen's fortunate discovery of two Kebaran(?) Period burials at Qasr Kharaneh is indeed exciting. It is not often that we have an opportunity to examine the physical remains of prehistoric people in this area, and the vague period of the beginning of the shift to food production is one of the most important for skeletal studies. Before looking at the skeletons it seems appropriate to look at the problem they may help to resolve. It has been suggested by historians and anthropologists (McNeill, 1976, p. 5-68; Harris, 1977, p. 11-43) and demonstrated by osteologists (Angel, 1975, p. 169-190) that although plant and animal domestication eventually provided a food base sufficient to support a much larger population, it nevertheless represented a decline in overall health for the generations of people who made the shift. This decline was caused by exposure to new diseases as well as by dietary deprivation. The obvious health advantages of a meaty diet and the less broadly applicable but intriguing ethnographic evidence of present day hunters and gatherers (Lee, 1968; Harlan, 1975, p. 3-32) suggest that farming began with a series of ecological stop-gap measures and was not viewed as an opportunity at all. Although the yields of the early domesticates may not have been significantly smaller (Zohary, p. 58 in Ucko and Dimbleby, 1969), the investment of time and labor as well as the necessary social alterations for cultivation and husbandry must make us skeptical of models that view the Neolithic Revolution as a planned, or even desirable, event from the stand-point of those prehistoric people. Instead it is probably more accurate to say that man was cornered into that new relationship and forced to exploit a less desirable food resource. Changes of climate may have been a factor, but it was more probably as a result of his own wasteful techniques that man altered the ecological balance between himself and the larger herbivorous protein banks he had hunted. His relationships with potentially domesticatable plants and animals had long been part of his resource inventory (Harris, 1969, p. 3-15, in Ucko and Dimbleby, 1969). Far from being forced to cast about for plants and techniques, he simply shifted his predominant reliance toward a resource that had previously been only an occasional food. The idea of deliberate planting need not be viewed as a miraculous or even difficult mental development. Nor should it be ruled out that man may have begun to plant long before he ceased to hunt. That is a brief statement of the problems.

Whatever the causes and the sequences of events of the Neolithic Revolution were, its consequences can be charted rather accurately through skeletal studies. In brief, those consequences were an abrupt and serious decline in dental health, probably due to softer foods and an increase in carbohydrate intake, as well as a decline in the level of health generally. We can trace this pattern insofar as it is reflected by stature, morbidity rates, and longevity.[1] The Kebaran sites in Palestine (16,000 - 10,000 B.C.) show a move away from larger game and toward a wider range of foods (Mellaart, 1975, p. 18-28). Their diet continued to contain significant amounts of animal protein and calcium however, and this would have been beneficial. The dis-

1. This is clearly observable in Neolithic vs. Mesolithic populations in Iberia, as current investigations are showing (Rolston, in press, Geological Services, Lisbon, Portugal). It should be noted that Angel (1974, p. 382-391) has shown that dental health and overall health are not necessarily correlated.

advantages of a predominantly cereal diet, even if only from gathered wild strains, are not to be expected among them beyond a possible increase in the frequency of dental caries. The real health decline of the Mesolithic and early Neolithic (Angel, 1974) was still far in the future.

There is a wealth of information to be retrieved from bones (Angel, 1969; 1975, p. 107-190; Brothwell, 1965; Edynak, p. 408-432 and Saul, p. 372-382, in Giles and Friedlaender; Steinbock, 1976; Ubelaker, 1978). In fact, we stand to gain the sort of data we have always claimed are important, contributing not to a mere study of material culture but to a dynamic diachronic profile of a people living in an environment and competing with other organisms sharing it. We can also trace the affinities of people on the move with increasing precision (Berry and Berry, 1967, p. 361-379; Howells, 1966, p. 531-540; 1969, p. 311-314; 1973, p. 159-176; 1973 b), beginning at last to definitively answer through bones the questions which have been fruitlessly asked of artifacts. "Who are these people? Where did they come from? How did they interact socially (i.e. genetically)? How did their environment and lifestyle affect them?" But we must have large skeletal samples of populations from all periods in order to get a clear look at their traits, both genetic and aquired. This will bring us much closer to an understanding of these long dead people.

What follows is a short report of the fragmentary remains of only two prehistoric individuals. It is expected that they are only the first of many to be recovered and studied in Jordan. Ordinarily, some of the metric detail presented here would be found only in the raw data sheets, but the importance of the population from which they came prompts more full publication of detail for the benefit of other researchers. Carbon 14 dates are not available at the time of this writing, but will be obtained during the forthcoming year.

My thanks are due to Mr. Mujahed Muheisen of the Jordanian Department of Antiquities for making this material available to me.

The Remains

Two fragmentary skeletons are represented in the remains from Qasr Kharaneh. The burials appear to have been primary and extended with the bodies placed on their backs. The hands were along their sides. The compass orientation of the skull of burial no. 2 was northeast. The antlers of a gazelle were found to have been placed on either side of the head of the person in burial no.2. Such behavior is clearly ritual and symbolic, and may indicate personal status as well as an item of subsistence. Beyond that we should not guess until we have had an opportunity to examine other contemporary burials. It should be noted, however, that this person's facial appearance may have been unusal and that his health was decidedly poor (see below).

BURIAL NUMBER 1

Sex: Male? Criteria: Vertical diameter of the humeral head.
Age: Young Adult Criteria: Residential signs of epiphyseal closure.

Cranial material: Nothing recovered

Mandibular material: A fragment of left portion of the mandible with the ascending ramus was recovered. It is not a robust specimen.

Length:	61.5
Direct Ramus Ht:	67.5
Minimum Ramus Br:	36.5
Body Ht. (M1 & M2):	?
Body thickness:	16
Goneal eversion:	+

Dental pathology:

Left M1 & M2 were lost shortly before death. M3 was lost just before death or post mortem. The cancellous bone is not repaired. There is severe (+ + +) alveolar resorption and M3 is maloccluded lignually. There are signs of disturbance in the left tempero-mandibular joint. The infection was active at the time of death.

Scapula (right):
Glenoid height: 41 Glenoid breath: 29.5

Humerus:

	Left	*Right*
Maximum length:	305	308.5
Vertical head diameter:	46.5	45
Maximum midshaft:	22.5	19
Minimum midshaft:	18	16
Distal epiphyses breath:	59	59
Robusticity index	20.4	17.9
Stature estimate	164.5 cm.	
Supra-condyloid foramen:	none	none

Pathology and Remarks:

There is periostitis on the left humeral diaphysis at the level of the deltoid tuberosity. The right bone is more gracile than the left and the left deltoid area is very strongly developed, suggesting left handedness. There does not appear to be any disuse atrophy on the right, so an injury to that limb or its neural controls can be ruled out.

Radius:

	Left	*Right*
Maximum length:	242.5	243.5
Bowing:	+	+
Interosseous crest:	+ +	+ +
Stature estimate:	171 cm.	

Ulna:

Only the distal end of the right ulna has been recovered. It shows signs of a healed spiral fracture.

Femur (Left only):

Stature increment 1-2:	67
2-3:	207
3-4:	107
Stature estimate:	165 cm.
Maximum head diameter:	43 .5
Platymeric index:	70.7 (very flat)
Shaft circumference:	84
Bowing:	+
Anterior neck erosion:	none
3rd trochanter:	trace

Remarks and Summary

Burial number one is the remains of an adult male who suffered from an infection which affected his teeth and jaw rather severely. He was rather short by epipaleolithic standards (Angel, 1975), with an estimated stature of about 167 cm.

BURIAL NUMBER 2

Number 2 is a male, the criteria being the sciatic notch, discriminant analysis of the mandible (Giles, 1970), the mastoids, brow, and general robusticity.[2] The pubic sympysis was not preserved, but an estimate of his biological age, based upon endocranial suture closure, places him between 35 and 45 years. Brothwell's tooth wear formula (Brothwell, 1965, figure 30) and his vertebral arthritis suggest an age above forty.[3]

Frontal:

The brow is divided and of medium (+) size. There is complete metopism, a trace of frontal grooves, slight post-orbital constriction, small frontal bosses, and small median crest.

Prietals:

There is no saggital elevation or parietal bossing. Pterion type is K on the right and unknown on the left. The parietal foramen is small.

Occipital:

Slight lamboid flattening and a mod-

2. The discriminant function used was that divised for modern white populations. His score was 308.4, well above the sectioning point of 287.43. It is not suggested that Giles formulae are always useful for prehistoric populations. In a function weighted for his own group he may have scored higher.

3. His arthritis may not be useful as even a general age indicator; see below, Pathology.

Craninal and Mandibular Metric Data:

The skull is broken, but much of the vault has been preserved. All measurements except overall stature estimates are in millimeters.

Cranium:

Glabello-occipital:	180	Maximum frontal br:	130
Nasion-occipital:	175.5	Minimum frontal br:	108
Basion-bregma:	115?	Bi-mastoid:	159
Auricular-bregma:	102	Bi-auricular:	143
Forehead height (bregma):	73.5	Left parietal thick:	6.5
Auricular vertex:	110	Mastoid ht:	28
Nasion-bregma chord:	109	Zygoma thickness:	6.5
Bregma-lambda chord:	117	Bi-orbital breadth:	105
Frontal arc:	131	Inter-orbital br:	30
Parietal arc:	136	Orbit height:	30.5
Transverse arc:	330?	Orbit breadth:	36.5
Vault breadth:	150.5	Upper nasalia br:	14.5

Mandible:

Chin Height:	32	Body height (Ml):	27.5
Bicondylar:	134?	Minimum ramus br:	35
Bigonial:	113.5	Gonion-symphysis	80
Bimental:	46	Condyle-gonion	61?
Corpus thickness:	15.5		

Indices:

Cranial:	83.61	(broad/round)
Mean Porio-height:	61.72	(low)
Frontal-partietal:	71.7	(broad)
Cranial Module:	148.5?	
Orbital:	83.5	(medium)

erate (+) cerebeller bulge are in evidence.

Sutures:

Serration is 5/10 mm Coronal, 11/10 mm Saggital, 8/10 mm Lambdoid. Closure is nearly complete in the coronal suture, complete in the saggital with some lapsed union, and nearly complete (+ + +) in the lambdoid. The other sutures are not preserved.

Misc. Cranial:

The auditory meatus is ellipsoid. The orbits are square with no infra-orbital suture in evidence. The nose root is wide with a low bridge.

Mandible:

Chin form is bilateral and slightly projecting. Genial tubercles are not in evidence. Gonial eversion is strong (+ +), and there is no mandibular torus.

Molar teeth:

Size	M1 Ht: ? L: 10.5 Br: 11.5	M2 Ht: ? L: 10.5 Br: 10.5	M3 Ht: ? L: 11.5 Br: 10.5
Wear	M1 3	M2 5	M3 4 (after Brothwell, 1965)
Cusp	M1 ?	M2 4	M3 4

The traits indicative of epigenetic variation (Berry and Berry, 1967, p. 361-379)

were recorded insofar as the fragmentary nature of the material would permit.[4]

Postcranial, Metric and Non-Metric:

Clavicle (Left only): maximum length 145 mm.
Scapula (Right only):

Morphological breadth:	132
Glenoid height:	38
Glenoid breadth:	27

The notch on the superior border is quite pronounced and acromion is of an intermediate shape. The glenoid is comma shaped with slight lipping.

Humerus (Left only):

Maximum length:	315
Vertical head diameter:	44
Robusticity Index:	19.84
Stature estimate:	167 cm.
Olecranon perforation:	none

The relative degree of deltoid development suggests that this person was right handed.

Inominates:

	Left	*Right*
Iliac breadth:	150	149
Ischial length:	?	72
Bi-iliac breadth:	250	
Pelvic brim M.L.:	112	

Sacrum:

Height: 119, Breadth: 103, Index: 86.5

The sacral curvature is moderate (+) and begins at the 3rd sacral foramen. The posterior notch is equal in length to 25% of the overall sacral height. The index is very low, even lower than those published for African populations by Wilder (1920, p. 118). The bone was exceedingly narrow in relationship to its breadth.

Femur:

	Left	*Right*
Maximum head diameter:	46	47
Platymeric index:	69.5	
Stature increments 1-2:	71	?
2-3:	235	?

There is no anterior neck erosion or visible squatting facets. Bowing of the shaft is present (+) but not pronounced.

Tibia:

	Left	*Right*
Maximum length:	67	72
Medical Condyle-Maleolus:	356	365
Platycnemic Index:	55.5	62.5
Upper epiphysis breadth:	77.5	82
Squatting facets, distal:	slight	slight
Stature estimate:	169 cm.	

The left bone is somewhat shorter than the right. Though there is no sign of atrophy in either bone, this may have been due to a pathological condition (see below, Pathology).

Pathology:

Burial number 2 seems to have been an unfortunate individual in a number of respects. His skull displays strongly developed (+ +) supra-mastoid crests and strong (+ +) gonial eversion. This was due to a rather severe underbite which probably made it difficult for him to chew. Although the upper face was not recovered, the mandibular incisors and canines are worn well down (+ +) like grinders in a sharp buccal

4. Parties interested in details of these epigenetic observations should contact the author through the Jordanian Department of Antiquities.

to lingual plane. He apparently compensated for a lack of normal occlusion by forcing his jaw back and forth as well as our laterally and up to meet his maxillary teeth. The only fragment of maxilla recovered contains left M2 and M3. Their usual occlusion was with left mandibular M3, which is pushed over 30 degrees off vertical in a lingual direction. Eating must have been a chore. There is moderate to severe (+ +) alveolar resorption and slight tartar but no caries despite severe wear and pulp exposure throughout the dental arcade.

Postcranially he exhibits varying degrees of arthritic degeneration in every recovered fibrous and synovial joint. There is eburnation, especially medially, and the knees and some rarification on the heads of the femora and humeiri, as well as the distal humerus. Vertebral osteophytosis is particularly severe (+ + + +) in the lumbar region and is at least present all along the vertebral column (thoracic + +, cervical +). This vertebral involvement is typically that of osteophytosis, though there is little apparent narrowing of the intervertebral spaces. There is, however, lipping involvement of the apophyseal joints on the vertebral processes which probably should not be classified along with the osteophytosis (Putschar, 1958, p. 439-444; Steinbock, 1976, p. 287-294). The involvement of all of the joints rather symmetrically suggests a not very advanced degree of rheumatoid arthritis. His relative youth supports this, as he would have first shown symptoms of the disease years earlier and rhematoid arthritis often attacks the young. The interphalangeal joints are as much affected as the metacarpophylangeal, however, which holds against a diagnosis of rheumatoid arthritis. His worst area of involvement, by far, is the vertebral column. This material will be submitted to the headquarters of the Paleopathology Association in Detroit, Michigan, for a collective judgement. If it does prove to be rheumatoid it will be oldest known case.

Several of the ribs are swollen in such a manner as to suggest an internal cavity rather than a badly healed fracture. Both clavicles show signs of lesions on their inferior medial surfaces which were active at death. The greater and lesser trochanter show disturbances bilaterally, though especially on the left, and the right acetabulum contains an area in which a lesion was apparently active at the point of contact with the fovea capitis. Both femora are thickened in the sub-trochanteral area, antero-medially, as a result of abnormal use of the iliacus muscle in walking on the insides of the feet. This apparently aggrevated the arthritis on the medial condyles of the tibiae. The cause of such a gait appears to have been an infection in the lower leg area. The tibia show signs of periosteal disturbance just under the proximal epiphyses as well as periostitis along the medial aspects of both shafts. In addition, the left tibia is 9 mm shorter than the right and has a spur of bone on its medial diaphysis. This does not appear to be neoplastic and may have been the result of a puncture injury. The fibula shows signs of a healed fracture on the distal diaphysis. The right fibula has suppurative osteomyelitis along the shaft. Cloaca are in evidence. There is swelling of the distal metaphysis of the left fibula.

Summary:

The person represented by burial number 2 was suffering from several conditions, the most serious of them apparently having been an acute and wide spread bone infection ongoing at the time of death.

Burial number, did have severe dental problems just before death, but these were not caused by caries or abscesses. It seems unlikely that such conditions could cause the sudden loss of many teeth. Thus far then, a model of superior dental health and relatively high stature in the Epi-Paleolithic is neither disproved nor upheld by the individuals from Kharaneh.

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AN ARCHAEOLOGICAL SURVEY OF THE THEATRE MOUNT AND CATCHWATER REGULATION SYSTEM AT SABRA, SOUTH OF PETRA, 1980.

by
Manfred Lindner

The towns of antiquity were just as dependent on their water supply for their rise, development and respective size, as are the towns of our own day. A wealthier or more consistently developed settlement could afford more complex provision with that vital element in those days, too, and thus attract more inhabitants. There was yet another problem to be solved in regions with both a mountainous terrain and low rainfall: the water provided by the winter precipitation had to be regulated and, as far as possible, stored for the summer dry season. At the same time there was also the need to protect the town and its environs from the effects of this torrential downpour. The ancient city of Petra, whose northern Hubta water supply system has only recently been described after being subjected to intensive investigation[1], provides a perfect example of the significance and interdependence of water supply, precautions against flash flooding, water storage and the size of a town. As well shall see, this observation applies with equal validity to the water supply for the ancient ruined settlement of Sabra, situated some 7 km from Petra in the wadi of the same name and so far relatively uninvestigated. (Fig. 1)

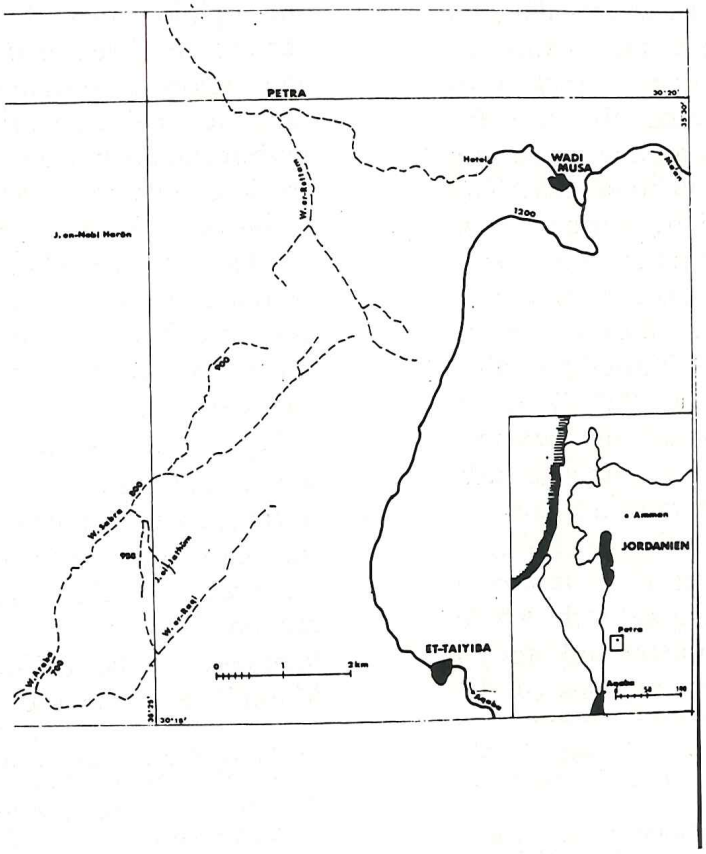

Fig. 1. Sketch map of the site of Sabra Theatre

1. E. Gunsam in "Petra und das Königreich der Nabatäer". Editor M. Lindner. 3rd Edition. Munich 1980, p. 302-312

The first European of modern times to visit Sabra was in all probability Leon de Laborde in the year 1828.[2] The Count, an insatiable traveller, drew a map of the site which was later reproduced by Brunnow and von Domaszewski in their "Provincia Arabia"[3]. Although he overlooked a number of settlements on the surrounding hills he did record with relative accuracy the ruins of temples, a bridge and a theatre, all of which he assumed to be Roman. Laborde regarded the orchestra of this latter theatre in the rock wall opposite the town proper as a large water basin in which mimic sea-fights were staged, similar to the Roman naumachiae. He also spotted the walled reservoir above the theatre but felt that it was too small in size to compensate effectively for the evaporation of the water stored in the orchestra. After some consideration he rejected the idea that this water served only as a cooling system. M.-J. Lagrange[4] one of the next to visit the area, adopted Laborde's views. He also thought that Sabra was no more than an adjunct of Petra with the sole purpose of providing the town's inhabitants with the luxury of naumachiae. Brunnow and von Domaszewski, questioning the use for naumachiae at the site, probably made only a hurried visit to Sabra on horseback.[5] The theatre at Sabra could be reached from Petra in 1 hour and 48 minutes. Kammerer does indeed mention Sabra as a sort of suburb of Petra and reiterates its use for naumachiae, although he himself probably never set foot there.[6] In 1925 Kennedy formed an opinion based on personal observation, though of a rather clearly established nature. In his view, the Romans had chosen the site for a military installation to defend Petra, because of a spring in the wadi yielding water the whole year round. Masonry, columns and capitals represented for him the remains of the barracks and other garrison structures. Finally, the garrison troops had transformed the exit of a gorge on the south bank of the wadi into a theatre. The gorge had been bridged with stone seats under which an opening allowed the downpour of rainwater to discharge into the wadi. Still later, he concluded, a small colony of traders joined the garrison and in the final stage Sabra had even become a sort of winter resort for the inhabitants of the capital. Kennedy makes no mention of the suitability of the theatre for naumachiae.[7]

N. Glueck, reporting in 1940 on an earlier visit to the site, drew quite different conclusions.[8] He regarded Sabra (es-Sabrah) as an extensive Nabataean mining and smelting centre. To the west of the actual site of the ruins, he discovered large deposits of sandstone of high copper content, and in widespread sections of the wadi numerous iron-ore probes and mining galleries as well. He also found piles of copper-ore slag in some of the ruined structures above the wadi dam. He was of the opinion that the gorge above the theatre had been artificially enlarged and the section of the wadi between the theatre and the smelting works had been paved with rectangular slabs of sandstone. Using the large number of Nabataean fragments as his basis, he dated Sabra in the period between the second century B.C. and the second A.D., but regarded it as extremely probable that the Romans continued to use the various edifices and installations after that date, too.

Like so many visitors before him, the writer had only had a few hours' time during earlier visits he had made to Sabra in the years 1969, 1976 and 1978.[9] Despite the brevity of the visits, one impression remained clear: the splendour of the temples and other edifices on the "Temple Mount" as evidenced by the individual

2. Léon de Laborde: Journey through Arabia Petraea. London 1836, p. 195-197; Voyage de l'Arabie Pétrée, Paris 1830
3. R.E. Brünnow u. A.v. Domaszewski: Die Provincia Arabia. Vol. I, Strasburg 1904, p. 425-427
4. M.-J. Lagrange: Rev. Bibl. 1898, p. 166, 179
5. Op. cit, Vol. I, p. 425
6. A. Kammerer: Pétra et la Nabatène. Paris 1929, pp. 273, 328, 383/384
7. A.B. W. Kennedy: Petra — Its History and Monuments. London 1925, p. 19-25.
8. N. Glueck: The Other Side of the Jordan. AASOR, Cambridge.
9. M. Lindner: Jahresmitt. d. Nat. Hist. Ges. Nürnberg 1978, p. 90-91

finds, the complex catchwater regulation system in the wadi, the surprisingly high number of Nabataean potsherds, the ruins of noteworthy settlements along the slopes on both sides of the theatre, and finally the theatre itself, made it seem highly likely that Sabra was not founded as a Roman garrison, but was originally a Nabataean, and probably then a Roman city of considerable importance.

The writer was convinced of this in 1978 when he commenced his investigations of the catchwater regulation system in the high-lying valleys below the Jebel el-Jathum[10] as well as the theatre and reservoir. With the generous permission of Dr. Adnan Hadidi, Director General of the Department of Antiquities, who also requested and received a report on the present state of the antiquities at Sabra, the writer was able to spend 5 days in May 1980 on a detailed investigation of Sabra's water supply system, taking as his starting-point the "Theatre Mount".

The results of his investigations are presented here in three sections:

1) The Theatre
2) The Catchwater Regulation System
3) The Sabra Dam and Water Channelling System

The Theatre at Sabra

The theatre at Sabra is hewn of the sandstone rock from a gorge of the precipitous Jebel el-Jathum on the southeast side of the Wadi el-Jathum. On the right-hand side of the auditorium--here and in what follows always as viewed from the stage--some 150 stone seats have survived on 10 rock steps. Towards the center and along the entire left-hand side there are strongly weathered, foot-worn steps which are deeply channelled in part. One finds it difficult today to imagine them capped with stone seats. Since the theatre represents both the visual and actual conclusion of a regulation system for catchwater from the high-lying valleys of the Jebel el-Jathum (to be described later), measurements were taken. The orchestra was found to be not an exact semi-circle as in the "theatrum latinum" of Vitruvius. However, it proved impossible to establish its exact original groundplan because the left-hand section of the auditorium had been destroyed and the skena washed away or buried beneath debris. Measurements were taken from the "fountain basin" (cf. infra) (C) along the arc of the circle to the furthest extremity of the upper edge of the orchestra in the rock (B), and then transferred along the arc to a distance of 25 metres on the other side. The point thus obtained, (A), was then marked in the debris and the line A-B measured as 22 metres in length. Point N was obtained by halving the line A-B. The distance between N and C was then found to be 19 metres, from C to B 22 metres, and the diametre of the orchestra 24 metres. Such a geometric structure does not yield a genuine segment of a circle. At the present time, it is not possible to say whether this form was the result of inaccurate measurement or due to the accommodation of the theatre ground plan to the difficult terrain. At any rate the auditorium extends beyond the limits of the semicircle in the manner of a "Greek" theatre. According to Vitruvius[11], this was to allow for a larger orchestra, a stage structure situated further back and a somewhat more shallow stage. Here only the actors performed, whereas the remaining members of the cast were in the orchestra. The measurable height of the enclosing wall of the orchestra varied between 2.20 and 2.65 metres, the lower height was measured in the region of the debris-covered *skene* and the higher towards the mountain side.

Below point B, remains of a double course of masonry, together 2.10 metres in width, are to be found which extend the curve of the orchestra in the direction of the

10. According to the map of the "Jordan Dep. of Lands and Surveys", 1961. On the aerial map of Sabra the same massif is called "Eth Thrayya - Wal Qamar" and is designated a "religious rock".
11. Vitruv: Zehn Bücher über Architektur. Ubers. v. C. Fensterbusch. Darmstadt 1924, S. 227-237. Abb. 11, 12.

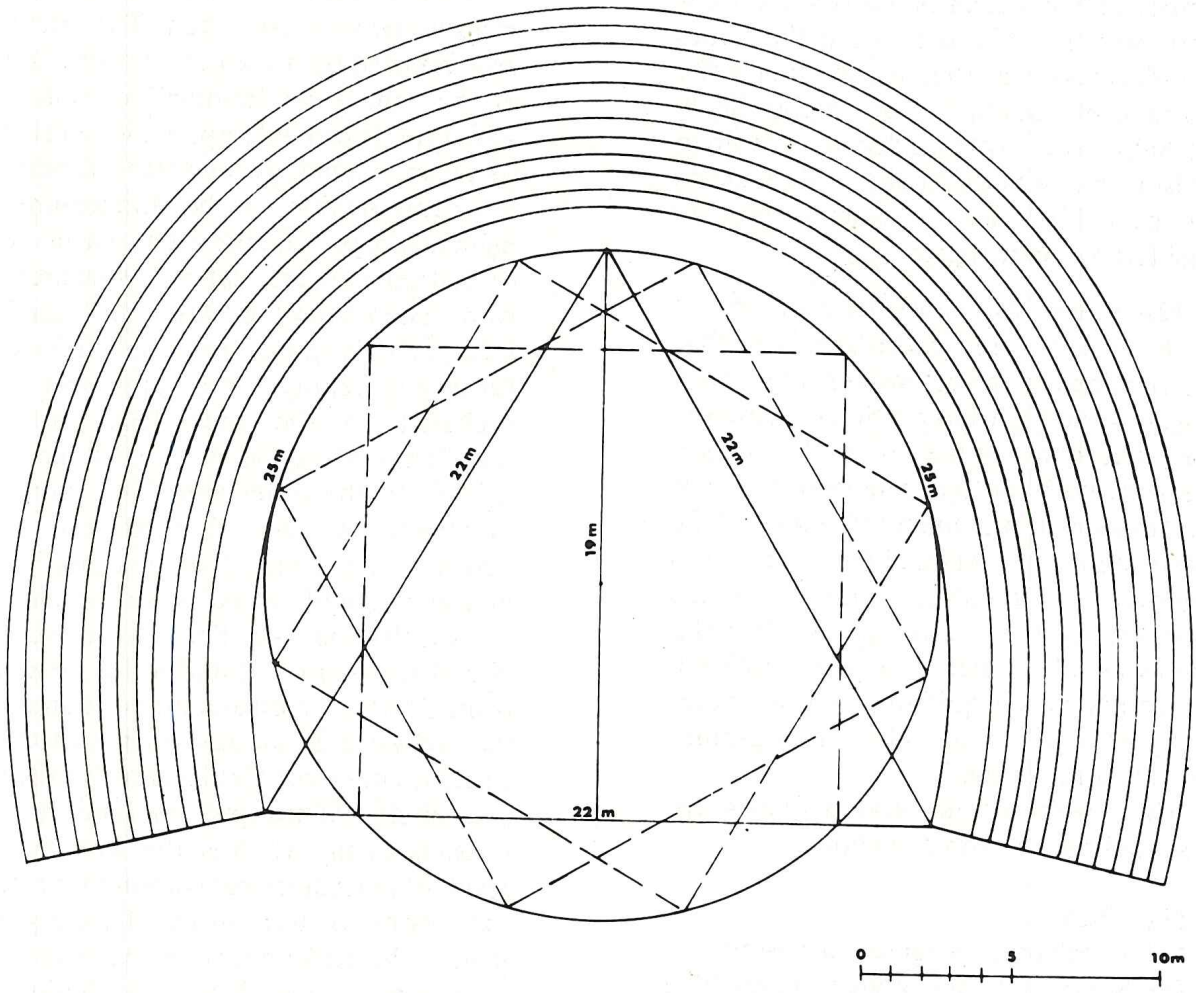

Fig. 2. Ground plan of the Sabra Theatre

skene, for an additional 4.80 metres in the case of the inner wall, and an additional 5.40 metres in the case of the outer. Still further beyond B, a single layer of mansonry runs at right angles to A-B in the direction of the wadi. Here it probably joined a stone wall running parallel to the course of the wadi, and has survived for a length of some 6 metres. The left-hand segment of the theatre is badly damaged. It is still possible, however, to make out a double course of masonry below point A similar to the one just described. It does not follow the curve of the orchestra but rather runs down to the bed of the wadi at right angles to A-B. In the wadi itself some extremely large foundation stones, as a direct prolongation of the double course of masonry, are still to be found--apparently still *in situ.* Their purpose hopefully will become evident with further investigations.

In two sections on the right-hand side of the auditorium, the seating stones are relatively well preserved to just beyond point B. The measurements of two of them were taken: one--*in situ*--measured 0.65 (0.56) x 0.60 x 0.42 metres. The variations in depth at the seating surface and the base are to be accounted for by the convex rounding of the front upper edge. A second seating stone which had fallen into the orchestra measured 0.57 (0.50) x 0.82 x

0.39 metres, which means it was not quite as deep, but roughly as high and of greater width. The upper-most row of seating stones had backrests, which, together with the rounding of the front upper edge, made them comfortable. The overall height of the seats was increased by the backrest to 82 centimetres. Together the backrests, at least on the right side, formed a type of raised rear wall which was perhaps intended to improve the acoustics.

In order to obtain additional data on the size of the theatre, measurements were taken and drawings made of a profile of the theatre on the inside of the surviving stairway between the two well-preserved sections of seating to the right (Fig. 3). The angle of inclination of the rows of seats was found to be roughly 40° and the diameter of the entire structure approximately 39 metres. Only by removing the debris from the orchestra and from what remains of the *skene* would it be possible to establish how many of the rock-hewn steps were capped with seating stones. A number of such stones are also lying in the left-hand half of the orchestra. Depending on whether the central sections of the *cavea* were provided with seats or not, the theatre would have seated between 500 and 800 spectators, as a "seating test" showed.

Beneath the central sections of the auditorium, there is a peculiarity about the theatre at Sabra which is noteworthy. The

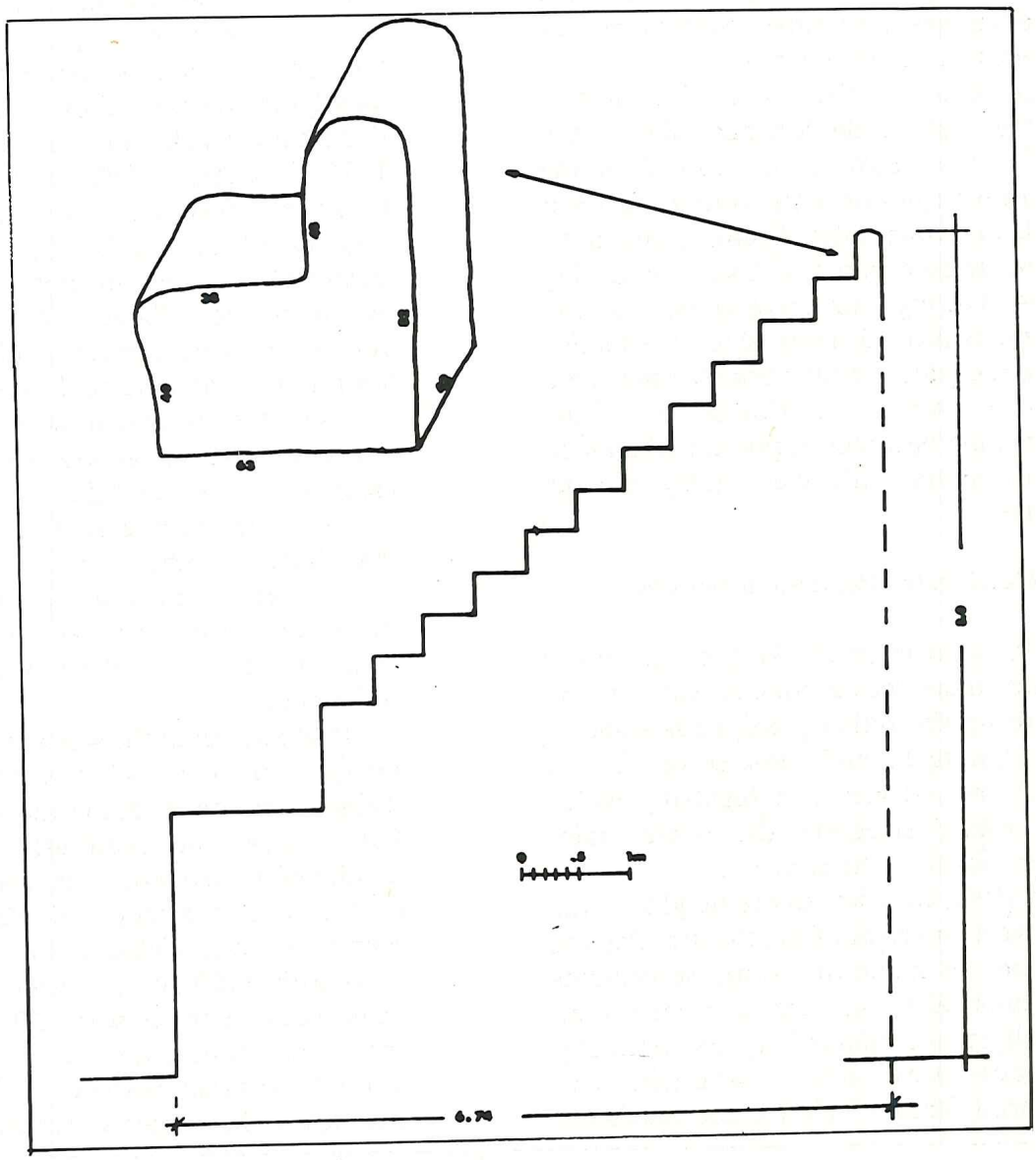

Fig. 3. Inner section of the Theatre.

lower steps, which were situated where water could flow, and today still occasionally flows, into the orchestra from the higher-lying reservoir, are interrupted only by a fallen rock that the constructors of the theatre either could not, or did not wish to remove. The latter is more probable, for underneath it a "fountain basin" was constructed which could be reached via 8 steps, each 0.9 metres in width. This structure is interesting for two reasons. On the one hand, the fallen rock could have cultic significance. In the Wadi She'b Qes at Petra, the idol niches and an inscription bear witness to the site of a fallen rock being regarded as a "sacred" place. On the other hand, the existence of the "fountain basin" makes it even less probable that the orchestra was used either permanently or primarily as a water tank. As in other ancient theatres, there is a wide channel however only on the left-hand side, in the rock at the height of or instead of the uppermost rows of seats, with a narrower and deeper water inlet. A ledge enabled the channel to be covered with slabs or seating stones. During our investigation of the theatre, it proved impossible to establish where the water of the rock channel came from or where it flowed to. This observation becomes important when seen in connection with the totality of our findings.

The Catchwater Regulation System

On a cold day in 1978 in the company of several others, the author climbed from the theatre up the rather precipitous slope of the "Theatre Mount" situated on the left (N.E.) and arrived at a highlying valley from which evidently the winter rains poured down to the city.[12]

In 1980, we climbed the heights to the southwest and right of the theatre. Passing the ruins of numerous slope setllements and, inter alia, an arched niche in an arcosolium, we climbed up the naturally terraced bed of a stream, the "Terraced-Stream Valley", and reached a narrow defile easy to close off (Pl. LIX, 1). Finally, after further climbing made easier by artificially hewn steps, we reached a spur overlooking the Wadi Sabra on both sides. Here we found fine, painted Nabataean potsherds, which suggested that sacrifice had been offered on that height in Nabataean times or by Nabataeans. This custom of offering on "high places" is familiar from Petra. Behind the spur, the ascent continues across a scree-strewn slope above a waterfall, until a steep gorge is reached, particularly distinguished by its numerous juniper and carob trees. Today it drains directly into the Wadi Sabra but there are some indications that it used to discharge its water into the "Terraced-Stream Valley". The climb ends at a fissure from which one descends through a chimney-type formation to a high-lying western valley below the Jebel El Jathum, which we had not penetrated in 1978. This time we followed it to its source, a gorge full of junipers, broom, honeysuckle, cuckoopint, daphne, mayweed, grass etc. In contrast to the first section of the "Theatre Mount", a scant number of ancient sherds and a few steps hewn out of the bare rock were found.

Here the mountain slopes of eroded sandstone rise up almost vertically to a great height. Nevertheless, traces of men and animals of quite recent date indicate that there are other access routes besides the asceent both sides of the theatre, probably to the northeast via a high-lying valley to the east which has still to be described.

If one descends the western valley in the direction of the Wadi Sabra, one crosses at its end some outcropping rocks which one has to negotiate cautiously, hand over hand, before arriving at the fourth terrace on the edge of a deep gully dotted with a number of water-filled basins. The gully is of smooth-polished rock, wide open at the front and penetrates some 30 metres into the mountain-side, with a small, water-filled basin of some 2 x 2 metres in size below the winter waterfall. Nearby a

12. M. Lindner: Jahresmitt. d. Nat. Hist. Ges. Nürnberg 1978, p. 90-91.

strongly weathered rectangular-shaped niche seems to be hewn out of the rock. This "Niche Terrace" discharges its waters from the high-lying west and east valleys into a very steep, inaccessible gulch about 30 metres in depth containing water basins and one large pothoole or kettle. Below the gulch an inaccessible basin has been cut by the flash floods. It spills into a narrow, transverse gully -- entered by the author -- with several turpentine trees, overflowing in its turn into the third terrace some 10 metres below. This terrace extends some 19 metres into the mountainside and has a rock, which can be seen from the valley, wedged into the top of its open end. The third terrace measures 5 metres at its widest point and is so narrow at the front that it would have been easy to close off. However, no terraces of such a closure can be seen today on the smooth sides at the opening. From this point, there is no direct descent. One must either retrace one's steps or come further by attempting the arduous climb up the above mentioned trasverse gully. This latter route brings one to the catchwater regulation system of the "Theatre Mount", still to be described.

The second terrace, which lies some 16 metres underneath the wedged-in rock, can be approached not from above but from below via the mountain slope to the northeast, i.e., to the left of the theatre. At the point where the torrential downpour hits the terrace there is a basin, which in May 1980 contained some 30 cubic metres of water (Pl. LIX, 2). Both the basin and the terrace itself bear signs of human workmanship. The bedouins of the region bring their goats here to water during the midday heat and the water for the author's camp was also drawn from this basin.

No traces of artificial damming, and accordingly of storage, were found in the terraces of the catchwater regulation system that have so far been described. The favourable lie of the land and the water engineering aids, still faintly discernible today, may have sufficed to lead the catchwater in the desired direction and to check its force. How thick the damming structure would have to have been at the requisite points can be deduced from the structural conversion of the first terrace into a reservoir beneath the second terrace. The dam is 14 metres long, 1.8 metres high and 2.1 metres thick. It is built of ashlar, which are well hewn, in part diagonally adzed and laid by employing the header-and-stretcher technique. Some 120 of the ashlar are still in their original place, whereas, on the righthand side, others have been wrenched out of their bonding and edged down below. The thickness of the dam structure (Pl. LX, 1) reflects the pressure the engineer expected the water stored behind it to exert. The terrace, now buried beneath debris, was hewn out of the rock in a rectangle to the N.E. and in a semicircle to the S.W. and measures roughly 14 x 11 metres. On the basis of the height of the dam and the original depth of the reservoir, we may presume that it held 14 x 11 x 2.4. m. = 370 m^3 of water. A small outlet in the lowest masonry course allowed the water stored in the reservoir to fall 11.5 m. into the "Fountain Basin" of the theatre, without the pressure of the water bursting the masonry. Today there is a huge carob tree growing in the N.E. corner of the terrace.

We cannot be sure whether the orchestra of the theatre at the end of the regulation system (Fig. 4), 14 metres below, represents the last and lowest-lying reservoir or even whether this was its main function. This view would seem to be supported by its location at the conclusion of the system and by mortar remains on its inside surface. However, there are a number of reasons for arguing against such a supposition: firstly and paradoxically, that same reservoir on the first terrace which only discharged small quantities of water, then the "Fountain Basin", which would have been senseless if the orchestra were not empty, further the observation already made by Laborde that the water in the orchestra would have evaporated too rapidly in summer. Secondly, there is the consideration that an orchestra filled with water would have rendered normal theatre performances impossible, if we disregard the improbable *naumachiae*.

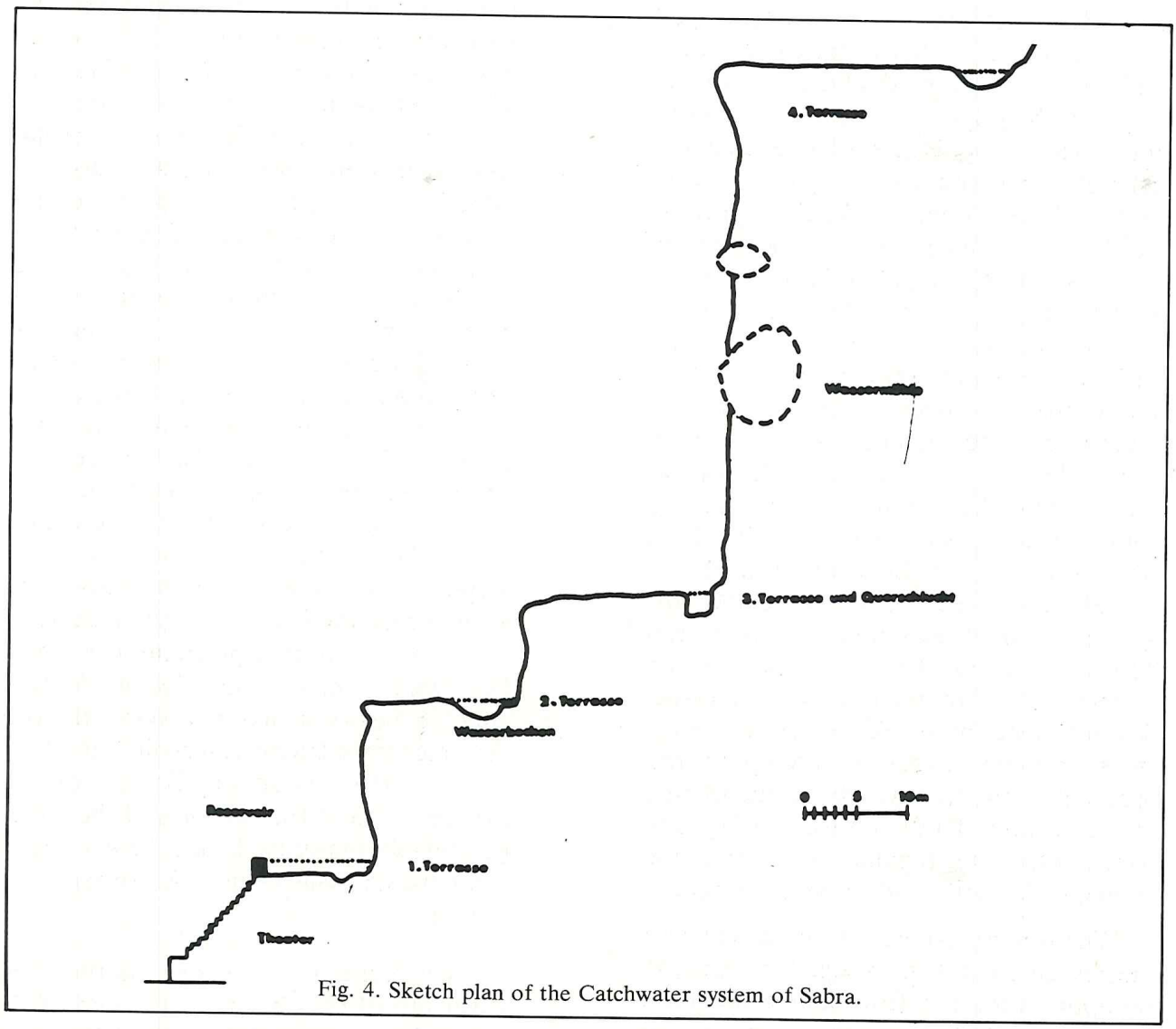

Fig. 4. Sketch plan of the Catchwater system of Sabra.

The Sabra Dam and Water Channelling System

If one crosses in an easterly direction a natural partition at the lower end of the high-lying western valley at the juncture where it discharges its waters into the regulation system described above, one enters a second, eastern valley. It runs almost parallel but terminates in a large, natural basin which was filled with sand and debris when we discovered it on 2 May 1980. The only gap in the rocks encircling it and through which the valley originally drained was sealed off by a massive wall situated some 100 m. above the Wadi Sabra and hardly visible from the valley itself. (Pl. LX, 2).

It runs from S.W. to N.E., is 14 metres long, 4.6 metres high and 4 metres thick and is constructed of mainly grey, very hard and carefully-hewn ashlar in the header-and-stretcher-technique by the use of mortar mixed with small stone chips. A rock also of hard sandstone located in the centre of the gap was incorporated in the masonry. The particularly strong closure of the lower section of the eastern valley formed in antiquity — no other dating is possible — a reservoir of at least 30 x 30 metres. If we suppose a maximum water depth of 4 metres, it would store some 3.6 million litres of water.

A square opening whose sides are 0.7 m. in length and which is 3 m. in depth was discovered 1.10 m. above the lowest point of the external surface of the dam and almost exactly between the above-mentioned central rock and the N.E.

end of the dam. At the conclusion of this conduit we identified, by probing a small opening in the right upper section, more towards the centre of the dam structure which in all probability pierces right through to the inner surface of the barrage.

Almost exactly above this opening, a semicircle of stones has been dislodged from 4 or 5 courses of the masonry. We can only offer conjectures about the cause and the date of this destruction. Earthquakes during the first five centuries of our era have been demonstrated for the neighbouring town of Petra[13] A military attack on the barrage is at least conceivable. A further possibility is that the mortar was washed out between the ashlars in the centuries after the fall of Sabra. However, in the course of time, as more and more sand and debris collected in the reservoir, their pressure was added to the pressure of dammed water[14]. Theoretically speaking a very early catastrophe could be construed. Could the dam have burst the very first time the reservoir was completely filled with water, because the structure proved incapable of passing the load on to the two slopes of the valley?[15]

On three of the masonry stones, one dislodged and two still in situ, bankermarks were found, recalling on the one hand a reclining cross or X and on the other a Nabataean or Sinaitic E. The external surfaces of some of the stones had been bush-hammered, whereas others had been diagonally adzed in the Nabataean manner.

Higher than the dam, a number of conspicuous stone blocks, some cut vertically, (PL. LXI, 1) were presumably left over from quarrying. The ashlar for the dam and the other installations had been quarried not below but above them in order to facilitate the transport of the stone. A huge "mooring hole" on the S.E. side of the dam would have helped to transport the stone and to anchor a crane.

The discovery of the ancient dam indicated the presence of a water channelling system starting nearby, since flash floods would already have poured into the above-mentioned regulation system before the dam was constructed. And sure enough, some 10 m. down from the dam, a channel was discovered, at first walled and then hewn out of the rock. It was 19-25 cm. in width and of varying depth according to the terrain. The slope below the dam soon fell steeply and confronted the planners and constructors with some difficult problems. Only in places could they direct the line of flow down a moderate incline. Then outcrops of rock had to be bypassed, steep sections traversed, bends constructed and even overhanging rocks mastered.

The channel hewn in the rock bypasses an outcrop of rock after the first flat stretch (Pl. LXI, 2). In doing so, it runs along the upper rim of the gulch between the fourth and the third terraces. From this vantage point some 80 paces from the dam, a good view is to be had of the Wadi Sabra. Some 60 paces further on there is a settling or collecting basin which is followed in its turn, some 70 paces away, by a steep incline. Between these two and below a spot where the channel ends abruptly there lies a section of guttering of whitish material. Evidently small defiles, the courses of streams and slopes of scree were bridged by aqueducts or walls topped by guttering. In several places outjutting rock where the guttering is interrupted and precipitous sections have been overcome merely by letting the flow of water fall freely into the basin. Some 35 paces further a big juniper tree grows at the end of the rock-cut channel, just before a screen-covered section, which either contained a basin or was spanned by an aqueduct. Be that as it may, this is followed by a flat stretch some 100 paces in length which terminates in a sharp curve. Shortly

13. About the phase of destruction of ca. 355 A.D. vid. Ph.C. Hammond: Excavations at Petra 1975-1977 ADAJ XXII (1977-78)

14. The author thanks Prof. Dr.-Ing. G. Garbrecht for this suggestion.

15. The writer is grateful for this suggestion to Dipl.-Ing. Otto Miller, Nürnberg. On the other hand Ing. Heinrich Zech. Nürnberg, tells me that according to his calculations the dam was alone through its weight able to withstand the pressure of more than 3.6 million litres of water.

before the curve, there is another juniper tree, dead, in the middle of the channel. Here, too, the only stone artifact was found: a cutting implement of blue-grey flint (Fig. 5).

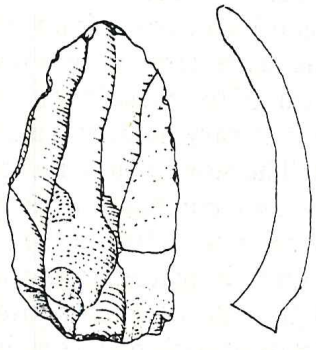

Fig. 5. A flint implement found at Sabra.

From there on the terrain becomes extremely difficult and climbing on the eroded sandstone places some demands on the climber. However, the channelling system had had to be followed, inspected, and repaired in antiquity too, and presumably one follows the same course today. This section ends, surprisingly, 30 paces down the channel. Here the water used to flow freely into a hollowed-out basin with outlet hole. Some 25 paces later. After traversing other steep sections, one comes to a spot where further climbing is out of the question. The water was here conducted down the valley and towards the theatre by means of an almost vertical rock channel (Pl. LXII, 1). The author was forced to turn back here, roughly at the height of the second terrace and return in the oppressive midday heat via the dam, the ''Niche Terrace'' and the "Terraced-Stream Valley" to the camp near the theatre. Crossing from the catchwater regulation system to the latter valley was rendered easier by steps hewn in the rock face.

This almost vertical channel can be seen from the Wadi as a fine line on the rock face, which is particularly discolored here. At the same time, it was also possible to make its continuation and its linkup with a further section crossing the second terrace, which was easily accessible from below and supplied us with the water for our camp. After a strongly eroded flat stretch of terrain below the almost vertical rock channel (which we had not been able to reach previously), the water was conducted through a gutter still in situ which served as a water spout (Pl. LXII, 2). The water then fell some 10 m. into a large basin, half cut from the rock and half built of diagonally adzed stone, from which again a channel emerged. Some 20 paces beyond the inaccessible section near the reservoir on the first terrace, this part of the channelling system simply peters out in the debris and eroded stone. Even after the most painstaking search it proved impossible to pinpoint its course again.

It was thus not possible to determine where the channelling system originating at the dam in the eastern mountain valley terminated. Erosion by torrential downpours and wind-borne sand have to a large extent destroyed this part of the rock face, as well as the left half of the theatre. Various courses which the channelling system could have taken are conceivable and by no means mutually exclusive. Perhaps it was connected up with the wide water channel running around the top of the left-hand side of the auditorium (Pl. LXIII, 1), which is provided with a narrow ledge and can be covered with slabs or seating stones.

The water from the large reservoir may also have been conducted to the Wadi via the masonwork channels and guttering of the type found to the left of the theatre, then across the Wadi to the slopes of the "Temple Mount" (Pl. LXIII, 2) or to the former oasis around the Wadi spring. As has already been mentioned, similar guttering has survived in the top section of the channelling system. N. Glueck had found getterguttering near the Wadi Hasa[16], the writer between the Nabataean temple of Wadi Ramm and the esh-Shellaleh spring.[17]

16. N. Glueck: Explorations in Eastern Palestine, III. AASOR XVIII-XIX (1937-1939), p. 57
17. M. Lindner: Eine archäologische Expedition nach Jordanien (1973) In: Jahresmitt. der Nat. Hist. Ges. Nürnberg 1973, p. 39-41

Although it is true that the entire complex at Sabra can be dated with certainty to the centuries at the beginning of our era and with even greater certainty to the first centuries A.D., it is still not possible at the present time to state the exact date. Undoubtedly, further indications are to be expected from the potsherds found. The surface ceramic finds from the slope settlements of the "Theatre Mount" and as far as the catchwater regulation system, along the water channelling system and in the mountain valleys, along with the surface finds of the "Temple Mount" were given to F. Zayadine of the Department of Antiquities for purposes of identification. With his kind permission the results are published here:

Surface Finds of Ceramic Fragments at Sabra

1) Slope settlement to the S.(W.) of the theatre: Nabataean, Later Roman, Roman, a few Byzantine
2) Slope settlement to the N. (E.) of the theatre: A few Nabataean, most Roman
3) "Terraced-Stream Valley" to the big dam: Mostly Nabataean, a few Roman
4) Upper slopes of the "Theatre Mount": late Roman
5) Water channelling system on the "Theatre Mount": 2 potsherds perhaps Nabataean, otherwise Roman
6) Mountain valley: Nabataean, Arabic, modern
7) "Temple Mount": Nabataean, (end of 1st cent. A.D.), late Roman, Byzantine

A handful of sherds picked up from the water channel around the upper left side of the theatre in 1969 were put together and completed by the Prehistorische Staatssammlung Munchen thanks to its Director Dr. H.-J. Kellner. (Pl. LXIV, 1).

With all necessary caution, it appears possible, on the basis of the surface finds of potsherds, to assign the construction and use of the waterworks on the "Theatre Mount" to the time from the 1st century A.D. to the Byzantine period. An earlier construction date is possible, a later improbable. The Nabataean, and not the Roman or Byzantine elements, predominate among the ceramic finds.

Summary

The investigations into the water supply and regulation systems in the ancient town of Sabra (Fig. 6 and Pl. LXIV, 2) situated in the wadi of the same name southwest of Petra in Jordan provide new insights into how the water engineers of antiquity dealt with the problem of controlling and storing the catchwater of the winter season and of ensuring a supply of water all year round. At Sabra these installations were investigated on the more important side of the site, namely on the "Theatre Mount" or the area above the ancient theatre. Part of the installations was a dam located roughly a hundred metres above the theatre at Sabra and discovered by the author in 1980. The dam collected the catchwater draining off from a mountain valley and directed it downhill through an ingeniously contrived channelling system. Presumably the dam made possible, or was supposed to make possible, an uninterrupted supply of water during the dry period of the year as well. In addition there was also a catchwater system to regulate the precipitation of a second mountain valley and a number of side valleys and gorges This system may also have included further reservoirs but was quite capable of slowing down the flash-flood waters without them and filled basins at several points, too.

The remainder of the catchwater was conducted to the valley via the "Terraced-Stream Valley" south-west of the theatre above the wadi spring. Beside the big dam definite traces of engineering work are to be found only immediately above the auditorium of the theatre, where another dam structure created a large reservoir. The question of whether and to what extent the orchestra of the theatre also functioned as a reservoir must remain open until it has been cleaned out and excavated. Some of the measurements and ideas recorded here, e.g. the finding that it is a "Greek" and not a "Latin" theatre in the Vitruvian sense, should be an incentive for such a venture. It was also possible to

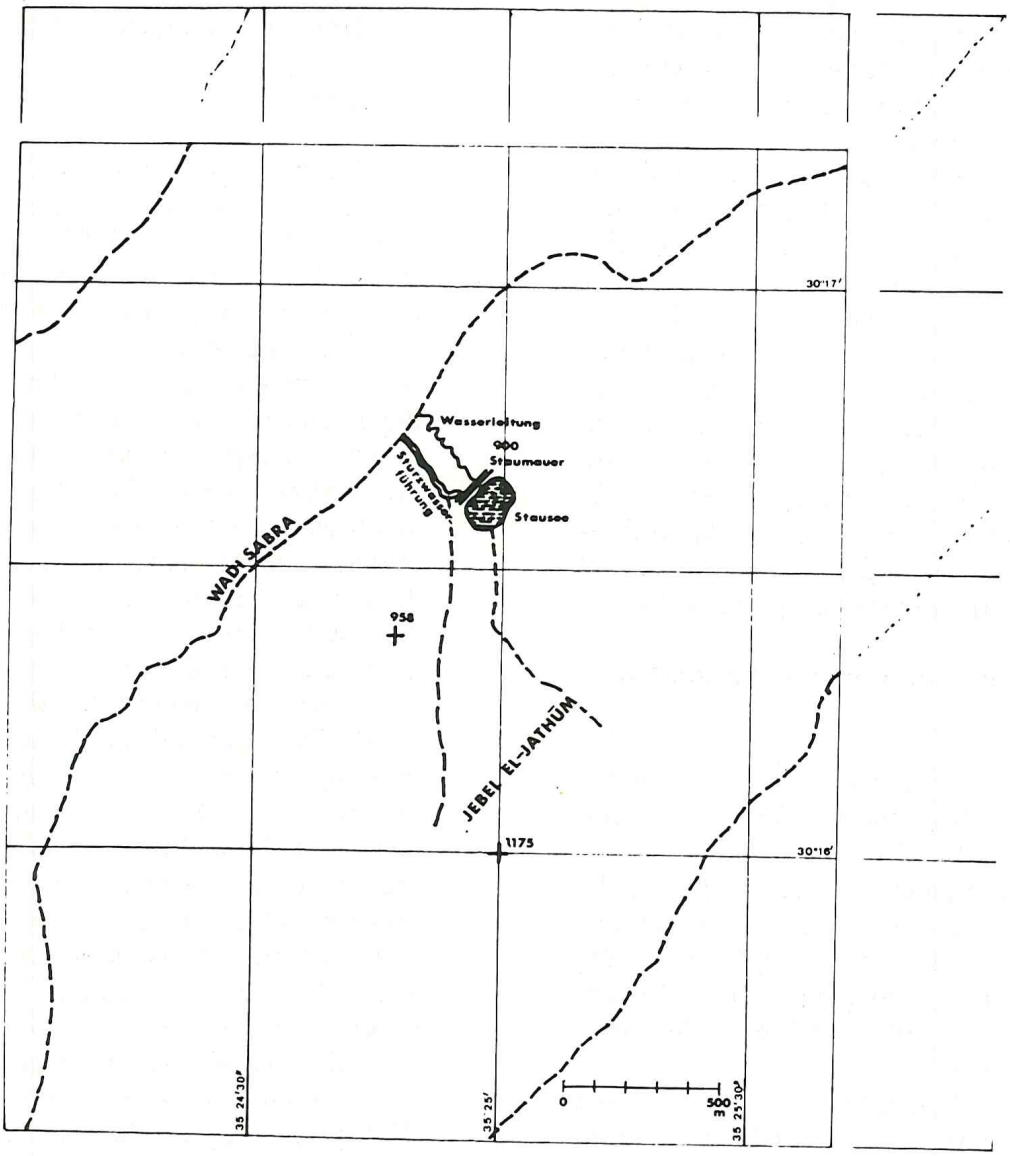

Fig. 6. The Dam system of Wadi Sabra Theatre.

date the theatre, the dam and the water systems more precisely: on the basis of the available clues, such as the surface finds of ceramic fragments and the employment of diagonally adzed ashlar masonry, they have for the time being to be assigned to the first centuries of our era.[18]

Manfred Lindner

18. The author thanks his friends of the "Study Group Petra Research" in the Natürhistorische Gesellschaft Nürnberg e. V. for support during the work at Sabra; Ing. Heinrich Zech, Nürnberg, for drawings and calculations, Dipl. Ing. Otto Miller, Nürnberg, Prof. Dr. Klaus Parlasca and Prof. Dr.-Ing. G. Garbrecht, Braunschweig, for the reading of the typescript and helpful suggestions; Director General of the Department of Antiquities Dr. Adnan Hadidi, Amman, for the permission to visit and study Sabra; Dr. Fawzi Zayadine and Muhammed A. Khadija of the Department of Antiquities for scientific and logistic help; Mr. Paul Dine for the translation and the B'dul bedouin Mohammed Soliman Salim for accompanying him to Sabra with his family.

A BURIN SITE IN THE UMM UTHEINA DISTRICT, JABAL AMMAN

by
G. Rollefson
Z. Kaechele
J. Kaechele

Introduction

Recent surveys in the eastern deserts of Jordan (Betts n.d.: Garrard and Price 1977) and in Saudi Arabia (Adams et al. 1977; Parr et al. 1978) have suggested a particular phenomenon of cultural exploitation of this now very arid area in the form of flint sites heavily dominated by one tool type: the burin, most often struck from a concave truncation. Concurrent and later investigations in the eastern Jordan deserts revealed that these sites are found both in the basalt areas (Rollefson and Frohlich 1982) and in the "ard es-suwwan" (flint desert) (Muhaisen n.d.). Although this poorly understood cultural manifestation is a common feature of the deserts east of the Jordan Valley, one survey recently located a cluster of "burin sites" (Betts n.d.) on a small plateau in the western highlands of Jordan south of the Wadi Hasa northeast of Tafila (MacDonald et al. 1982). Since none of the burin sites now known have produced conclusively diagnostic artifacts, they are currently assigned to the Pre-Pottery Neolithic B tradition based on similarities of burin configurations with sites in the Wadi Dhobai in the eastern Jordanian desert (Waechter and Seton-Williams 1938; Garrard and Price 1977).

The recent focus on economic development in the Umm Utheina district of western Jabal Amman has brought to light another burin site which, with the Wadi el-Hasa cluster, adds some new dimensions to what appeared, at first, to be a PPNB desert cultural adaptation. Construction of the San Rock Hotel destroyed the location of several periods of prehistoric and historic occupation, but enough evidence remains to indicate that the uniquely focused activity sites which are so numerous in today's deserts also exist in areas of very different ecological associations.

Site Location and Setting

The economic expansion near Amman has heavily affected the hills west of the city center, and Jabal Amman has witnessed some of the most intensive development of the urban area. In addition to the construction of new new housing, streets, and support systems, two major hotels have been established just north of the Wadi Seer Road near the Sixth Circle.

The San Rock Hotel now occupies the northwest brow of Jabal Amman, and it has a splendid view of the large Wadi Umm ad-Diba, approximately one kilometer to the west, and a smaller unnamed wadi directly to the north which feeds into the Wadi Umm ad-Diba. The construction of the hotel delved deeply into limestone bedrock, obliterating Roman, Iron Age, and Neolithic occupations.

At an elevation of ca. 980 m, the Umm Utheina burin site is located in a situation that starkly contrasts with the eastern desert sites which, for the most part, lie 250 meters or more lower in elevation. Amman currently receives 400-500 mm precipitation annually, with monthly temperatures ranging between averages of 12-33° C. throughout the year. The bioclimate is classified as the warm variety of semi-Mediterranean in a Red Mediterranean soil zone which supports a Mediterranean plant community. By contrast, the eastern desert sites receive between 50-100 mm rain each year, with monthly temperature averages ranging from 18-39° C. Bioclimates in the desert are all cool Mediterranean-Sahara with Gray Desert

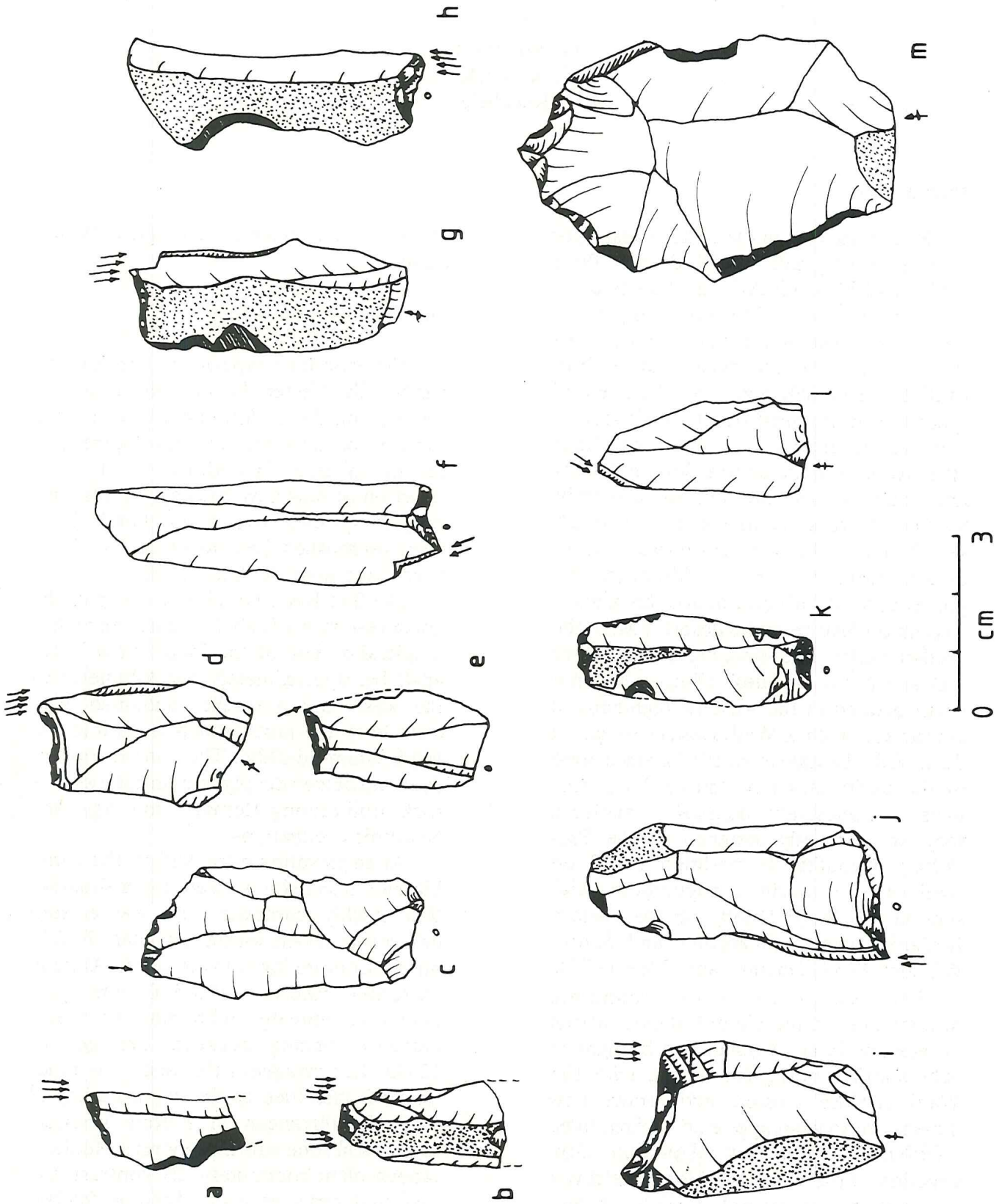

Figure 1. Tools from the Umm Utheina site. a-j, 1) burins; k) double truncation on a blade; m) borer.

or Basalt soils that support Irano-Touranian plant communities (Madany 1978; Anonymous 1971).

The destruction of the Umm Utheina burin site has left very little of the original occupation, but enough material could be collected to provide a sufficient sample of artifacts to make substantive analyses and conclusions.

Typology

The collection efforts produced 127 artifacts. Of this total one piece is a distal segment of a Levallois point and derives either from the Late Acheulian or the Middle Paleolithic; based on similarities of patina and abrasion with the Levallois point, two blade segments also appear to date from Middle or Upper Paleolithic times. The remaining 124 artifacts all appear to belong to the same general period of cultural occupation on the bases of technological similarities and the lack of substantial patina development.

Table 1 presents the inventory of major artifact classes in the collection. The relatively small amount of debris and the lone bidirectional blade core are probably reflective of the severe disturbance of the site, and the relative frequencies of flakes and blades are probably suspect. The comparison of the nearly 20% tool proportion (excluding debris) with other sites is similarly inappropriate.

Among the tool types in the collection (Table 2), nearly half of them are of dubious origin, and this uncertainty is once again due to the disturbance caused by the hotel construction. Both the use of heavy earth-moving equipment and the exposure of the artifacts to repeated vehicular traffic have contributed greatly to the damage of artifact edges. Since only 16% of the flakes and blades (n = 19) have light patina development, it is very difficult to determine whether the "retouch" on 11 of the specimens is recent or ancient. These suspicious "implements" include all of the notches, denticulates, battered pieces, the scraper, and the borers. Only the burins and the truncated blade can be confidently assumed to have been fashioned during the site's occupation.

Table 1. Absolute and relative frequencies of major artifact classes in the Umm Utheina artifact sample.

Class	*n*	%	%'
Cores	1	0.8	0.8
Flakes	66	53.2	55.5
Blades	52	41.9	43.7
(Tools)	(23)	(18.5)	(19.3)
Debris	5	4.0	
Total	124	99.9	100.0

Table 2. Absolute and relative frequencies of tool types in the Umm Utheina artifact sample.

Type	*n*	%
Borer	1	4.3
Atypical borer	2	8.7
Burins:	(11)	(47.8)
On a straight truncation	1	4.3
On an oblique truncation	2	8.7
On a concave truncation	7	30.4
On a convex truncation	1	4.3
Double truncation on a blade	1	4.3
Notch	3	13.0
Denticulate	2	8.7
Battered piece	2	8.7
Scraper	1	4.3
Total	23	99.7

Nearly two-thirds of the burins (7 of 11, 63.4%) are on concave truncations, and although the sample is small, this is similar to the Wadi Dhobai figures. It is interesting to note that nine of the 11 burins (81.8%) bear two or more burin facets that emanate from the same platform. Of the 113 burins from Jabal Uweinid Site A (Rollefson and Frohlich 1982), for example, multiple burin facets from the same platform are found on only 13 specimens (11.5%).

Technological Features

The techniques used to produce the flakes and blades in the sample are presented in Table 3. Specific technique could not be determined for 34 of the pieces. For

those blades for which the technique could be discerned, half had platform angles greater than 110° (relative to the interior surface of the blade), 35% had platform angles of less than 110°, and 15% were punch blades. None of these relative frequencies are significantly different from the values calculated for Jabal Uweinid Site A. The predominance of high platform angles is a technological feature that charaterizes the PPNB period (Mortensen 1970: 20).

Table 3 also provides information concerning the relative amounts of cortex on the flakes and blades. In terms of the amount of cortex on the striking platforms, the percentages are not very different from Jabal Uweinid Site A. However, for the categories of remaining cortex on the exterior surfaces of flakes and blades, the two collections are significantly different in all except the completely cortical category; furthermore, only ten of the artifacts in the Umm Utheina sample bear natural backing, which is quite the reverse of the case for the Jabal Uweinid PPNB cluster. These stark differences in cortex are probably related to the raw material resources in the immediate vicinity of each site: the tabular outcrops of flint so characteristic at Jabal Uweinid do not occur at Umm Utheina.

Table 3. Aspects relating to the production of flakes and blades in the Umm Utheina artifact sample.

TECHNIQUE OF PRODUCTION

Technique	*n*	%	%'
High angle blade	20	16.9	23.8
Low angle blade	14	11.9	16.7
High angle flake	26	22.0	31.0
Low angle flake	14	11.9	16.7
Punch blade	6	5.1	7.1
Punch flake	4	3.4	4.8
Interminate blade	24	20.3	
Interminate flake	10	8.5	
Total	118	100.0	100.1

PLATFORM CORTEX

Amount	*n*	%
No cortex	54	71.0
Partially cortical	2	2.6
Completely cortical	20	26.3
Total	76	99.9

EXTERIOR CORTEX

Amount	*n*	%
None	50	42.4
1-10%	21	17.8
10-50%	30	25.4
50-90%	10	8.5
90-100%	7	5.9
Total	118	100.0

Concluding Remarks

Although the collection from Umm Utheina is small and from a very disturbed site, it appears to represent a highly specialized occupation which until now seemed to be uniquely associated with present desert environments in eastern Jordan and Saudi Arabia. This implication is important to our understanding of the economies pursued by Early Neolithic societies, but this small sample requires much more coorborating evidence from elsewhere in the western highlands before any firm conclusions can be made.

Accumulating such evidence, if it exists, will not be an easy task, since in contrast to the denuded and deflated nature of most of the desert environs, the Irbid-Madaba district has witnessed net accumulation of sediments that conceal very ancient sites. Beyond this, the rapid economic expansion of the urban centers of the western region in quickly encroaching upon and destroying archaeological sites from all periods of cultural development. Despite the problems involved, and because of the urgency of archaeological salvage in some sectors, concerted efforts should be made to explore more fully the prehistory of the western highlands.

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EXCAVATIONS OF THE EARLY BRONZE AGE CEMETERY AT BAB EDH-DHRA JORDAN, 1981

A Preliminary Report

by
Bruno Fröhlich and Donald J. Ortner

Introduction

The Bab edh-Dhra settlement (Figure 1) was first brought to the attention of archaeologists by Albright (Albright 1924, 1926, 1945; Glueck 1935) and the adjacent cemetery was first described by Saller (1965) and Lapp (1966, 1968a, 1968b, and 1970). Beginning with Lapp's pioneer work, the cemetery has been extensively excavated (Schaub 1973, 1981a, 1981b Rast and Schaub 1974, 1978; Ortner 1978, 1979, 1981). The recovery of well-preserved human skeletal remains from the cemetery has added signficant data to our understanding of the biological history of the Early Bronze Age population in the Bab edh-Dhra area. The data make comparisons possible between the people of Bab edh-Dhra and other contemporary and non-contemporary groups in the Middle East (Frohlich and Ortner 1981).

This preliminary report describes the work carried out at the Bab edh-Dhra Cemetery between May and August, 1981, as part of the expedition to the Southeastern Ghor led by Drs. Walter E. Rast and R. Thomas Schaub. The cultural finds, except for a few items now located at the Kerak Museum, and all of the human skeletal material have been shipped to the Smithsonian Institution and are presently being conserved and studied in the Department of Antrhopology.

Objectives

Several objectives were planned for the 1981 field season at the Bab edh-Dhra Cemetery. These include: (1) a comprehensive topographical survey of the cemetery and adjacent areas, (2) a survey of previously excavated shaft tombs to incorporate the distribution of tombs, (3) an electronic survey of the cemetery using electromagnetic terrain conductivity measurements to discover the extent of the cemetery as well as the location and density of unidentified shaft tombs and charnel houses, (4) excavation of selected shaft tombs whose location was identified by the electronic survey, and (5) excavation and recovery of human skeletal material from different Early Bronze Age subphases to increase sample sizes to levels appropriate for multivariate statistics.

Topographical Survey

The cemetery and adjoining area was surveyed during the 1981 field season to produce an accurate contour map of the area. The survey was conducted using a self-reducing theodolite (Carl Zeiss, Dahlta 010-A) which permitted us to measure relative vertical as well as horizontal distance differences between selected points. Twenty-two instrument stations were selected for an area covering 3000 meters (East to West) and 600 meters (North to South) with the virtual center in the previously excavated cemetery area. The north-south axis was limited by the construction of the town for the Arab Potash Company to the south and by the cemetery's natural boundaries to the north. All major high and low geographical points were recorded. Approximately 25 to 50 points were recorded for each of the 31 theodolite stations, which provided a data matrix for an accurate contour map. The estimate of each point's position below mean sea level (Defense Mapping Agency 1973) as well as its position in a selected

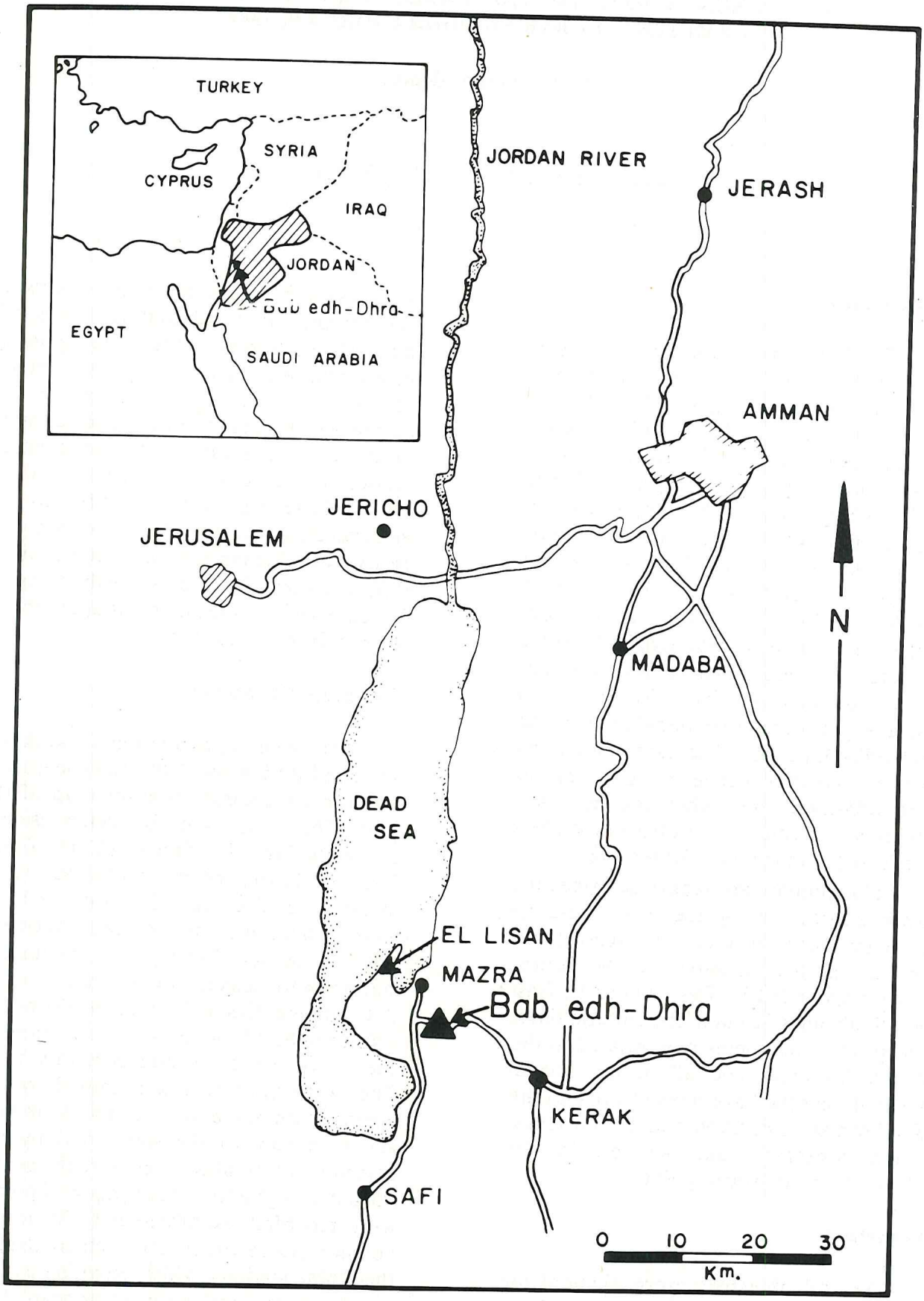

Figure 1: The Dead Sea region with the Bab edh-Dhra Cemetery indicated by the triangle.

coordinate system were computed on a LSI-11 Microcomputer based on the data obtained in the field. The final contour map was assembled from a combination of data obtained from a computer-generated contour map (Smithsonian Honeywell Series 60 (level 66)/6000) modified manually where appropriate. The employment of a computer-generated contour map allowed a much higher accuracy in determining the exact distance between the contours at any given point inside a selected area (Figure 2). In addition to the construction of contours, all known shaft tomb and charnel houses were recorded for later inclusion on the contour map.

Electronic Survey

One of the major obejectives during this field season was to examine methods and equipment in which a small team could identify and locate shaft tombs electronically so that time consuming test excavations could be avoided. The electronic equipment must be able to produce accurate and reproducible results with minimal training and experience. The EM-31 electronic conductivity meter, produced by Geonics Ltd., Toronto, Canada, was selected because it appeared to have the required potential: (1) it was light enough to be carried by one person (Plate LXV), (2) it did not require any physical contact with the ground, thus speeding up the actual survey, (3) the recycle time for a new reading on the meter was less than 2 to 3 seconds, (4) it was independent of large and heavy power supplies (8 D-cell batters gave approximately 20 hours of operating time), and (5) the equipment could identify conductivity variations to a depth of 6 meters in soil (McNeil 1980).

Basically, the EM-31 measures the conductivity of the soil by producing a time varying magnetic field at the transmitter end. This artificially produced magnetic field results from the induction of very small electrical currents in the ground. The electrical currents result in a secondary magnetic field which, with the primary magnetic field, is sensed by the receiver coil located at the other end of the equipment.

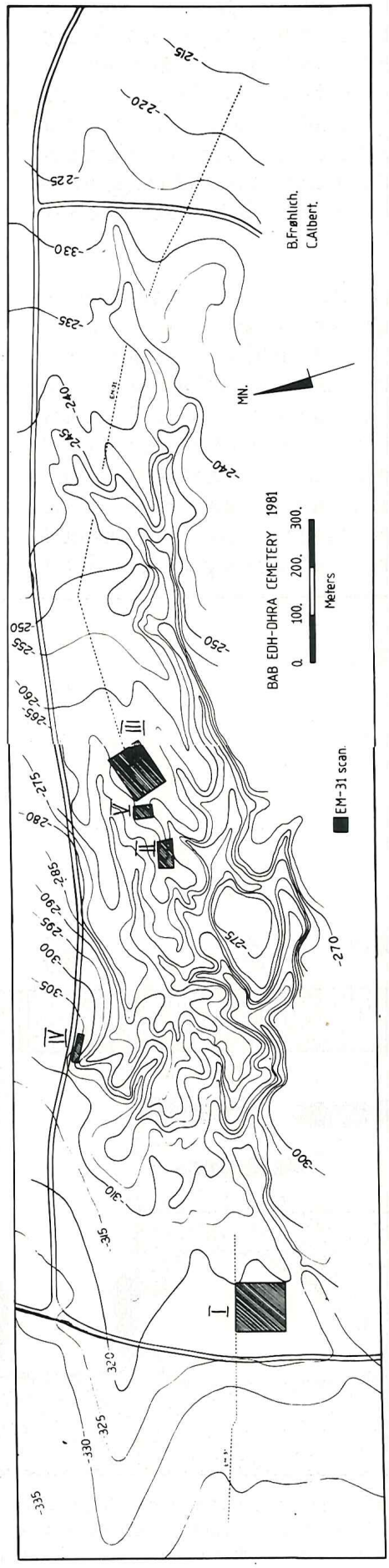

Figure 2: Topographical map of the Bab edh-Dhra Cometery. Contour intervals are 5 meters. Shaded squares indicate areas which have been scanned with the EM/31 Electronic Conductivity Meter. The dotted line indicates the path of a long EM-31 scan trail to explore East-West boundaries of the cemetery area.

The ratio between the primary magnetic field and the secondary magnetic field can be converted to yield a value in millimho. per meter (mmho/m. or Siemens) indicating the ground's conductivity. In general, different geological features yield different conductivities, thus allowing identification of varying soil features (McNeil 1980).

The specific response of the equipment to the presence of shaft tombs was not known prior to our field testing. However, we were reasonably certain that the vertical shafts, with a diameter of up to 2 meters and a depth of 1.5 to 3 meters, would yield different conductivity readings than the undisturbed adjacent areas. Further, we also expected that the presence of unsilted tomb chambers surrounding the filled shaft would increase the difference in conductivity. Identification of shaft tombs by variation in conductivity was based on the following assumptions: (1) a filled shaft would have a slightly more porous consistency than the surrounding hard packed structures, resulting in an increase of conductivity because of a higher content of moisture, and (2) an air-filled, unsilted grave chamber adjacent to the filled shaft would have lower conductivity since air is a poor electrical conductor (Figure 3).

If this hypothesis is correct the identification of significant high readings surrounded with low readings should reflect the presence of an unsilted shaft tomb, whereas significant high values in combination with adjacent reductions in the conductivity should indicate the presence of a shalf tomb system with silted tomb

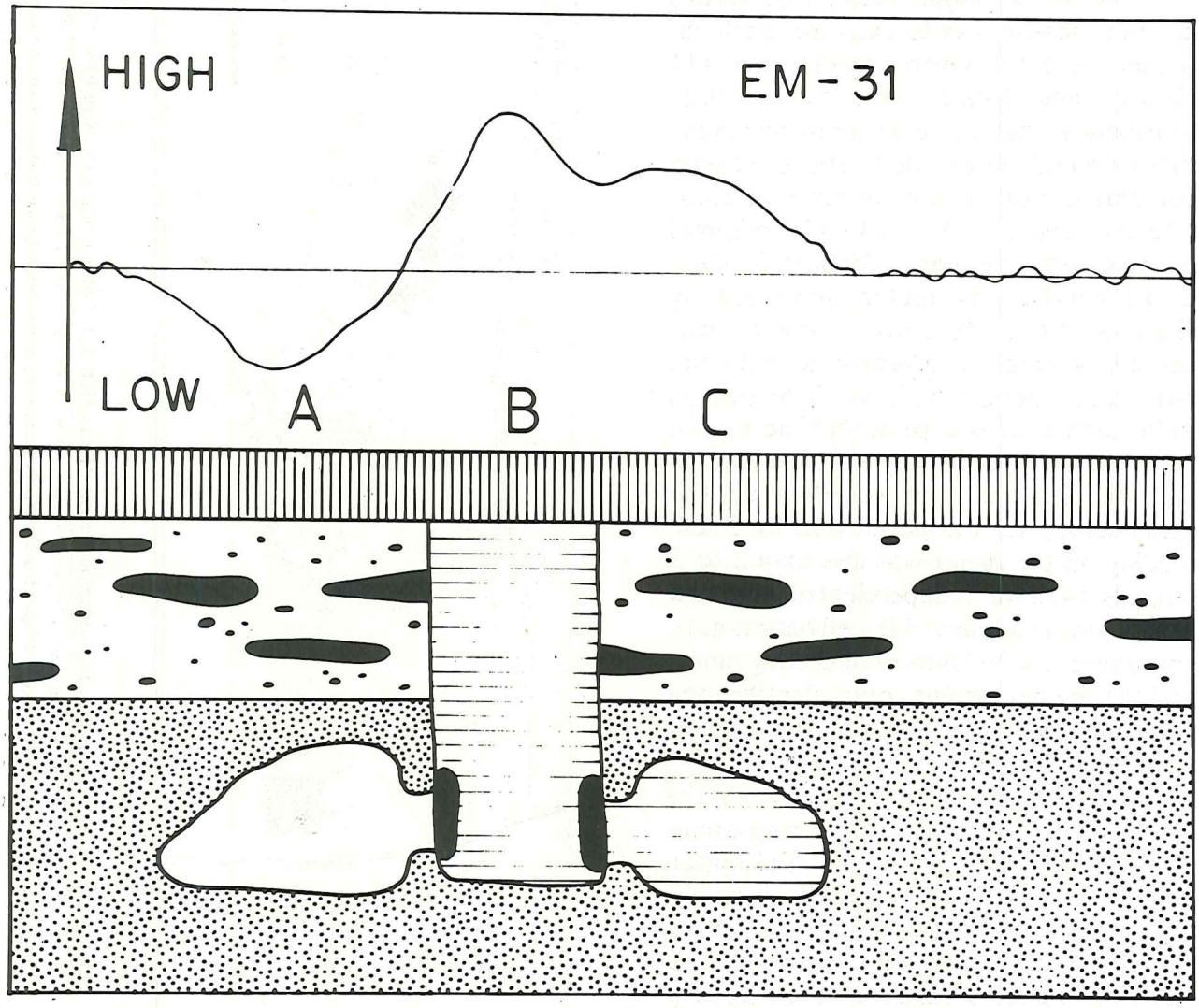

Figure 3: EM-31 response to a shaft tomb. Minimum conductivity is read when the center of the EM/31 passes an unsilted burial chamber (A). Maximum conductivity is read when scanner passes a refilled shaft (B). A higher than normal conductivity is read when scanner passes a silted burial chamber (C).

chambers.

We were also interested in evaluating several important potential problems with the equipment: (1) would the equipment be sensitive to the extremely high ambient temperatures found at the site, (2) would the equipment show sensitivity to long exposure to the sun, and (3) how sensitive the equipment would be to rough handling inevitable in a field situation? Basically, the important thing to learn was if the equipment could function in the rough environment at the Dead Sea without major repairs and recalibrations.

Our experience was very positive. During three months of field work at no time was it necessary to carry out any major recalibration on the equipment. Several test areas with known conductivity yielded the same results during any given time of the day (temperature differences) and between any given time of the week and/or month (time variation). Furthermore, at no time did we experience any major break down of the equipment.

Five squares were surveyed by the EM-31 (shaded areas in Figure 2). Two areas, 60 by 30 meters (Area II in Figure 2) and 100 by 74 meters (Area III in Figure 2) were scanned - taking conductivity readings every 2 meters, - yielding 496 data points in the first area and 1938 data points in the latter. A contour map indicating concentrations of high conductivity as well as low conductivity was produced for the field. Selected areas inside the two squares were scanned again, using one meter intervals. The resulting contour map from the latter scan yielded a higher degree of resolution for the high and low areas. These areas were selected for the test excavations, (Area II in Figure 2) which demonstrated a strong association between the conductivity readings and the presence of man-made disturbance in the soil. After several test excavations it was clear that areas with high conductivity were synonymous with the vertical shaft of the shaft tombs, whereas low readings, in most cases, indicated the presence of unsilted chambers (Figures 4 and 5). Five areas having high readings were tested by excavations. In all cases the excavations yielded a shaft within ¼ of a meter from where the predicted shaft center should be (Figures 4 and 5).

Areas with extremely high readings, when compared to the adjacent area, were in all cases equivalent to either robbed shaft tombs (the soil in the shaft has had little or less time to pack, thus resulting in a higher degree of moisture (A in Figure 6)) or geological features such as gravel deposits, limestone deposits etc. (A in Figure 4). The difference in the conductivity between undisturbed geological layers and Early Bronze Age man-made shafts was less than 10 mmho/m. and, in some cases, only 2 to 4 mmho/m. (Figures 4 and 5).

Based on the assumption that inside a small, defined area the top layer of the ground is horizontally layered, the extent of the cemetery could be established using the EM-31 scanner. This assumption is based on the hypothesis that only shaft tombs are the result of man-made structures in the area. Thus, by running three parallel traverses from the center of the cemetery in an east-west axis (Figure 2) it is possible to determine when the concentration of shaft tombs decreases, by interpretating the differences between the three parallel readings. We were able to identify the western limit of the cemetery because the electronic survey data indicated that the Early Bronze Age tombs stopped approximately 300 meters east of the modern north-south road connecting Mazra with Safi. On the Lisan Peninsula, approximately 250 meters west of the north-south road, at least one and possibly two stone wall structures were located by a significant increase in the conductivity. The wall structures may be associated with a Roman road described by Nelson Glueck, (Glueck 1959; McCreery 1981). The results of the three parallel readings to the east was less successful. However, this was due to the fact that the scanner picked up many interpretable as well as uninterpretable structures in the ground which were significantly different from the expected values. Only future test excavations can associate these conductivity differences with possible cultural remains. In some cases, however, the difference in conductivity could be associated with cle-

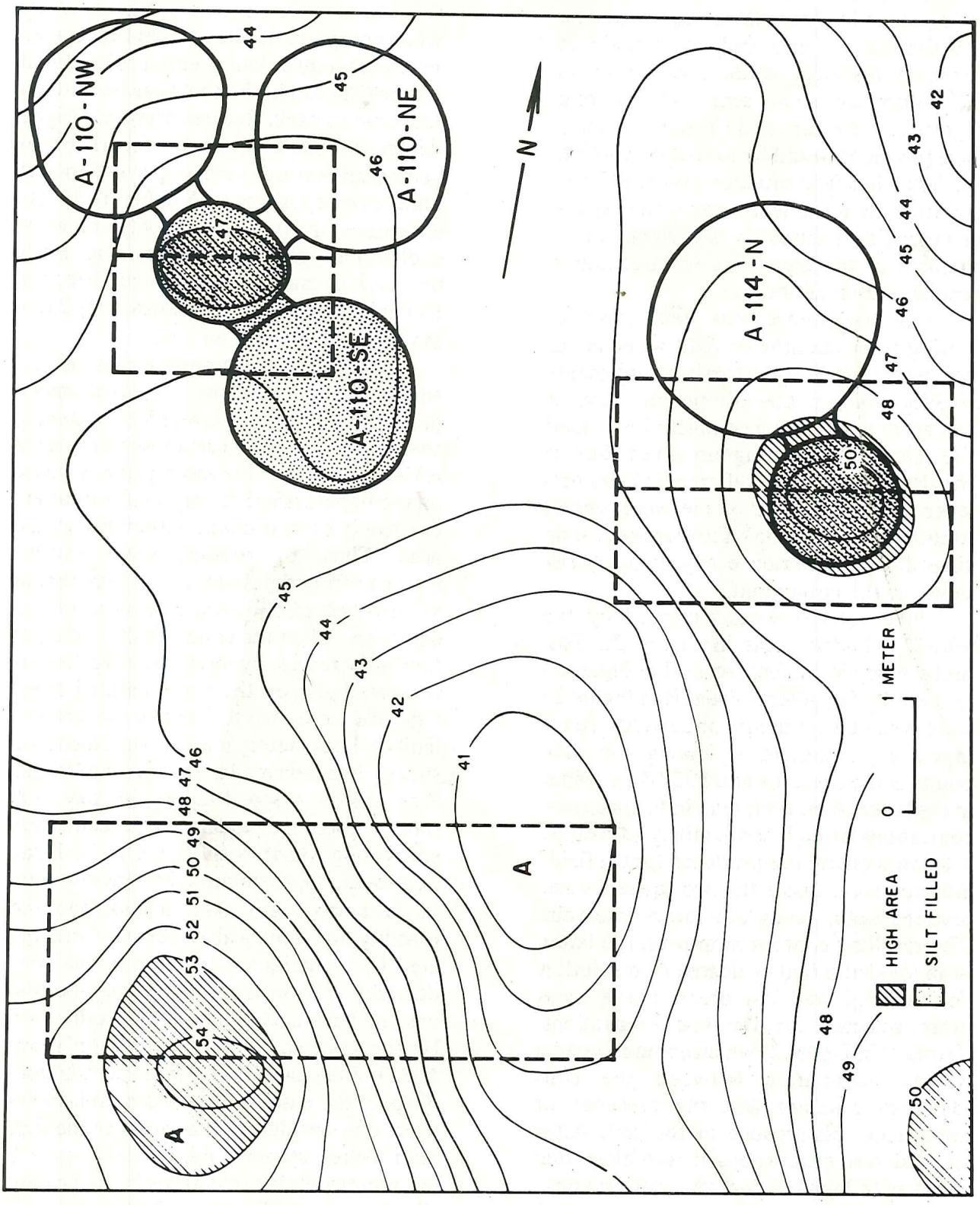

Figure 4: Contour map showing differences in conductivity in association with the shaft tombs. Conductivity intervals are 1 meter. Measurement spacing is 1 meter. Dotted lines are excavated areas. High conductivity areas are shaded. Refilled shafts and silted tombs are stippled. Shafts A-110 and A-114 are found in the center of high conductivities. Possible shaft tomb in lower left corner. Extreme high and low areas are pockets of Lisan marl and gravel deposits (A).

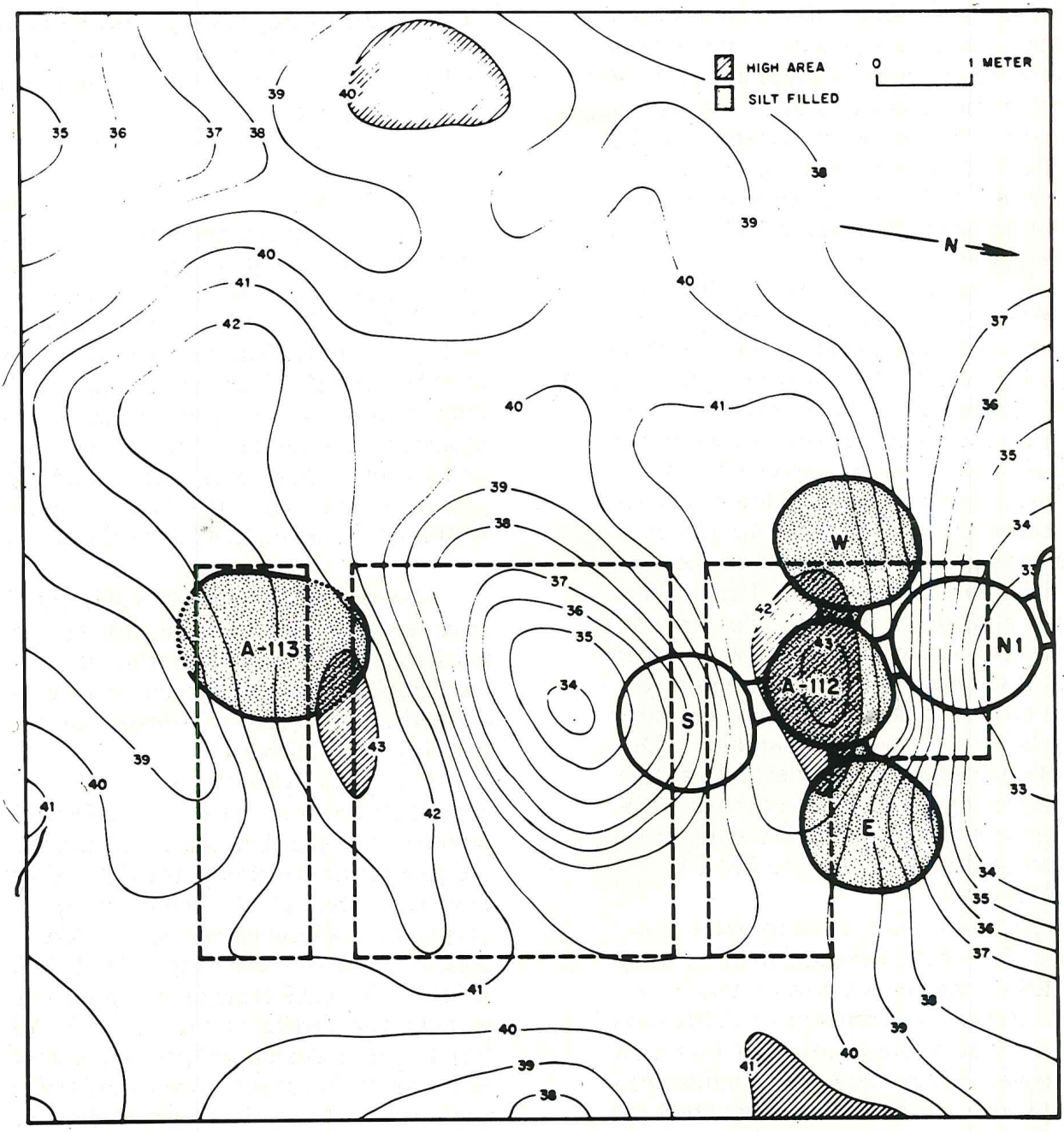

Figure 5: Contour map showing differences in conductivity. Contour intervals are 1 meter. Measurement spacing is 1 meter. Dotted lines are excavated areas, High conductivity areas are shaded. Refilled shafts and silted tombs are stippled. Shaft tomb A-112 shows two partly unsilted chambers (A-112-N1 & A-112-S) in low conductivity areas and two silted chambers (A-112-W& A-112 E) in normal conductivity areas. Collapsed or robbed shaft tomb A-113 is centered in a high conductivity area; however less significant. possible shaft tomb in upper center.

arly visable stone walls running perpendicular to the scan axis. It was clear that the scanner picked up even small differences in the conductivity and that most of these inconsistencies could be associated with man-made features.

The presence of EB IB-III charnel houses (3050-2300 B.C.) built in the area which was utilized earlier by the EB IA tombs (3150 - 3050 B.C.) is known (Lapp 1970; Rast and Schaub 1978, Schaub 1981a; Ortner 1981) and it was one of our objectives to test the equipment's ability to pick up these structures, which are made of mudbricks. Aerial photos and topography suggested the presence of charnel house structures around our central theodolite reference point at the center of the cemetery (Rast and Schaub 1978). The conductivity contour map of the area suggested a presence of the charnel house in two ways: (1) by not yielding any significant

high areas associated with shaft tombs, and (2) by a decreasing pattern of conductivity toward the center of the presumed position of the charnel house (Figure6). The second evidence (a significant lowering of the conductivity toward the center of the charnel house) is the most promising, but must await further clarification in the form of test excavations.

In general, the use of the electromagnetic terrain conductivity meter proved to be successful. In all, five areas with high conductivity and thought to be shaft tombs were tested by excavations. In each case, the conductivity measurements indicating the shaft corresponded with the actual location of the shaft. More field tests are necessary to understand the influence of natural geological variation on the conductivity for the cemetery. The positive results obtained at Bab edh-Dhra are not, however, necesarrily transferable to other sites. If used at another site the equipment must be recalibrated for the new soil conditions and geological variation. Our experience suggests considerable promise for achieving much more effective excavation procedures by first identifying areas of potential interest with the EM-31.

Shaft Tombs

Six shaft tomb systems were excavated. Five shafts were identified by using the EM-31 and the sixth was found by Mr. Sami Rabadi, Department of Antiquities Inspector at the Kerak Museum. Of the six excavated tombs, four were undisturbed tombs, one tomb had been disturbed (by robbers?) and one was a collapsed tomb. Human skeletal remains were found in all but the collapsed tomb. Of the four undisturbed tombs, one had four chambers, only three of which had been used for burials. One tomb had three chambers and two tombs had one chamber each. Of the total of nine undisturbed chambers, seven were unsilted, and two were partly silted (Table 1). The disturbed tomb had four silted chambers (50% to 90% silted) none of which had blocking stones. An additional partly silted chamber (10% silted) belonging to an adjacent shaft tomb system had been broken into, presumably by thieves, from one of the partly silted chambers. The collapsed tomb may have been the result of construction which reached an earlier and unknown tomb or of a shaft dug during a robbery attempt.

A 110

Three burial chambers are associated with this tomb. Shaft and chamber dimensions are given in Table 1. Two chambers, A 110 NE and A 110 NW, were unsilted and yielded undisturbed burials. One chamber, A 110 SE was partly silted, with approximately 40 cm. of silt (Figure 4). All chambers were cut into a matrix consisting of a mixture of hard-packed clay, sand and gravel. Several signs of tool marks were visable on the ceiling in all three chambers.

Chamber A 110 NE The single burial chamber was sealed from the shaft by one blocking stone and mud mortar between the blocking stone and the entryway covering the entire external surface of the blocking stone (Table 1).

The grave yielded two articulated adult skeletons (one male and one female) placed so that the skull was to the left and the postcranial skeleton to the right of the entryway. One child (approximately 7 years old) was located between the female skeleton and the entryway (Pls. LXVI, LXVII). The male skeleton was placed on its right side parallel to the backwall. All bones were in anatomical position, except for parts of the upper extremities, which were found between the lower extremities, and the eight lowest vertebrae, which were disarticulated from the skeleton and placed in correct anatomical order next to the child's skeleton (Pls. LXVI, LXVII). The lower extremities were slightly bent with the left leg flexed more than the right leg.

Based on measurements from upper and lower extremities the estimated living stature of the male skeleton was approximately 165 cm. Except for an abnormal bone growth found on the distal end of the left humerus, no pathological changes were identified. The adult female skeleton was placed on its back with the lower extremities slightly bent. The upper extremities were placed with the left arm

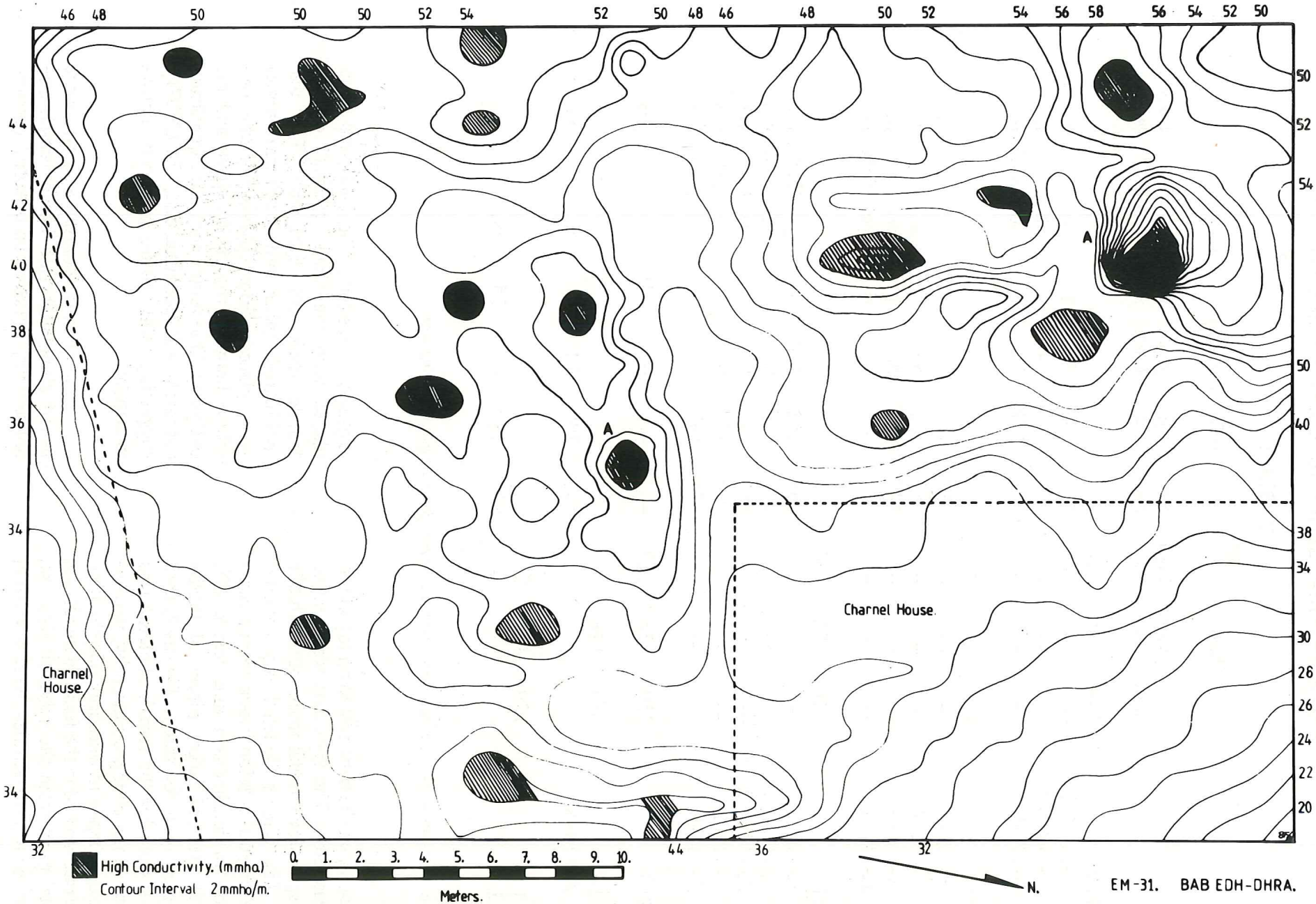

Figure 6: Contour map showing differences in conductivity in area with known charnel houses. Conductivity intervals are 2 meters. Measurement spacing is 1 meter. Shaded areas are concentrations of high conductivities and thus are possible shafts. Differences in conductivity more than 5 to 10 mmho/m. are robbed or excavated tombs (A). Charnel houses are significant in having no high condutivity concentrations (Shafts) and a significant lowering of the conductivity toward the center of the charnel house.

BAB EDH-DHRA, GENERAL SHAFT TOMB DATA

TABLE 1

	Shaft:			Burial Chamber				Entrance	
	Depth	Upper Diam.	Lower Diam.	Max. Length	Max. Width	Max. Height	Blocking Stone(s)	Silting	Disturbed (Robbed)
A-110	148	125	114						
A-110-NE	—	—	—	175	184	88	1	no	no
A-110-NW	—	—	—	156	175	84	1	no	no
A-110-SE	—	—	—	172	172	72	3	yes(20%)	no
A-111	197	129	76						
A-111-E	—	—	—	163	190	89	9	no	no
A-111-W	—	—	—	153	152	83	7	no	no
A-111-N	—	—	—	149	164	86	1	no	no
A-111-S	—	—	—	—	—	—	0	yes (95%)	no
A-112	151	172	166						
A-112-S	—	—	—	168	152	114	0	yes (50%)	yes
A-112-N/1	—	—	—	174	183	95	0	yes (50%)	yes
A-112-N/2*	—	—	—	151	—	80	(1)	yes (10%)	yes
A-112-E	—	—	—	180	168	94	0	yes (90%)	yes
A-112-W	—	—	—	174	147	86	0	yes (90%)	yes
A-113	250	136	110	—	—	—	(3)	—	yes
A-114	139	126	96						
A-114-N	—	—	—	192	208	74	1	no	no
C-11	129	105	57						
C-11	—	—	—	83	119	67	15	no	no

**Adjacent tomb accesed by the thieves through a breakdown of the separating wall.*

bent such that the hand rested on top of the male skeleton. The right arm was bent to make space for the placement of the child's body. The female skeleton was covered with a shroud, possibly made from a combination of leather/skin and textile (Pl. LXVII). Several larger pieces of textile were recovered for study. The estimated living stature for the female skeleton was 153 cm. Bone changes caused by osteoarthritic development were found in the lumbar vertebrae and in the femoral heads. All skeletal parts from the subadult skeleton, except for the extremities, were in correct anatomical position. The child had been placed with the skull "resting" on the female skeleton's right arm. The disarticulated upper and lower extremities were placed almost parallel to the vertebrae between the child's trunk and the entryway. One femur showed a significant cut mark on its proximal end, (Pl. LXVII), suggesting soft tissue removal before interment.

Twenty-four complete pots were found along with one basalt vessel, one unfired clay figurine, and several decom-

posed wood objects. Most pots were located to the right of the entryway and between the child's skeleton and the entryway (Table 2). The figurine was located below the pots just adjacent to the entryway. Preliminary readings of the pottery by Dr. Thomas Schaub indicate an EB IA association (Schaub 1980). Wood samples for carbon dating were also collected..

BAB EDH-DHRA, CULTURAL FINDS
TABLE 2

	Pots	Basalt Vessel(s)	Mace Head(s)	Un-fired Clay Figurine(s)	Wood Objects	Wood Tools	Beads	Wood selected For Carbon Dating	Textile
A-110-NE	24	1	0	1	yes	no	no	yes	yes
A-110-NW	22	1	0	2	no	no	no	yes	no
A-110-SE	30	2	2	0	no	no	yes	yes	no
A-111-E	15	1	0	2	no	no	no	no	no
A-111-W	14	1	0	0	yes	no	no	no	no
A-111-N	49	1	1	0	yes	no	no	yes	no
A-111-S	0	0	0	0	no	no	no	no	no
A-112 (all)	no	0	0	0	no	no	no	no	no
A-113	3	0	0	0	no	no	no	no	no
A-114-N	23	1	1	0	yes	yes	no	yes	yes
C-11	8	1	1	0	no	no	no	no	no
Total:	188	9	5	5	—	—	—	—	—

Chamber A 110 NW Tomb dimensions are given in Table 1. The chamber was sealed from the shaft by a single blocking stone and mortar. The chamber was unsilted and contained only disarticulated skeletons. All adult and most sub-adult skulls were placed to the left of the entryway and the postcranial and remaining infant cranial material was placed in the center of the chamber floor (Pl. LXVIII). The preliminary analysis of the skeletal remains revealed the presence of two adult males and a minimum of four infants ranging from newborn to approximately one year of age at death. One of the adult skulls was found with the cranial bones articulated. In the other adult skull, all the individual cranial bones had separated and were nested in each other before the final placement toward the back of the chamber. Between the two adult skulls was one partly disarticulated infant skull and two stacks of infant skull fragments. Although three discrete piles of infant skull fragments were found between the two adult skulls, the three groups contained four infant crania with the youngest either prenatal or newborn, one was approximately 6 months of age, and two were about 1 year of age (Table 3). The adult bones in the bone pile are from exactly two individuals. Although the placement of the skeletal material indicates a secondary burial, the location and articulation of one pair of lower extremities suggest that they were placed in the grave while they were still connected by soft tissue. This suggests a relatively short time for the primary burial period (probably not more than a few weeks). No articulation, however, was found between the femora and the innominate bones. The estimated living stature of the two adult males was 164 cm. and 166 cm.

Twenty-two complete pots and one basalt vessel were found to the right of the entryway. Two unfired clay figurines were placed between the infant cranial frag-

TABLE 3
BAB EDH-DHRA, 1981
SKELETAL MATERIAL

Burial Chamber:	Adults Males	Adults Females	Total	Children (1-18 yrs.)	Infants (0-1 yr)	Pre-natal (-9 mth.-0 yr.)	Total
A-110-NE	1	1	2	1	0	0	3
A-110-NW	2	0	2	0	4	0	6
A-110-SE	2	2	4	2	3	1	10
A-11-E	1	1	2	0	2	1	5
A-111-W	3	1	4	0	2	0	6
A-111-N	2*	1*	3*	3	4	0	10*
A-11-S	0	0	0	0	0	0	0
A-112	—	—	—	—	—	—	—
A-113	0	0	0	0	0	0	0
A-114-N	1	2	3	2	2	0	7
C-11	1	1	2	1	2	0	5
Total	13	9	22	9	19	2	52

**More than or equal to.*

ments and the nested adult skull bones closest to the backwall (Pl. LXVIII). One bone needle and several extremely fragmentary wood objects were found inside the pots and on the floor to the left of the entryway. No textiles and/or skins have been identified with this tomb (Table 2). The preliminary identification of the cultural material suggests an EB IA association (Schaub 1982). Wood samples for carbon dating have been collected.

Chamber A 110 SE Tomb dimensions are given in Table 1. Three blocking stones and mortar formed a seal between the shaft and the tomb. Approximately 40 cm. of silt covered the chamber floor. The silt consisted of a fine-grained, light brown clay forming a horizontal layering sequence in the entire tomb. The silt is the result of water and silt leaking through the blocking stones, offering support for the hypothesis that multiple, small blocking stones in connection with the lack of good packing material form a less perfect seal between the tomb and shaft (Ortner 1981). Silt was found inside all the articulated crania and all the pots except for three smaller juglets which floated on the top of the silt (Pl. LXIX).

Human skeletal material from 10 people was found. Two adult articulated skeletons were placed on their right side just inside the entryway. The skull was positioned to the left and the postcranial skeleton was laid to the right of the entryway. In both cases, the lower extremities were slightly bent toward the entryway and the upper extremities were bent in front of the face. One skeleton was male, the other female. A postcranial bone pile and associated skulls were placed between the two articulated skeletons and the backwall. There is no indication that the bone pile was pushed toward the back, thus making space for a later placement of the two articulated skeletons. This placement suggests that all the skeletal remains were interred at the same time. The bone pile yielded skeletal remains from two adults (one male and one female) in addition to the remains of five sub-adult individuals (Pl. LXIX). The sub-adults range in age from newborn to 0.5 yr (n = 3), 3.5 yrs (n = 1), and 2.5 yrs (n = 1). In addition one fetal humerus (approximately 1 to 2 month prenatal) was found between the two articulated skeletons (Table 3). The estimated living stature for the females was 155 cm. and 154 cm. and for the males 165 cm. and 168 cm. Estimates were based on measurements from the lower extremities (Tro-

tter and Glesser, 1952). Tomb chamber A 110 SE yielded a total of 30 pots, including a Kernoi vessel with four cups, two alabaster artifacts (mace heads or loom weights), two basalt vessels, and several perforated beads (found inside one pot). No textile fragments were found (Table 2). The preliminary identification of the pottery suggests an EB IA association (Schaub 1982). A few fragmentary wood samples were collected for carbon dating.

A 111

The tomb contained four burial chambers of which only three were used for burials. Three unsilted burial chambers (A 111 N, A 111 E, and A 111 W) were sealed from the shaft with blocking stones and mud mortar. One chamber (A 111 S) with no blocking stone was 95% silted (Figure 5). The burial chambers were cut into a matrix of clay, gravel, hard packed sand, and a few pockets of lime stone (Lisan marl).

Chamber A 111 E Nine stones packed in mortar sealed the chamber from the shaft. The dimensions of the unsilted burial chamber are given in Table 1. Two articulated adult skeletons and three disarticulated sub-adult skeletons were placed with the adults at the center of the burial chamber and the sub-adults in a bone pile between the adults and the entryway (Pl. LXX). The articulated skeletons (one female and one male) were placed on their right side with the skulls to the left and the postcranial skeletons laid to the right of the entryway with the lower extremities bent toward the entryway and the upper extremities flexed in front of the face. The upper right extremity of the female (humerus, ulna, and radius) was disconnected from the otherwise fully articulated skeleton and placed just southwest of the lumbar region (Pl. LXX). The subadult bone pile contained complete skeletons of two infants (both newborn to 0.5 yr. of age at death) and a single innominate bone suggesting the presence of a fetus (7th to 8th fetal month) (Table 3).

The location of the skeletons in chamber A 111 E with with parts of the articulated female skeleton covering the male skeleton and two of the disarticulated infant innominate bones overlapping the articulated female skeleton suggests that the articulated male skeleton was placed first along the backwall of the tomb, the female skeleton was then placed second, and finally the bones of the subadults were placed last.

Fifteen pots, one basalt vessel, and two unfired clay figurines were found in chamber A 111 E (Table 2). The figurines were located between the disarticulated bone pile containing the infant skeletal remains and the entryway. The pottery was evenly distributed to the left, right and along the backwall of the tomb with the larger items to the right. A preliminary analysis of the pottery indicates a late EB 1A association containing transition elements to EB 1B (Schaub 1982). No textiles and no wood objects or wood tools were found.

Chamber A 111 W Seven stones imbedded in mud mortar sealed the A 111 W chamber from the shaft. The chamber was free of silting but had a little roof fall along the sides of the chamber. Table 1 gives the dimensions of the chamber. Four adults (three males and one female) and a minimum of two infants were recovered (Table 3). One adult male was placed just inside the entryway with the skull to the left and the postcranial skeleton in front and to the right of the entryway. The body had been placed on its right side with the face toward the entryway. The location of the upper and lower extremities suggest a partial disarticulation of the longbones from the articulated trunk. The remaining skeletal remains were located between the partly articulated male skeleton and the backwall. In contrast to tombs previously excavated this season, the content of the bone pile was arranged with the long axis of most of the longbones placed parallel to the backwall, and the rest of the postcranial skeleton placed between the stacked longbones and the partially articulated male skeleton. All skulls assocaited with the bone pile were placed to the left of the entryway (Pl. LXXI). The estimated living stature based on measurements of the

lower extremities for the partly articulated male was 160 cm. Estimated stature for the males in the bone pile were 165 cm. and 163 cm. and for the female in the bone pile: 158 cm.

One extra longbone (radius) was included in the bone pile. It was not possible to associate this radius with any of the four adult skeletons and the radius must have been misplaced during the reburial process.

Fourteen pots, one basalt vessel, one pointed bone tool and several wood objects were found mostly located to the right of the entryway (Table 2). Preliminary analysis of the pottery indicates an EB IA association (Schaub 1982).

Chamber A 111 N The chamber had one blocking stone extensively packed with mortar to seal the chamber from the shaft. All dimensions are given in Table 1. No silting was found but there was a little roof fall along the walls.

One bone pile with disarticulated bones was located in the center of the chamber (Pl. LXXII). Complete skulls and cranial bones were found to the left of the entryway. The tentative sorting and cataloging of the postcranial skeletons suggests the presence of bones from a minimum of three adults and seven sub-adults. The total amount of single bones, however, does not add up to an exact number of individuals. Three adult innominate bones suggest the presence of at least two males. The skulls indicate the presence of one male and one female, thus a minimum of two males and one female were buried in this chamber. Skeletal material from a minimum of seven sub-adults were found in the bone pile, ages at death: 5-6 years (n = 1), 3 years (n = 1), 1.5-2 years (n = 1), and newborn to 0.5 yr (n = 4). Only in the case of the 5 to 6 year child did we identify more than 50 percent of the skeletal remains.

Forty nine pots, one basalt vessel, one artifact (mace head or loom weight), and several wood objects were found in A 111 N. Most of the cultural finds were located to the right of the entryway and along the backwall with most of the smaller pots stacked inside the larger ones (Table 2). The number of pots in this grave was the highest found during the 1981 season. A preliminary analysis of the pottery indicates a late EB 1A association containing some transition elements to EB 1B (Schaub 1982).

CHAMBER A 111S The chamber was empty. It had no blocking stone and contained no human remains or cultural items. The chamber was silted almost to the top of the ceiling leaving only a few centimeters unsilted. The non-layered stratigraphy of the shaft and the silted chamber suggests that it was filled at one time.

A 112

Four chambers associated with this tomb and one chamber belonging to an adjacent shaft tomb were found during the excavation (Figure 2). All chambers were cut into a matrix of Lisan marl. The stratigraphy of the shaft suggests multiple episodes of soil deposit during refill. At least two different shaft diameters could be identified. No blocking stones were found for any of the four chambers and the chambers were filled up to 90 per cent with material originating from the latest refill episode of the shaft. Fragmentary human skeletal material was found in all of the chambers. So far none of the material has been restored or analysed. The amount of skeletal material suggests that all the chambers contained at least one skeleton. No pottery or other cultural artifacts were present (Table2).

The results from the excavation of this shaft tomb strongly suggested that the tomb had been robbed before recent time (the same conductivity difference as in undisturbed shaft tombs). One scenario for the procedure the thieves used is as follows. (1) A shaft allowing entrance to the tombs was excavated inside the original shaft. (2) The blocking stones were removed from the shaft. (3) In the process of obtaining all the desirable gravegoods the thieves broke up the fragile human skeletal material. None of the skeletal material seems to have been removed, however. Similar procedures have been observed in robbed Early

Bronze Age tumuli on Bahrain Island (Frohilch 1980). (4) In order to locate burial chambers from an adjacent shaft tomb, a hard pointed instrument was forcefully thrown into the side walls of the chamber. Several cuts were found in strategically located places. One such search yielded one adjacent burial chamber. The fifth burial chamber (A 112 N2), was partly silted, yielded one undisturbed entryway with the blocking stone in situ allowing us to observe the original silting process through the entryway.

A 113

No burial chambers were found in connection with this shaft. A few blocking stones were found at the bottom of the shaft. However, no stratigraphic evidences indicating burial chambers could be identified. No skeletal remains were found, Three almost complete pots were found at the bottom of the shaft (Table 2). The dimensions of the shaft are given in Table 1. We suggest that this shaft is either the result of a shaft tomb construction which accidentally cut into an already existing burial chamber with the contents of the chamber moved to another shaft tomb, or the shaft is the result of thieves' digging to find a burial chamber. The last option is less likely than the first, since no human skeletal remains were found in shaft A 113.

A 114

One burial chamber is associated with tomb A 114. The single chamber was cut into a matrix of sand, gravel and clay. Dimensions for the shaft and for the grave chamber are given in Table 1.

CHAMBER A 114 N One blocking stone sealed with mud mortar isolated the chamber from the shaft (Table 1). The chamber was unsilted and contained disarticulated human bones, pottery, wood tools and other wood objects. All adult skulls were placed to the left of the entryway, and the postcranial skeletons were placed in a bone pile in the center of the chamber. Cultural items (pottery and wood-tools) were primarily placed to the right of the entryway (Pls. LXXIII, LXXIV). Three adults (two females and one male) and four sub-adults have been identified. The ages of the four sub-adults are, 11-12 years, 3 years, 1 year, and newborn. Two articulated vertebral columns were found in the bone pile. One was fully articulated and placed in the lower center of the bone pile with the cervical end toward the skulls. A partly articulated vertebral column was placed in the southern part of the bone pile closest to the entryway (Pl. LXXIII). The cranial bones from at least one subadult were stacked and placed in line with the skulls. The estimates of living stature for the adults are: (1) male 165 cm., (2) first female 157 cm, and (3) second female about 151 cm. Estimates are derived from maximum length of the longbones (Trotter and Glesser 1952). Severe osteoarthritis was found in one vertebral column suggesting hard work and/or old age.

Chamber A 114 N had exceptionally well-preserved wood objects. One wood stick, 137 cm. long, was located to the right of the entryway balancing on two pots (Pls. LXXIII, LXXIV).Three well-preserved wood tools and two wood bowls were conserved and removed from the grave chamber. Other wood objects, badly decomposed, were placed to the right and left of the entryway. Two wood samples were collected for carbon dating before any attempt to conserve the tomb content was carried out. Twenty-three pots ranging from large bowls to small juglets were placed to the right of the entryway. One basalt vesel and one alabaster artifact (mace head or loom weight) were found to the left of the cranial bones (Table 2). A preliminary analysis of the pottery suggests an EB IA association (Schaub 1982).

Several fragments of well preserved textiles were found on the longbones and on some of the scapulae. The distribution of these textile fragments suggests that the entire bone pile had been covered by a shroud after the interment, thus the textile fragments were found only on the upper part of the bones facing the top of the bone pile.

The human skeletal remains had been placed on two separate pieces of reed matting; one was a rectangular mat for the skulls and one rectangular mat was for the post cranial material. The location and placement of the two mats resulted in a closer location of the skulls to the entryway than the postcranial bones, which may be due to of the architecture of the tomb (Pls. LXXIII, LXXIV).

C 11

Shaft tomb C 11 was found approximately 500 meters northwest of the area in which all other 1981 excavated tombs were found (Area IV in figure2). The shaft leading to the tomb was cut into Lisan marl in an angle of about 60° (compared to the other EB IA tombs vertical shafts (90° to the horizontal surface). A single unsilted burial chamber was cut into the Lisan marl as an extension of the shaft and sealed from the shaft by a wall of small rocks held together by extensive use of mortar. The tomb dimensions are given in Table 1. No silt was found in the chamber.

Disarticulated human skeletons with the skulls to the left of the entryway and the postcranial skeletons in a bone pile in the center of the chamber were found. Two adults (one female and one male) and three subadult skeletons were found (Table 3). The sub-adult's age at death were new born to 0.5 year (n = 2), and 4 to 6 years (n = 1). Osteoarthritis was found on one set of vertebrae possibly belonging to the male skull. The estimated stature for the male was 162 cm. and for the female 155cm.

Eight pots were found. Six pots were located to the right of the entryway. One basalt vessel, one alabaster artifact (mace head or loom weight), and two pots were located to the left of the entryway (Table 2). Preliminary analysis of the pottery suggests an EB IA association (Schaub 1982). No organic material was found in C11 (Table 2).

Conclusions

The major objectives for the 1981 field work in the Bad edh-Dhra cemetery were as follows.

1. Field test the EM-31 electrical conductivity meter to determine if the equipment is sufficiently sensitive to detect slight variations in soil conductivity.

2. Determine the association between variation in soil conductivity and the presence of various man-made structures (shaft tombs and charnel houses).

3. Identify the eastern and western boundries of the Early Bronze Age cemetery at Bab edh-Dhra.

4. Obtain better estimates of the density of the shaft tombs in the cemetery area.

5. Conduct a topographical survey of the cemetery to provide data for a better map of the area.

6. Plot the location of excavated and unexcavated shaft tombs and charnel houses on the new topographic map.

7. Obtain additional skeletons from the EB IA phase (shaft tombs) to improve the sample size of existing materials.

As indicated in the above text, all of these objectives have at least partially been met. Undoubtedly additional data collection and analysis will permit us to clarify these objectives even further in future publications. In addition, the presence of partially articulated skeletons in some of the shaft tombs throws new evidence on the time framework for the primary burial phase of some of the secondary burials typical of the shaft tombs. Partially articulated skeletons suggest as little as a few weeks time for the primary burial phase, while broken skulls and postcranial bones often recovered from undisturbed shaft tombs suggest that the primary burial phase for others may have been several years or at least long enough for the bone to become relatively fragile. This evidence will support the present hypothesis of the Expedition that EB IA burials are the result of periodical returns to the site before the establishment of the permanent settlement in EB IA (Rast and Schaub 1981; Schaub 1981).

Our work on the skeletal biology of other more or less contemporary sites in the Near East begins to allow us to place the Bab edh-Dhra people in the context of the broader human biological history of the region. We also are beginning to obtain

data on how the shaft tomb people at Bab edh-Dhra are related to the people associated with subsequent occupation of the site through the Early Bronze Age. Certainly a better understanding of the human biological history of the Near East has much to add to our understanding of the human biological history of this area which provided the roots for Western Civilization.

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INSCRIPTIONS RELIGIEUSES DE GÉRASA

par

P.-L. Gatier

La préparation du tome 2 du *Corpus des Inscriptions Grecques et Latines de Jordanie* [1] m'a permis, en parcourant le site de Gérasa, l'actuelle Jerash, ainsi que les villages environnants, de découvrir des textes inédits. J'en présente quelques-uns concernant certains aspects de la vie religieuse de la cité [2].

N° 1. Dédicace à Zeus Ange. Petite base en calcaire, placée devant la construction antique voûtée, utilisée aujourd'hui comme dépôt, entre le théâtre sud et la cour basse du temple de Zeus. La corniche supérieure est en partie brisée au-dessus d'un bandeau contenant la première ligne d'une inscription dont la seconde se trouve sur le dé, au-dessus d'un cartouche à queues d'aronde formant un panneau rectangulaire en creux vraisemblablement destiné à recevoir une autre inscription (peinte ?) ; sous la queue d'aronde droite une feuille d'eau est gravée. Dimensions : 60 x 41 x 41 ; dé : 28 x 28 x 28 ; h. l. : 4,5. Photo, pl. LXXV, 1

Διὶ
Ἀγγέλωι.

A Zeus Ange.

Cette inscription est un témoignage

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1. Le *Corpus des Inscriptions Grecques et Latines de Jordanie* est préparé par l'Institut Fernand Courby de la Maison de l'Orient Méditerranéen à Lyon (Université Lyon II et CNRS). Y travaillent, selon un découpage régional, M.M. Jean Marcillet-Jaubert, Maurice Sartre, Fawzi Zayadine et moi-même. Le tome 1 concernant la région centre-ouest de la Transjordanie, avec Amman, Madaba, Dhiban..., est sous presse.

Le Dr. Fawzi Zayadine se dépense sans compter pour cette entreprise ; je profite de cette occasion pour lui témoigner ma reconnaissance.

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Un prochain article traitera d'inscriptions byzantines de Gérasa.

Abréviations :

- Welles = C. B. Welles, *The Inscriptions*, p. 355-494, *in* C. H. Kraeling, *Gerasa, City of the Decapolis*, New Haven, 1938.

- Sourdel = D. Sourdel, *Les cultes du Hauran à l'époque romaine*, Paris, 1952.

- *PAES*, 3, A = E. Littmann, R. Magie, R. Stuart, *Syria, Publications of the Princeton University Archaeological Expeditions to Syria in 1904-5 and 1909, Greek and Latin Inscriptions, Southern Syria*, Leiden, 1921.

supplémentaire du culte des anges [3]. Ici la divinité elle-même est vénérée, dans son aspect d'ange, «dans son apparition avec laquelle il se confond» [4]. Ce culte a un caractère sémitique marqué, peut-être nabatéen.

Quelques lettres ont été gravées à la l.1, dans un état précédent de l'inscription, ainsi le second *iota* ressemble à un *sigma*, ce que je ne pense pas qu'il soit. On remarque également, un peu plus loin d'autres traces de lettres plus effacées. C'est pour préparer le second état qu'on a aussi recreusé le dé, mutilant par là la feuille d'eau.

N° 2. Offrande d'une statue et d'un bâtiment. Bloc de calcaire dur soigneusement taillé, dont les deux arêtes horizontales supérieures ont été arrondies. Trouvé en octobre 1981 à 300 m. de la porte sud, dans la nécropole, légèrement au Sud du restaurant en construction, parmi des déblais, par des ouvriers. On aperçoit des traces de peinture rouge dans les lettres. Dimensions : 47 x 73 x 22 ; h. l. : 8 (pre-

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3. Sur le culte des anges dans le paganisme, F. Cumont, «Les anges du paganisme», *RHR*, 72, 1915, p. 159-182 ; L. Robert, *RA*, 1935, II, p. 154-155, sur un texte de Stratonicée de Carie ; J. et L. Robert, *Bull. épigr.*, 1941, 13 *c*) et 106, bibliographie et commentaire sur des anges à Théra, dont ils montrent le caractère chrétien ; L. Robert, *Anatolia*, 3, 1958, p. 115-123 (= *Opera Minora Selecta*, 1, Amsterdam, 1969, p. 414-422) sur l'Ange en Asie Mineure ; *idem*, *Hellenica*, 11-12, Paris, 1960, p. 430-434, sur les anges en Phrygie (milieu chrétien avec une influence juive possible et peut-être un substrat païen) ; *idem*, *CRAI*, 1971, p. 613-614, sur la mention d'anges-messagers, dans un oracle gravé au 3e s. de notre ère à Oinoanda. Cumont et récemment J. T. Milik, *Dédicaces faites par des dieux*, Paris, 1972, p. 35-36, 195-199 et 423-440, insistent sur le caractère sémitique que semble avoir ce culte : J. T. Milik, p. 440, «La croyance en l'Ange qui personnifie le Dieu intervenant dans les affaires des hommes était aussi vivante, pendant [le 3e siècle avant notre ère], chez les Juifs de Palestine et d'Égypte que chez les Phéniciens hellénisés de la campagne tyrienne».

4. H. Seyrig, *Syria*, 10, 1929, p. 346. L. Robert, *Anatolia*, 3, 1958, p. 116-118, a prouvé qu'en Asie Mineure il n'y avait pas assimilation entre Zeus Très Haut et le Divin Saint et Juste ou l'Ange Saint Juste. Ainsi on pourrait «considérer que la seconde personne divine est placée à côté de l'autre sans copule comme dans tant de dédicaces», et traduire ainsi «A Zeus ; à l'Ange». L'exemple proche du culte de Jupiter héliopolitain montre que les Zeus sémitiques peuvent s'identifier à leur Ange, puisque le dieu de Baalbek est vénéré à Portus et Rome sous le nom de *Jupiter Optimus Maximus Angelus Heliopolitanus*, cf. J.T. Milik, p. 432-435. Dans de nombreux autres cas, il y a séparation entre l'Ange et le Dieu ; ainsi Malakbêl est-il à Palmyre «l'Ange de Bêl». Milik étudie «Ilâh-'al-Gê», identifié à Dousarés, dieu national des Nabatéens, dont l'Ange se nomme Idarouma : «la main levée».

Curieusement, le néopythagoricien Nicomaque de Gérasa a écrit dans ses *Theologoumena arithmeticae*, ed. Ast, 1817, p. 43, un passage célèbre sur les anges signalant que les plus illustres des Babyloniens, Hostanès et Zoroastre, donnaient le nom d'anges ou d'archanges aux esprits qui présidaient aux sept sphères des planètes (cité par Cumont, *op. cit.*, p. 163, n. 4 ; par R. Reitzenstein, *Die Hellenistischen Mysterien Religionen*, Göttingen, 3e ed., 1927, p. 171). Seul point de rapprochement possible entre notre inscription et ce texte consacré à un aspect de la théologie irano-babylonienne, l'éveil de l'attention de Nicomaque à un type de vénération connu dans sa patrie est envisageable.

mière ligne)-5 (trois dernières lignes). Photo, pl. LXXV, 2

Ἀγαθῇ Τύχῃ. Ὑπὲρ σωτηρίας τοῦ Κυρίου
Αὐτοκράτορος Μ(άρκου) Αὐρηλίου
Κομόδου Ἀντωνίνου τοῦ Κυρίου Αὐ-
4 τοκράτορος τὸ ἄγαλμα σὺν τῷ οἴκῳ ἐγέ-
νετο ἐξ ἀπολείψεος (δηναρίων) ὀκτακοσίων
Φλ(αουίου) Ἰουλιάνου τοῦ καὶ Λιβεραλίου καὶ προσφιλο-
τιμησαμένου Φλ(αουίου) Κερεαλίου τοῦ καὶ Μαρκιανοῦ υἱοῦ
8 (δηνάρια) διακόσια εὐσεβείας ἕνεκεν, τῷ ζμσ' Ὑπερβερετ(αίου) ε'.

A la Bonne Fortune. Pour le salut du Seigneur Empereur Marcus Aurelius Commode Antoninus le Seigneur Empereur, la statue avec la chapelle ont été faites par l'offrande de 800 deniers effectuée par Flavius Julianus dit Liberalios et alors que Flavius Cerealios dit Marcianus, son fils, a offert avec générosité 200 deniers, l'an 247, le 5e jour d'Hyperbérétaios.

On remarquera que l'inscription a dû poser des difficultés au graveur qui a commencé par former une belle écriture soignée mais qui occupe beaucoup de place ; il a serré son texte et réduit la dimension de ses lettres dans les trois dernières lignes. La ligne 8 est franchement bâclée. Ligatures l.1 TH de *σωτηρίας*, l.7 MH ; les abréviations de Φλ(*αουίου*) l.6 et 7 sont marquées par un petit *lambda* surmontant le *phi* ; *δηνάρια* est abrégé l.5 et 8 par le signe habituel ; tilde sur le grand *epsilon* du nombre (en marge) l.8 ; les deux premiers *epsilon* de Ὑπερβερετ(*αίου*) sont carrés alors que tous les autres de ce texte sont lunaires. A la ligne 3 il y a quelques traces de martelage (inachevé ou complété par de la peinture ?) sur Κομόδου, épel d'ailleurs moins habituel que Κομμόδου.

Le texte signale la libéralité de deux personnages qui ont offert sous le règne de Commode une statue avec le *naos* qui l'entoure, ordre d'énumération qui reflète bien la mentalité grecque, accordant l'importance principale à la représentation figurée de la divinité. Il doit s'agir, vu la faiblesse de la somme [5], d'une chapelle destinée à abriter la statue, telle celle dont H. Seyrig a identifié les représentations sur des monnaies de Capitolias [6].

La date, soigneusement précisée, est le 5e jour du mois d'Hyperbérétaios de l'an 247 de l'ère de Gérasa ; nous avons tout lieu de croire que l'année de Gérasa

5. La bibliographie est donnée dans l'article de J.P. Rey-Coquais, *JRS*, 1968, aux p. 72-73, où les principales questions se rapportant à la monnaie sont exposées. Quelle que soit la valeur relative de la drachme et du denier, la somme est médiocre. A Gérasa on fait mention de drachmes, Welles, 2-6, 17, 49, 52, dites parfois d'argent de Tyr, Welles, 3-5, entre 22 et 74 de notre ère (et non au 2e s., comme l'indique Rey-Coquais). La seule mention du denier se trouve dans un décret de l'association des technites dionysiaques entre 105 et 114, Welles, 192 (amende de 25 deniers pour les concurrents et artistes qui négligent de couronner une statue de bienfaiteur).

6. H. Seyrig, «Temples, cultes et souvenirs historiques de la Décapole», *Syria*, 36, 1959, p. 60-78 (= *Antiquités Syriennes*, 6, Paris, 1966, p. 34-53) : Deux édifices, à Capitolias, abritent une statue de Tyché, «les deux formes alternent sur les monnaies entre Marc-Aurèle et Macrin, et témoignent certainement de l'existence simultanée de deux sanctuaires. A vrai dire, c'étaient peut-être moins là de vrais temples, que des chapelles, destinées à l'ornement de la ville, tout autant qu'au culte» (p. 66 = 39).

commençait au mois de Gorpiaios [7], il s'agit donc ici de septembre 184. Il est possible que la date corresponde à une fête, et précisément on retrouve dans le Hauran de nombreux témoignages montrant que la période d'automne, d'août à octobre, était l'un des deux moments privilégiés, avec le printemps, pour les activités religieuses, fêtes, constructions et dédicaces [8]. Il est à peu près assuré que la statue abritée par la chapelle était une représentation de divinité [9].

La titulature de l'empereur est incomplète d'une part et répétitive d'autre part, il semble donc qu'aux l. 3-4 il y a eu une confusion du graveur, preuve supplémentaire du laisser-aller qui a présidé à la réalisation de cette inscription.

Les donateurs, citoyens romains, portent le gentilice Flavius, extrêmement courant à Gérasa et dans toute la région depuis le passage de Vespasien pendant la Guerre Juive ; le père a le *cognomen* de Julianus, très courant en Syrie, et le fils celui de Céréalios, repris du latin Cerealis, qui permet de les rattacher à une famille dont on connaît plusieurs représentants dans la première moitié du 2e s. à Gérasa [10].
Le *signum* du père, Libéralios, pour Liberalis latin, et celui du fils, Marcianus [11], témoignent de la «romanisation» de cette importante famille.

N° 3. Offrande d'un aigle au Dieu Arabique. Épais bloc de calcaire, taillé sur trois côtés et vraisemblablement destiné à être engagé dans un ensemble architectural plus vaste ; tel qu'il demeure, il a l'allure d'une base avec quatre lignes gravées sur le dé et une cinquième sur le régistre inférieur ; on remarque deux protubérances sur le couronnement ; il n'y a pas de traces de tenons. Trouvé dans une zone de maisons abandonnées,

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7. Une mosaïque des mois, datant du 6e ou du 7e s., a été retrouvée dans l'église dite d'Élie, Marie et Soreg, S.J. Saller et B. Bagatti, *The Town of Nebo*, Jérusalem, 1949, p. 269-289 et pl. 45-51 ; le premier mois figuré est donc Gorpiaios. Les deux autres mosaïques des mois, Welles, 295 et 307, commencent par Audnaios qui ne peut en aucune manière être le premier mois du calendrier proprement gérasénien (on attribuera leur travail, de très grande qualité, à l'atelier d'un centre plus important ; à la différence du style que l'on aperçoit dans la mosaïque de l'église d'Élie, Marie et Soreg, provincial et assez maladroit).

Nous avons toute raison de penser que Philadelphie-Amman avait un calendrier semblable à celui de Gérasa.

8. Sourdel, p. 109-111.

9. Par ailleurs d'autres offrandes de statues sont connues par des inscriptions ; statues de divinités nommées, Welles, 6, 9, 10, 15, 22, 53 ; statues dont l'identité n'est pas précisée, Welles, 121-123 ; statues de prêtresses, Welles, 25 ; statue d'un agonothète, Welles, 192.

10. Par ordre chronologique :

- entre 105 et 114, Titus Flavius Gerrenus, fils de Flavius Flacus, de la tribu Quirina, agonothète particulièrement généreux, Welles, 192.
- en 115-116, Titus Flavius Flaccus, de la tribu Quirina, fils de Flavius Cerialios, Welles, 119.
- en 130, Flavius Flaccus (Dé[...] ?) agonothète, Welles, 144.
- en 156 (?), Flavius Cersilochus, Welles, 43.
- à une date inconnue, Titus Flavius Flaccus Cersilochus, fils de Flaccus, de la tribu Quirina, Welles, 182.

Il est probable que certaines de ces mentions concernent le même personnage, il est possible que d'autres *Flavii* de Gérasa se rattachent également à cette famille. Le *cognomen* Cerealis (et non Cerealios ou Cerialios) se retrouve en grec à Gérasa, après 152 de notre ère, Welles, 164 : Lucius Ulpius Cerealis. Sur l'origine de Cerealis, Kraeling, p. 46.

La famille se veut romaine, le seul nom véritablement grec est Cersilochus.

11. Faut-il chercher quelque rapport avec le gouverneur Geminius Marcianus ?

parmi des vestiges antiques (tronçons de colonne, chapiteau de pilastre orné d'acanthes), et en excellent état de conservation, le 5 novembre 1981, à Deir-el-Liyat, village situé à trois kilomètres à l'Ouest de Jérash, sur la route de Souf, par Adnan Oweis et moi-même. Nous avons transporté la pierre à Jérash. Dimensions : 25 x 30 x 48 ; h. l. : 2-3. Photo, Pl. LXXVI, 1.

Θοφση Ζοβαίδου Θεῷ Ἀ-
ραβικῷ τὸν ἀετὸν εὐ-
σεβείας χάριν
4 ἐκ τῶν ἰδίων ἀν-
ήγειρεν.

Thophsê femme (?) de Zobaidos, pour le Dieu Arabique, a construit l'aigle, par piété, de ses propres ressources.

Gravure assez médiocre. Coexistent dans le même texte des formes différentes de la même lettre : le *nu* par exemple est penché ou droit. La lettre *alpha* oubliée au début de la l. 2 a été gravée sur la moulure au-dessus de la l. 1.

La donatrice porte un nom d'allure sémitique dont je ne connais pas d'autre exemple. Son mari (?) porte un nom sémitique bien connu sous les formes Σόβειδος, Σάβαδος... etc et présent à Gérasa même [12].

Le Dieu Arabique (ou Arabe) est bien connu à Gérasa. Il apparaît dans cinq autres textes [13] uniquement dans la région de Gérasa, et sa personnalité reste assez mystérieuse [14]. Il est intéressant de constater que nous avons ici le deuxième texte mentionnant l'offrande d'un aigle à ce Dieu. Cela le rapproche fortement des divinités de type Zeus-Baal, mais aussi lui fournit un trait commun avec Lycurgue [15]; l'offrande d'un

12. Très nombreux exemples en Syrie, Waddington, *Inscriptions grecques et latines de la Syrie*, Paris, 1870, n° 1879, 2612,... etc. Le Gérasénien Marcus Aurelius... fils de Marcus Aurelius Zobaidos est connu sous Sévère Alexandre, Welles, 156. On peut envisager une parenté ou une identité avec le personnage de notre inscription.

13. Welles, 19 ; Welles, 20, où l'on offre des autels et un vestibule (?) au Dieu Saint Arabique ; Welles, 21, offrande d'un autel au Dieu Arabique Secourable ; Welles, 22, où le Dieu Arabique et une autre divinité (?) reçoivent des statues et d'autres dons ; de Hamameh à 17 km au Nord-Est de Jérash, une inscription, R. de Vaux, *ADAJ*, 1, 1951, p. 23-24 (*SEG*, 14, 830), mentionne l'offrande d'un aigle au Dieu Arabique.

14. D'après Welles, p 385, on peut l'identifier avec Paqeidas ou avec Dousarès-Dionysos, fils de Paqeidas ; pour L.H. Vincent, *RB*, 1940, p. 98-129, c'est l'équivalent de Paqeidas et de Dousarès ; ce qui suscite le doute de R. Dussaud, *Syria*, 22, 1941, p. 295-297.

15. Sur les offrandes d'aigle, Sourdel, p. 29, 57, 75-76, 82, n. 2, et surtout 109, n. 4. Offrande d'aigle associé avec le lion, M. Dunand, «Nouvelles Inscriptions du Djebel Druze et du Hauran», *RB*, 61, 1932, p. 414, n° 54 (*SEG*, 7, 1058) à Khirbet el-Hoyé ; un aigle est offert à Khoureibat au dieu Lycurgue, *PAES*, 3, A, n° 789 ; si on ajoute l'inscription, M. Dunand, *Le Musée de Soueida*, Paris, 1934, n° 149, on doit constater que les dédicaces d'aigles ne sont pas particulièrement nombreuses en Syrie, en dépit de l'abondance des représentations figurées de ces oiseaux. Sur les dédicaces d'aigles, J. et L. Robert, *Bull. épigr.*, 1973, 375, p. 138.

Le sens de ἀετός peut être architectural ; le seul cas douteux est celui du Musée de Soueida.

aigle en deux points du territoire de Gérasa au Dieu Arabique montre que l'oiseau céleste le caractérise [16].

N° 4. Dédicace à la déesse Leucothée. Petit autel en calcaire se trouvant actuellement dans la deuxième cour des réserves du Musée. Le bandeau de couronnement porte une ligne, le chanfrein supérieur deux, le dé six, le chanfrein inférieur deux Les deux côtés de l'autel ont été cassés ou endommagés, ainsi manquent le début et la fin des quatre premières lignes et le début des cinq suivantes. Dimensions : 59 x 28 x 28 ; h. l. : 4. Photo, pl. LXXVI, 2.

[Ἀγα]θῇ Τύχῃ.
[Ὑπὲ]ρ σωτ[ηρί]-
[ας] τοῦ Κυ[ρ]-
ίου. Θεᾷ ἐπ-
[η]κόῳ Λευκ-
[ο]θέᾳ, Αὐρή-
[λι]ς Ηρ ὁ καί
[..]νος Ἀρτε-
μεισιασ(τής), εὐσεβῶν ἀ-
νέθηκεν.

A la Bonne Fortune. Pour le salut du Seigneur (Empereur). A la Déesse Secourable Leucothée, Aurelis Er, dit ..nos, artémisiaste (?), plein de piété a offert.

L. 7, début, il est possible qu'il ne manque qu'une lettre au début, auquel cas on aurait Αὐρή[λ(ιος)] Ση ρ, de même une lettre peut manquer à la fin de cette même ligne.

La difficulté de cette inscription se trouve dans les noms du dédicant ; cet Aurelios, citoyen romain, a un *cognomen* qui peut être le rare Her, sémitique [17], voire Ser ou Aser ; son *signum* est incomplet, de nombreux noms peuvent convenir dont Νῶνος connu à Gérasa [18]. L. 8-9, on peut expliquer le mot, soit par l'hypothèse ἀρτεμεισιασ(τής), c'est-à-dire «membre de la confrérie des fidèles d'Artemis», la grande divinité de Gérasa, soit par «fils d'Artemisia», en admettant une matronymie, connue par des exemples plus tardifs [19] mais difficile à admettre pour un citoyen romain.

16. Pour Sourdel, p. 109, la valeur symbolique des offrandes «devait être quelque peu dépréciée» ; tel ne paraît pas être le cas. Sur les caractères de Lycurgue, Sourdel, p. 81-84 ; sur Dousarès avec qui il a des rapports étroits, *id.*, p. 59-68.

Sur la symbolique de l'aigle, H. Seyrig, *Syria*, 26, 1949, p. 232-235 (= *Antiquités Syriennes*, 4, Paris, 1953, p. 47-50).

17. Er, Luc, 3, 28 ; Aser est le plus courant, Josèphe, *AJ*, 1, 306, au génitif *PAES*, 3, 518. Les trois noms se trouvent dans un contexte non sémitique, cf. Pape et Benseler. Er peut être l'équivalent de Héras, nom sémitique courant. Sur Ηρ , L. Robert, *Les stèles funéraires de Byzance gréco-romaines*, Paris, 1964.

18. Welles, 234.

19. *IGLJ*, 1, à paraître, cf. J. Saller et B. Bagatti, *The Town of Nebo*, Jérusalem, 1949, (inscriptions byzantines). Deux exemples dans le pays de Moab, là aussi à basse époque, R. Canova, *Iscrizioni e monumenti proto cristiani del paese di Moab*, Città del Vaticano, 1954, N° 158 et 280. Une Artemisia est connue à Gérasa, Welles, 5.

La déesse Leucothée, à qui est faite la dédicace, est connue par trois inscriptions de l'Hermon et une de Tyr [20]. H. Seyrig, après P. Perdrizet [21] et C. Clermont-Ganneau, ont montré les rapports entre Leucothée «déesse marine par excellence», Atargatis, Astarté et Dercéto. Nous voyons pour la première fois l'épithète de «Secourable» donnée à la déesse Leucothée, ce qui ne précise guère sa physionomie puisque le terme est assez fréquent dans le monde sémitique [22]. Les liens entre la côte phénicienne (Tyr, et Sidon dont dépend une partie de l'Hermon) et la Décapole sont également confirmés [23].

Dans ces brefs textes, la vie religieuse de Gérasa nous paraît fortement marquée de traits sémitiques, d'origine phénicienne, arabe ou impossible à préciser. C'est à travers le nom et le statut social qu'une influence romaine semble s'exercer sur la population locale plus ou moins hellénisée.

P.-L. Gatier

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20. H. Seyrig, *Syria*, 40, 1963, p. 26 (= *Antiquités syriennes*, 6, Paris, 1966, p. 128). A Rahlé, deux inscriptions, (L. Jalabert, *Mel. Fac. Or.*, 2, 1907, p. 273-278 ; et R. Mouterde, *MUSJ*, 25, 1959, p. 81-82), à Kalaat Djendal (C. Fossey, *BCH*, 19, 1895, p. 303-306 ; C. Clermont-Ganneau, *RAO*, 2, p. 61 et 98 ; *IGRR*, 3, 1075). A Tyr, R. Mouterde, *MUSJ*, 1962, p. 17-19.

21. *RHR*, 105, 1932, p. 209.

22. Sourdel, p. 98.

23. H. Seyrig, *Syria*, 37, 1960, p. 249 (= *Antiquités syriennes*, 6, Paris, 1966, p. 95), et *ibid.*, 40, 1963, p. 20-22 (= p. 122-124).

THE RESTORATION OF THE UMAYYAD MONUMENTAL CONSTRUCTIONS ON THE AMMAN CITADEL (1979- 1981)

by
A. Almagro

As a result of the collaboration between the Department of Antiquities of Jordan and the Spanish Archaeological Mission in Jordan, a program of consolidation and restoration of the remains of the Umayyad Palace on the Citadel of Amman is being developed. This program, which is being conducted simultaneously with a Hispanic-Jordanian excavation program, has as its main goal the conservation of the many remains in this large monument complex, which have come to light in the excavations, thus ensuring their preservation for posterity and providing a better understanding of the remains to both scholars and laymen.

After a careful photogrammetric mapping of the whole citadel, studies and recommendations for the Umayyad restoration were submitted, not only for the vestibule or audience hall, but for all of the ruins which were part of the palace complex.

The basic criteria for these restorations were the following:

1) The work of restoration must proceed with the strictest respect for the remains as they are, such that the restoration does not go beyond the limit of historical certitude, avoiding imaginary or fantastic invention. This percept has been followed in all our work.
2) Our first priority is the consolidation of the archaeological remains so that we can guarantee that which is now in existence will be preserved.
3) The reconstruction of the archaeological remains should give a better understanding to the laymen about the ruins themselves both as to their original function and their structure.
4) Lastly, we have attempted to insure that the final result lives up to, and does not contrast excessively with the original work to blend the reconstructed part with the original remains so that the eye is not presented with a striking contrast (for example we re-use old stones rather than cutting new ones). However, the scholar may distinguish the original from the reconstructed by consulting the records housed in the Department of Antiquities, to be published shortly.

With these criteria in mind, we began consolidation of the vestibule in 1978. We first filled the gaps in the walls which had been opened by treasure hunters, since these gaps threatened the stability of the entire building.

In 1979, under the direction of architect Santiago Camacho, we began to clear the upper part of the stairway leading to the roof of the vestibule, which permitted the discovery of a loop hole opening to the north. In addition, we were able to re-erect some of the interior walls of the staircase. We also replaced some of the upper stones of the north facade. (pl. LXXVII, No. 1,2)

In 1980, architects Pedro Ponce de Leon, Santiago Camacho, and Jose Felix Mendez supervised the restoration of the interior walls of the northeast room of the vestibule, and the upper courses of the eastern half of the northern facade. (Figs. 1,2,3,4).

In 1981, architects Javier Poch, Alberto Campanero and Santiago Camacho worked on the restoration of the eastern facade of the vestibule.

The area of the antique Roman temenos, occupied during Umayyad times by various buildings which were probably residential, had been excavated in the eastern portion between 1927 and 1938 by an Italian team headed by R. Bartoccini. Various circumstances, which are not worth mentioning here, resulted in the disappearnce

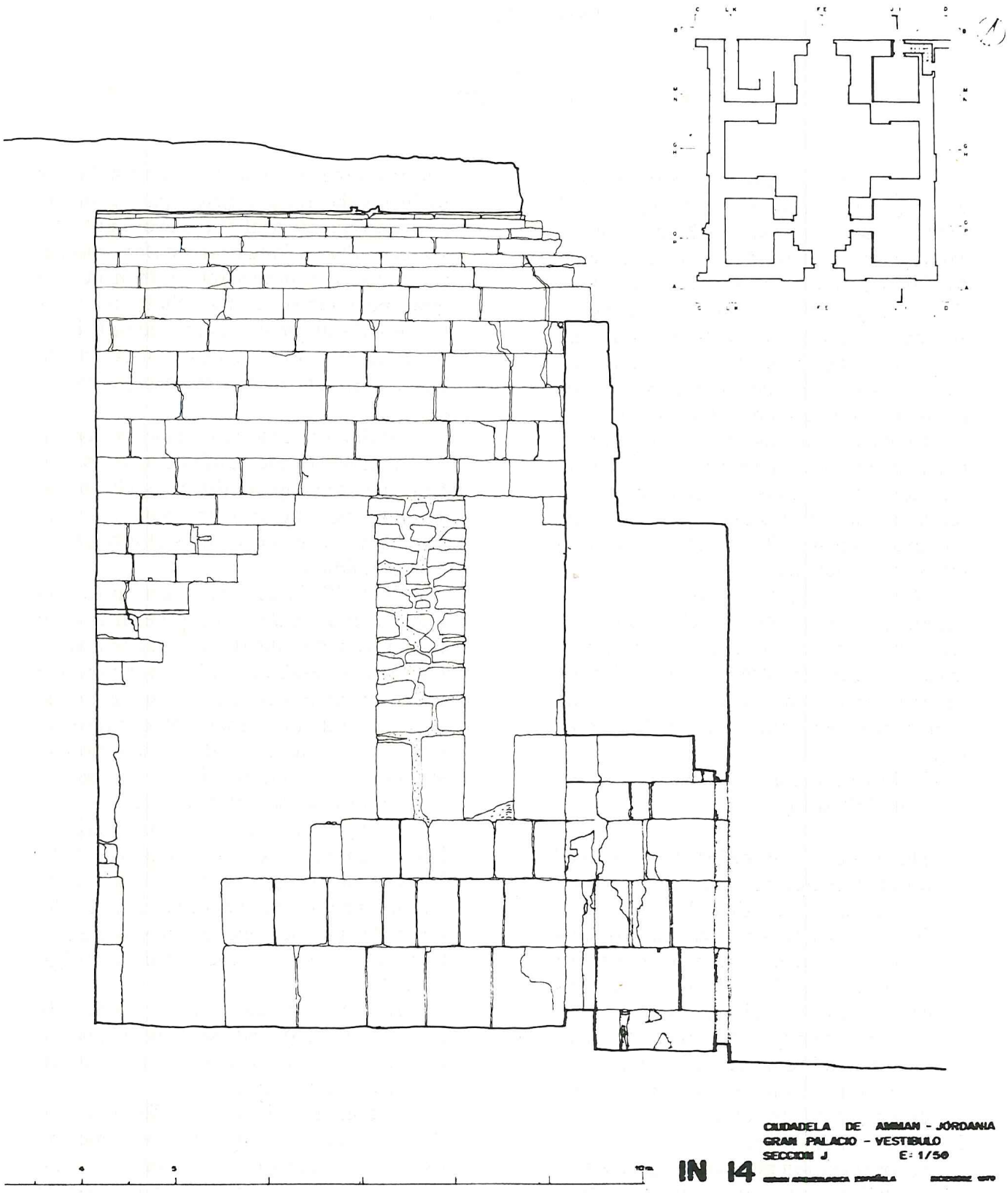

Fig. 1: The west wall of the northeast room of the vestibule before its restoration.

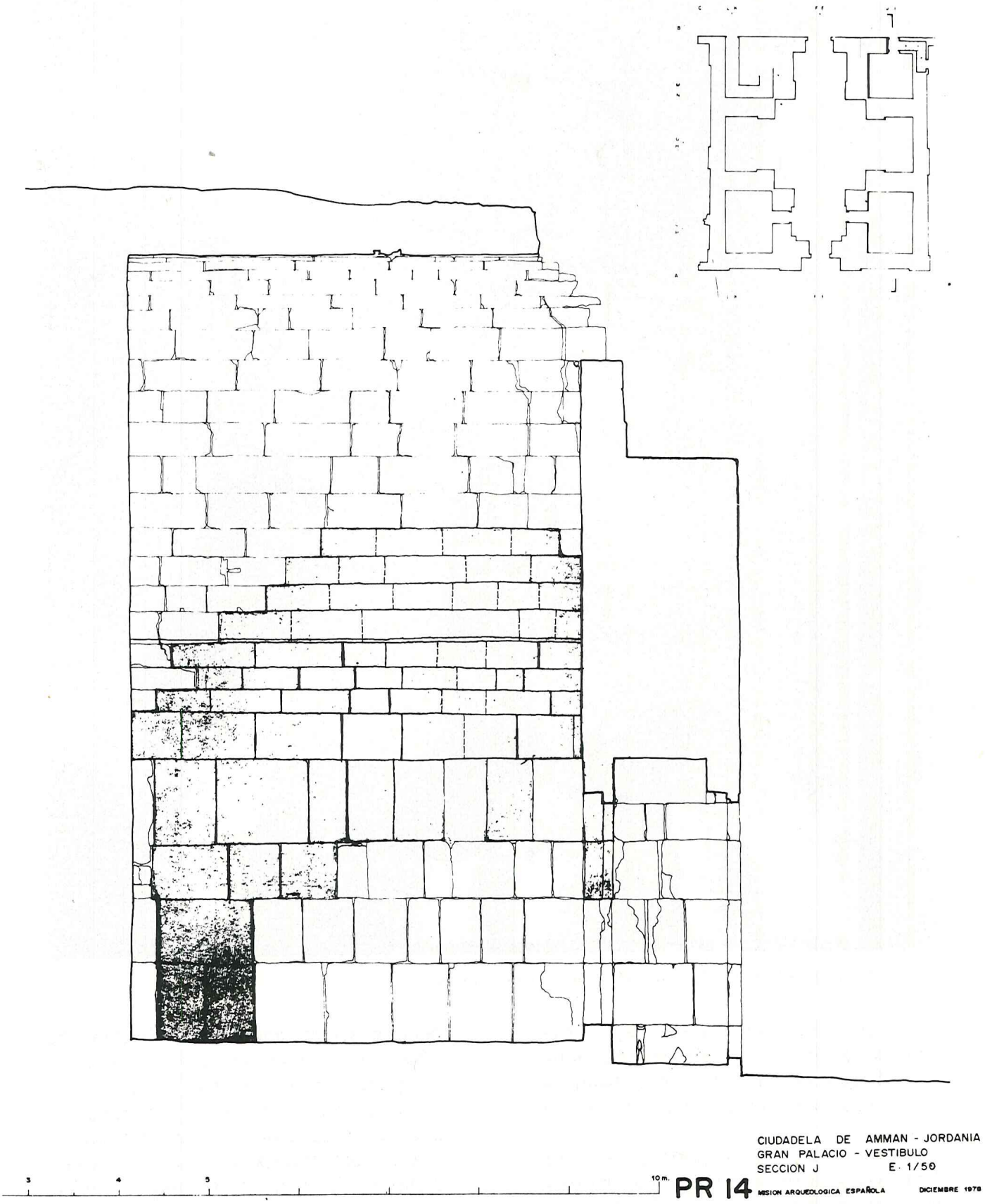

Fig. 2: The west wall of the northeast room of the vestibule after its restoration.



Fig 3: The west wall of the northeast room before the restoration.

of the great majority of the Umayyad structures, leaving in the area an enormous pile of stones-for the most part Roman-which had been reused in the Umayyad walls.

Conscious of the importance of these Umayyad structures as integral to the palace complex as a whole, we initiated a study and analysis of the documentation in order to try to reconstruct at least the plan of these structures. During 1980, we proceeded to consolidate the ruins which had been preserved, and to carefully clean the whole area, which was at that moment a complete ruin. In 1981, we began a faithful reconstruction of the outline of Buildings A and B, whose structures we were able to discern, and transported the Roman elements to the area of Building C, which, because of the state of its destruction, was absolutely impossible to reconstruct. (Fig. 5).

In the northern zone of the Roman temenos we shall try to make the "ana-



Fig. 4: The west wall of the northeast room after the restoration.

stylosis" of some of the Roman ruins, currently in the planning stages.

In order to complete the reconstruction of the plan of the buildings, the walls were rebuilt to the height of one course of stone, using a mortar mixed with lime and cement and employing a similar technique to that used in the Umayyad period. When it was possible to identify the stones, we replaced them in their original positions. Several walls of later periods, of little historical value or artistic interest, which obstructed the understanding of the original Umayyad structure, were removed, after fully documenting them.

Also during 1979 and 1981, we consolidated the excavated structures in the northern area, and we wait for successive years to be able to undertake an adequate restoration and "analysis" of several fallen elements.

With this work of restoration, brought to fruition by the cooperation between the Jordanian Department of Antiquities and

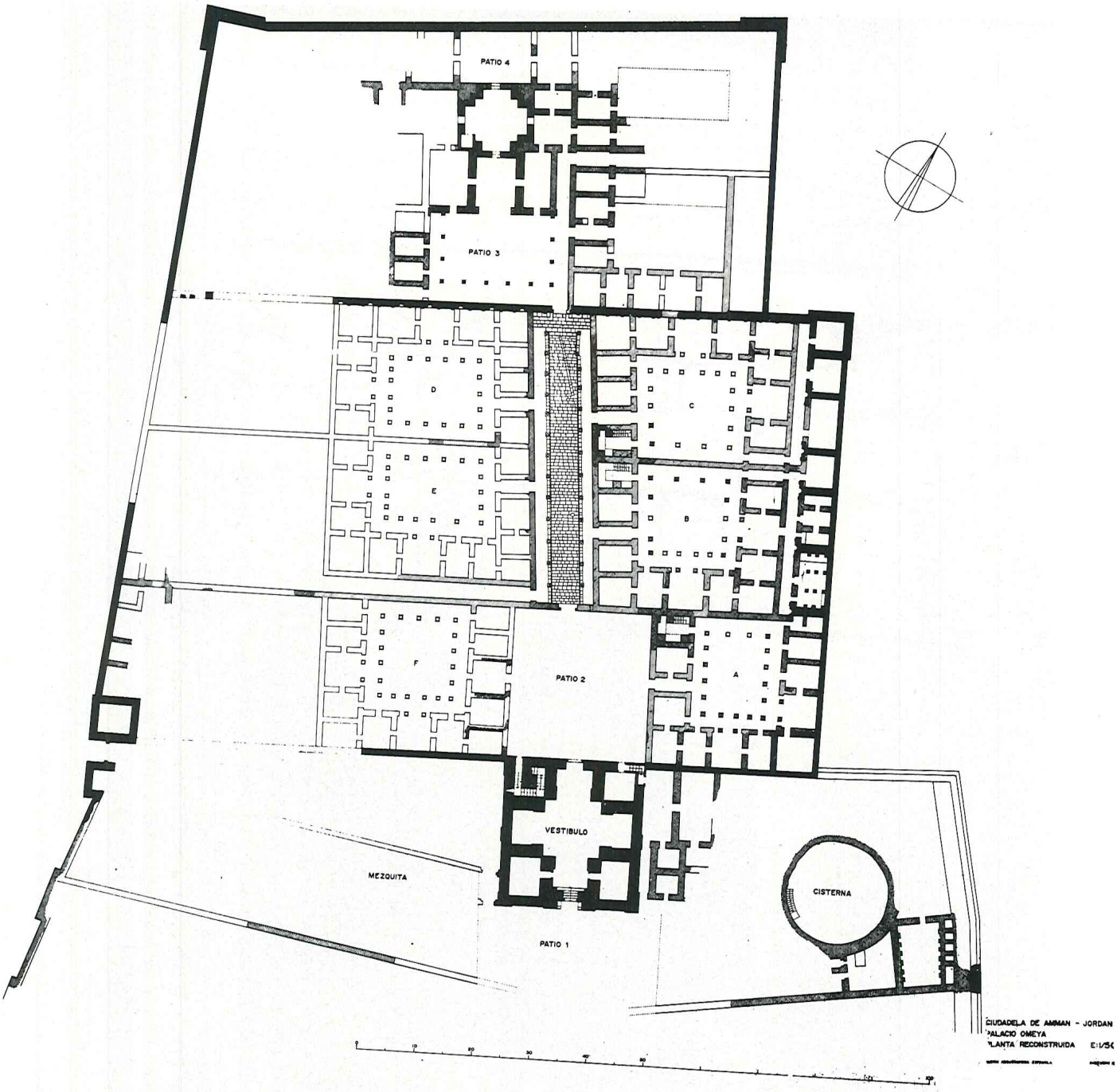

Fig. 5: The general plan of the Umayyad Palace with the reconstruction of the destroyed structures.

the Spanish Archaeological Mission in Jordan, we hope that this great Umayyad palace complex, of immense artistic and archaeological interest, will be valued, conserved, and made available to all of those persons interested in their past.

We would also like to take this opportunity to point out to archaeologists and to those responsible for antiquities the importance of consolidating all architectural remains immediately after an excavation, if one does not want to see in only a few years the transformation of a coherent building into a pile of rubble-incomprehensible and unreconstructable.

This kind of labour requires a great deal of time and more money than the excavation itself. But if this not done, it is better not to excavate at all, or else to backfill these excavations with sterile soil. Only in this way we can preserve the legacy of our past, leaving it as a heritage for those who come after us.

Antonio Almagro

AN EB -MB TOMB AT JABAL JOFEH IN AMMAN

by
Adnan Hadidi

This tomb was discovered accidentally at the end of August 1980 while workmen laying out a new sewerage line in the area of Um Tina South on Jabal Jofeh overlooking the Roman theater and forum at the wadi bed in down town Amman. The find was reported immediately and the Department of Antiquities took over excavations of the tomb and its adjacent vicinity; ten labourers were employed to lift and carry, and the actual clearance and recording was done by Mr. Hifzi Haddad, Chief Inspector of Antiquities of the Amman Governorate, assisted by Inspector of Antiquities Mr. Tayseer Atayyat. The plans, sections, photographs, preliminary description and dating of the tomb and its contents were prepared by Mr. Haddad, whom the writer wishes to express sincere thanks and appreciation.

Description of the Tomb:

The tomb was originally a natural cave located in the solid limestone rock, with an almost rectangular single chamber, measuring 2.80 m east-west and 4.30 m north-south, had a dome-shaped ceiling cutwith a blade about 2 cm wide. A similar instrument and method was reported to have been used at Dhar Mirzbaneh (Lapp, 1966, p. 78, Zayadine, 1978, p. 60). Two benches raised 65 cm high above floor level were found to have been chiseled from natural rock; one on the north side and the other on the south opposite side (Fig. 1 & Pl. LXXVIII, 1). Access to the tomb was provided by a shaft which was then blocked with a large rough stone at the east corner of the chamber (Pl. LXXVIII, 2). Though the opening of the tomb was tightly closed, a small heap of brown soil had filtered through but had not caused any damage to the tomb or its contents. Both benches had scattered human bones and broken pottery vessels over them. The chamber floor was covered by a layer of soft *huwwar* about 10 cm thick and on it was found the pottery deposit. The pottery was arranged in two different groups: The first, on the chamber floor between the two benches on the north and south, consisted of four jars pl. LXXIX, 1-4 and two lamps; pl. LXXXI, 6-7 each lamp is four-spouted and have rounded base of the type common at Jericho, Megiddo, Dhar Mirzbaneh, el-Husn, Amman and other places in Palestine and East Jordan (Zayadine, 1978 p. 62.). The second group of pottery consisted of a large jar and several sherds found on the north bench. pl. LXXX,5.

The use of benches in tombs of this period in East Jordan seems to be unparalleled in Palestine (Zayadine, 1978, p. 62).

Date of the Tomb:

The dating of this type of tomb and its contents is beset with difficulties (for a good discussion of the problematic dating of EB-MB burials in East Jordan see: (Zayadine, 1978, pp. 64-65). This phase was first recognized by Albright in his excavations at Tel Beit Mirsim, which then he and Wright designated as EB III B (Albright, 1956, p. 77; Wright, 1961, p. 86). Evidence of the existence of a phase following the end of the Early Bronze Age and preceding the beginning of the Middle Bronze Age I, further came from excavations at Beth-Shemesh, Bethel, Beth Yerah, Dhar Mirzbaneh and other places in Palestine. EB-MB tomb material from Jericho especially from Tomb F 4 is closely related typologically to the Megiddo tomb groups (Kenyon, I, 1960, p. 144, fig. 47).

The chronology of the EB-MB period in East Jordan is still undecided for lack of stratified archaeological material. Excavations at Ader (*AASOR*, 34-35, 1960, pp. 79-97), Khirbet Iskander (Parr, 1960), Aro'er (Olivarri, 1969) and Tell Iktanu

(Prag, 1974) have considerably added to our knowledge of this period in East Jordan. The close affinity of the Jabal Jofeh tomb material with the material from Amman's Jabal et-Taj and Sports City tombs (Dajani, 1967-68; Zayadine 1978) does indicate the existence of a transitional period which must have flourished at a date around 1950 B.C. (Zayadine, 1978, p. 65).

This new tomb of Jabal Jofeh must also be assigned to the middle of the twentieth century B.C. This date is also supported by the presence among the pottery group of a large jar in which a combination of the flat loop handle from rim to shoulder and the ledge envelope handle with three overlapping flaps on the body (Pls. LXXIX No. 4, LXXX No. 5).

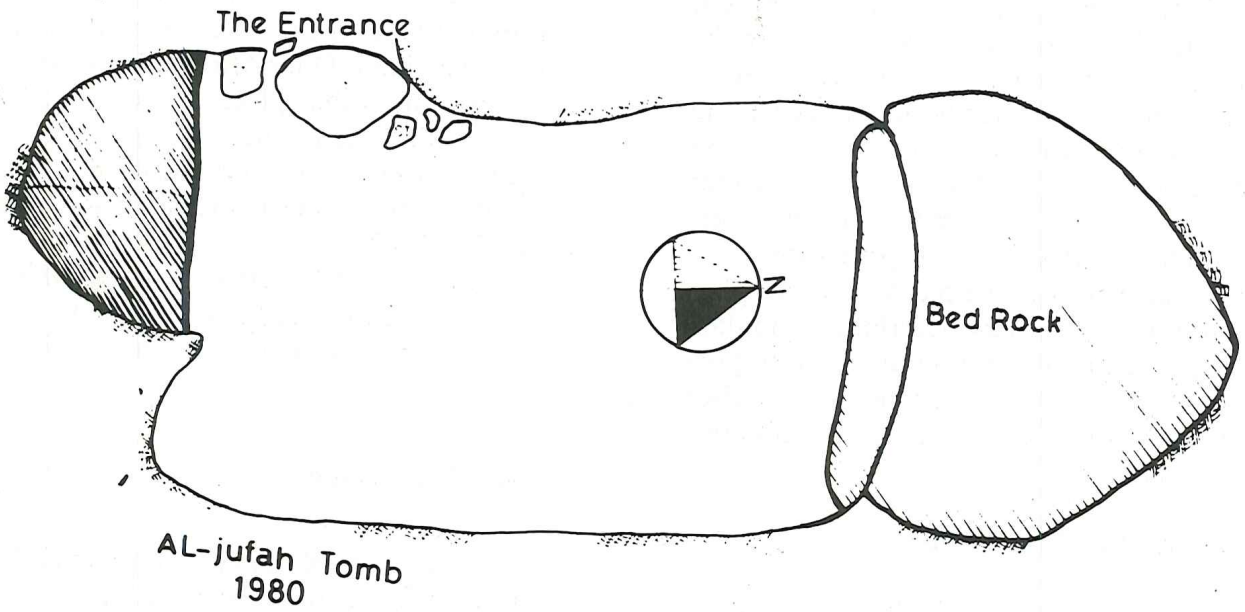

Fig. 1: Ground plan of Tomb

Description of the Pottery;

No	*Plate*	*Provinces*	*Description*
1.	LXXIX	Chamber floor	Plan globular jug, loop angulated handle from rim to shoulder. Lime deposits inside and outside. Dark grey ware with large and small limestone grits. Flat base and slightly everted rim.
2.	LXXIX	Chamber floor	Plain globular jar, two ledge envelope handles, each with three overlapping flaps. Buff ware with large limestone grits. Flat base and slightly everted rim.
3.	LXXIX	Chamber floor	Globular jar, loop handle with a groove in the middle from below rim to shoulder, Buff gritty ware. Moulded clay rope decoration at base of neck and around body. Flat base and everted rim.
4.	LXXIX	Chamber floor	Plain globular jug, two ledge envelope handles, each with three overlapping flaps. Buff gritty ware. Flat base and everted rim.
5.	LXXX	North Bench	Globular jar, two broad loop handles from rim to shoulder decorated with bands of wavy slashes incised vertically. Two more handles of the ledge envelope type with three overlapping flaps are attached to the sides of the body. Buff gritty ware and incised bands of wavy slashes around the shoulder. Similar examples were discovered in Jebel et-Taj Tomb (Dajani, 1967-68, pl. XL).
6.	LXXXI	Chamber floor	Open four-spouted lamp, rounded base, buff gritty ware, traces of burning.
7.	LXXXI	Chamber floor	Open four-spouted lamp, rounded base, black gritty ware, traces of burning.

Adnan Hadidi

References:

1. *AASOR* 34-35 (1960), pp. 79-97.

2. W.F. Albright, *The Archaeology of Palestine, 1956.*

3. R. Amiran, *Ancient Pottery of the Holy Land,* 1969.

4. Roger Brechet, *Evolution de la poterie du Proche-Orient,* Tom I, Ammane, 1981, esp. pp. 225-243.

5. R.W. Dajani, "An (EB-MB) Burial From Amman, "*ADAJ,* XII-XIII (1967-68) pp. 68-69, Pl. XL 1 + 2.

6. K.M. Kenyon, *Excavations at Jericho,* I. London, 1960, p. 144, fig. 47.

7. P.W. Lapp, *Dhar Mirzbaneh Tombs,* (1966).

8. E. Olivarri, *RB* LXVI (1969), pp. 240-259.

9. P.J. Parr, "Excavations at Khirbet Iskander, "*ADAJ,* IV-V (1960) pp. 128-133.

10. K. Prag, "Tell-Yahudiyeh, *Levant,* VI, (1974) p. 192.

11. G.E. Wright, in *The Bible and the Ancient Near East,* Essays in Honour of W.F. Albright, London, 1961, p. 86.

12. F. Zayadine, "An EB-MB Bilobate Tomb At Amman, *Archaeology in the Levant,* Warminster, 1978, pp. 59-66.

A ROMAN FAMILY TOMB AT AMMAN CITADEL HILL

by
Adnan Hadidi

This tomb was discovered accidentally on July 26, 1980 while workmen were leveling ground for a new sewerage line in the area situated north of the Amman Citadel Hill at the road junction leading to wadi el-Haddadeh and down town Amman. The discovery was reported immediately, and the Department of Antiquities took over excavation of the tomb; ten labourers were employed to lift and carry, and the actual clearance and recording was done by Mr. Hifzi Haddad, Chief Inspector of Antiquities assisted by Mr. Tayseer Atayyat, Insepctor of Antiquities at the Department. The plans, photographs and preliminary description of the tomb, and its contents were prepared by both inspectors, to whom the writer wishes to express sincere thanks and appreciation.

Description of the tomb and its contents:

The tomb complex appears to have been originally a natural cave, which had been completely prepared including the main hall by chiseling. Two benches raised 0.35 m above floor level at the east and south sides of the central main hall were also found to have been chiseled from natural rock. In the west side of this main hall was found a loculus 1.40 m deep and raised 0.35 m high above floor level. The doorway to the tomb was located south of this loculus and sealed with undressed stones reinforced with mud (Pl. LXXXII). There was no attempt to extend excavation beyond the doorway as such excavation would have endangered the main road leading from Jabl el-Hussein down to the city center and in which case a diversion of vehicular traffic was absolutely necessary and that would have created chaos not only in the tomb area but also in the city as a whole.

The stone sarcophagi were discovered in the main hall and located parallel to each other at the east side of the hall. The first sarcophagus on the west measured 1.75 x 0.55 x 0.85m while the second sarcophagus laid west of the first, measured 1.60 x 0.55 x 0.85 m. Both sarcophagi have similarly decorated lids, consisting of carved triangles on the four corners, and stylized crescent shape garlands over six-petaled rosettes in the center on both sides of each lid (Pl. LXXXIII, 1). Each sarcophagus was found to contain the bones of a man and a woman mixed with bracelets and broken glass bottles (LXXXIV.). The smaller sarcophagus contained in addition a badly corroded bronze coin which seems to have belonged to emperor Pupineus (238 A.D.)[1] Pl. LXXXIII, 2 a plain silver bracelet twisted at the ends, and three bronze rings, one of which is in the shape of joined decorated oval circles. Four pottery lamps with moulded decoration and a piriform juglet were found on the floor of the main hall east of the two sarcophagi. Lamps 1 and 4 belong to the 2nd Century A.D.[2], while 2 and 3 are dated to the 3rd Century A.D.[3]. (pl. LXXXV).

Judging from the style and technique of the tomb and its contents, it must have been in use during the 2nd and 3rd Centuries A.D.

1. R.A.G. Carson, *Coins of the Roman Empire in the British Museum* London 1962, VI P. 251 & PL. 43,11.

2. G. Bisheh, *ADAJ* XVIII (1973) P. 65, & PL. XXXVII, I.

3. O. Broneer, *Terra Cottalamps, Corinth,* Vol. IV, Part II Cambridge, 1930. Type XXVIII Pl. XIII-XVII (3rd - 4th Century A.D.).

Inventory:

Exc. No.	*Plate*	*Description*	*Burial*
1.	LXXXV	Pottery lamp, pear shape, long splayed nozzle, grooved stump handle, decorated with moulded dots arranged in concentric circles around wide filling hole Buff ware covered with brownish slip.	Main hall
2.	LXXXV	Pottery lamp, circular shape, small circular nozzle, grooved stump handle, decorated with moulded small concentric circles spaced at equal distance around wide filling-hole, dark grey ware with calcite grits.	Main hall
3.	LXXXV	Pottery lamp, oval shape, small circular nozzle, grooved stump handle, wide filling-hole buff ware, covered with brownish slip.	Main hall
4.	LXXXV	Pottery lamp, pear shape, long splayed nozzle, grooved stump handle, decorated with moulded floral design around wide filling-hole, buff ware covered with brownish slip.	Main hall
5.	LXXXV	Lower half of pottery juglet, dark grey ware, traces of ribbing.	Main hall
6.	LXXXVI	Lower half of ribbed pottery juglet flat disc base, dark grey ware.	Main hall
7.	LXXXVI	Pottery juglet, piriform shape, moulded rim, ribbed body, flat disc base, dark grey ware.	Main hall
8-17	LXXXVI	Broken glass bottles of various lengths; No. 9 is complete and has dark colour.	East sarcophagus
18.	LXXXVII	Twisted Silver bracelet	West Sarcophagus
19-20.	LXXXVII	Plain bronze rings	West Sarcophagus
21.	LXXXIII, 2	Bronze Coin of Pupienus obv. Laur. Head of emperor, Inscr. around: (Faint) ob. IMP. CAES. M. CLOD. PUPIENUS. AUG. Rev. Liberalitas draped, Standing front, head L., holding abacus in r. hand and cornucopiae in L. Inscr. around LIBERALITAS AVGVSTORVM; in ex.S.C.	West Sarcophagus
22 (a)	LXXXVII	Bronze ring in the shape of joined and decorated oval circles.	West Sarcophagus
22 (b)	LXXXVII	Bronze ring seen in Profile	Adnan Hadidi

REPORT ON THE 1981 SEASON OF SURVEY AND SOUNDINGS AT KHIRBET ISKANDER

by
Suzanne Richard

Introduction

A brief season of survey and soundings was conducted from July 10 - August 10 at the site of Khirbet Iskander. This expedition was affiliated with the American Schools of Oriental Research and Drew University, and was funded principally by a grant from the Zion Research Foundation, a nonsectarian foundation for the study of the Bible and the history of the Christian Church. The writer is most grateful for this support. The writer would also like to express her gratitude to Dr. Adnan Hadidi, Director-General of the Department of Antiquities, for the financial and logistical support he extended to this project. Seton Hall University and several private donors provided additional financial support which is also gratefully acknowledged. For the inception of this project, the writer would like to thank Dr. James A. Sauer, former director of the American Center of Oriental Research, for it is he who in the summer of 1980 suggested to the writer the site of Khirbet Iskander for excavation. In light of current research and of interest in late third millennium B.C. studies, and in light of their knowledge of this important Early Bronze Age site, Dr. Sauer, Dr. Hadidi, and Mr. Peter Parr, have all encouraged the writer to renew excavations there.

The site itself is situated on the north bank of the Wadi Wala, some 400 meters west of the bridge where the Madaba-Dhiban road crosses the Wadi (see figs. 1-2). A perennial stream, whose primary source is the Ras el-Wala -- a spring just east of the site, flows through the Wadi. Consequently, the area around the site is intensely cultivated and, in fact, even in summer enjoys quite a lush vegetation. The Wala flows into the Wadi el-Mujib and ultimately into the Dead Sea. Khirbet Iskander lies 23 kilometers in a direct line from the Dead Sea and 56 kilometers south from Amman.

Although the site has been known for some time (Schick 1877; Brunnow and von Domaszewski 1904; Musil 1907), Nelson Glueck (1939) was the first to investigate it systematically. Although he located the site on either side of a secondary north-south wadi which joins the Wala from the north (Glueck 1939: fig. 47), his "western sector" constitutes the mound of Khirbet Iskander as it is visible today (see pl. LXXXVIII). Based on the EB IV sherds found on the surface and on the stone-circles and menhirs discovered, Glueck concluded that Khirbet Iskander was a one-period EB IV site. His detailed description of standing domestic structures, a defensive perimeter wall with large square towers, and an east-west wall presents the image of a large settlement and indeed a stronghold. Important new information was uncovered by Peter Parr (1960), who excavated two deep soundings and found domestic EB IV occupation and a portion of what was possibly the outer wall. Even more important, the EB IV occupation he encountered proved to lie above earlier material on the mound, a discovery which enlarged the occupational history of the site beyond that observed by Glueck.

The 1981 expedition to Khirbet Iskander sought to establish the stratigraphic profile of the site and to determine if, in fact, the site could shed light on the EB III-EB IV cultural horizon for which, aside from Bâb edh-Dhr'a, no stratified sequence is known. Though a great deal of material from the EB IV period has been published, the overwhelming majority derives from tomb deposits. This state of affairs had induced the view that the population was virtually non-sedentary: a one-sided and, as we are beginning to see, distorted view of EB IV

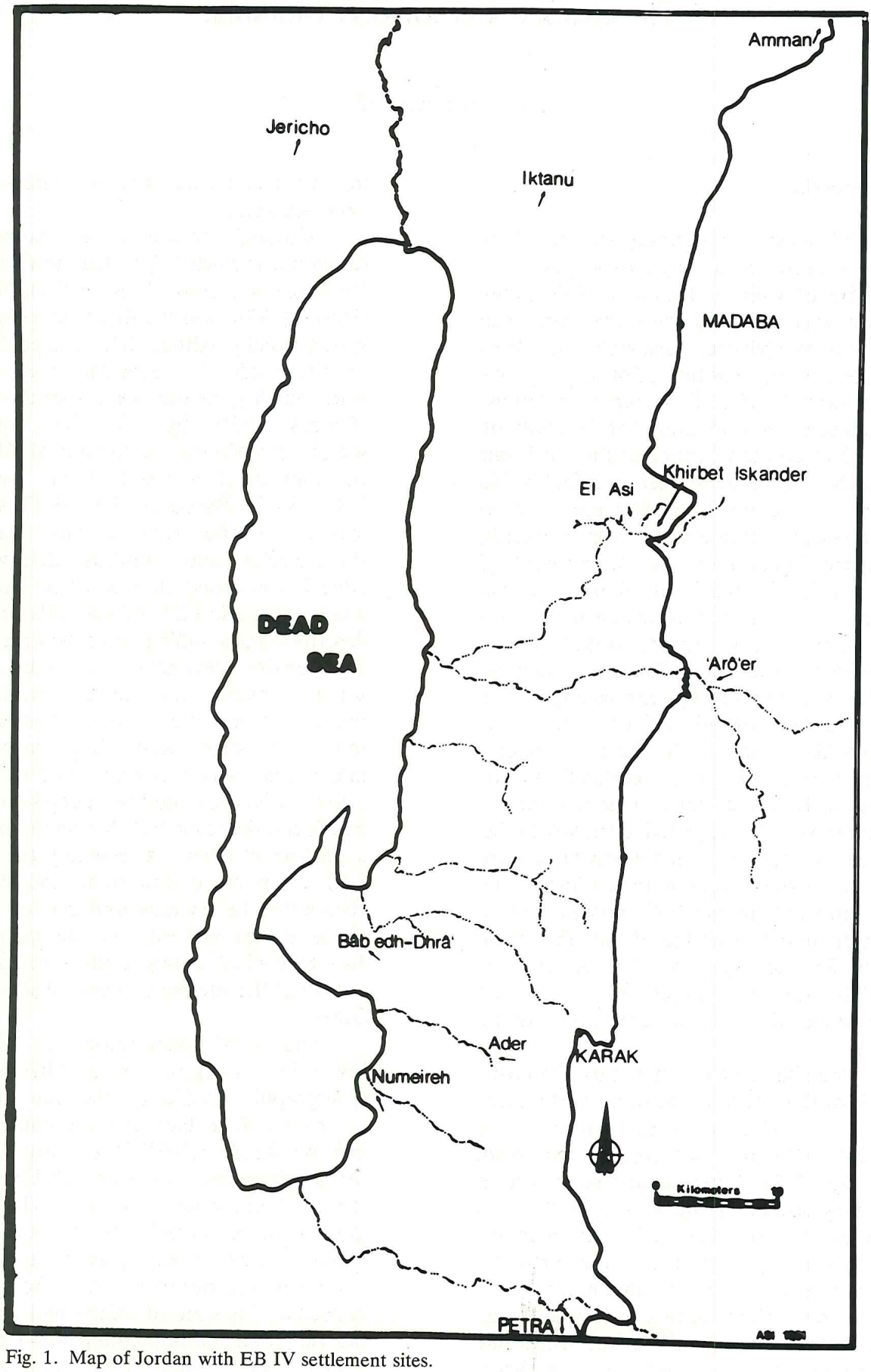

Fig. 1. Map of Jordan with EB IV settlement sites.

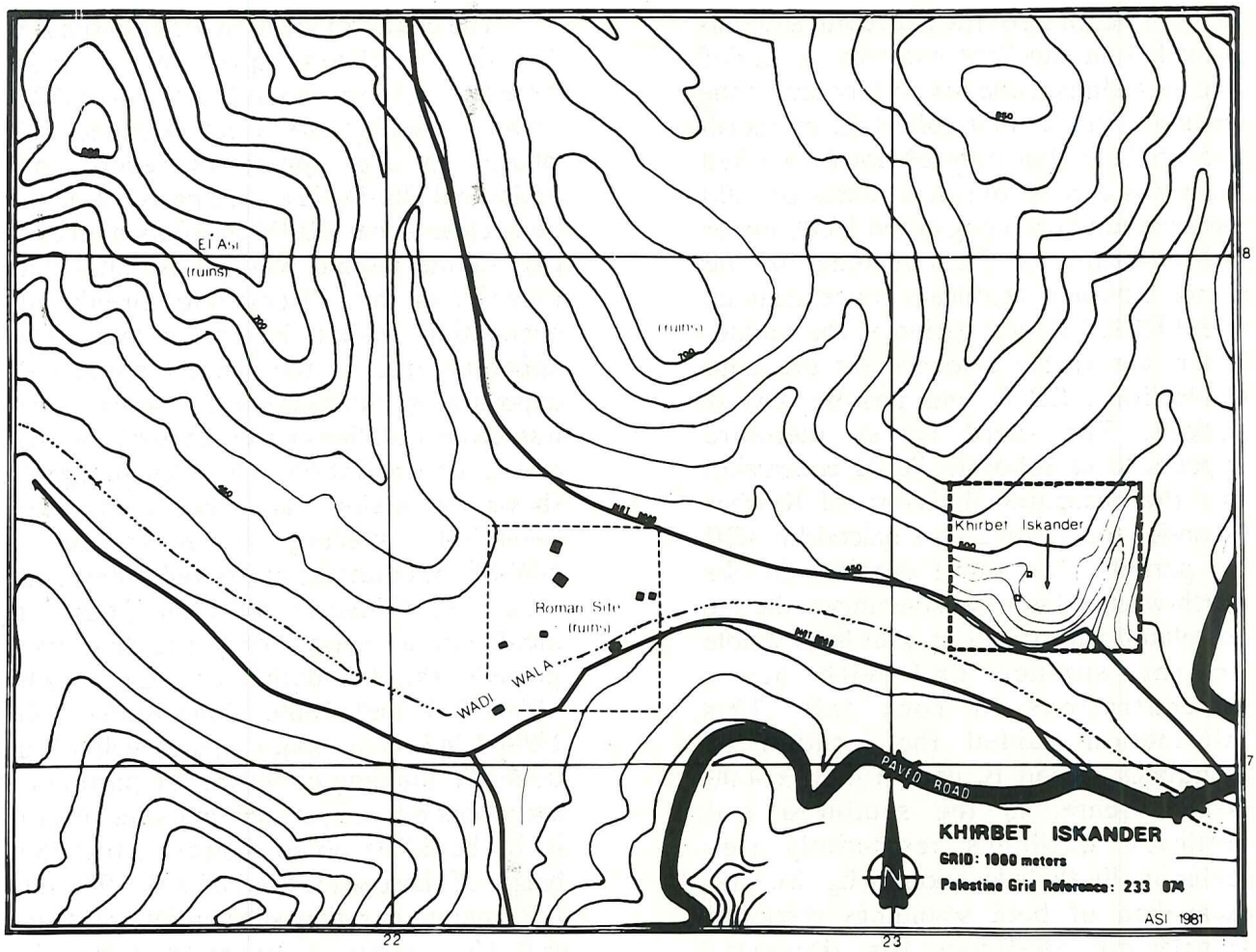

Fig. 2. Topographic map of Khirbet Iskander and vicinity with location of Soundings indicated.

society in Palestine. The excavation of settlement sites such as Ikhtanu (Prag 1974), Ader (Cleveland 1960), Bâb edh Dhr'a (Rast and Schaub 1978, 1979), 'Aro'er (Olavarri 1969), Har Yaruham (Kochavi 1963), Beer Resisim (Cohen and Dever 1979, 1980), as well as Khirbet Iskander, has offered a glimpse of a more substantive level of agrarian subsistence than was heretofore suspected. Renewed interest in this period has sparked a number of recent syntheses on the state of late third millennium B.C. studies (Dever 1970, 1971, 1973; Oren 1973; Prag 1974; Dever 1980; Richard 1980). There is, however, still no clear evidence as to why the seemingly abrupt cultural break occurred at the EB III-EB IV horizon. The major goal of the Khirbet Iskander Expedition is to seek an explanation to this phenomenon.

Survey and Soundings

The goals of the 1981 season were: 1) to conduct a systematic random survey of the site 2) to map and grid the site 3) to excavate two soundings to bedrock, and 4) to initiate a regional survey with a reconnaissance of the immediate vicinity. Despite a small staff [1] and a short season, the project was able to meet all of its goals except to reach bedrock in the two soundings.

Given the relatively small size of the mound (150 x 150 meters), the sampling strategy chosen was one which allowed a

1. The supervisory staff consisted of Suzanne Richard, Director of Architect; James D'Angelo, Surveyor and Photographer; Gail D'Angelo, Pottery Reigstrar; Donald H. Wimmer and Suzanne V. Kane, Soundings Supervisors; Ghazi Bisheh and Brian Bloom, Staff Members; Omar Unis, Representative, Department of Antiquities. Eight local laborers completed the work-force.

random sampling of the entire site and thus provided an excellent overview of period and location densities of pottery across the mound. Thus a total collection of sherds and artifacts (but only obviously worked flint) was carried out in a radius of 1.00 meter around each peg at the 10.00 meter grid co-ordinates. Field readings of the sherds indicated significant concentrations of EB III-EB IV occupation on the mound, lesser, but visible evidence for the Late Chalcolithic, EB I, and possibly EB II periods. The sherd survey therefore appears to corroborate Parr's conclusion that the occupational history of Khirbet Iskander spans the Late Chalcolithic -EB IV periods. The sherd densities in the north-west and southwest sectors of the site correlated with traces of wall lines visible on the surface and with heavy concentrations of rock fall. This information guided the location of Soundings A and B, each a 4.00 x 4.00 meter square, in the southwest and northwest quadrants respectively (see preliminarily their location in fig. 2). The excavation of both soundings disclosed significant evidence for domestic occupation in the EB IV period and a glimpse at the EB III occupation which, on the basis of the sherd survey and fortification lines traced on the surface, should be substantial. An investigative survey of the immediate vicinity revealed important cultural remains from the Roman Period, in particular a second site named Khirbet Iskander several kilometers down the Wadi to the west (see fig. 2). The small sampling of pottery collected was all of Roman-Byzantine date. It is apparently this site to which Glueck referred as Khirbet Tahunet el-Wala (1939: 129). Examination of the site of El Asi, (see fig. 2) classified by Glueck as EB IV, will have to await the systematic regional survey to begin in 1982. The following report is a brief summary and provisional interpretation of the stratification uncovered in two soundings. The precise nature of the architectural remains will, of course, only become manifest in future seasons when greater lateral exposure is realized.

The choice of location for Sounding A (in the southwest quadrant) proved excellent, for excavation to a depth of 3.25 meters revealed six clear architectural phases in the uppermost levels and additional phasing in a deep probe. What is quite clear is that EB IV occupation on this part of the mound was intense and that there was no discernible break in occupation. What is not immediately apparent, due to the limited horizontal exposure, are the function and nature of the numerous wall lines which appeared in the course of excavation. The plan in fig. 3 shows the major walls discovered: wall 1004-1047 bisecting the square on a NW-SE orientation; cross-wall 1009; and the earliest (Phase 1) wall 1039. Of the six architectural phases, only the first two precede the foundation of major walls 1004-1047 and 1009. Conceivably wall 1004-1047 is a major spine wall of a domestic building complex, for partitions for rooms were excavated on either side of it. It should be noted, however, that the height of these walls (and of wall 1009) at 1.30 meters is rather substantial and that wall 1047 forms a square "tower-like" structure which clearly extends beyond the confines of the north and west balks. Such a structure recalls Glueck's description of "large towers" at intervals in the wall system and indeed fragmentary remains of Glueck's "eastwest" wall seem to align with wall 1004-1047. Plans for the 1982 season include the excavation of squares contiguous to Sounding A in order to trace the extent and nature of these important but as yet enigmatic architectural remains.

The chronological sequence of the major walls is apparent even though their function is not. It is evident that wall 1047, which abuts wall 1004 and for which a possible foundation trench was discovered in Phase 4, is later in date than wall 1004 and cross-wall 1009. The non-alignment of wall 1004-1047 is quite noticeable (fig. 3). What is likewise clear is that approximately contemporaneous with the founding of wall 1047, walls 1004 and 1009 underwent a rebuild, for in their upper three courses, these latter two walls bond together. During this rebuild a boulder-sized rock

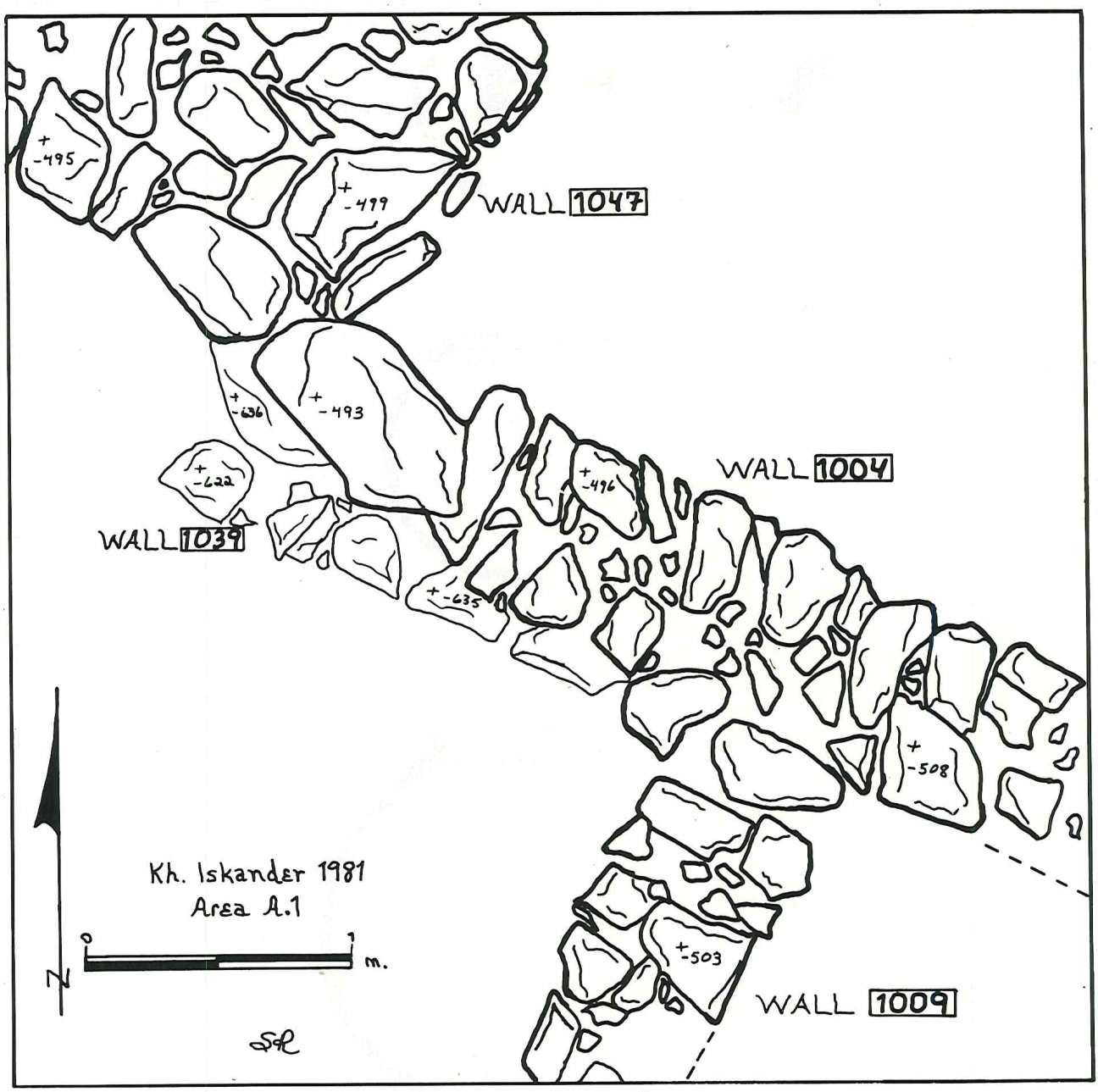

Fig. 3. Plan of Sounding A with major wall lines.

was laid at the westernmost extension of wall 1004. A gap between this boulder and the course below creates a curious window-like apperture.

The earliest wall uncovered was wall 1039, a one course structure consisting of at least two rows of flat-lying stones (see fig. 3). Presumably wall 1039 extended farther to the northwest but was cut in Phase 4 by a trench discovered alongside the southern face of wall 1047. As mentioned above, this trench was probably dug for the foundation of the latter wall. In association with this ·hase I wall, but to the north of wall 1004 ·re just the edges of wall 1039 were visible, was a partially intact EB IV cooking pot (fig. 4:3, pl. XC), to be discussed below. The extent and nature of wall 1039 must await further excavation but provisionally one may conclude that it was not a platform or foundation for wall 1004 since the two walls are not in alignment. A number of wall stubs, usually with two rows and two courses, appeared on either side of wall 1004-1047 in the course of excavation. Associated surfaces made it possible to phase in these wall stubs with the major wall system. The sequence of architectural plans in Sounding A appears to reflect a continuous development and adaptation of

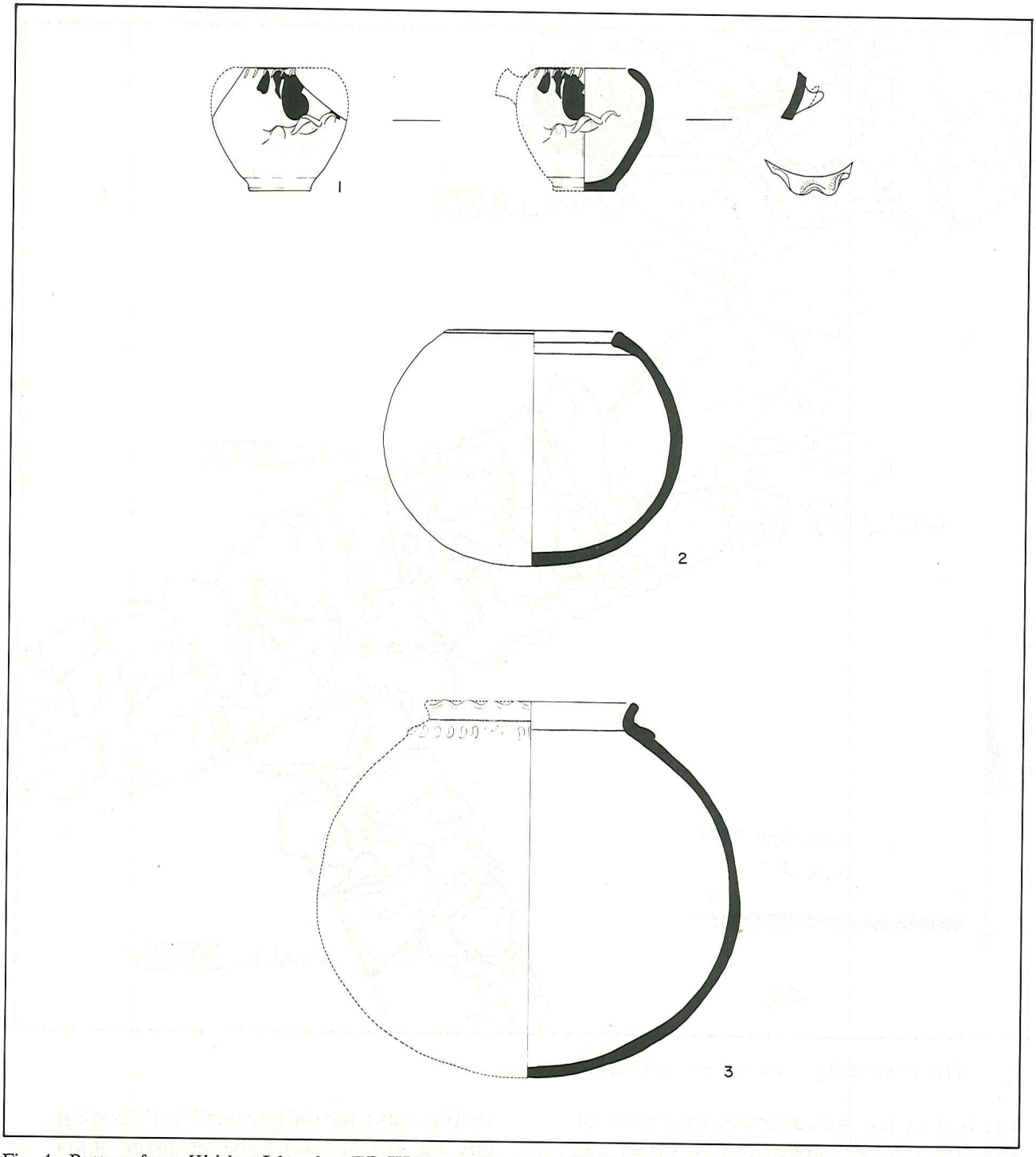

Fig. 4. Pottery from Khirbet Iskander: EB III "teapot" and to EB IV cooking pots. Scale 1:5.

the size and position of domestic rooms on either side of the major east-west wall. All stratigraphic and related ceramic evidence suggests an EB IV date for these remains. The term EB III/EB IV transitional could, however, characterize well the pottery found in the lowest levels of a deep probe in Sounding A.

Sounding B was located at the northwestern crest of the mound where wall lines on the surface seemed to define a complex situated immediately inside the northern exterior wall. Glueck, in fact, mentioned that the remains of buildings immediately within the city wall on the north were the most clearly discernible. Excavation of this square, however, exposed quite a different type of occupational debris than that recovered in Sounding A. No continuous build-up of surfaces in association with rebuilds of major walls or changing house walls was

evident here. Below a Phase 5 modern layer, excavation exposed three EB IV phases and, in the lowest levels reached in a deep probe, one EB III (or at the latest EB III/EB IV transitional) phase. The depth reached in this sounding was also ca. 3.25 meters.

Again, owing to the limited horizontal exposure, it is not possible to interpret some of the evidence with any degree of certainty. The latest EB IV phases (4 and 3) clearly represent the remains of an outdoor, open courtyard area. Phase 4 consisted of a three course, two row wall running north-south into both balks. Built against this wall and resting upon a hard-packed earthen surface was a fairly intact tabun. This tabun had been relined and rebuilt several times. Associated with it were ashy patches and numerous tabun fragments in a fairly thick layer of occupational debris, thus pointing to an extended period of time when the tabun was in use. In Phase 3, below the wall and tabun, an unusual structure came to light. It contained three wall segments arranged in such a way so as to resemble an enclosure or U-shaped installation varying from one to two courses and rows, and divided the area roughly in the middle on an east-west axis. There were no associated surfaces, but rather a series of fill layers containing much EB IV pottery, many fragments of mudbrick and chert chips.

Whatever the function of this odd structure, it seems evident that the layer of fill material immediately below it had been laid down in order to level off the mudbrick debris and ashy remains of Phase 2. Phase 2 consisted primarily of a thick layer of mudbrick debris, although within the square there was no evidence of the wall from which this mudbrick may have fallen. Possibly this mudbrick debris repressents the fallen superstructure of an east-west wall found in the north balk in a deep probe, a six-course (Phase 1) wall which is the earliest architectural element in this sounding. The east and west balks exhibited the slump of mudbrick from north to south. Evidence of burning, in the form of ash lenses and patches, suggests perhaps a destruction of some sort. The whole EB IV cooking pot seen in fig. 4:2 and pl. XC was found *in situ* alongside the north balk, covered by the mudbrick detritus. Plans for the 1982 season likewise include the excavation of several contiguous squares in order to investigate further the character of occupation in this section of the mound. Notwithstanding the somewhat enigmatic nature of the archaeological record in Sounding B, it appears that excavation has exposed in the lowest levels of the probe an EB III or transitional phase based on the ceramic remains, of which a fragmentary EB III "teapot" is displayed on fig. 4:1 and Pl. LXXXIX.

Pottery

In the full preliminary report, a representative selection of pottery will be presented. It is a well-stratified sequence of EB III/EB IV pottery which is needed to clarify the relationship between the two repertoires, and to elucidate the interrelationships among several distinct EB IV assemblages. The stratified sequence at Khirbet Iskander should cast some light on the typological and chronological development within the period. Suggested frameworks for the period include 1) several regional ceramic families that overlap and are essentially contemporaneous (Amiran 1974); 2) a two-phase chronology, EB IV A-B (Oren 1973); and 3) a three-phase chronology EB IV-A-B-C (Dever 1973; Richard 1980). The purpose of the following brief ceramic study is merely to illustrate the three whole or partially complete vessels discovered this past season, vessels of great intrinsic as well as chronological value.

Illustrated on fig. 4 and pls. LXXXIX - XCI are an EB III "teapots" and two EB IV cooking pots. One of the nicest vessels recovered, though in fragmanetary form, is the EB III "teapot" exhibited on fig. 4:1 and pl. LXXXIX. The numerous parallels with EB III teapots that one could cite suggest that in fact this "holemouth" vessel with incurved rim and wavy ledge handle did include a spout originally. In typical EB III fashion it has stab marks sircling the rim

and displays the common red paint in the broad-banded design often found in the EB III period. Note especially good parallels in form and design in Tomb A at Jericho (Garstang 1932, pl. VIII). For the relationship between EB III and EB IV teapots, see Dever 1973: 47-48 and Richard 1980: 17-18 and references and parallels cited there. The context for this vessel was the lowest levels of the probe in Sounding B.

Fig. 4: 2-3 demonstrates that two cooking pot traditions coexisted at Khirbet Iskander. Although these are the only two to be restored, numerous sherds of each type show that both traditions were popular at the site. These are the first published examples from Jordan complete enough to prove beyond doubt that the typical EB IV cooking pot there was round-based. In light of whole vessels published from Na saneh (Dever 1974, pls. 1-4: *passim)* and many published examples of "holemouth" rims with beviled edge, it is certain that fig. 4:2 (pl. XC) represents the classic EB IV cooking pot in the unequivocable Early Bronze Age tradition. This fire-blackened vessel was disovered in Sounding B.

To my knowledge, the cooking pot illustrated in fig. 4:3 and pl. XCI is the first published specimen of the everted-rim variety found in Jordan, except for the somewhat similar jar form from el-Husn (Harding and Isserlin 1953, fig. 4: 48-50). Other examples of the type have appeared at Qedesh (Tadmor 1978, fig. 5), Hanita (Negbi 1969, figs. 1-2), Ma'ayan Barukh (Amiran, fig. 6:5), and Beth Shan (Oren 1973, fig. 24:2), all early EB IV sites in the northern sector of Western Palestine. On the basis of its globularity and plastic decoration, fig. 4:3 compares most favourably with Oren's Type Ml jars at Beth Shan (1973: figs. 18:16, 22: 2-4, 24: 5-6), although they are not described as cooking pots. Parallels drawn between this particular form and globular, necked Syrian jars are apropos, e.g., at Hama (Fugmann 1958, figs. 64, 85, 103). Fig. 4:3 is of reddish-brown clay blackened by fire and was found in a Phase I layer in Sounding A.

Conclusion

The preliminary season of excavations at the site of Khirbet Iskander has revaled a site rich in Early Bronze Age remains, particularly, thus far, in startified materials from the enigmatic EB IV period. Sounding A yielded the most significant stratification: six clear architectural phases showing continuous occupation without a descernible break in the archaeological record. Such evidence for intensive domestic occupation would appear to attest a permanent sedentary population. Further excavation is necessary to interpret the findings in Sounding B; nonetheless, by the end of the season evidence for the EB III period revealed itself in the lowest levels. The painted "teapot" is a promising sign that important EB III startified occupation is present on the site. Likewise, vestiges of once substantial fortifications on the perimeter of the mound must a priori belong to an EB III (or EB II/III) settlement.

Having determined as a result of survey and soundings that important cultural remains from the EB III-EB IV periods are present on the mound, the project proposes over the course of three seasons to test the validity of certain models formulated to explain the archaeological data associated with this transition. Though the expedition is concerned to uncover the complete sequence of cultures on the mound, the design of the proposed project is oriented toward the problematic EB III-EB IV cultural transition. The project intends to test the applicability of the model of pastoral nomadism -- a model which embraces both pastoral and semi-sedentary elements -- to an EB IV settlement site such as Khirbet Iskander. Both the evidence gathered from this site thus far as well as data retrieved from various surveys reflectinig intensive EB IV occupation in Jordan suggest that the model of pastoral nomadism does not comprehend the totality of the EB IV archaeological remains. The subsistence patterns and the socio-economic organization of the EB IV peoples may, in fact, be far more complex than hitherto suspected. The project will

likewise address the perplexing EB III-EB IV transition by testing the alternate models of cultural continuity/cultural discontinuity. Assuming some relationship, the project will seek to explain the degree and extent of both the continuities and the discontinuities in the archaeological record. To this end the objective of the three planned season (1982, 1984, 1986) is to achieve maximum exposure of the EB IV and EB III settlements for the purposes of comparison. As a complement to the excavation of this site, a regional survey is planned to uncover information regarding the extent of sedentary EB IV occupation in the area.

Suzanne Richard

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FOUILLE DE LA PORTE MONUMENTALE A IRAQ AL-AMIR LA CAMPAGNE DE 1978

par
J.-M. Dentzer, F. Villeneuve,
F. Larché, F. Zayadine

La fouille de la porte monumentale qui donne accès au secteur du Qasr al-Abd, commencée en 1977[1], a été poursuivie et achevée en 1978. La deuxième campagne, d'une durée d'un mois, en avril-mai 1978, a réuni J.-M. Dentzer, professeur à l'Université de Paris I, F. Zayadine, Directeur Adjoint du Département des Antiquités de Jordanie, F. Villeneuve, alors élève à l'Ecole Normale Supérieure (Paris), F. Larché, architecte à l'Institut Français d'Archéologie du Proche-Orient. Parallèlement, P. Gentelle, alors Chargé de recherches au Centre National de la Recherche Scientifique, a entrepris l'étude du paysage antique de l'ensemble du site d'Iraq al-Amir, et plus particulièrement le réseau d'irrigation et les terrassements agricoles. Les résultats auxquels il est parvenu sont publiés par ailleurs[2].

Cette campagne a été complétée par une semaine de travail conduite par F. Villeneuve au mois d'octobre 1978, puis par des vérifications et nettoyages en novembre 1980. Si le dégagement de la porte a pu être mené jusqu' à un point satisfaisant, la mise en valeur et la préservation du site restent préoccupants: un figuier sauvage particulièrement tenace, qui pousse dans la maçonnerie même, cache et menace la pile nord-est de la porte; sa destruction par des moyens chimiques doit être envisagée. D'autre part les ruines de la porte continuent, après fouille comme avant, d'être le dépotoir des maisons modernes situées juste en contre-haut au sud-ouest. L'acquisition du terrain par le Département des Antiquités, actuellement en cours, permettra une meilleure mise en valeur de cette belle construction. Une consolidation et restauration partielle seraient aussi à envisager.

Il faut souligner notre étroite collaboration avec le Département des Antiquités, et remercier le Dr. A. Hadidi, Directeur Général, pour l'aide très efficace qu'il nous a offerte en prenant en charge une partie des frais de main d'oeuvre, en fournissant les moyens mécaniques puissants nécessaires pour le déplacement des gros blocs et pour l'enlèvement des déblais. Les résultats présentés ici n'auraient pu être acquis sans l'amitié du Dr. F. Zayadine, qui nous a fait bénéficier de sa compétence en participant fidèlement au travail quotidien, prévenant ainsi toute difficulté.

Dans le texte qui suit, les côtes d'altitude sont données en référence à un niveau O qui a été pris sur la semelle à la base de la pile sud-ouest de la porte (voir fig. 2), à l'angle est de cette pile. Il est sensiblement le niveau de la chaussée devant la porte. L'altitude absolue de ce niveau est 416,65 mètres [3]

Architecture

Technique de construction. Les résultats obtenus en 1977 ont été confirmés et complétés par la campagne de 1978.

Le matériau dur très blanc utilisé en façade essentiellement est de la dolomie, alors qu'un calcaire crayeux, tendre et grisâtre, a servi dans la construction à l'intérieur du passage. La taille n'a pas été

1. Jean-Marie Dentzer, "Recherches archéologiques à Araq El-Emir: Fouilles de la porte monumentale", *ADAJ,* XXII, 1977-1978, 102-107, pl. LXIII-LXIV.
2. P. Gentelle, "Un 'paradis' hellénistique en Jordanie: étude de géo-archéologie", *Hérodote,* n°20, janv.-fév. 1981, 70-101.
3. Côte établie par nivellement à partir de points côtés de la restitution photogrammétrique en plan du secteur du Qasr al-Abd, à 1/1000, établie par le Servicio de Fotogrametria de la Universidad Politécnica de Madrid.

réalisée avec les mêmes outils dans les deux cas: la dolomie montre des traces de pointe et de gradine (linteau), alors que des sillons aplatis et incurvés, que l'on peut attribuer à une laye ou une herminette, sont parfois visibles sur les blocs en calcaire tendre.

Les faces internes et les façades des deux piles ont pu être dégagées entièrement. La pile nord-est est massive. Les niveaux des assises alternées de la façade se prolongent dans le passage, mais aux assises hautes correspondent à l'arrière deux ou trois assises basses. Le corps de la pile est constitué par un blocage, visible au sommet sous l'accumulation de blocs tombés, et retenu, dans le passage, par un parement de blocs appareillés en calcaire tendre.

Dans la face intérieure de la pile sud-ouest s'ouvre un couloir sans issue, qui la divise en deux sur toute sa longueur (voir fig. 2): il fournissait un abri pour un gardien ou du matériel. Il ne présente par de trace de fermeture, mais il était bouché par le battant de la grande porte lorsque celle-ci était ouverte. Ce couloir montre le prolongement, à l'intérieur de la pile, de l'appareil visible sur ses faces. Un linteau de dolomie, à présent brisé, couvrait la baie de ce couloir à une hauteur de 2,02 m, mais immédiatement derrière lui un dallage de couverture reposait une assise plus haut (soit 0,41 m). Dans le couloir, l'assise inférieure des deux murs n'est ravalée qu'à l'entrée, sous le linteau; plus à l'intérieur, elle présente des saillies irrégulières sur l'aplomb du mur. Le sol du couloir est constitué d'un pavement grossier de pierres à peu près plates, sauf à l'entrée, où il s'agit de dalles.

Le problème du niveau du sol se pose pour l'ensemble du monument, devant la façade et dans le passage. Nulle part n'a été trouvé le reste ni même la trace d'un dallage, fût-il arraché. Une extension de la fouille a conduit à la même conclusion en ce qui concerne le seuil en façade: ni dallage ni seuil ne semblent avoir été exécutés. Les assises en grand appareil du monument reposent sur une semelle saillante, dont le niveau est en moyenne le niveau O en façade, mais une dizaine de centimètres plus bas dans le passage, immédiatement à l'arrière du piédroit (v. fig. 2): c'est donc le niveau du dallage prévu dans le passage, alors que le niveau O était le niveau du seuil prévu. La différence entre les deux niveaux permettait d'offrir une butée aux battants de la porte. Le seuil postérieur de l'édifice, qui a été réalisé, a sa surface à un niveau plus élevé (15 à 20 cm, soit l'équivalent d'une marche).

L'étude des fondations a été permise notamment par un sondage en profondeur, à l'angle est de la pile sud-ouest (v. fig. 5). Les semelles qui viennent d'être décrites, réservées dans les blocs qui constituent l'assise inférieure de la pile, reposent sur un seul niveau de grosses pierres irrégulières, légèrement retouchées, et sont calées avec des pierres plus petites. Cette fondation de grosses pierres repose elle-même sur un blocage peu épais de petites pierres. L'ensemble des fondation, de la base au niveau de la semelle, atteint au maximum un mètre d'épaisseur. L'ensemble manquait évidemment de stabilité: on comprend que la pile sud-ouest ait légèrement basculé vers le sud-ouest, la pile nord-est vers le nord-est.

Elévation. L'essentiel de l'élévation avait pu être restitué dès 1977[4]. En 1978 un certain nombre de blocs, dont certains décorés, ont été retrouvés et trouvent une place dans la restitution (v. fig. 3 et 4). Pratiquement tous correspondent à des types déjà reconnus en 1977.
Il s'agit de:

Blocs à bossage, d'assises courantes (certains présentent le bandeau de la porte dorique).
blocs de linteau, ou en relation avec celui-ci.
blocs de corniche ionique.
blocs d'entablement dorique:
blocs d'architrave dorique avec *regulae* et gouttes
blocs de corniche dorique avec mutules.
deux blocs avec fauves.
deux blocs avec aigles.

4. Dentzer 1978, *loc. cit.*, p. 103.

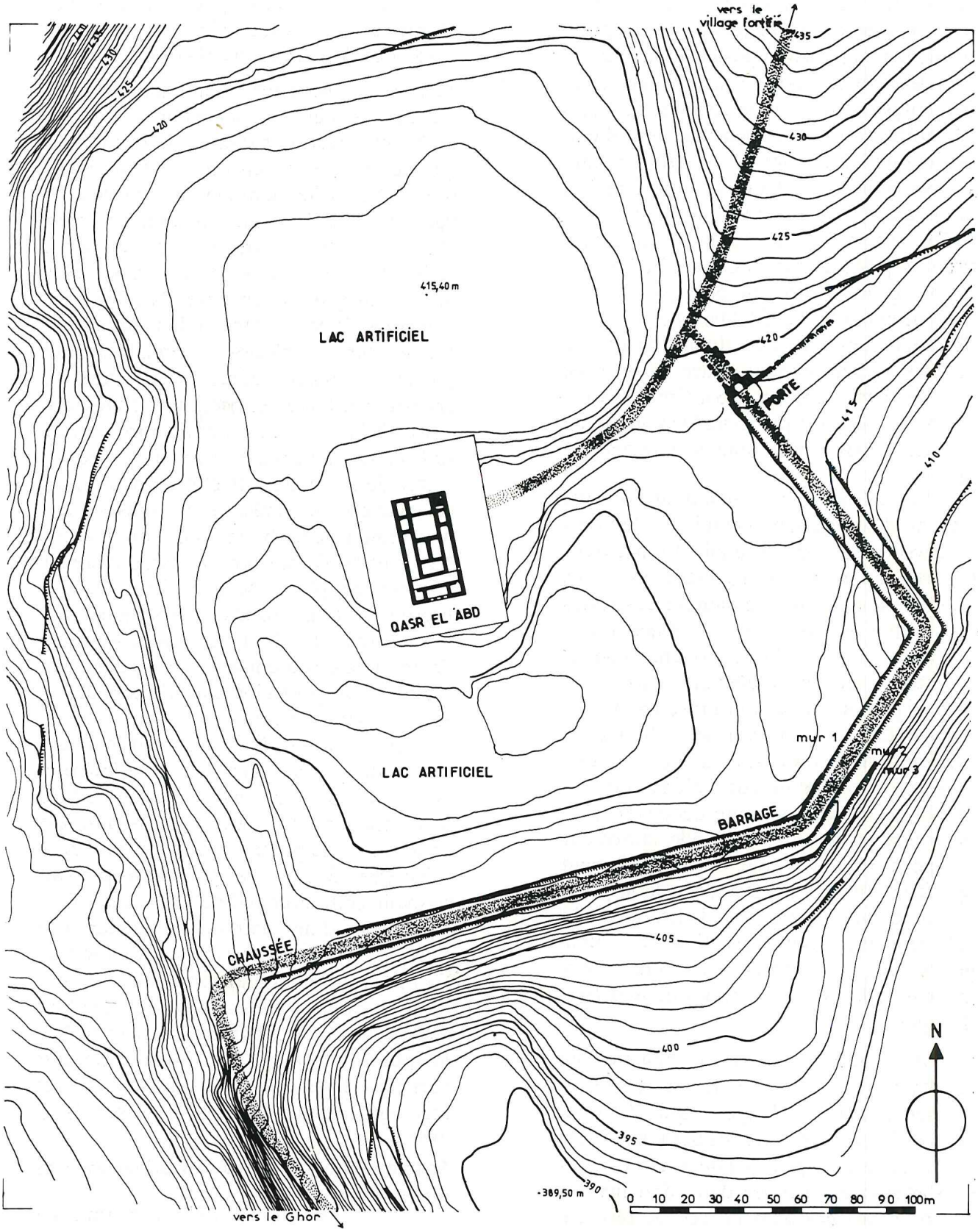

Fig. 1: Plan de situation. Essai de reconstitution des aménagements antiques autour du Qasr al-Abd. Document original: restitution photogrammétrique, Servicio de Fotogrametria, Universidad Politécnica de Madrid; étude, dessin et mise au net, F. Larché, F. Villeneuve.

La restitution de la façade (v. fig. 4; et Pl. XCII, 1) peut être considérée comme sûre et sans lacune jusqu'au niveau de la corniche ionique qui reposait sur le linteau. Tous les éléments pour restituer huit assises courantes en façade pour chacune des piles ont été retrouvés, et aucun élément d'une assise supplémentaire ne l'a été. La baie s'élevait donc à une hauteur de 6,35 m. Les deux grands blocs ornés de fauves (pl. XCII, 2) venaient très vraisemblablement prendre place de part et d'autre du linteau, encore qu'il subsiste une petite incertitude d'agencement (v. fig. 3). Dans l'échancrure de l'angle supérieur droit du bloc au lion de gauche venait prendre place l'extrémité gauche du bloc portant la corniche ionique. Celle-ci n'occupait pas toute la longueur de la façade mais couronnait simplement le linteau.

Les éléments d'entablement dorique, d'un module inférieur à celui des éléments de décor précédents, prenaient place dans la partie supérieure de la construction, mais on ne peut dire à quelle hauteur au-dessus du dernier élément mis en place d'une façon sûre, c'est-à-dire la corniche ionique. Ils étaient vraisemblablement séparés de celle-ci par une assise courante au moins (v. fig. 4). Le bloc d'architrave 110 (fig. 3) présente un retour sur sa face latérale gauche et, comme un autre élément de cet entablement dorique a été découvert près de la face postérieure de la pile sud-ouest, on peut conclure que cet entablement faisait le tour des quatre côtés de la porte monumentale. Aucun bloc de triglyphe n'a été retrouvé, mais les blocs à l'aigle pourraient, en raison de leurs dimensions, avoir joué le rôle de métopes dans la frise dorique.

Au cours des deux campagnes de fouille ont été retrouvés des morceaux de plusieurs dalles allongées qui devaient couvrir le passage entre les deux piles. Ces dalles étaient disposées longitudinalement et s'appuyaient sur les deux linteaux, en partie encastrées dans la face postérieure des blocs de la corniche ionique.

Ainsi les deux piles étaient-elles réunies en une facade unique au niveau du linteau et des assises placées plus haut.

Système de fermeture. La feuillure de la baie, et le système de butée décrit ci-dessus amènent à restituer deux grands battants, qu'une poutre, coulissant dans la cavité prévue à cet effet dans la pile sud-ouest (v. fig. 2 et pl. XCIII), venait maintenir fermés. On n'a pas trouvé trace de ces battants, mais ils devaient être en bois. Plus problématique est l'absence d'un dispositif d'ancrage de ces battants, à la base: en bas des feuillures verticales, la semelle devrait porter, de chaque côté, un fort trou de crapaudine. Il n'en est rien: pas la moindre cavité à la base du piédroit nord-est; au sud-ouest, seulement un trou de section carrée de 10 cm de côté et profond de 1 à 2 cm: rien qui ait pu résister à la pression des mouvements d'un battant de porte haut de 6,35 mètres. Donc ces battants n'ont jamais été mis en place. Mais il faut noter la présence d'un dispositif sommaire de fermeture (v. fig. 2, et pl. XCIII). A la base de chacune des feuillures, sur la semelle, a été placé un petit bloc parallélépipédique, épais de 10 à 15 cm.

Les plaques de fer encastrées dans l'angle de ces blocs devaient faire fonction de crapaudine mais seule celle correspondant au piédroit sud-ouest est entaillée d'une petite cavité hémisphérique (diamètre: 3 cm). Le pivot que pouvait recevoir cette crapaudine ne pouvait être que celui d'un battant de dimensions réduites, sans rapport avec le projet initial. Ce battant venait buter sur un bloc (P 141) placé au milieu de la baie, dont la feuillure formait butée[5]. Les battants pouvaient être maintenus fermés par deux montants verticaux fixés dans deux petites cavités rectangulaires taillées dans la surface de ce bloc.

Implantation de la porte: Relations avec les murs

La campagne de 1978 a permis de

5. C'est sans doute ce bloc que H.C. Bulter a identifié, précipitamment, comme le seuil de la porte: *Syria, Publications of the Princeton University Archaeological Expeditions to Syria in 1904-1905 and 1909,* Leyden, 1913, II, A, 1, p. 19: "It was not a difficult to reach the threshold on the south side"(!).

préciser l'implantation de la porte dans le paysage (fig. 1) et plus particulièrement son articulation avec les murs qui butent sur elle. A son extrémité sud-ouest, la porte est prolongée par un massif de plan carré, dont le volume est à peu près égal à celui de la pile voisine, et sur lequel bute le mur dit "mur sud-ouest", qui borde et surplombe la chaussée aboutissant à la porte. Ce mur est l'extrémité du mur supérieur de la digue qui entourait l'étang du Qasr al-Abd.

Le mur "nord-est" prolonge la façade en direction du nord-est. Un sondage réalisé sur la face postérieure de la porte a permis de découvrir un autre mur ("nord-ouest"), parallèle à l'axe de la porte et appuyé contre la pile sud-ouest. On peut restituer sans trop d'hésitation un mur symétrique butant sur la pile nord-est: ces deux murs délimitaient la chaussée, une fois la porte passée, à l'intérieur de la clôture.

Mur nord-est. Ce mur, qui aboutit à l'angle est de la pile nord-est, peut être suivi nettement sur une longueur de 25 mètres environ, vers le nord-est. Il n'a pu être dégagé sur toute son épaisseur, car au voisinage de la pile sa partie postérieure est recouverte par de gros blocs fendus, difficiles à transporter. Sa face sud-est n'a été dégagée qui sur une longueur de 2 mètres environ. Le mur, conservé sur une hauteur de cinq assises (2,70 m) reposant sur une semelle débordante, est constitué de pierres grossièrement équarries, de taille variable (la plus grosse atteint une longueur de 1,50 mètre), calées sur des éclats.

Ce mur, appuyé contre la pile, sans liaisonnement, en est séparé par un joint plus large en haut (0,12m) qu'en bas (0,04 m), ce qui semble indiquer que le mur s'est affaissé vers le nord-est. Sa semelle est

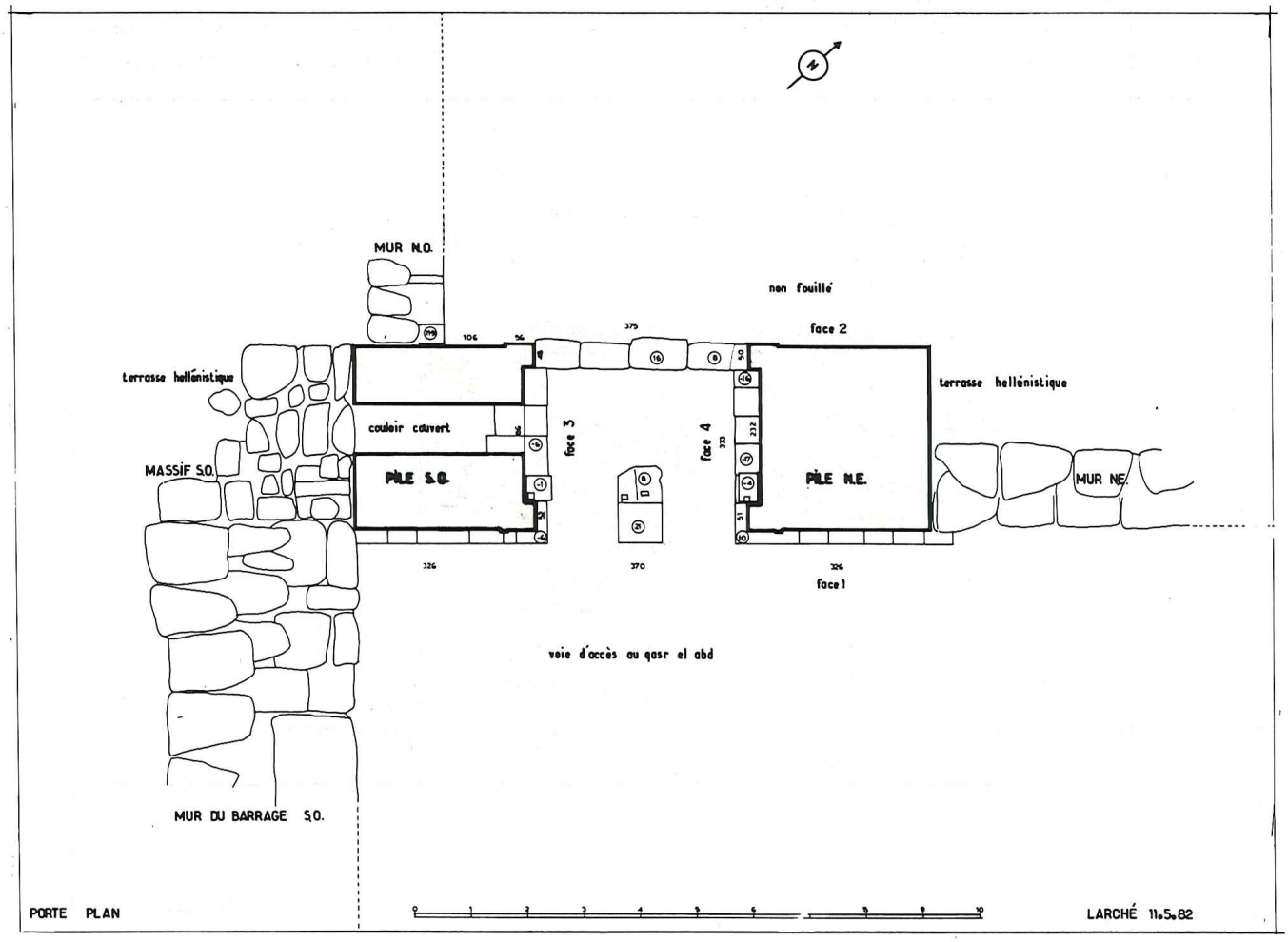

Fig.2: Plan de la porte monumentale. Relevé F. Villeneuve; dessin et mise au net F. Larché

fondée légèrement plus haut que la surface de la semelle de la pile, et son assise inférieure vient s'encastrer dans un ressaut de l'assise 1 de la pile, sur lequel s'appuient les assises supérieures du mur. La mise en place de ce mur s'est donc faite, au moins au voisinage de la pile, après l'achèvement de la pile. Cela ne signifie pas que le mur soit postérieur à la porte: il est vraisemblable qu'il ne s'agisse que de deux opérations successives d'un même programme de constructions.

Il est actuellement impossible d'évaluer la hauteur originale du mur par rapport à la pile. Le bloc constituant l'extrémité droite de la dernière assise conservée de la pile présente une face latérale avec un cadre soigneusement dressé, ce qui semble indiquer que l'angle à ce niveau (= + 4,50 m) était libre et que le mur ne montait pas aussi haut. Malheureusement, les blocs d'angle des deux assises suivantes ont été épaufrés. Il faut noter enfin que le mur était légèrement en retrait par rapport à l'angle de la pile souligné par un ciselure.

Mur sud-ouest. Ce mur bute sur l'angle sud de la pile sud-ouest et s'encastre dans une encoche de 0,20 m visible dans les assises 2 et 3 de la pile. Le mur s'élevait jusqu'à la hauteur du lit d'attente de l'assise 4. En effet le bloc d'angle de l'assise 5, et le bloc n° 71 que l'on restitue au même emplacement à l'assise 6, présentent un bossage sur la face sud-ouest, qui était donc visible. En revanche, les trois blocs qui doublent en épaisseur le carreau de l'assise 4 étaient taillés sommairement et devaient rester cachés. On peut donc restituer pour le mur une hauteur de 2,90 m environ. Le mur ne semble pas liaisonné, aux assises actuellement visibles, avec le massif de gros blocs contre lequel il s'appuie et qui prolonge la pile sud-ouest.

Le dégagement du sommet du mur sur une longueur de près de 10 mètres a montré son épaisseur considérable (de l'ordre de 3 mètres) par rapport à sa faible hauteur. Les deux assises inférieures sont constituées par des blocs assez soigneusement appareillés, disposés tantôt en carreaux tantôt en boutisses. La face inférieure des

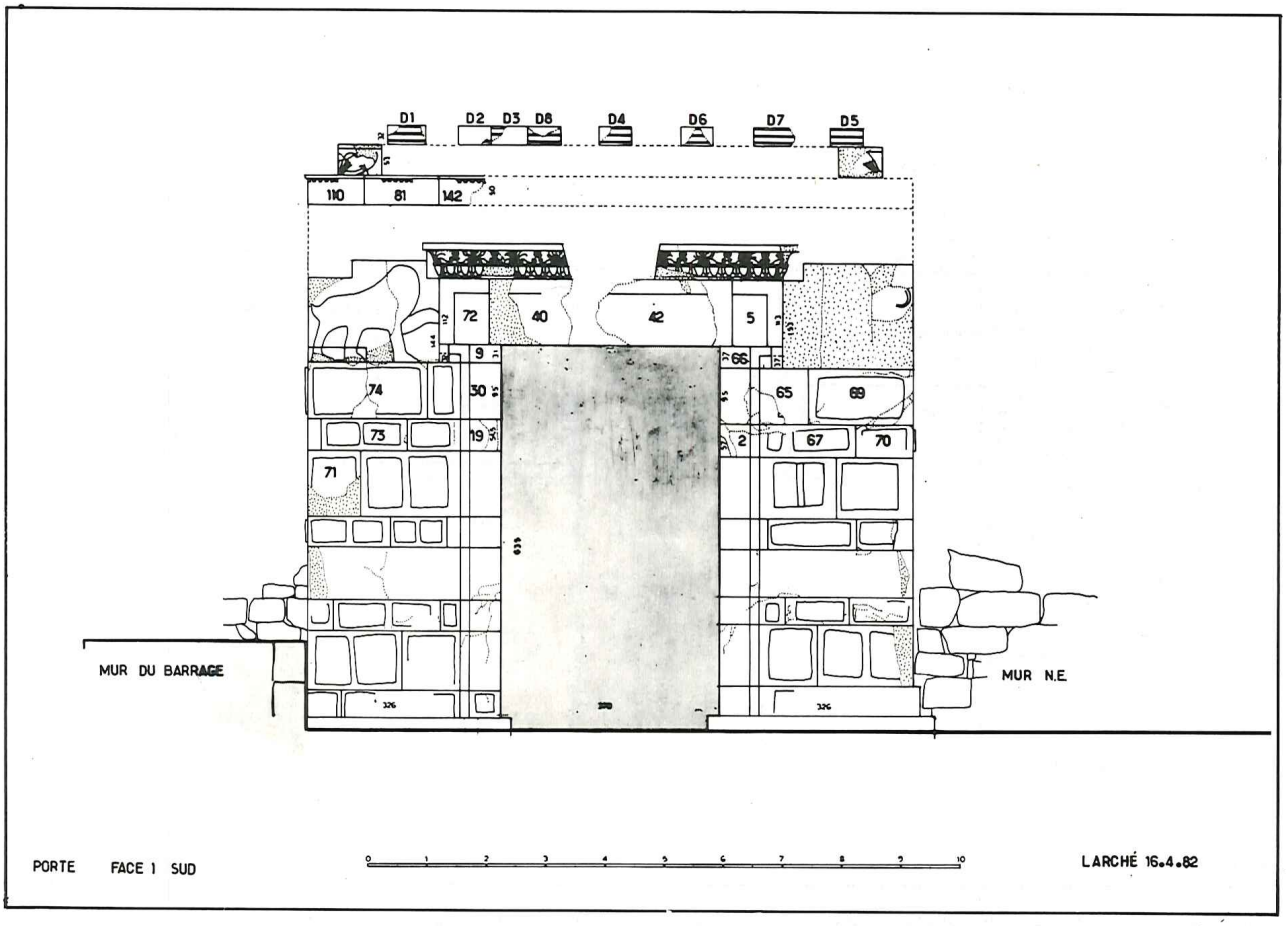

Fig. 3: Elévation de la porte. Etude et dessin: F. Larché.

blocs n'a pas été taillée régulièrement et repose, ici encore, nettement au-dessus du niveau de la semelle de la pile. Immédiatement à l'arrière de ce parement se trouve un blocage de pierres irrégulières, dont certaines sont très grosses (jusqu'a 1 x 0,60 x 0,60 m). Un alignement plus régulier de blocs de dimensions moyennes (autour de 0,50 m) limite le blocage à l'arrière. Cette face sud-ouest du mur n'est pas traitée comme le parement et n'était manifestement pas destinée à rester visible: elle était masquée par le remblai de la terrasse sud-ouest, que ce mur avait pour fonction de retenir.

Massif sud-ouest. Le lien entre le mur sud-ouest et la porte monumentale était constitué par un massif de pierres et de blocs de dimensions parfois importantes, disposés avec une certaine régularité dans l'alignement des deux façades de la pile et formant entre ces deux lignes un blocage plus irrégulier. Les limites vers l'ouest sont indistinctes: manifestement le massif ne présentait pas de ce côté de face visible. Au voisinage de l'angle sud de la pile les pierres sont taillées et appareillées avec plus de soin. Un canal a été creusé dans les deux premiers blocs jointifs à la pile et semble avoir été également ménagé entre les blocs de l'assise supérieure. Ce canal prolonge la cavité de section carrée qui traverse la pile et dans laquelle coulissait la poutre qui verrouillait la porte en position fermée. Lorsque la porte était ouverte, l'extrémité de la poutre venait se loger dans le massif. Ce dispositif montre que le massif et la pile sud-ouest constituent un tout, auquel il faut rattacher également le mur sud-ouest, sans lequel cette ordonnance n'aurait pas de sens. Le massif devait s'élever, comme le mur, à une hauteur de 2,90 m environ.

Cette hauteur limitée, ainsi que l'opposition d'une face appareillée et d'un limite indistincte au dos du mur, enfin l'épaisseur exceptionnelle des éléments de ce dispositif, permettent de conclure qu'il a joué essentiellement un rôle de soutènement.

Le mur de soutènement nord-ouest. Ce mur,

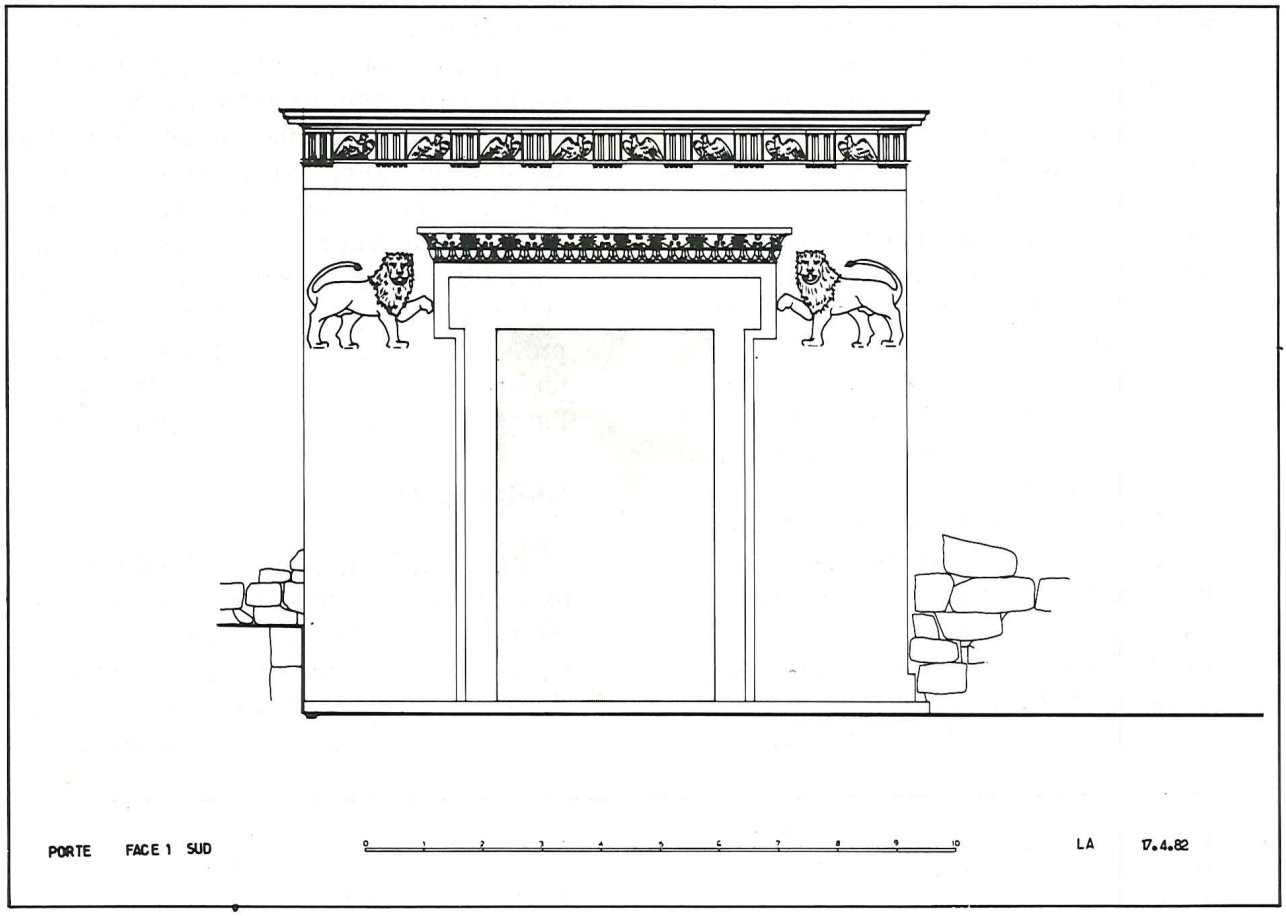

Fig. 4: Restitution de l'élévation, état original. Etude et dessin: F. Larché.

dégagé sur une longueur limitée (à cause de la plantation de citronniers), mais suffisante, de 1,50 mètre, est perpendiculaire à la face nord-ouest de la pile sud-ouest. S'élevant jusqu'a 1,80 m au-dessus du niveau O, qui est pratiquement le niveau de sa base, il avait pour fonction, dans l'aménagement du site, de retenir un important remblai au sud-ouest de la route antique, dans tout le tronçon de son parcours où, la porte passée, elle se trouvait encaissée avant d'émerger vers le village et le Qasr (v. fig. 1). Cette fonction est confirmée par le traitement dissemblable des deux faces du mur. Seule la face tournée vers la route est faite d'assises régulières.

Le parement externe de ce mur touche la pile à une distance de 1,65 m de l'angle nord de la pile, donc de la baie. La qualité de sa finition et sa liaison parfaite avec la pile montrent que ce mur est contemporain de l'ensemble de l'aménagement de la porte. Mais le mur et la pile ne sont pas liaisonnés: le mur a été mis en place après construction de la pile. Ce procédé d'adjonctions sans liaisonnements d'éléments de construction appartenant à un même programme, employé ici de façon systématique, est attesté ailleurs dans le Proche-Orient hellénisé.

Nous restituons derrière la pile nord-est un symétrique de ce mur nord-ouest (v. fig. 2), qui n'a pas été dégagé mais qui semble certain car il fallait bien que la terrasse nord-est soit elle aussi retenue au-dessus de la chaussée.

Il est clair que l'ensemble de ces murs, vu leur hauteur limitée (3 à 4 mètres au maximum) n'étaient pas un véritable rempart mais des murs de soutènement; le mur nord-ouest (et son symétrique) n'était que cela; le mur sud-ouest est aussi l'aboutissement du mur supérieur de la digue destinée à retenir l'étang qui devait entourer le Qasr al-Abd; ce mur sud-ouest et le mur nord-est avaient aussi, secondairement, une fonction d'enceinte, mais plutôt symbolique.

Par son intégration dans ce système des gros murs de l'enclos et de la digue du Qasr al-Abd, et par son architecture et son décor, notre porte apparait à coup sûr comme un élement du programme de construction du Qasr al-Abd.

Notre fouille n'a pu prendre assez d'extension pour dégager la chaussée en arrière de la porte (au nord-ouest). On détient cependant quelques données à ce sujet. Le niveau de base de la porte se situe environ 2,50 m plus bas que celui du Qasr: il est donc assuré que la chaussée montait fortement, dès la porte passée. D'autre part, le duc de Luynes, voyageant en 1864, a pu voir la chaussée reliant le Qasr à la porte [6]; et C.R. Conder, sur son plan levé en 1881[7] représentait le départ d'une chaussée antique montant du Qasr vers le village. Sur la base de ces deux témoignages, nous restituons (fig. 1) une chaussée partant de la porte et se subdivisant après 25 m en un tronçon qui va vers le Qasr et un autre vers le "village". En tout état de cause, cette chaussée est l'aboutissement d'une route antique qui semble venir du Ghôr et de Jérusalem et, à l'arrivée au site d'Iraq al-Amir, contourne le Qasr par le sud en passant entre les deux murs supérieurs de la digue. Sur ce tracé, une centaine de mètres au sud de notre porte, cette chaussée passait a proximité d'un petit bâtiment antique, dont Butler[8], au vu des fondations, a voulu faire une autre porte. Les blocs sont maintenant trop dispersés pour qu'on se prononce sur cette hypothèse. Si c'était réellement une porte, elle était loin d'avoir l'importance de la porte principale.

Stratigraphie

L'objectif de cette fouille était avant tout d'ordre architectural, et l'on ne pouvait s'attendre à trouver, sur le site d'une porte monumentale, un matériel abondant et bien conservé. Pourtant, et malgré le chaos de blocs qui encombraient

6. Duc de Luynes, *Voyage d'exploration à la Mer Morte, à Pétra et sur la rive gauche du Jourdain,* vol. 1, Paris, s.d. (1874 ?), 138-141.
7. C.R. Conder, *The Survey of Eastern Palestine,* I. Londres, 1889, plan en regard de la page 80.
8. H.C. Butler, in *Syria, Publications* etc., *op.cit.,* 21-22.

le terrain et qu'il a fallu déplacer mécaniquement, la fouille a été menée systématiquement suivant la méthode stratigraphique. En effet, l'hypothèse de base était que cette porte était un édifice strictement contemporain du Qasr al-Abd - hypothèse qui a été pleinement confirmée par l'étude d'ensemble (v. plus haut); or, s'agissant d'une porte, on pouvait penser *a priori* qu'elle n'avait pas été réoccupée à l'époque byzantine, donc que son étude stratigraphique permettrait de trouver ce que l'on arrivait pas à trouver au Qasr (à cause de l'implantation byzantine): un niveau d'origine encore en place et daté par du matériel.

La description qui suit doit être lue en relation avec les fig. 5 et 6, représentant les coupes stratigraphiques A-F et G-H, dont la localisation en plan est donnée fig. 2. On notera que sur la coupe A-F les couches 1 et 2 n'ont pu être représentées dans le tronçon C-D: l'enlèvement des gros blocs à la pelle méecanique n'a pas permis de laisser un témoin temporaire pour le dessin de la coupe. Il convient donc de raccorder mentalement ce troncon aux sections A-B et E-F à ce niveau.

Couche 1. Le niveau du sol avant fouille s'élevait, suivant l'endroit, de + 1,50 à 2,70 m. La couche supérieure (1), constituée d'humus, surtout à l'arrière de la porte, de poussière et de détritus ailleurs, est moderne. Elle a conservé trois monnaies (IAP 77 M 1,2,3) et, outre des tessons résiduels des périodes antérieures, deux fragments d'époque ayyoubide ou mamlouke (n° 35-36).

La couche 2, accumulation de blocs de la porte pris dans une terre jaunâtre contenant une assez grande quantité de céramique en gros morceaux, est le résultat de l'effondrement de la porte détruite par un séisme. Les blocs de couronnement, tombés les premiers, reposent non sur un sol mais sur une surface irrégulière correspondant à une période d'abandon.

La couche 3, terre brune argileuse et compacte avec de très petits fragments de céramique, est essentiellement un dépôt naturel de terre correspondant à une période d'abandon. Cependant, dans le passage, un foyer (fig. 5 section CD), auquel se rattachent la plupart des tessons, témoigne d'une occupation temporaire.

Ces trois premiers niveaux (1-3) sont sans relation avec l'architecture de la porte. Dans les couches situées plus bas le fait significatif est la superposition de deux sols dont aucun ne constituait le sol définitif que les constructeurs projetaient pour cette porte. Ce sont des niveaux à peu près plans dont la surface a été piétinée. La céramique, écrasée, a été réduite à des fragments très petits.

Le niveau supérieur (sol 1), irrégulier, situé entre + 0,50/0,40 m devant la porte et à + 0,10 m dans le passage, est situé trop haut par rapport à la semelle de la façade (= 0) et par rapport à la semelle interne dans le passage (- 0,10 m). Lié au dispositif de fermeture sommaire décrit plus haut, il doit être considéré plutôt comme un sol d'utilisation provisoire de la porte que comme un sol de travail. Un terminus post quem pour ce sol est fourni par un lot de 7 monnaies de bronze trouvées sur ce sol devant la façade de la pile sud-ouest.

Sous ce niveau, les couches réunies pour plus de commodité sous la dénomination de couche 4 sont contemporaines de la construction même de la porte, comme l'indiquent leur niveau et leur composition faite d'éclats de taille, de remblais argileux caractéristiques (comme au Qasr), avec un bloc d'architecture laissé pour compte. Sous une couche 4 a, mélange d'éclats de taille et d'argile que l'on peut attribuer à la phase finale de la construction, apparaît un sol 2 qui ne peut être qu'un sol de travail (éclats de taille). Sous ce sol, la couche 4b, à peu près sans matériel, s'explique comme un remblayage argileux des tranchées de fondation. Nos sondages ont atteint le niveau - 1 m sans parvenir au sol vierge.

La stratification est sensiblement différente, à l'arrière de la porte, au sud-ouest du mur de soutènement nord-ouest; sous la couche 1 (humus du verger) on a identifié, sous une surface non compactee (niveau + 2,35 m à + 1,80 m), en pente du sud-ouest vers le nord-est et se raccordant au sommet du mur nord-ouest, un épais remblai manifestement

contemporain du mur et donc de l'ensemble de la porte.

Materiel

Outre les deux blocs de fer parallélépipédiques, le matériel se compose pour l'essentiel de 13 monnaies et fragments de monnaies, d'un fragment de verre, d'un fragment de bol de pierre et d'un silex taillé, et de tessons de céramique

Monnaies (par M. Chr. Augé) Voir Pl. XCIV.

Les deux fouilles de 1977 et 1978 ont mis au jour douze monnaies (et un fragment) toutes en bronze et très usées. Dix d'entre elles ont pu être identifiées:
— Six très petites pièces (demi-unités), de séries courantes attribuées à Antiochos III (période 208-200 av. J.-C.), peut-être à l'atelier d'Antioche; trouvées dans un même contexte, cinq d'entre elles portent au revers le type d'Apollon debout (78 M 1,3, 4, 5, 6), et une celui de l'éléphant (78 M 2). L'une des deux monnaies illisibles (78 M 7) paraît appartenir aux mêmes séries.
— Une monnaie séleucide tardive (77 M 1): fin du IIe s. av. J.-C.
— Une monnaie des Maccabées (77 M 3), peut-être de Jean Hyrcan II (63-40 av. J.-C.), et une d'Hérode Agrippa (77 M 2), datable de 42/43 ap. J.-C.
— Un *aes* (erratique) de l'atelier d'Antioche, entre 383 et 395 ap. J-C. (78 M 10).

Céramique

L'étude de ce matériel a bénéficié de l'aide du Dr. F. Zayadine, du Dr. J. Sauer, de Mrs. N. Lapp (qui nous a aimablement autorisé à examiner au Pittsburgh Theological Seminary, le matériel, encore très partiellement publié à ce jour, des fouilles de 1961-62 à Iraq al-Amir), de

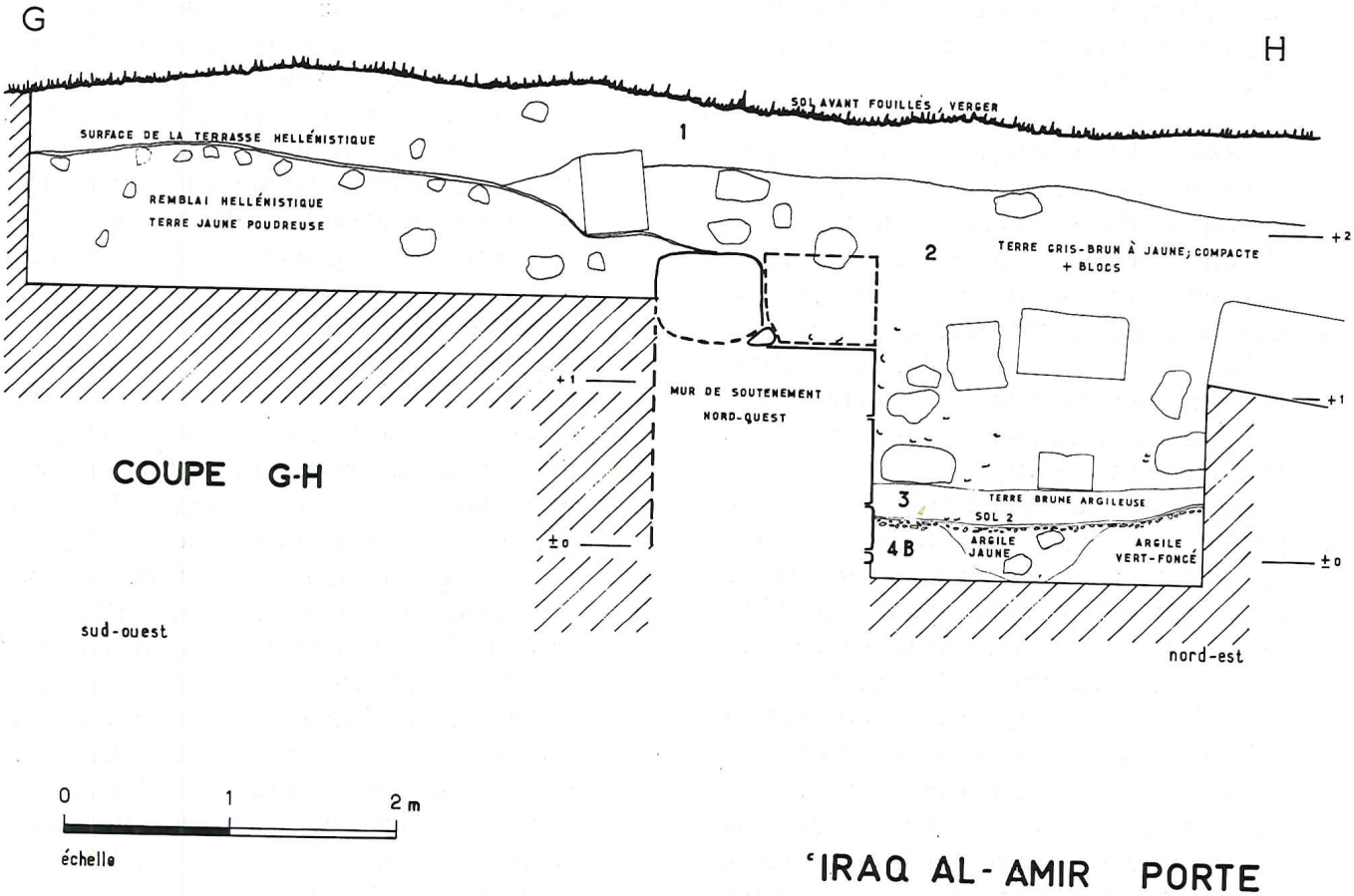

Fig. 5: Coupe stratigraphique sud-est /nord-ouest dans l'axe de la porte. Relevé et dessin F. Villeneuve.

Mlle D. Orssaud. Mlle M.-J. Roche a participé à la première élaboration des figures.

Les couleurs des poteries, données à titre indicatif, renvoient à *Munsell Soil Color Charts,* éd. 1975. Les diamètres indiqués sont les diamètres externes à l'embouchure.

Pour la présentation, on a réparti les objets en 6 groupes, A,B,C,D, E,F. Le groupe F (Fig. 7) rassemble les objets en pierre et verre, les autres la céramique. Le groupe A (Fig. 7) est celui de la couche 4 et des sols 1 et 2 (niveaux en relation avec la construction de la porte); la céramique de la couche 3, dont l'essentiel provient du foyer correspondant à une brève utilisation du site, constitue le grope B (Fig. 7). On a subdivisé le matériel de la couche 2, couche d'effondrement: la céramique hellénistique a été placée dans le groupe C (Fig. 7), la céramique romaine et byzantine dans le groupe D (Fig. 8). La céramique de la couche 1 et la céramique non stratifiée constituent le groupe E. (Fig. 8). La présentation des figures tient donc compte à la fois de l'étude stratigraphique et de l'étude chronologique du matériel.

Chronologie

L'étude de l'architecture, de la stratification et du matériel semble autoriser les conclusions chronologiques suivantes.

Début du IIè s.av. J.-C. La porte est construite, à un emplacement où la fouille n'a fait apparaître aucune occupation antérieure (le silex n°39, au demeurant mal daté, est isolé et non probant, étant repris dans un remblai ultérieur). L'architecture et le décor sont clairement hellénistiques, et contemporains de ceux du Qasr al-Abd, à l'aménagement duquel cette porte est visiblement associée. Mais la date de construction du Qasr reste elle-même sujette à débat.

L'étude stratigraphique apporte une réponse claire: sur le sol 1, associé à une phase terminale des travaux de construction de la porte et à une utilisation

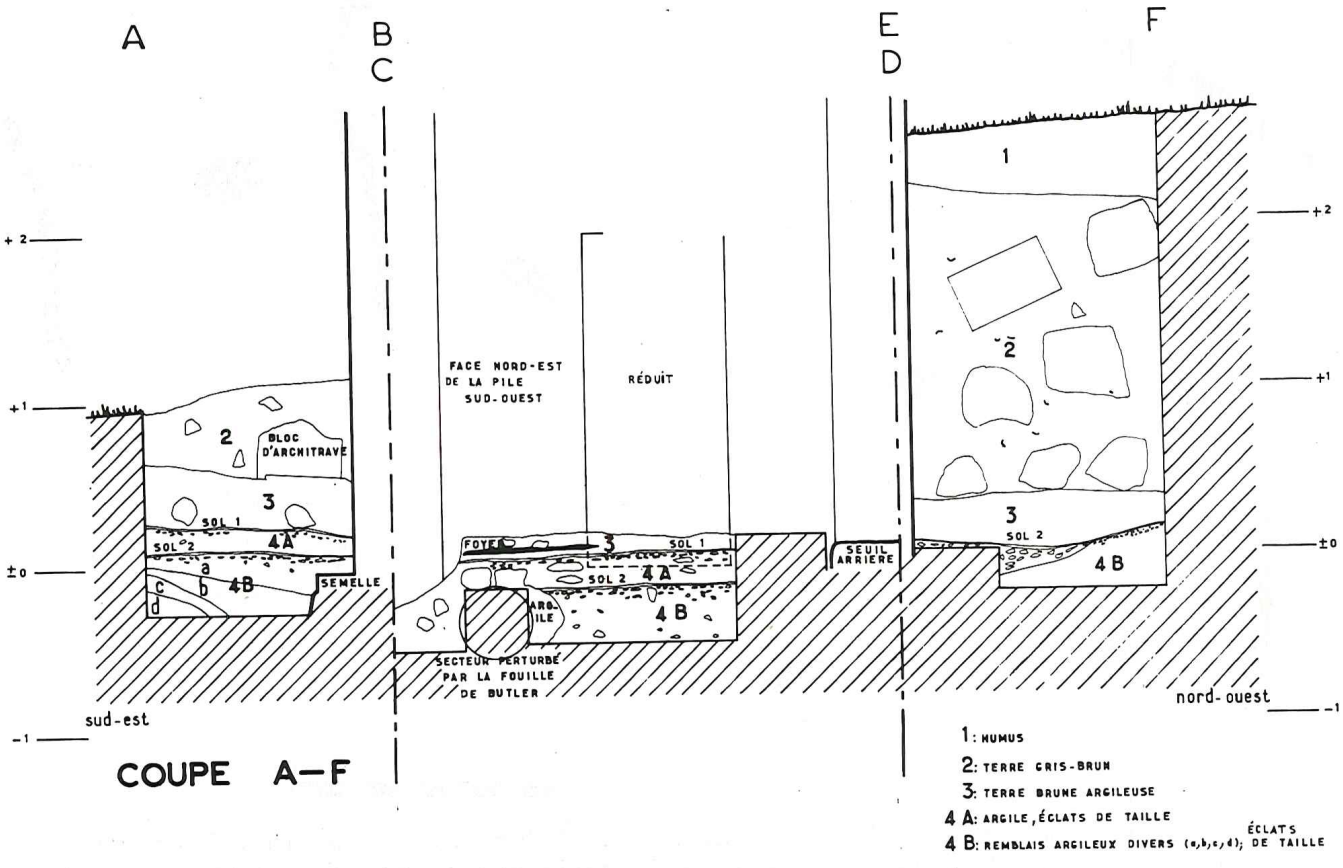

Fig. 6: Coupe stratigraphique sud-ouest/nord-est derrière la porte. Relevé et dessin F. Villeneuve.

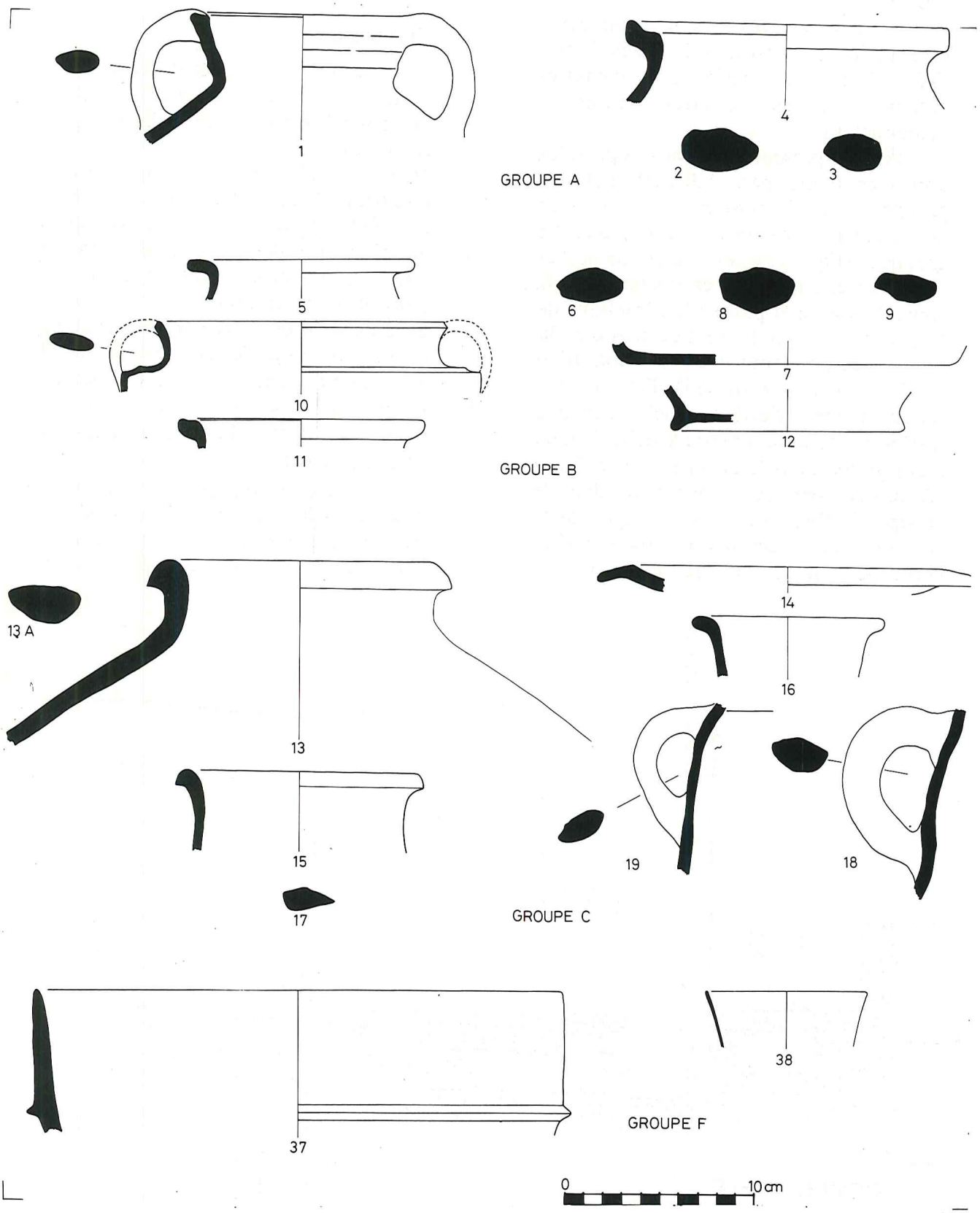

Fig. 7: Objets en céramique et autres. No 1-19: céramique: 1-6 et 13-19, hellénistique, 1er quart du IIème siècle av. J.-C.; 7-12, "romain", mileu du Ier s. ap. J.-C. No. 37: stéatite, byzantin ou islamique ancien. N°. 38, verre, romain tardif ou byzantin.
Dessin et mise au net F. Villeneuve.

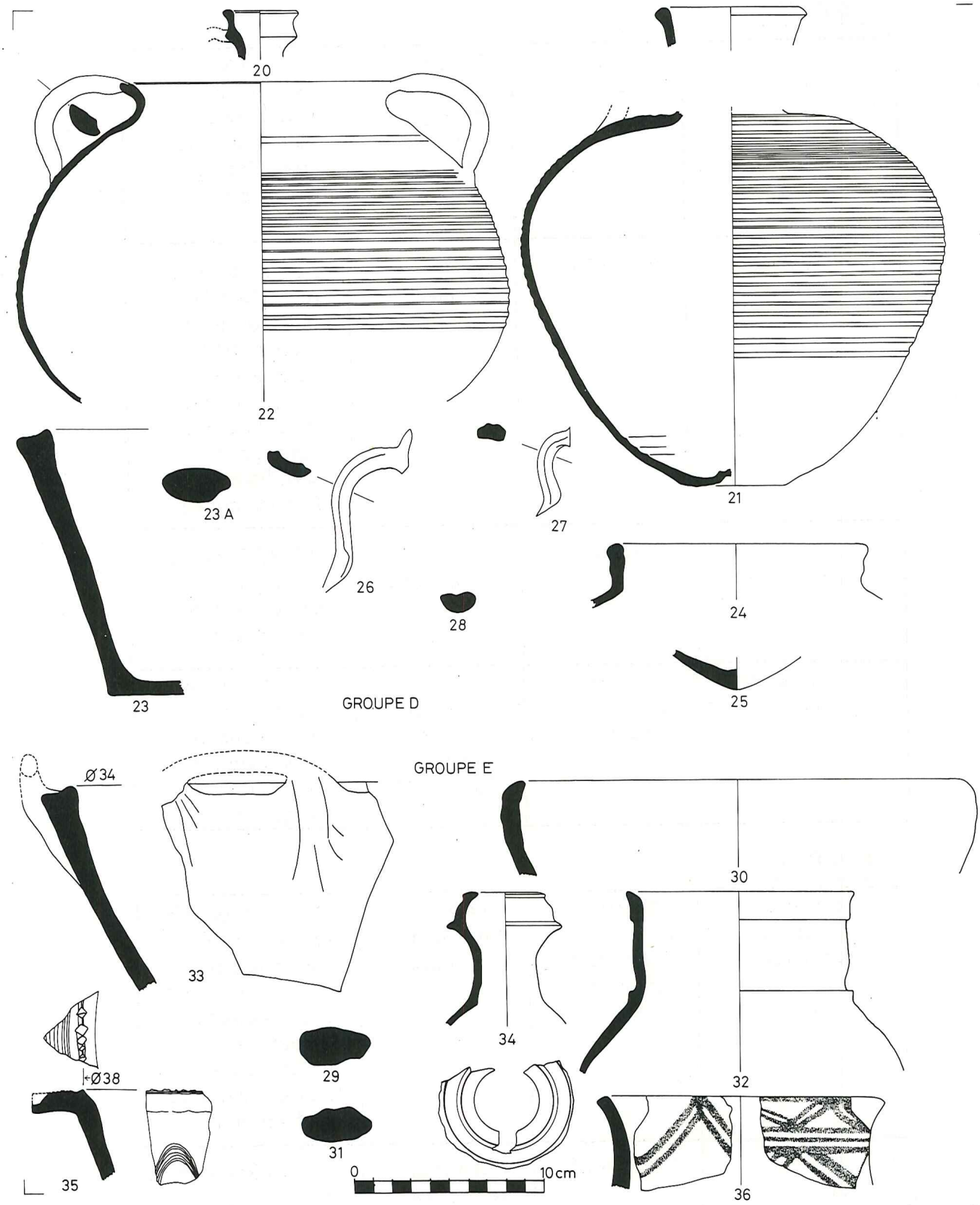

Fig. 8: Objets en céramique: 29, hellénistique; 20, 30, "romain", milieu du 1er s. ap. J.-C.; 21-28, 31-34, byzantin; 35,36, islamique, XII-XIV èmes siècles. Dessin et mise au net F. Villeneuve.

No	Nature	N°d'inv.	Locus	Matériau
GROUPE A				
1	Col de pot à cuire	78IAP10, 21,24	Couche 4B, sol 2. Passage et dev. pile SW	2,5YR5/8 "red" face ext. brûlée pâte dure bien cuite. Surf. très irrég. Incl. gros grains gris.
2	Anse de jarre	78IAP77/2	Sol 1, passage.	2,5YR6/6 "light red". Dans l'épaisseur de la section, bandes de tons brun-rouge variables. Pâte dure. Incl. petits gr. bl; surf. lissée. Engobe crême.
3	Anse de jarre	78IAP60/2	Sol 1, devant pile SW	10YR5/3 "brown" coeur gris, nombr. incl. bl. surf. rugueuse.
4	Col de pot à cuire	78IAP60/1 cf. 78IAP48/1	Sol 1, devant pile SW, avec monnaies 78M1 à M7	10YR8/3 "very pale brown". Surf. rugueuse mais régulière. Incl. petits gr. quartz.
GROUPE B				
5	Bord de cruche à col large	78IAP82/1 cf. 78IAP22/1 (ex.dessiné ici)	couche 3, foyer dans le passage	5YR6/6 "reddish yellow", coeur gris. Pâte peu dure. Incl. abond. grosses etpetites grains bl. et n., un peu de quartz, chamotte? surf. poreuse.
6	Anse de jarre	78IAP65/2	Couloir de la pile SW couche 3	10YR8/3 "very pale brown". Surf. rugueuse. Nombr. petites incl. gris à noir.

7	Fond de plat à cuire	78IAP17/1	Couche 3, dans le passage.	5YR7/6"reddish-yellow". Pâte dure; incl. abond. petits grains n.et calcite. Surf. lissée.
8	Anse de Jarre	78IAP24/1	Couche 3, dans le passage;	5YR6/4 "light reddish brown", coeur brun. Pâte très dure. Nombr. incl. n.
9	Anse de jarre	78IAP34/2	Couche 3, foyer dans le passage.	7,5YR6/4 "light brown", coeur sombre. Pâte dure Incl. abond.: gros grains n.et bl. très apparents sur la paroi.
10	Bord de marmite (au moins une anse sûre)	78IAP52/3 53/1,72/3 72/2.	Couche 3, dans le passage et le couloir.	2,5YR5/8"red";en section, filet noirâtre au coeur de la paroi, Pâte assez dure. Incl. fines, n. et bl., surf. lissée.
11	Haut de col d'amphore	78IAP21/1	Couche 3, foyer dans le passage.	7,5YR6/4 "light brown". cuisson homogène. Pâte dure. Incl. petits grains de quartz Engobe 10YR8/4 "very pale brown"
12	Fond de cruche (?)	78IAP93/1	Couche 3, couloir de la pile SW	10YR6/2 "light brownish gray" (int.) à 2,5YR7/6 (ext.). Coeur sombre. Pâte dure Incl. abond. très apparentes: grain bl., quartz. Surf. rugueuse.

GROUPE C

13	Col de jarre (avec anse verticale 13 A ?)	78IAP102	Couche 2 derrière la porte	Non tourné, sauf le col. 5YR6/6 "reddish yellow" ext.; 5YR6/4 "light reddish brown" int. Coeur gris sombre. Pâte dure. Incl. gros grains bl.
14	Bord d'assiette dérivée du type "fish-plate"	78IAP5/3	Couche 2, devant pile SW	5YR6/6 "reddish yellow", coeur gris. Pâte tendre. Surf. rugueuse. Incl. nombr.: grains bl. et n., quartz , chamotte?
15	Col de cruche	78IAP104/2	Couche 2, derrière la porte	7,5YR7/6"reddish yellow".Pâte tendre, assez compacte. Incl. abond., grains bl. et quartz.
16	Col de cruche	78IAP11/1	Couche 2, dans le passage	5YR6/6"reddish yellow". Pâte bien cuite. Incl. quartz, mica?
17	Anse de cruche	78IAP10/1	Couche 2, devant pile SW	7,5YR6/4"light brown", coeur sombre. Pâte dure incl. abond. et très apparentes, grains n. et bl. Parois lissées.
18	Anse de jarre	78IAP52/1	Couche 2, dans le couloir	comme n°17, avec bulles.
19	Anse de jarre	78IAP104/3	Couche 2, derrière la porte	Comme n°14

GROUPE D

20 Col de petite cruche (une anse sûre, sans doute unique)	77IAP5	Couche 2, dans le passage	7,5YR8/4"pink" Petites incl. bl. Traces d'engobe rouge.
21 Cruche à une anse	78IAP28 33,41,42	Couche 2 couloir de la pile SW	2,5YR6/8"light red", cuisson homogène. Pâte dure bien cuite. Surf. rugueuse, côtelée. Incl. bl.
22 Pot à Cuire à deux anses verticales légèrement désaxées. Fond bombé présumé	78IAP42, 50.	Couche 2, couloir de la pile SW	Ext.7, 5YR5/2 "brown". Coeur et surf. int. 7,5YR6/6 "reddish yellow" Pâte dure très cuite. Surf. rugueuse côtelée Quelques incl. bl.
23 Diam.34 cm Bassine, à anses peut-être verticales (cf nº 23A) horizontales (cf nº 33)	78IAP11/ 2et3; 104/1	Couche 2 dans le passage et derrière la porte	7,5YR6/6"reddish yellow", coeur gris. Incl. quartz. surf. rugueuse. Le bas du pot n'est pas tourné traces de modelage vertical).
23A Anse (de la bassine no. 23 ?)	78IAP41/2	Couche 2, dans le couloir de la pile SW	V. Nº 23
24 Col de pot à cuire	78IAP33/1	idem.	7,5YR7/6"reddish yellow". Cuisson homogène. Incl. bl. et quartz. Surf. côtelée, traces d'engobe brun.

25	Fond d'amphore ?	78IAP42/1	Couche 2, dans le couloir de la pile SW	Paroi ext.: 10YR5/1 "gray"; paroi int.: 5YR7/6 "reddish yellow". Surf. rugueuse. Pâte dure nombr. incl. bl.
26	Anse de cruche	78IAP16/1	Couche 2, dans le passage	7,5YR7/6"reddish yellow". Coeur gris. Incl. quartz.
27	Anse de cruche	78IAP42/2	Couche 2, couloir de la pile SW	5YR6/6"reddish yellow". Petites incl. bl.
28	Anse de cruche	781AP38/1	idem	10YR6/2 "light brownish gray" à 2,5YR7/6"reddish yellow".Engobe 7,5YR6/4"light brown". Coeur plus sombre. Pâte dure. Incl. abond.: bl., n., quartz.

GROUPE E

29	Anse de jarre	78IAP66/1	Hors Stratification derrière la porte.	7,5YR6/2"pinkish gray". Pâte dure. Surf. rugueuse. Grosses incl. bl. et petites n.
30	Bord d'écuelle	78IAP8/1	Couche 1, devant la pile NE.	7,5YR6/4"light brown". Pâte très dure. Incl. rares, calcite. Surf. lisse, lustrée, quelques craquelures.
31	Anse de jarre	78IAP74/1	Nettoyage du canal de la poutre, pile SW	10R6/8"light red" Coeur 10YR5/2 "grayish brown" .Incl. calcite; autres incl. bl.; basalte? pâte dure.
32	Col d'amphore (au moins une anse)	78IAP43/1 et 3	Hors stratification, pile SW.	v.n°5 En outre incl. bl. et chamotte, très abond.

33	Bord de bassine à anses horizontales	77IAP2	Hors stratification	V.n°23
34	Col de cruche. Une anse vraisemblable, attachée au col.	77IAP1	Hors stratification.	v.n°22
35	Fragment de bassine ?	77IAP6	Hors stratification	v. n°23 / engobe 7,5YR8/2pinkish white". Décor en creux au peigne, décor.incisé sur la lèvre. Orientation approxim.
36	Bord de pot de stockage.	77IPA4	Hors stratification	Pâte 5YR6/4 "light reddish brown". Coeur plus gris. Engobe 10YR7/3"very pale brown". Peinture 2,5YR2,5/4"dark reddish brown". Tourné. Le dessus de la lèvre est peint. Incl. bl.

GROUPE F

37	Bord de grand bol à paroi verticale	77IAP3	Hors stratification	Stéatite noircie
38	Bord de flacon ?	78IAP42	Couche 2, couloir de la pile SW	Verre transparent, teinte verte.
39	Racloir sur éclat (v. photo pl. VI)	80IAP107	Couche 4Bb, remblayage de la tranchée de fondation de la pile SW	silex

provisoire avec un système de fermeture bancal, a été trouvé un groupe de 7 monnaies dont une seule est illisible et les 6 autres, contemporaines entre elles, ont été émises dans les dernières années du IIIè s. av. J.-C., sous le règne d'Antiochos III. Cela donne un *terminus post quem* pour la construction de la porte. Ces monnaies sont usées ou très usées et ont donc dû circuler quelque temps après leur émission. Nous ne disposons d'aucun *terminus ante quem* (si ce n'est, bien plus tard, l'époque du foyer de la couche 3); mais la céramique des différentes strates de la couche 4, du sol 2 et du sol 1, si elle n'est ni très abondante ni très précisément datable, ne semble en toute cas pas postérieure à la première moitié du IIè s.av. J.-C.; de même la céramique éparse trouvée dans la couche 2 d'effondrement et hors stratification: l'ensemble de la céramique hellénistique trouvée s'accorderait assez bien avec une date au premier quart du IIè. siècle avant J.-C., que propose le texte de Flavius Josèphe (Ant. J. XII, 229-236) qui situe ces aménagements vers 182-175. Notre matériel ne permet pas, bien entendu, de proposer une date à l'année ou à la décennie près, ce qui empêche de mettre d'une façon péremptoire l'inachèvement de la porte en rapport avec le suicide d'Hyrcan. Il est certain, en tout cas, que la construction n'est pas antérieure aux environs de l'an 200 avant J.-C.

D'autre part, aucune occupation hellénistique sensiblement postérieure à l'époque de la construction n'a eu lieu à cet emplacement. La construction n'a jamais été menée tout à fait à terme: ni le seuil, ni le pavement, ni les vantaux de la porte n'ont jamais été placés. Au lieu de cela, c'est seulement un système provisoire et bancal de fermeture qui a été installé, à une époque qui se situe immédiatement après, ou plutôt à la fin de la construction, comme l'a montré l'analyse stratigraphique.

Milieu du Ier siècle ap. J.-C. A la différence du Qasr, la porte n'a pas connu de véritable réutilisation ou réoccupation. Les deux monnaies de la fin du IIè et du début du Ier ss.av. J.-C. (77M1 et 77M3) ont été trouvées dans la couche superficielle et sont donc là par hasard: elles n'intéressent que l'histoire du site en général. En revanche, après plusieurs siècles d'abandon, un foyer assez conséquent, avec de la céramique du Ier siècle ap. J.-C., montre que la porte a connu une certaine forme d'usage (feu de nomades?) à ce moment. Une monnaie hérodienne du deuxième quart de ce siècle, trouvée dans la couche superficielle, a peut-être une relation avec cet ensemble, ce qui nous a amené à proposer, pour cette réoccupation temporaire, une date vers le milieu du siècle.

Périodes byzantine et omeyyade. Le dernier fait important est l'effondrement partiel de la construction, causé par un séisme qui est certainement le même que celui qui a détruit le Qasr et qui a été situé en 365 ou en 363 de notre ère.[9]. La fouille de la porte ne fournit qu'un *terminus post quem* au Ier siècle après J.-C. pour un séisme qui a sans doute eu lieu au IVè siècle. D'une part la céramique byzantine dans la couche d'effondrement est mal datée par des parallèles, d'autre part la couche contient, pêle-mêle, du matériel clairement antérieur au séisme (céramique hellénistique) et du matériel qui peut lui être postérieur (détritus jetés sur l'éboulis et glissés entre les pierres jusque très bas dans la couche).

Le matériel byzantin de la couche d'effondrement (et de la couche 1 moderne, où se trouvait une monnaie de la fin du IVè siècle ap. J.-C.) témoigne donc seulement d'une occupation à cette période ailleurs sur le site, et très probablement au Qasr. De même les rares vestiges omeyyades.

Période ayyoubide ou mamelouke. Deux tessons de la couche superficielle

9. P.W. Lapp a proposé la date de 365 après J.-C. (BASOR, 165, 32 et 171,21) K.W. Russell, (The Earthquake of May 19, A.D. 363, BASOR, 238, printemps 1980, 47-64) propose le 19 mai 363 sur la base d'un texte syriaque récemment étudié.

témoignent d'une occupation à cette époque quelque part sur le site aux environs de la porte. Ce sont les dernières traces avant les installations modernes postérieures à 1960.

La porte monumentale d'Iraq al-Amir apparaît donc comme une construction à l'histoire très brève, liée à la volonté d'un potentat local du début du IIè siècle av. J.-C. de se constituer un domaine enclos mais non réellement fortifié, conçu pour le prestige plus que pour la guerre, dont cette porte, si elle n'était restée inachevée, aurait constitué l'entrée.

PRELIMINARY REPORT ON THE 1981 SEASON OF THE SYDNEY/WOOSTER JOINT EXPEDITION TO PELLA (SPRING SESSION)

by
Robert H. Smith

The third season of the Sydney/Wooster Joint Expedition to Pella, Jordan, was carried out during the first five months of 1981. As in the previous two seasons, field operations were conducted in two sessions, the first during January-February by a staff provided by The University of Sydney and the second from mid-March through mid-May by a staff under the auspices of The College of Wooster. In order to enable these preliminary reports on the two sessions of the season to appear as promptly as possible, the directors are submitting their respective reports to this journal separately, as was done for the previous season.

The spring session had a staff of more than two dozen persons, who came not only from the United States but from several other countries as well, with Jordan being well represented.[1] Primary funding came from the National Geographic Society and the National Endowment for the Humanities, with significant additional funding being provided by The College of Wooster. Field work was carried out under permit from the Department of Antiquities, with the endorsement of the American Schools of Oriental Research and the cooperation of the American Center of Oriental Research in Amman. The Expedition wishes to express its thanks to all the persons and institutions whose contributions have made possible this continuing undertaking at Pella.

The site has become sufficiently familiar from previous publications that it needs no introduction here.[2] Since the Joint Expedition commenced activities in 1979, fourteen areas have been explored, some of them as on a continuing basis and others for limited purposes only. Each of the two sponsoring institutions has responsibility for field activities in its agreed-upon areas. The two most extensive excavations have been Areas III-IV (Sydney) and IX (Wooster); still as Pl. XCV shows, only a small part of the ancient site has yet been excavated.[3] In 1981 excavations and related archaeological activities were carried out by the Wooster-directed team in four of these areas, two of which (VIII and IX) had been opened in 1979 and two of which (XIII and XIV) were new. Regarding results of the 1981 season and the prior work done in Areas VIII and IX and other areas, the reader is referred to the several preliminary reports published

1. In addition to myself, and the four persons who are named in the text of this report as area supervisors, the spring 1981 staff consisted of the following: Omar Reshaidat and Hekmat Ta'ani, representatives of the Department of Antiquities and excavators; Douglas Kuylenstierna, photographer; Ilse Koehler, Zoologist; Cherie J. Lenzen, ceramicist; Beryl Jolowicz, registrar/nurse/camp manager; Neil Ramsay, architect; Sallie S. Fried, draftsperson; Julie Billingsley, David C. Rimmler, Dorothy J. Wickert, Adriana Hopper, Mark D. Smith, Margaret Poethig, Kristy A. Dawson, Tina Niemi, Alison M. McQuitty, and Guy Wilson, excavators. Badri Madi again served as foreman and Hassan Adawi as cook. An average of approximately seventy local labourers, mostly men and boys, completed the field contingent.
2. For a description of the site and a list of earlier publications relating to it, see Robert H. Smith, *Pella of the Decapolis, Vol. I: the 1967 Season of The Wooster Expedition to Pella* (Wooster, Ohio, 1973), particularly Chapter 1.
3. Pl. XCV also shows, atop the central mound (upper left) the permanent field headquarters that the Expedition constructed with the generous assistance of the Department of Antiquities through its director-general, Dr. Adnan Hadidi. The expedition wishes to express its appreciation to Dr. Hadidi and his staff for the continuing support that they have given to the field program at Pella.

or in the press.[4] as well as to a book-length, three-season interim scholarly report that is presently in the press.[5] This present report will concern itself only with the work carried out in the Wooster session in 1981.

Area VIII

The West Cut

This was the third spring session that operations have been conducted in this long trench on the western side of the central mound. The purpose of excavation in this area is to provide a solid stratigraphic picture of the occupation of the western side of the city through the centuries, until bedrock is reached. In the two previous seasons the excavators worked their way successively back through abundant Umayyad, some Byzantine, and scanty Roman remains to the Late Hellenistic city, where there was extensive evidence of both occupation and subsequent destruction, the latter associated with an invasion successfully mounted against Pella by the Hasmonean ruler Alexander Jannaeus in 82/81 B.C. The area supervisor was Brian Cannon, a veteran of the Wooster team since the beginning of the Joint Expedition; he was assisted by Cherie J. Lenzen.

As the spring session began, it was anticipated that the excavation of the Late Hellenistic stratum would soon be completed and work could proceed into the Iron II levels that the excavations in the spring of 1980 had shown underlie the Hellenistic. It was discovered, however, that the Hellenistic debris was considerably deeper than had been expected. Although Iron Age sherds were increasingly found mingled with Hellenistic remains, the disturbance of the soil layers was such that in only a few of the loci excavated during this past spring session were pure Iron Age levels encountered.

The discovery of the relatively large quantity of Hellenistic remains gave opportunity for further inquiry into Pella's history during the 4th Century through the early 1st Century B.C. Every effort was made to distinguish any Early Hellenistic levels underlying the abundant ones of Late Hellenistic date. Although a few sherds of Early Hellenistic date were identified, there was no Early Hellenistic stratum as such in the West Cut; there continued to be predominantly Late Hellenistic sherds in most of the deposits in this stratum. It would appear that the Late Hellenistic builders who constructed the numerous walls of that period (Pl. XCVI) churned up whatever remains there might have been of the city's Early Hellenistic Period.

During the 1980 spring session the excavators had found that, despite an abundance of walls of Late Hellenistic date, there was a notable absence of floors associated with those walls. It is becoming increasingly apparent that the numerous walls that the excavators found were, in fact, only the foundations of walls. The floors that must have been associated with the buildings had been destroyed by leveling procedures carried out by builders in the latest Hellenistic phases and in the Roman Period so that they could construct new edifices, just as later the Byzantine builders would scrape away most traces of Roman construction.

Although in general the Late Hellenistic ceramic tradition dominates the Hellenistic deposits in the West Cut, there appear to be some slight typological differences in the ceramics found at lower levels in the stratum, although never with sharp stratigraphic delination. In these lower levels, Eastern Sigillata A ware is less

4. Preliminary reports by the co-directors on the previous seasons of the Joint Expedition are to be published in *BASOR* and *ADAJ* . One of these reports is already in print: R.H. Smith, A. McNicoll, and J.B. Hennessy, "Preliminary Report on the 1979 Season of The Sydney-Wooster Joint Expedition to Pella," *ADAJ* 24 (1980), pp. 13-40. The reader is also referred to two non-technical articles that summarize the results of the first three seasons of the Joint Expedition: Robert H. Smith, "Pella of the Decapolis," *Jordan* 5, no. 3 (Fall, 1980), pp. 13ff., and "Pella of the Decapolis," *Archaeology* 34, no. 5 (September-October, 1981), pp. 46-53.
5. *Pella in Jordan; Interim Report on the 1979-1981 Excavations,* by A.W. McNicoll, R.H. Smith and J.B. Hennessy (Canberra: Australian National Gallery, 1982).

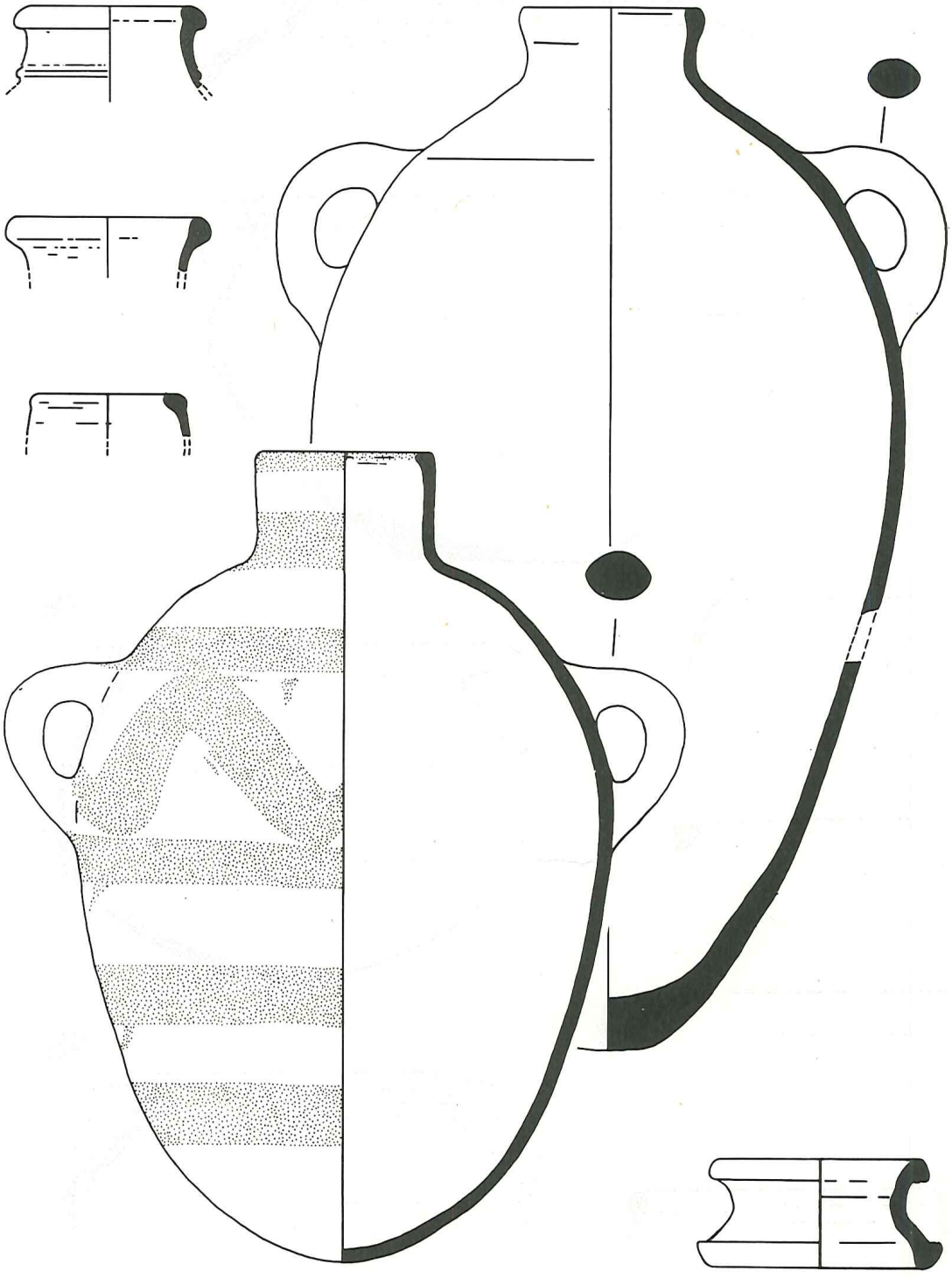

Fig. 1: Iron II pottery, chiefly jars and jar stand, from Area VIII, the West Cut, at Pella. Scale 1:4.

frequent and moulded bowls in Megarian style occasionally appear. Black-glaze Attic-style bowls are proportionately more frequent than in later levels, although Hellenistic red ware remains the most abundant imported pottery. Rhodian jar handles become noticeably less common in the lower levels. Possibly when the pottery is studied in greater detail other distinctions may become evident. The ceramic evidence supports the conclusion that Pella was occupied by at least the later part of the 3rd century B.C., and possibly earlier in that century. Numismatic data have yet to be assembled, but the generally low percentage of legible coins that are

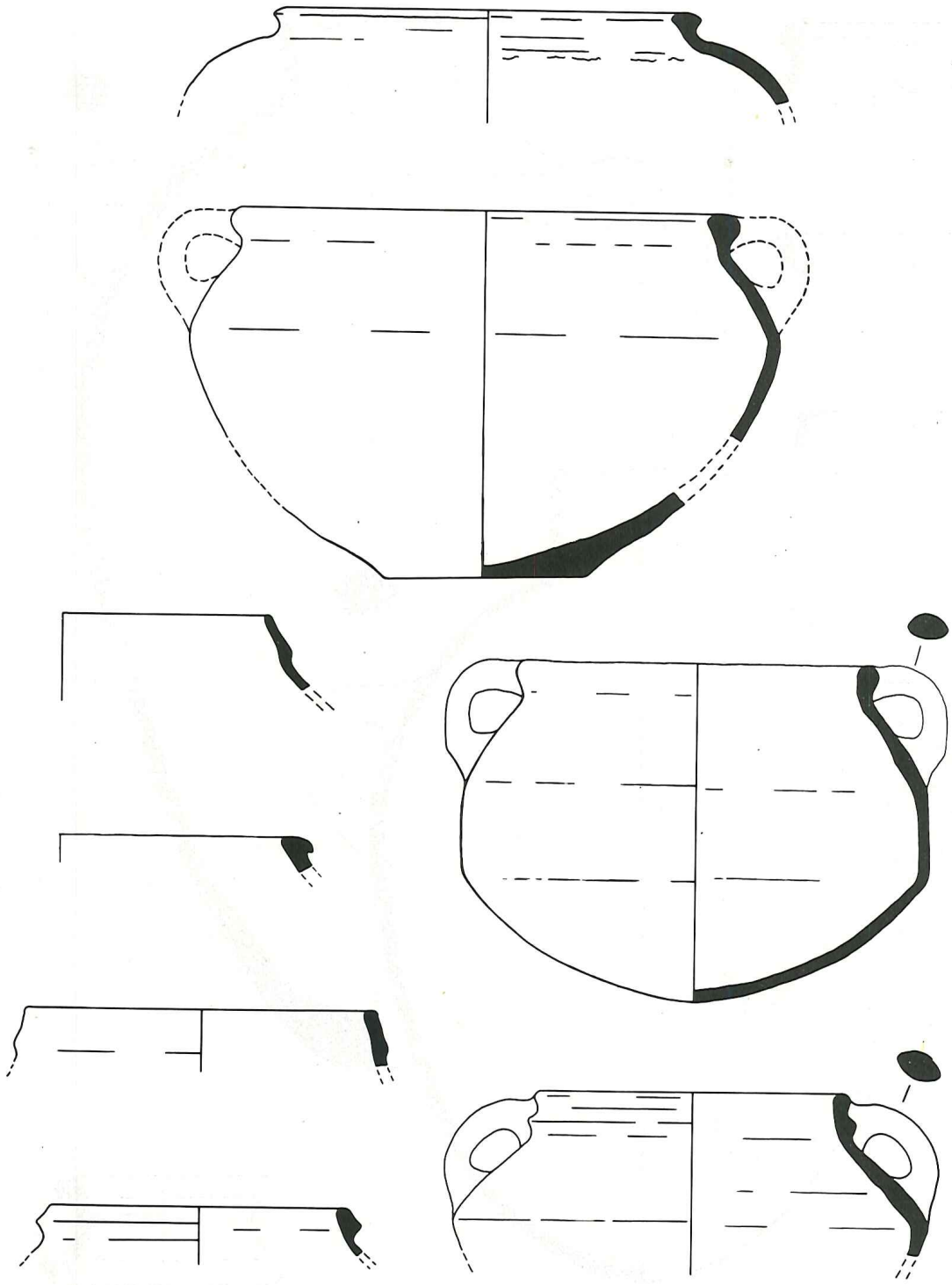

Fig. 2: Iron II pottery, chiefly cooking pots and food-storage pots, from Area VIII, the West Cut, at Pella. Scale 1:4.

retrieved in the West Cut cautions against the expectation of definitive dating by that means.

Pella was a rapidly growing city during the Late Hellenistic period, for the quantity of finds increases rapidly from the slight remains of the 3rd Century B.C. to the more abundant artifacts of the early 2nd century and the large quantity of finds from the late 2nd and early 1st centuries B.C. Excavation is thus confirming the traditions recorded by Graeco-Roman writers that Pella was refounded, either at the end of the 4th Century B.C. or late in the 3rd Century B.C. (more likely the latter) under the Seleucid monarchy.

The Iron Age occupation was also found intermingled with the Hellenistic, but the ceramic corpus was restricted largely to potsherds that did not come from restorable vessels. Diagnostic ceramic wares and types (see Fig. 1, which illustrates some jar forms, which are among the two hundred vessel-types or wares identified in the field) indicate occupation during the 8th-7th centuries B.C. with an apparent extension into the early 6th century, after which time there is a virtual gap in occupation lasting three hundred or more years, until the refounding of the Hellenistic city.

Relatively few structural remains were associated with the Iron Age levels; such walls as did appear were flimsy and scarcely more than a course high, and generally were associated with tabuns (bread ovens). Broken but partly restorable vessels had a narrow typological range, being chiefly for cooking or storing food (Fig. 2). Some mud brick was encountered, but it may be suspected that most of the latest Iron Age houses had been constructed of mud brick atop rubble-stone foundations. No masses of collapsed mud birck, however, were found. The Early Hellenistic builders must have destroyed most of the Iron II ruins that they found at the site as they set about their own construction. Once these levels of disturbance are past, it may be hoped that better-preserved Iron Age remains will be found. There will, however, be considerable Iron II debris to be excavated; a sounding made in one plot indicated a continuation of the same ceramic horizon for at almost two more meters below the average depth reached in the West Cut by the end of the 1981 spring session, without the appearance of floors or any change in

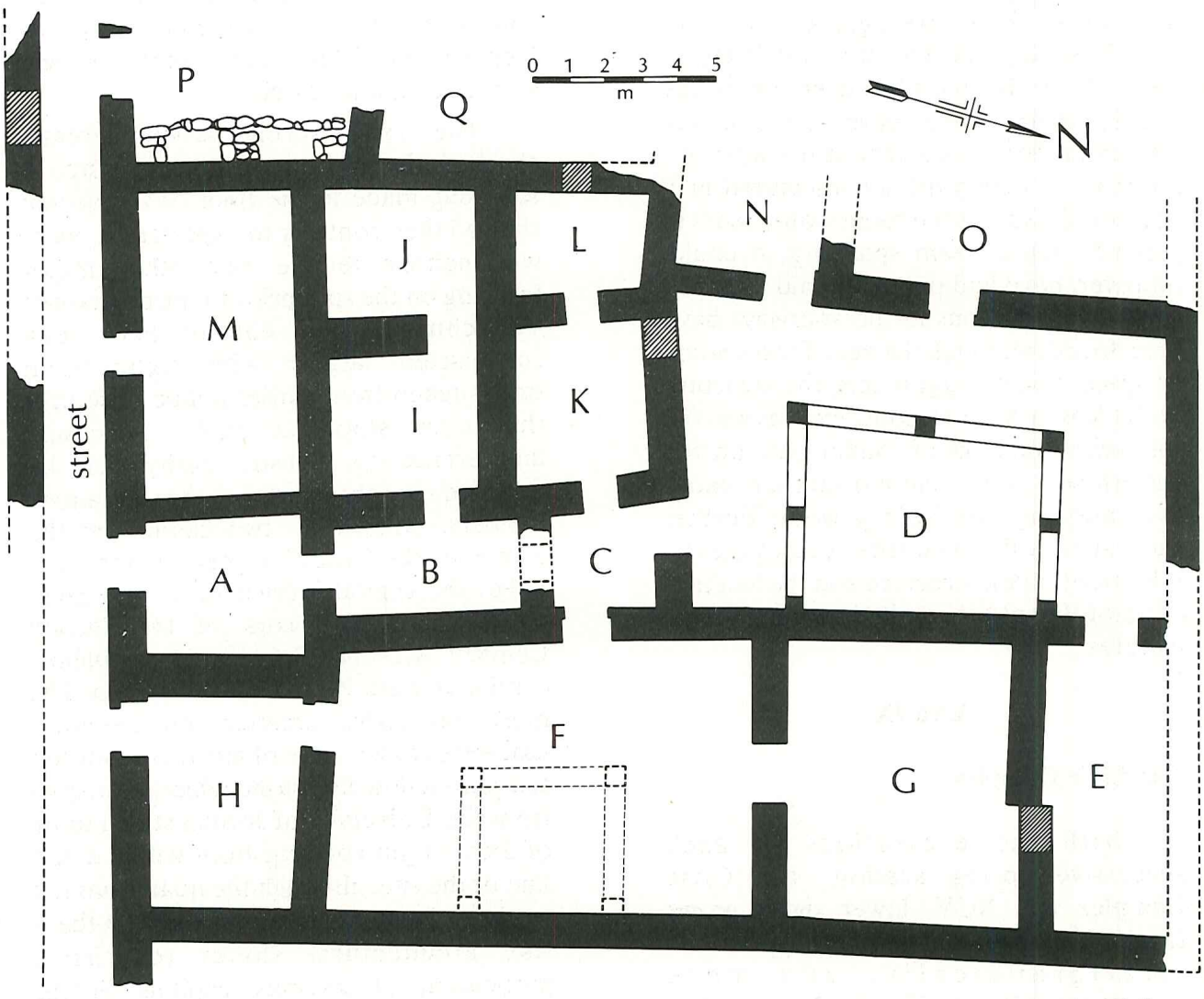

Fig. 3: Provisional plan of a large Byzantine-Umayyad house on the western side of the central mound of Pella.

the Iron II ceramic corpus. It would seem that Iron II may still be encountered in the West Cut at a depth of 6-7 m. from the surface of the mound. Whether Iron I or earlier periods will be found at greater depths remains to be seen, but it may be regarded as likely.

While these excavations were taking place, a crew of workmen was set to the task of clearing the large Byzantine-Umayyad house that had been discovered in the West Cut in the 1979 season, when portions of its walls were brought to light. Ever since that structure was discovered it has seemed desirable to expose the entire house-plan, so that 6th- to 8th-century A.D. domestic architecture at Pella could be better understood. By the end of the season it had become apparent that what were originally identified as Houses A, B and C in the West Cut may all be part of a single, sprawling house. As provisionaly reconstructed on the basis of these investigations, the plan (Fig. 3) shows that the courtyard found in 1979 (*D* on the plan) lies deep within the house, where it may have served in the Umayyad Period as a part of the women's quarters. A courtyard is conjectured in *F* because the size of the room would seem to preclude single-beam spanning; it could, however, have had pillars to hold a roof or second storey. Thus far no stairways have been found, although the need for economy of space would suggest that the structure had at least a partial second level, as was the case with buildings of similar date on the eastern side of the mound that are under excavation by the Sydney team. Further excavation will be needed to determine the full extent of this structure and the location of all of the interior walls and other major features.

Area IX

The Civic Complex

With the excavations of each successive spring session, the Civic Complex (Pl. XCV, lower right) grows larger in area, more complicated stratigraphically, and more archaeologically significant. It is rapidly becoming the dominant feature at the site, and its full extent remains unknown. During the interval between the 1980 and 1981 spring sessions, the Department of Antiquities had reset columns of the atrium of the Civic Complex Church which had previously been excavated, so that the viewer now has some awareness of the commanding position that this church occupied near Pella's spring and probably on the edge of the city's Roman-period forum.

In the spring of 1981, field operations in the Civic Complex were supervised by Dr. Leslie P. Day, who returned in this capacity for her third successive season. The northeast quadrant of the atrium was excavated, and the atrium was thereby completely cleared of debris. Most of the remaining columns and their capitals were found, and it is anticipated that the resetting of the final portion of the colonnade can be completed by the Department of Antiquities before the next spring session takes place.

The 1981 spring session greatly clarified the history of this building. A sounding made in the floor of the atrium showed that, contrary to expectation, there was neither temple nor other major building on the spot prior to the erection of the church. The church had been constructed largely with architectural stones taken from earlier public structures that once stood at Pella. A casual indifference to stylistic purity can be detected on the part of the Byzantine builders. Almost no two capitals in the atrium of the Civic Complex Church were alike; the capitals varied from very good quality provincial work of the Second Century A.D. (Pl. XCVII, 1) to shallow carving of Late Roman workmanship. The most impressive architectural members that were reused were of attractive mottled red-and-yellow limestone which geologists from the University of Jordan stated to be of local origin (coming from within a few km. of the site, although the quarry has not yet been located). It is possible that these fine architectural stones (consisting particularly of columns, capitals, lintels, and polished facing slabs) may have been

taken from the impressive Roman-period temple that numismatic evidence shows as standing on Tell el Husn, the large natural hill that rises 200 feet above the creekbed of the Wadi Jirm south of the central mound.

This past spring excavation proceeded for the first time inside the sanctuary of this church. Although the quantity of massive fallen stones, including some intact monolithic columns, prevented the exposure of more than a small part of the sanctuary, the results were informative, and work will need to continue there in future seasons. The sanctuary had originally been floored with a geometric mosaic pavement, small patches of which had survived amid numerous repavings of increasingly poor quality. The sanctuary had been stripped of its ecclesiastical fittings prior to the earthquake of A.D. 746-47 that destroyed the structure. The skeletons of two persons who perished in the earthquake were found on the floor, one of them in a tightly crouched position and the other sprawled on its back. The archaeological evidence found in this one part of the sanctuary is already providing an outline of the vicissitudes of the church from the time of its construction in the 5th

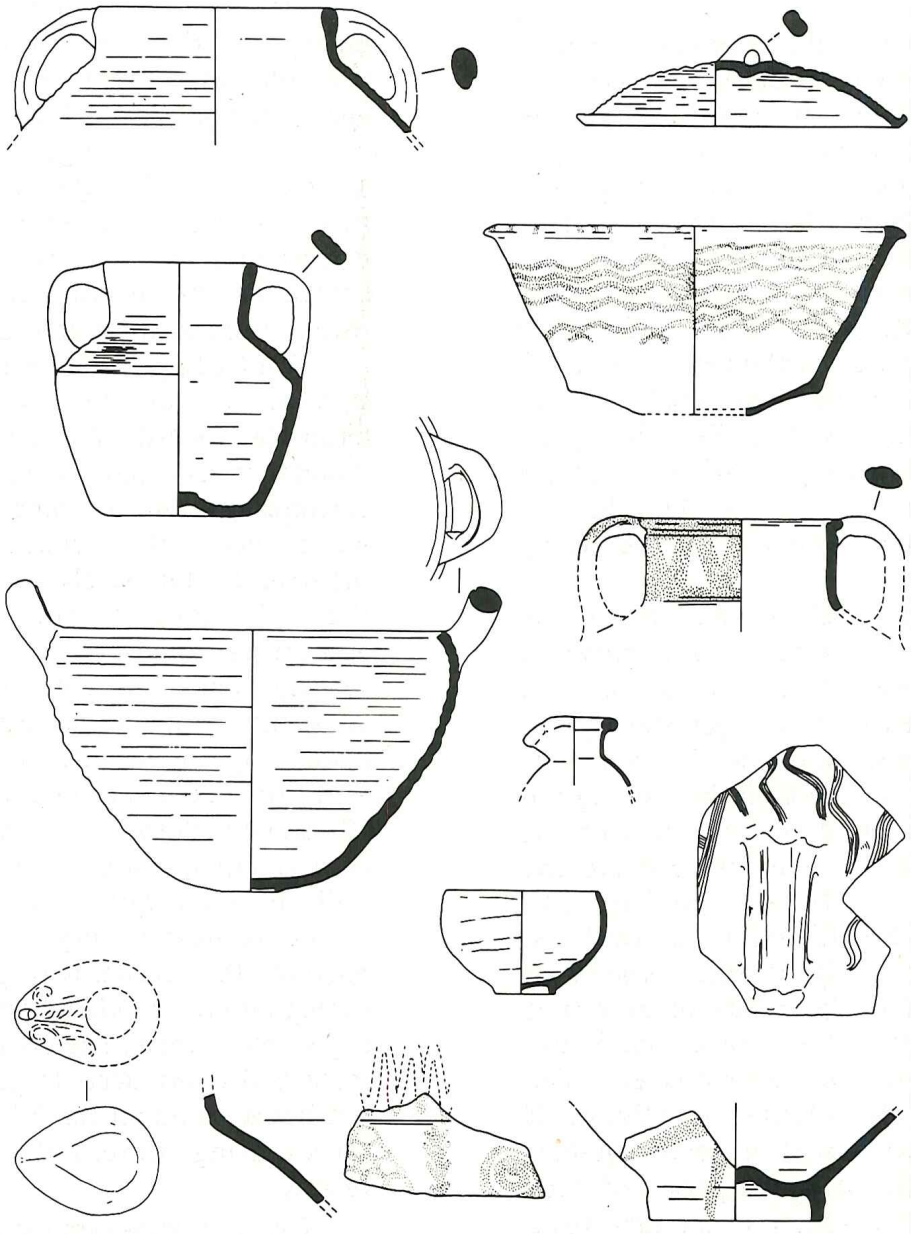

Fig. 4: Typical pottery of the first half of the 8th century A.D. found in the debris the colonnaded hall north of Civic Complex Church in Area IX at Pella. Scale 1:4.

century until its abandonment and ultimate collapse in the middle of the 8th century A.D.

North of the atrium and sanctuary is a long colonnaded chamber discovered in the spring of 1980. By the end of the past spring session a total of seven camel skeletons, a calf skeleton, a donkey skeleton, and two human skeletons had been found in this chamber; all had died in the final earthquake. One of the human skeletons was found crouched near the entrance (Pl. XCVIII, 1); with it was a pruning hook, a dagger, a gold earring, and several gold and silver Umayyad coins. Although by the first half of the 8th century this chamber was obviously being used to house domesticated animals, its original function will not become clear until excavation has proceeded further. Of particular interest in the debris that filled this hall was a corpus of artefacts (mostly ceramic) dating from the period between the earthquake of A.D. 717 and that of 746/47. Fig. 4 illustrates some of the forms. As a whole, the corpus is indisnguishable from that found in the debris of the latter earthquake in Area III. The quantity of pottery from the first half of the 8th Century A.D. at Pella is rapidly growing, and already constitutes a major contribution to the knowledge of Transjordanian ceramics of the Early Umayyad period.

Amid the debris that filled the chamber of the camels was a paver of Byzantine or Early Umayyad date that had been fashioned from a larger marble slab bearing an inscription in Latin on its opposite side. Regrettably in forming the paver the mason destroyed most of the inscription; all that can be read are the fragmentary words (Pl. XCVII, 2).. SARIBUS ... HEODOSIO.., in two lines, which can be easily be reconstructed as *Caesaribus... Theodosio*. The upper edge of a third line of text is visible, but is too fragmentary to be reconstructed. The reference to Theodosius as Caesar, if indeed the two should be read together, suggests a date during the period of A.D. 350-450. It is possible that the text was a dedicatory one that was placed on a public building. This inscription is the first in Latin that has been found at Pella. It would be premature to draw extensive conclusions from the find, since inscriptions have thus far been scarce at Pella by comparison with a site such as Gerasa, but it would seem that Pella generally shared the preference of Levantine cities for Greek rather than Latin as an international language.

Much more has now been exposed of the monumental stairway that extends southwestward from the atrium toward the Wadi Jirm, that is to say, toward what was probably an open public area in Roman-Byzantine times. At the bottom of the stairway a Byzantine street was discovered. In the last few days of the excavation an interesting exedra began to emerge to the west of (and originally beneath) this street. It is tempting to speculate that, since it lies very close to the city's great spring, this massive, 1-meter-thick, U-shaped wall may prove to have some connection with the nymphaeum that is shown on some of the city's coins, but only further excavation will reveal its exact form and function.

South of the atrium lies Pella's odeon, a small theater that was presumably originally roofed. The condition of the building is very ruinous, largely because of earthquakes and robbing by Byzantine inhabitants of the architectural stones of the structure for use elsewhere. As early as the 7th century the ecclesiastical authorities appropriated the limestone seating slabs of the odeon for the construction of the monumental stairway leading up to the atrium of the church. After the odeon was denuded of virtually all usable architectural stones, it was used as a dumping ground. Several retaining walls of poor quality were constructed during the final century of the city's life to prevent the accumulating debris from sliding into the creekbed and polluting the city's water supply. The excavations behind these walls produced large quantities of potsherds of about the 6th-century A.D., representing thousands of discarded vessels.

Every effort was made this past spring to clear the Byzantine debris from at least a part of the floor of the orchestra of the

odeon. The pavement was encountered on the last day of excavation, but only after immense difficulty because the water table in the Wadi Jirm rises more than 2 meters above the floor of the building. Only by continual pumping of water and excavating of mud was it possible to reach the floor, and then only temporarily. Upon conclusion of the excavation the water table resumed its customary level and the Department of Antiquities anticipated filling in the resulting pool as a safety measure. Although it would be highly desirable to excavate the stage of the odeon, further archaeological work there will have to await the permanent lowering of the water table.

The discoveries in the Civic Complex are gradually beginning to dovetail, so that it is now possible to understand the occupation of part of this area in broad outline, and to relate it to the emerging larger history of Pella. The odeon, and perhaps the colonnade north of the church, date from the Roman period. These structures flanked a public area that had been constructed in the creekbed just south of the city-mound. When Pella was at its height of prosperity and population in the 5th-6th centuries and Christianity was in full sway, extensive construction began in the Civic Complex. The large Civic Complex Church was built of stones taken from important pre-Christian buildings, including many architectural stones from one major especially handsome structure. Approached by a street that descended southward into the atrium from the eastern side of the city, the church was flanked on the west by a row of shops and a street that led to the rear (northern) entrance of the odeon. Later, when the odeon was closed, the approach to the church was changed from north to west, and on the west a monumental stairway was constructed that covered the street and Byzantine shops. For the paving of this stairway the stone seats of the odeon were turned upside down and reused. Before long, however -- perhaps because it had been damaged in an earthquake -- the grand staircase was walled off and the atrium was once again entered from the north -- this time by means of a rude corrider formed of assorted old column drums and other architectural stones. By this time the chamber adjoining the atrium on the north had been converted into a kind of stable, and in order to prevent the animals from straying into the atrium the church's leaders had a large stile of discarded architectural stones built across the corridor (Pl. XCVIII, 2). Soon afterward the entire complex was destroyed by earthquake.

Area XIII

The Jebel Sartaba Fortress

One of the notable discoveries made in the spring of 1980 was a large fortress situated 2.2 kilometers east-southeast of Pella, on the highest hilltop in the vicinity, the elevation of which is 350 meters above that of Pella. Although within view from the western side of the mound (Pl. XCIX, 1), the site lay beyond all roads, ancient or modern, and was difficult of access--a fact which had undoubtedly saved its stones from depredation over the centuries. A crew of men under Area Supervisor Dale Martin worked at the site throughout the spring session of 1981, clearing the fallen stones from the walls so that the outlines could be examined and mapped, and conducting soundings to try to determine the dates of construction, occupation, abandonment and collapse.

The fortress was roughly square in plan and approximately 60 meters on each side (Pl. C). The construction was extremely simple; the rocky surface had been stripped of soil and rough-hewn field stones (of which there is an abundance on the broad hilltop) were laid to form walls as much as 2 meters wide. There were eight towers, one at each corner and one near the center of each wall. No two towers were identical, but all of them had one to three inner rooms (Pl. XCIX, 2). There were four entrances, one on each side and each beside a tower. A few meters outside the walls ran a low terrace with an outer face of rough-hewn stones but seldom any discernable inner face. The quantity of fallen wall stones was not sufficient to

suggest that there had been a second storey. Indeed, so undressed were the building stones that there is some question as to the stability of the structure if it had borne a second level.

Two small cisterns had been cut in the bedrock inside the fortification. The restricted size of the cisterns indicates that not many soldiers could be accommodated within the fort for any great length of time. Indeed, the lack of more than a few centimeters of sediment at the bottom of each of them suggests little or no actual use. The few sherds that were found at the bottom of them or embedded in the cement that partially lined their rough-hewn rock walls were of Hellenistic date, as were occasional sherds or clusters of sherds found amid the fallen stones of the fortress's walls. Though slight in quantity, the ceramic evidence clearly indicates that the fort was built in the Hellenistic period. The form of the structure accords well with that dating.

It is not plausible that the fortess was built by the people of Pella independently for their own security, for in its isolated hilltop position it could do little to defend the city; rather it is likely that it was constructed by one of two Seleucid monarchs, either Seleucus I around 301 B.C. or Antiochus III, both of whom are said to have been interested in the region of Pella. The construction most likely took place around the end of the 3rd Century B.C., for, as we know from the ancient historian Josephus, Antiochus was militarily active in Transjordan for a brief period around that time.

Inspection of the interior of the structure showed a ragged outcropping of bedrock running across the center, with no evidence whatever of any interior paving, or even so much as a packed-earth floor. Had there been such, it could not have been washed entirely away by erosion, since the walls of the building would have acted as retainers. Soundings made at various spots within the structure yielded no evidence whatever of occupation. Indeed, it is possible that the walls of the fort were never completed.

The fact that the fort was never occupied may be attributed either ot its poor structural characteristics or the possibility that, once Antiochus left the region, his administrators did not, or could not, carry out his ambitious plans for establishing a military presence throughout northern Transjordan. In any case, after a relatively short time the Seleucids were forced to abandon the region, and never returned. Their retreat from this part of Transjordan early after relatively brief occupation may have been the primary cause for the abandonment of the fortress before it was ever used.

If the construction of the fortress was ordered by Antiochus III, it was presumably hoped that it would serve as a deterrent to incursions by the Arab tribes that inhabited the Transjordanian plateau that began only a few miles east of Pella. The idea was apparently ill-conceived, since the manning of a fort of such large size would require a large expenditure, and the utility of the structure as a barrier to incursions would be limited. Perhaps, of course, the chief purpose of the installation was to serve as a psychological deterrent. It also could have served as a lookout station, commanding as it did a view of much of the terrain on the north, east, and south. From the hilltop the castle of Ajlun can easily be seen a dozen kilometers to the south-southeast, and to the west a sharp-eyed watchman could see not only Beth Shan but also Mt. Carmel, and on a clear day even Mr. Hermon 100 km. distant to the north.

An isolated tower situated some 60 m. south-southeast of the fortress, atop the highest spot on the hilltop, was also explored archaeologically. Its construction was identical with that of the fort, and some sherds found in association with the walls indicated that it was contemporaneous with the larger structure. There was, however, in addition to the Hellenistic pottery, a relatively large corpus of much earlier ceramics ranging from Chalcolithic through Iron II. This pottery was much weathered, and appeared to have been lying on the hill at the time the tower was constructed. It is possible that the tower was build on a natural camping spot which had attracted

occasional use for thousands of years.

This large hill also has other features of interest, including a wall-like line of large, unhewn rocks leading from the fortress to the single tower, and an irregular enclosure, also constructed of massive field stones, extending northeastward from the tower. The enclosure may perhaps have been intended for animals, and could date from a later time than the tower itself. Several other apparent lines of rude single-course walls can be seen at various places on the slopes. Much farther down the slope to the northeast is a cistern that still holds water. The relationship of these more distant evidences of human activity to the structures on the crest of Jebel Sartaba is unknown, as are their dates.

Area XIV

The Chalcolithic Site

On the third day of the 1981 spring session two staff members discovered, about one-half kilometre southeast of the city's ruins, a circular group of stones (which, upon excavation, proved to be a so-called silo, with a plastered bottom; Pl. CII) and some associated Chalcolithic potsherds that were of sufficient interest to warrant further investigation. The site is situated midway up the slope of a high ridge that is presently remote from water but may once have had a spring coming out of a gully that was close at hand (Pl. CI). It overlooks the Jordan Valley, but is somewhat sheltered from view by intervening hills. Looking northward, one sees Tell el Husn looming up not far distant, blocking the view of most of the central mound of Pella.

The find-spot proved to have had intensive occupational use. Although three rooms were excavated by Area Supervisor Jack Hanbury-Tension during the spring session, sherds found elsewhere in the

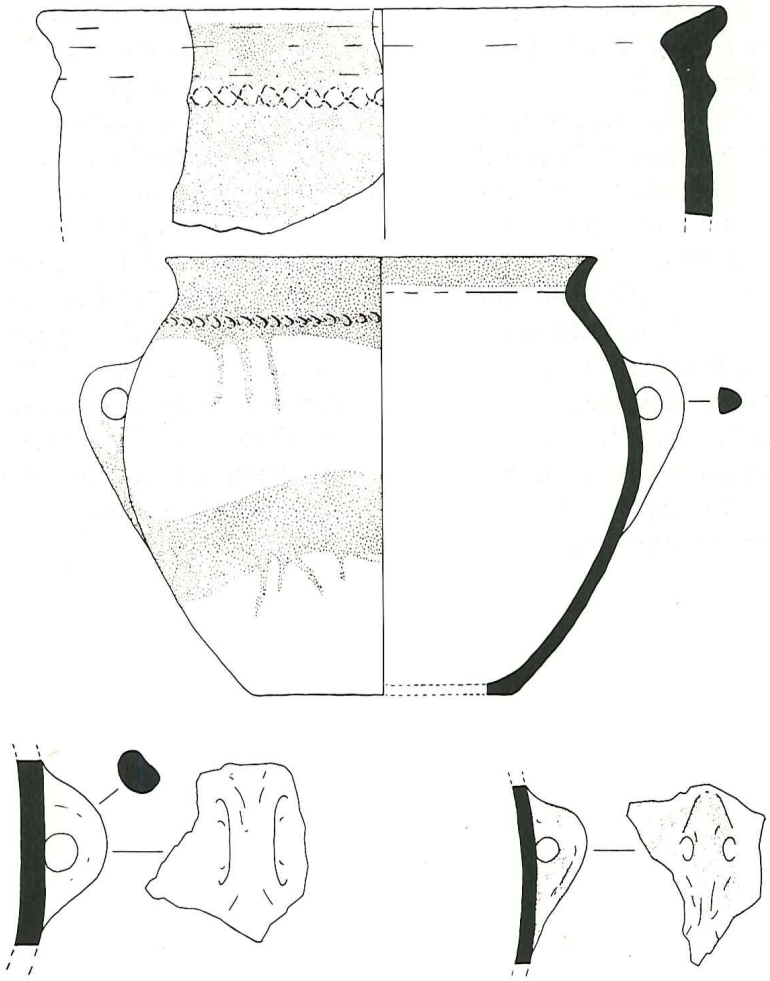

Fig. 5: Typical storage kraters excavated in Area XIV at Pella, one of a many of vessel forms found at the Chalcolithic site during excavation. Stippling denotes red paint. Scale 1:4.

immediate vicinity suggest that the site may have extended over a considerable area. The chambers were crudely fashioned by a combination of the cutting of the bedrock and the construction of some walls of field-stone, and some walls were made of rounded, breadloaf-shaped mud bricks. The typically Middle Chalcolithic artifacts included basalt bowls, including one fenestrated pedestal bowl that was found broken and lying on its side inside a plastered pit. Fragments of many dozens of ceramic vessels were found in the chambers, sometimes lying in the shallow soil and other times close to the irregular, rock-hewn floors. In addition to customary coarse-ware basins, jars and other large ceramic vessels that were often parcel-slipped in red with bold geometric brush strokes (examples of which are illustrated on Fig. 5), there was an interesting repertory of smaller, much better levigated pottery that included some bowls turned on a slow potter's wheel. There were also worked flints, limestone adzes and stone spindle whorls.

The site has features that suggest that religious rites may have been performed there, but displays domestic characteristics as well. It has particular importance not only because it is the first Chalcolithic occupation found *in situ* at Pella, but also because the site appears to have been used for a relatively short period of time and therefore constitutes a homogeneous assemblage of Middle Chalcolithic artifacts that may be dated to the third quarter of the 4th millennium B.C. Although it may be that many of the salient features of the site have been uncovered in the excavation of these three chambers, there is the possibility that the site has more of archaeological importance to offer, particularly with regard to the settlement's plan; hence excavation will continue in 1983 during the Australian winter session, and into future seasons if its potentiality warrants.

Conclusion

The 1981 spring session at Pella was abundant in new discoveries of the history of the site, ranging over more than four thousand years. The richness of the discoveries is the more notable in view of the fact that no tombs were excavated. The 1981 finds have made it possible to fill in some otherwise obscure periods of Pella's history and to give a more detailed and coherent picture of the final centuries of the city's long history. But only a small part of the site has yet been explored archaeologically, and many questions remain. A number of season of field work will be required before a complete outline of Pella's history can be written.

The College of Wooster team will not be in the field in the spring of 1982. For some time it has been planned that there would be a fallow year, in which there would be opportunity for additional curatorial work on the artifacts and study of the finds of the first three spring sessions of the Expedition. The resumption of field activities is projected for the spring of 1983.

A CHURCH AT SHUNAT NIMRIN

by
Michele Piccirillo

By chance, during the summer of 1980, a bulldozer, digging on the western slope of tell Nimrin in the village of Shuna el-Janubiyyeh, brought to light traces of a mosaic pavement. The prompt intervention of the Department of Antiquities saved what proved to be the first important archaeological testimony of the settlement in the Byzatine-Umayyad periods.[1]

The name of the tell calls to mind Bet-Nimra, the city founded, according to the Bible, by men of the tribe of Gad in the steppes of Moab *(Num.* 32:26; *Jos.* 13,27)[2] The identification is confirmed by the statement of Eusebius, who wrote in the IVth Cent. A.D.: "Today Bet-Nimra is the city of Bethnamaris, on the other side of the Jordan, five miles to the north of Livias".[3] On this basis, we are able to say that in the Byzantine epoch the village belonged to the territory of the bishopric of Livias. In the Targum it is called Bet Nimrin.[4]

The Church (Fig. 1; Pl. CIII, 1)

The excavations led by the Department of Antiquities were limited to the area of the mosaic floor, which proved to be part of a three nave church (18.45 x 13.52 m.). The surrounding wall was almost entirely destroyed, as were the doors. The presbytery with the two side chapels is elevated some 30 cm. above the level of the church's nave and was enclosed by a chancel-screen with columnets and posts in Nebi Mousa stone (Pl. CIX, 1-4). The church had an apse, but it was not possible to determine whether the polygonal shape which we show in the plan is original or created by an open water-channel which passed later on the outside of the wall.

The Mosaic Pavement

The bulldozer caused damages in the north and central nave. Unfortunately, irreparable damage was also done to the dedicatory inscription in the center of the geometrical composition.

The mosaic floor in the central nave is enclosed in a guilloche border and is divided into three panels. The first, nearest the presbytery (Pl. CV, 1) is composed of interlacing squares and ellipses with circles, decorated with diamonds, flowers and notched motifs. The second consists of two large interlacing squares from the central octagon of the church, where the dedicatory inscription is found (Pl. CIV, 1). The trapezoidal panels on the sides of the octagon, were decorated with ducks, roughly designed and executed (Pl. CV,3; Pl. CVI, 1-3). In the third panel, a composition of eight-pointed stars, alternating with squares, encircle a smaller octagon with an inscription around an interlacing double knot *(Solomon's seal;* Pl. CVIII, 2). In front of the north-western corner of the presbytery, can still be noted part of the surround of a first mosaic floor from a previous period, to which also belongs the area immediately in front of the chancel-post decorated with florets (Pl. CV, 1-2).

In the southern nave, we find a composition asymetrically arranged. The first panel, with juxtaposed octagons decorated with diamonds, forms an angle around two of the church's pillars, decorated, on its western border, with an inscription in large black letters on a white

1. The Hashemite Kingdom of the Jordan. Scale 1.250.000, Sheet 1, Amman, 146-210. I wish to thank Dr. Adnan Hadidi, Dr. Ghazi Bisheh and the Inspector of Es-Salt Mr. Saad Hadidi, of the Department of Antiquities. A Special thank to Fr. Eugenio Alliata of the Franciscan Biblical Institute, who prepared the drawings of this article.
2. F.M. ABEL, *Géographie de la Palestine,* Paris 1938, II, 278; "De Tell Nimrin au Zerqa", *RB* 1910, 543-545.
3. *Onomasticon,* 44, 16 (ed. Klostermann).
4. Talmud of Jerusalem, *Shebi'it,* IX, 2.

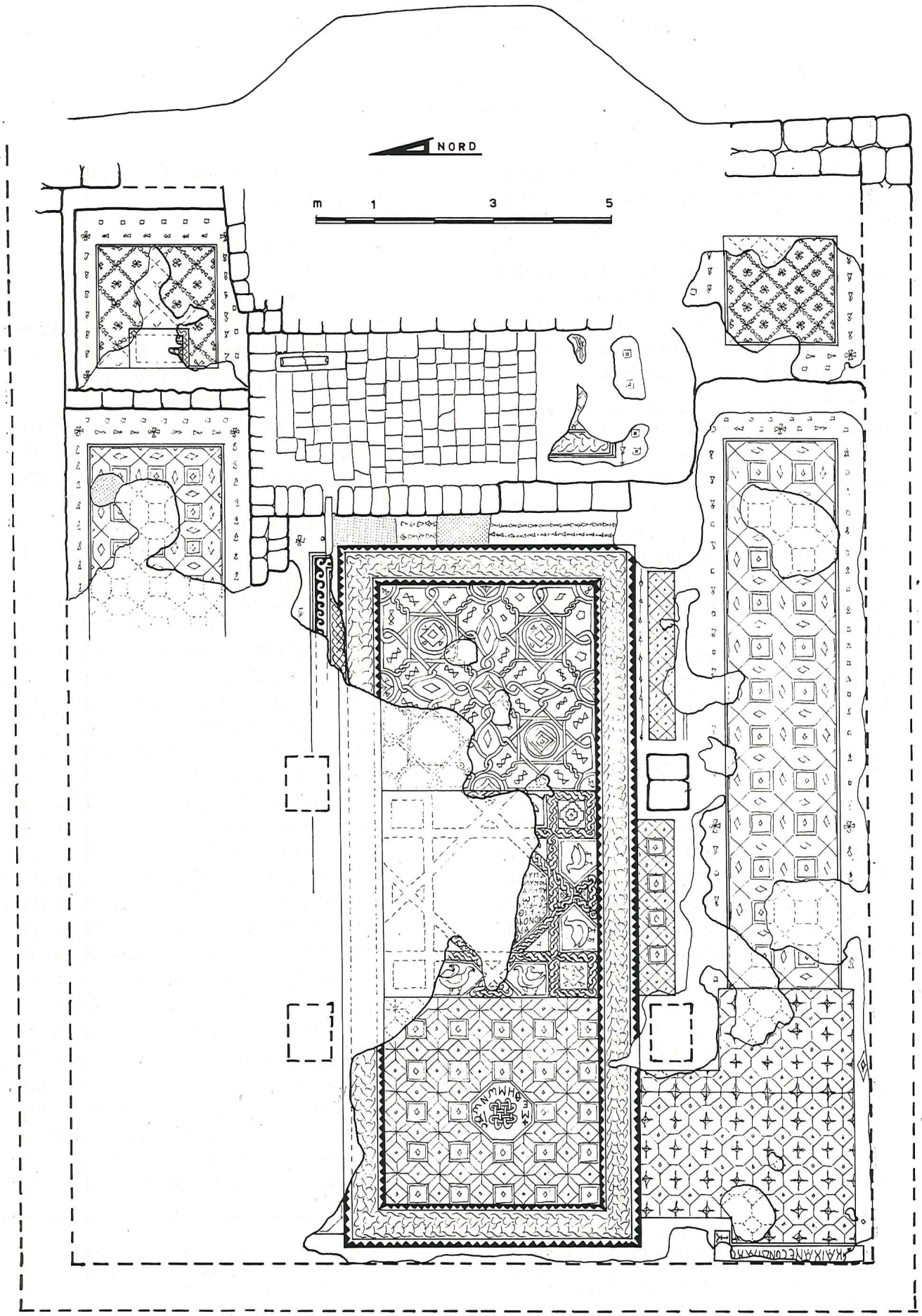

Fig. 1. Plan of the Church excavated at Shunat Nimrin (E. Alliata).

background (Pl. CIV, 4; Pl. CVII, 1). Not only does the panel occupy the space of the nave, but extends to the area between the two pillars and goes on to end at the border of the central nave mosaic. On the eastern side, it is joined to a uniform rectangular panel of interlacing octagons which form squares and oblong exagons, reaching the step of the southern side-chapel (Pl. CVII, 2).

Asymetry is also noted in the rectangular geometric panels among the pillars between the two naves. While one of them is joined to the border of the central nave, the second remains too isolated in relation either to the southern or central naves. The remaining white space is in part filled with florets.

The decoration of the northern nave would have been parallel to the southern one, judging from the remaining strip on the eastern border, with the same motif of interlacing octagons (Pl. CIV, 3).

The side-chapels are both decorated with diamonds and florets (Pl. CIV, 3; Pl. CVII, 2). In the northern chapel, an inscription was added in a later period, covering a rectangular opening below it (Pl. CVII, 3).

Originally, also the presbytery pavement had a mosaic floor, as can be seen from the few traces of interlacing design, found together with the present lithostrotos pavement in Nebi Mousa stone, which reuses posts from the earlier chancel-screen (Pl. CIV, 2; Pl. CIX, 2).

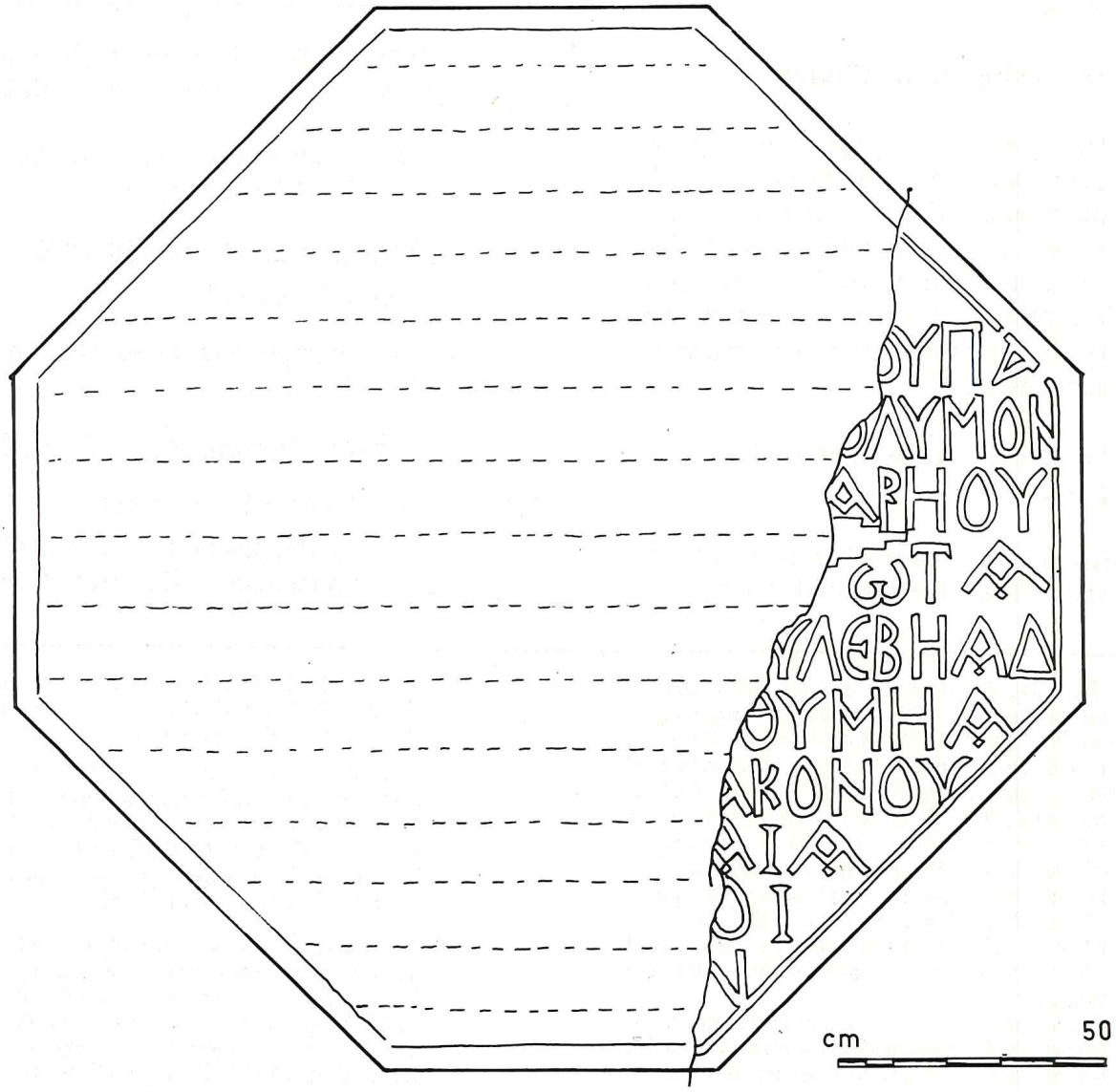

Fig. 2. The dedicatory inscription.

We have, therefore, evidence that the mosaic floor of the church has traces of two different periods. On careful examination of the mosaic from the technical point of view, taking also into account the general anomalies of the composition which have been noted, one can conclude that various elements from the earlier mosaic floor were incorporated into the second one. I believe, in fact, that the panels of both side-chapels, the motif on the eastern borders of the side naves and the corresponding intercolumn area, are contemporary with the interlacing design fragments in the central nave and in the presbytery. Additional proof of this can be noted in the difference of decoration in the space between the panels of the naves and the southern wall: the earlier decoration has florets, the second diamonds.

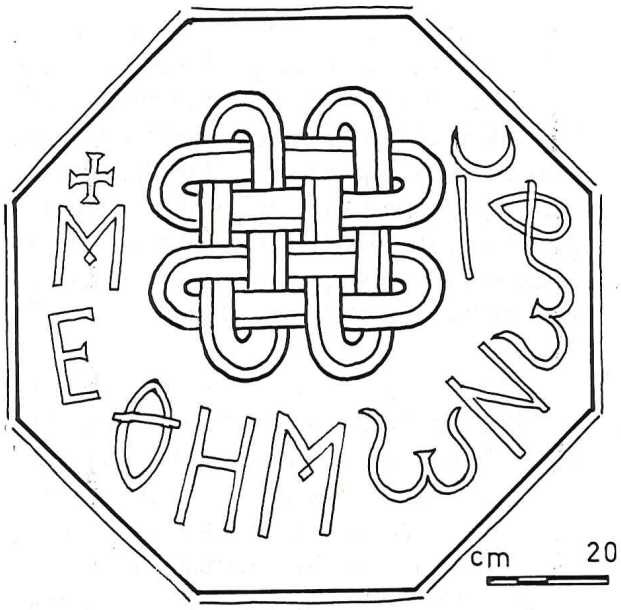

Fig. 3. Inscription B.

The Inscriptions in the Church

The greatest damage done by the bulldozer was the destruction of the dedicatory inscription of which only a few letters and words remain in each line, insufficient to extract any historical data, which would have been the first for the Livias bishopric,[5] not to mention Bethnamaris itself.

A. The dedicatory inscription (Pl. CVIII, 1; Fig. 2).

The text was divided in two parts by diamonds. Therefore would have been composed of 14 lines from which we read only the word *deacon* in the 10th line.

B. The second inscription in the central nave (Pl. CVIII, 2; Fig. 3).

+ Μεθ' ἡμῶν ὁ Θ(εό)ς

+ God (is) with us[6]

C. The inscription in the southern nave (Pl. CVIII, 3; Fig. 4).

+ Καὶ Χανεσον διακό(νο)υ

+ and CHANESON deacon.

From the position, CHANESON must be a personal name.[7] The inscription is lack-

5 H. Relandi, *Palestina in Monumentis Veteribus uisutrata,* in UGOLINI *Thesaurus Antiquitatum Sacrarum,* VI, p. DCCCXXXV; M.Le QUIEN, *Oriens Christianus,* III, 656-658. The bishop of Livias (identified with tell er-Rameh, ABEL, *Géographie,* II, 273) *Letoius* was present at the council of Ephesus (431 A.D.). *Pancratius* participated in the Robber Synod of Ephesus (449 A.D.) and his signature is also found on the acts of the Council of Chalcedon (451 A.D.) *Zacchary* was bishop of Livias in 536, when he participated in the council of Jerusalem held under the Patriarch Peter.

6. A similar expression with the addition of the name *Emmanuel* is found carved on lintels (J. LASSUS, *Inventaire Archéologique de la région au nord-est de Hama,* Paris 1935, p. 127; on some lead ampulla of Monza, of Palestinian origin *(DACL,* XI, 2, coll. 2759-2763); on a lead from Beisan (G.M. FITZGERALD, *A Sixth Century Monastery at Beth Shean,* 1939, pl. IV, Fig. 3).

The name *Emmanuel,* which in Hebrew corresponds to our Greek inscription, is carved on the barrack's tower in Umm el-Jimal *(AAES* III, A, 3, p. 147). Cfr. B. BAGATTI, *"Espressioni bibliche nelle antiche iscrizioni cristiane della Palestina", Liber Annuus* 1953, 144.

7. A. XANOSEUS is listed in F. PREISIGKE, *Namenbuch enthaltend alle griechischen, lateinischen... Menschennamen,* Heildberg 1922-Amsterdam 1967, col. 471. A personal name of Arabian orgin, HNS. (خنوص ,*sucking pig) in G. LANKASTER HARDING, An Index and Concordance of Pre-Islamic Arabian Names and Inscriptions,* Toronto 1971, p. 229.

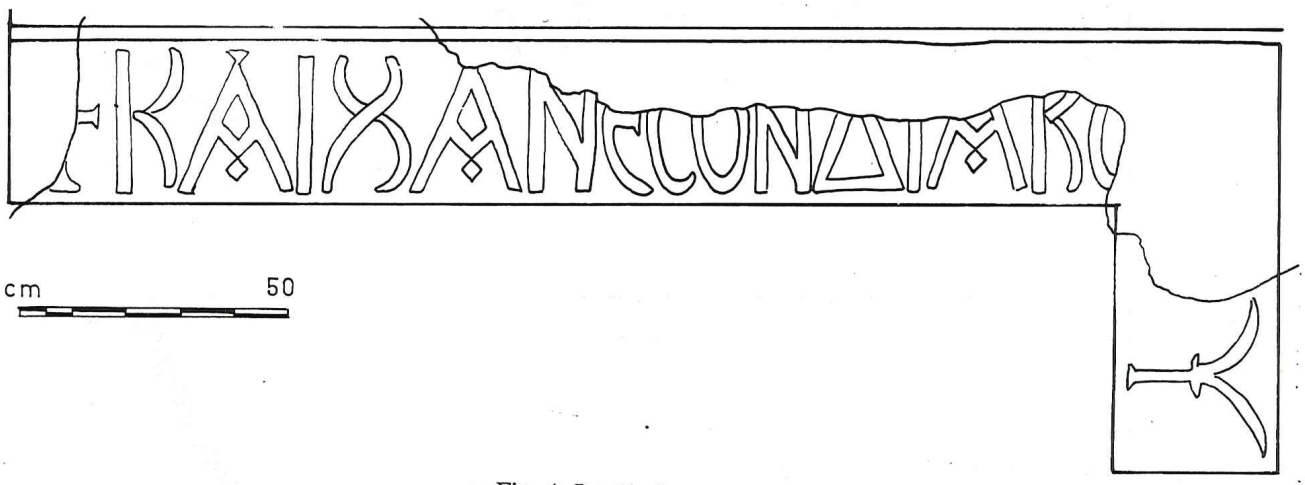

Fig. 4. Inscription C.

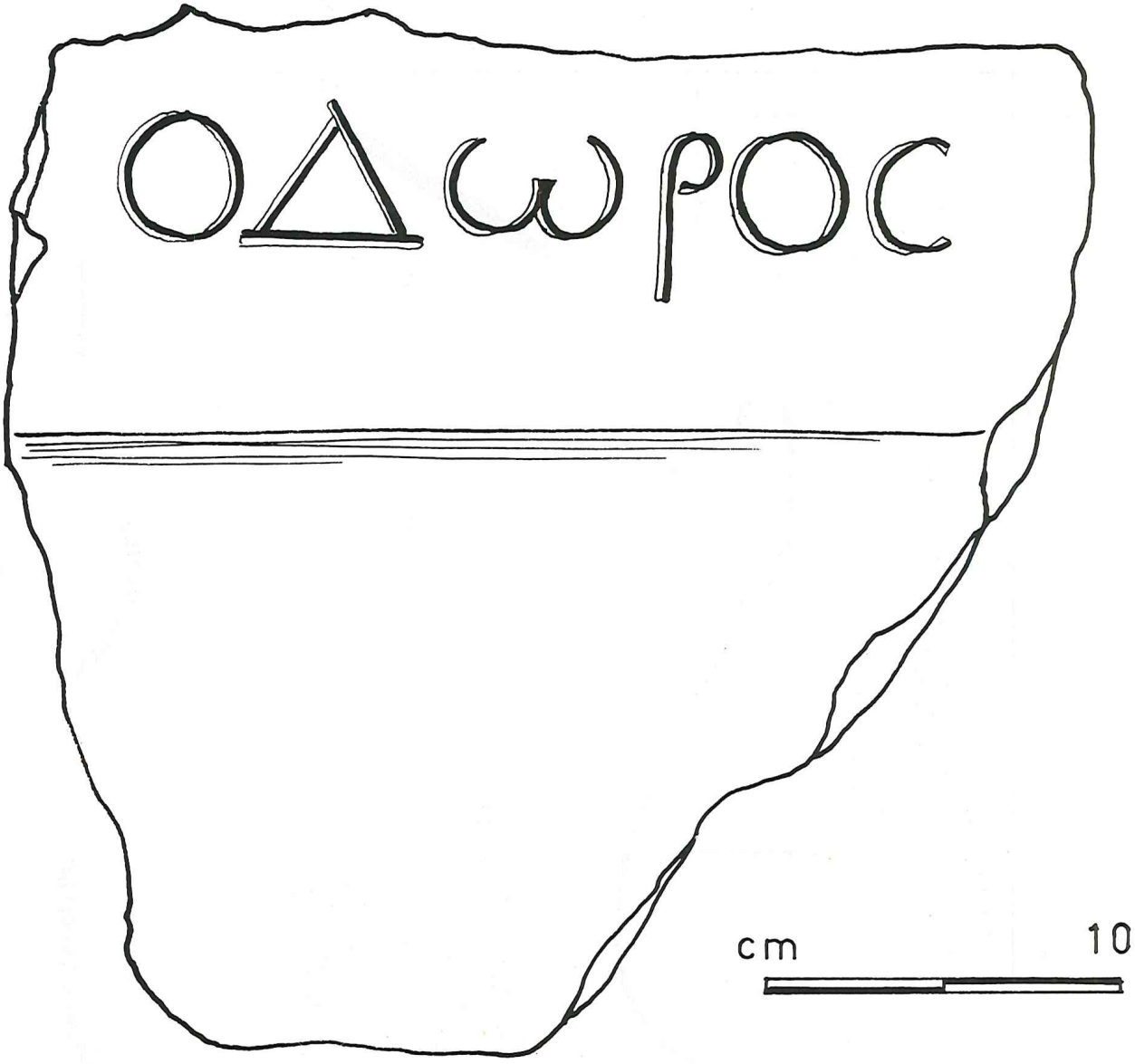

Fig. 5. Inscription E.

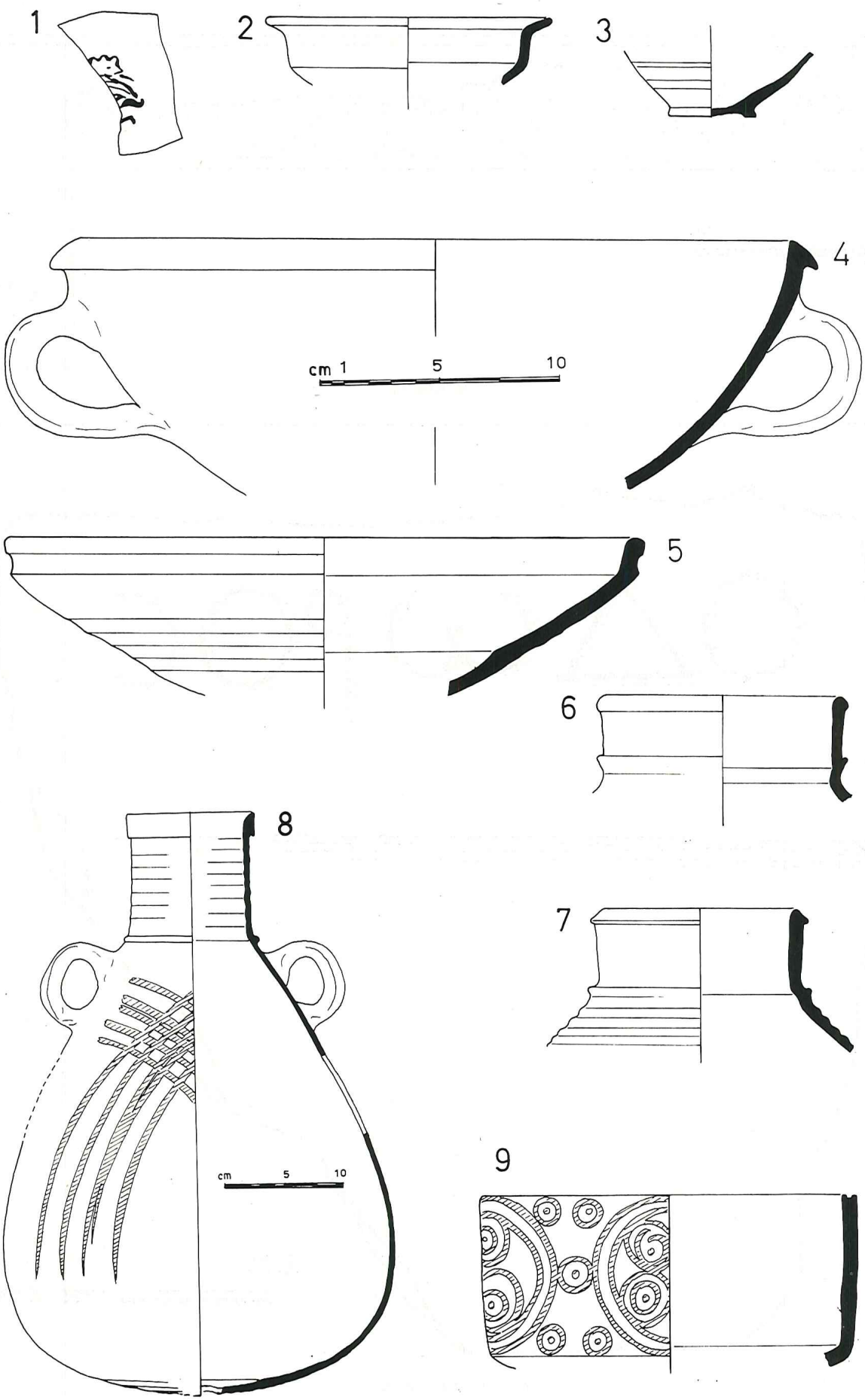

Fig. 6. Pottery sherds found in the excavation of the church.

ing of the first line, possibly inside door-post.

D. Remains of letters in the northern side-chapel (Pl. CVII,3).

E. The inscription carved on a fragment of Chancel-screen (Pl. CIX, 3; Fig. 5).

(Θε)όδωρος [*The*]*odoros*[8]

Pottery Sherds (Fig. 6; Pl. CX, 1-2).

The pottery sherds give a good chronological picture of the occupation of the area from the Byzantine to the Umayyad Periods, with glazed pottery of a later epoch.

1. Seal on *terra sigillata* ware (Fig. 6,1). Peacock with head turned backwards. Red granulous core. We have not found any parallel to this seal in the published material east and west of the river Jordan (S. LOFFREDA, "Stampi su terre sigillate del IV-VI, secolo in Palestina", *Studia Hierosolymitana,* Jerusalem 1976, I, 176-196. The peacock on page 186, n.59, is similar.) According to HAYES *(Late Roman Pottery,* London 1972) similar seals are dated to the V-VIth Cent. A.D.).

2. Small cup rim, carenated (Fig. 6, 2). Fine reddish core, strong firing, coloured red on outside (H. SCHNEIDER, *The Pottery* at the Memorial of Moses, Mount Nebo, Jerusalem 1950, p. 70, n. 267; p. 68, fig. 6, n. 6: dated VIth Cent. A.D.).

3. Cup base with ring bottom (Fig. 6, 3). Gray core on inside, coloured red on outside.

4. Basin with cutcurved rim and double loop-handles with band combing (fig. 6,4). Yellowish core (SCHNEIDER, *The Pottery,* 71-87, fig. 7-8).

5. Bowl with carenated walls (Figs. 6, 5). Yellow core (V. CORBO, *Gli scavi di Kh. Siyar el-Ghanam,* Jerusalem 1955, 67-70, fig. 21)?

6. Neck of jar, with collar at base (Fig. 6, 6). Red core, well-fired, *(QDAP* 10 (1944) P. 77, fig. 3).

7. Neck of jar, similar to preceding, with combing on the walls (Fig. 6, 7). Yellow core, well fired.

8. Neck of jar, painted with red lines on yellowish background (Fig. 6, 8; Pl. CX, 1). Red core, well-fired (SCHNEIDER, *The Pottery,* p. 114, fig. 13, n.5; D.C. BARAMKI, "The Pottery from Kh. el-Mefjer", *QDAP* 10 (1944) 77, fig. 3).

9. Painted cup (Fig. 6, 9). Red metallic ware, decorated in red circles on yellowish background (SCHNEIDER, *The Pottery,* p. 114, fig. 13, n. 5; *QDAP* 10 (1944) p. 85, fig. 7).

Dating of the Church

The technical workmanship of the earlier mosaic floor associates this pavement with the mosaic floors of the VIth Cent. A.D.[9].

The later phase of the mosaic is related with mosaic floors of the VII-VIIIth Centuries so far discovered in Jordan. To the late dating point the utilization of the previous mosaic, the less careful technical workmanship, the preference of geometric motifs with knotted interlace decoration, the richness of accessory decorative elements, such as florets or diamonds,[10] and

8. A name very common in the Byzantine inscriptions of Jordan. (M. PICCIRILLO, *Chiese e Mosaici della Giordania Settentrionale,* Jerusalem 1981, 123).

9. See S. SALLER, *The Memorial of Moses, II,* Pls. 98-99, or H.C. KRAELING, *Gerasa City of the Decapolis,* Pl. LXXXI.

10. All these stylistic and technical peculiarities are found in mosaic floors of later periods, as in the church of the Virgin at Madaba (M. PICCIRILLO, *ADAJ* 1980, pl. XCII), at Quweismeh (S. SALLER-B. B. BAGATTI, *The Town of Nebo,* Jerusalem 1949, pls. 42-43), at Khirbet el-Mafjar (R.W. HAMILTON, *Khirbat al-Mafjar,* Oxford 1959, pls. LXXVI-XCIII), and in the new mosaics discovered by Ghazi Bisheh at Qasr Al-Hallabat.

the position of the inscriptions in central octagons of the central nave or at the entrance of the southern nave. [11]

In conclusion, I believe that the church was built in the VIth Cent. A.D., and was later restored during the VII-VIIIth Centuries A.D. in the Umayyad Period.

Michele Piccirillo

11. In the two churches discovered in Jordan surely dated from the Umayyad Period, the dedicatory inscription is found either on the west end of the southern nave, (as at Quweismeh, dated 717, S. SALLER," An Eight-Century Christian Inscription at Quweismeh near Amman, Transjordan", *JPOS* 1948, 137-147) or at the entrance of the central nave (as in Ma'in, *RB* 1938, 227-258). In the church of the Virgin at Madaba, we found a medallion with inscription in the center of the geometrical composition (*ADAJ* 1980, pl. XCII).

A THIRD SEASON OF EXCAVATIONS AT PELLA, 1980/81

by
A.W. McNicoll, J.B. Hennessy
A.G. Walmsley, T.F. Potts

The third session of the University of Sydney Expedition took place between 16 December, 1980 and 23 February, 1981, with a staff totalling thirty-three[1] and a locally hired work force numbering up to 105. As usual the dig was greatly aided by the co-operation and active assistance of the Director-General of the Department of Antiquities, Dr. Adnan Hadidi and members of his staff, particularly Mr. Brian Bowen who is in charge of architectural conservation of the site. The principal financial support for the excavations came again from the Australian Research Grants Committee, the Australian National Gallery, Canberra and the University of Sydney. Other contributions were received from The University of Queensland (St. Lucia), The University of New England (Armidale) and The Australian Institute of Archaeology (Melbourne).

Excavations took place in Areas III, IV, V and VI, and a preliminary geological study of the district was carried out by Phil Macumber. Further ceramic studies were undertaken by Ian Edwards. In the present report some of the excavated finds of the Late Bronze Age, Iron Age, Roman and Byzantine periods are outlined briefly, while the Early Islamic material is discussed in greater detail by Alan Walmsley. The first three seasons' preliminary reports in *ADAJ* will be superseded in great measure by the lengthy interim publication prepared by the three codirectors during 1981. (McNicoll, A., Hennessy, J.B. and Smith, R.H. *Pella in Jordan: report of the Joint Sydney University-Wooster College, Ohio Excavations, 1979-1981,* Canberra 1982 (forthcoming).

The Bronze and Iron Ages (Area IIIC)

Three phases of occupation associated with architectural remains were reached in the lowest levels of Plot IIIC in the final weeks of the 1981 season. The phasing is tentative and a great deal of work remains to be done in the area. On the evidence so far available, three periods of occupation are represented. They are treated in chronological order.

Phase A[2] (Figs. 1, 2)

East of wall 3 a large east-west mudbrick wall Fig. 1, 10 on stone foundations separates two rooms which yielded large quantities of pottery and other artefacts. It is cut irregularly just before reaching wall 3 by a wash gully (F 35) which runs southwards along the line of wall 3. Into the gully thus formed fell some of the collapse of wall 3.

The room south of wall 10 is bounded to the south by a huge mass of crumbly green mudbrick which has been faced at floor level with a row of stones. This mudbrick is, in fact, the very top of a massive wall about three metres wide, predating wall 3, which runs south-west to north-east across IIID (the plot immediately south of

1. Basil Hennessy and Anthony McNicoll (Co-directors), Alan Walmsley (Field Director), Margaret Wheeler, Elizabeth Roberts, Priscilla Wadham and Margery Edwards (Recording), Annie Searight-Macdonald (Conservator), Tamara McNicoll and Susan Balderstone (Architects), Ian Edwards (Ceramic technologist), Phil Macumber (Geomorphologist), Melissa McCord (Photographer), Colin Hawke and Chris Willing (Cineasts), Stephen Bourke (human bones), Timothy Potts, Peta Seaton, Pam Watson, Phil Edwards, Robert Deane, Robyn Stocks, Georgina Payten, Greg Wightman, Annette Berryman, Richard Champion, Susan Bassett (Site Supervisors), Catriona Bonfiglioni (Au pair). Sultan Shraideh and Antiquities. Our foreman was Badri Hasan Ma'adi and Abu Arif our cook.

2. This phase has been given an alphabetical designation for the present as the intervening wall 3 (Fig. 1) prevents any stratigraphical correlation with phases V and IV to the west of the wall.

IIIC) and into IIIC. Rather than build a new wall, the people of Phase A reused this much older one, cutting it back to give them the desired space.

The floor of this room (Fig. 1) was littered with broken pottery (a series of jars, bowls, krater etc.; Fig. 3: 1, 2, 4, 5, 6; Fig. 4: 1, 3), two intact saddle querns (one with its grinding stone), a spindle whorl and a bronze pin. The room to the north (Fig. 1) yielded an even richer bounty; again a fair amount of pottery, a broken saddle quern, a loom (?) weight, more than fifteen knuckle bones in association with two smoothed pebbles, one oval and white the other conical and black, a conch shell and the striking sculpture illustrated in pl. CXI. This last piece, carved from brown chert with a chalkly white slip, is very delicately worked in a highly stylised, almost Brancusi-like manner. What, if anything, it was intended to represent is not clear. This intriguing complex of contemporaneous artefacts and pottery makes Phase A of

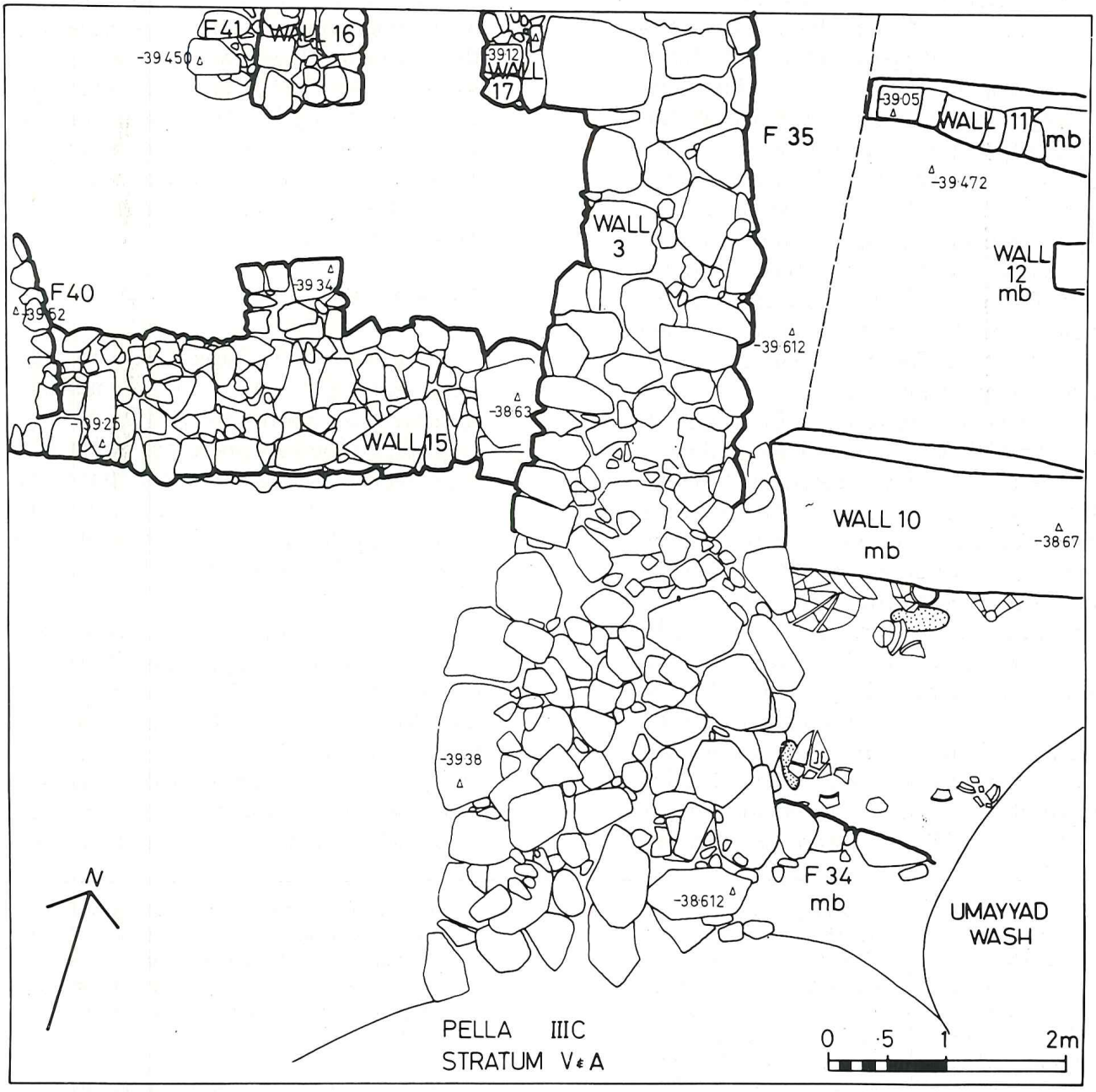

Fig. 1. Pella. Area IIIC. Plan of Bronze Age Walls.

particular interest.

Phase V (Figs. 1, 2)

Thus far, Phase V has only been uncovered in the north-western corner of the plot. There we find a series of walls (15, 16, 17) bonded to wall 3, defining two rooms connected by a doorway, and what seems to be another doorway leading to a third room further north. Two thinly separated floors were exposed inside the structure but no contemporary surface has yet been reached south of wall 15.

The rooms seem to have served a domestic function. On the floor of the westernmost were fragments of a large, coarse pithos and, in the south-east corner , the remains of a storage jar broken *in situ*. In the eastern room was more pottery (Fig. 5: 1-4) and a basalt saddle quern. The superstructure of the walls evidently consisted of variously coloured mudbricks; above the floor lay a meter - originally, no doubt, more - of vivid green, chocolate brown, tan and cream coloured mudbrick tumble, laced with a few ashy lenses.

Phase IV (Figs. 1, 2)

The most prominent architectural feature of Phase IV, the latest of the Bronze Age horizons, is the massive stone wall (3) running north-south through the centre of the plot. We know from the 5 metre section at the southern end of the plot, created by erosion during the Umayyad period, that this wall was built a considerable time before Phase IV; and that it continued in use into the Iron Age of Phase III. During Phase IV it had already begun to collapse westwards. The other architectural remains of this Phase consist of the corner of a house (walls 14 and 19) in the south-western quarter of the plot and an east-west wall (13) in the north. This latter wall ends quite abruptly with no return and in this instance erosion is clearly not to blame. It is very carefully constructed of a single course of stones with a flat top; probably it served as a foundation course or as a low bench. A fire pit (F 39) just north of wall 14 contained the remains of at least two tabuns, the later one surrounded by jar fragments and thick ash deposits. The associated sur-

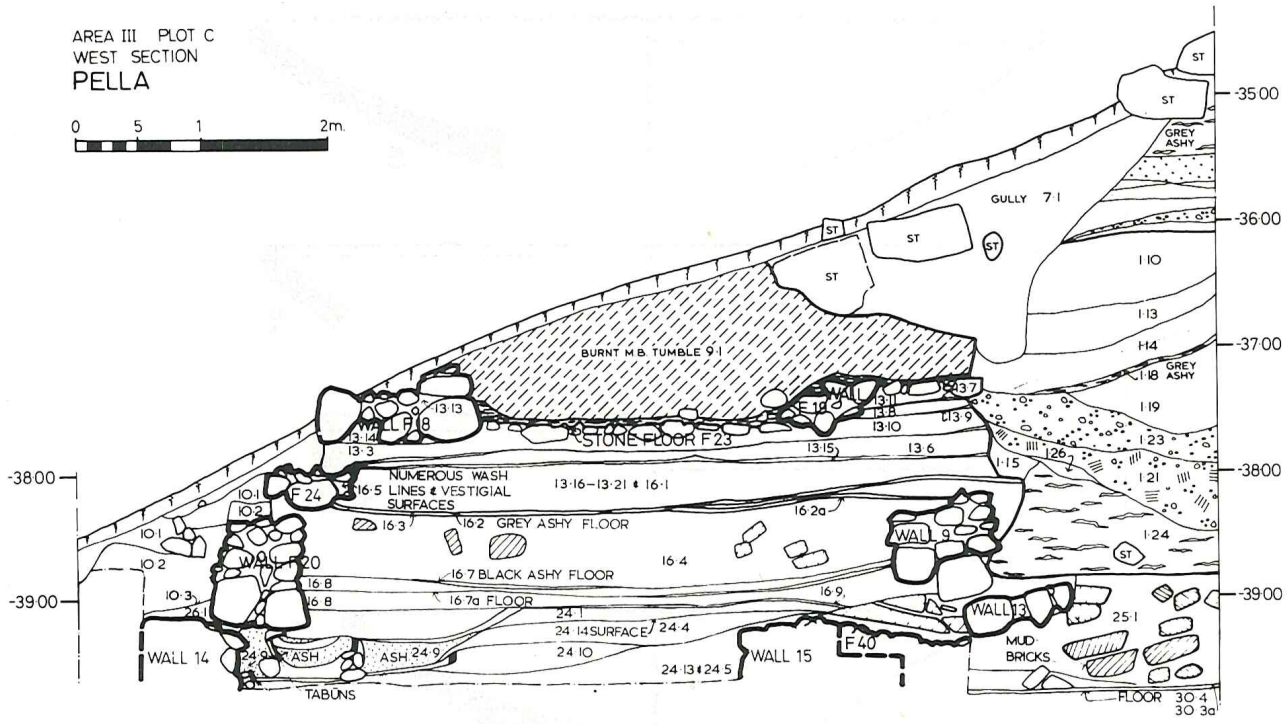

Fig. 2. Pella. Area IIIC. West section. Bronze and Iron Age levels.

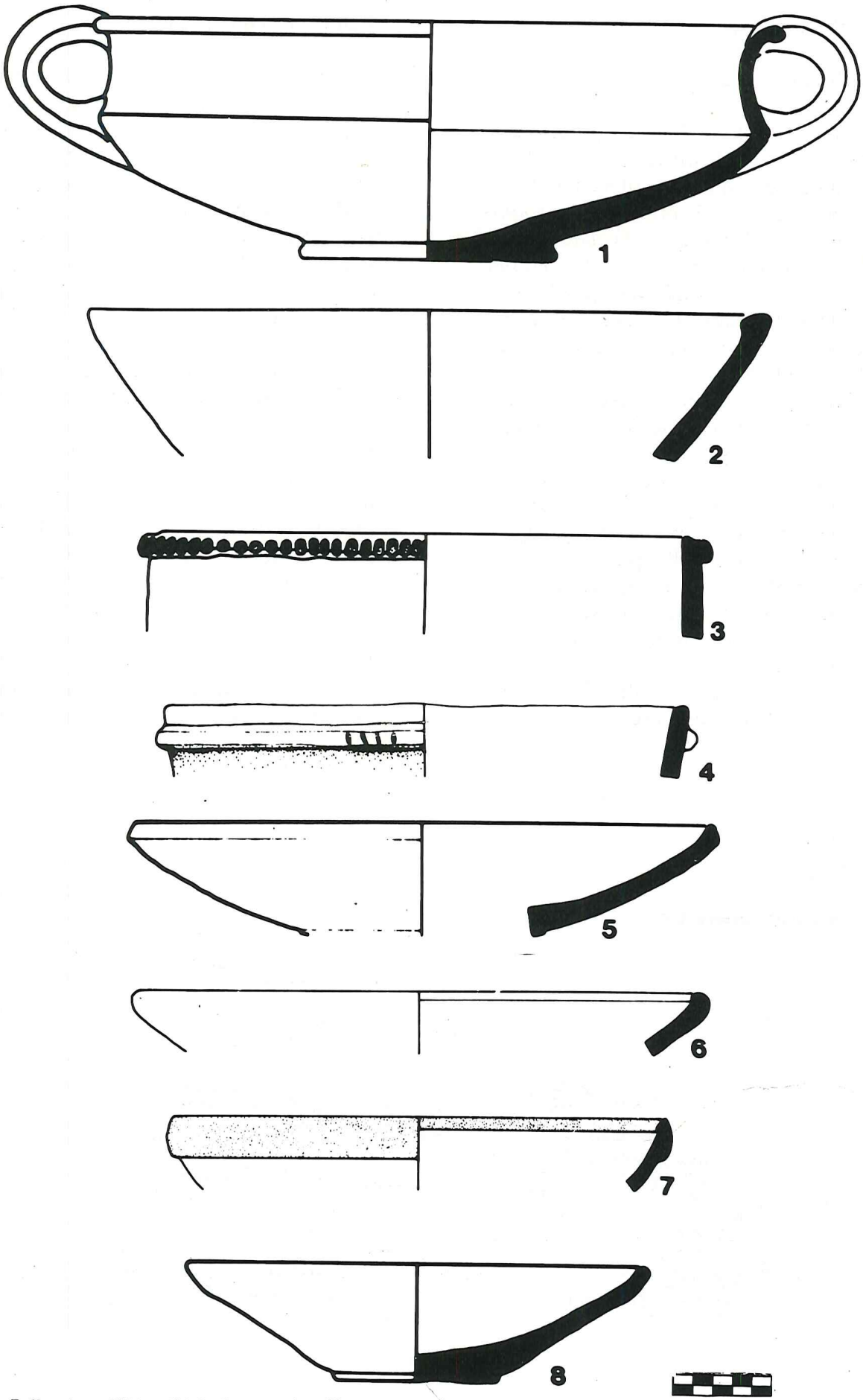

Fig. 3. Pella. Area IIIC. Middle Bronze Age II pottery.

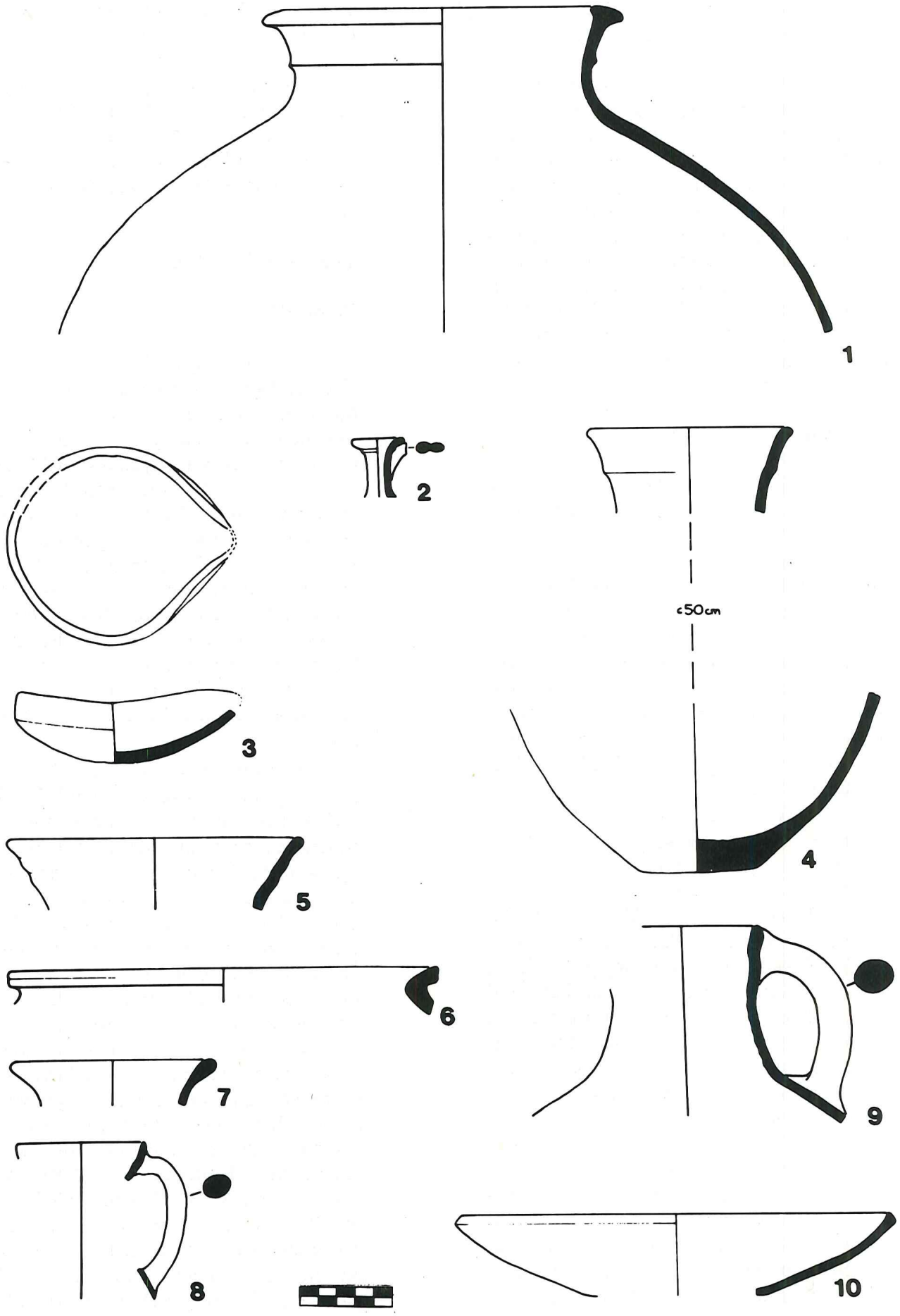

Fig. 4. Pella. Area IIIC. Middle Bronze Age II pottery.

faces excavated so far (there may be more) slope up to the north, over wall 15 of Phase V.

Protruding from the western baulk is the edge of what seems to be an area of stone paving F40 (Figs. 1, 2), running from the top of wall 15 (Phase V) to the bottom of wall 13. Immediately above it lies a clump of mudbricks, perhaps *in situ,* onto which run the surfaces going with the tabuns and walls to the south. These feactures, along with the enigmatic wall 13, have yet to be fully explained. It seems that we have just clipped the very edge of a complex of features the rest of which lies further west, awaiting investigation.

The Pottery (Figs. 3-6)

The pottery from Phases A, V and IV is especially important in that it represents the only stratified material excavated at Pella so far which is at all comparable in date with the rich tomb deposits. However, since these phases were not reached until the most recent of the three joint Sydney-Wooster seasons, some of this pottery has not yet been fully processed and studied. All comments on this material must, therefore, be taken as provisional and are sure to require revision in the light of further analysis.

The pottery of Phase A (Fig. 3, 4) seems to belong to the very end of the Middle Bronze Age and the beginning of the Late Bronze Age, i.e. to the middle of the sixteenth century B.C. Typical Middle Bronze forms are the decorated bowl (Fig. 3: 7) and the incrusted cooking pots (Fig. 3: 3,4). The krater (Fig. 3: 1) also has good sixteenth century parallels. Other types, such as the bowls, juglets , jars and lamp have a wider range and are less diagnostic.

In moving from the eastern to the western side of wall 3 we also take a chronological step forward.

The pottery of Phase V (Fig. 5. 1-4) appears to belong somewhere in Late Bronze II. Of the very limited repertory, the miniature juglet (Fig. 5: 3) is the only piece which might perhaphs argue for a date rather more towards the end than the beginning of this period.

Phase IV (Figs. 5: 5-7 and 6) appears to date to the end of Late Bronze II. Apart from the typical bowls and cooking pots, the distinctive red burnished pedestal bowls (Fig. 5:5, 6) and painted bowls (Fig. 6) may be noted. After the destruction of Phase IV and the building, along similar lines, of Phase III, Iron Age forms begin to appear.

The Early Iron Age

Phase III

Phase III (Figs. 1, 2) comprises a massive north-south stone wall; the corner of a building (walls F20, F21), most of which has been destroyed by the Umayyad wash; a rough north-south retaining wall (wall 6); and an east-west return (wall 9). Three of these walls -walls F20, F21 and 9 - follow approximately the same alignment as walls 14, 18 and 12 of the preceding Phase IV, attributed to the Bronze Age. The walls of Phase III are narrower than their predecessors and are positioned slightly differently but the general correlation in layout is clear, and indicates that we are dealing here with a rebuilding by the same people.

From this phase down, the plot is dominated by the massive stone wall (3) which divides the plot into two independent and stratigraphically unconnected halves. Its size is suggestive of a city wall rather than of domestic architecture. It was constructed a good deal earlier than Phase III, though exactly how much earlier we do not yet know. In any case, it is clear that it survived for a considerable time, gradually collapsing to the west, before being completely sealed over by Phase II. Wall 6 seems to have been constructed from some of this collapase material as a slightly more seemly alternative to the dilapidated wall 3. It is built right up against wall 3 on the same alignment. It is met at its northern end by wall 9. The associated floors (16.7, 16.7a, Fig. 2) yielded nothing exceptional. There was some black ash on the latest (16.7) but not enough to suggest conflagration. The phase is sealed by a thick (0.6 m.) mudbrick collapse. The room comprising walls F20

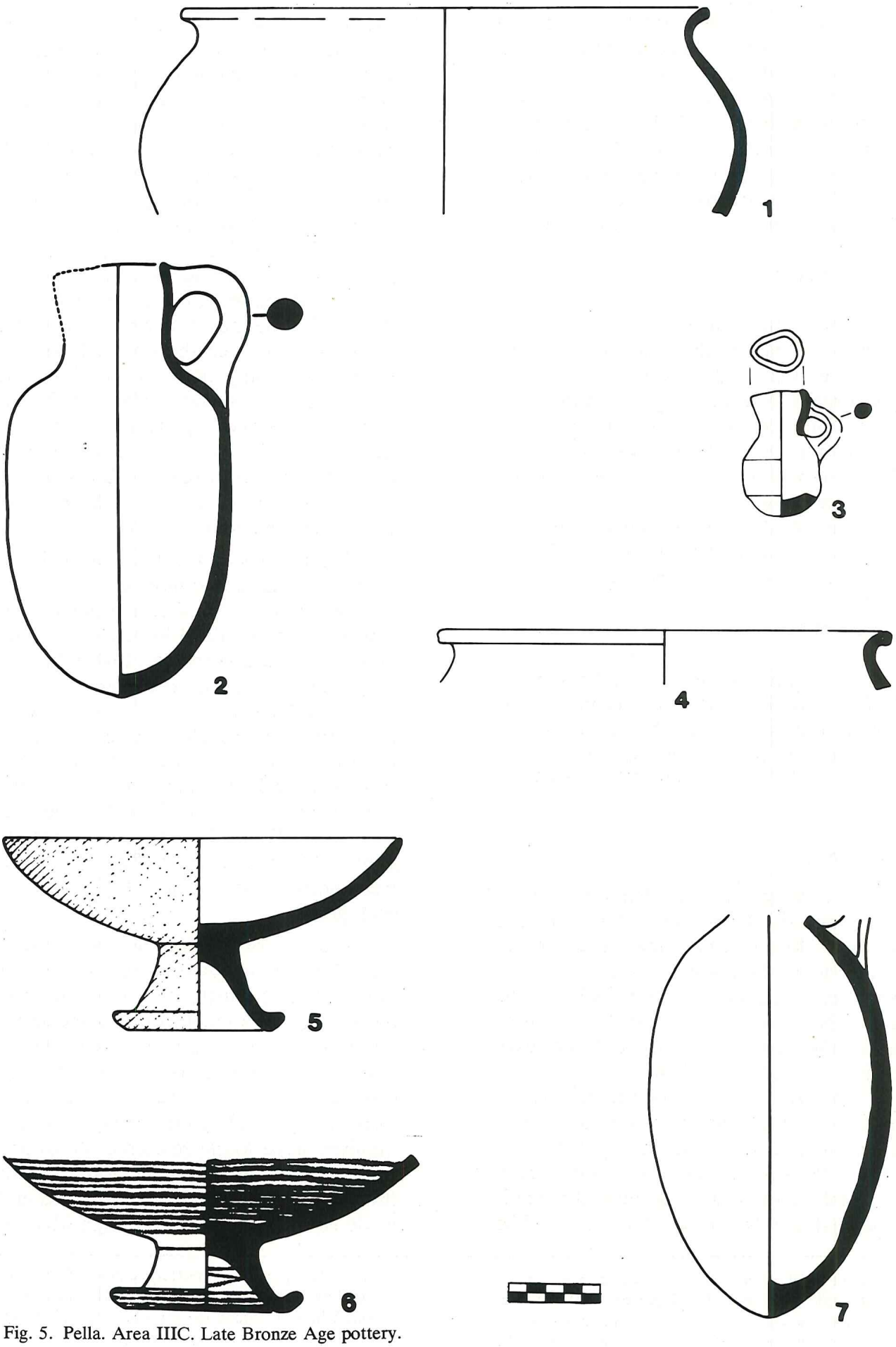

Fig. 5. Pella. Area IIIC. Late Bronze Age pottery.

and F21 was built on a different alignment and seems to have been completely independent. Yet again, however, with so little left, one can only guess at the original character of the building. Only the very corner of the interior floor (level 10.3) survived. It was very clean with no signs of burning.

Phases below this were from the Bronze Age, and have been discussed above.

The Pottery

The pottery of Phase III (Figs. 7, 8) appears to date to the first century of the Iron I period,[3] and is clearly very close to the Bronze Age and may even bridge the transition. A more definite statement must await more extensive excavation of these levels (now in progress) and further study of the material.

Imported fabrics are present but scarce. Cypriot White Slip II and Base Ring II wares are attested for Phase III.

Hellenistic

A minute amount of Hellenistic startified material of the late second - early first centuries B.C. was added to the corpus excavated in the first two seasons *(ADAJ* XXIV (1980): 16-22 and *ADAJ* XXV

Roman

Extensive startified Roman remains have not yet been encountered on the mound. However, in a new trench on the south slope of the tell (Area III, Plot N) a small part of a Late Roman Building was unearthed, giving promise of further finds when the neighbouring trenches are excavated to a greater depth.

In Area VI south of the occupation area two intact, rock-cut tombs of Roman date were located and invstigated. One, Tomb 30, was notable for its abundance of skeletal material (at least thirty-three individuals) and its paucity of artefacts; while the other, Tomb 39A, was remarkable in that the sparse skeletal remains in it had the consistency of dust and were irretrievable, whereas the artefacts were legion, and many were attractive and extremely well preserved. The skeletal remains of Tomb 30 are yet to be examined in detail, so the following brief account is concerned with Tomb 39A and its artefacts.

The tomb (Fig. 9) is one of two or possibly more opening off a large bay-like dromos cut into the north side of a hillock in Area VI. The other tomb investigated, Tomb 40, had been thoroughly looted by robbers smashing their way in from the south. Nearby a surface scatter of six stumpy columns with square bases and truncated conical tops may have formed part of the funerary complex. The investigation of these columns and of the dromos will continue in the coming season.

The tomb is rock-cut, and irregular in shape. Closing the stomion was a flat, rectangular stone with a slightly rounded top which was firmly fixed in place with mud mortar and snecking stones. Inside the entrance, steps down give access eastwards to a small vestibule, two walls of which were neatly built with roughly dressed limestone blocks set in lime (?) mortar. The chamber proper is roughtly rectangular, c. 1.90 m. x 1.90 m. and 1.60 m. high, with three shallow arcosolia each containing a simple grave 1.90 m. x 0.75 m. There were no indications of more than a single burial in each grave.

The bulk of the finds was made up of ceramic lamps and glass vessels which date to the third or fourth century. In addition there were various metal objects, including six coins, three small plaques (two of bone, one of ivory), bone pins, stone beads, miscellaneous pottery vessels, and a single wooden object. The lamps, thirty - seven in number, were found scattered all around the chamber and arcosolia. Most (about two thirds) are of that bi-lanceolate mould made type with impressed design which is

3. Good parallels can be found, for example, from Megiddo str. VIII-VII: Hazor Str. XII, XI, Ia; Taanach periods IA, IB; Dier 'Alla Phases A-D; Beth Shan level VI; Gezer Field I Str. Iv, Field II Str. XII-IX. Selected pottery shapes of the succeeding Iron Age I phases Area IIIC have been published in previous reports *(ADAJ* XXIV (1980) and *ADAJ* XXV (1981).

so common at Pella that it was surely manufactured on or near the site (Fig. 10, Nos. 1, 3, 4 and 6). The remaining third of the lamp population shows greater variation, but belongs also in the third and fourth century range.

By contrast with the lamps the majority of the other objects was found in the grave in the southern arcosolium. Of the five bronze coins from this grave, four could be identified exactly or approximately. The earliest is a follis of Maximinus as Caesar (305-308 A.D.), then follow two coins (a follis and an AE 3) of the reign of Constantine I (307-337 A.D.), and the latest coin a centenionalis of Constantius II (337-361 A.D.). The fifth coin from the grave is certainly not later and its weight (9.30 g.) suggests that it is considerably earlier, than its four companions, but its types are obliterated. The sixth coin's find spot was uncertain, and it cannot be identified, but its module and fabric point to the fourth century A.D.

While the latest coin in a tomb does not necessarily give a close *terminus post quem* for its closure, the half-century span of the four identified coins, along with the fact that there was only one skeleton in each grave, may point to a brief period of use for tomb 39A. More specifically, the southern grave of tomb 39A may have been used within a generation or two after the date of the last coin. If this hypothesis is accepted, it has important implications for the dating of the glass vessels , tomb 39A (Pls. CXII-CXIII), for all but one of them (pl. CXII, no. 3) were found in the southern grave beneath the capstones. Nearly all the glass must therefore have been deposited after the Constantius II centenionalis, which was struck in the 350s. Like the lamps, the glass can be broadly dated by analagous finds (at Jebel Joffeh, Amman, at Hanita, at Beit Fajjar, etc.) to the third or fourth century. On internal evidence we may suggest a tentative date of deposition, between about 350-375 A.D. For only one piece, the head flask (pl. CXII, no. 11) does this date seem rather late; possibly it should be viewed as aberrant - an heirloom or some such.

Among the other objects found in the southern grave of tomb 39A, three carved bone and ivory plaques and a tiny repoussé bronze plaque deserve attention. The bone and ivory plaques (Pl. CXIV nos: 1-3) do not appear to belong to the local Palestinian School identified by Rosenthal *(IEJ* 1976, 96-103), perhaps they were imported from Egypt. Certainly the dancing maenad has stylistic parallels in the Cairo Museum, and a plaque like this one was excavated by Petrie at Shurafa. The tomb 39A plaques, like the lamps and glass, can be broadly dated to the third and fourth centuries.

The most surprising object from tomb 39A is the bronze repoussé plaque 2.4 x 2.4 cm. (Pl. CXV, nos. 1,2). It appears to have on one side a representation of the holiest shrines of Christendom, i.e. the twin sanctuaries of Golgotha and the Holy Sepulchre. On the other side, the rider on the donkey is surely to be identified as Christ entering Jerusalem. If the date proposed above for the burial in tomb 39A's southern grave is correct, the shrines shown on the plaque are those erected by Constantine the Great in 336 A.D.

Byzantine and Early Islamic

From this tiny memento of Christianity's most important holy place we turn to a Christian monument erected at Pella itself. The East Church, Area V, is dramatically situated on a hillside overlooking the Wadi Jirm and Khirbet Fahl. During the 1981 season the area west of the churh was completely excavated, and what was referred to in earlier reports as the tetrastyle front of a Temple proved to be the west portico of an atrium belonging to the church. Some of the Corinthian columns of the portico have been re-erected by the Department of Antiquities (Pl. CXVI). It remains likely that there was a building on this site before the construction of the church in the fifth or sixth century.

Area IV

In the area excavations (Area IV) at the east end of the main mound, two important findings stand out. Firstly, the exc-

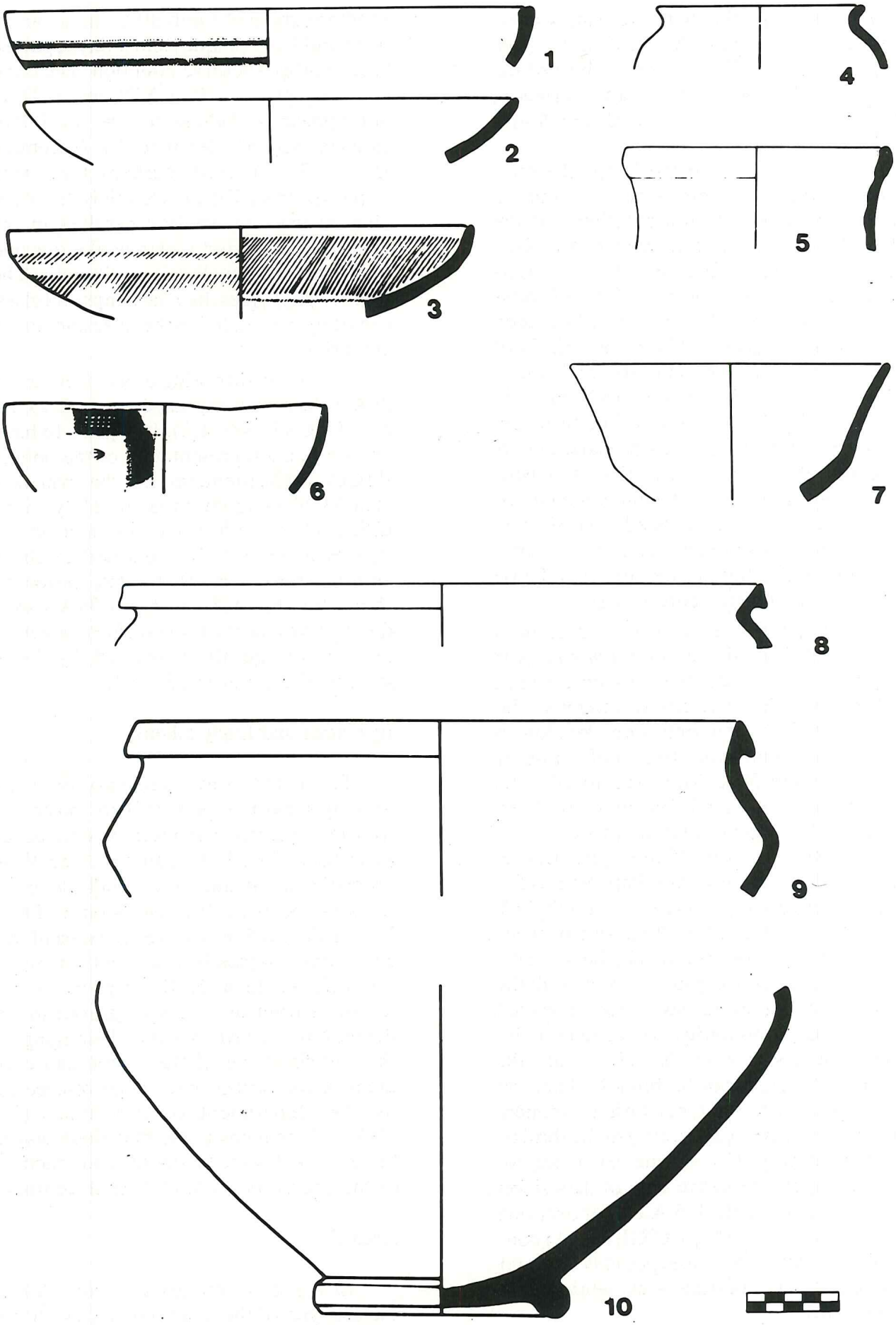

Fig. 6. Pella. Area IIIC. Late Bronze Age Pottery.

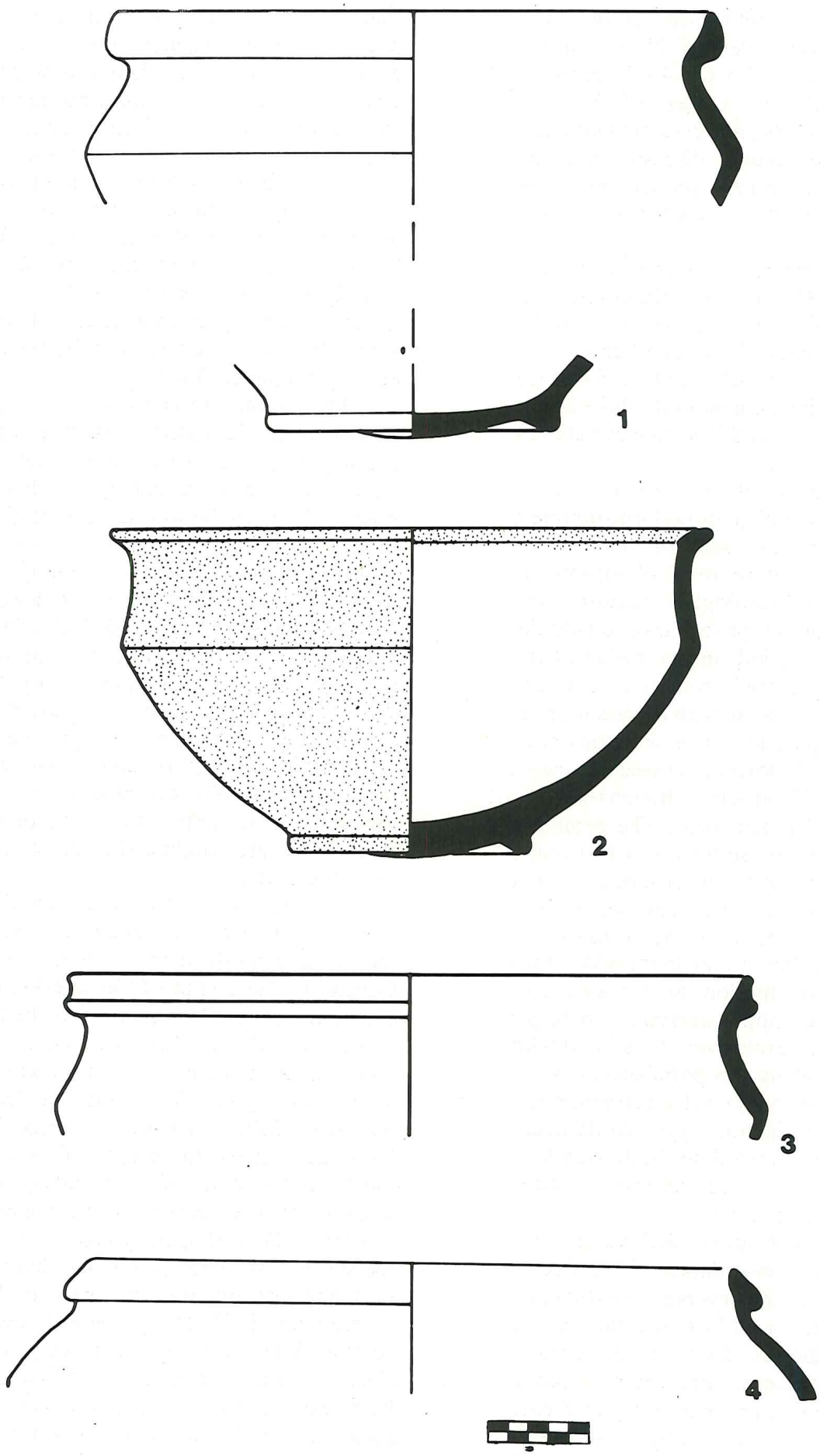

Fig. 7. Pella. Area IIIC. Iron Age I pottery.

avations confirm that the end of the Umayyad occupation at Pella (Fihl) was caused by the earthquake of A.D. 746/7; secondly, they provided a clear view of the Late Byzantine-Early Islamic ceramic sequence. The following account discusses first the trenches opened in 1981 and the finds from them, and then the trenches begun in the 1980 season.

The high priority of excavation in Area IV for the 1981 season was the connection by four new plots (IV J, L, M and P) of the two areas of excavation opened up in 1979 (IV A-E) and 1980 (IV H, O, R, S and U) on the top of the main mound. Three of the new plots, IV J, M and P, were excavated as one unit (Fig. 11).

The progress of excavation in these new plots was similar to that encountered during the first two seasons in the Area Excavation. After removal of topsoil the first major archaeological feature encountered is copious pit-burials dating to the late Medieval period. Initial studies of the osteological material from this cemetery suggest we are dealing with a standard pre-industrial population. The skeletons bore no evidence of violence or disease; caries were remarkably absent although there are often cases of molar wear. The cemetery may have been in use for up to 150 years, perhaps by two different groups as at first burials appear to have been segregated, with males in one area and females and infants in another. Later there was a breakdown in this division. So far jewellery, usually simple copper earrings and finger rings, has been exclusively associated with women. It is likely this population is to be associated with the revival of economic activity in Syria during the Ayyubid-Mameluk period, during which time the Jordan Valley was noted for its agricultural products, particularly sugar cane.

The major feature underlying the burials is the yellowish deposit identified as *pisé* collapse. In the new plots the thickness of the deposit varied from less than one to over three metres. Its removal revealed occupation surfaces, either mud or paved floors or in IV L an extensive paved courtyard (Fig. 11). This courtyard showed a long period of use. Constructed of soft mud-stone, the constant traffic of man and beast led to the fragmentation of the the paving slabs, until the original surface became so irregular that a hard packed mud surface was allowed to form over it, most probably during the Umayyad Period. On this new surface were found tabūns (ovens) and stray capitals, the latter inverted for use in the preparation of bread dough. Probably at about the same time rooms 25 and 26 (Fig. 11) were open to the sky, as here too tabuns and columns were found, along with a thick seven-layered ash deposit over an original paved floor.

The final destruction and abandonment of the houses clustered around the large central courtyard in IV L seems to have occurred simultaneously. This can now be dated to the well-documented earthquake of A.D. 746/7, for in room 16, along with the skeleton of a young man, were recovered four Umayyad dinars, the last dating of A.H. 117 (A.D. 735) which is long after any of the recorded earthquakes dating to earlier in the eighth century A.D. This numismatic evidence now provides an absolute date for the end of large scale occupation of the eastern end of the main mound, a chronological cut-off point that can equally be applied to the vestiges of material culture caught in the *pisé* collapse from the houses.

The excavation of IV J, L, M and P in 1981 gives us a clearer idea of the plan of the housing north of the east-west street. Central to the layout of the housing exposed during the 1981 season was the large courtyard 9.20 m. x 6.80 m. (N-S x E-W) which connected with the Byzantine street to the south by a 11.50 m. long lane. On the east side of the courtyard a staircase probably gave access to an upper floor (as in the Byzantine cities of the Hauran), while to the north was located a stable, excavated in 1980 as IV 0. Originally rooms 31-34 to the south of the courtyard would have formed one unit opening out onto the Byzantine street in IV D. By the mid seventh century A.D. access to the street was blocked and the unit rebuilt to allow entry from the south end of the courtyard into room 31. The bin indicates the room was used for stabling animals, while rooms 32

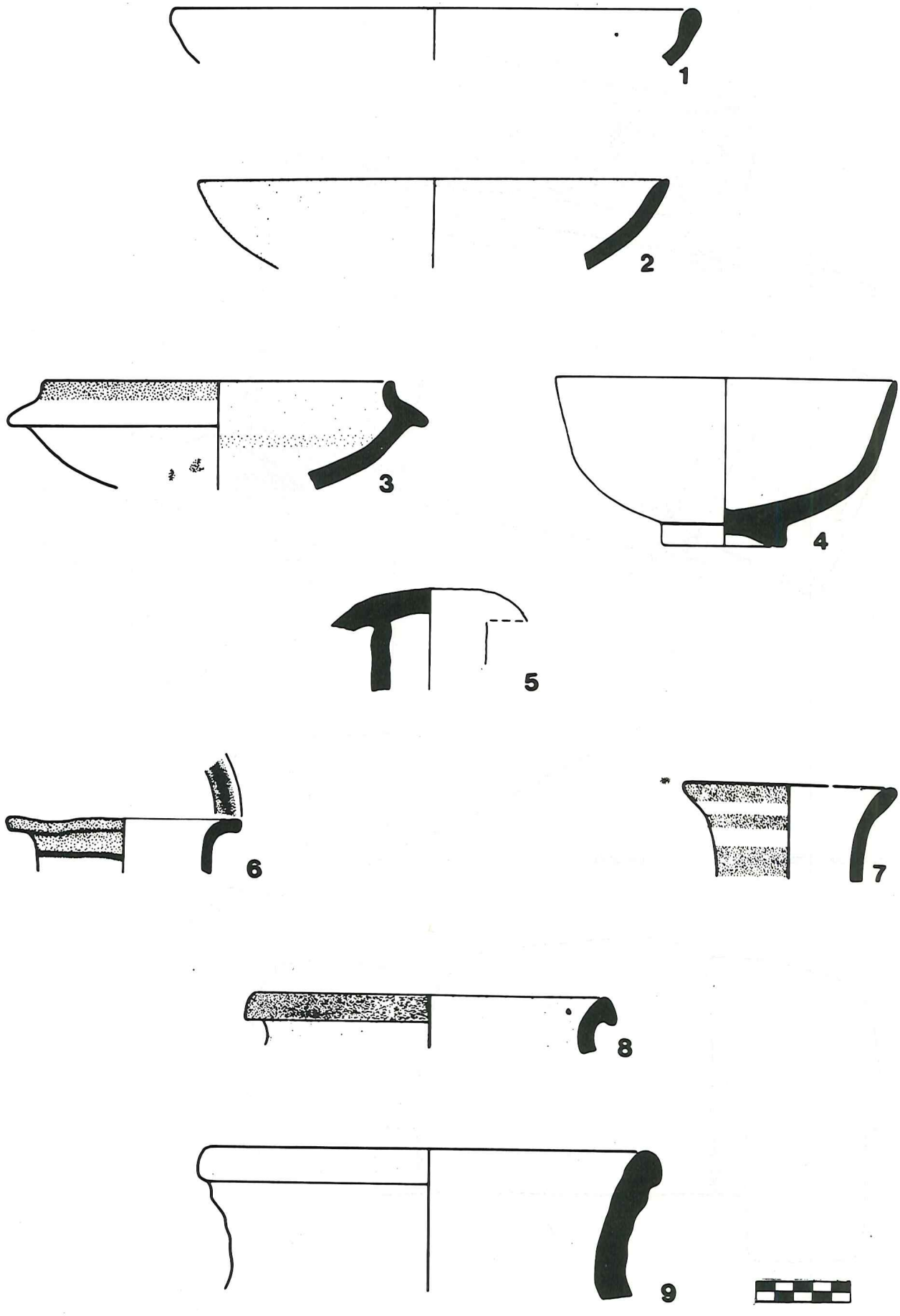

Fig. 8. Pella. Area IIIC. Iron Age I pottery.

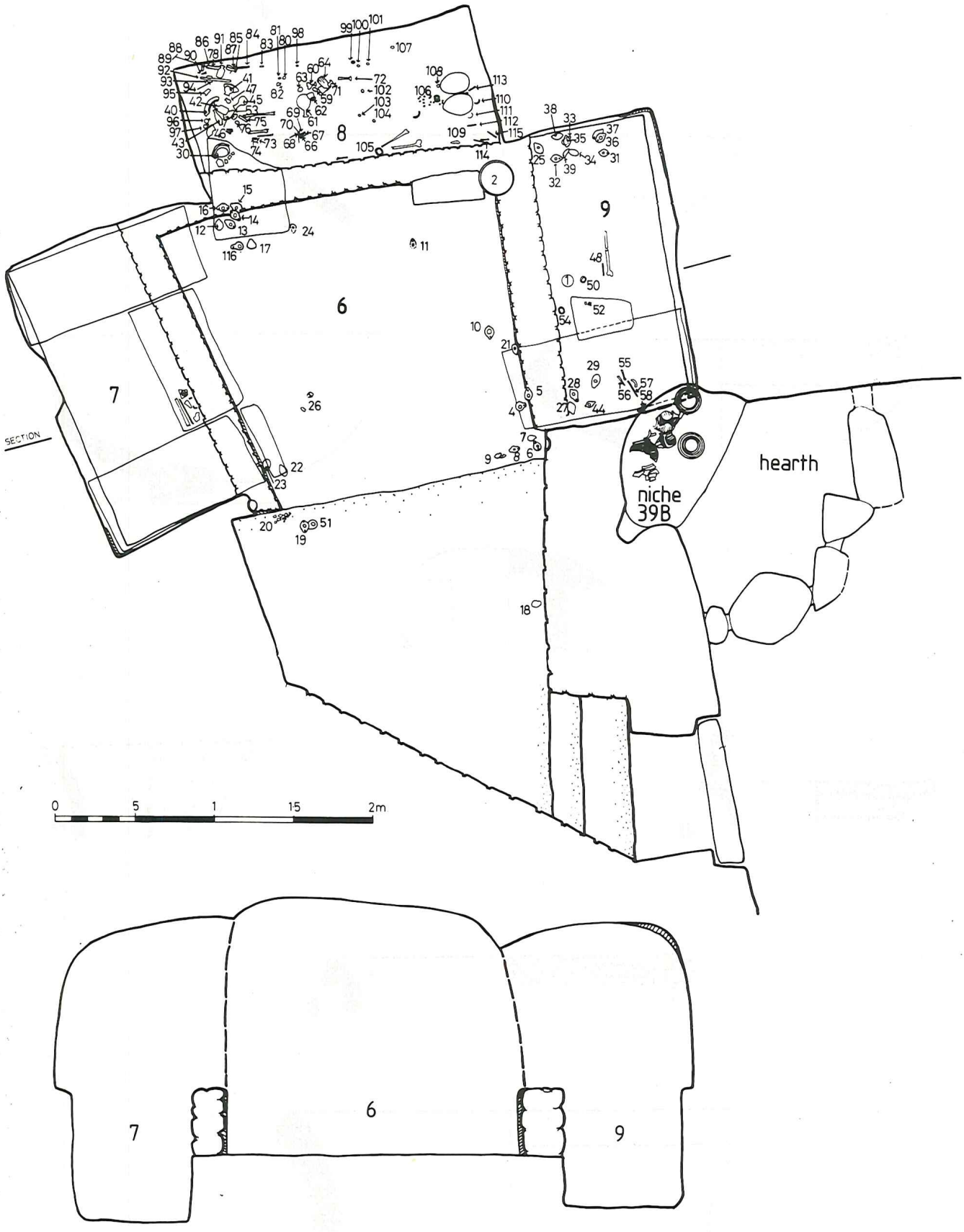

Fig. 9. Pella. Tomb 39. Plan.

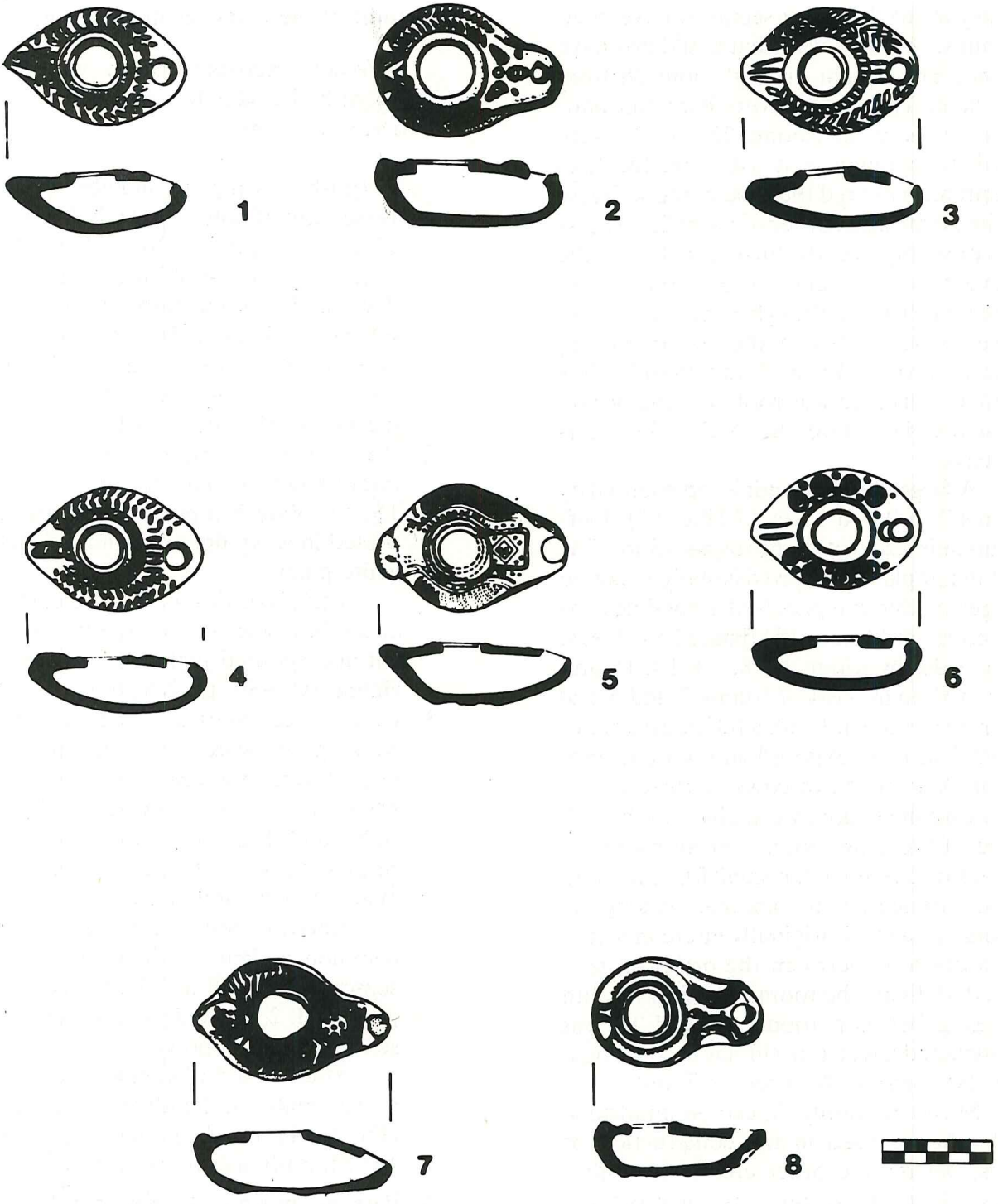

Fig. 10. Pella. Tomb 39A. Lamps.

and 34 are curious in that they had no access from ground floor level (cf. rooms 18 and 19).

In the period immediately before the final devastating earthquake at Pella the area to the east of the lane connecting the courtyard to the street seems to have been in ruins. A rough wall that could not have carried any weight divided room 28 from the lane. The large pavers here run underneath the wall. Rooms 25 and 26 were used for cooking, and ash from the fires eventually covered the base of the staircase in the north-east corner of room 25. Access was probably over the broken wall from the stable room 17, and were probably dilapidated. Thus although a barrier would have existed between the courtyard and lane, and rooms 18 to 19 and 25 to 26, it is unlikely this area was roofed in the period immediately before the A.D. 746/7 earthquake.

A large domestic unit is represented by rooms 7 to 9 and 13 to 17 (Fig. 11). Unfortunately excavation of rooms 13 to 17 is still incomplete, but provisionally it can be suggested that the plan is of a possible central courtyard (room 15) flanked on at least three sides by rooms (7, 8, 13, 14, 16 and 17). Although most of rooms 7 and 8 had been excavated in 1980, a full clearnance of room 7 in 1981 exposed another cow skeleton. A total of two cows, a horse and at least one sheep/goat were killed in the collapse of these two rooms. From room 8 a small side entrance, too small for animals to pass, connected to another courtyard. Rooms 14 and 17 originally interconnected via a doorway between the orthostat feed bins that divide the rooms. Against the late blocking between rooms 17 and 18 was constructed a feed bin, similar to those against the north walls of rooms 7 and 8.

Most commonly limestone, mudstone and tufa are used in the construction of walls, paving and other architectural features. The upper storey, it is suggested was of *pisé,* most likely with roofs of compressed mud over wood beams and reed matting, a form of roofing that with adequate drainage can withstand the damp winters of the north Jordan Valley.

In a small room (no. 16) just off the central courtyard of the domestic unit described above was a victim of the earthquake with his worldly possessions of money and utensils. When the room is fully excavated the contents of this room will be published as a complete unit - until then a preliminary account of the ceramics must suffice.

Vessels recovered from within the room with the skeleton and coins divide into various wares.

1. Purplish brown paint on light buff. Two vessels are of note; a jug CN 1869 (Fig. 12:1) and a jar CN 2030 (Fig. 12; 2). Ware is creamy-buff with small grits, decorated with purplish-brown paint in spirals and lines. This ware is not common at Pella, possibly because it was in use only a few decades before the destruction of the site in A.D. 746/7.
2. White paint on metallic terracotta. Of interest here is the jug CN 2022 (Fig. 13; 1). Ware is a gritty terracotta decorated in wavy lines in bands of thinish white paint.

   Vessels of this ware were common in the first season, mostly smallish jars but also spouted juglets (McNicoll and Hennessy 1980: pl. XX, 6-8).
3. Coarse terracotta. The common cooking-pot ware; two open pots and one lid were found close to a rough hearth in the centre of the room. The lid (CN 2052, Fig. 13;2) fitted very neatly one of the bowls (CN 2051, Fig. 13; 3). Ware is loose and gritty.

   Cooking pots of this type are very common at Pella both from the 1979 season (McNicoll and Hennessy 1980: pl. XXIII, 2, 3 and 5) and Smith's 1967 season of excavations.

   Made of a similar coarse terracotta is the small one-handled jar CN 2021 (Fig. 13; 4), as is the moulded lamp (Fig. 13; 5), both also from room 16.
4. Pale cream ware. Two pilgrim flasks of this ware were recovered from among the possessions of the earthquake victim. One (CN 2028) is of interest in that one handle was missing and the rim was chipped before the collapse of the building (Fig. 13; 6). The ware is fine and

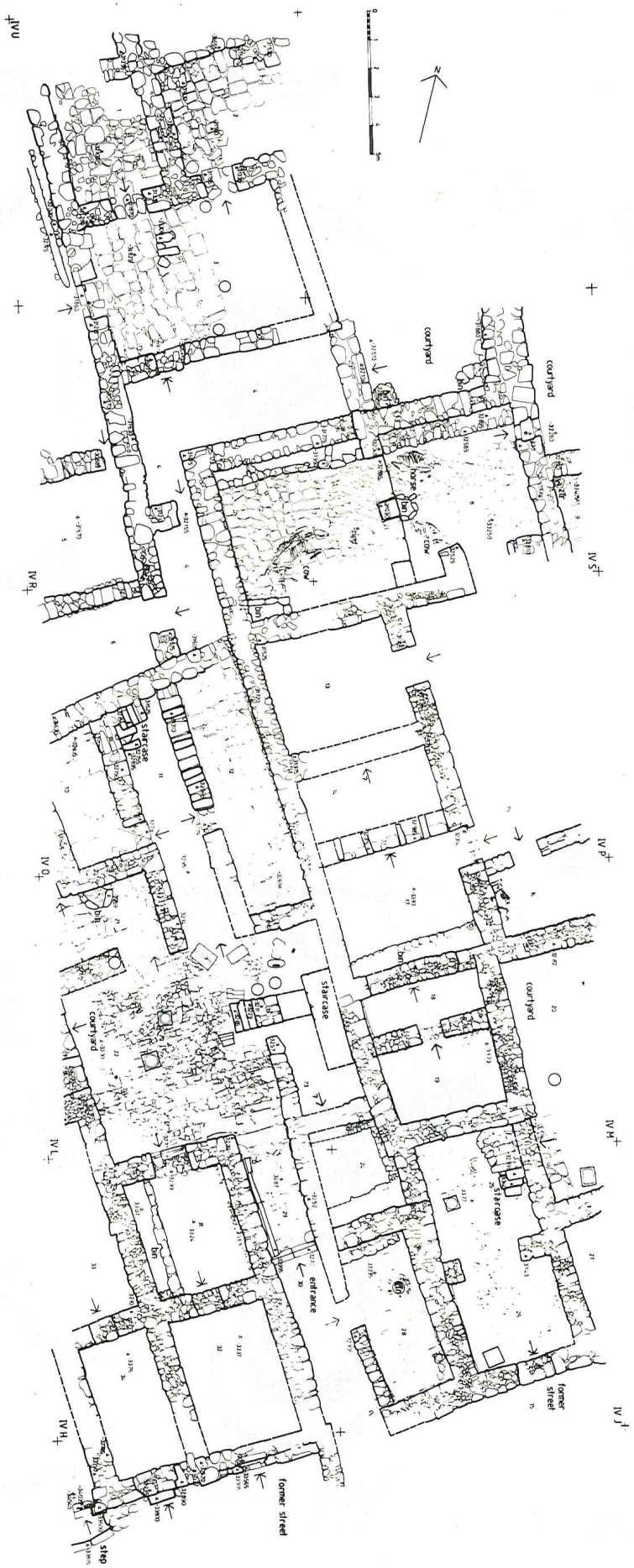

Fig. 11. Pella. Area IV. Plan.



Fig. 12. Pella. Area IV. Umayyad pottery.

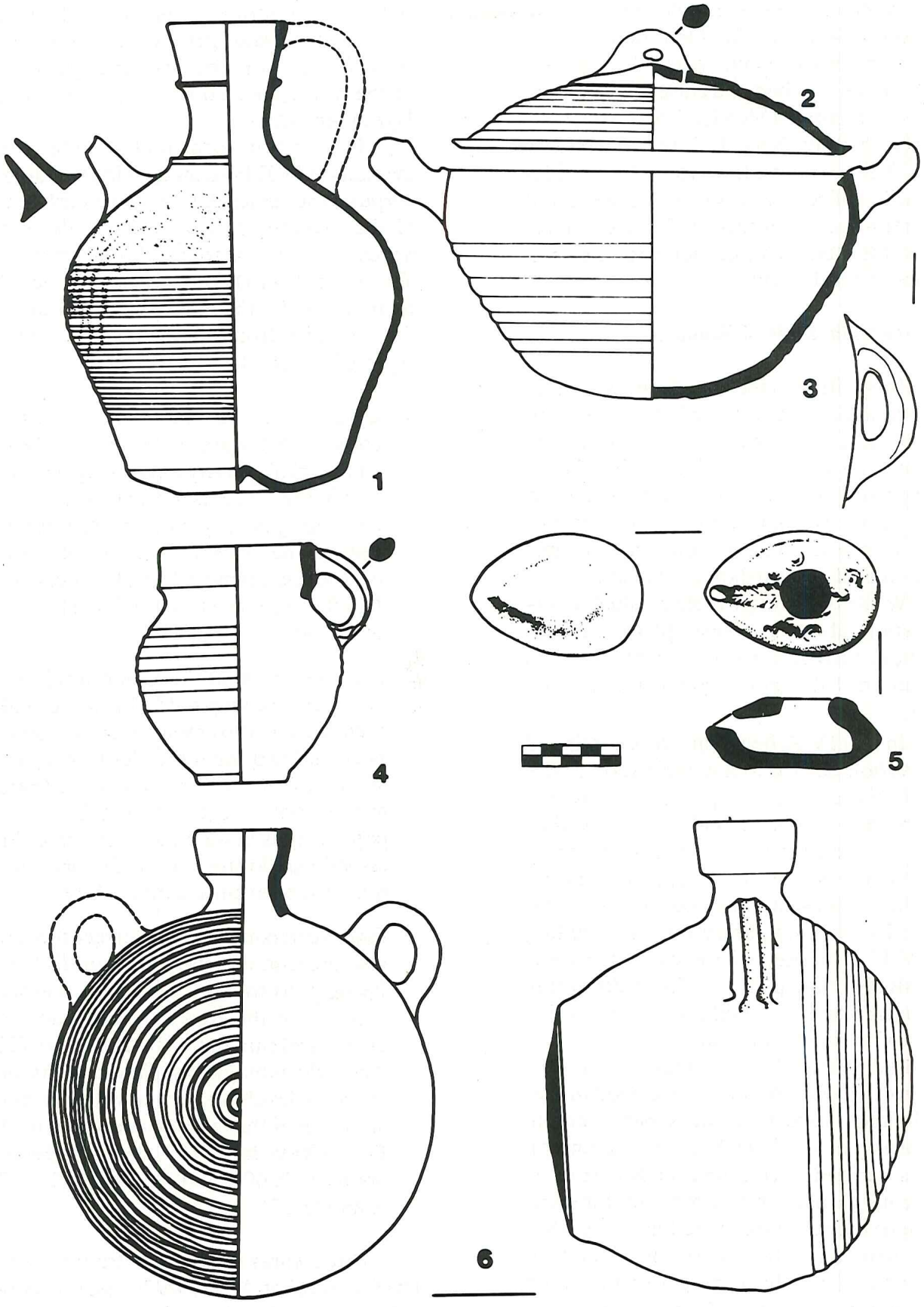

Fig. 13. Pella. Area IV. Umayyad pottery.

softish, and has a distinctive pale cream to pale green colour. It is unpainted.

Although these are by no means all the Umayyad wares so far identified at Pella e.g. dark brown white painted, and dark grey to buff combed and chiselled wares are not represented (McNicoll and Hennessy 1980: 28-9; pl. XXI, 1, 3 and 4; XXIII, 6 and 7), the ceramics from room 16 provides a useful collection of wares and vessels of the mid-eighth century A.D., and a fixed point for studies on earlier and later ceramics in the Levant.

Non-ceramic finds of Room 16.

In addition to the four dinars, the other non-ceramic artefacts included a square ended hoe identical to one found at Amman by Harding (1951: pl. II, 12), an iron pruning knife and a wood bucket on an iron frame. No significant object of bronze or glass was recovered, indicating the Spartan life of the earthquake victim.

While the new plots gave valuable information about the final phase of occupation, further work in two of the plots begun in 1980 also provided important data.

In plot IV R, begun in 1980, continued excavation has led to a modification of the "early phase" and "late phase" proposed in the report on the second season. Rather than a sequence of pre-and post-earthquake phases, it now appears that the building represented by rooms 7 to 9 and 13 to 16 is contemporary with the building in IV U composed of rooms 1 to 3 (previously the "late phase"). The walls of this latter unit are a rebuilding upon earlier walls of an uncertain date.

Following the delineation of the east-west Byzantine street described in the preliminary report of the second season (Hennessy et al *ADAJ* XXV, forthcoming) it was decided to continue further work in the courtyard of the Umayyad building south of the street excavated in 1979. This work resulted in the uncovering of remains which in their earliest phase formed part of the building excavated in 1979. At some time, perhaps about or just after the Islamic invasion, the building was altered by the construction of a small internal courtyard and by the blocking of doorways that led out onto the street. This altered building was razed at a later period, perhaps around A.D. 700, to form the large courtyard west of the now truncated building south of the Byzantine street.

The major contribution the excavations in IV E have made is in providing a corpus of ceramics dating to the early part of the seventh century A.D. While some wares are the same as those described above (pp. 18-19) there are noticeable differences. By far the most common wares in the ceramics from IV E are the various types of terracottas.

1. Coarse terracotta. The common cooking-pot ware as described above. The "open" variety of cooking pot, like that in Fig. 13; 3, is present suggesting it has a long history, but also present are pots of the "closed" variety with thick over-turned rims and small vertical loop handles from rim to shoulder. The body is ribbed.

2. Medium terracotta. Present in this category are cooking pots of a type usually identified as Byzantine, with an upright neck and two small handles from rim to shouler, and finely ribbed body. Initial impressions suggest that this form's popularity is at an end by the time this assemblage formed about the first quarter of the seventh century A.D.

3. Finer terracottas. Finer terracottas are also present, and used for utensils from frying pans to cups. Of a very fine terracotta are the Red Slip wares as described and catalogued by Hayes (1972). The chronologically latest example from the levels associated with the construction of the internal courtyard in IV E is ARSW form 105, dated by Hayes about A.D. 600-660 (Hayes 1972: 167, example 17).

Three wares well known from the destruction level of A.D. 746/7 appear in deposits associated with the internal courtyard of IV E. Their lesser frequency and restricted number of shapes may indicate that

they were just beginning to become popular. They are:

a) Grey to buff combed and chiselled wares
b) Dark brown white painted wares
c) White paint on metallic terracotta.

These wares appear to have been introduced more or less simultaneously at Pella, perhaps not much before the end of the sixth century A.D.

Absent from this early seventh century group of pottery is the purplish-brown paint on light buff and pale cream wares. The date at which those wares make an appearance at Pella is uncertain, it depends when the large courtyard in IV D and IV E was laid down. It seems unlikely this can be dated prior to A.D. 700, which means these two wares appear at Pella in the early eight century A.D. Greater detail on the Umayyad pottery and its antecedents can be found in the Interim Report on the Sydney-Wooster excavations at Pella (McNicoll et al 1981 (in press)).

A.W. McNicoll
J.B. Hennessy
A.G. Walmsley
T.F. Potts

RECENT EXCAVATIONS AT PETRA (1979-81)

by
Fawzi Zayadine

Thanks to the efforts of the Department of Antiquities and the financial support of the Jerash-Petra Tourist Project, a substantial development programme was initiated in 1979. It included: I) the clearance of the Sîq, II) the excavation of Qasr el Bint Temple and of III) a potter's kiln complex at Zurrabeh, near the Rest House. The work was supervised by the author, with Mr. Nabil el Qadi, and the architect F. Larché from IFAPO, at the Qasr.

I. Sîq Clearance:

As previously indicated[1], large segments of the paved street and water channels were uncovered in the Sîq and consolidated by the project under the supervision of Muhammed Murshed.It is noteworthy that this main access to the caravan city is dotted by many cultic niches and Baetyls, suggesting that the gorge had been considered as a processional way. The most significant monuments in this connection, recently excavated, are a niche decorated with a doric frieze and pilasters, protecting two idols[2], a Greek dedication to Sabinus son of Alexander[3], panagyriarches (master of the festivals) of the city of Der'a in the Hauran (Pl. CXVII, 1) and finally a sandstone altar (Pl. CXVII, 2) found opposite the niche with ten idols, at 500 m. from the Khazneh.

Text:

Θεῶι Ἁγίωι
Ἐπηκόωι *
Οὐικτωρῖνος
β(ενε)φ(ικιάριος) εὐξάμενος
ἀνέθηκεν.

Translation:

1. To the holy god
2. Who listens to prayers
3. Victorinus
4. beneficarius
5. as a dedication
6. erected.

The saint god is to be indentified with Zeus-Dusares as indicated by two Greek dedications: the first one is engraved on an altar discovered by the Horsfields near the Qasr[4] and the second in a chapel on the top of Umm el Biyarah[5]. The epithet 'saint' is of Semitic origin[6] and was attached to Zeus in the Roman period in the Phoenician cities of Tripoli[7], Sidon and Baetocécé (Qal'at el Husn)[8]. At Petra, the discovery of three dedications is evidence of the permanent oriental influence in the Roman period. Victorinus, the dedicant, was a Roman soldier[9] of the 2nd century A.D., probably in garrison at Petra.

II. Tomb 64B[10]:

Two funeral monuments are carved in

1. *ADAJ,* XXV (1981) p. 352.
2. F. Zayadine, *ADAJ,* XXIII (1979) p. 194-197.
3. See G. Dalman, *Petra,* Leipzig, 1908, p. 145-146, Figs 68-69.
4. P.J. Parr, *PEQ,* 89 (1957) p. 134.
5. C-M. Bennett, *ADAJ, XXIV* (1980) p. 209-212.
6. Ch. Clermont-Ganneau, *EAO,* I, p. 104; also D. Sourdel, *Les cultes* du Hauran à l'épopque romaine, Paris, 1952, p. 98 & no. 1.
7. B. Mittford, in *PEQ,* 89 (1957) p. 13-14.
8. J.P. Rey-Coquais, *Arados et sa Pérée,* Paris 1974, p. 235.
9. *Idem, IGLS,* Paris, 1967, p. 125: "Attachés aux états majors des gouverneurs ou des officiers généraux, les bénéficiaires sont souvent chargés par leurs chefs de missions de confiance." See also M. Sartre, *IGLS,* XIII, Paris, 1982, p. 348.
10. In Brünnow and von Domasewski, Die Provincia Arabia, I. Strassbourg 1904, only one tomb opposite the Khazneh is recorded (64). But two of the Hegra type exist, which I number 64A, decorated with short pilasters in the attica and B. under study.

the Khubtha cliff, at the exit of the Sîq, opposite the Khazneh and are sealed by about 2.50 m. of wadi débris. The excavation of Tomb 64 B. was decided as part of the Sîq clearance and the accumulated gravel which obstructed the entrance was partly removed with the help of the Project's grader. The excavation of the tomb was very long (from September 1979 to March 1980) and was successfully supervised by Mr. Nabil Qadi.

The architectural facade (Pl. CXVIII, 1-2), which averages 20.05 m. in height and 13.45 m. in maximum width, belongs to the well known Hegra type: two pilasters whose bases are severely eroded support a cornice and a frieze, followed by a plain attic, a rounded tenia, and a cavetto: of the two usual half crowsteps at the angles, only the right hand one is extant.

Two frames enclose the entrance; the outer one consists of two pilasters spanned by an architrave supporting a frieze and a weathered pediment. The inner frame includes two pilasters, topped by an architrave (completely worn), and a frieze with a cornice. Five holes on the architrave and four oblique grooves above the cornice were probably prepared to hold stucco decoration. In addition to a step partly hewn out of the rock, two other steps are built with dressed stones in front of the funeral chamber, which is carved with 9 loculi and 3 sunken graves. (Fig. 1).

A sandstone block (0.45 by 0.38 by 0.12 m.), carved with a 4 line Nabataean inscription (Pl. CXIX, 1 and Fig. 3) was discovered to the left of the entrance, near sunken grave 11 which was filled with broken cover slabs and boulders, mixed with disintegrated bones (for the inscription, see below).

Grave 10, in the southwestern corner, is a shallow cist which contained broken slabs, rubble and bones, while grave 9 was filled with charcoal, probably the remains of a wooden coffin. Many little bronze bells with burned bones, broken slabs and rubble filled the burial.

From the five southern loculi, only No. 2 is dug with a grave about 1.02 m. deep, originally covered with slabs, set on a depressed rim. It contained fragmentary bones and few sherds.

The three loculi, cut in the eastern wall, opposite the entrance, are elaborate for they are flanked by pilasters with pedestals. Imported pedestrals are built in front of loculi 4 and 6. In loculus 4, a trough 2.47 m. deep and 0.78 m. wide is cut in the floor and superimposed by two shelves (section A-B, Fig. 2). A complete skeleton was desposited on the right ledge of the grave, while fragmentary bones were scattered on the shelves. A lamp (No. 2 Pl. CXXII) was found beside the skeleton and a bowl (No 1, Pl. CXX) was lying at the entrance of the loculus. At this place, a funeral stele *(nefesh)* half broken, was set in a slot.

In loculus 5 (2.75 m. deep), there were two superimposed shelves but only the lower one preserved its covering slabs. A woman's skeleton with a foetus between the legs was found on the upper shelf. A silver denarius of Septimius Severus (Pl. CXX,2) together with lamp No.7 were collected among the bones. In the floor, in front of the loculus, a slot was carved to receive a stele while a nefesh fragment was found in the vicinity.

Dressed stones line the sides of loculus 6. At its entrance, a stele, engraved with a pyramid (Pl. CXXI, 1), was discovered with lamp No 4. Another lamp (No.5) was deposited at the entrance of the loculus.

A slab from the same area bears a painted Nabataen inscription (Pl. CXIX,2) which reads: "MKS", probably a name of Greek origin like Andromakos.

The Nabataean Inscription:

Pl. CXIX,1 and Fig. 3).

It consists of four lines, deeply engraved on a sandstone block, 0.38 m.H., 0.45 m. wide and 0.12 m. thick.

Transliteration:

1- ... bt 'frw 'ntt
2- ... ' w 'srt'
3- ...[dh] b' w 'dyt' dy tḫth
4- *vacat* ġty dy 'l' *vacat*

Translation:

1- ... bat- 'frw, wife of
2- ...' w and concubine
3- gold (?) and ornament which is down
4- *vacat* my corpse (at rest) above *vacat*

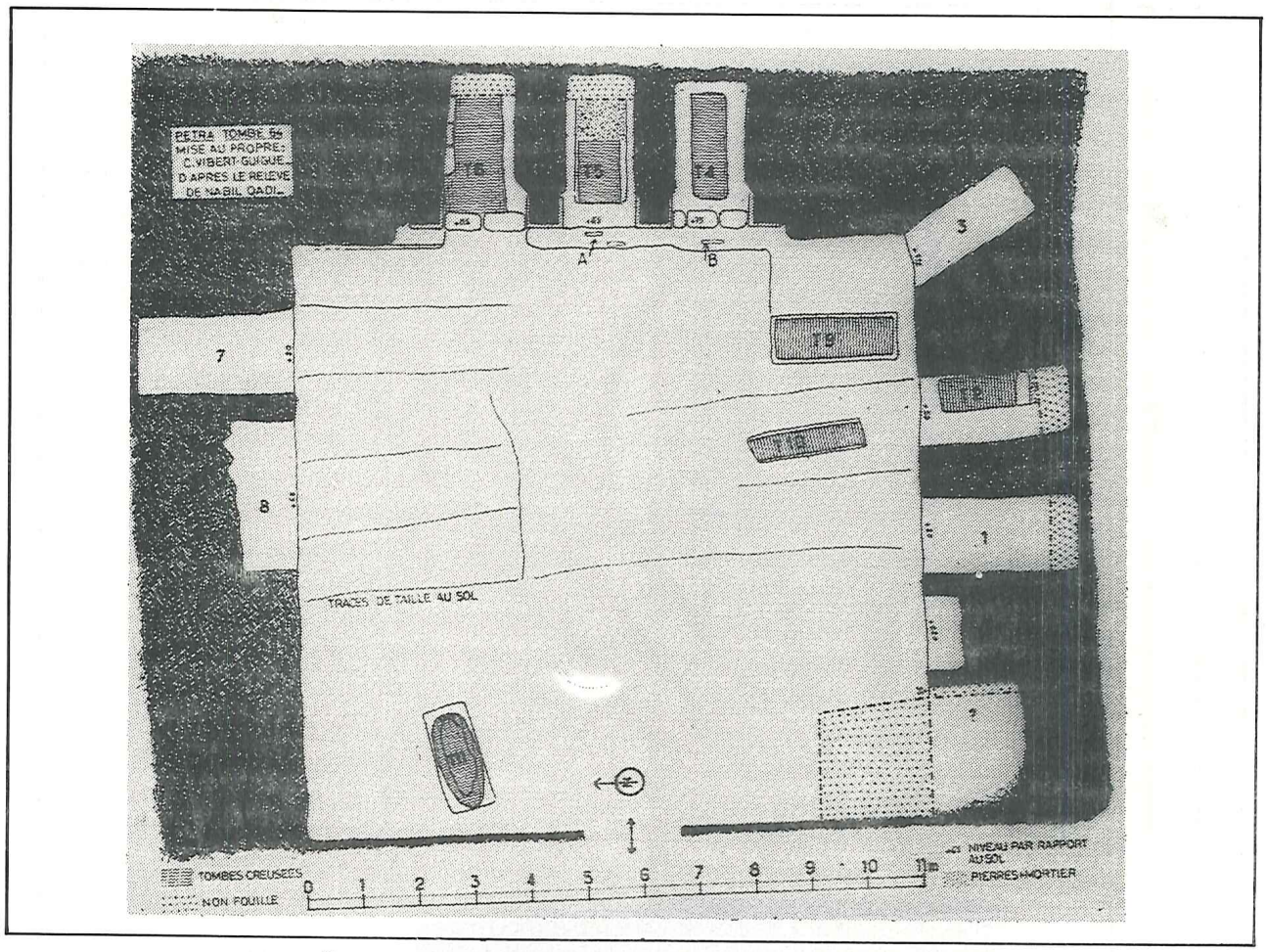

Fig. 1: Ground plan of Tomb 64 B by Cl. Vibert-Guigue

This epitaph, the first of its kind in the Nabataean epigraphic corpus, was probably a cover slab. L.1: bat'frw designates a woman who is the unique heir of their family.[11] The name frw can be compared to arabic. غفر L.2: 'srt': in the Syriac Lexicon (C. Prockelman) and Arabic is a female captive. It is probably in this context a concubine. L. 3: although the *'ain* of *'dyt'* is not usual, there is no other satisfactory interpretation. It means oranment or jewelry (G. Dalman, *Armaisch Neuhebraisches Handworterbuch).*

The inscription which could be dated to the second century A.D. is rather obscure because it is mutilitated. It nevertheless confirms the already expressed opinion[12] that the Petra citizens preferred to place the funeral inscription, for some unknown reason, inside their tombs.

In a recent paper, M. Gawlikowski advanced the theory "that there was an interdiction of religious character barring the founders of the tombs in Petra from putting their names on their monuments"[13]. In fact, out of 81 tombs at Hegra, only 30 façades bear inscriptions. M.Gawlikowski does not specify if his hypothesis should apply to those anonymous tombs or those of Palmyra for example. On the other hand, he makes no mention of the remarks of P.J. Parr about the evidence of "plaques of limestone or of bronze originally fixed near the entrances of the tombs, materials more conductive to good and legible epigraphy".[14] He also omits a bilingual epitaph, carved in the Bab es-Sîq, opposite the Obelisk Tomb, bearing the name of the tomb's founder. *(ADAJ,* XXI; 1976, p. 143-154.

11. J.T. Milik, *Dédicaces faites par des dieux,* Paris, 1972, p. 259.
12. F. Zayadine, *RB,* 86 (1979) p. 134.
13. *Studies in the History and Archaeology of Jordan, I,* 1982, p. 303.
14. P.J. Parr, *PEQ,* 100 (1968), p. 12.

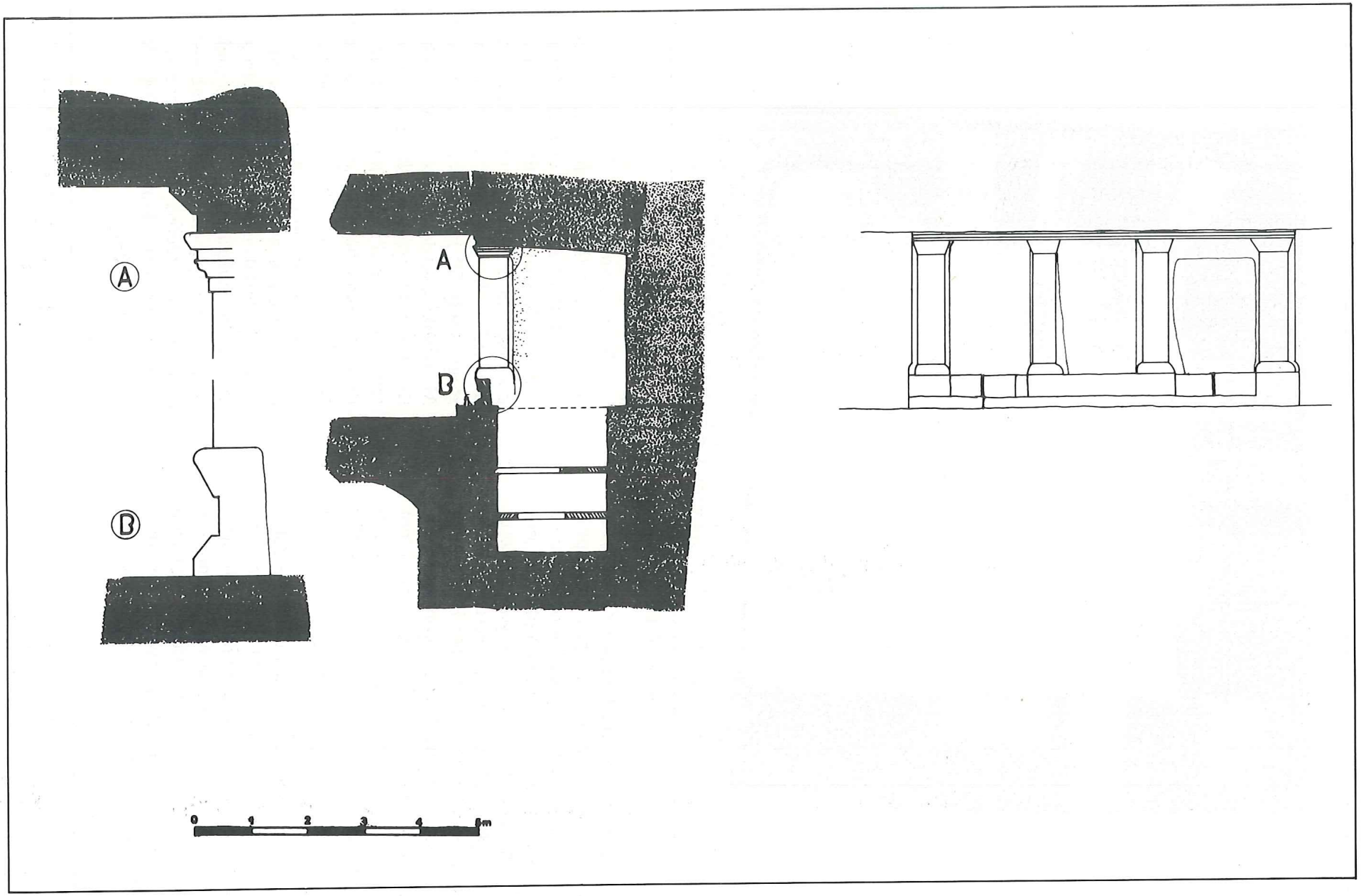

Fig. 2: Section of East wall of Tomb 64 B by Elisabeth Gunsam

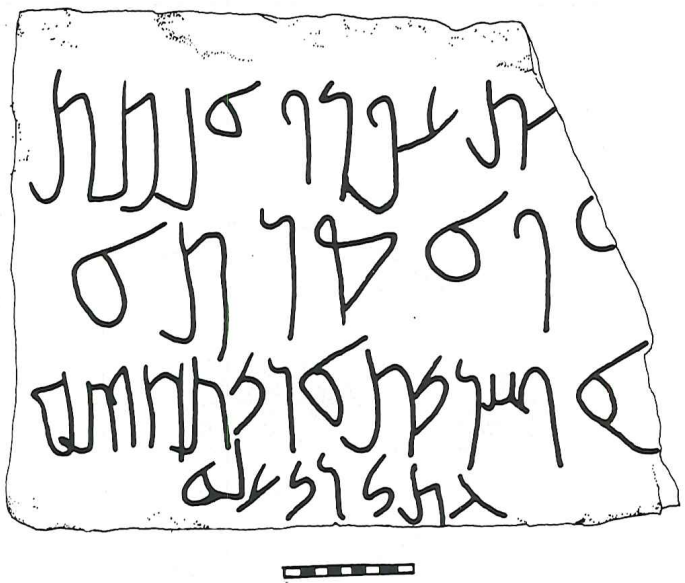

Fig. 3: Facsimile of Nabataean epitaph

The Objects:

1. A silver coin:
Exc. No. 12: Silver Denarius (Pl. CXX, 2)
Provenance: loculus 5, upper shelf.
Ob.: head of Septimius Severus, r.
Rev.: Jupiter naked, std. half left, between two children (Caracalla and Geta?), cloak over shoulder.
Insc.: (H.R.P.) M. TR.P. XVII COS III.P.P.
This example, in fairly good condition, is dated 201-210 A.D.[15]

2. The Pottery:

An important collection of complete vessels was gathered in tomb 64 B. Bowl 1 of red ware (Pl. CXX,1 & Fig. 6) was found outside loculus 4. It is built with thick sides but shows a thin outverted rim and a sharp carination on the shoulder. Wheel marks are visible on the outside. This is apparently a version of the Late Hellenistic bowl, common at Samaria-Sebaste, Beth-Shan and Tulûl abu el 'Alayiq. It has been dated to 20 B.C. to A.D. 20.[16] But the base of the present example is slightly concave instead of the elegant pedestal base of Samaria variety. It is an imitation, probably of the end of the first century, A.D. or later.

Along with the coin of Septimius Severus, the group of seven moulded lamps is the most secure evidence for the occupational history of the tomb and can be classified in five different types:

A. Lamp 11 (Pl. CXXI,2 & Fig. 4) is badly damaged. It is provided with a circular discus and a projecting bow-shaped nozzle, decorated with volutes. Rays and rosettes in relief are impressed on the shoulder. The type is abundantly represented at Petra [17] and can be dated to the early first century A.D. (Broneer type XXII).[18].

B. Lamps 2 and 5 (Pl. CXXII, Fig. 4) represent a development of the preceding example. The nozzle is rounder and shorter and the depressed discuss is decorated with a frond (No 2) or a rosette of seven double petals (No5). Notice the ear-shaped projections of lamp 5, a characteristic inherited from Late Hellenistic lamps and which has a close parallel in a tomb of Mu'eisrah at Petra[19]. It corresponds to Broneer type XXVII(?) which was produced "about the end of the first century" (p. 95) and was in vogue in the Antonine period and the time of Hadrian.

C. With lamp 4 (Pl. CXXII, Fig. 4) the

15. H.A. Seaby, Roman Silver Coins, London, 1969, p. 40, Nº 525.

16. See P. Lapp, *Palestine Ceramic Chronology,* p. 212, 251.6

17. *ADAJ,* XXIII (1979) p. 188, Nºs 8 & 10, pls. XXXV-XXXVIII.

18. O. Broneer, Terra cotta lamps, Corinth IV, Cambridge, 1930, p. 76-78.

19. *QDAP,* VIII (1939) Pl. XXI, 162.

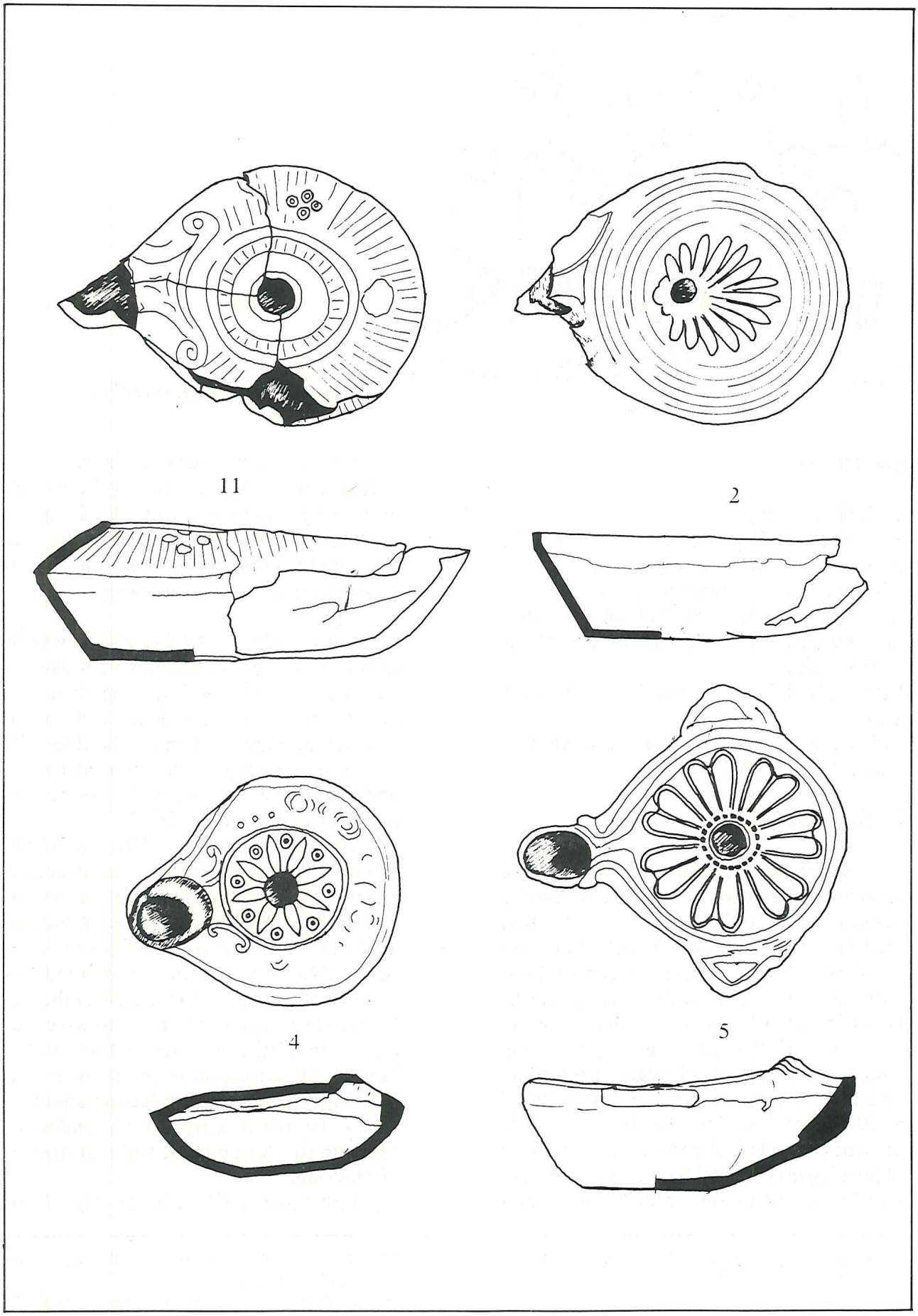

Fig. 4: Lamps found in Tomb 64B

nozzle becomes shorter. Two volutes are on the shoulder. A rosette with circles stamped between the petals decorate the depressed discuss. Compare with Broneer type XXVIII (Nos. 927 & 965, but the Corinthian examples are supplied with pyramidal handles). This type is dated to the 3rd and 4th century A.D.

D. Nos 3 and 8 (Pl. CXXII & Fig. 5) show a further development of the type: they are pear-shaped, supplied with an incised pyramidal prehension. The discuss is decorated with grooves and impressed circles. This variety is comparable to Broneer type XXVIII (Pls. XV-XVI) dated to the 3rd and 4th century A.D.

Lamp 10 (Pl. CXXI, 3) with a short knob handle and a herring-bone border around the shoulder is impressed with an erotic symplegma on the discus. It is a common model at Petra [20] and Corinth (Nos 1198-99), dated to the 3rd-4th century A.D.

E. The new type represented by Nos 6,7 & 9 (Pl. CXXII, Fig. 5, 6) is characterized by a more elongated body called 'slipper shape'. Its pyramidal prehension is inherited from the preceding type (Broneer XXVIII). But the remarkable feature is the encroachement of the body on the nozzle by a depressed bridge, decorated with volutes.

Close parallels to this variety are to be found in Broneer type XXIX (Nos. 1419 & 1424), dated to the fourth century A.D. Other examples came from a tomb at Beit Fajjar[21] in Palestine and were dated by Iliffe to the reign of Constantine the Great.

Tomb 64 B was occupied, on the evidence of the finds, for a long period from the 1st to the 4th century A.D.

Description:

Ex. No	*Description*	*Provenance*	*Pl.*	*Fig.*
1	Bowl, carinated shoulder, outside grooving, slightly concave base. Red ware, wheel traces on back.	Out. Loc. 4	CXX	6
2	Moulded lamp, traces of burning on nozzle, pinkish ware, brown slip.	Loc. 4 with skeleton	CXXII	4
3	Moulded lamp, traces of burning on nozzle, orange to buff ware, traces of white wash.	Loc. 5 upper shelf	XXII	5
4	Moulded lamp, light orange ware, no traces of burning	Out. Loc. 6	XXII	4
5	Moulded lamp, burned nozzle,	Out. Loc. 6	XXII	4
6	Moulded lamp, pinkish ware	Fill out. Loc. 5	XXII	5
7.	Moulded lamp, burned nozzle, orangle ware	Loc. 5, upper shelf with denarius of Septimius Severus.	XXII	5
8	Dark gray ware, burned nozzle	Loc. 4, mid. shelf	XXII	5
9	Pinkish ware, burned nozzle	Loc. 4, mid shelf		6
10	Lamp fragment, buff ware	Loc. 4, upper shelf	XXI	
11	Moulded lamp, buff ware, traces of grayish-brown slip.	Loc. 4, upper shelf	XXI	4

20. *QDAP,* IX (1941) Pl. XLV, 424a-424b.

21. *QDAP,* IV (1934) p. 175-178, & Pl. XXXIII.

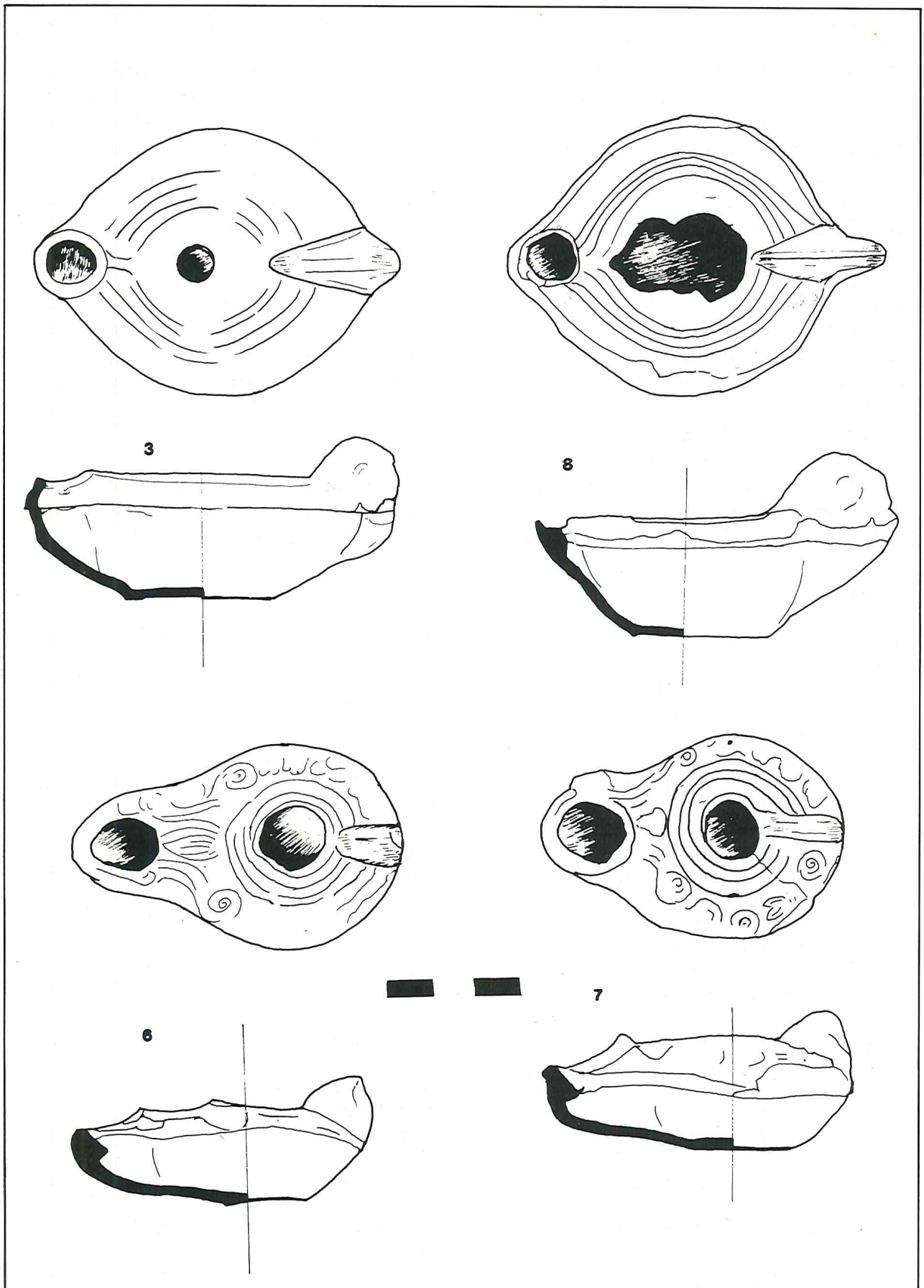

Fig. 5: Lamps found in Tomb 64B.

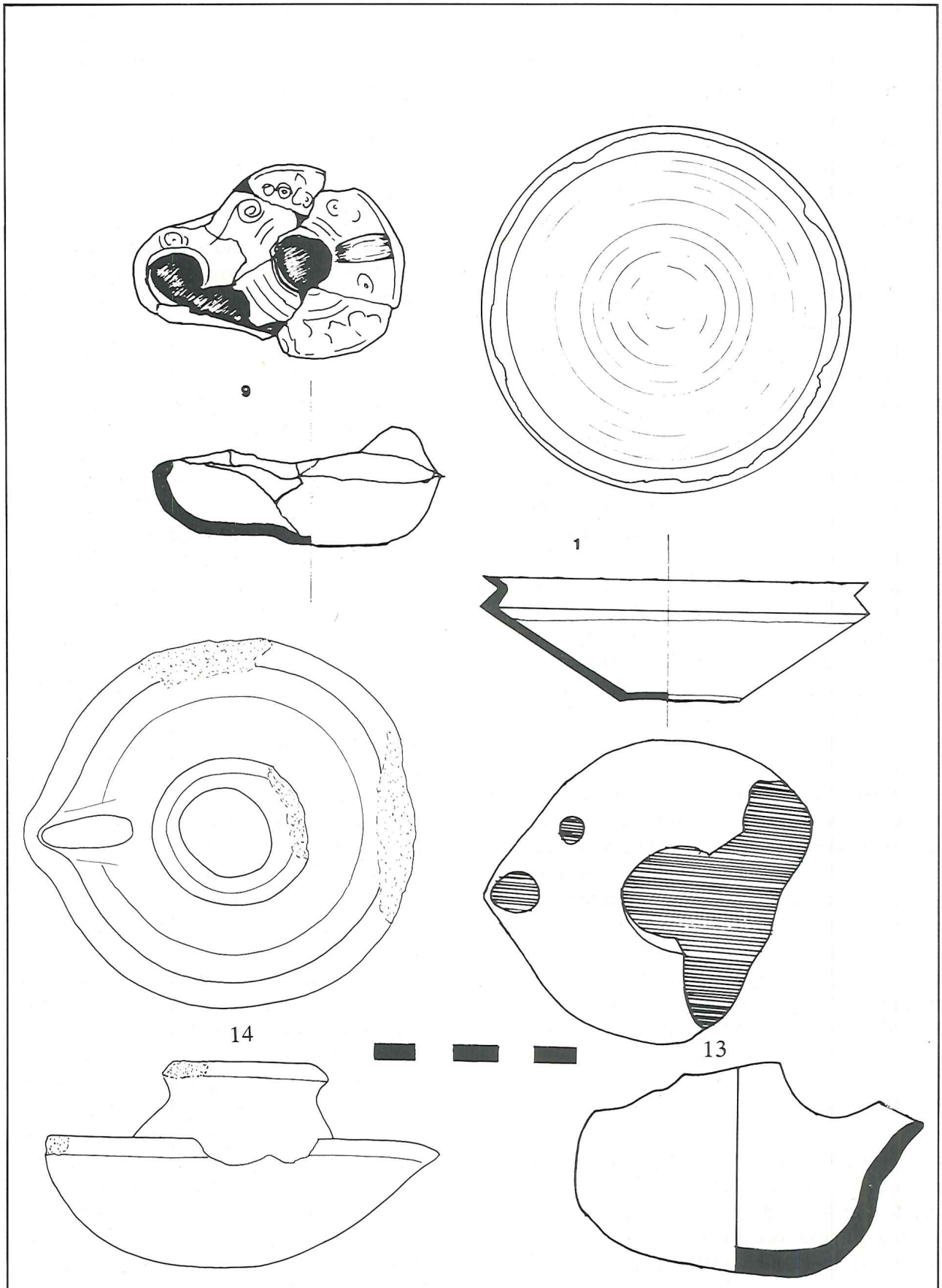

Fig. 6: Objects from Tomb 64B (9 & 1) Nº. 13, Ayyubid Lamp from Petra, Qasr. Nº 14 Mamluk Lamp from Amman-Citadal.

II. Qasr el Bint Excavations:

The free-standing temple of Qasr el Bint which stands within a large paved temenos at the end of the colonnaded street (Pl. CXXIII, 1) has been extensively reported by early explorers of the site but it was not until 1961 that an updated review of the monument was published by G.R.H. Wright prior to any excavation. Wright considered his study "as a supplement to Kohl, pending the (hoped for) clearance and reconstruction of the monument."[22] Indeed, it was only in 1964, with the clearance of the temenos wall by the Department of Antiquities, that a confirmation about the Nabataen dating of the Qasr was reached: a sandstone block, built into the temenos wall, was a dedication to the statue of Aretas IV (9 B.C.-40 A.D.). With this discovery, P.J. Parr acknowledged that his previous opinion, shared by Wright, on the dating of the Qasr as not "earlier than the Antonine period... can obviously no longer be sustained."[23] He suggests the reign of Obodas II (28-9 B.C.) for the construction of the monument. Since the investigations of the British School conducted by Parr were necessarily restricted due to limited financial resources, the Department of Antiquities was convinced that new evidence both for the dating and reconstruction of the temple could be revealed by exhaustive excavations. Three seasons proceeded in and around the monument. A grid (Fig. 7) was prepared by Fr. Larché to plot the areas under investigation and to number, accordingly, the architectural fragments. From the *pronaos,* the work was extended to the monumental stairway, the *cella* and the south wall.

The Pronaos:

This forecourt of the temple, enclosed by the *antae,* the northern wall and the tetrastyle façade, is about 29 by 11 m. A niche is located in the western *anta* and was coated with stucco, and another one is west of the main entrance. The meticulous drawings of the architect Larché show that the walls are honeycombed with stucco attachment holes. The revetment imitated stone ashlars. Traces of a cornice with relief figure (Pl. CXXIII, 2) representing probably a caryatid can be noted.

Three Squares (5 x 4 m.) were planned in the pronaos (area marked 7/4 on the grid).

Square 1 was plotted in the southwestern corner and four loci were identified. After the removal of surface soil, a brownish sand layer, a drum about 0.51 m. in diameter appeared in the eastern balk. The registered sherds are mainly handmade of the Medieval periods, mixed with a few Byzantine ones. Below the surface, the soil is uniformly red-brown sand (loc. 1). A fragment of a marble statuette, probably an arm, was recovered and the pottery remained unchanged. Below this layer, a floor paved with sandstone regular slabs (loc. 2) came to light. It started from a plinth running along the southern wall 5 (Pl. CXIV and Fig. 7). This plinth was missing in the southwest corner where a pit about 1 x 1.60 m was filled with ashes. A marble block (0.38 x 0.30 x 0.14 m.) was concealed in the pit together with thin marble pieces, roof tile fragments and stucco. The collected sherds are Medieval, Byzantine and Nabataean. In a strip about 1.20 m. wide, where the pavement was removed, to the depth of 0.43 m., a cobbled floor was reached (Pl. CXXIV,1). It was covered with a thin layer of lime along the western wall 4 (loc. 5) and yellowish soil in the rest of the Square (loc. 5).

Square 2 was dug to the north of Sq. 1 with a 1 m. balk in between. Below the surface soil, a red-brown sandy layer concealed a base and a drum both 0.53 m. in diameter. Many roof tiles, about 0.14 m. in length, and marble fragments were gathered in the debris; the pottery is hand made Medieval, Byzantine and Nabataean. Other drums and dressed blocks were lying on an irregular pavement, very similar to the floor loc. 2 in Sq. 1 (Pl. CXXIV,2). No change in the pottery horizons was noticed. It is not possible to determine the structures to which the architectural elements bel-

22. *PEQ,* 93 (1961) p. 9.

23. *ADAJ,* XII-XIII (1967-8) p. 17.

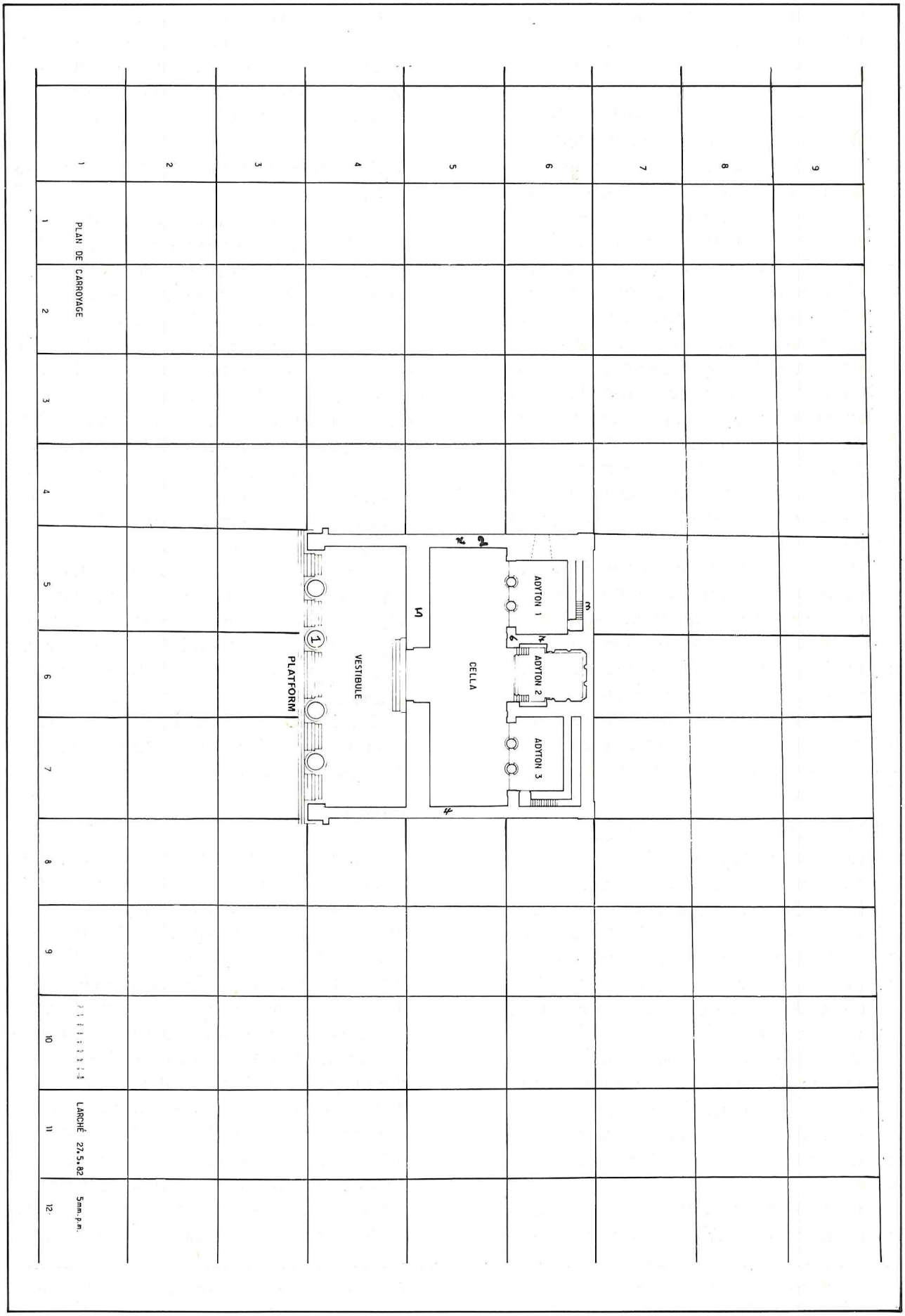

Fig. 7: Grid of Qasr el Bint at Petra

onged, for they are not homogeneous and seem to have been brought in at two different phases, probably in the Medieval period.

Square 3 is set to the north of Sq. 2, beyond the western *anta* and the left column. A bronze coin of Al 'Adel,[24] borther of Saladin, (Pl. CXXVI, 1), was discovered in the surface soil. Locus 1 was a yellow to brown soil, mixed with rubble and roof tile. The top of a mortar, carved in a column drum fragment with honeycomb design (Pl. CXXV, 1) appeared in locus 2. The mortar was resting on the paved floor of a chamber (loc. 6) built with rough blocks. A rounded lamp (Pl. CXXVI, 2 & Fig. 6) together with Ayyubid pottery, was gathered on the floor at the foot of the mortar. The lamp can be compared to a similar example (Pl. CXXVI, 3) of thick greenish clay, found in a Mamluk cistern in the Umayyad Palace of Amman.

As the pavement was removed, many architectural fragments including a cornice, a pine cones, oves and animal head piece were below the pavement. When this fill was removed, four steps of the stairway, stripped of their marble revetment, came to light. It appears that the western *anta* and the left column were cut with a square groove, prepared to fix a balustrade (Pl. CXXXV, 2).

The rest of the stairway (Area 7/3) was excavated as one Square of 7.20 m. by 5 m., and a few marble steps were found *in situ* (Pl. CXXVII, 1). In the tumble over the lower steps, a dedication to Shu'udat, daughter of Maliku, was discovered. She is probably a princess of king Maliku II (40-60 A.D.) as one can guess from other Nabatean inscriptions of the royal family.[25] It is probable, in this case, that the dedication was placed under the statue of the princess. In the same destruction layer, a cornice fragment and an Ionic marble capital of a pilaster. (Pl. CXXVII, 2) were found.

In all, the monumental approach to the temple includes fourteen steps in the lower section followed by a passegeway; then comes another flight of eight steps. It is noticeable that no marble gutter, similar to the one discovered by P. Parr[26], was recovered at the foot of the stairway.

2. The Entrance to the Cella: (Pl. CXXVIII, 1-2).

The remarkable feature of this Area (6/4 of the grid) is a ramp built in front of the entrance between two retaining walls about 1.80 m. in height. They are constructed with reused column drums of 1.30 m. in diameter and ahslar blocks of variable size. A 6 by 4 m. Square was plotted in the area (Sq. 5). The excavations were very difficult in the absence of a mechanical lift. Nevertheless, the original floor of the pronaos was reached in a 1 m. strip. Marble pavements of 0.56 by 0.54 m. were uncovered and three marble steps about 0.10 m high. were found in *situ.*

In 1981, the jambs of the lofty arch which spans the gateway were exposed by M. Murshed to start the consolidation of the vault. It was found that the original entrance was reduced, probably in the Byzantine period, from 5.65 m. to 1.70 m. (Pl. CVIII, 2). This new access to the sanctuary is built with ashlar stones and preserved to the height of 1.50 m.

Interpretation:

Some preliminary conclusions could be drawn from the excavations of the pronaos which underwent several phases of use and disuse. The reshaping of the doorway occured in the Byzantine period, although very little pottery was found. It is clear that the original doorjambs were worn when the new entrance was built, except for one ashlar block, presently covered with stucco at the height of 9.30 m. At this level, a wooden rounded beam was observed, embodied into the core of the wall with stucco. The ramp which covers the Byzantine wall was of the Ayyubid-Mamluk periods and clearly indicates that the Qasr was completely dismantled since column drums

24. S. Lane-pool, *Catalogue of the Collection of Arabic coins preserved in the Khedivial Library at Cairo,* London, 1897, p. 217.

25. J. Cantineau, *Le Nabatéen,* II, Paris, 1932, p. 6.

26. *ADAJ,* XII-XIII (1967-8) Pl. VIII, 12-13.

were used in the construction of this new access. There are also traces of occupation of the early 19th century, for one J.I. Yunis left his signature on the second course of the western wall 4, below the flat niche, in 1830 in Latin characters.

The Triabsidial Adyton:

Internally, the sanctuary is divided into three compartments (Fig. 7), called *adyton* in Greek. The eastern and western compartments had balcony terraces, accessible by stairway concealed in walls 3 & 4. Since the whole cella was obstructed with heavy tumbled blocks, they were numbered according to the grid prior to any excavation. In *adyton* 1 (Area 6/5)the tumble averages 2.90 m. in height, and it was not possible to dig more than a strip 6 m. long and 2 m. wide, in front of the staircase concealed in wall 3. This entrance, 2 m. high and 0.90 m. wide, is flanked by two pilasters which have been worn. In the section (Fig. 8) the most striking feature is a layer of burn, 0.20 m. thick, about 1.20 m. above floor level. It is assumed that the burn resulted from the collapse of the balcony terrace, originally supported by wooden beams. The floor itself was covered by a thin layer of ash mixed with marble slabs and roof tile fragments. Some of the marble slabs are engraved with Greek letters. The exposed floor is laid with a thick layer of gray cement but was certainly revetted with marble.

One of the two columns which supported the terrace was uncovered but not a single piece of architrave was indentified in the removed blocks. However, many keystones suggest that the columns were spanned by arches which were concealed by a wooden or marble slabs as indicated by two rectangular cavities in the east and the west walls (2 & 4), at the level of the cornice. (Pl. CXXIX, 2).

A few Byzantine sherds and two complete Late Roman oil lamps are the meagre evidence of the occupation of the monument at that period. But future excavation will hopefully provide more dating material.

Adyton 2 (Area 6/6) is the holy of holies for it is supposed to protect the cultic baetyl. This compartment, adorned with half engaged columns, has no balcony roof and was covered by 1.50 m. of tumble (loc. 1). Locus 2, below the collapse, was a floor covered with a heterogeneous pavement of sandstone flags, marble slabs engraved with Greek letters in some cases, and tiles. A mask fragment and an animal foot were in the floor bedding. There is a niche in southern wall 3 about 1.30 m. by 0.94 m. Whether it was intended for a *mihrab* will be a matter of future speculation. Another peculiarity of the western wall 8 of the *adyton* is a channel 0.16 m. wide which ascends into this wall. Its purpose is still mysterious, unless it drained the terrace water.

The central area of the chapel consists of a raised platform 1.40 m. above floor level, accessible on both sides by a flight of 7 steps (Fig. 9 and Pl. CXXIX, 3). Its central part was destroyed by a large hole and filled with marble fragments and bricks. A good parallel to this cultic podium can be observed in the Winged Lion Temple recently excavated by Ph. Hammond.[27] The rest of the cella was covered with debris, and an irregular wall of undressed boulders, almost of the same height as the cultic platform, was probably built as a retaining wall for the fill (Fig. 9). This phase of reuse is most probably Medieval for it is levelled with the above mentioned ramp of the entrance, but very little pottery has been sofar collected in the fill.

Excavation of the Southwestern corner:

A 5 x 5 m. Square was dug at the southwern corner of the Qasr (Area 7/7). Many stucco architectural fragments were gathered from a surface clearing (Pl. CXXX, 1), but the Bedouins said they were discards left by the excavators of the Winged Lion Temple. Nevertheless, they were collected and stocked because they included some interesting stucco revetment, such as fluted column pieces. Also in this area there was about 1.70 m. modern fill belonging to the Nazzal Camp, which had been recently converted by the Department of Antiquities into a dig house.

27. *ADAJ*, XXII (1977-78) p. 93-94 & Pl. L-LI.

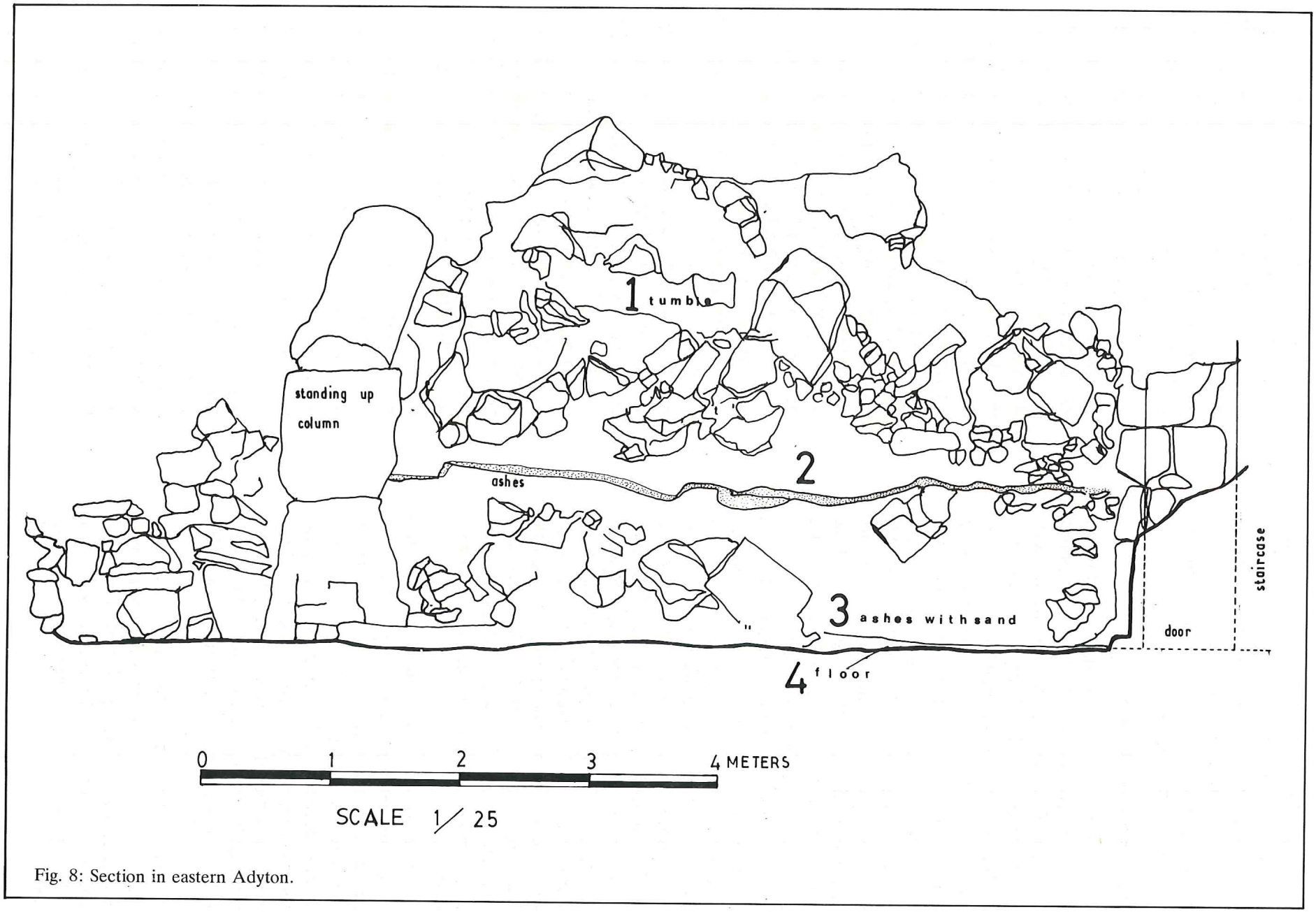

Fig. 8: Section in eastern Adyton.

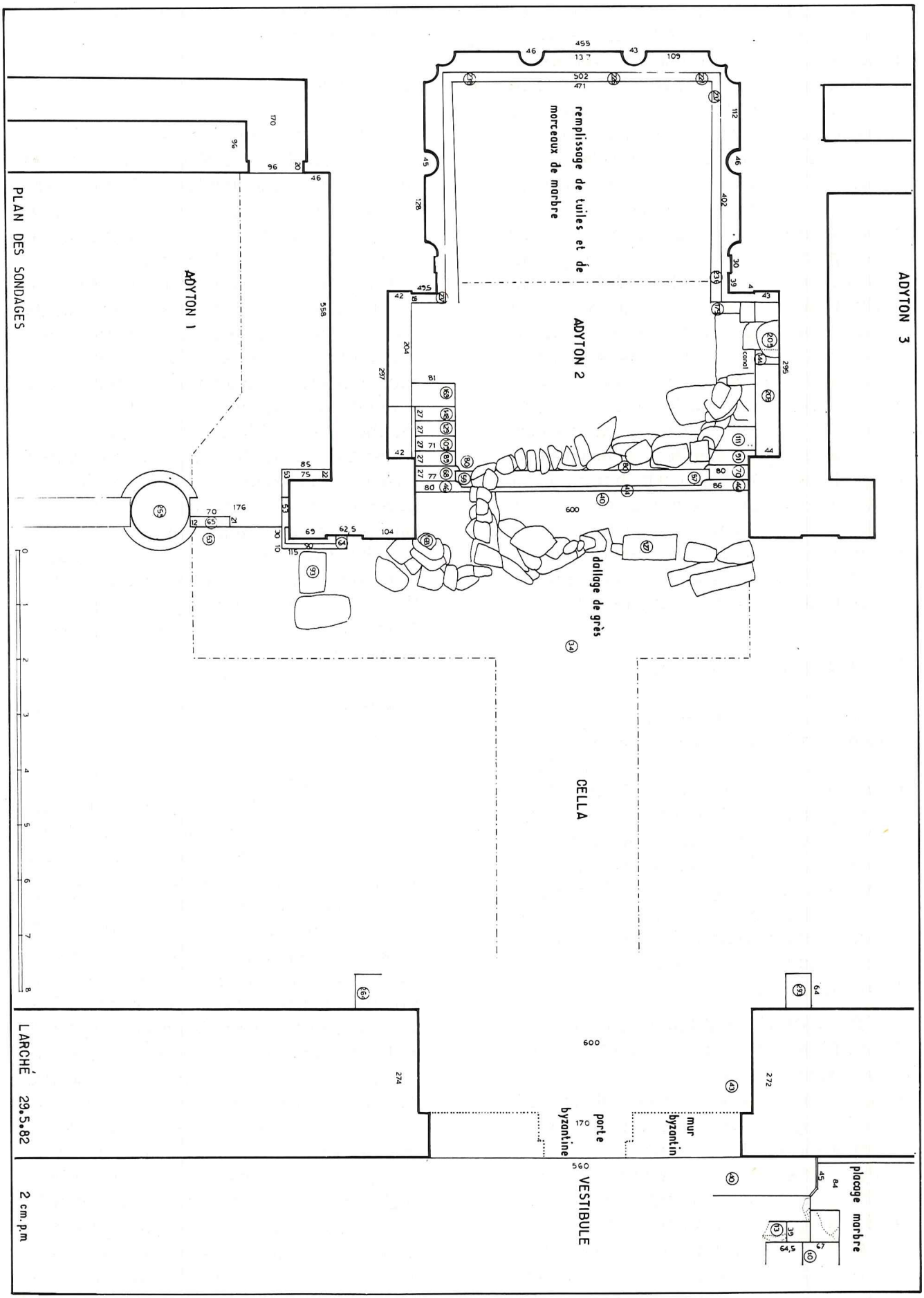

Fig. 9: Later walls in central Adyton.

The ancient occupation starts with locus 5, a greenish soil dated to the Medieval period. Late Roman and Byzantine sherds came from the next locus, a packed red sand. Since the area was covered by heavy collapsed blocks, the excavated area was restricted to a 2 m wide strip. Meanwhile, the architect Larché was able to draw the relevant architectural blocks which consisted of a pediment decorated with a palmette, a pilaster capital fragment, and a column drum (Pl. CXXX, 2). An early Byzantine coin was found in loc. 8, a loose brown sand. In loc. 10 was a skeleton of an adult lying N-S, face to west. A layer of yellowish sand mixed with charcoal was laid underneath the burial (loc. 11), beneath which was a flagstone pavement which extended along the southern wall. This was the podium of the temple which turned at a right angle to continue along the western wall. A solid season of excavation with a mechanical lift will be needed to remove the modern dump and uncover more architectural fragments of the temple.

III - The potter's kiln complex:

It was by accident that the first potter's kilns were discovered at Petra in November 1979 when a new access road was cut between the Rest-House and the Budul Housing Project at Drâ' Umm es-Sahûn, to the north. A rescue campaign was immediately launched under the supervision of Nabil el Qadi. Other campaigns followed in April 1980 and November 1981 under the direction of the author. This report is but a short account in preparation of a substantial monograph.

The staff of the different seasons consisted of Nabil el Qadi, Mujahed el Muheisen, Khaled Abu-Ghanimeh, Muhammed el Ghoj, Niazi esh-Shab'an and Miss Khairiyyeh 'Amr. The last who is preparing a Ph.D. Thesis on pottery and clay analysis, produced a report on neutron activation analysis at the London Institute of Archaeology of some sherds and clay samples from the Petra kiln. On the other hand, Dr. Ian Edwards, a ceramicist from Burlington College, Australia, visited the site and was kind enough to send a short report on his observation.

1. The Site:

The kilns' area lies about one km. to the northeast of the Rest-House, halfway between the little hamlet of Zurrabeh and the ancient water reservoir of Petra, at the foot of a rock wall. Ashy layers and pottery sherds are deposited in many strata suggesting an intensive production of pottery over a long period. It is believed that the reasons for the presence of this manufacturing centre are the available clay deposits and abundant water supply. Clay is available in thick deposits on the spot and at the nearby Ain et-Tîneh (clay spring) about two km. to the northeast of Zurrabeh in a tributary valley of Wadi Musa. Fuel was certainly supplied by wild bushes which once covered the hills and which are still extant in the Hîsheh area along the modern road to Beida. Clay, fuel and water explain this large pottery making complex since four kilns have been uncovered and more of them are still buried.

2. Kilns I & II (Fig. 10 & Pls. CXXXI, 1,2 & CXXXII,1).

These are the first kilns to be uncovered in the earliest campaign. The main kiln I is oval in shape, measuring 2.87 m. E-W and 3.30 m. N-S and is sunk into the ground. Four heavy arches supported its dome. There are no traces of the sole but it can be assumed that it existed at about 0.42 m. above ground level . No traces of pillars were observed to support the sole, and it is possible that this floor was carried by low arches. The kiln floor is paved with brick slabs, but the most unusual feature is the stone archway as an entrance to the fire box. It was, nevertheless, isolated by bricks to protect it from the destructive heat. A passageway, about 1.15 m. wide and 3.80 m. long, is accessible from the north by a flight of six steps and is protected on both sides by a field stone wall, originally pierced by a doorway on the western side but closed in a later period. This vestibule was certainly a storage room for the fuel.

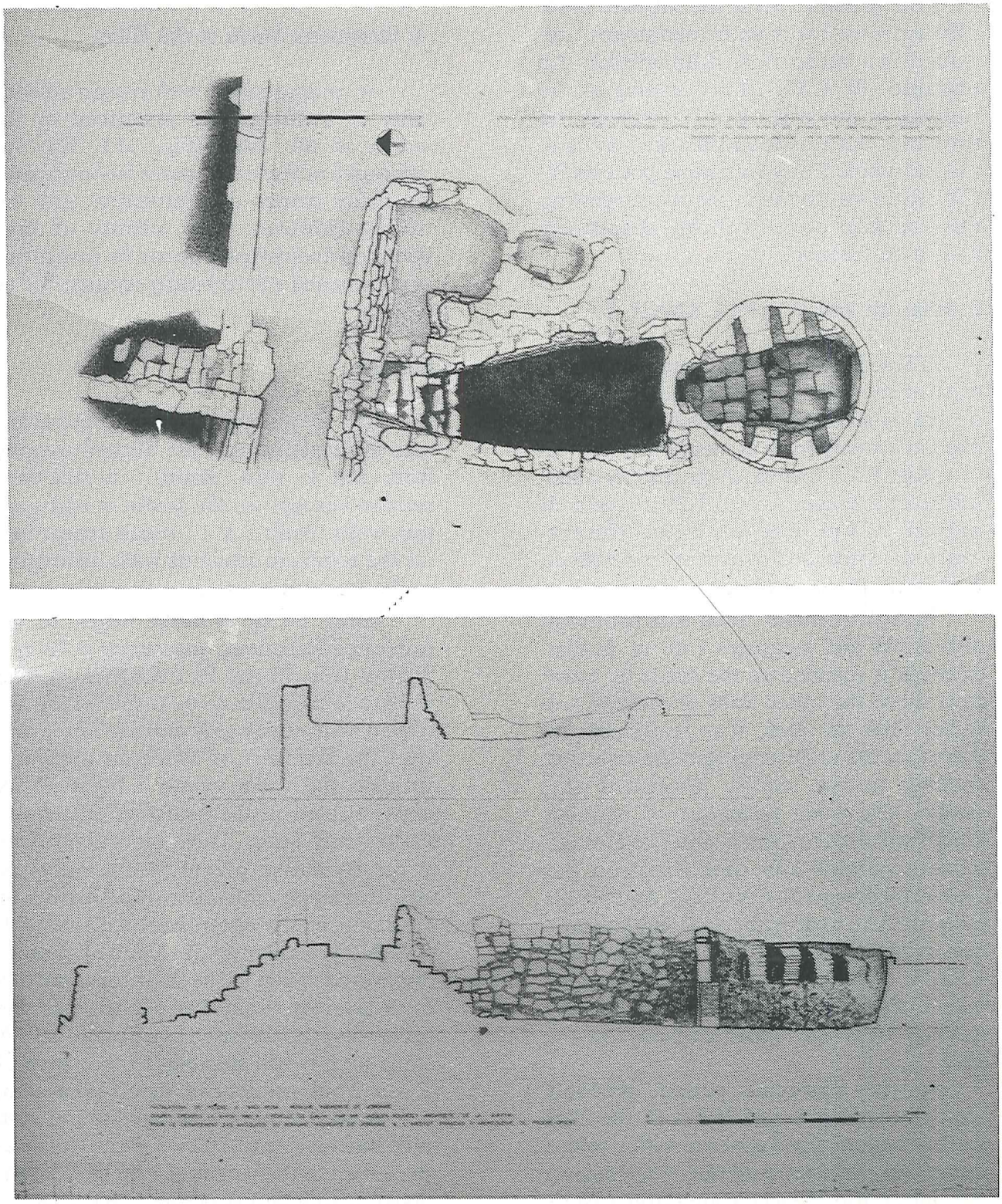

Fig. 10: Kilns I-II. Ground plan and section by J. Rougetet.

The smaller kiln II is located to the east of the larger one. It is be-hived, measuring 0.90 m. in diameter, with a preserved height of 0.74 m. A large half-circle vestibule (1.60 m. in diam.) lies at the entrance of the kiln and is built with undressed stones, repaired in a later period with mudbricks. An entrance (Pl. CXXXII, 1) leading to the stairway of the larger kiln II, connects the two areas but was found blocked by unshaped rubble. Early Byzantine pottery (Pl. CXLII, 2) was found in the fill, suggesting that the kilns were probably abandoned after a destruction.

3. Kilns III and IV: (Pl. CXXXII, 2).

These kilns were excavated in 1980, west of the kilns I and II and were connected by an entrance which has been blocked in a later period as mentioned above.

Kiln III is oval in shape and its outer diameter averages 1.59 to 1.39 m. An arch of brick 0.28 m. wide was in *situ*. The entrance was preceded by a circular vestibule built with irregular stones.

Kiln IV is smaller, built with poor reddish bricks and measures 1.08 m. in diameter. It is spanned on the inside by a law arch. Since the outer walls of the kiln are higher than the arch, it is reasonable to think that the arch supported the sole. An opening in the middle evacuated the smoke. The same technique of building kilns is still used in Jordan as noticed from a modern potter's kiln near Zizia, on the Desert Highway (Pl. CXLIV, 1,2). There is no room here to describe the complete process of pottery making but the pictures (Pl. CXLIV, 1— 3) show the jars made on the wheel, then dried in the sun, and finally stacked from the upper chimeny on the sole.

In the Byzantine period, probably after the earthquake of 363 A.D. the kilns were abandoned and covered with a refuse dump. An enclosure wall (loc. 4 see below) was built across the whole area from east to west.

Trial trench 5 (6 by 5 m.) was dug East of kilns I & II. No structures were encounted but only dump deposits (Fig. 12) very rich in complete objects; some of them dated to the Nabataen period (1st century A.D.), but many figurines belong to the Late Roman and Byzantine periods (see below).

4. Structures North of the Kilns:

A comparatively well preserved complex of buildings was unearthed to the north of the kilns (Fig. 11). The stratigraphy of these structures is complicated by many phases of destruction and levelling. However, four phases of construction and destruction can be recognised at present and will be briefly summarized as fellows:

Phase I:

Five adjoining rooms, constructed with unshaped stones, are aligned roughly from east to west. Room 1 is still unexcavated except for the southern and western walls. Walls 2 & 11 which appear inside the room are retaining walls, belonging to the latest phase IV.

Room 2 (Sq. 9) is the largest of the excavated structures, measuring 5.70 m x 3.20 m. (Fig. 11 and Pl. CXXXIII, 1). The walls, about 0.40 m. to 0.50 m in width, are coated with a thick gray mortar. Three arches, the springers of which are apparent, spanned the room, while a flight of six steps, located in the southwestern angle, was the only access. The room was filled up in the Byzantine period (4th century) as indicated by two coins, poorly preserved. In the dump, many wasters were collected (Pl. CXXX,2), similar to the melted pottery discovered in kiln I. The floor consisted of a thick layer of virgin clay deposit, and the room was probably used as a storage hall. A stone arch is still standing to the north of Room 2 but was not completely excavated.

Adjacent room 3, situated to the west, is of smaller size (3.70 by 3.40 m.) and was preserved to the height of 1.60 m. Like the above mentioned structures, the walls are of undressed field stones, coated with gray plaster. There is evidence of repair in the north-west angle where a flight of four steps is lodged. A door socket was found on the last step but its original position could

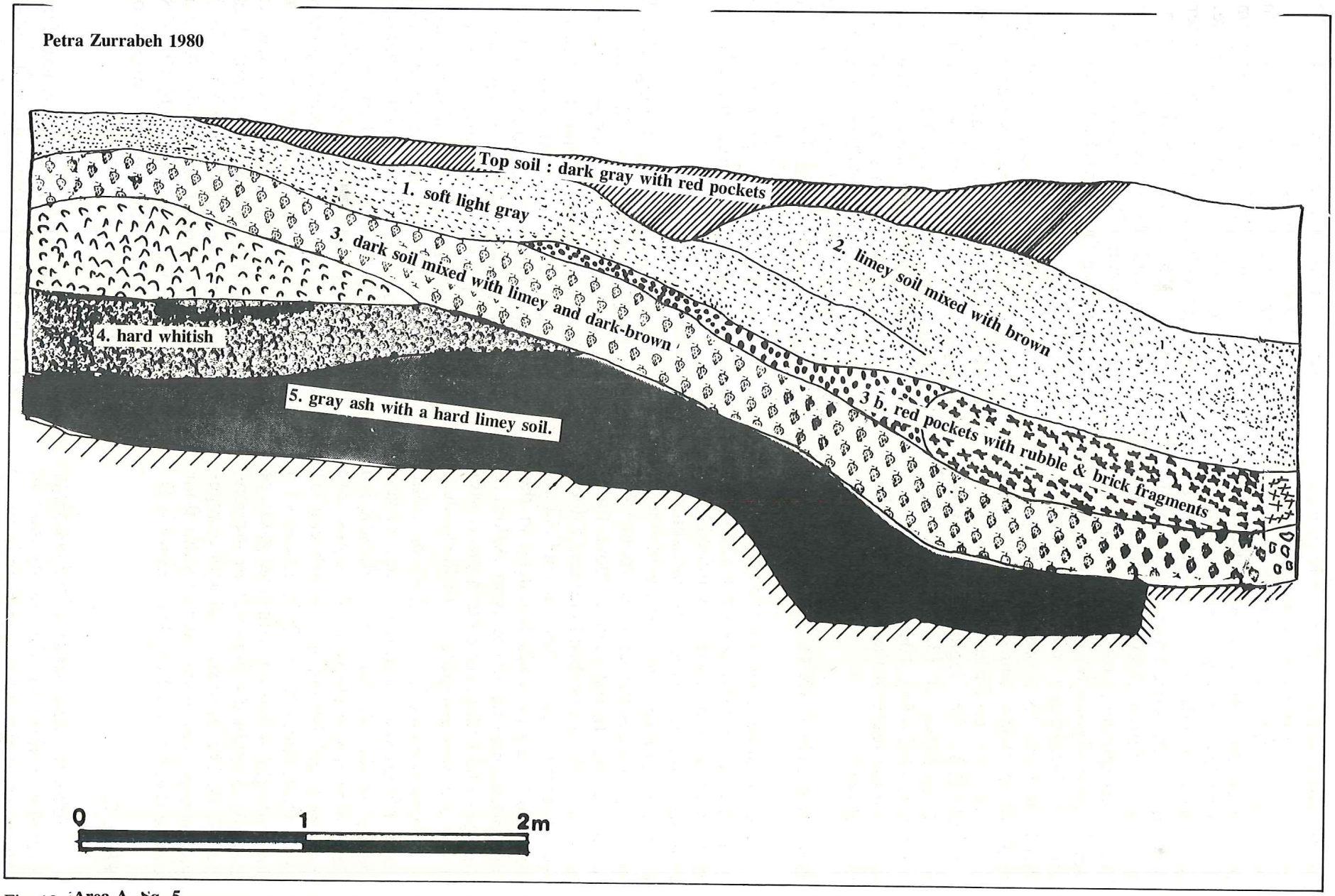

Fig. 12: **Area A, Sq. 5**
East Baulk

not be determined. A thin partition wall separates this room from the next (Room 4, Fig. 11 & Pl. CXXXIV,1). A vault springer can be noticed in this wall, and in locus 9, a destruction level, many *voussoirs* of sandstone dressed in the Nabataean style were excavated. In the same layer a bronze coin of Maliku II (40-60 A.D.) was identified. But it was intrusive, for the pottery was mainly early Byzantine and Late Roman with few Nabataean and Early Roman sherds. In locus 15, a reddish hard soil, a hoard of 45 bronze coins was gathered as well as 10 complete lamps (Pl. CXXXIV,2,3). The legible pieces range from Constantius II (337-361 to Theodosius II (402-450). These dates fit very well with the reuse of the site in phase III (see below).

Rooms 4 & 5 (Pl. CXXXV,1 & Fig. 11)

Heavy destruction of the structures west of room 3 complicates the stratigraphy in this area. Room 4, which is arched by a vault still covered by the balk, measures 6 m. from east to west, but only the southern and western walls, preserved to about 1.60 m. are visible. In the tumble above floor level (loc. 26) a broken lintel and a door socket came to light. A basin about 0.42 m. deep and 1.20 m. wide is lodged in the southwestern corner of the room. A floor of orange-yellow clay, covered in place with black ash, was associated with the walls.

Finally room 5, about 2 m. in width, probably served as a storage place, or vestibule. In the fill (loc. 35), a destruction layer of stones and brown soil, 4 coins were gathered and belong to the 4th century A.D. (Valentinus II 375-392). Locus 44, a layer of light brown soil with large pieces of roof tile, contained 4 coins of Late 4th century A.D. The floor was laid with orange-yellow clay. Two coins found on this floor can be dated to the Late 4th century A.D.

Phase II

After the destruction of the buildings, probably in the Late 4th century A.D. as indicated by the above mentioned coins, a channel was built across the area. A stretch about 5.40 m long was exposed to the north of the Square running to the south-east. The channel has destroyed the northern walls of rooms 4 & 5 and another room situated in the N-W corner of the Square. Its external width is 0.50 m. and its inner dimension 0.16 m. with a depth of 0.45 m. It is covered with flat stones and was plastered from inside. It is not possible to determine where the channel empties.

Phase III

This is a complicated phase of reuse after the destruction of the structures of the earlier phases. A wall of rough boulders, preserved to the height of 1.40 m. with an opening to the west, preceded by a step, was probably an animal shelter. There is a small strip of pavement to the south (loc. 16) (measuring 1.35 by 0.80 m) paved with roughly regular slabs. A layer of concrete extended from the platform (Loc. 5). It yielded 6 coins of Late Roman mint (Constantius II). This phase is apparently a reoccupation of the destroyed phase II.

Phase IV:

To the last phase IV belongs a wall (loc. 4), about 0.30 m. in width and preserved in some places to 0.45 m. It extends over the whole excavated area, from east to west (Pl. CXXXV, 1) but could not be completely followed. It probably dates to the Late Byzantine period, around the 6th century A.D., for a dismantled segment of this wall provided a coin of Theodosius II (402-450 A.D.), indicating a reoccupation phase after this time. It is assumed that wall 4 was a field boundary, and the large collection of olive pits encountered in the dig suggest that the area was thickly planted with olive trees as is still the case in the village of Wadi Musa. In the area between the kiln and the Rest House, a mill stone and a counterweight (Pl. CXXXV, 2-3), similar to the ones found at the Amman Citadel and Yajuz (*ADAJ,* XXII, 1977-78, p. 20 f. & Pl. X, 1) indicate the existence of an ancient olive press system.

Summary:

It is difficult in this short account of the kilns area to draw a decisive conclusion on the occupational history of this large pot-

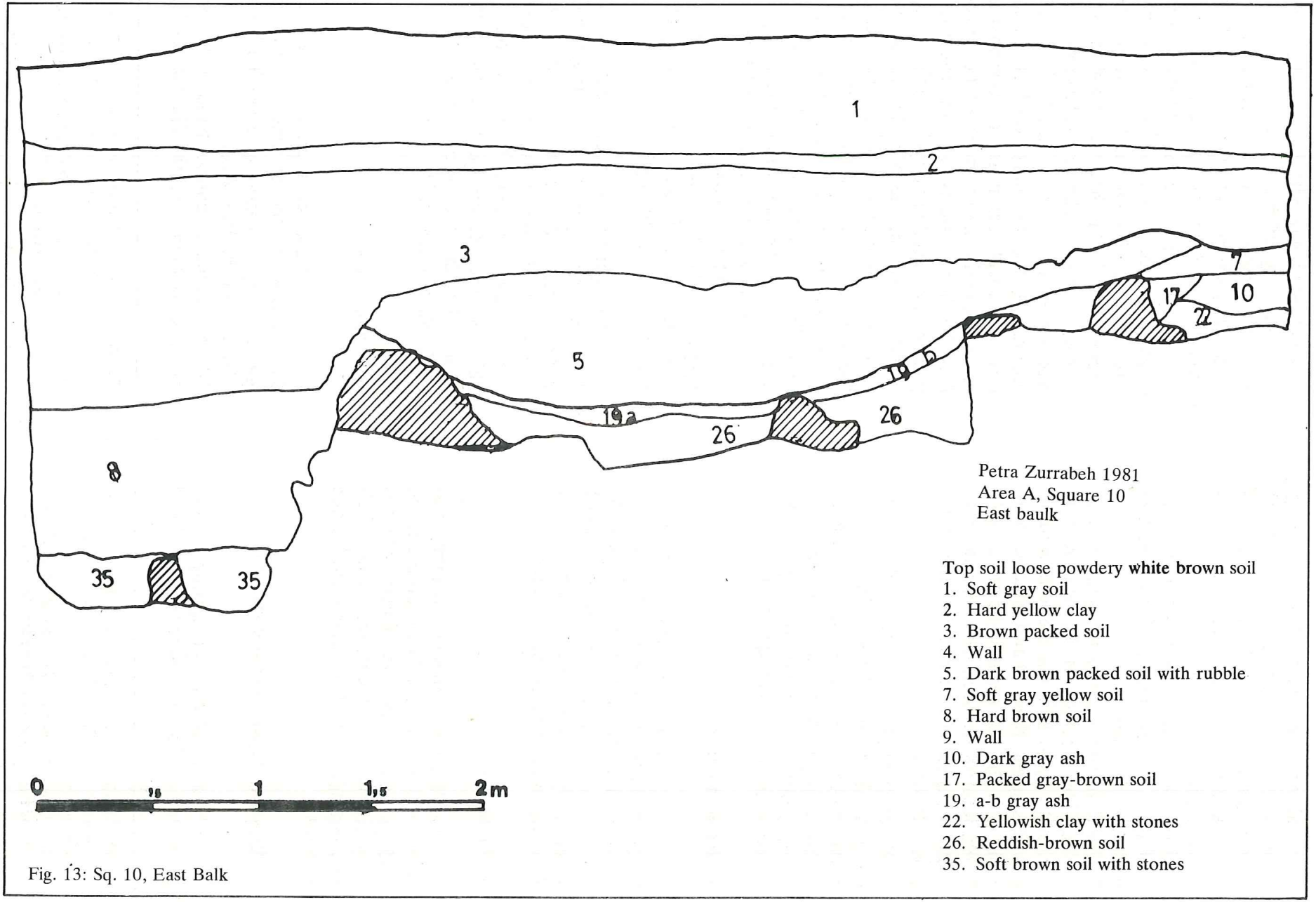

Fig. 13: Sq. 10, East Balk

tery making complex. Such a conclusion must await an exhaustive analysis of the coins and a more detailed study of the pottery. Nevertheless, some preliminary conclusions can be reached:

1. From the large quantity of Nabataean pottery, it is clear that a Nabataean kiln existed in the area.
2. The kilns I-IV were in use in the Roman period. The blocking of the passage between kiln I and II in the Early Byzantine period suggest their abandonment, probably after the 363 earthquake (phase II).
3. A reuse of the area for domestic purposes was brought to an end probably in the Late 4th century A.D.
4. A domestic phase was reestablished in the mid 5th century (Phase III).
5. An abandonment of the site and its adaptation for agricultural purposes, especially for olive plantation, is attested in phase IV, probably in the 6th century A.D.

5. Selected Objects:

A good sample of figurines, moulded lamps, pottery vessels, and coins has been discovered in the excavations of the kilns and the adjacent structures. But for lack of space, only a selection of objects will be published in this preliminary report.

A. Figurines:

A collection of human and animal figurines was recovered. They represent the popular and artisanal art of Petra which is very expressive and portrays religious beliefs and cults in the Nabataean and Roman periods.

1. Standing Figurine with a raised hand:

N° 52: A plaque representing a standing female figure, raising the right hand with parted fingers. She wears a long mantle which clings around her breast. A band is on the forehead, and a necklace with a crescent-like pendentive hangs on the chest while a torque adorns the left arm (Pl. CXXXVI, 3). This figure appears on the coins of Obodas III (30-9 av. J.C.) and Aretas IV (9 B..C-40 A.D.)[28]. It is interpreted by Y. Meshorer as a Nabataean queen, [29] but J. Starcky[30] considers this representation as a blessing goddess". Since the present plaque shows no distinctive features of a royal personage, it is reasonable to admit the alternative interpretation. Besides, Meshorer asserts that "the extended palm of the raised hand had a distincly religious and ceremonial significance in the life of the Nabataeans".[31] This is also true in the Semitic world. S.A. Cook lists the different symbols of the hand: "It is painted on walls as a charm... In Carthaginian inscriptions it is the hand of the god that bestows blessings while the pair of hands on palmyrene altars is taken to be a symbol of prayer."[32] The presence of a crescent on the Zurrabeh plaque is in favour of a religious interpretation of the figure.

This figurine was discovered in Sq. 2, loc. 10, a dark gray soil with loose undressed stones, with a coin of Rabel II (70-106 A.D.). The locus was apparently a destruction level with many Roman sherds. In this case, the figurine can be dated to the first half of the 2nd century A.D.
Buff Ware, red slip. H.: 7 cm.

2. Astrate Type:

Three figurines reproduce the well known types of the oriental Astarte figurine, very common in Palestine[33] and Cyprus[34] in the Iron Age.
N° 185: Female figurine, hands held together below breasts. Curls of hair in parallel

28. Y. Meshorer, Nabataean Coins, *Qedem* 33, Jerusalem, 1975, Pl. 3, 35; 4, 55; 56, 58, 60; 5,66.
29. *Idem,* p. 25.
30. *Un roayaume aux confins du désert, Pétra et la Nabatène,* Exhibition Museum de Lyon, 1978-79, p. 30, N° 12.
31. *Op. cit.* p. 25.
32. S.A. Cook, The Religion of Ancient Palestine in the Light of Archaeology, London, 1930, p. 45.
33. See for example, J.B. Pritchard, *Palestinian Figurines,* New Haven, 1943.
34. J. Karageorghis, *La grande déesse de Chypre,* Lyon, 1977.

lines are represented on forehead. The nose is straight and protruding. The incisions around the neck are probably a collar imitation. An incision girdles the waist and other incisions on the legs probably represent anklets (Pl. CXXXVII,1 Reddish clay, possible ochre slip; H. 12 cm.

Discovered in Sq. 5, loc. 4, a loose brown soil, with brick fragments. The pottery was Byzantine and Late Roman with few Early Roman and Nabataean sherds.

A precise dating of this type is not easy since Sq. 5 was a dump area (see above), but it is possible to attribute it to the Early Byzantine period (4th and 5th century A.D.). There are parallels in the Late Roman and Byzantine figurines of Palestine[34] and Egypt[35].

N° 360 : Female figurine, head missing. Incised collar around the neck. Hands held on abdomen, below breasts. Horizontal incisions on abdomen and representation of anklets on the legs. (Pl. CXXXVII, 2).

Grayish clay; H.: 7 cm.

Provenance: Sq. 5, loc. 3, a layer of dark ashe mixed with a limey and dark brown soil.

N° 201 : Bottom front half of a figurine. Anklets are representated by rounded bands with an intermediate incision. (Pl. CXXXVII, Pink-red clay; H.: 4, 5 cm.

Prov.: Sq. 5, loc. 5, a layer of gray ashes with a hard limy soil. The two figurines (N°201 x 360) can be dated to the Late Roman period.

3. Seated Figurines:

N°177 : Seated female figurine, draped in a long mantle ornamented by a rounded fringe in the front (Pl. CXXXVI,1,Fig. 14). The right hand, wearing a bracelet, is raised to the chin, while the other, resting on the knee, holds the folds of the mantle. The parted hair is surmounted by a crown, consisting of a little disc amid a trefoil plant. This is an imitation of the Isis crown worn by Egyptian figurines[36]. Here the goddess is depicted in a pensive attitude, suggesting a mourning Isis. The type is not very common and only two parallels are recorded in the large collection of the Cairo Museum, recently published by Fr. Dunand[37]. Two other parallels were recovered at Petra by Ph. Hammond in a Nabataean house[38] and in the Winged Lion Temple[39]. The first object is a moulded statuette of a female figure, draped in a mantle with a central twisted fringe. The right hand is raised to the chin. Apparently, the crown is decorated with a central disc amid a trefoil plant. Hammond describes it as an Atargatis with a question mark. But the similarity of this figurine said to be a "moulded lamp handle" with the Zurrabeh example is striking.

The second object is a sandstone statuette of a seated female figurine. There is no description in the report but in the registry book, Hammonds notes: "Clock gathered in front and secured by Isis knot".

It is noticeable that the upper part of figurine N°177 was excavated in Sq. 5, loc. 5, while the lower segment was found in loc. 4. It is a evident that we are dealing with a dump area. The two parts of the figurine were assembled thanks to Dr. K. Parlasca and his wife, during their stay in Amman. Pink to gray ware, traces of ochre slip. H.: 17 cm.

To be dated most probably to the Roman period, 2nd. Century A.D.

N° 50 : Seated female figurine, draped in a long mantle. A thick rounded band is on the forehead. One hand is resting on the lap (Pl. LXXXVI, 1) while the other is raised to the chin. The general features are crude and imprecise but the attitude is similar to N° 177. Red to gray ware; H.: 9, 1 cm. Found in A Sq. 2, loc. 13, a gray soil with stones and a few animal bones.

N°51 : Crude seated female figurine; the head is featureless, except for five

35. M. Avi-Yonah, 'Oriental elements in the art of Palestine in Roman and Byzantine periods." *QDAP,* X (1940) p. 121 f. & Pl. XXIV.
36. P. Graindor, *Terre cuites de l'Egypte gréco-romaine,* Anvers, 1939, p; 106-107, N° 34.
37. Religion populaire en Egypte romaine, Leiden, 1979, p. 34, Pl. XXIV, N°s 37 & 38 (Museum N°s JE 43540 & JE 55242).
38. *ADAJ,* XXII (1977-78) Pl. XLVIII, 1 and p. 83.
39. *Idem,* Pl. LVII, 3.



Fig. 14: Seated Isis

holes. The hands are crossed below the breasts, represented by small rounded discs; the rounded rolls on the legs are probably anklets. (Pl. CXXXVI, 2). Pink core, dark gray surface, white wash in some places H.: 8 cm. Found in A, sq. 2, loc. 13 with N°50. Probably a waster.

The enthroned goddess, identified with Isis, is carved in two niches at Petra, in Wadi Waghit[40], and Wadi Siyyagh;[41] in the last site the relief is accompanied by a Nabataean inscription dated 25 B.C. In a recent survey of the cult of Al 'Uzza at Petra, the author suggested the identification of this partroness of the city with the Egyptian goddess Isis.

4. Animal Figurines: (Pl. CXXXVII)

N° 213 : Animal head, probably goat two horns and a beard. Incised decoration. Pink-red clay. H.: 6.3 cm.

Provenance: A, Sq. 6, loc. 1 (loose, dark ashy soil, with Late Roman and Byzantine pottery).

N° 17 : Ibex fragmentary head, incised horns and round pastille eyes. Dark gray ware, gray slip. Provenance: A, Sq. 1, loc. 7, a brown soil mixed of ashes, in front of kiln I H.: 6 cm.

N° 18 : Fragmentary ibex head , horns decorated with incisions. Provenance : A, Sq. 1, 1, the upper surface of the kiln with black soil, and broken bricks. H.: 6, 5 cm.

N° 96 : Ibex head, working as spout; This was probably part of an aquamanile. Dark gray ware. H.: 8 cm.

Provenance: A, Sq. 4, loc. 1, hard-packed brown soil. A Byzantine coin was found in the same layer (probably 5th century).

The three heads belonged to zoomorphic vases, probably used as aquamanile. Similar vases were found at Khirbet el Mefjar, near Jericho.[42]

N°215 : Deer head? probably a lamp handle. Broken small loop handle over the head. (Pl. CXLI).

Provenance , A, 6, 2, hard brown, mixed with black ash pockets. (Late Roman and Byzantine pottery).

B. Painted Pottery (Pl. CXXXVIII).

A large amount of painted Nabataean sherds was found in the excavations but unfortunately in a mixed context. A few forms and designs are selected here as samples. Four of them came from Sq. 5, a dump area as noted above. Two fragments (28-29) are from the potter's kiln I with other material which was disturbed by the road cutting.

N° 189: Deep carinated Bowl, rounded base, inturned rim, reddish gray clay. Red-brown painted decoration consisting of a counterclockwise palmette on border and two others on the centre. H.: 4, 8 cm; diam.: 15, 6 cm.

Prov.: Area A, Sq. 5, loc. 5.

Parallel : A. Negev, Pl. 4, 2[43]

N°202: Rounded bowl fragment, orange clay, dark-red decoration of a central multi-petalled rosette and a clockwise palmette border.

Diam.: 10,5 cm.

Prov.: Area A, Sq. 5, loc. 5.

Parallel : P. Parr, Pl. 44, 12 [44]

N° 203: Base of a rounded bowl, orange clay, pinkish wash, dark-red-brown paint; central multi-petalled rossette and a palmette.

Prov. ; Area A, Sq. 5, loc. 5.

Parallel : P. Parr, Pl. 44, 12, Phase IX (?).

N°125 : Bowl, base missing. Clockwise palmette around rim. Pink clay, few white grits, pink-white wash on outside, around rim. Reddish orange painted palmette.

Diam.: 8 cm.

Prov.: Area A, Sq. 5, loc. 1.

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40. P.J. Parr, *ADAJ,* VI-VII (1962) p. 21-23 & Pl. XI, 7.
41. J.T. Milik et J. Starcky, *ADAJ,* XX (1975) p. 120-124 & Pl. XLIV.
42. D. Baramki, *QDAP,* X(1940) Pl. XVIII, 4. Ibex heads similar to the Petra examples are common in South Arabia. Cf. R.L. Cleveland, An Ancient South Arabian Necropolis, Baltimore, 1965, Pls. 56-59.
43. *The Nabatean Potter's Workshop at Oboda,* Bonn, 1974.
44. A sequence of Pottery from Petra, *Near Eastern Archaeology in the Twentieth Century,* J.A. Sanders Ed., New-York, 1970.

Parallel : A. Negev. Pl. 7, 16.

N° 28: Plate fragment of an orange ware decorated with a black palmette and dots.

Prov.: Area A, Sq. 1, loc. 5.

Parallel : P. Parr, Fig. 7, 113, Phase XIV.

N°29 : Plate fragment, decorated with a bird about to peck at a grape cluster. Orange ware decorated with black paint. These two fragments represent the later development and decline of Nabataean pottery techniques in the Late Roman period.

C - Wasters and Roman Pottery

An abundant collection of melted plates was found in the potter's kiln and adjacent buildings. An excess of heat is the cause of this technical accident. It is important to note that a good quantity of wasters was found in the main kiln I, in loc. 2 (N° 47). The melted plates show a characteristic thick, folded-in rim, in contrast with the thin classical Nabataean vessels. The decoration consists of palmettes in dark brown. Similar pottery wasters were found in Sq. 9, room 2, loc. 8 (N°s 430, 436, 439) (Pl. CXXXIX). N° 436 is painted with palmettes and pyramids in dark brown and can be compared to painted pottery excavated in the colonnaded street by P.J. Parr and belonging to a later phase of occupation. It is difficult to assign a precise date to the Zurrabeh group but the hoard of lamps found in the kilns and the building complex points to the Late Roman period (2nd and 3rd centuries A.D.).

1. Cups:

The six cups (Pl. CXL, 1-2) present an everted flat rim, a bulbous body and a pedestal base. Cups 37. 39-41 are of pinkish ware, a yellowish buff with patches of red-brown paint. They are all of the same locus (A. 1, 2) from inside the main kiln I. Evidently they represent a development of the Nabatean cups well known at Petra[45]. N° 38 of a pinkish ware, a buff surface and a brown patch was discovered in the vestibule of the smaller kiln II. N° 36 was collected in loc. 7 in the passage of the main kiln I. All of these pots of the same fabric prove that the kilns were abandoned all at once, in the Late Roman period.

2. Juglets: (Pl. CXL, 3)

The three juglets show the same characteristic of gray ware and an ochre flaky slip.

N° 327 : Red pink ware, ochre slip. H. 13.5 cm Prov.: Area A, Sq. 7, loc. 10. This jug was found in the vestibule of kiln III. It is wide spread from Hellenistic to Byzantine periods. This example can be dated to the Roman period. N° 222: Handle and neck missing. Gray ware, ochre slip. H.: 9, 3 cm.

Prov.: Area A, Sq. 6, loc. 4.

For good parallels : see Hammond,[46] 1973, Figs. 10, 11, 13 (2nd-3rd century A.D.).

N° 225: Pink ware, gray surface and ochre slip. H.: 9, 3 cm.

N° 43: Ring handle bowl. Red gritty ware, buff slip. (Pl. LXLII , 3). Prov.: Area A, Sq. 1, loc. 10.

This bowl fragment came from the blocking of a passageway between kiln I and II. It is similar to a jug found by Ph. Hammond in Site I and dated to the early Byzantine period.

N° 45 : Cup fragment, decorated with vertical and horizontal incisions on body and below rim (Pl. CXLII,3).

Prov.: Area A, Sq. 1, loc. 7, with cup 36. It probably belongs to the Late Roman period.

D- Moulded Lamps:

1. Figured Early Roman Lamps:
(Pl. CXLII,1-2 & Fig. 15)

From the large collection of moulded lamps excavated in the kilns and the adjacent buildings, a small amount is pub-

45. Ph. Hammond, Pottery from Petra, *PEQ*, (1973), p. 31-32 & 45-46.

46. *Ibid.*

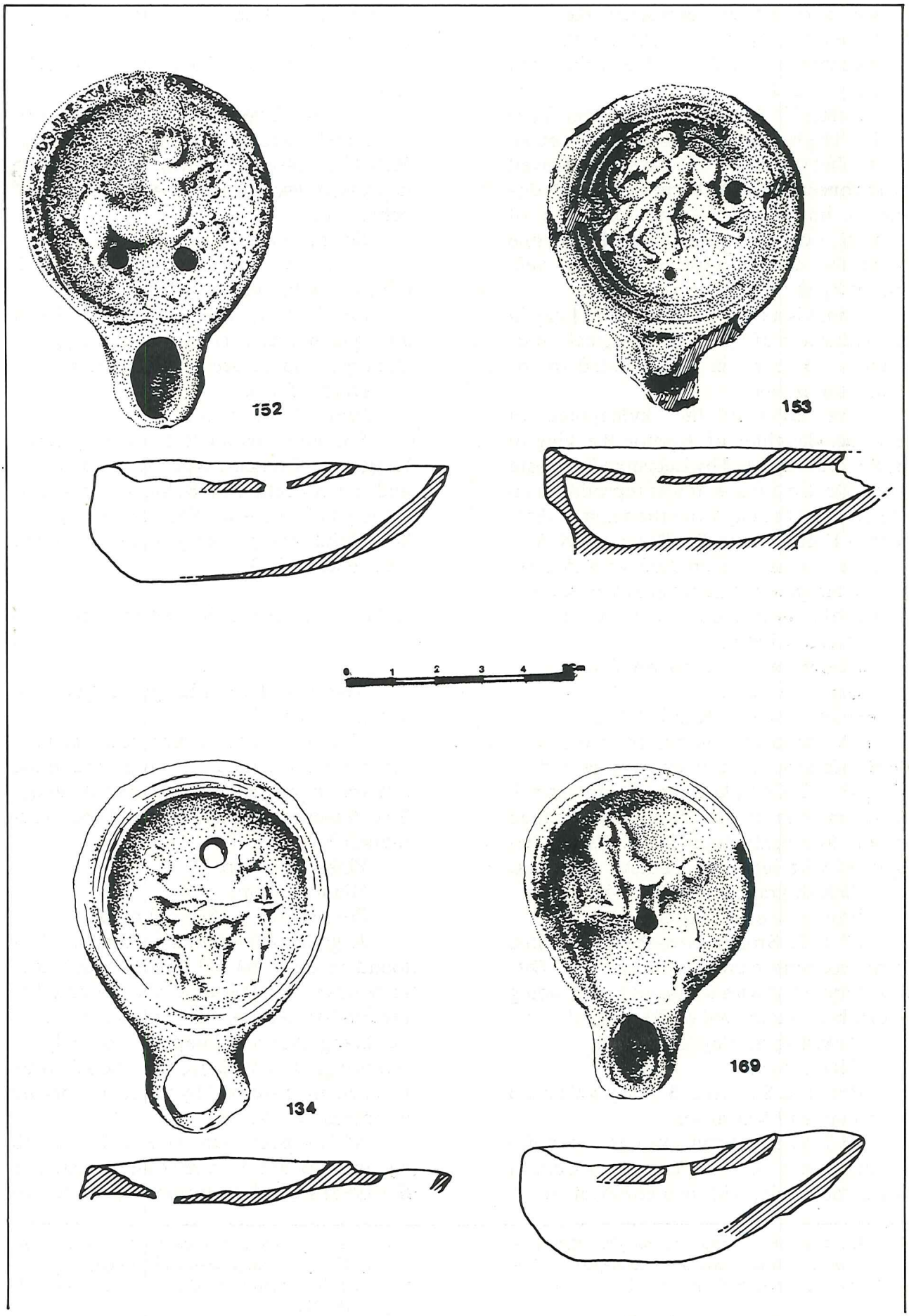

Fig. 15: Figured lamps found in the kilns by J.P. Lange

lished here which represents the occupational history of the workshop from the first century to the Byzantine period (5th century A.D.).

Lamp N° 4 belongs to Broneer Type XXII. The bow-shaped nozzle is decorated with relief volutes. While the rim is grooved with concentric lines. In the depressed discus is impressed the representation of Europè, riding the bull. She holds with one hand the animal horn, while here veil, blown by the wind, forms a dome.

There is a close parallel to this lamp in the collection of the Archaeological museum of Bologna in Italy[47], dated to the Augustan period.

The myth of the kidnapping of Europè, daughter of Agenor the king of Sidon, was reported by Lucian of Samosate in his *De dea Syria* 4. It was reproduced on the coins of the city from the reign of Antiochus Epiphanes to the Roman period [48]. Europe was soon identified with Astarte whose temple was famous at Sidon. She was probably confused with Al-'Uzza-Aprhodite at Petra.

Buff ware, red to brown slip.

Diam.: 6,8 cm.

Prov.: Area A, Kiln I, loc. 2.

The lamp was discovered in the main kiln with other pottery of later period.

N° 152: Complete lamp but for a small piece missing in the base. Bow shaped spout, two ventiliation holes. Rim decorated with incisions. Centaur on discus.

Pinkish gray ware Diam.: 5,5 cm.

Prov. : Area A. Sq. 5, loc. 3.

N° 153: Broken bow-shaped spouted lamp, concentric grooves around rim. Discus impressed with a winged cupid, riding a panther, the animal of Dionysos.[49]

Pinkish-gray clay, ochre slip.

Diam.: 5 cm.

Prov.: A, Sq. 5, loc. 3 (Ashy soil mixed with limy and brown soil).

N° 129: Slight concave base, rim decorated with concentric grooves.Central ventilation hole, with two cornocopiae on both sides. Pinkish clay, ochre slip. Diam: 5,5 cm.

Prov.: A., Sq. 5 loc. 1 (Loose ashy soil).

N° 134: Upper part of a lamp. Grooved circles around rim; ventilation hole. Relief impression of a divination [50] scene on depressed discus. Orange to brown ware, ochre wash.

Diam.: 5 cm.

Prov.: A, Sq. 5, loc. 2 (whitish soil mixed with brown).

N° 169: Moulded lamp decorated with a symplegma scene (Pl. CXLIII & Fig. 15), Dark gray clay, traces of an ochre wash.

Diam.: 5 cm.

Prov.: A, Sq. 5, loc. 3.

For good parallels to these figured lamps, see Broneer, type XXII (p. 76 ff) and the collection of Bologna,[51] dated to the reign of Augustus. The Petra Lamps are later imitations, probably of the end of the first century A.D.

2. Late Roman and Byzantine lamps:

This collection of lamps was gathered in Sq. 1, 2 and 8.

N° 6: Pear shaped lamp, rounded nozzle, pyramidal handle. Grooves around the rim and impressed circles on the shoulder. Two bunches of grapes around the ventilation hole.

Pink gritty ware.

Diam: 5.9 cm.

Prov.: Area A, Sq. 1, Loc. 2.

A good parallel of this lamp is N° 8 found in tomb 64 (Pl. LXII) which corresponds to Broneer type XXVIII dated to the 3rd-4th century. Its presence in kiln I, loc. 2, together with lamp 4 of the early 1st century A.D. is evidence that the kiln area was heavily disturbed by the road working machines. (Pl. XLIII)

N° 7: slipper shape (see N° 7 of Tomb 64, above p. and Pl. and could be dated to the 4th century A.D. It came from loc. 9, in

47. M.C. Gualandi Genito, *Lucerne fittile delle collezioni del Museo* civico archeologico di Bologna, Bologna, 1977, p. 85 & Pl. 25, 148.

48. J. Babelon, *R.A.* 20 (1942) p. 126.

49. For similar moulded lamps, see O. Broneer, *op. cit.* No. 429 with Dionysos and Menad.

50. Cf. a similar motif in *QDAP,* IX (1940-41) Pl. XLIV, No 421.

51. See M.C. Genito, op. cit., Pl. 25.

front of kiln. (Pl. CXLIII

N° 55: pear shaped lamp, short rounded rim, rounded circles around shoulder and grooves around filling hole. Pyramidal handle. Pinkish ware, burned nozzle. Diam. 6, 4 Prov.: Area A, Sq. 2, Loc. 5. It came from below wall 4, which was dated by a coin of Theodosius II (402-450). This coin can be considered as an antequem date for lamp 55 which is of the 4th century A.D. (Pl. CXLI, 2)

N° 56: The shoulder is decorated with rays. Same type as precedent example. Buff ware, burned nozzle. (Pl. LXLI,2)

Diam.: 5, 8 cm.

Prov.: Area A, Sq. 2, loc. 1. (with late Roman pottery sherds pail 24).

N° 57: Slipper type lamp, vestigial handle, ray decoration. Red brown ware, gray slip. (Pl. CXLI , 2)

Diam.: 5.2 cm.

Prov.: Area A, Sq. 2, loc. 17 (over floor of Room 2.). This lamp can be compared with the group of 8 lamps found on the floor of Room 3 together with 45 coins (the latest dated to Theodosius II (402-450 A.D.) see below.

N°s 372-377 : this collection of lamps was recovered in Room 3, loc. 16, together with 45 bronze coins, the latest of them dating to Theodosius II (402-540 A.D.)[52]. The ware is pinkish with a buff surface and an ochre (Pl. CXXXIV 2.3).

E. Moulds (Pl. CXLI, 1)

Several lamp moulds were discovered in the dig and two of them were found in Sq. 2 : N°63, from loc. 14, was used to produce the lower half of the lamp. Red gritty ware, diam. 7.3 cm. N° 64, loc. 4. with its ray decoration was for the upper part. Red ware, gray core. Diam.: 7 cm.

General Conclusion:

The recent excavations of the Department of Antiquities brought to light, along with the Nabataean remains, a good amount of Roman and Byzantine cultural material. Greek inscriptions in the Siq prove that this access road to Petra continued to play the role of a sacred way in the Roman period. Pottery objects from tomb 64 and the potter's complex indicate that the site remained as a pottery manufacturing centre for a long period of time. The available clay deposits in the vicinity of the kilns stimulated a mass production. But there is, compared with the Nabataean classical period, an evident decline of techniques in the Late Roman and Byzantine periods. However, a mass production suggest an intensive commercial demands which is probably the main cause of decline in techniques. On the other hand, the discovery of a large quantity of cultural figurines indicate that there existed an increasing popular religious demonstrations. Aphrodite and Isis, identified with al 'Uzza, as has been prooved by the author [53] enjoyed a favourite place in the Petra religious beliefs as late as the Byzantine period.

Through the excavations of Qasr el Bint, it is now evident that the site continued to be occupied in the Medieval period, during the crusader wars, a still obscure phase in the history of Petra.

Fawzi Zayadine
October 1982

52. For a similar lamp, see R.H. Smith, *Pella of the Decapolis,* London, 1973, p. 218-219, N° 368 & Pl. 66 (4th-6th century A.D.).

53. F. Zayadine, 'L'Iconographie d'al 'Uzza-Aphrodite', *Mythologie greco-romaine, mythologie périphérique,* Colloques Inter. du CNRS, Paris, 1981.

THE PROTO-AEOLIC CAPITALS FROM MUDEIBI'A, IN MOAB(*)

Ivan Negueruela

The purpose of this paper is to report the existence of four Proto-Aeolic capitals in Mudeibi'a, to the south east of Moab, close to the Fajj Useikhir[1].

In the 1930's Glueck published a short note on the existence of a "Proto-Ionic" capital[2] in the ruins of Khirbet Mudeibi'a. He included a photograph and the measurements of the piece, together with a sketch of the Iron Age II fortress and of the Nabatean wall inside it.[3]

More recently, in 1979, Shiloh published a book on the Proto-Aeolic capitals[4] in which he refered to Glueck's discovery while deploring the lack of data on the piece. In spite of his comments Shiloh republishes the same photograph as Glueck though suggesting that it is a new and better one.[5] He also reproduces Glueck's measurements, which are basically correct.

As a part of the Research Programme of the Spanish Archeological Mission in Jordan, I paid a visit to Mudeibi'a in August 1982 with the kind permission of Dr. Adnan Hadidi, General Director of the Department of Antiquities of Jordan. I was happy to discover that the capital was still there, as Mr. Miller had already led me to believe, the only additions being some irrelevant arabic sentences scratched on the capital. It lies 3 meters west of the towers of the Eastern Gate of the wall, i.e. inside the precinct (fig. 1 and 2; Pl. CXLV, 2).

To my surprise I was to find in the same place three other pieces, hitherto unknown to scholars: the first one is 1 meter away from Glueck's capital. It stands almost vertical but for the most part covered by earth. From the part of the stone projecting above ground level, a small section of earth along the face of the piece had been sufficiently cleared to enable me to identify, with some difficulty, the moulding. It appeared to be a piece of the same type as Glueck had described. (fig. 1, no. 2; Pl. CXLVI, 3)

The second new piece (fig. 1, no. 3; Pł. CXLVII, 5) was found two meters west of the previous one. Only a small part of it was uncovered but sufficient to see very clearly one of the concentric circles of the decoration of the upper part; unfortunately, it was broken.

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* I wish to thank Maxwell Miller, of the University of Emory, Atlanta, and Michael Pinkerton, a member of his team, for their help in the precise localisation of the site; it is included in the area which over several years they have been surveying. See Maxwell Miller: *Archaeological Survey South of Wadi Mujib: Glueck's site revisited.* "A.D.A.J.", XXIII, 1979, pp. 79-92. IDEM: *Archaeological Survey of Central Moab.* "B.A.S.O.R.", 234, 1979, pp. 43-52.

Drawings and photographs are by the author except photograph no. 2 kindly lent to me by Fawzi Zayadine.

The English version has been read by Dr. De Larios, of Madrid, and Terence Volk, of the Fitzwilliam Museum, Cambridge. My thanks to them.

1. This work is the result of the survey conducted on the site, as described in the text; it was undertaken by the author as part of the 1982 Research Programme of the Spanish Archaeological Mission in Jordan (S.A.M.), directed by Professor Almagro. The Moab survey aims to carry forward the researches in the Iron Age period, which are being undertaken by Dr. Olavarri in Aroer and Medeineh North. E. Olavarri: *Sondages à 'Arôer su l'Aron.* "Revue Biblique", no. 72, 1965-1, pp. 77-94. Idem: *Fouilles à Arôer sur l'Arnon. Les niveaux du Bronze Intermediaire.* "Revue Biblique", no. 76, 1969-2, pp. 230-259. Summarised in "Encyclopaedia of Archaeological Excavations in the Holy Land", *Aroer,* Vol. I, pp. 98-100. E. Olavarri: *Sondeo arqueológico en Khirbet Medeineh, junto a Smakieh (Jordania).* "A.D.A.J.", XXII, 1977-1978, pp. 136-149.
2. N. Glueck: *Explorations in Eastern Palestine, I.* "A.A.S.O.R.", Vol. XIV, 1933-34, pp. 1-114.
3. Ibidem: Fig. 26, p. 68 and Plate 11. In my opinion the attribution of this inner wall to the Nabatean period is not as yet secure.
4. Y. Shilloh: *The Proto-Aeolic capital and Israelite ashlar masonry.* "QEDEM", 11. The Hebrew University of Jerusalem, 1979.
5. Shiloh, op. cit. p. 13, note 82.

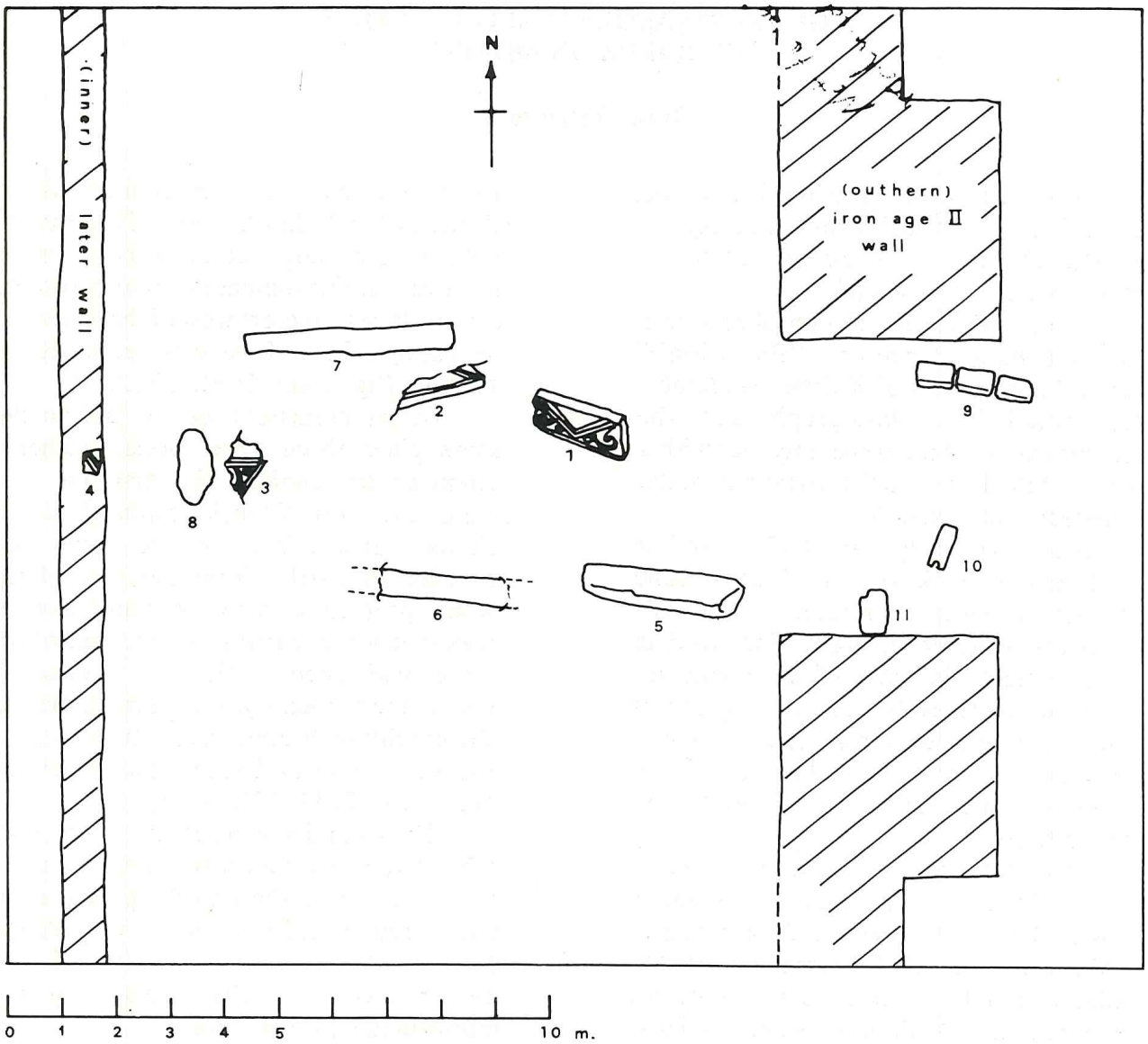

Fig. 1: Sketch plan. Measurements are roughly approximated.

The third piece (fig. 1, no. 4; Pl. CXLVIII, 7) is a fragment only; it was reused in repairs to the later inner wall (see note 3). This repair is characterised by the use of clay in fixing the stones, and hence is of a later period. In this same area, namely between the Iron Age II fortress Gate and the inner wall, there were other pieces that seemed to be related to the capitals (in fig. 1 the stones have been numbered): stone no. 5, a monolith of 3.05 monolith of 3.05 x 0.55 x 0.70 meters roughly carved on two of its three visible faces and smoother on its third; stone no. 6, another monolith in a line with the previous one and half-unearthed; stone no. 7, a monolith placed to the north of stone no. 6, also half-unearthed and measuring 3.85 x 0.69 x 0.40 m. (visible measurement only).

On the west side of the whole area and close to capital no. 3 there is a further irregularly shaped stone apparently vertical, stone no. 8. Finally and more closely related to the Gate itself there is to the north of the south tower still *in situ* a door-jamb, of which only half of its original length is preserved. The second door-jamb, fallen and broken in three pieces lies to the south-east of the north tower, stone no. 9. East of the Gate there is a fragment of the broken threshold, stone no. 10, evidently not in its original place.

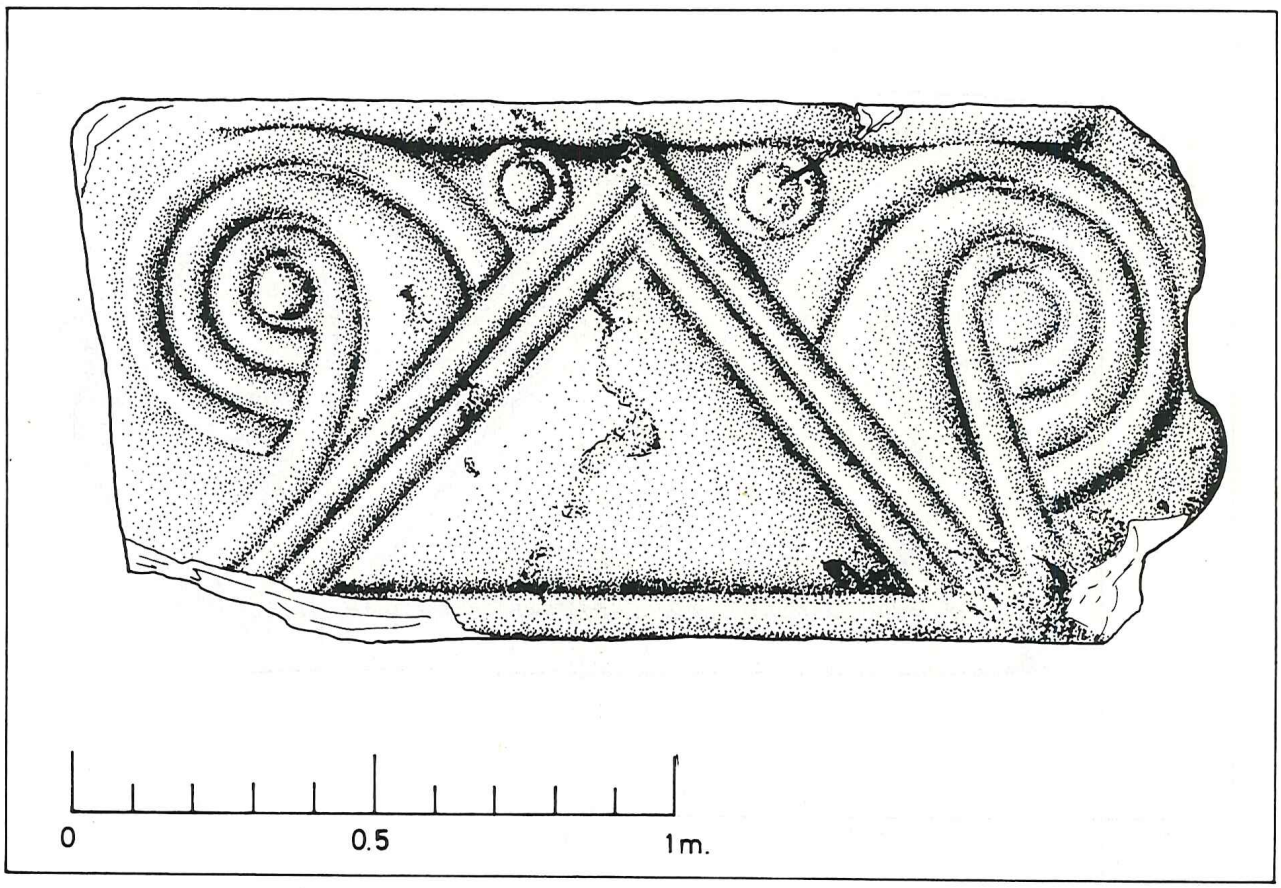

Fig. 2: Capital Md-1

Once the survey of the site had been completed[6] and given the existence of a monument of such importance and whose pieces were partially unearthed, I asked for the permission of the Department of Antiquities to draw and photograph the capitals before they might suffer irreparable damage. This permission included (i) the removal of earth from capitals 2 and 3 in order to draw them, and (ii) the clearing of monoliths 6 and 7 in order to establish their lengths.

On 22 September I returned to the site with Dr. Olavarri and M. Menendez, archaeologists of the Spanish Archaeological Mission, to complete the proposed work. Although it was not a proper excavation we prepared to record the levels with particular care although in the event this proved impossible. The soil unearthed consisted of an extremely thin sand, practically dust, blown together by the wind. We did not reach the base levels of the capitals for two reasons: firstly because we wanted to avoid the destruction of those levels until we could perform a full-scale excavation in some future campaign; secondly because the positioning of the stones prevented us from removing them. In figs. 3 and 4 a heavy line indicates the limits of our present exploration. The existence of the above mentioned sand fill proves that after the fall of the capitals there has not been in this part of the site any substantial settlement. This leads us to think that the ruin of the monument must have happened after the Nabatean occupation of the site, documented by the finds of pottery and most of the structures today visible inside the fortress. Until future excavations confirm or deny this hypothesis, we can

6. The team directed by M. Miller surveyed the site and collected as many sherds from the surface as they could although such finds are now scarse. The results of the American survey in Moab will shortly be published; in the meantime they have kindly placed at my disposal the data from Mudeibi'a.

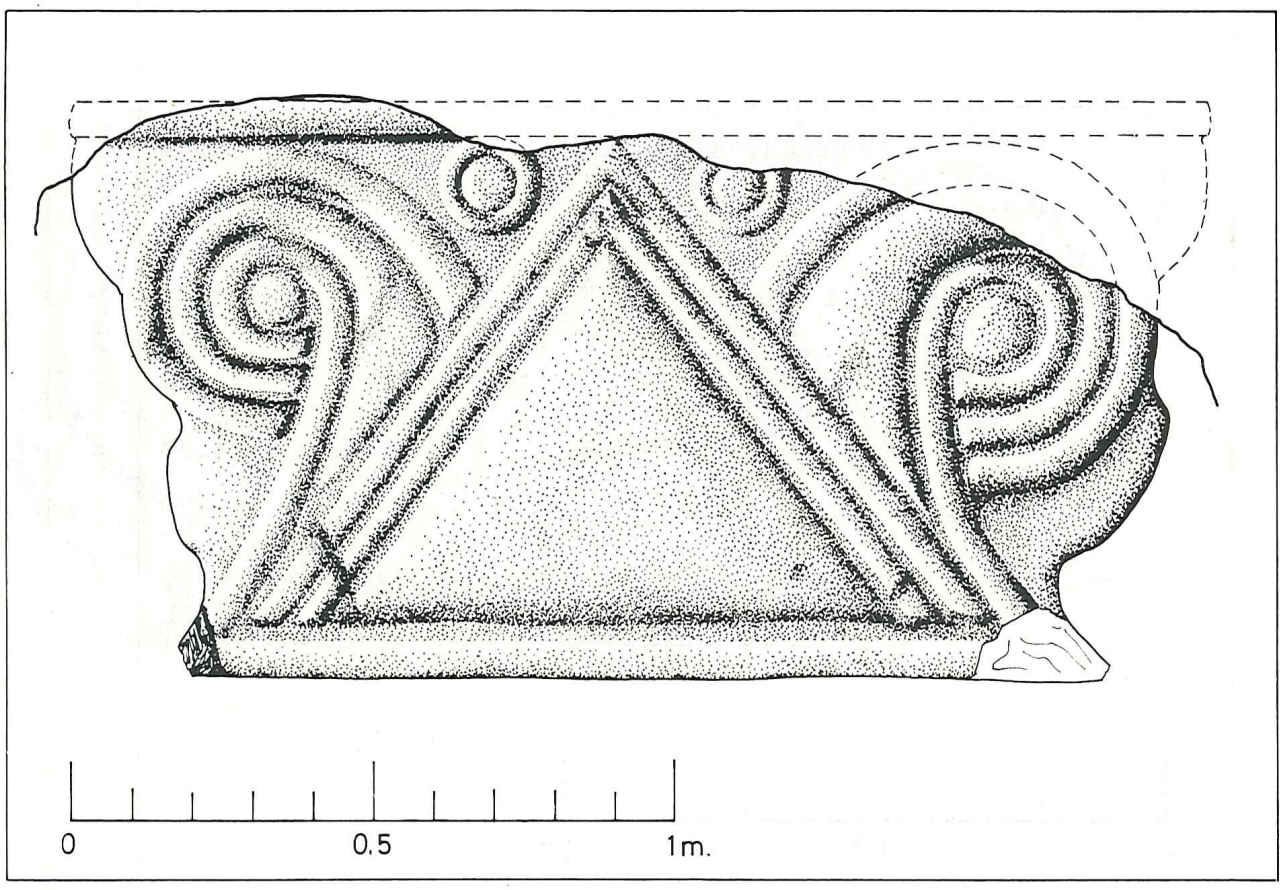

Fig. 3: Capital Md-2

assume that the Iron Age II Gate must have been in use until the Nabatean period. In our opinion the destruction of the monument could be due to any of the several earthquakes that shattered Transjordan between the Late Roman period and Early Medieval times. The sketch at fig. 1 shows the generally regular alignment with which the stones have fallen.[7]

The data collected on the surface suggests that this monumental entrance of Mudeibi'a is substantially intact with all the structural elements needed for its reconstruction still in place. If this was so, we would have here the first such example in the archaeology of the Near East. Its complete excavation will be a great help for a better understanding of similar cases (Meggido, Hazor, Ramat-Rahel...). For the present, therefore, any hypothetical reconstruction would be inappropriate, at least until a proper excavation can be undertaken.

A careful study of the Proto-Aeolic capitals, their style, evolution and relationship to their associated buildings has been undertaken recently by Shiloh.[8] His work, however, leaves open some questions that even now do not meet with easy answers. The origin of the circular moulding on the capitals of Ramat-Rahel,

7. The effects of such earthquakes have been progressively evaluated from an archaeological perspective in the recents works. Grumel: *Traite d'études Byzantines, I. La Chronologie,* 1958, p. 479. DH.K. Amiran: *A revised earthquake Catalogue of Palestine, I.* "Isr. Expl. Journal", 1950-51, pp. 223-246. IDEM: *A revised earthquake Catalogue of Palestine, II,* "I.E.J.", 1952, pp. 48-62. F. Zayadine: *Deux inscriptions grecques de Rabat Moab (Areopolis). "ADAJ",* 1971, no. XVI, pp. 73-74. He records an earthquake, not noted by Grumel, shortly before 597 and offers several interesting ideas about it. Rabat-Moab, today Rabba, lies on the same plateau of Moab as Mudeibi'a, but north of Kerak. More recently K.W. Rusell: *The earthquake of May, 19, A.D. 363. "BASOR"* no. 238, 1980, pp. 47-64.

8. Op. cit. in note 4.

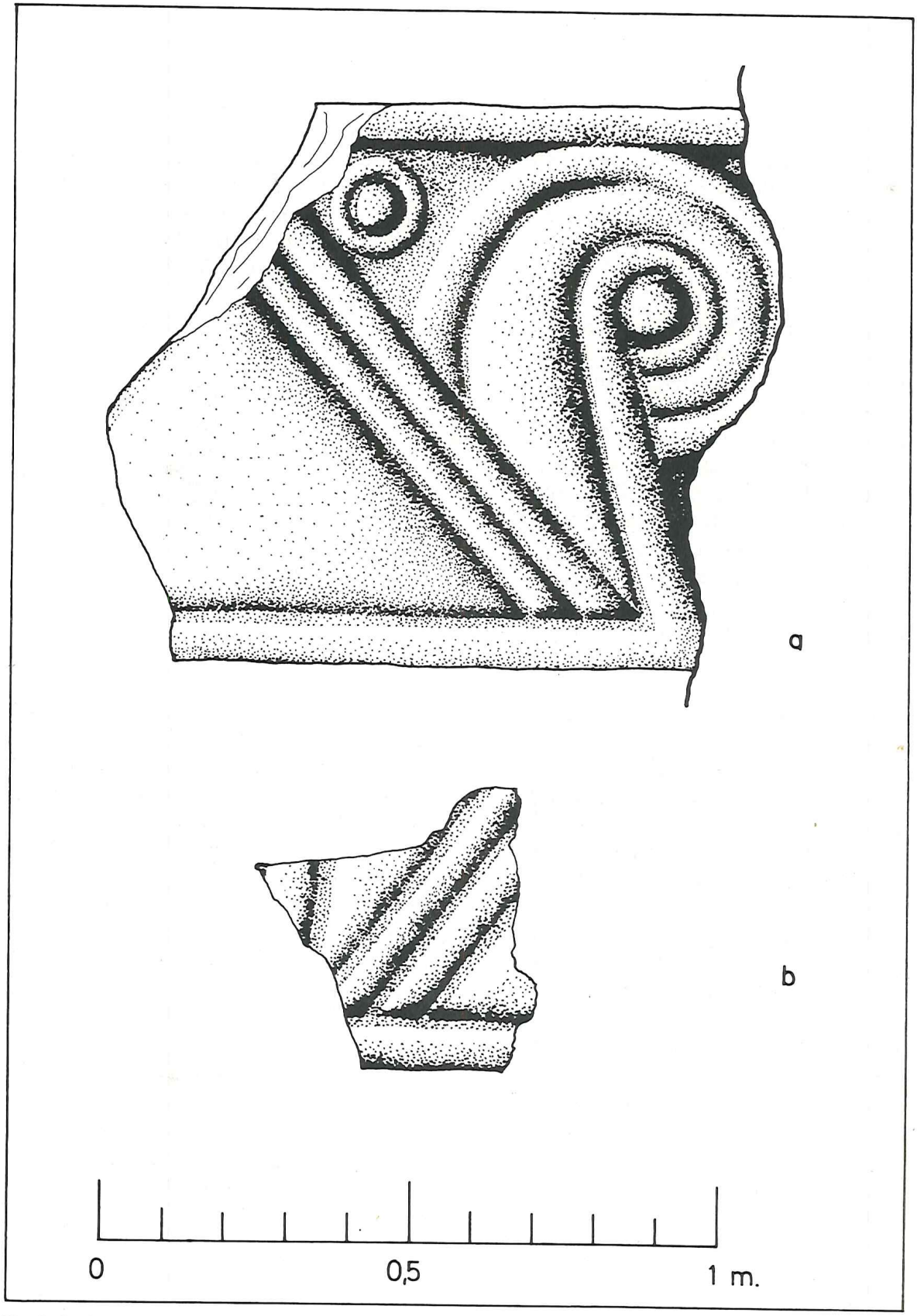

Fig. 4: Capital Md-3 & 4

Jerusalem and Mudeibi'a is not settled; the position of this capital in relation to the structure of the building is not definitely solved[9], nor is the suggested attribution, in our opinion, wholly convincing[10]. Anyway it is surely premature to discuss the style of these pieces from Mudeibi'a as long as new data from stratigraphical analysis is lacking. The purpose of this paper is, therefore, limited to presenting descriptions of these pieces:

Capital no. 1 (Md-1) (Fig. 2 and Pl. CXLV, 2). On the decorated face the upper and lower borders are parallel. While the right-hand edge has been cut to a distinctively curved pattern, the left-hand one is straight, though not yet perpendicular. This contrasts with capital no. 2 and with those from Palestine: in all these capitals the spaces above and below the volutes which are similarly curved, contain leaves missing on our capital. The upper corners of the block are no longer sharp and the lower ones are broken. The most outstanding feature of the capital is the large size of the central isosceles triangle, itself rather well drawn. Its base is 1 meter long and its short sides are 0.77 x 0.75 meters. This inner triangle is flanked on its short sides by two parallel bands of moulding, giving three consecutive lines of engraving. The apex touches the abaco. Two assymetrical volutes flank the short sides of the triangle; they almost cover the remaining free space. On both sides of the apex of the double triangle there is a circular device 'ocullus' formed by two concentric incisions. The abaco can be seen clearly only in its central section where this characteristic "oculli" occur. Its line is broken by shallow curves where they over-lap it (which is, of course, a mistake). The base of the triangle where it touches the base of the capital is formed by a single band of moulding. Under close examination the traces of the burin can still be clearly identified in the incised lines. The section of the engraved surface is never so sharp or so deep as those published by Shiloh[11], but smoother: fig. 5. The back side of the block is irregular and rough.

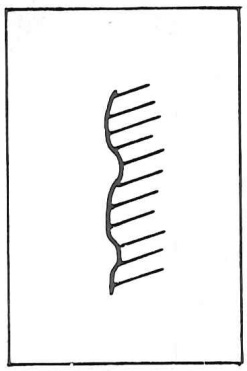

Fig. 5

Capital no. 2 (Md-2) (fig. 3 and Pl. CXLVI, 4). This piece is basically similar to the previous one but with an important difference: both left and right-hand edges of the decorated face are carved at those points, towards the top and bottom respectively, where the leaves characteristic of these capitals should appear. These blank spaces are about 8-10 cm. deep. Both flanks of the block are only lightly carved as in the case of the right flank of capital no. 1. Its back is irregular and rough.

Capital no. 3. (Md-3) (fig. 4-a, and Pl. CXLVII, 6). This shows an interesting feature: its height, 0.92 m., is much closer

9. He gives two variants of the same solution: the capitals topped pilasters placed in the gateway in the position of the door-jambs, that is facing each other; that within the same general arrangement there was a single pillar placed between the pilasters, a variant requiring three capitals. Crowfoot's reconstruction for Samaria is rejected by Y. Shiloh: *New Proto-Aeolic capitals found in Israel. "BASOR"*, no. 222, 1976, p. 70, and in "QEDEM", 11, p. 8. With the few data we have, we can assume that a third solution is required for Mudeibi'a.
10. He demonstrates that the motive is common to the great Asiatic cultures that surrounded Israel, but in its form as Proto-Aeolic capital he claims it as a purely Israelite creation. The earliest examples from Israel would be those of Meggido (M-2, 4,5, y 11) dated to the Xth. Century B.C., to the period of Solomon. We know from the Bible that the King used Phoenician architects. As far as Mudeibi'a is concerned, it is worth keeping in mind, at least as a possibility, that King Mesha himself tells us that he used (a century later) Israelite prisoners in some of his works.
11. Shiloh, Qedem, 11, cit., fig. 10.

to that of Md-1. 0.90 m., than that of Md-2,,0.97 m. Unfortunately we were unable to make a drawing of the right-hand side of this capital, although we suppose it to be complete. An hypothetical reconstruction suggests that this piece is from a different capital than the fragment here recorded as capital no. 4 (Md-4) (fig. 4-b, and Pl. CXLVIII, 7).

The very hard type of stone from which these pieces are made is readily found in the area. This suggests that it is unlikely that the capitals were imported from the West Coast. On the contrary the craftsmen required to carve them were most probably "imported". If Shiloh's date for Mudeibi'a is correct - IX century B.C. - the construction of an important fortress[12] which such an imposing entrance could well be due to the building fever of King Mesha for which we have the King's own testimony in his stele.

Shiloh included capital Md-1 among group-E of his classification, citing the capitals of Ramat-Rahel as parallels. It is, however, important to emphasize that in the present capitals from Transjordan there are two decorative features which make them distinct from the other known pieces: the bands of moulding on either side of the central triangle are not three as in the other cases, but two: and secondly, the two upper and lower leaves emerging from the volutes are missing. Both features are common to all the pieces of the E-group; the second one is common to all the previously known capitals.

To summarise, we are dealing with an unusually well preserved monumental gateway an Iron Age II fortress and one which should provide many important data for our improved knowledge of this type of structures.

Ivan Negueruela
Amman,
September, 1982

12. The very regular plan of this Moabite fortress has as yet to be explained. None of the sites which have produced Proto-Aeolic capitals shares this shape. The closest is Ramat-Rahel which of course does not serves as a usefull parallel. Undoubtedly the best parallel is the fortress of Arôer, which was built ("rebuilt") by King Mesha.

ARCHAEOLOGICAL

NOTES AND NEWS

BOOK REVIEW

by
Adnan Hadidi

Tres Monumentos Islamicos Restaurados por Espana en el Mundo Arabe por Antonio Almagro Gorbea. Instituto de Espana, Madrid, MCMLXXXI. 131 pp., 37 plates, 38 figures in text.

This book is yet another outstanding expression of Spanish scholarship and a significant contribution for a deeper understanding of the development of Islamic art and architecture, and in particular, Spanish-Arab relationships during the early century of Islamic civilization.

In Jordan, two very important Islamic monuments from the Umayyad Period have been restored, with further work continuing. These are the hunting and bathing lodge of Qasr Amra, and the palace building on the Citadel of Amman. In Tunisia, the Spanish archaeological team has restored the Sidi Qasim el Seliki's Complex, an Islamic monument from the 11th century. All three mouments have tremendous cultural value to concerned countries. In restoring the Umayyad monuments in Jordan, historical factors played a major role in their selection: both were built in the center of the geographical area of the umayyads in Damascus, the Umayyad family was massacred by the Abbasids, all except for Abdel Rahman I, who escaped safely to Spain, and succeeded in establishing a new and vigorous Umayyad Dynasty, an event which brought Spain into an equal cultural and political level with, and sometimes rivalling, the Abbasid Caliphate. The palaces of Qasr Amra and Amman are two manifestations of Umayyad ideals of art and architecture, as they brought into Spain, present in Cordobas' Caliphate, "...reflecting the symbiosis with the local traditions."

From 1971-1974, several seasons of hard work under difficult conditions were undertaken by the Spanish team to restore the wall paintings of Qasr Amra (an element which makes this site, in particular, unique among all others of the period), as well as to consolidate the building itself. The restoration project at Qasr Amra was initiated and implemented due to the great interest expressed, since 1962, by the illustrous father of Dr. Antonio, Don Martin Almagro, who succeeded in obtaining the approval of the Spanish Government to Jordan's appeal to preserve and protect this monument.

Today, scholars as well as the general public enjoy the beauty of this Umayyad bath-house which also served as a hunting palace during the early part of the 8th century, and perhaps during the Caliph Walid I's reign. It reflects the great artistic refinement achieved at a time when the Arab Empire was at the height of its expansion: the time when Spain was conquerred. The rich pictorial work found in this monument contains many representations of the triumphant Islam over foreign kings: Spain's Rodoricos (last Spanish-Visigoth king whose name appeared here in Greek), as well as the portraits of the kings of Ethiopia, Byzantium, Persia, and probably China and India or Turkestan. These portraits are found decorating the western wall of the reception room and illustrate in an artistic manner (better than any written accounts) the period pertaining to Walid I. During this time, Musa Ibn Nusayr incorporated Spain into the Caliphate of Damascus and was invading France, while Qutaiba (Governor of Korasan) conquerred the central stepes of Asia, entering into Bukara and Samarcand. This was the period of the Islamization of the Turks, the time when the Arab Empire clashed with the Chinese (T'ang), and later on, the period of the submission of India.

The author's analysis as to the meaning and function of the monument's rich, decorative elements reflects his great understanding of the development of Islamic arts. As he points out to us, though the umayyad caliph built this complex at Qasr

Amra, its decorative art as well as its architecture are not Arab, but clearly of classical origin (late Roman or Byzantine). The classicial sense is evoked by the number of symbolic figures represented (muses, victory, bacchi, fortunes, etc.) in various illustrated themes (hunting, victory scenes in which the conquerred kings are marked with a Byzantine accent, etc.), as well as by the use of some Greek inscriptions in addition to those in Arabic.

From 1974 up to the present, the Spanish Archaeological Mission in Jordan has undertaken to work at the Umayyad palace on the Citadel of Amman. The palace itself was the best preserved monument among all those structures remaining on the Citadel. The Spanish Mission's application of photogrammetry as a technique has been a very valuable contribution for the documentation of the Citadel as a whole. The Citadel, from the Umayyad period, consists of a great architectural complex, representing a government palace or "Dar-al-Imara." This complex served either as the residence of the prince or governor or, perhaps, as an administrative center. It was erected by using the reamins of local structures from previous periods, a fact (as the author states) that determined the morphology of the new complex.

This whole complex lacked a decisive date until the Spanish archaeologists started to work on it. Their scientific approach to solving this problem involved a serious study of the typology, archaeology, and stratigraphy of the site. From the stratigraphical work alone, three periods of occupation were obtained for the site: Byzantine, Umayyad, and post-Umayyad. An Umayyad coin minted after the Abd-el-Malik coinage reform was uncovered in an Umayyad layer, thus making possible the absolute dating of the corresponding building. This evidence for dating corroborates with the typology set-up for the group of ceramics found among the debris filling the staircase of the palace's terrace. Gaube's analysis of decoration also asserts this date.

The strong influence of Sassanid architecture on the Amman complex is another important factor which the author stresses. This is an influence which can be traced back before the Abbasid Caliphate, and is based not only on the decorative point of view but on the structural and constructional ones as well. In Amman, we find Byzantine spatial schemes (as reflected by the design of the palace), and within it, developments such as the Sassanid structural conceptions (for example the use of trumphets and domes), with local stone construction techniques. Also found are typical Sassanid conceptions, such as that of the "iwan" and the crosslike hall of the northern area where Syrian techniques of construction are equally encountered.

Mesopotamian and Iranian influence is clearly observed from the plastered columns located in the courtyards, which are as well Orientally designed. This spirit, found among all the decorations, indicates that this palace was originally conceived within an Oriental conception.

Finally, the author of this outstanding publication is to be greatly congratulated on his achievement. Many thanks are also extended to all the Spanish authorities and scholars who helped and supported this significant project of archaeological work in Jordan. Particular mention should be given to: the Spanish Foreign Ministry, its Executive Board for Cultural Relations, its Committee for the Protection of Foreign Monuments and Cultural Wealth, the author of this most valuable and interesting book, his most distinguished father, Don Martin Almagro, the staff of the Spanish Archaeological Mission in Jordan, and all others involved.

Adnan Hadidi

* (Grateful acknowledgement to Mrs. Ileana Viscal Fenyo for translating relevant excerpts from this publication.)

THE SIMILARITY IN PLANNING THE DOME OF THE ROCK AND THE CHURCH OF ASCENSION IN JERUSALEM

by
H. Kalayan

The planning of pagan temples and Christian churches have common symmetries which suggest the continuity of planning in numerical values as being an unchangeable concept.

Designating B as the breadth and L as the length of a monument, ratio B/L is an invariable constant for the catagories of deities of certain attributes, and later on for the churches dedicated to personalities of the same attributes.

The ratio of B/L results in one of the following forms:

a. $\sqrt{\frac{N \mp 1}{N}} \times \frac{1}{2}$

b. $\sqrt{\frac{N \mp 1}{N} \times \frac{1}{2}}$

c. $\frac{N \mp 1}{N} \times \frac{1}{2}$

d. $\left(\frac{N \mp 1}{N} \times \frac{1}{2}\right)^{\frac{1}{4}}$

The N and N ∓ is the symmetry of the monument, symmetry meant to have a common measure between B and L, they must not have the same number of measures, but one being one measure less than the other, what ever the measure is.

The form *a* is for the temples where the number of the columns on L plus one divided by two gives the number of columns on B. Vitruvius is mentioning this rule, call it Vitruvian temples.

The form *b,c,* and *d* are called side and diagonal number by Plato and Theon of Smyrna; that is if L is one diameter, then B is the side of an isosceles right angle triangle constructed on the second line, which is one measure less or more than L.

Any building's destination is revealed by the values of N and N ∓ 1. When these values are:

7 and 8, the Monument is for Baalshamin the lord of heaven, Osiris, Nyphaeum, in churches, dedicated to; Jesus, redeemer, St. John, Virgin Mary, heavenly personalities, or places in relation with heaven, baptistery, etc.

9 and 10, the building is for a deity of Jupiter standing.

11 and 12, the building is for a goddess; Athena, Artemis, Allat, Cybele, the Syrian goddess, Anahit, Nemesis, etc.

12 and 13, is a tolerance symmetry, any god can be placed in this kind of a building, but the lodge of the god must be arranged with god's proper symmetry. It might be called a Pantheon.

6 and 7, It is a church dedicated to one apostle, or a temple of Mercury as apostle.

5 and 6, it is a public building, or churches dedicated to Apostles, other numbers; as 4 and 5, and 1 and $\sqrt{2}$, are ordinary buildings, 2 and 3, or 3 and 4, are usually used for the triumphal arches, and theatres, they are the roots of 8 and 9 and 9 and 8 in side and diagonal form.

48 and 49, the building is for a deity of Bacchus standing. 49 and 50, the building is for human gods as, Apollo, Hecules, deified emperors, or churches dedicated to St. George, or Sergius, or local saints etc.

The relations mentioned above show that, the pair of numbers have kept their

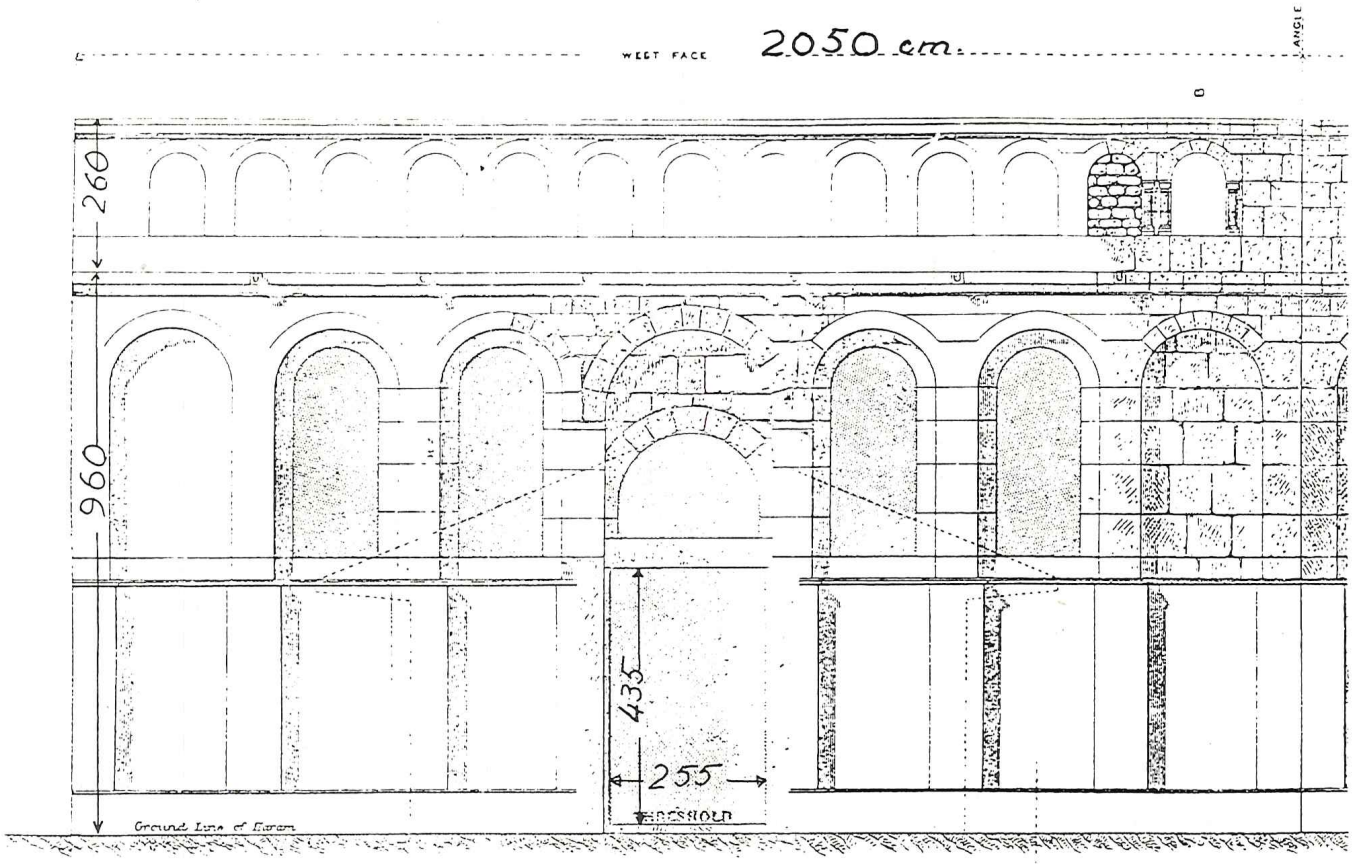

Fig. 1

intrinsic meaning through the ages, from the Egyptian ancient ages, through Greek, Roman, Christian and Moslem periods, as well in Romanesque and Gothic Architecture ages. One can conclude that, there was a universal consensus for the values attributed to the pairs of numbers, either by the constructers or by all the religions of the mediterranean world.

The Church of the Resurrection and the Dome of the Rock in Jerusalem, due to their connection with heaven, have to be planned with symmetry of 7 and 8, and to emphasize 8, they must be planned in octagonal form, as they are.

The Relations of The Dome of The Rock

The porch columns of the Dome of the Rock, in front of the south entrance, have the following axial distances. (This according the scale reading on the plan.) (fig. 2)
155, 270, 155, 352, 155, 270, 155

$$\frac{155}{270} = \frac{8}{7} \times \frac{1}{2} \quad 154.2$$

$$\frac{155}{352} = \frac{7}{8} \times \frac{1}{2} \quad 154$$

$$\frac{270}{352} = \frac{7}{8} \times \frac{7}{8}$$

The porch entrance door 255 cm. by 435 cm. (fig. 1)

$$\frac{255}{435} = \frac{7}{8} \times \frac{2}{3} \quad 253.75$$

The outer facade of the octagon, in elevation, is divided into two sections; the lower 960 cm. high, the upper 260 cm. high. (fig. 1)

$$\frac{960}{2050} \quad \frac{\sqrt{7}}{\sqrt{8}} \times \frac{1}{2} \quad 958.8$$

$$\frac{260}{2050} = \frac{8}{7} \times \frac{1}{9} \quad 260.3$$

The relation of two octagons

The dimension of the side of the outer

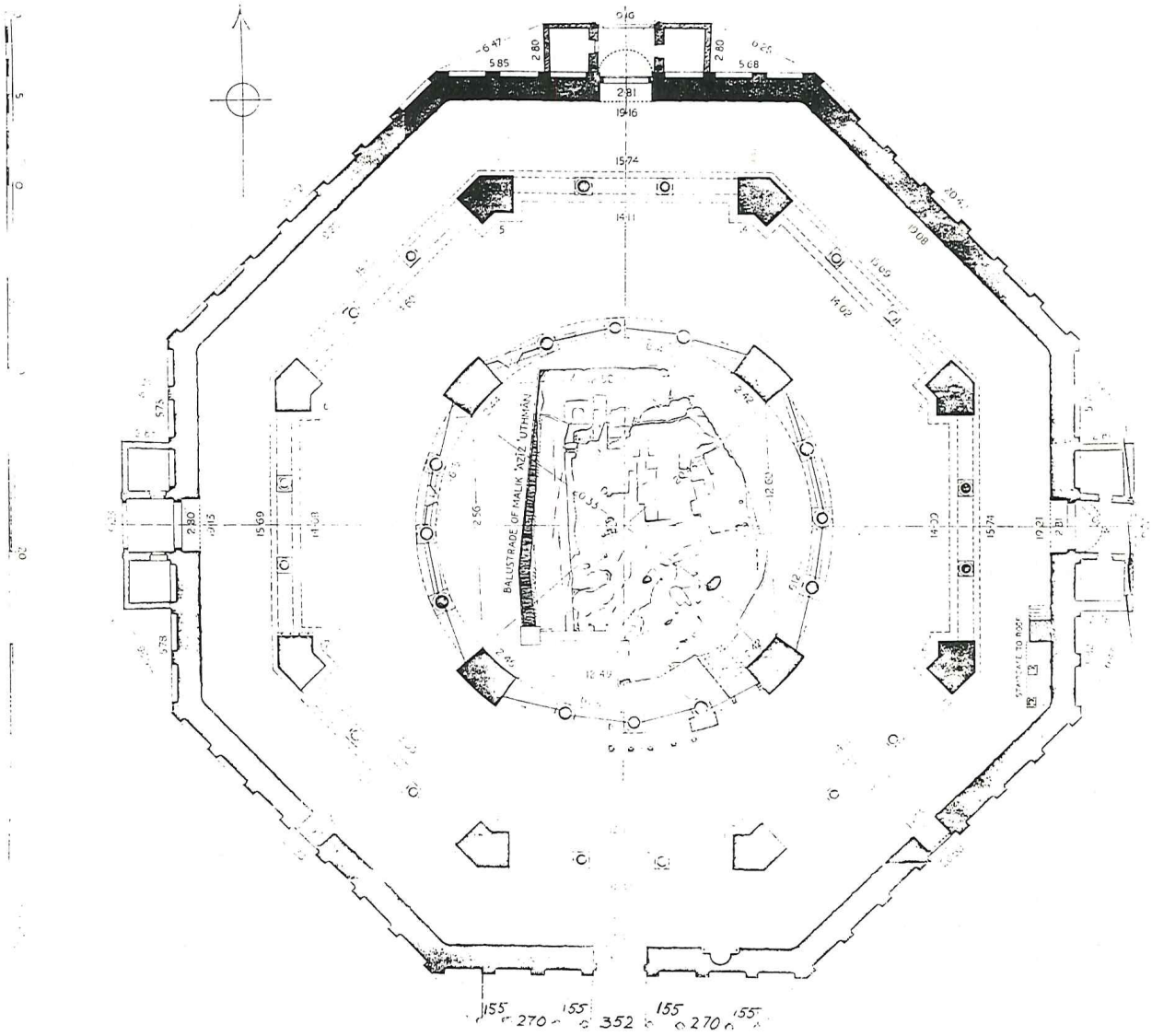

Fig. 2

octagon is 2059 cm. (calculated) that of the inner one is 1570 cm. (average).

$$\frac{1570}{2059} = \frac{8}{7} \times \frac{2}{3} \quad 1568.7$$

The radii of the two circles circumsribing the two octagons must be of the same ratio as the sides of the octagons. Their ratio is 16 to 21.

The inner most circle is measured. The radius is 1022 cm. In Creswell there is a calculation for the outer radius as 2687.5 cm. The relation of the two radii;

$$\frac{1022}{2687.5} = \frac{8}{7} \times \frac{1}{3} \quad 2682.75$$

Thus, the inner circle's radius is 8 divisions out of 21 divisions forming the outer circle's radius. The irregularities of the side dimensions of both octagons may be due to the bisecters unaccuracy of 90 degrees radial lines. The sides of the octagons being incommensurable when the radius is commensurable, the architect had no control of measurement for the sides.

The outer circles radius is 2682.75 cm. according the measured radius of the inner

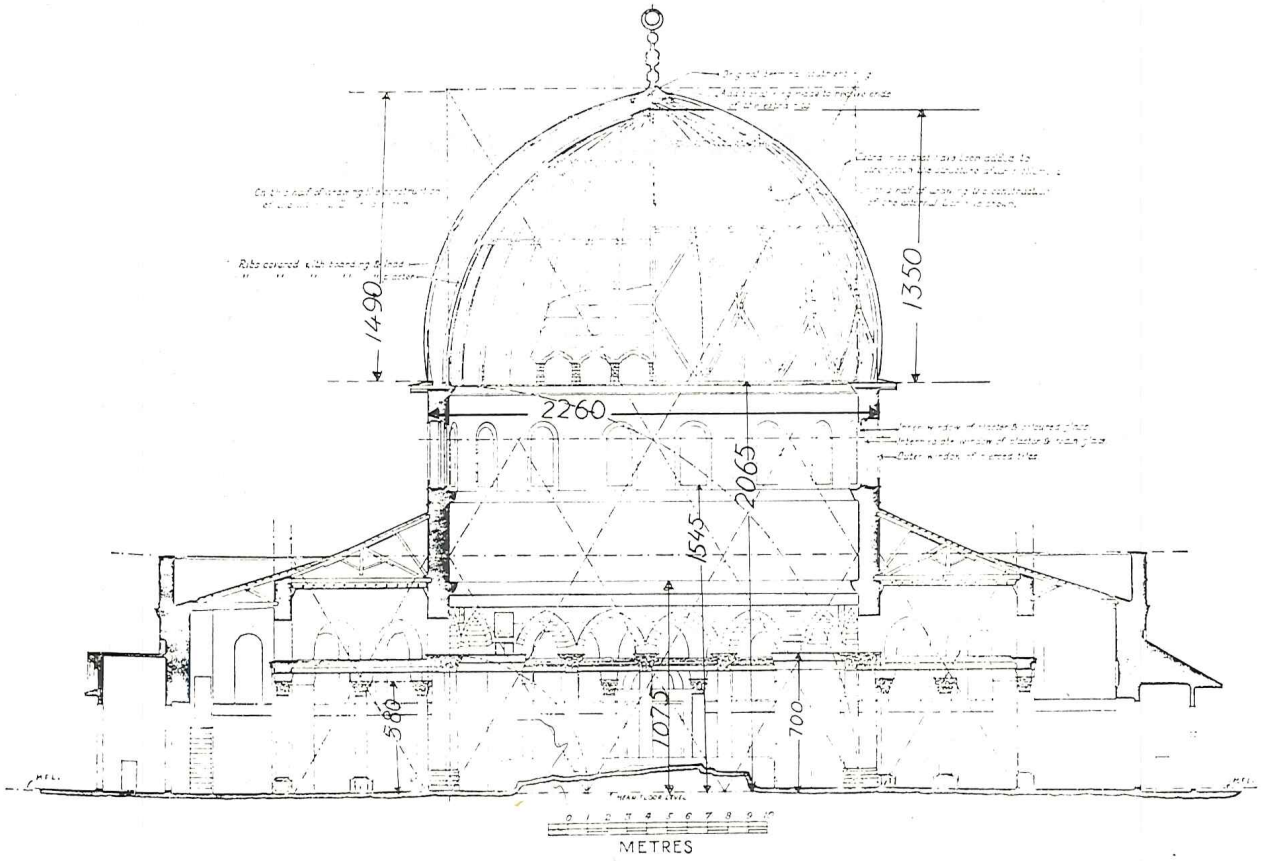

Fig. 3

circle. This measure should be a certain number of feet used for the layout of the building. 2682.75 ÷ 91 = 29.48 cm. The architect has taken 91 ft. as the layout radius of the plan, it is divisible by 7, so the inner radius is 34 and 2/3 ft. long, the second octagon is 69 and 1/3 ft. long.

The elevation relations

(All measurements marked on the fig. 3 is scale measurements from the drawing.)

The height of the inner column is measured as 700 cm.

$$\frac{700}{1022} = \frac{8}{7} \times \frac{3}{5} \quad 700.8$$

The columns supporting the inner octagon is 580 cm. high. the outer radius of the inner octagon is 2044 cm.

$$\frac{580}{2044} = \frac{8}{7} \times \frac{1}{4} \quad 584$$

The inner drum's first cornice height 1075 cm. its relation to radius of 1022 cm.

$$\frac{1075}{1022} = \frac{7}{8} \times \frac{6}{5} \quad 1073.1$$

The upper row of cornice 1520 or the sill of the windows 1545 cm. relation to the diameter 2044.

$$\frac{1545}{2044} = \frac{\sqrt{8}}{\sqrt{7}} \times \frac{1}{\sqrt{2}} \quad 1545.1$$

Total height of the drum 2065 cm.

$$\frac{2065}{2044} = \frac{\sqrt{56}}{\sqrt{49}} \qquad 2064.7$$

The relation 50/49 closes the relation with the diameter.

The relations of the dome.

The dome's outer cord dimension 2260 cm. Its perpendicular bisector 1490 cm.

$$\frac{1490}{2260} = \frac{\sqrt{7}}{\sqrt{8}} \times \frac{1}{\sqrt{2}} \quad 1494.8$$

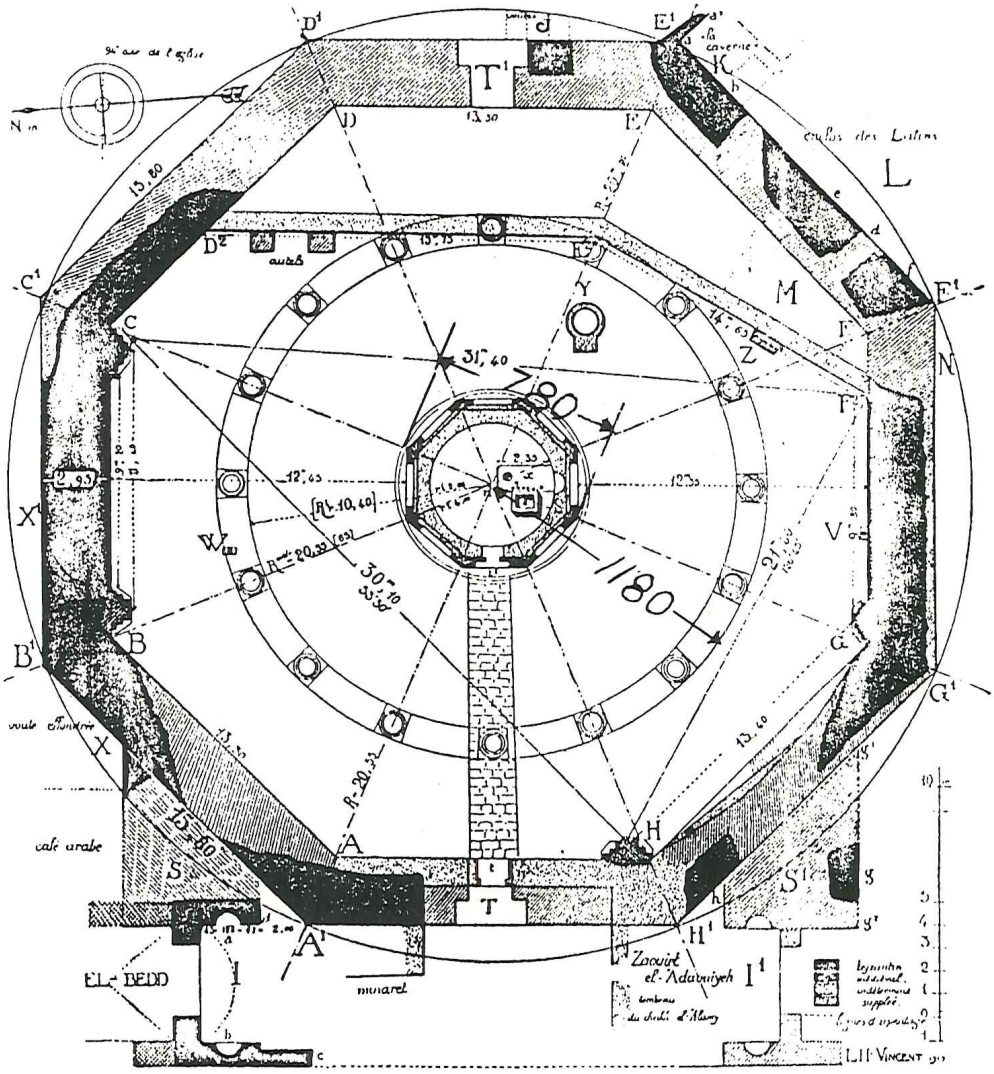

Fig. 4

The inner measurements; the inner cord 2044 cm. and its perpendicular bisector 1350 cm.

$$\frac{1350}{2044} = \frac{\sqrt{7}}{\sqrt{8}} \times \frac{1}{\sqrt{2}} \quad 1352$$

The Church of Resurrection. (Fig. 4)

The radius of the outer circle circumscribing the octagon is marked 2055 cm., 2055 ÷ 70 = 29.36 cm. This dimension of the foot is used for the construction of the temple of Artemis in Jerash, it is marked on a long horizontal line on the southern side of the podium.

The scale reading of the radius for the outer circle encircling the bases of the columns is 1180 cm. the relation to outer circles radius;

$$\frac{1180}{2055} = \frac{\overline{8}}{7} \times \frac{1}{2} \quad 1174.2$$

This radius is 40 feet long.

The radius of the inner octagon 390 cm. (scale reading).

$$\frac{390}{2055} = \frac{8}{7} \times \frac{1}{2} \times \frac{1}{3} \quad 391.4$$

This radius is 1/3 of 40 ft. it is 13 and 1/3 ft. The elements for elevation are not in hand to analyze.(Note. All figures are from Creswell.)

H. Kalayan

Excavations at PPNB 'Ain Ghazal

Report from
Gary O. Rollefson
and
Albert Leonard, Jr.

During January-April of 1982, the Department of Antiquities of Jordan conducted the first of a multi-year series of excavations at 'Ain Ghazal, a PPNB village on the northern outskirts of Amman in the municipality of 'Alya. Measuring at least 600 by 200 metres in extent, the 12 hectares of area at 'Ain Ghazal rank the village with Tell Abu Hureyra in northern Syria, approximately three times the size of contemporary Jericho. The site is situated along the banks of the Zarqa River in an ecotone between the high jebels and deep wadis of Amman and the lower hills and rolling landscape towards Zarqa.

The efforts of the 1982 season, co-directed by Dr. Gary O. Rollefson of ACOR and Dr. Albert Leonard, Jr., of U. Missouri-Columbia, were, in part, salvage-oriented to recover as much information as possible in areas threatened by erosion along road cuts and commercial construction which had severely damanged the eastern and southern sectors of the site. Mr. Khaled Abu Ghuneima and Mr. Emusaytef Suleiman were Assistant Directors of the project.

Although analysis of the season's work was not completed by press time for the current volume of the *Annual,* several preliminary observations are appropriate here. More than 40 individual structures were identified in the road cuts this season, and along the 600 m. exposure it appears that at least three major clusters of buildings are included in the site. The houses are multi-roomed rectangular structures, ranging from ca. 5.0 to more than 6.5 m. in length for the domestic dwellings. One building, or building complex of "apartments" sharing party walls, is 15 meters in length. (Fig. 1). Walls are constructed of stone (at least for the lower portion) set in mud mortar, covered with mud plaster, and finished with fine white plaster that bears traces of red ochre in several instances. Floors are made of fine, hard white plaster, and the use of red ochre on extensive areas is evident in some instances, while rectilinear and "polka dot" designs occur on some floors. Three postholes were located along the western wall of two superimposed floors, attesting in some degree to the manner of supporting roof beams. In one trench, it can be seen that at least six major phases of occupation exist at 'Ain Ghazal.

Sunken plastered hearths are characteristic of the houses, and a direct correlation of these domestic features with sub-floor burials immediately to the south is an intriguing aspect of cultural/ritual regularity at 'Ain Ghazal. A minimum of 19 individuals from 15 burial pits was recovered, and infant mortality appears to be high. No plastered skulls were found this season.

A mixed economy is indicated by the samples from this season. Sickle blades are moderately represented, and domestic wheat, barley, pea, lentil, and possibly chickpea were harvested; fig pips attest to another item of the diet. Domestic sheep and goat are present, although spear points (arrowheads are rare) reveal a reliance on hunting as well; in fact, the predominant faunal element is gazelle ("Spring of the Gazelle"), and wild bovids and equids also occur at 'Ain Ghazal. Bone awls and spatauls form a small part of the tool kit, yet burins constitute an amazing 40% of the chipped stone inventory.

Fourteen animal figurines of clay (four of them baked) were recovered. Of the unbaked specimens, one bears traces of red ochre. One small plaster figurine is anthropomorphic and highly stylized. (Fig. 2). Small clay cones and balls appear to be gaming pieces. Stone bowls, mortars, and querns of limestone occur, as well as a bowl of basalt. Basalt was also used for pulverizing red ochre and for grinding grain. The use of plaster for bowls, platters, and

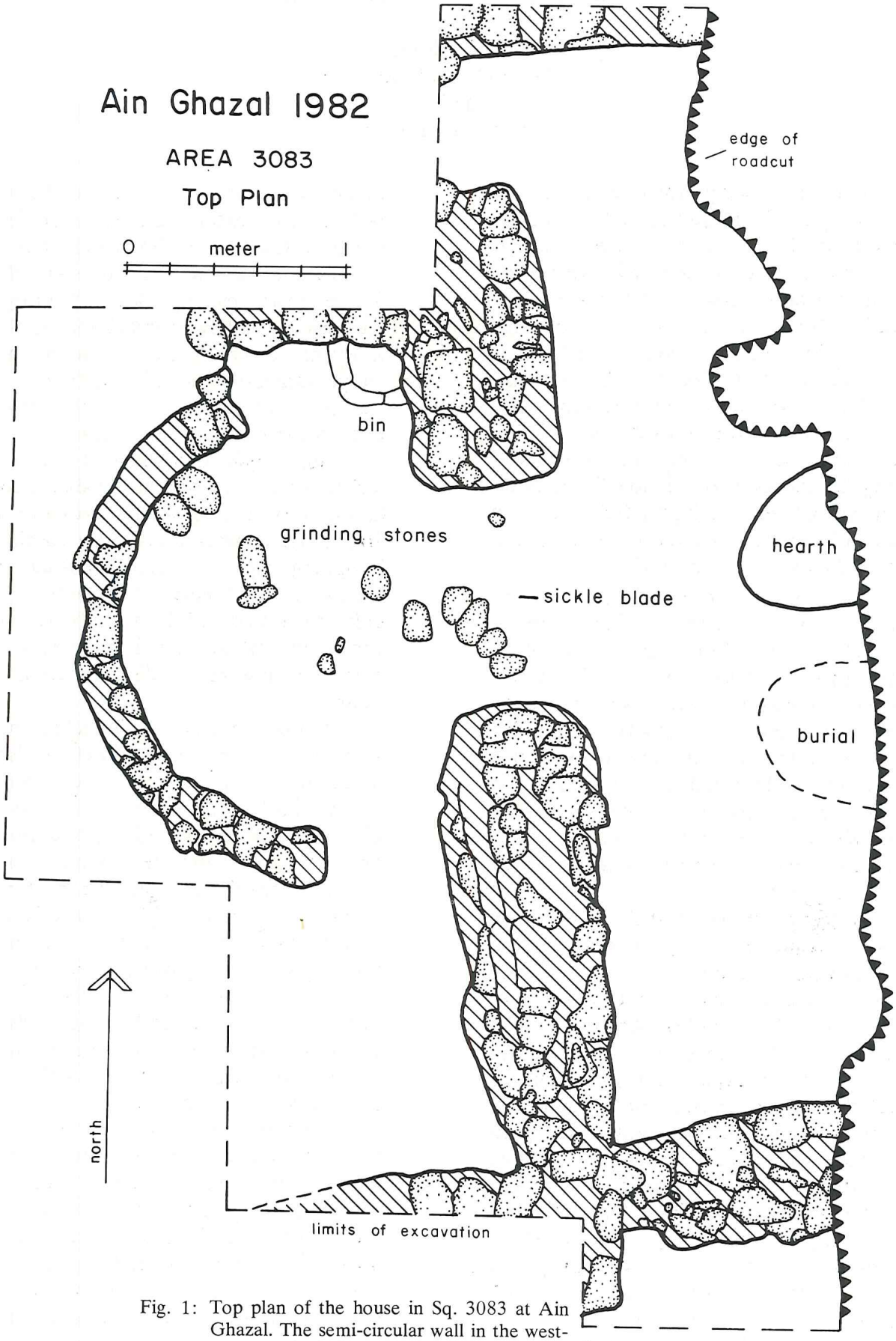

Fig. 1: Top plan of the house in Sq. 3083 at Ain Ghazal. The semi-circular wall in the western room is constructed on top of the floor and appears to be a bench on which to rest domestic utensils.



Fig. 2: Stylized human figurine made of plaster. Height: 59 mm. (photo courtesy of Dr. Denise Homes).

troughs ("white ware") is also indicated by a number of fragments.

Contacts with areas outside the immediate vicinity are demonstrated by a knife of Anatolian (?) obsidian, two dentalium shells from the Mediterranean (as well as several perforated cockle shells), two cowrie shells from the Red Sea, and stones stained with asphalt (?) from the Dead Sea.

Additional work will be conducted by the Department of Antiquities at 'Ain Ghazal during the remainder of 1982, and it is hoped that large-scale efforts can begin in the summer of 1983.

G.O. Rollefson
A. Leonard, Jr.

UDRUH. 1980 AND 1981 SEASONS

Report from
A.C. Killick

The village of Udruh lies 20kms north-west of Ma'an and 11kms east of Wadi Musa, at a height of 1300 above sea level. The area has an annual rainfall of less than 20cm and a perennial spring has consequently attracted settlement to the site throughout antiquity.

The site of Udruh and the immediate area was surveyed in 1980. A more accurate architectural and photographic record was required than that of the only other major study, a five day survey in 1887/1898 (Brunnow and Domaszewski, Die Provincia Arabia, 1904). Surface artifacts from the site of Udruh indicated occupation during the Lower Palaeolothic, Neolithic, Iron Age, Hellenistic, Nabatean, Late Roman, Byzantine, Early and Late Islamic and Ottoman periods. The trade route from Arabia northwards to Syria passed through Udruh in the Nabatean period. That same route later became the 'Via Traiana Nova', the Roman road constructed (A.D.111-A.D.114) between Syria and the Red Sea coast.

The main architecture at Udruh lies to the west of the village and consists of a large trapezoidal shaped fortress with 200m long walls and projecting defensive towers. (Pl. CXLIX,1). The area within these walls is strewn with large masonry rulbble and building debris. The site falls 30m from west to east and projects over the spring source at the north-east corner.

The town of Udruh is first mentioned in the second century A.D. listings of Ptolemy, although by the fourth century A.D. it is missing from the military listings of the *'Notitia Dignitatum'*. The Justinianic tax edict from Beersheba clearly refers to Udruh paying the highest tax at the top of the list of the towns of Palestina Tertia. The Islamic sources highlight the importance of the site as the scene of the conference in A.D. 658 between Muawiya Ibn abi Sofian, the governor of Syria, and the cousin and son-in-law of the Prophet, Khalif Ali ibn abi Talib. The sources continue to mention the site throughout the later periods.

In the 1980[1] season, in preparation for excavation, all the major building elevations were drawn and photographed, some of which have since collapsed. Several new sites in the immediate area were located and planned. These include: Tell Udruh, an Iron Age and Nabataean hill top tower with a ring ditch; a series of watch towers protecting the Nabataean and Roman route, running north-west towards Shobek; a very extensive limestone quarry for the main site of Udruh. The whole area was intensively field walked and recorded. The first season of excavation in 1981[2] concentrated on the excavation and clearance of a corner tower of the fortress as well as in four other areas on the main site. An important pottery sequence was recovered running from Nabataean through to the Mamluk and Ottoman periods. (Pl. CXLIX,2).

The architecture of the site indicated that it was clearly a strong military fortress and it is plausible to suggest that it was originally constructed in the Tranjanic period at a similar time to the Roman road astride which it lies. All areas however underwent significant rebuilding in the Early Islamic period.

Work in 1982 will concentrate on establishing a basis for the internal plan of the fortress, clearing a complex water

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[1] In 1980 the project was funded by the British School of Archaeology in Jerusalem, the British Institute at Amman for Archaeology and History and the author.

[2] In 1981 the project was funded by the British School of Archaeology in Jerusalem, The British Academy, the British Institute at Amman for Archaeology and History, the Palestine Exploration Fund, the Ashmolean Museum, the Manchester Museum and the author.

ravine system, further excavations of the head-quarters building and a rescue excavation of the further corner tower under threat of demolision. The site is threatened by the growth of the modern village and this was noted in 1971: "An enormous amount of archeological work remains to be done in Jordan...While Lejjun is unlikely to disapear in the near future, Udruh is already fading as its village begins to encroach' (G.W. Bowersock, *Journal of Roman Studies).*

A preliminary report of all three seasons will appear in the next *ADAJ.*

A.C. Killick

A NEW MOSAIC DISCOVERED IN MADABA

Report from
M. Piccirillo

As reported in a brief report in the ADAJ 1980, the Department of Antiquities, in collaboration with the Franciscan Biblical Institute, since 1979 is carrying out cleaning and excavation works on the Roman cardo of Madaba once occupied by the Chruch of the Virgin Mary and by the Church of the prophet Elias.[1]

The mosaic floor of the church of the Virgin Mary at Madaba was the first mosaic floor of Jordan to be known to scholars. (Pl. CL, 1). It was found in 1887. Since then many scholars have studied the three inscriptions of the mosaic floor, but little interest was given to the history of the monument.

The Department of Antiquities acquired the site in 1972. In 1973-74 the area was partially cleaned. In 1979, Dr. Adnan Hadidi, Director of the Department, decided to restore the building for the preservation of the mosaic. Therefore, it was necessary to define the plan of the ancient edifice, after systematic excavations which, since then were directed by the writer. In the progress of the works further studies gave to me the opportunity to locate under the atrium of the church, the left part of a mosaic floor which is now in the Theatre Museum in Amman.[2] In the last two weeks of August 1982, in a rescue excavation, this mosaic floor was unearthed 1.30 cm. below the church level.[3] (Pl. CL, 2; Fig. 1).

In an acanthus frame, decorated with hunting scenes and the Seasons on the corners, there are two rectangular panels with mythological scenes. The best preserved panel depicts Aphrodite, seated near Adonis, who threatens with her shoe the young Eros seized by a Grace. Two other Graces run after Erotes, while a young Peasant brings a partridge and fruits in a basket.

In the second panel, partially damaged when the front wall of the church was built, Phaedra and Hippolytus, accompanied by servants and handmaids, are represented.[4] Unfortunately, only the name of Hippolytus remains on the right.[5]

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1. M. Piccirillo, "A note on the Church of the Virgin at Madaba, Jordan", *ADAJ* XXIX (1980) 151-152, pl. XCII-III, where the main bibliography on the subject is given.
2. The main source for the discovery of the new mosaic is M. Metaxakis who wrote a long article on the antiquities of Madaba at the beginning of our century (in *Nea Sion* 1905, 454-473, photo XVIII, the text is in Greek).
3. My thanks are due to Dr. Adnan Hadidi and to the Officials of the Department for allowing the necessary permission and providing financial support to the work.
4. The subject of the mythological tragedy, narrated by Euripides in Greek and by Seneca in Latin, is summarized by A.S. Way, editor of Euripides' work in the Loeb Classical Library, n. 12, p. 159: "Hippolita, Queen of the Amazons, bore to Theseus, king of Athens and Troezen, a son whom he named from her, Hippolytus. Now this youth grew up of all men most pure in heart, reverencing chiefly Artemis the Maiden, Goddess of the Chase, and utterly condemning the worship of Aphrodite. Wherefore the wrath of the Queen of Love was kindled against him, and she made Phaedra, his father's young wife, mad with love for him; and although she wrestled with her malady, and strove to hide it in her heart, till by the fever of it she was brought nigh to death's door, yet in the end it was revealed, and was made destruction to her and to Hippolytus also".
5. A large number of monuments (sculptures, frescoes and mosaics) illustrate the tragedy in the Greek-Roman and Byzantine Periods. They enable us to complete the scene of the mosaic of Madaba. Phaedra sits among a group of maid servants, while her nurse is delivering a message to Hippolytus, who is leaving for the hunt with his companions, with a spear in his left hand, and who makes a gesture of repulsion with his right hand, (see D. Levi, *Antioch Mosaic Pavements*, I, Princeton 1957, pp. 71-75). A Byzantine mosaic with a similar scene was found at Sheikh Zoueda between el Arish and Rapha (*ibi*, p. 73, fig. 29).

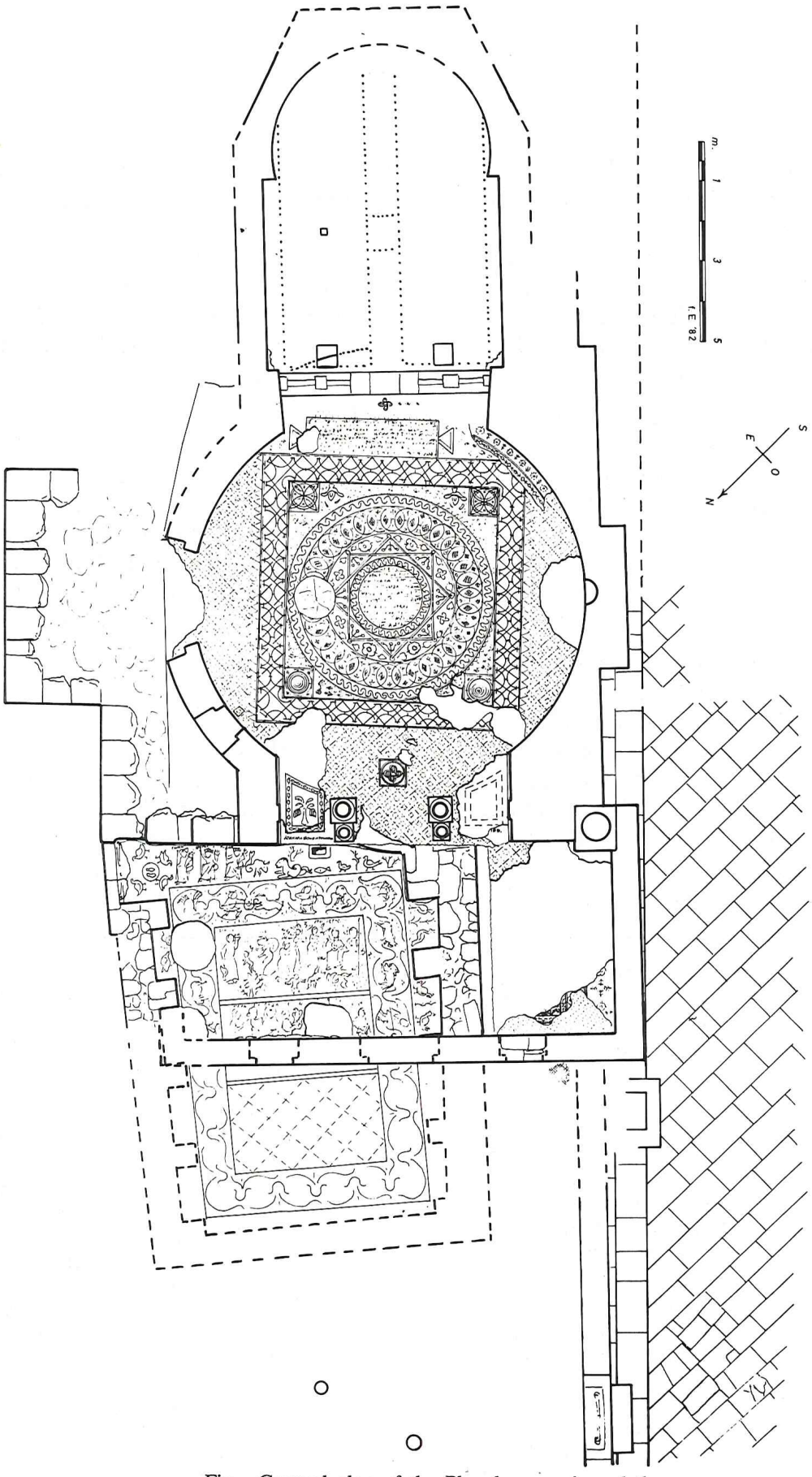


Fig. Ground plan of the Phaedra mosaic and the Church of Virgin Mary.

Outside the acanthus frame, near the eastern wall of the hall, together with birds, fishes and sea-monsters, there are the personifications of three cities seated on throne: Rome, Gregoria and Madaba, each one dipicted as a Tyche with turreted crown on the head, handling a cornucopiae in the left hand and a cross in the right hand.[6]

The mosaic floor is one of the most important mosaics until now discovered in Jordan and one of the finest examples of the classical Renaissance at the time of Emperor Justinian in the Byzantine Empire.[7] It is to be dated to the middle of the VIth Cent. A.D.[8] It decorated an official hall, perhaps the Council Hall of the city of Madaba.

From the last excavation campaign we know better the plan of the church of the Virgin Mary and the history of the monument. In the II-IIIrd Cent. A.D. an exedra was built on the northern side of the paved road stretching East-West in the middle of the town.[9] In the Middle of the VIth Cen. A.D. a broad room (9 x 10 m. wide), with an entrance on the northern wall, was built and decorated with mosaics, on the western wall of the exedra. Later, at the end of the same century, the room was covered and the church of the Virigin Mary was built. The church which, took the place of the previous Roman and Byzantine monument along the road, was paved with mosaics[10] It was paved anew, during the Ummayyad Period, in 662-663, at the time of bishop Teophanes, whose name we know from the first line of the dedicatory inscription discovered during the current excavations in 1980.

Michele Piccirillo
Franciscan Biblical Institute

6 For parallels of the same epoch see the four silver statuettes which represent Rome, Constantinople, Alexandria and Antioch in the British Museum (in K. Weitzmann, *Age of Spirituality, the Catalogue,* Princeton 1979, pp. 176-177, no. 155). Rome ordinary wears the helmet (*ibi,* p. 174, no. 153, the photo of the ivory diptych, in the Vienna Museum, with the personifications of Rome and Constantinople). The Tyche of Madaba, wearing turreted crown and chiton leaving right leg bare, standing left foot on uncertain object, holding in left hand cornucopiae and in right hand a small bust, is struck on the coins of the city at the time of Emperors Caracalla, Geta and Elagabalus (A. Spijkerman, *The Coins of the Decapolis and Provincia Arabia,* Jerusalem 1978, pp. 183-185, pls 39-40). We have no historical evidence to identify Gregoria. The city, between Rome and Madaba, has a foot-stool. On the basis of this sign of distinction and honour, we suggest, only as an hypothesis to be proved in the future, the identification with Constantinople, which on the coins has the left foot on a prow (see the coins of Constans II in *Enciclopedia dell 'arte antica,* II, p. 919).

7. Cfr. G.M.A. Hanfmann, "The Continuity of Classical Art: Culture, Myth, and Faith", in *Age of Spirituality. A Symposium,* ed. K. Weitzmann, Princeton 1980, p. 75-99.

8. My dating is based on stylistic reasons. The mosaic, despite its uniqueness, is well placed among the mosacis of Madaba dated at the time of bishop John (562 A.D.). The acanthus frame has a good parallel in the frame of the chapel of St. Theodore in the cathedral (Piccirillo, *LA* 1981, 299-322, pls. 63-96 and *I mosaici di Giordania,* Roma 1982, 16-20).

9. It is the type of monument resulting from the archaeological evidence.

10. The first mosaic floor is dated by the name of a benefactor remembered in the dated inscription of the church of the prophet Elias (608 A.D.).

استمرارية هذه القناة الفخارية في ارضية القبو الواقع اسفل الدرجات الأولى لساحة معبد زيوس، كما تظهر حجارة البناء المربع بطبزه من الداخل وليس من الخارج، بالتالي فليس من المعقول ان تكون جدران البرج الداخلية بهذا الشكل بالاضافة الى انه من المحتمل ان تكون هذه الجدران مقصورة الا انها حاليا غير ظاهرة.

وهناك ما هو مشابه لهذا البناء المربع في ساحة معبد ارتميس الى الشمال الغربي من النهاية العليا لدرج مدخل المعبد اذ يوجد بناء مربع الشكل أيضا تظهر على جدرانه الشرقية والغربية اماكن الاقنية الفخارية محفورة بالحجر، بالاضافة لوجود حفر سطحي على حجارة المدماك الأول من الجدار الغربي من هذا البناء وظهور قصارة على جدرانه الداخلية ذات الطبزة، وباعتقادي ان هذا التشابه بين البنائين من حيث الشكل ومن حيث وجودهما بالقرب من المعابد الرئيسية في المدينة انما يخدمان غرضا واحدا الا وهو تزويد منطقة المعابد بالمياه النقية.

٣ ـ يبدو ان المياه المتجمعة من المجاري اسفل ساحة الفورم كانت تصرف عن طريق مجرى فرعي يتجه جنوبا باتجاه البوابة الجنوبية ومن ثم يتجه شرقا الى الوادي حيث تم الكشف عن هذا المجرى اسفل البوابة الجنوبية لسور المدينة مباشرة، الا انه قد حصل تغيير في المنطقة في وقت متأخر اذ قطع امتداد هذا المجرى بجدار حجري في المنطقة الجنوبية لساحة الفورم.

٤ ـ خلال عمليات الحفر على الجانب الشرقي للشارع الرئيسي المعمد (الكاردو) لتمديد الكوابل الكهربائية لمشروع الصوت والضوء، بالقرب من نقطة اتصال الشارع بساحة الفورم ظهر مجرى فرعي يتجه شمال ـ جنوب اسفل رصيف الشارع بعمق ٨٠سم وعرض (٣٥) سم ذو قصارة ويسير بشكل موازي للمجرى الرئيسي في الشارع نفسه، ويبدو انه استخدم لتوصيل المياه لمنطقة الفورم.

بعد هذا العرض التفصيلي لمكونات واتجاهات وقياسات المجاري في مدينة جرش الكلاسيكية نتوصل الى ان نظام المياه والمجاري فيها هو نظام دقيق ومتقن راعى فيه مخططوا المدينة سهولة توصيل وتصريف المياه من والى مختلف المناطق حيث توزعت الأقبية والمجاري في المدينة تبعا لهذا النظام الدقيق والمحدد.

عبد المجيد مجلي

عام يلاحظ انه: –

١ – بلغ أقصى اتساع للمجاري (٦٠ سم) وادنى اتساع (٢٠ سم) وذلك في المنطقة المقابلة للكتدرائية، وانني اعتقد ان السبب في تدني اتساعها الى هذا الحد هو سقوط الاعمدة الواقعة على جانبي الشارع الى وسطه مما عمل على تخلخل الارضية المبلطة وتغير شكلها المستقيم مما دفع بجانب المجرى نحو بعضهما البعض اذ لوحظ هذا عندما ازيلت طبقة البلاط في هذه المنطقة لتسويتها وتوسيع المجرى.

٢ – اما بالنسبة للعمق فيختلف من منطقة لأخرى ففي المنطقة الممتدة ما بين بوابة ارتميس والمصلبة الجنوبية بلغ العمق ما بين (١٨٠ – ٢٢٠ سم)، اما بين المصلبة الجنوبية وساحة الفورم فبلغ (١٢٠ – ١٦٠ سم) ولقد قطع استمرار المجرى في هذه المنطقة خاصة في منتصف المسافة ما بين المصلبة والفورم بدرجة واحدة بلغ ارتفاعها (٤٠ سم) لزيادة حدة جريان المياه بالاضافة لتغيير وانحراف سير المجرى في كامل هذه المنطقة اما بالنسبة للمجرى في الدكيومانوس الجنوبي فقد بلغ عمقه ما بين (١٢٠ – ١٣٠ سم) بينما تراوح العمق في ساحة الفورم ما بين (١٥٠ – ١٨٠ سم).

ويلاحظ ان هناك مجاري فرعية وثانوية تتصل بالمجاري الرئيسي اقل اتساعا وعمقا لتصريف المياه من المناطق الغربية والشرقية الى المجرى الواقع اسفل الشارع الرئيسي المعمد. وتظهر على جوانب الشوارع الرئيسية مصارف بشكل نصف دائري بلغ نصف قطرها (١٠ سم) تعمل على تصريف المياه من على سطح الشوارع الى المجاري السفلية.

٣ – اختلفت المسافات ما بين الأغطية الدائرية اذ بلغت اطول مسافة (٣٩,٣٥ م) بينما اقصر مسافة هي (٩,٣٠ م)، ويلاحظ ان هذه الاغطية تظهر على سطح الشارع لغاية المصلبة الشمالية فقط اما في المسافة ما بين المصلبة والبوابة الشمالية فلا يظهر لها أثر مما يدعو الى الاعتقاد بأن المنطقة هذه قد افتقرت للمجاري لأنها تعود الى فترة متقدمة (١١٥ بعد الميلاد).

محتويات المجاري: – [1]

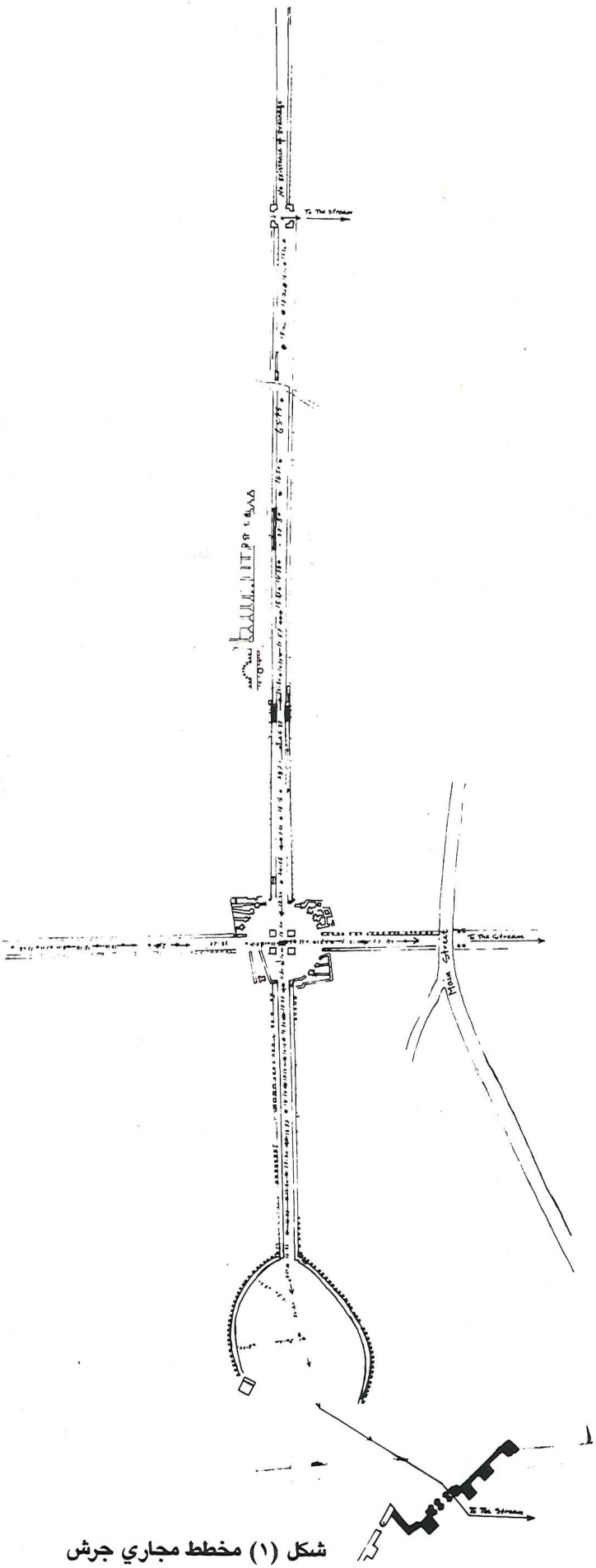
لقد احتوت المجاري على نسبة كبيرة من الكسر الفخارية التي تعود في تاريخها لمختلف العصور التاريخية من رومانية وبيزنطية واسلامية خاصة الاموية والمملوكية، بالاضافة لبعض القطع الفخارية الكاملة كالاسرجة والاباريق الصغيرة والقوارير. كما احتوت على كمية كبيرة من قطع العملة البرونزية التي تم تنظيف جزء منها في مختبر دائرة الآثار العامة. ومن خلال الدراسة الاولية لهذه القطع يلاحظ انها تعود بتاريخها للعصور الرومانية والبيزنطية والاسلامية خاصة الفترة الاموية وكذلك الى الفترة الانتقالية ما بين العصر البيزنطي والفترة الأموية. وهناك بعض قطع العملة الساسانية والدراهم الأموية الا انها قليلة العدد فلا تتجاوز اربعة او خمسة بعضها مكسور.

ومن ضمن ما احتوته المجاري كسر زجاجية لكؤوس وقوارير مختلفة الاحجام والأشكال وقطع برونزية عبارة عن اساور وخواتم وقليل من القطع العظمية وافلاك المغازل الحجرية.

بعض الملاحظات بالنسبة لمنطقة ساحة الفورم وما يجاورها: –

١ – لقد تم الكشف عن قنوات رصاصية في المنطقة المحاذية للممر الغربي المعمد لساحة الفورم ربما كان لها اتصال بالقنوات الفخارية التي ظهرت في حفريات الدكتور عاصم البرغوثي خلف الممر للشارع المعمد (الكاردو) من جهة ومن جهة اخرى بالقنوات الفخارية التي كانت موجودة في المجريين السطحيين في ساحة الفروم.

٢ – بالنسبة لما يطلق عليه اسم البرج المربع الكائن في الزاوية الجنوبية الغربية للفورم فانني اعتقد انه عبارة عن بركة لتجمع المياه النقية لتزويد الاقبية الواقعة اسفل ساحة معبد زيوس، اذ تظهر القنوات الفخارية على الجدار الغربي والجدار الشرقي لهذا البناء المربع، بالاضافة الى انه قد تم الكشف عن



شكل (١) مخطط مجاري جرش

نظام المياه والمجاري
في مدينة جرش الكلاسيكية

اعداد: عبد المجيد مجلي

من اهم مشاريع دائرة المشروع السياحي لتنمية موقعي جرش والبتراء مشروع الصوت والضوء في مدينة جرش، ولتنفيذ هذا المشروع تم تمديد الكوابل الكهربائية الرئيسية في المجاري الرومانية على طول شارع الاعمدة (الكاردو) المتجه من الشمال الى الجنوب والشارع المتجه من الغرب الى الشرق (الدكيومانوس الجنوبي). بعد انتهاء عملية التنظيف هذه قررت دراسة المجاري من حيث بنائها وتخطيطها ومحتوياتها والتوصل لبعض النتائج التي تلقي الضوء على نظام المجاري الذي استخدم في العصر الروماني في مدينة جرش.

ولتسهيل عملية الدراسة لجأت الى تقسيم المجرى الرئيسي في الشارع المعمد (الكاردو) الى اجزاء وفقا للمباني الأثرية على جانبيه كالتالي: -

١ ـ من بوابة معبد ارتميس حتى سبيل الحوريات.
٢ ـ من سبيل الحوريات حتى الكتدرائية.
٣ ـ من الكتدرائية الى المصلبة الجنوبية.
٤ ـ من المصلبة الجنوبية حتى منتصف ساحة الفورم.

وكذلك قمت بدراسة المجرى الرئيسي الآخر في الشارع المتجه شرقا والمجاري الموجودة في ساحة الفورم بالاضافة لتسجيل بعض الملاحظات عن هذه الساحة.

تكوين المجاري: -

يلاحظ ان هناك شكلين من بناء المجاري:

الاول : مجرى منحوت في الطبقة الصخرية الأرضية اضيف عليه بعض المداميك لتشكيل المجرى مع مراعاة الفجوات الصخرية الطبيعية المتشكلة في هذه الطبقة والتي تعطي اتساعا طبيعيا للمجرى كما هو ظاهر في المنطقة الممتدة ما بين بوابة معبد ارتميس وسبيل الحوريات وكذلك في ساحة المصلبة الجنوبية.

الثاني: مجرى مبني على شكل مداميك من الحجارة الصغيرة والكبيرة ومطلي بالقصارة ويبدو هذا الطراز واضحا في المجرى الممتد من المصلبة الجنوبية باتجاه وسط ساحة الفورم وكذلك في المجرى الممتد الجهة الغربية باتجاه وسط ساحة الفورم أيضا، الا ان المجرى الأول تعلوه طبقة من الحجارة الصغيرة الحجم التي تشكل رصفه او اساسا لبلاط ساحة الفورم بلغ ارتفاعها (٤٠ – ٥٠ سم) بينما لا تظهر هذه الطبقة في المجرى الثاني.

اتجاهات المجاري: - (شكل ١).

تمتد المجاري بشكل عام باتجاهين: -

١ ـ نحو الجنوب وذلك على طول امتداد الشارع الرئيسي المعمد (الكاردو) وساحة الفورم.
٢ ـ نحو الشرق وذلك على طول امتداد الشارع الفرعي الثاني (الدكيومانوس الجنوبي) الذي يشكل المجرى الرئيسي الأول للمدينة حيث يتم تصريف المياه من المدينة الى الجدول شرقا. الا ان هذه الاتجاهات لا تسير بشكل مستقيم بل تنحرف من نقطة لأخرى تخفيفا لحدة تدفق المياه داخل المجاري. كما يتضح هذا الانحراف من خلال الاغطية الدائرية (المناهل) والتي يبلغ قطرها ما بين (٤٠ – ٥٠ سم) بالاضافة لظهور بقايا المقابض المعدنية عليها. والتي لا تقع هي أيضا على خط مستقيم في منتصف الشارع.

قياسات المجاري: -

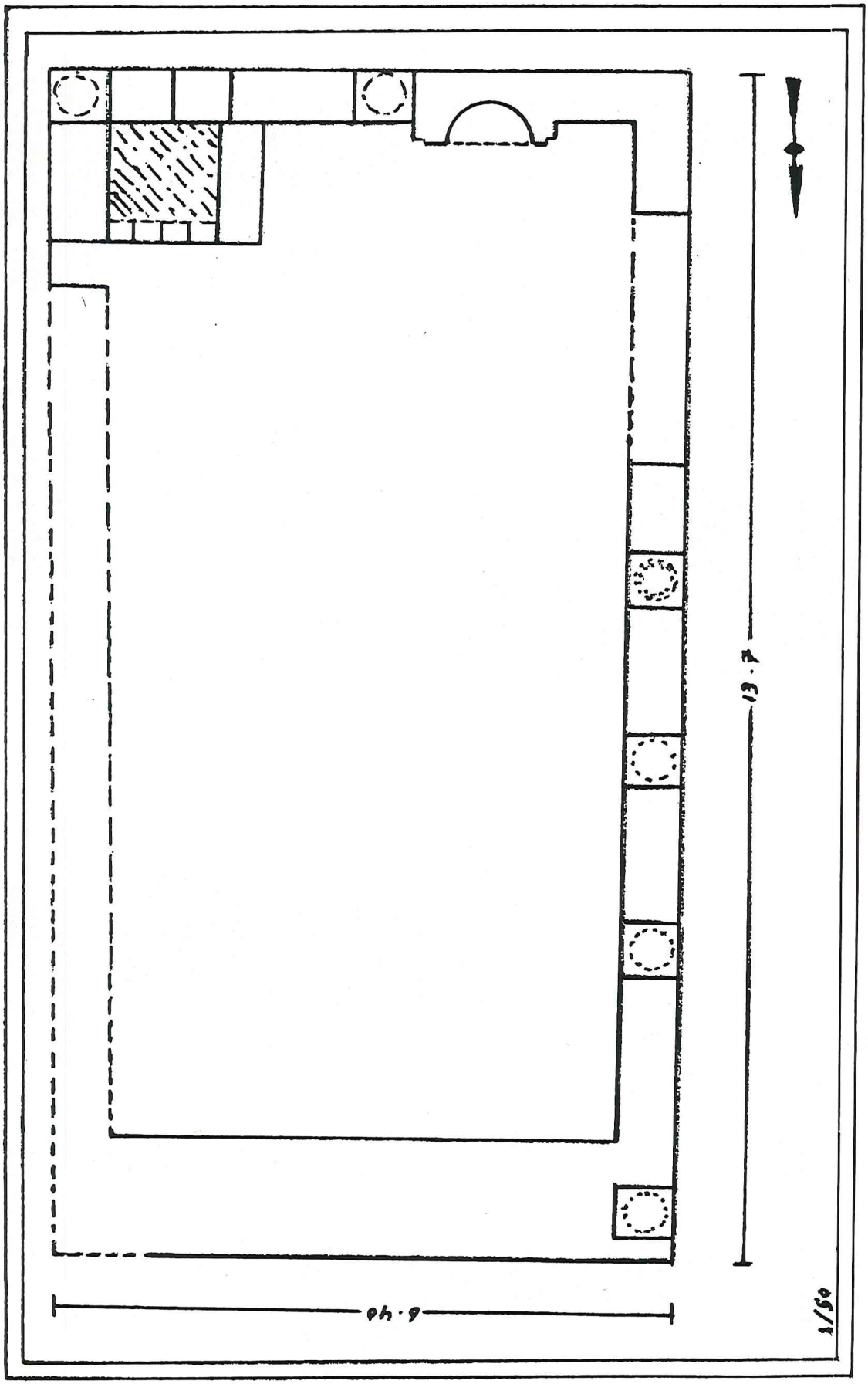
بعد اخذ القياسات الدقيقة للمجاري بشكل



موقع المسجد الاموي قبل التنقيب



المسجد الاموي في جرش بعد التنقيب



المخطط ـ ١ ـ

المسجد الاموي بمدينة جرش

مسجد اموي في جرش

اعداد: عائده نغوي

تم اكتشاف هذا المسجد الى الشمال من بوابة معبد ارتميس وكنيسة الجسر المواجهة لها وبمحاذاة شارع الاعمدة الرئيسي (الكاردو).

بدأ العمل في الموقع بتاريخ ١٠/٥/١٩٨١ بازالة الحجارة الكبيرة المتردمة والاتربة والاعشاب وذلك بتمويل من المشروع السياحي الذي قدم العمل والآليات.

انشىء المسجد على بقايا منزل روماني ذي فناء متوسط (اتريوم) ظهر على طرفه الشمالي الغربي مصرف للماء يمتد الى الشارع المعمد ـ وبينه وبين هذا الشارع ممران، الأول مرصوف بالفسيفساء الملونة التي لا تزال بقاياها ظاهرة والآخر مبلط.

يقع المدخل الى الغرب ويبلغ عرضه ١,٢٠م وقد بنى بحجارة رومانية اعيد استعمالها. ولا تزال الجدران الغربية والشمالية والجنوبية التي يبلغ سمكها من ٦٠ الى ٦٧ سنتمتر واضحة المعالم، غير انه لم يبق اثر للجدار الشرقي.

يتألف المسجد من الداخل من صحن أوسط (١٣,٠٧ × ١٠م) يحف به رواقان في الاصل. الا انه لم يبق سوى الرواق الغربي وله خمس قواعد اعمدة كانت تحمل ركائز السقف (المخطط رقم ١) دون ان يكون لها مقابل على الجانب الشرقي ينخفض الصحن عن الاروقة مقدار عشرة سنتمترات. وهذه الظاهرة كانت شائعة في المنازل الرومانية.

للمسجد محراب مجوف، مثبت في الجدار الجنوبي وهو عبارة عن حنية لبناء روماني اعلاها على شكل صدفة افروديت، طلى بالجص ـ وارتفاعه الحالي ١,٥٥م. وبالقرب منه في الزاوية الجنوبية الشرقية مدخل عرضه ١,٤٠م وعلى جانبيه عمودان نحتا لاثبات حاجز. والى يسار الباب مصطبة مستطيلة (٢٠٠ م × ١,٣٥م) ترتفع عن الارض حوالي ٣٥ سنتمترا. وعلى ظهرها آثار لدرجة واحدة ـ ويعتقد ان هذه المصطبة كانت تستعمل منبرا للوعظ.

تلاصق الجدار الجنوبي من الغرب غرفة مربعة الشكل (٢,٥٨ × ٢,٥٨م) ظهرت فيها قناة من الحجر تتصل بأخرى رصاصية تجري باتجاه الشارع الرئيسي المعمد. واما من الجهة الشرقيةفتوجد غرفة اخرى كانت مرصوفة بالفسيفساء ـ كما تشير الى ذلك الأرضية الاسمنتية التي توضع اساسا للمكعبات ـ وعثر كذلك على بلاطات من الطوب مربعة الشكل (٣٠ × ٣٠سم) مرصوفة بين المدخل والغرفة التي يعتقد انها كانت مخصصة لامام المسجد.

في الجدار الشمالي قاعدة عمود مثمنة ـ وعند الزاوية الشمالية الغربية توجد درجتان من المحتمل انهما جزء من مصطبة ـ وبالقرب منها حوض مجصص ـ ربما استعمل للوضوء.

ومثل هذه المصطبة تظهر عند مدخل جامع الحلابات الاموي (١) ويعتقد انها كانت تستعمل لرفع الآذان.

ظهرت اثناء التنقيب كسر فخارية مدهونة باللون الأحمر او الرمادي او البرتقالي وعليها خطوط باللون الأحمر اذا كان الاناء مدهونا باللون البني الفاتح وعثر على كسره رخامية كتب عليها اربعة احرف بالخط النسخي المنقوط وهي لم اب.

ان مسجد جرش هو الدليل القاطع على انتقال المدينة من أيدي البيزنطيين الى سلطة المسلمين بعد الفتح عام ٦٣٦ ميلادي. الا ان هناك آثار اخرى كثيرة ظهرت أثناء الحفرية التي قامت بها الجامعة الأردنية ودائرة الآثار العامة باشراف الدكتور عاصم برغوثي وتظهر في المشاريع القائمة حاليا للاعمار والتنقيب عن مدينة جرش، وهي تشير الى ان المدينة كانت آهلة في العصر الاموي بسبب موقعها على طريق دمشق ـ عمان.

عائدة نغوى

مراجع:

(١) راجع غازي بيشه، حوليه دائرة الآثار العامة العدد ٢٤. (١٩٨٠) ص: ٧٣ ـ ٧٥ بالانكليزية.

ذلك عدة كسر صغيرة.

ان علاقة القرية مع العالم الخارجي المحيط بها قد تأكدت من خلال اكتشاف سكاكين من الزجاج البركاني وبعض الاصداف من البحر الابيض المتوسط وبعض المحار المثقوب وكذلك اصداف من البحر الاحمر، وحجارة مطلية بالقار من البحر الميت.

وتعتزم دائرة الآثار ان تستمر في العمل في نهاية عام ١٩٨٢ ونأمل بأن تقوم بحملة ضخمة في صيف عام ١٩٨٣.

حنان عازر

عين غزال: موقع من العصر الحجري الحديث

اعداد: حنان عازر

باشرت دائرة الآثار العامة بالحملة الأولى من التنقيب في عين غزال من كانون الثاني حتى نيسان ١٩٨٢، وهو مشروع طويل الأمد على ما يبدو. اذ ان الموقع عبارة عن قرية ترجع الى العصر الحجري الحديث ما قبل الفخار، تمتد على مسافة يبلغ طولها ٦٠٠ مترا بعرض ٢٠٠ مترا أي ما يعادل ١٢٠ دونما. وهذه القرية توازي تل ابو هريرة في شمالي سورية وتبلغ ثلاثة اضعاف آثار اريحا المعاصرة لها وتقع على ضفاف نهر الزرقاء في منطقة متوسطة بين الجبال والأودية المنخفضة في عمان وبين التلال والسهوب الممتدة الى الزرقاء.

تركزت جهود الموسم الأول الذي تم بادارة كل من الدكتور غاري رولفسن من المركز الاميركي للأبحاث الشرقية والدكتور البرت ليونارد من جامعة ميسوري – كولمبيا – على انقاذ ما يمكن انقاذه من المعلومات الأثرية في المناطق المهددة بالانجراف وشق الطرق والمنشآت التجارية التي اتلفت الجزء الجنوبي والشرقي من الموقع، وقد شارك في التنقيب كل من خالد ابو غنيمة وامصيطف سليمان مندوبين عن دائرة الآثار العامة.

ورغم ان دراسة وتحليل الموسم الأول لم تتم بعد لاصدار تقرير مبدئي في هذا العدد الا انه اصبح بالامكان ابداء بعض الملاحظات الاولية:

تم التعرف منذ الحملة الأولى على أكثر من أربعين وحدة معمارية في مقطع الطريق وعلى امتداد ٦٠٠ مترا، وتبين وجود ثلاث مجموعات من الأبنية. فالبيوت المتعددة الغرف هي مجمعات سكنية مستطيلة الشكل يتراوح طولها من خمسة الى ستة أمتار ونصف المتر. وقد ظهر مجمع سكني ذو جدران متلاصقة يبلغ طوله خمسة عشر مترا. وهذه الجدران مبنية من الحجارة في مداميكها السفلى على الأقل ومعونة بالطين يغطيها الجص الابيض الذي ما يزال يحمل آثار الوان حمراء وصفراء. اما الأرضيات فهي مغطاة بطبقة من الجص المرصوص ومزينة بخطوط طولية ومنقطة بدوائر على شكل نسيج البولكا. ظهرت بمحاذاة الجدار الغربي ثلاثة حفر كانت مركزا لدعائم خشبية تحمل السقف وذلك في ارضيتين متلاحقتين. وفي خندق واحد تبين وجود ست فترات سكنية على الأقل.

في أرضية المنازل مواقد من الجص غائرة لها علاقة مباشرة بالمدافن الموجودة على الجهة الجنوبية. وهذه الظاهرة تدعو الى الاعتقاد بوجود طقوس دينية وحضارية منتظمة في عين غزال. تم الكشف عما لا يقل عن ١٩ هيكلا عظميا من مجمل ١٥ قبرا. وتبين ان نسبة وفاة الأطفال كانت مرتفعة ولم تكتشف حتى الآن اي جمجمة مغطاه بالجص كتلك التي وجدت في اريحا.

تشير المكتشفات الى نظام اقتصادي مختلط اذ ظهرت كمية من شفرات المناجل وتبين ان اهل القرية كانوا يحصدون القمح والشعير والبزيلا والعدس وربما الحمص بالاضافة الى وجود بذور التين. وهناك دلائل على تربية الأغنام والماعز الا ان رؤوس الحراب والسهام القليلة التي تم اكتشافها تؤكد الاعتماد على الصيد. وكانت الطرائد الاكثر شيوعا الغزال (كما يشير الى ذلك اسم الموقع) مع البقر الوحشي والخيول.

وقد وجدت مخارز وملاعق من العظم كجزء بسيط من الادوات المستعملة بالاضافة الى الازاميل التي تكون اربعين بالمئة منها.

تم الكشف عن اربعة عشر تمثالا لحيوانات من الطين اربعة منها مشوية. اما التماثيل غير المشوية فبعضها يحمل آثار الوان من الاحمر والاصفر. ووجد تمثال بشري من الجص ذو ملامح تشكيلية كما وان هناك طابات من الصلصال وقموع كانت تستعمل للعب. اما الأدوات المنزلية فكانت صحاف من الحجر وهاون – واجران وزبادي من البازلت الذي كان يستعمل أيضا لاستخراج اللون الاحمر الضارب الى الصفار ولجرش الحبوب وهناك دليل على استعمال الجص للادوات المنزلية كما تبين

٩٨١/٥/١١ وتم الكشف عن مدماكين من الحجارة الغير المشذبة من الجهة الجنوبية بلغ ارتفاعهما متر ونصف المتر ـ ويبلغ طول الحجارة متر بارتفاع ٧٧ سنتمترا ـ ويبلغ عرض الجدار حوالي سبعين سنتمترا. وقد ظهرت ثلاث مداميك من الجهة الشرقية ـ ومدماك واحد من الجهة الغربية. تبين ان البرج مبني على الصخر وانه يعود الى العصر الحديدي الثاني (القرن الثامن/ السابع ق.م). كما دلت على ذلك الكسر الفخارية ولكنه يحتاج الى المزيد من التنقيب.

الكهف الأول:

بدأ العمل بتاريخ ١٩٨١/٥/١١ بتعزيل مدخل الكهف الذي يبلغ ارتفاعه ١,١٧ متر من الانقاض التي اخرجها العابثون وظهرت خمس درجات قطعت في الصخر تؤدي الى حجرة الدفن التي تبلغ ٢,٥٠ متر طولا و ١,٧٠ عرضا بارتفاع ١,٤٤ م اليها خمس درجات مقطوعة في الصخر تم العثور على كميات كبيرة من العظام والجماجم المبعثرة وعلى عدد من الاواني الفخارية والاساور البرونزية ترجع الى العصر الحديدي الثاني (القرن الثامن والسابع ق.م). وفي ارضية الكهف ظهرت حفرة مستديرة قطرها ٨٠ سنتمترا وعمقها عشرين سنتمترا. وكان بداخلها جرة مهشمة تم ترميمها.

الكهف الثاني:

كان مغلقا بصخرة عظمية ظهرت بعد ازالتها ست درجات مهترئة تؤدي الى حجرة مستطيلة (٧,٨٠ × ٧,٣٠ × ٥,١٠ × ٤,٨٠ م) تبين ان جدران الكهف مطلية بطبقتين من الجص الأولى ناعمة والثانية خشنة ـ يعتقد انها حديثة العهد بدليل ان الطبقة الأولى تحمل كتابات صفوية ورسومات لحيوانات برية ـ وجدت بداخل الكهف شقف فخارية من العصر الحديدي وعصر المماليك.

المعصرة:

تتألف من حوضين مربعين (٥ × ٥ امتار) يحيط بهما جدار بمدماك واحد ـ ارتفاعه ٢٥ سنتمترا والى الشمال من الأحواض جرنان لتصفية النبيذ وبئر مجصصة للخزين.

تدل الشقف الفخارية على ان المعصرة بيزنطية ـ وهي شبيهة بالمعصرة التي وجدت في ام السماق الجنوبي والصوفية في عمان ـ وجميعها من نفس العصر.

خالد ابو غنيمة

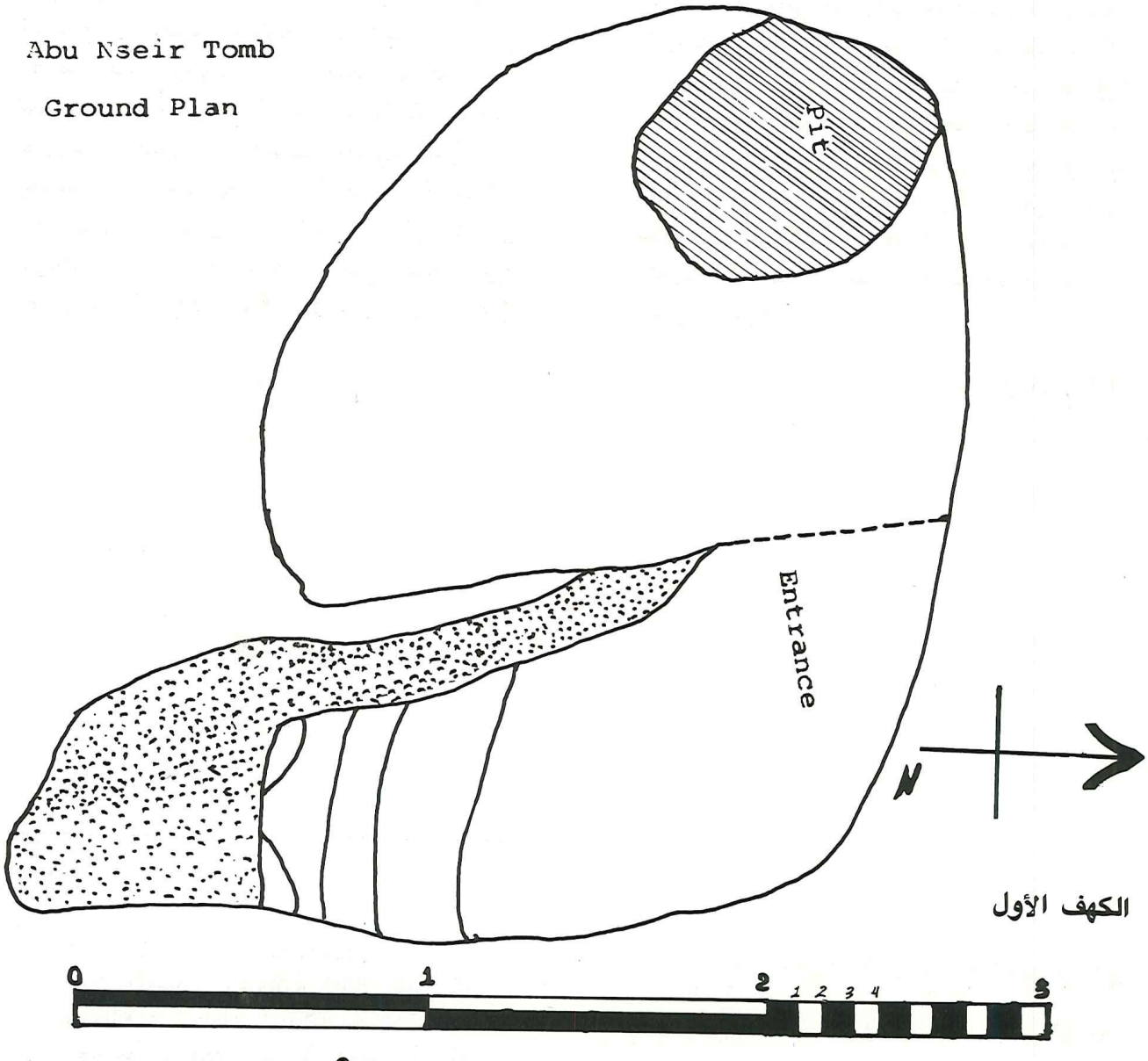
حفرية ابو نصير

اعداد خالد ابو غنيمة

على اثر اخبارية وردت الى دائرة الآثار العامة تفيد بأن اشخاصا يقومون بالتنقيب عن دفائن ذهبية في منطقة ابو نصير – قمت بالكشف على الموقع برفقة مفتش آثار العاصمة وتبين ان اللصوص عبثوا بأحد الكهوف اذ وجد عند مدخله قارورتان فخاريتان تم ضبطهما وتسجيلهما في مركز الشرطة.

الموقع:

تمتد هضبة ابو نصير الى الشمال من صويلح على بعد اربع كيلومترات عن طريق ياجوز الزرقاء ضمن الاراضي التي استملكتها الدولة لاقامة مشروع اسكان الموظفين. وتشرف على سهل البقعة ومحطة الاقمار الصناعية التي تمر بجانبها طريق عمان – جرش والمنطقة صخرية ومنبسطة حفرت فيها كهوف عديدة والى الشرق من الكهف الأول المشار اليه ترتفع اساسات برجين مربعين بينهما منخفض كأنه مدخل – والى الشمال من البرج الشرقي يمتد سور ضخم باتجاه شمال – جنوب. تم حفر مربع بمحاذاة البرج الغربي – بتاريخ



سلة وآخر تؤدبه افروديت بحذائها وثالث أختبأ في شجرة بينما فر الرابع هاربا تلاحقه الهة الجمال، والى اقصى اليسار من هذه المشاهد المليئة بالحيوية، تمر فلاحة بهدوء حاملة على كتفها سلة فواكه وبيدها طير تذهب بها الى السوق.

يمثل الشريط الأسفل مشهدا من مأساة هيبوليتوس التي كتبها الشاعر الاغريقي يوريبيدوس والتي استوحاها من اسطورة قديمة تروى ان فدرا ابنة مينوس ملك كريت اصبحت الزوجة الثانية لملك اثينا تيسيوس، وكانت زوجته الأولى هيبوليتا قد رزقته بصبي سمته هيبوليتوس فلما اصبح يافعا تولع بالصيد والرياضة الصعبة. وكان يعبد الآلهة ارتميس دون افروديت فانتقمت منه بان اوقعت فدرا زوجة ابيه، في غرامه. ومع ان فدرا قاومت هذا الحب المخالف للطبيعة الا انها لم تستطع ان تكتمه فصارحت به الشاب الذي اعرض عنها. وخوفا من ان يفضحها عند ابيه لجأت الى حيلة جهنمية فمزقت ثيابها وكسرت باب حجرتها وادعت ان الشاب البريء حاول ان يغتصبها. ولم يشأ ابوه ان يقتله بنفسه، فطلب الى اله البحر بوسيدون ان ينتقم منه، فبينما كان هيبوليتوس يسير بعربته على شاطيء البحر خرج عليه وحش فاجفلت الخيل وسقط الى الأرض وعلق في اعنة الخيل التي جرته على الصخور ومات. ولما رأت فدرا ما حصل لحبيبها بسبب افترائها، اقدمت على الانتحار.

ان هذه المأساة التي استوحى منها المسرحي الفرنسي راسين، تفسر ظهور افروديت في اعلى اللوحة وهي الالهة التي تعتلي سدة الجمال والحب وتنتقم لمن يخذلها. والفسيفساء هي ابدع ما انتجته مدرسة مادبا في القرن السادس للميلاد وتشير الى حيوية هذا الفن الذي اتحفنا بخارطة مادبا وكنيسة الرسل وسياغة وغيرها. كما تبين ان الفنان المأدبي لم يتورع من ان يأخذ عن الاساطير الاغريقية القديمة ويستوحي فنه من منابع الفن الكلاسيكي.

الا ان اهم ما كشفت عنه الحفريات الاخيرة هو التطور التاريخي للابنية في تلك المنطقة ففي العصر الروماني اقيم بناء نصف دائري اعتقد انه كان مخصصا لعبادة الالهة افروديت كما هي الحال في معبد بعلبك. ثم تحول في العصر البيزنطي الى ايوان تابع للمدينة، وفي القرن السابع، في عهد الامويين اثناء خلافة معاوية بن ابي سفيان، بنيت فوق الايوان كنيسة العذراء مريم. وليس من الغريب ان يتحول معبد افروديت لعبادة العذراء بتأثير المسيحية.

د. فوزي زيادين

مراجع:

(١) C.Dauphin, PEQ, 1975, P 155-157

من المؤسف ان كاتبة المقال التي كانت مخطئة في تحليلها للكتابة استخدمت تصريحا صحفيا نشر في الجوردان تايمز للتشهير بدائرة الآثار العامة لأغراض غير علمية.

(٢) راجع: M. Piccirillo, ADAJ IV, (1980) P. 151 - 52.
وفي هذا العدد ص ٤١٧ ـ ٤٢١

فسيفساء جديدة في مادبا

في عام ١٩٧٣ عملت دائرة الآثار العامة على حيازة المنطقة الأثرية الواقعة في حي الصناع في مادبا ومنذ ذلك التاريخ وهي تقوم بالتنقيب عن الآثار في الموقع، فقد كشفت عن جزء من شارع الأعمدة الرئيسي الذي كان يجتاز المدينة من الشرق الى الغرب. ومن المحتمل ان ساحة الندوة الفوروم ـ لم تكن بعيدة عنه. وفي هذه المنطقة تم صيانة ثلاثة كنائس بيزنطية مزينة بالفسيفساء، اثنتان الى الجنوب من الشارع الواحدة فوق الأخرى، اقيمت السفلى تذكارا للشهيد اليانوس عام ٥٩٥ ـ ٥٩٦ ب.م والعليا للنبي الياس عام ٦٠٨ ب.م.

اما كنيسة العذراء مريم فانشئت الى الشمال من الشارع وهي أقدم المآثر التي استرعت اهتمام المختصين اذ اطلع عليها الفرنسي جرمر دوران (Germer-Durand) عام ١٨٨٧ ونسخ كتاباتها ولكن اول من نشر لها مخططا هو الأب منفردي (Manfredi) عام ١٨٩٩، تبعه بعد ذلك الراهب اليوناني متكساكيس (Metaxakis) الذي شملها في مخطط دقيق وكامل لأثار مادبا. عندما باشرت دائرة الآثار العامة في العمل في الكنيسة بدأت بازالة البيت الحديث الذي كان يستخدم مستودعا للآلات الزراعية فظهرت الكتابة التي تحمل التاريخ والتي تتألف من ثمانية اسطر وليس سبعة كما ادعى البعض (١) وهذا نصها: ـ

١ ـ في عهد ابينا الورع الاسقف ثيوفانوس.
٢ ـ تم انجاز هذه الفسيفساء البديعة.
٣ ـ لزينة البيت المجيد المقدس (المقام) للقديسة الطاهرة.
٤ ـ الملكة ام الله بفضل جهد ونشاط اهل مادبا المحبين للمسيح.
٥ ـ من أجل خلاص وبعث ومغفرة خطايا.
٦ ـ الذين قدموا التبرعات.
٧ ـ والذين يقدمونها امين يا رب. تم
٨ ـ بنعمة الله في شهر شباط سنة ١٩٧٤ (٦٦٢ ـ ٦٦٣ ب.م).

كان هناك اختلاف في الرأي حول تفسير الأرقام اليونانية ولكن الأبحاث الأخيرة اكدت ان الرقم الأخير هو تسعمائة على الحساب السلوقي (اي ٩٧٤ ـ ٣١٢ = ٦٦٢ ـ ٦٦٣ ب .م)[٢].

تتألف الكنيسة من: ـ

١ ـ فناء مربع حيث المدخل الغربي، ظهر فيه في الاربعينات جزء من فسيفساء أثناء حفر اساسات احد المنازل، وهي تمثل الهة الحظ، فنقلها لانكستر هاردينغ الى عمان وهي الآن في متحف المدرج الروماني.
٢ ـ ومن صحن مستدير مزين بالفسيفساء ذات الأشكال الهندسية وفي وسطها كتابة اخرى.
٣ ـ ومن الشرق تنتهي بمحراب مجوف وجدت في مدخله الكتابة المشار اليها.

في شهر آب عام ١٩٨٢ عادت دائرة الآثار العامة الى التنقيب في الموقع بايعاز من المدير العام الدكتور عدنان الحديدي وباشراف مفتش آثار مادبا والدكتور ميشيل بشرللو. وكان الهدف من العمل صيانة الفسيفساء والبحث عن مخطط البناء الكامل وعن تاريخه بالاضافة الى البحث عن الأرضية التي اقتطعت منها اللوحة التي نقلت الى عمان كما ذكرنا ذلك.

بعد ازالة الردم من الجهة الغربية ظهرت على عمق متر ونصف المتر ارضية ملونة كاملة تتكون من ثلاثة أجزاء: ففي الافريز العلوي، بين الطيور والحيوانات الخرافية، ثلاث سيدات جالسات على الارائك في زي الهات الحظ يحملن صولجانا في اليمنى على شكل صليب وفي اليسرى رمزا للخصب وفوق رؤوسهن كتبت اسماؤهن: روما، غريغوريا، مادبا، ان المدينة الثانية هي في الغالب القسطنطينية وان لم يكن هذا التفسير الا مجرد افتراض. ومما يثير الاهتمام هو وجود مادبا بين حاضرتين كبيرتين في العصر البيزنطي.

يحيط باللوحة الوسطى المربعة شريط يمثل مشاهد صيد الحيوانات المفترسة وعلى الزوايا الأربع الهات الحظ (التي نقلت احداهن الى عمان) وتقسم اللوحة الى جزئين: في الاعلى الهة الجمال افروديت جالسة على كرسي وبجانبها الآله ادونيس ممسكا بالرمح وحولهما اطفال الحب المجنحة (كيوبيدو) تسرح وتمرح وتطاردها الهات الجمال الثلاث ويلاحظ ان الفنان قصد من هذا المشهد التفكهة والمرح. فهذا كيوبيدو يختبيء في



شكل (١) حمامات رومانية في السلط

ولابد من تقديم الشكر لرئيس بلدية السلط الدكتور عبد الرزاق النسور الذي ابدى كل اهتمام بالاكتشاف الجديد وسمح بتعطيل اعمال البناء حتى انتهاء الحفريات والتخطيط (شكل ١).

دمرت اعمال التجريف الجزء العلوي من الحمامات ولم يتبق سوى دعامات من الطوب كانت تحمل الأرضيات وتسمح بمرور الهواء الساخن. وقد استطعنا، رغم التخريب الذي تعرض له البناء، التعرف على حجرتين تبلغ ابعاد الأولى ٣ م × ٣,٢٠ م كانت في الغالب هي الغرفة الساخنة Caldarium والثانية وهي اكبر منها (٤,٥٠ م × ٣ م) يعتقد انها الغرفة الفاترة Tepidarium ـ كما هي الحال في حمامات قصير عمره. وتوجد حجرات صغيرة الى الغرب منحوته في الصخر وبها دعامات من الطوب. الا انه كان من الصعب تحديد وظيفتها بسبب وجودها عند سفح الجبل وتحت طبقة سميكة من الردم.

يستدل من الكسر الفخارية ان الحمامات كانت قائمة في أواخر العصر الروماني (القرن الثالث والرابع بعد الميلاد) الا انها بنيت دون شك في فترة اقدم اذ انها تشبه الحمامات التي اكتشفت في قلعة مكاور جنوب مادبا ومسعده على شاطئ البحر الميت والتي ترجع الى اواخر القرن الاول قبل الميلاد.

ان متعهد البناء لم يستطع مع الأسف الحفاظ على هذا الشاهد الوحيد لمدينة السلط اليونانية الرومانية والتي اشتهرت تحت اسم جادورا.

وآل عمران "وأبرىء الاكمه والابرص واحيي الموتى باذن الله".

ب ـ الجدار الشمالي: يظهر في الأعلى افريز من اغصان الكرمة في وسط صليب والى اليمين من الحنية سعف نخل باللون الأخضر وشكل يصعب تمييزه. وكان الجدار الغربي مزينا بالرسوم أيضا الا انه لم يتبق منه شيء.

يستدل من المصباح وكسر الفخار التي اكتشفت ان المدفن يرجع الى أواخر القرن السادس الميلادي. وهو اول مدفن بيزنطي تظهر منه صورة السيد المسيح ومعجزاته ورغم ان مدافن قويلبة التي تم التنقيب عنها حديثا مزينة بالفرسكو الملونة الا ان لا تأثير فيها للمسيحية.

مراجع:

1. G.L. Harding, **QDAP**, XIV (1950) p. 81-94.
   G. Bisheh, **ADAJ**, XVII (1972) p. 81-83.
2. A. Nestori, Repertorio topographico delle pitture delle catacombe romane, Citta del Vaticano, 1975 (see index).
   A. Grabar, Le Premier Art Chretien, Paris, 1966, Fig. 255-6.

خريبة السوق:

انجزت دائرة الآثار العامة موسما من التنقيب في خريبة السوق التي تبعد حوالي ١١ كلم في شهري اذار ونيسان عام ١٩٨١. وتركز العمل على البزليكا الواقعة في قلب البلدة وعلى المدفن القائم بمحاذاة الطريق وذلك باشراف كاتب هذا التقرير يساعده الساده حفظي حداد وتيسير عطيات.

البزليكا:

يقسم هذا البناء المستطيل الى ثلاثة اروقة صفان من سبعة اعمدة اثنان منها مازالا قائمين تعلوهما التيجان الايونية ويبلغ عرض البزليكا ١٣ مترا تقريبا ولم يحدد طولها بعد بسبب امتدادها في عقار احد المواطنين.

كشف التنقيب عن خمس فترات معمارية، يرجع ان الاولى منها رومانية متأخرة، كان البناء في خلالها معبدا والثانية بيزنطية، اذ وجدت في الرواق الشمالي عام ١٩٧٥ بقايا فسيفساء ملونة تصور غزالا يقف بجانب شجرة. وفي الموسم الجديد ظهر فوق مدخل هذا الرواق حنت عليه أثار صليب ـ ولكن هذا المدخل كان قد اعيد بناؤه. تم استعمال البناء في الفترة الاموية بدليل الكسر الفخارية الكثيرة والملاط الذي زخرف باشكال تشبه تلك التي ظهرت في قصر الحلابات وغيرها من الابنية الاموية. وفي الفترة الرابعة (عصر المماليك) كان اصطبلا للخيول ومن العهد العثماني، تم العثور على منزل اقيم في الزاوية الجنوبية الغربية وقد طليت جدرانه بالجص الابيض.

الى الغرب من البزليكا، تم اكتشاف بناء آخر مستطيل مدخله الى الشرق وتبلغ ابعاده ٨,١٠ م × ٤,٨٠ م وقد استعملت في جدرانه قطع اعمدة كبيرة ـ وعثر بداخله على ابريق ملون وكسر فخارية ترجع الى القرن الرابع عشر الميلادي.

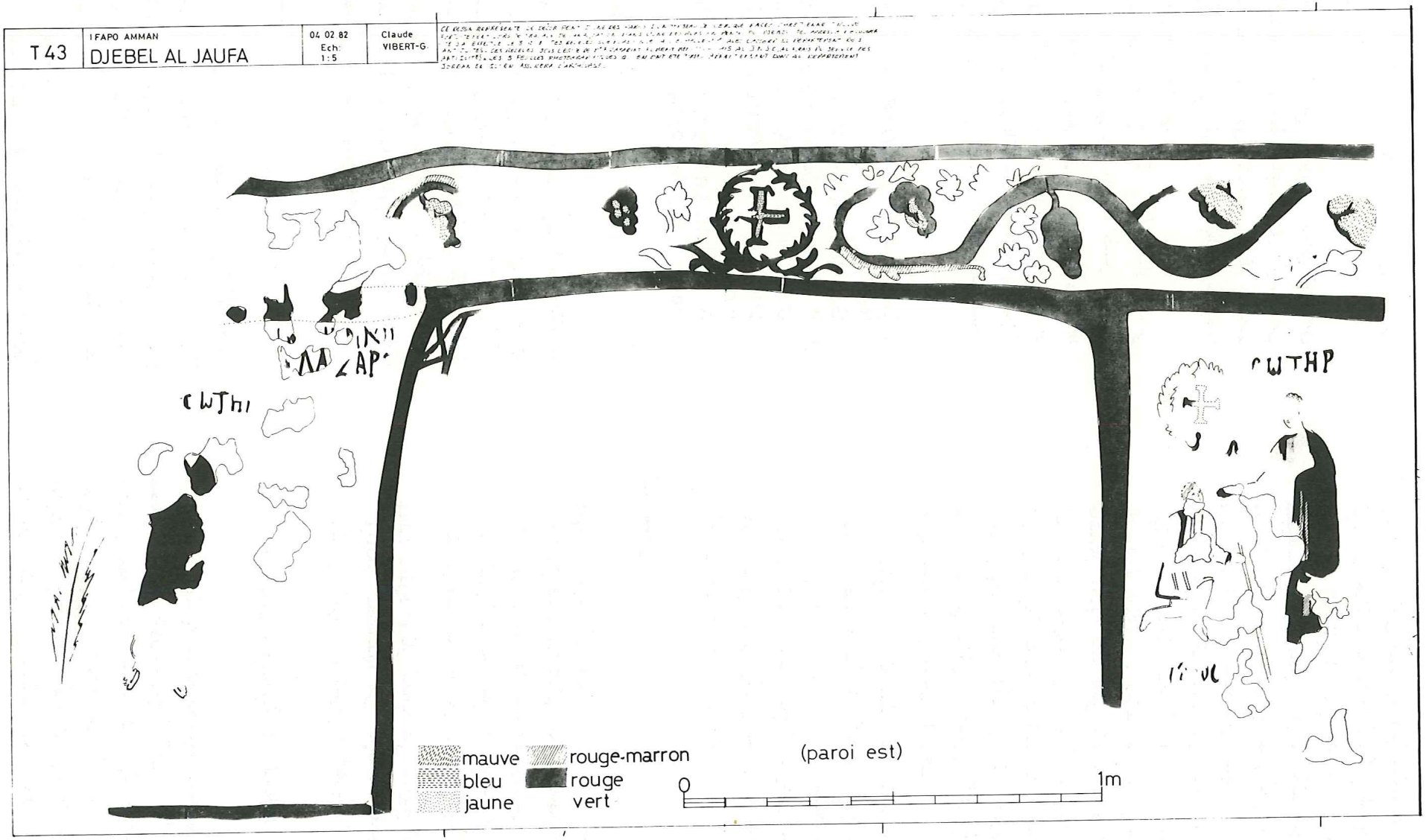
المدفـــن:

أظهر التنقيب ان البناء الذي يقع بمحاذاة الطريق هو مدفن عائلي، له شباك من الغرب وقد عثر بداخله على غطاء تابوت من الحجر وعلى كسر فخارية ترجع الى العصر الروماني المتأخر ولم ينته العمل في هذا البناء.

عملت دائرة الآثار العامة على تسييج البزليكا والمدفن لحمايتها من الزحف العمراني وتأمل بالعودة الى الموقع في القريب العاجل.

حمامات رومانية في السلط

أثناء قيام بلدية السلط بعمليات التجريف لبناء مجمع النقابات ظهر بتاريخ ٧ تموز ١٩٨١ الدور الأسفل لحمامات رومانية في الموقع المسمى البياضة بين تل الجدعة وتل الجادور الأثري. طلبت الدائرة ايقاف الاليات وباشرت بالتنقيب باشراف مفتش اثار السلط السيد سعد الحديدي.



قبر بيزنطي في جبل الجوفة في عمان

الحفريات الأثرية

اعداد: د. فوزي زيادين

عمان ـ جبل الجوفة
مدفن بيزنطي مزين بالرسوم الملونة:

ظهر هذا المدفن في الثالث من شهر كانون الأول عام ١٩٨١ أثناء القيام بحفريات شبكة المجاري في جبل الجوفة، فوق المدرج الروماني ـ وقد سبق ان عثر في هذه المنطقة على العديد من المدافن الرومانية والبيزنطية(١).

يتكون المدفن من حجرة صغيرة تكاد تكون مربعة لا يتجاوز ضلعها الثلاثة امتار نحتت في الصخر الجيري ولها مدخل ضيق من الغرب وعلى جوانبها حفرت ثلاث حنيات للدفن
كانت الجدران الصخرية مغطاة بطبقة من الجص الملون يبلغ سمكها سنتمتران ولكن الرطوبة وعبث المخربين ازالا جزءا كبيرا منها. وسارعت دائرة الآثار الى اجراء التنقيب باشراف كل من د. صبري عبادي ووائل الرشدان. ولما زار كاتب هذه الاسطر الموقع تيقن من اهمية الاكتشاف بعد قراءة الكتابات اليونانية المتبقية وطلب الى الرسام كلود فيبرت من المعهد الفرنسي نسخ الصور المتبقية (شكل ١). لم يظهر أثناء التنقيب سوى بعض الكسر الفخارية البيزنطية مع مصباح واحد وبقايا عظام تالفة ـ وقطعة نقدامية غير واضحة.

الرسوم الملونة:

أ ـ الجدار الشرقي: هي الواجهة الوحيدة التي لا تزال رسوماتها واضحة المعالم نسبيا. ففي اعلاها يمتد افريز من اغصان الكرمة وعناقيد العنب بالوان خضراء وحمراء وبنية وصفراء، بين شريطين بلغ عرضهما خمسة سنتمترات ويتوسط هذا الافريز صليب داخل اكليل وعلى جانبي الحنية رسمت لوحتان.

يظهر في اللوحة اليمنى رجل واقف يرتدي معطفا طويلا احمر ويمد يده نحو رجل جاثم امامه وفوق رأسه كتبت كلمة (CWTHP) باليونانية اي المخلص. وهو لقب السيد المسيح. اما الرجل الجاثم فيتكأ على عصاه وفوق رأسه اكليل باللون الأصفر وبداخله صليب وعند قدميه كتبت بضعة احرف باليونانية استطعت ان استخلص منها كلمة OC (Λ)ΦΥ(T) اي الاعمى فاللوحة اذا تصور معجزة شفاء رجل اعمى قام بها السيد المسيح. وفي الانجيل عدة معجزات من هذا النوع. فمثلا: انجيل يوحنا اصحاح ٩، ١٠ ـ ٢٦ هي التي صورها الفنان في نظري:

"وجاء الى بيت صيدا فاحضروا له اعمى وسألوه ان يلمسه فأخذ بيد الأعمى وأخرجه الى خارج القرية وتفل في عينيه ووضع يديه عليه وسأله ايبصر؟ فرفع طرفه وقال: ابصر الناس كأشجار تمشي فعاد ووضع يديه على عينيه فبدأ يبصر وعاد معافى حتى اصبح يبصر كل شيء جيدا (الكتاب المقدس، المطبعة الكاثوليكية ـ ١٩٦٦).

في اللوحة التي الى يسار الحينية رجل يلبس رداء احمر يشده الى وسطه زنار ويمكن تمييز حذائه ـ وفوق رأسه كتبت كلمة CWTHP مرة اخرى، فهو اذا السيد المسيح اما الشخص الآخر الى اليمين فقد زالت معالمه كليا ولكن الحروف المتبقية فوق رأسه تدل على اسم (OC) ΛAZAP ـ اليعازر وهناك كلمة اخرى يصعب قراءتها اذ لم يبق منها الا القليل. صور الفنان معجزة اخرى قام بها السيد المسيح في بيت عنيا قرب القدس حيث توفي صديقه اليعازر. فلما وصله الخبر ذهب الى القرية حيث كانت اختاه مريم ومرثا في انتظاره مع جمع غفير ـ فاخرج اليعازر من قبره بعد مرور اربعة ايام على موته وبعد هذه المعجزة تأمر اليهود على قتله خوفا من ان يتبعه الشعب ـ واصبحت قيامة اليعازر رمزا لقيامة المسيح والبعث الأخير ـ ولذلك تكرر هذا الموضوع في ديناميس روما اكثر من عشرة مرات(٢).

ـ ذكر القرآن الكريم معجزة احياء الموتى التي قام بها السيد المسيح في سورة المائدة "وتبرىء الاكمه والابرص باذني واذ تخرج الموتى باذني"

ب ــ قلعة الشوبك: استمر العمل في قلعة الشوبك مدة خمسة اشهر حيث تركز في منطقتين رئيسيتين:ـ

أ ــ المنطقة الواقعة عند الطرف الشمالي للجزء العلوي من القلعة حيث تم ازالة الطمم والانقاض والحجارة المتساقطة التي كان يزيد ارتفاعها عن مترين وقد كشفت أعمال التنظيف هذه عن بناء يشبه في تخطيطه نظام "المدرسة" الذي أصبح شائعا في سوريا وفلسطين ومصر في العصر المملوكي. ويتألف مخطط البناء من باحة مركزية مربعة طول ضلعها ٦ م ويحيط بها من الشرق والغرب ايوانان متعامدان، اما في الجهة الجنوبية فتوجد غرفتان صغيرتان متجاورتان.

ومع انه من الصعب التكهن بوظيفة البناء الاصلية في الوقت الحالي الا انه من المحتمل ان البناء كان قد استخدم كمحكمة. ان البناء لا يزال يقف الى ارتفاع ٦ م ويبدو ان مساحته الكلية تبلغ ٢٤ × ١٠ م.

ب ــ أما المنطقة الأخرى التي تركز فيها العمل فتضم بقايا الكنيسة التي كانت قد شيدت في القرن الثاني عشر والتي تقع الى الغرب من البوابة الحالية المؤدية الى القلعة. شمل العمل في هذه المنطقة هدم وازالة جميع الجدران والأقواس الحديثة التي كانت قد شيدت خلال القرن الماضي مع المحافظة على ابقاء الجدران والعقود الاصلية والمبنية بكتل من الحجارة الكلسية المقطوعة بشكل منتظم. وعند ازالة الانقاض ونقلها بدا واضحا ان بعض الجدران والعقود الاصلية بحاجة الى صيانة آنية، فتم بناء سقايل خشبية لدعم وتقوية واعادة بناء الجدران والعقود المتصدعة.

بعد ان تم الفراغ من العمل في هذه المنطقة والذي كان يجري بخطى حثيثة نتيجة توفر الاشراف الدقيق والمراقبة المتواصلة، فقد وجد انه من الممكن الاستمرار في العمل والتركيز على البوابة الاصلية المؤدية الى القلعة. يجب التنويه هنا بأن المدخل الحالي الى القلعة كان قد شيد في نهاية العصر العثماني بعد اغلاق البوابة الرئيسية، لذلك فقد وجد انه من المناسب اعادة الأمور الى ما كانت عليه اصلا فتم اغلاق المدخل الحديث نسبيا بكتل من الحجارة الكلسية واعادة فتح البوابة الاصلية وترميم الاكتاف الجانبية والعتبة العليا للبوابة بالاضافة الى تسهيل وتحسين الممر المؤدي الى الأجزاء العليا من القلعة. وبعد استكمال هذه الأعمال كلها بوشر في بناء غرفة لحارس القلعة بمحاذاة الوجه الداخلي للمدخل الذي تم اغلاقه. هذا وقد استعمل في بناء هذه الغرفة حجارة تتناسب في حجمها وقطعها مع بقية أجزاء القلعة.

هذه هي المنجزات الرئيسية لقسم الصيانة والترميم واذا كان لابد من كلمة أخيرة حول تقييم هذه المنجزات فاستطيع القول انه رغم بعض الهنات هنا وهناك والتي يمكن تجنبها مستقبلا في ضوء الخبرات المكتسبة سنة بعد اخرى، فان المنجزات كانت جيدة جدا بشكل عام خاصة اذا اخذنا بعين الاعتبار الكفاءات والأيدي العاملة الفنية المحدودة المتوفرة في الدائرة، واذا كان هذا التقييم الايجابي في محله فالفضل فيه يرجع اولا وأخيرا الى تعاون موظفي الدائرة في العاصمة والمحافظات المختلفة وحرصهم على التطلع دوما نحو الأفضل والأكمل.

رئيس قسم المشاريع
د. غازي بيشه

كانت تؤدي الى مدخل القلعة. والواقع ان هذا الممر وتلك السلالم كانت محط التقاء العديدين من الزوار رغم انها لم تكن عملية ومتناسبة مع بناء القلعة ولكن في نفس الوقت لم يكن بالامكان البدء في بناء جسر مناسب قبل الفراغ من تكحيل الجدران الداخلية وتقوية واعادة بناء الجدران المتصدعة الداخلية والخارجية والتي تم انجاز الجزء الأكبر منها في السنة الماضية. بكلمات أخرى فان اولويات خطة العمل لم تمكننا من البدء في بناء الجسر قبل هذا العام.

قبل البدء ببناء الجسر الجديد الذي وضع تصميمه بحيث يتبع خطوط الجسر القديم او الاصلي كان لابد من القيام باعمال التنظيف وازالة الطمم الذي بلغ ارتفاعه حوالي اربعة امتار تقريبا من الخندق الذي حفر بالصخر. وقد كشفت اعمال التنظيف هذه عن كتف بني بكتل من الحجارة التي قطعت بشكل منتظم بمحاذاة العمود الصخري الذي كان يدعم الجسر الاصلي، وبالتالي تم اعادة بناء هذا الكتف ورفعه الى مستوى العمود ليدعم الجسر الجديد. وبعد الانتهاء من أعمال التنظيف وازالة الصخور لبناء ممر منحدر بشكل انسيابي لتسهيل عملية الوصول الى الجسر، شرع في بناء الجسر الخشبي المدعوم بعوارض حديدية سميكة واقامة درابزينات خشبية Railings على جانبي الجسر بالاضافة الى جانب واحد من جانبي الممر المنحدر. وهكذا فان الزائر يصعد بواسطة الممر المنحدر الجانبي الى مصطبة مربعة

تقريبا ومن هناك يتجه عبر الجسر الخشبي الجديد الذي يبلغ طوله ١١م وعرضه ٣ م تقريبا الى المدخل الرئيسي للقلعة. ولمنع العوارض والدرابزينات الخشبية من التلف فقد تم معالجتها عن طريق طليها بمزيج من زيت التربنتين. إن هذا المشروع يعتبر من انجح منجزات قسم الصيانة والترميم في دائرة الآثار ليس لضخامته وصعوبته، ولكن لدقته وقربه من المظهر الاصلي لوسيلة المرور عبر الخندق والتي كانت بواسطة جسر خشبي متحرك لذا لا يسعني الا ان اتوجه بالشكر الى السيدة سوزان بولدرستون التي قامت بتصميم الجسر والخبير بريان بوين والسيد حفظي حداد اللذان اشرفا على بناء الجسر بالاضافة الى الزملاء والفنيين في مكتب آثار عجلون الذين كان لتعاونهم وجهدهم المشكور أكبر الأثر في انجاح هذا المشروع.

٤ ـ محافظة الكرك:

أ ـ قلعة الكرك: تركز العمل خلال هذا العام في قلعة الكرك على ترميم وتقوية القبو المحاذي للمتحف تم ترميمه في العام الماضي والذي يستعمل كمتحف للقطع الأثرية المكتشفة في محافظة الكرك. شمل عمل هذا العام تنظيف القبو من الطمم المتراكم ثم شيدت سقايل خشبية لاكمال بناء الفجوات التي كانت مفتوحة في القبو، ثم تقوية ودعم الجدران الجانبية وقصارتها كلية. كما تم رصف ارضية الجزء الأكبر من القبو بحجارة كلسية منتظمة تمهيدا لاستعماله كمتحف شعبي. تجب الاشارة هنا الى ان العمل في هذا القبو كان بطيئا للغاية وكان من الممكن الفراغ منه كلية في مدة اقصر لو توفر الاشراف الدقيق والمتابعة المستمرة.

٢ ـ تم بناء مركز أثري Dig-House في موقع باب الذراع وذلك لاستعماله كمركز للبحث والاقامة للبعثات الأثرية التي تقوم بأعمال المسح والتنقيب في الموقع المذكور. ويتألف البناء من قاعة وثلاثة غرف ومرافق صحية خططت على شكل حرف (ـا) بحيث يمكن توسيع البناء مستقبلا حسب الاحتياجات المحلية.

٥ ـ محافظة معان:

أ ـ البتراء: ـ تم البدء في اعمال الصيانة لرسوم الفريسكو التي اكتشفت في احدى الكهوف القريبة من مدخل وادي الصيغ وذلك بالتعاون مع المختصين من المتحف الوطني في مدريد، كما تم تشييد درج يسهل عملية الوصول الى الكهف الذي زود ببوابة حديدية لمنع الحاق اي ضرر بالرسوم الجدارية.

كذلك فانه بعد ان فرغ من الحفريات في "الفرن النبطي" الذي يقع الى الشرق من الطريق المعبد الموصل الى الاستراحة السياحية فقد تم اقامة مظلة حديدية لحماية الفرن من العوامل الجوية المختلفة.

أما المشروع الآخر فهو ترميم مدخل (قصر النبت) التي تشرف عليه دائرة المشاريع لتطوير مدينتي البتراء وجرش.

الذين اشرفوا على هذا المشروع من موظفين وعمال وحراس.

د ـ قصر الحلابات: ـ

تم ازالة الطمم وكتل الحجارة المتساقطة من جميع الغرف الواقعة بمحاذاة الحائط الجنوبي للقصر، كما تم تنظيف البرج الجنوبي الغربي كلية، ثم الكشف عن الدرجات التي كانت تؤدي الى الطابق الثاني من البرج. هذا وقد كشفت اعمال التنقيب عن ارضيات فسيفسائية ملونة تعود الى العصر الاموي ـ أي الى مرحلة البناء الأخيرة للقصر.

٣ ـ محافظة اربد

أ ـ المتحف الشعبي في البارحة/ اربد: ـ

لما كانت بلدية اربد قد قامت باستملاك احدى البيوت القديمة في البارحة لاقامة متحف شعبي، وحرصا من دائرة الآثار العامة على تشجيع مثل هذه النشاطات الحضارية النبيلة فقد تطوعت الدائرة لترميم جدران وسقوف مجموعة الغرف في البيت المستملك ـ لاسيما وانها كانت في حالة من التداعي والتشقق، بحيث تطلبت عملا صيانيا سريعا. وقد استغرقت عملية الصيانة مدة تزيد قليلا عن خمسة اشهر وذلك للحرص على ان يعود البناء الى ما كان عليه ـ اي المحافظة على مظهره القديم ـ ثم استعمال مونة مؤلفة من مزيج من الطين والتبن لقصارة الجدران الداخلية والسقوف من الداخل والخارج. والى جانب هذا تم اصلاح البوابات والشبابيك واستبدال التالف منها بأخرى قريبة الشبه من الأصل. أرجو ان انوه هنا بأنه رغم المدة التي استغرقتها اعادة بناء وترميم هذه الغرف ـ والتي زادت على توقعاتنا الزمنية بمدة خمسة اسابيع ـ الا ان النتائج كانت جيدة ومشجعة بفضل جهود موظفي مكتب الآثار في اربد واشرافهم الدقيق.

ب ـ القويلبة: ـ

بعد ان تم الكشف عن ثلاثة مدافن غطيت جدرانها بالرسوم الجدارية (الفريسكو) فقد اتخذت الاجراءات الفورية لتنظيفها وتوثيقها بالصور الفوتوغرافية والرسوم، تم اغلاق الفتحات العليا وعمل قنوات جانبية لمنع تسرب مياه الامطار اليها. كما تم تزويد هذه المدافن ببوابات حديدية لمنع اعمال التخريب والتعديات.

ج ـ خربة السمراء (لواء المفرق): ـ

تم احاطة المنطقة الأثرية بالاسلاك الشائكة لمنع تعديات الافراد والبناء داخل الموقع الأثري.

د ـ حيان المشرف (لواء المفرق): ـ

هذا الموقع أيضا تم احاطته بالاسلاك الشائكة لحمايته والمحافظة عليه.

هـ ـ ام قيس: ـ

تم تنظيف المناطق المجاورة للضريح الروماني وازالة الطمم والانقاض من بعض الغرف المحاذية للشارع الفرعي المبلط، كما تم اعادة نصب بعض الاعمدة المحاذية للشارع الرئيسي.

و ـ جرش:

١ ـ تم تنظيف جميع المناهل والمجاري الواقعة اسفل الطرق الرئيسية المرصوفة بكتل الحجارة المنتظمة وذلك تمهيدا لمد الكوابل والاسلاك الكهربائية السميكة الضرورية لمشروع الضوء والصوت.

٢ ـ تم اقامة حاجز من الاسلاك الشائكة لمنع عبور المواطنين فوق الجسر الروماني الذي يصل نصف المدينة الشرقي بنصفه الغربي وذلك لوهن الجسر وتصدعه مما يشكل خطرا على المواطنين الذين يعبرون الجسر.

٣ ـ عمليات التنظيف الدورية للمعالم والمنشآت الرئيسية في جرش.

اما المشاريع الرئيسية الأخرى فتشرف عليها دائرة المشاريع لتطوير مدينتي جرش والبتراء وبالتالي لن نتطرق اليها في هذا التقرير.

ز ـ عجلون:

شرع في العمل في قلعة عجلون منذ شهر حزيران وكان الهدف الاساسي لخطة العمل بناء جسر فوق الخندق لتسهيل عملية الوصول الى المدخل المؤدي للقلعة. وبعد اعداد الدراسات او المخططات اللازمة لاظهار الجسر بمظهر يقرب من وضعه الأصلي شرع في هدم الممر المبني من الحجر والاسمنت وازالة السلالم الحديدية المرتفعة التي

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قيمة الاشتراك السنوي :

خمسة دنانير اردنية ترسل باسم مدير الاثار العام.

تقبل المقالات حتى اول تشرين الثاني/نوفمبر من كل عام. وترسل باسم مدير الاثار العام دائرة الاثار العامة عمان ــ ص . ب ٨٨ ــ الاردن

الاراء المطروحة في المقالات لا تمثل رأي دائرة الاثار العامة بالضرورة

المؤلفون مسؤولون عن تدقيق مقالاتهم

المؤسسة الصحفية الأردنية «الرأي»



حولية دائرة الآثار العامة

المجلد السادس والعشرون

عمان

١٩٨٢

المملكة الأردنية الهاشمية