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# A Survey of Islamic Buildings at Amman<sup>1</sup>

by

Alastair Northedge

Between 1927 and 1938 the Italian Archaeological Mission under the direction of Giacomo Guidi, and subsequently Renato Bartoccini, conducted large-scale excavations on Jabal al-Qal'a - the Citadel Hill - at Amman.<sup>2</sup>

One of the main areas of excavation was the large Courtyard at the North end of the Upper Citadel. Bartoccini cleared approximately half the known area of the Courtyard, and then excavated and did restoration work on the cruciform vaulted Qasr that is attached to the South wall of the Courtyard.<sup>3</sup> In his reports he did not publish a plan of his excavations. Between October 15th and 31st 1977 we carried out a survey in an attempt to reconsider the area of the Courtyard, and particularly its later periods, in the light of the current excavations being carried out as a cooperation between the Department of Antiquities of Jordan and the British School of Archaeology in Amman.

The area was planned and photographed, and then divided into constructional phases for a relative chronology; subsequently an attempt was made to attach absolute dates to each phase, given the limitations of surface survey. However in the years since the area was excavated there has been considerable wear and tear and some walls visible on older photographs no longer exist except as fragments: the line of these walls has been reconstructed from the surviving fragments and the details from photographs (see fig. 1).<sup>4</sup>

## The Platform and Construction of the Courtyard

The natural profile of the hill at the north end of the Qal'a appears to have been a gentle slope down from the summit of the hill to a saddle connecting the Qal'a to Jabal Husain. The lines of earlier defensive walls excavated some years ago run under the line of the present wall at the north end. The current line of walling, standing some ten metres above the saddle, is therefore an artificial platform.

The construction is stepped with each course recessed approximately 5 cm from the one below, and is of rusticated ashlar masonry with two surviving courses of plain ashlar in places. There are large buttresses on the north-west and northeast corners which may have carried towers and one on the northeast projection of the Courtyard itself which clearly did not carry a tower.

On the west side the platform walling connects with a section built from plain ashlar, and in this section is a gate. On the east side the northernmost section is covered by the dump from the Italian excavations, but the join onto the north wall of the Courtyard is visible. The Courtyard projects 15 m further to the east than the northern area.

The superstructure of the Courtyard is composed of smooth-dressed masonry, and the structure of the east wall clearly indicates that the superstructure of the courtyard and the platform wall are contemporary: rusticated masonry was used for the platform and smooth-dressed for the superstructure. It is not possible to measure the width of the platform wall, but the outer wall of the superstructure is 90 cm.

The superstructure consists of two spaces divided by a wall with two visible gates. To the north of that wall no original structure survives with the possible exception of part of a line of foundations, (see below p. 9). The area south of the dividing wall is a quadrilateral ornamental courtyard of which three sides are visible, but which may have extended as far as the west wall of the Qal'a. The north wall is decorated with rectangular *podia*, square pilasters, and semi-circular niches surmounted by conches. All the *podia* were removed in the subsequent reconstruction (Period 3) with the exception of two adjacent to the central gate, and parts of two others incorporated in later walling. However they have now been restored.

Along the East wall there is a series of five rooms: the northern room (E5) is enclosed like

the better preserved southeast corner room (SE); room E4 is longer than the others and may once have been divided in two--the northern half has an enclosing facade with a decorated doorway.

Rooms E1-E4 are open-fronted with broad dividing walls (1.50m), and the springing of a vault is visible on the southernmost of these walls. On the court facade of the dividing walls are niches similar to those on the north wall, and these are flanked by square pilasters, in the same way as on the north wall.

In the second stage of development blocking walls were built across the fronts of the two southern rooms (E1 and E2) out of small ashlar blocks. The doorways are fitted with stone door-stops and bolt-holes. In room E5 a transverse arch is fitted against the outer wall and the stumps of two others are visible. These should be interpreted as supporting a second storey. A third broad stage of development should be seen in the further subdivision of these two rooms with unmortared rubble walls, and the addition of a doorway in E3<sup>5</sup>.

Between the east side rooms and the southeast corner is a gap now filled by later building. In the southeast corner is a room (SE) whose walls are bonded in with the east wall but not the south wall, with a roof supported by transverse arches. The door has a flat lintel and a segmental relieving arch. At a later date the room was filled up and a new floor inserted at a height of approximately three metres above the original floor level. It seems likely that the filling is associated with the later construction of the Citadel defences. Fifteen metres west from the southeast room bonding stones projecting from the south wall indicate further structures now disappeared.

### **The Buildings in the Courtyard (fig.1)**

A glance at the Courtyard today quickly shows that the area was completely built over at a later period by a series of buildings. Bisecting the area of the Courtyard a street of columns provides the main access from the south of the Courtyard to the northern area. This street is 10m wide with a roadway of 5m between kerbs. The paving is of limestone slabs 55cm wide and

of varying length. Running diagonally along the northern part of the street is a drain covered by paving blocks that empties into a cistern opposite the doorway to Building 4. The kerbs have a double step and vary between 22cm and 45cm in width. The columns are 40cm in diameter with plain bases 63cm square. The consistency of the column size indicates they were made for the purpose and not reused from elsewhere. At its south end there was a 2m wide gateway into a court, and at the north end there is access through a 3m wide gateway in the Courtyard wall to the Northern area. Today there is a step and a raised threshold, but Bartoccini's excavation photographs<sup>6</sup> show that there were five steps, and that the two surviving *podia* that flank the gateway were transformed into seats with armrests of the typical Islamic quarter-circle form.<sup>7</sup> As a result the street is not suitable for wheeled traffic, as are, for instance, the colonnaded streets of Jerash, and is more likely to be a ceremonial way.

The centre line of the street is aligned from the north door of the Qasr to the gateway in the courtyard wall. However the kerbing stops short at the wall of the small court at its south end (Court 1). Rather the evidence appears to indicate that the kerbing and columns are contemporary with the walls on either side, for the spacing of the columns has been adjusted to avoid placing a column in front of the entrance to Building 4. On the other hand the paving of the street is aligned with the original walls of the courtyard rather than the street it underlies, while it also extends the full length of the courtyard with a width greater than the later street. It seems likely that this represents a paved way belonging to the original period of construction.

Between the street and the Qasr it was possible to piece together the location of a court 25m square (Plate III), the same size as the outside dimensions of the Qasr. The court extends beyond the limit of the earlier paved way and thus has partly a paved and partly an earth surface. In the northeast corner was added a room of unmortared rubble walling (Plate III) and an L-shaped seat, while there are traces of a wall cutting off the western third of the court. The line of the west wall of the court is traceable in four places, and is the outer wall of a building on the west side (Building 7), which is unexca-

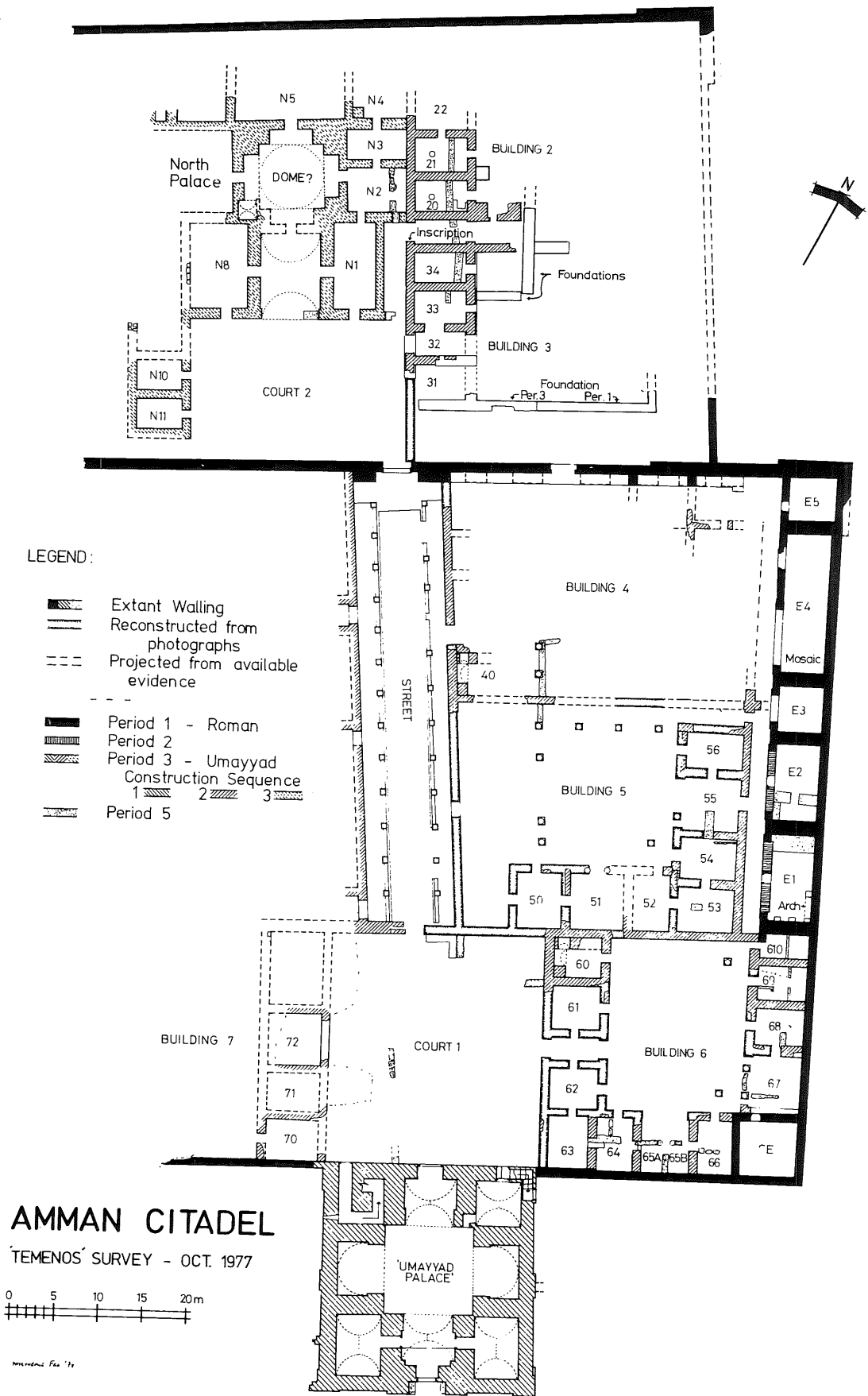


Fig. 1-The North End of Jabal al-Qal'a, Amman.

vated. Two rooms are visible: room 70 is part of the present-day track along the west side of the Qasr, and in it a single door to the west and a large patch of plaster studded with small stones can be seen. Parts of a second room, (72), may be seen in a bulldozer cut, and this room may have been an entrance opposite that in Building 6. Similar buildings also exist west of the street, but these are unexcavated. There are three entrances from the street and some traces of rooms can be seen in surface walling in the unexcavated area.

The structures on the east side of the street may be divided into three buildings (Buildings 4, 5 and 6), each following a basic common pattern.

The construction is identical to the west side of the street, but appears to be different because the walling here does not incorporate column bases for strengthening. Building 6 in the southeast corner is the best preserved, but the less well-preserved buildings 4 and 5 were similar. The rooms are arranged around three sides of the central courtyard with a single entrance from court 1 to the west. The room opposite the entrance gate is open-fronted and seems to function as an *iwān*, while room 65 on the south side may be the same (Plate II, 2), but the evidence is not decisive. Construction is of plastered, mortared rubble walls; all rooms have doors to the court, and most have interconnecting doors. All doorways are open without stone doorstops or bolt-holes.<sup>8</sup> All the floors seem to have been of earth. In room 65A there is a cistern fed by a drain running down from the roof, and there is a second roof drain on the central court facade, between rooms 68 and 69. The lining of these clean-water drains is of two layers, a base of lime and wood-ash mortar, the same material used for building the walls, and a facing of harder white cement which includes red chips, probably of crushed pottery.

In room 60 there is an arrangement of two arches, one set at right angles to the other, and unbonded to the outer walls, although the construction is identical. The shape of the arches is rough but it appears to be semi-elliptical with a string-line. Across the front of the smaller recess thus formed is a line of stones making a basin, though no sign of drainage can be seen. The purpose of this room is uncertain, but the

type recurs in the survey area in Building 4 (room 40): in the North Palace the characteristic square block can be seen in the partly destroyed room N4, while there is another example of the small arched recess with its single string line in an unexcavated building west of the North Palace. One possible suggestion is a washroom or toilet.

A colonnade of columns made from small rubble stones and gypsum mortar<sup>9</sup> was later added to the courtyard together with a pair of columns in the east *iwān* (Room 67). The next stage of development was to block off the mouths of the *iwāns*, narrow the doorways (Rooms 63-66) or block them off and subdivide the rooms. Both these major stages of rebuilding seem to have kept the original floor levels. Since the excavation three concrete huts were built in the northeast corner, and a fourth adjacent to the entrance.

Building 5 is divided from Building 6 by a common wall into which parts of both buildings are bonded: it is then divided from Building 4 by a further wall which was demolished by the Italian excavators. Only the east row of rooms survives to any extent (Rooms 53-56), but the survival of nine rubble and mortar column bases shows that there was a row of rooms along the west side. However, Bartoccini found no trace of them and it is possible that these were demolished during the lifetime of the building. Access to the east rooms was gained by a narrow passage through two doorways in Building 5. On the east side is an *iwān* (Room 55) similar to room 67, where one column base survives, and a second may be seen in plate Iib, 2. There is also slight evidence to suggest that room 51 was an *iwān* of this kind, but the building of a sunken concrete hut there has confused the evidence.

Very little remains of building 4, as this area was the first part of the courtyard excavated by the Italian Mission and much of the walling was demolished in order to obtain a clearer idea of the Roman remains.<sup>10</sup> However the west wall facing the street exists and the well-preserved double arch of room 40. In addition two surviving rubble and mortar column bases and stubs of walls indicate a courtyard and rows of rooms along the east, north and west sides, together with an alley to gain access to the east side rooms.



## The Northern Area

The remains of a building aligned north to south have always been visible outside the courtyard wall at the northern tip. This building was described by Conder,<sup>11</sup> and ascribed to the same period as the Qasr on the basis of two architectural fragments. He describes a square court with three recesses on the north, east and south sides. A small scale plan of the same building was published by Butler, who saw a semi-circular apse.<sup>12</sup>

The east side of the building has since been cleared together with a pair of rooms on the west side of the court in front, but no apse was revealed.

This area is in fact divided into three buildings - Buildings 2, 3 and the North Palace.<sup>13</sup> The division is marked primarily by a series of three straight joints through which the plastering of Building 2 continues. The remains of Buildings 2 and 3 consist of a row of rooms facing east with a dividing passage that has been turned into an L-shaped alley by the later addition of the North Palace. The surviving range of rooms must have faced onto a pair of courtyards with additional ranges of rooms on the north, south and east sides.

On the south side of this area runs a line of foundation work which makes a turn to the north at its east end. On this corner stands a column base of Roman fabric.<sup>14</sup> There is a slight difference between the stonework of one end and the other: the west end is of a softer more worn limestone, and incorporates a projection aligned with the foundations of building 3. In the corner of this join is a drain from the roof of the type described above (p. 6). It seems reasonable that this western end of the foundation is an integral part of building 3, while the east end is possibly earlier, and was reused. For this line marks the facade of a south range of rooms for Building 3.

When the area was first excavated the west wall of Building 3 extended as far as the gate in the Courtyard wall and slightly narrowed the passageway.<sup>15</sup> Room 32 is an axial entrance on the west side with a doorway into room 33, and there is one further room before the dividing passageway. The north wall of this last room projects eastward, and in the adjacent area is a

series of foundations made of well-cut pink-flecked limestone ashlar, of which one line makes a straight joint with the foundation of the Building 3 walls. The northwest corner of Building 3 incorporates a reused block with a well-cut Greek inscription referring to Philadelphia, but this has not been read yet.

North of the passageway two rooms survive that belong to Building 2, including a kind of basin in Room 20; but the area is too destroyed to give a clear picture. In Rooms 20 and 21 a reused column of 40 cm diameter was later added, and at a still later stage blocking walls were built across Rooms 34, 20 and 21. These rest on thick floor deposits which were exposed in excavation, and because the walls block the doors it may be assumed that these represent a very late stage.

## The North Palace

The North Palace is the latest building in the area. It is obviously of some architectural significance, although in a ruined and largely unexcavated state. The building faces onto a small court, lined on the west by a series of rooms of which two have been excavated. There is slight evidence to suggest a colonnade of reused columns. The plan of the Palace consists of a vaulted hall with a square chamber behind. On each side of the vault there are side rooms, and on the east side at least two more side rooms next to the square chamber (Rooms N2/3). Without excavation it is impossible to be certain about corresponding rooms on the west side. Behind the square chamber the remains are eroded, but there is evidence to suggest that the building stretched back to the platform wall, with a large room, or possibly a small court, directly behind the square chamber (Room N5).

The facade, the vault and the square chamber are faced with ashlar masonry, while the reverse sides of these walls<sup>16</sup> and the remainder of the walls are plastered rubble, of the same kind as Buildings 2-7. The vaulted hall is open-fronted with the exception of a shallow rectangular buttress at the entrance (20 cm deep)<sup>17</sup>, and may therefore be described as an *iwān*. However there is a later unmortared partial blocking wall. The springing of the vault survives on the west side; below it is a double

string line, and the door to the side room has a semi-circular arch. There is limited evidence of a cross-wall dividing the vault from the square chamber, in the form of disturbed stones visible on the surface.

The square chamber is of a similar style of construction, with a second complete doorway on the west side. Other doorways to the north and east are visible, all three set in recesses which give a double-pointed effect to the corner buttresses. These buttresses with the exception of the one in the southeast corner are enormously thick, and it may be suggested that they were intended to carry a dome. In the southeast corner is part of a small vault which must be for a cubicle, but without excavation the purpose is unclear.

No architectural decoration remains *in situ* but there are a number of pieces in the rubble. Consider recorded bases for niches similar to those in the Qasr but with vertical slots in place of relief decoration, and a niche arch with dog-tooth decoration.<sup>18</sup> Bartoccini photographed two more similar niche bases.<sup>19</sup> Two different kinds of fragment with blind slots can be seen today (Pl. V, 2), and a niche with engaged columns. The majority of the architectural stonework was found in the court in front of the building, and it may be suggested that the facade carried most of the decoration; the remainder is apparently connected with the fall from the dividing wall between the *iwān* and dome chamber.

The closest architectural parallels for this building should be drawn with the Qasr. The doorways to the south side rooms in the Qasr have the same round arches, now partially concealed by repairs. The employment of a double string line set against a plain stone vault is to be found in the main '*iwāns*' of the Qasr, while the side rooms employ a single string line. The niche construction in the two buildings is similar but not identical, while the North Palace in general is built from cheaper materials; but a close relationship between the two is clear. Blind vertical slots, found on three different kinds of decorative fragment associated with this building, are outside the tradition of Classical Syria but are widespread in Iraq and Iran: in particular the combination of vertical slots and niches with engaged columns and arches with dog-tooth

decoration may be seen at al-Ukhaidir in Room 32.<sup>20</sup> If we regard the decoration as drawn from eastern models, we may also consider the ground plan in the same light: in fact the plan of an *iwān* with two side rooms and a dome chamber behind comes from the same tradition.<sup>21</sup> Thus the builders appear to have intended the building to have an eastern style, though like the Qasr it seems to be of local workmanship.

The palace was never finished, or it collapsed soon after its construction, for above a height of two metres the wall between room N2 and the passage is constructed of small rubble and gypsum mortar, a technique that is obviously distinct from but always closely associated with the original construction of these buildings. There are fallen transverse arches in this technique in rooms N2 and N8. They may be compared with the rubble and mortar colonnades in Buildings 4, 5 and 6. Subsequently the door from N2 to the passage was blocked up, and a partition wall built that overlaps the blocking.

## Chronology

To summarise the development of the area, construction has been divided into five broad periods, based upon the structural sequence. Because stratigraphic evidence is not available, some of the relationships are tentative.

### Period 1: Construction of the Courtyard

It has been suggested above (p.5) that the surviving superstructure of the courtyard is contemporary with the artificial platform. Unfortunately the surviving remains of the layout are fragmentary, and its interpretation depends on the fact that the area consists of two spaces, one of which is a decorative courtyard. Butler and more recent opinion have considered it a temple and temenos of the 2nd-3rd centuries AD.<sup>22</sup> The 90 cm east wall suggests that the platform was not primarily intended as part of the city defences in this period.

### Period 2

Relatively little modification appears to have taken place before Period 3. The open

fronts of rooms E1 and E2 were blocked up with walls of small ashlar masonry of the type common at any time between the 4th and 9th centuries AD. The construction incorporates a recut Roman architectural fragment. While possibly Byzantine, because of a graffito cross on the door jam of room E2, locating this addition before, rather than after the Period 3 construction, is tentative.

### Period 3: Redevelopment of the Courtyard

Examination of the buildings that cover the area of the courtyard, and those in the Northern area, shows that the construction technique employed is remarkably consistent. Buildings 4 to 7 are contemporary: the surviving parts of Buildings 2 and 3 suggest that they were of similar layout, while the North Palace is a little later. The Qasr is tied into this plan, for court 1, adjacent to it, lies on the same axis and is of the same size (25m square), while as noted above (p. 10) the North Palace and the Qasr are similar architecturally.

Clearly this area is a zone of public buildings for the Qal'a dominated by two palaces connected by a columned street: the street is in Roman style, while the palaces have strong Sassanian connections. Further, although the archaeological evidence is not unequivocal, the main access to the street, and to the complex in general, was apparently through the Qasr: the other possible access routes are little more than alleys. In this context the area would have to be considered a single palace or palace complex, although it is known that the buildings were not put up at the same time.<sup>23</sup> Whether the Qasr stood at the entrance to this complex or not, it was clearly the main hall for public audience, with two large doorways, while the North Palace occupies a more secluded position.

There are two alternative sources of dating for this complex. Construction in the period 3 buildings, with the exception of the Qasr, is of a common type: that is, walling 96-107 cms or 120-130 cms wide, coursed rubble bonded with a lime mortar containing wood-ash. The surface is smoothed with a great number of snecking stones, and then plastered with the same mix as the mortar, which is then studded with small stones, and/or stamped with wedge-shaped key-

ing impressions. For a finer finish there is a second layer of a hard white cement with an admixture of crushed pottery, but this is only found in the staircase of the Qasr and on clean-water drains.<sup>24</sup> In the C Area excavations 120m away, this type of construction, albeit less consistent in its wall widths, is connected with the Umayyad redevelopment in that area, although plaster studded with stones is in addition a feature of the later modifications to the Umayyad defensive wall.

However a second independent source of dating is also available, and this may help to confirm the comparison. A sherd in the mortar of a dislodged stone from the west wall of Building 4 was of a red ware, with a black core and a plain white slip, a type normally associated with the Umayyad period. Surface sharding on the roof of the Qasr indicates mostly Byzantine red wares, but also included occasional mortar-covered sherds with red paint on white slip, which is characteristic of the Umayyad period. To balance this minimum dating, the complex must have been put up before the terminus date for period 4 which is probably the 9th century AD. After the erection of the Period 3 complex, the remaining occupation of the area represents development and modification of the Period 3 plan.

### Period 4

The first stage of modification to the Umayyad plan was in the completely different technique of rubble and gypsum mortar, a technique widely found in Iraq and Iran.

The North Palace was rebuilt with transverse arches in the side rooms, and a colonnade of rubble and mortar columns or piers was added to each of buildings 4, 5 and 6, together with a pair of columns in each *iwan*. This style of column and colonnading is found in the east in Sassanian times, and early in the Islamic period, but tends to die out in the 9th century,<sup>25</sup> and this gives us a rough terminus of the 9th century for period 4.

### Period 5

Period 5 consists of two phenomena: firstly evidence for the continued occupation of all the

standing buildings for a considerable length of time, in the form of the addition of partition walls that were invariably unmortared. Two features stand out: firstly the use of reused column drums for roof support and door jambs, and secondly the building of a long bin alongside a wall (Room 54); both are found in the late phase, thought to be 11th century, on Area C. The second phenomenon is the construction of some walling after the abandonment of the area, indicated by walls that block doorways (Buildings 2 and 3) and the building of a wall over the stumps of the rubble piers in Buildings 4 and 5. No certain date can be offered for these two phenomena on the basis of surface survey.

## SUMMARY

The sequence of occupation in the Islamic period in this area shows three main phases of continuous occupation, then abandonment and some slight further building, for there is no sign

of abandonment in periods 3 to 5. This is a different result from the C area excavations although such a result cannot be so closely defined on present evidence; for the C Area sequence shows Umayyad occupation, abandonment, then reoccupation for a short period, and then a second abandonment. Thus it seems likely that in this area are to be found the longest occupation sequences for the Islamic period on the Qal'a.

There are two basic constructional periods in the area, with a number of modifications to each; firstly the Roman platform and courtyard, probably for a *temenos*, and secondly its conversion into a Palace complex 150 metres long, probably in the Umayyad period - the first half of the 8th century. Although two buildings are decorated, the remainder are curiously of plain plastered construction, which has tended to obscure the relationship with the buildings of finer construction, but of that relationship there is little doubt.

## Footnotes

1. The survey was made possible by the help of Mrs. C-M. Bennett, Director of the British School of Archaeology in Jerusalem, and the Department of Antiquities of Jordan, who also loaned the services of Mr Ghassan ar-Ramahi. Thanks are also due to Prof. Basil Hennessy, who loaned the Ghassul excavation surveyor, Mr. Mark Watt, for several days of invaluable help. The survey was financed by the British School of Archaeology in Amman, and the Wright Fund of Cambridge University.
2. R. Bartoccini, "Ricerche e Scoperte della Missione Italiana in Amman", *Bollettino dell'Associazione Internazionale per gli Studi Mediterranei*, a.I, 1930, nr.3, pp.15-7 (Bartoccini 1930); "Scavi ad Amman della Missione Archeologica Italiana", a.III, 1932, nr.2, pp.16,23 (Bartoccini 1932); a. IV, 1933-4, nr.4-5, pp. 10ff. (Bartoccini 1933); "La Terza Campagna di Scavi sull' Acropoli di Amman", *Bollettino d'Arte del Ministero dell' Educazione Nazionale*, 1934 (Dicembre), pp.275-285 (Bartoccini 1934).
3. On the Qasr (Umayyad Palace) see: M. Almagro Basch & A. Almagro Gorbea, *The Arab-Spanish Restoration of the "Umayyad Palace" at the Citadel of Amman*, unpublished report in the Registration Centre of the Department of Antiquities; J. Warren, "A Sassanian Attribution for Two Buildings in Jordan", *Art and Archaeology Research Papers*, XI (1977), pp.49-55; H. Gaube, "Amman, Harane und Qastal, vier Früh-Islamische Bauwerke in MittelJordanien", *Zeitschrift des Deutsche Palastina-Vereins*, 93 (1977), pp. 52-87.
4. Photographs in Bartoccini's reports, and Department of Antiquities files, old series, nos. A580-8, dated November 1943.
5. Bartoccini 1934, p.277, ill.5.
6. loc. cit., p. 281, ill.19.
7. Similar seats exist at the south entrance of the Qasr. cf. R.W. Hamilton, *Khirbet ul-Mafjar*, p.27, Pls.III.2.& IV.2.
8. Plain doorways to the outside are not well suited to the wet Jordanian winters: buildings that continued in use often had these doorways narrowed, blocked up, or fitted with an inserted door-frame. *Iwans* were blocked up for the same reason.
9. Traces of four survive and see Plate IIb.
10. Bartoccini 1930, p.20, Pl.IV.1
11. C.R. Conder, *The Survey of Eastern Palestine*, Vol. 1, The Adwan Country, p. 63.
12. H. C. Butler, *Publications of the Princeton University Archaeological Expedition to Syria*, Div.II, Sect. A, Pt.I, pp.41-2 and ill. 26.
13. An alternative explanation would regard the rooms facing east as parts of one building with a central entrance at the L-shaped passage. While this division is not impossible, it fails to account for the entrance at Room 31, or the fact that the walls adjoining the passageway extend beyond the east facade of rooms 31-34 and 20-22.
14. It is not known to the author whether this column base was found in situ or is a restoration.
15. Bartoccini 1934; p. 277, ill. 4.
16. This type is duplicated in the Umayyad defensive wall.
17. A strengthening buttress is in fact usual on early *iwans*, eg. Taq-i-Kisra, or Bab ul-'Amma at Samarra.
18. Conder, op. cit., fig.2. facing p. 60.
19. Bartoccini 1933, p.20, Pl. IV, ill. 9.
20. K. A. C. Cresswell, *Early Muslim Architecture*, 1st. Ed., Vol.2, Pl. 15c & fig. 49, p.68.

21. For examples of dome chambers, some with related **iwans** see B. Finster & J. Schmidt, "Sasanidische und FruhIslamische Ruinen in Iraq," **Baghdader Mitteilungen**, 8 (1976), pp.70-73
22. Butler, op. cit., pp.41-2.
23. A sequence of construction is visible moving from south to north. The Qasr was built first, then the courtyard buildings and street, and lastly the North Palace. See construction sequence on the plan.
24. This style of plaster is recorded from the last phase at Qasr Hallabat, Qasr Mshatta, Khirbet ul-Mafjar (Hamilton p.49), and the "Umayyad Palace" in Jerusalem.
25. Columns of rubble and mortar with plain square bases, or the equivalent shape in brick, are common in the Sassanian tradition, either freestanding or as engaged columns. In the 8th Century, the **Dar ul-Imara** at Kufa (**Sumer XIX** pp.36-65) and al-Ukhaidir (Cresswell, op. cit., p. 70 fig. 52 and Pl. 15d) illustrate their use, but they are rare at Samarra (9th Cent.)-four houses have individual columns (Dept. of Antiquities, **Excavations at Samarra, 1936-39**, p.35 fig. 16)- and absent from Siraf (Whitehouse, **Iran**, vols.6-10) in the 9th/10th centuries.



# Pre-Second Millennium Dwellings in Palestine

by  
Khair Yassine

The first human dwelling places were presumably caves and other natural shelters. These were probably supplemented by artificial shelters of brushwood, stones and skin, by simple huts, and by pits dug in open-air sites. Such habitations continued in use side-by-side with more sophisticated dwellings long after man had acquired the technique of building houses and permanent settlements.

In Palestine, we find ancient man dwelling in caves as early as the Epi-Paleolithic period.<sup>1</sup> The el-Wad Cave on Mount Carmel is, in fact, the type-site for cave dwellings,<sup>2</sup> and numerous other cave sites have been found throughout the land. In the Mesolithic, Neolithic and chalcolithic periods, ancient Palestinians were living in what seem to have been semi-curved structures. Some seventy such sites have been found in the Mediterranean coastal plain: fifteen in Wadi Kharatun, and others at Jerusalem, Einan, Jericho, Shaar ha-Golan, Wadi Shallale and Tell el-Farah.<sup>3</sup>

Other types of dwellings came later. The increase in population imposed the need for a stable food supply in greater quantity, or vice versa. The areas with the most favorable conditions were sought. From this "quest" of security evolved the house in its simplest and crudest form--man's first architectural effort.

The most spectacular development in this line was first noticed at Jericho, in the Pre-Pottery Neolithic A period. This settlement reveals plano-convex mud-brick houses, built in a rounded shape,<sup>4</sup> with semi-subterranean floors reached by descending steps.

The shape of these houses was presumably taken from the rounded hut and this subterranean cave dwelling. Wadi Falleh (Nahel Oren), in the Carmel Mountains, contained fourteen rounded houses, built on a series of terraces.<sup>5</sup> Garstang, in his Jericho excavations, also found many circular constructions,<sup>6</sup> and this same type was found in Megiddo as well (Stratum XX),<sup>7</sup> Rounded structures, such as those found at Horvat Beter,<sup>8</sup> and at Jericho in the Chalcolithic

and Early Bronze periods, should not be confused with these rounded houses, as they seem to have been silos rather than domiciles.<sup>9</sup>

Rounded houses (with great variety), ranging from the Neolithic to the Early Cypriot Age, are quite prevalent in Cyprus.<sup>10</sup> Kent Flannery, who has traced this type of dwelling, found a wide range of distribution in both the Old and New Worlds.<sup>11</sup>

Rounded walls are found in later periods, but these can usually be explained by the dictates of available space, or even by the need for greater ease in construction.

A step in architecture is demonstrated by the change from a complete circular plan to that of a horseshoe, which may have occurred when a wide entrance was cut through a rounded house. In the early excavations of Garstang at Jericho, the circular and horseshoe types appear side-by-side.<sup>12</sup>

## Rectangular House

In the following period (PPNB), the tendency was to build houses not completely rounded but, rather, ovoid (rectangular with slightly rounded corners), and rectangular.

The houses of PPNB in Jericho are described as follows:

The rooms were mostly larger with wide doorways, sometimes flanked by timber posts. The plan of these rooms was rectangular, with slightly rounded corners, and the walls were straight and solid...The main rooms were flanked by small chambers, some of them apparently used for storage.<sup>13</sup>

The first truly rectangular houses to appear were in Jericho, side-by-side with the ovoid house,<sup>14</sup> but the rectangular plan did not become the dominant form until a later period.<sup>15</sup>

There are not enough exposed levels in the early Neolithic period to make any conclusions; however, during the Chalcolithic period the rectangular house had reached a further stage of development,<sup>16</sup> with a good deal of variety and experimentation. Some examples of these modifications were houses with porches, or sub-

divided rooms, as found in Teleilat Ghassul, Level IV,<sup>17</sup> and Beth-Shan, Level XVI.<sup>18</sup> In Meser, Stratum III,<sup>19</sup> we see small rooms alongside the main room.

The houses also vary as to size of rooms. Some of these houses are crudely constructed, while others are well-built. Two stages of development can be observed: A. Internal (the ante-room constructed inside the main room) and B. External (a room externally added to the main room). In general, the External House is "L"-shaped, with the subsidiary room added to either a long-room or to a broad-room.

A. The Internal House (referred to herein as the long-room house), is found in Teleilat Ghassul, where five small tells form a full sedentary village. Upon each tell is a cluster of buildings (some of which were constructed with common walls) that formed irregular blocks, and were surrounded by narrow streets. In the areas excavated, a group of seventeen rather homogeneous houses was found clustered in a circular arrangement. Each house seems to have been comprised of an open courtyard leading to a long-room, which has an inner room. The house plan seems to be an elaboration of a long, rectangular-type room. Each house has one or more fireplaces, usually located in the open courtyard, and several storage pits and silos. The outside walls of the houses form a fortification wall. These walls are sometimes built of stones, but generally of brick, and often set on a stone foundation. This same type of house was found in Meşer, Rooms B 13 and B 15 in Area B, Level III. The building is rectangular and consists of two rooms. Built in the fashion of a broad-house,<sup>20</sup> the entrance, eighty centimeters wide, is located in the northern, long side leading into the main room. At one side of the main room is a partition wall with a middle entrance leading to the small room. The arrangement of these houses looks somewhat similar to those of Teleilat Ghassul, Level III, and is compared to the final stage at Ghassul, Level IV, or thirty-fourth century B.C.<sup>21</sup>

B. The other type, External, or what is called here the Two - Room House (Main Room and Subsidiary Room), is a style which appeared at the end of the Chalcolithic period and one which

was to become a popular architectural feature of the Proto-Urban and Early Bronze I period. In the building found at Horvaṭ Beṭer<sup>22</sup> the rooms of Loci 3 and 4 form a single house. (The rooms of Loci 5 and 9, however, do not. The walls are very thin, and the planning here does not match the rest.) In general, the house seems to be formed from a big and a small room set at right angles to each other (see Plate I:1). In front of the house is a courtyard, and the rooms are entered by way of an opening near the end of a long wall. The house of the same type found in Stratum I at Meşer<sup>23</sup> is dated to the Proto-Urban period. Rooms B 8 and B 2 are attached to each other, forming an "L" shape (B 8 measures seven by three meters; B 2 measures four by three meters) (see Plate I:2). We find the same type of structure as those of Meşer Horvaṭ Beṭer in Stratum XX of Megiddo, dated to the end of the Chalcolithic period<sup>24</sup> (see Plate I:5).

To summarize, these houses of two rooms arranged in an "L" shape (set at right angles to each other) had no consistent entrance location (long-room or broad-room). The smaller room probably had another entrance leading to the outside yard, and was used, perhaps, as a workshop, since silos and copper slags were found in some instances. It could also have been used to shelter animals.

The assumption is that these houses were those of peasant families who owned a small flock of sheep or goats, made their own bread, and spun cloth for their own clothes. The frequency of this type of house indicates that by that time man had developed an ideal standard form for a particular function. Materials found in the subsidiary room show it had been used as a kitchen and an industrial quarter. Long-room material remains indicate that it was used for sleeping.

#### The Apsidal House

The apsidal house appears at the end of the Chalcolithic-EB I. Meser, Strata II and I,<sup>25</sup> has three examples dated to the end of the Chalcolithic period. Buildings B 1, B 14, and D 6 are built of rubble with some walls still standing to two meters high. Since no walls were found on the end opposite the apse, it might well have been an apsidal house with an open porch.

This type of house was found in Beisan (Beth-Shan) in EB Level XVI,<sup>26</sup> which has

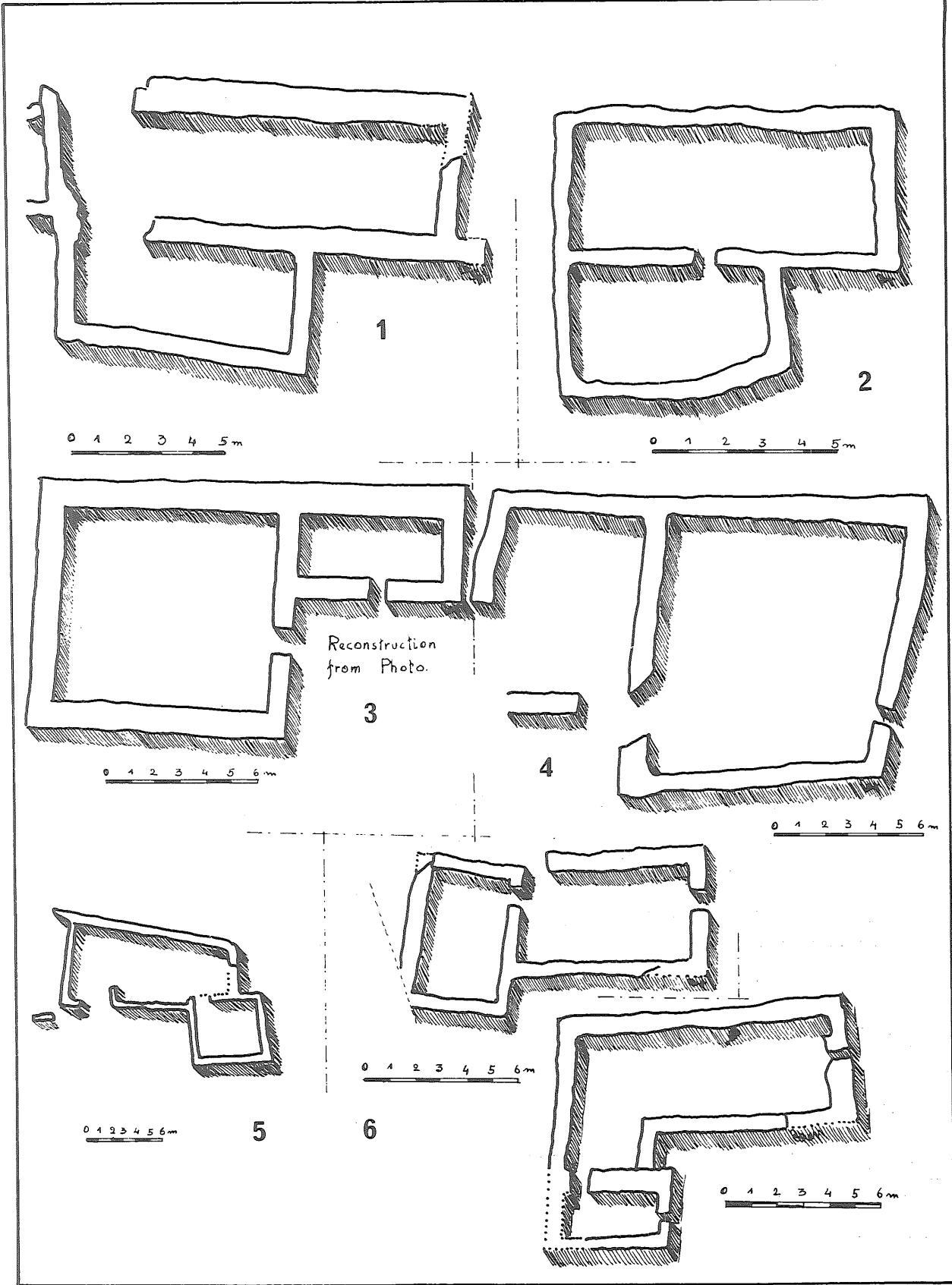


Fig. 1



been recently (1961) dated to ca. 3150 B.C.<sup>27</sup> The building measures four by three meters within. The northern end was partly separated from the southern room by a cross wall. The outside wall is semicircular, giving the whole building its apsidal form. It seems that this type differs from the one found at Meşer, for, instead of a porch, it has an ante-room opposite the apse.

At Megiddo, in Stage V,<sup>28</sup> this same type was found, but in a more complex form. The house has three rooms: the apse room, a middle room, and an ante-room (similar plans continue to appear in later periods).

In the Proto-Urban and EB I periods, apsidal architecture is found in Jericho E, III-IV, phase Q.<sup>29</sup>

In the Early Bronze period, the feature that characterized all the structures uncovered in Stratum I at Rosh Hanniqra was the rounded walls, indicating the existence of apsidal houses.<sup>30</sup> Unfortunately, plans were not published on these, so we are unable to conclude that these were like the ones preceding.

Room 97 at ʿAi (dated to the Early Bronze II period)<sup>31</sup> is a small, apse-like house and is the latest example found in this area. From this point on, the rectangular house is dominant here; however, apsidal architecture is found in the Chalcolithic, Early Bronze and Middle Helladic periods in the Aegean,<sup>32</sup> from Eutresis, Korakou, Thermos, and Troy.<sup>33</sup>

To summarize, we have three different subtypes of apsidal architecture: (1) apsidal room with a front porch; (2) apsidal room with an ante-room; (3) apsidal room with a middle room and an ante-room.

It is clear that the house went through sequential development: from cave to tent, to hut, to circular, to ovoid, and, finally, to rectangular. Variety and experimentation were clearly in evidence, and standardization had not yet taken place.

### Early Bronze Period

There is a general scarcity of information concerning domestic architecture during the Early Bronze age in Palestine.<sup>34</sup> Our objective is to trace the continuity and to study the new development in the formation of the house plan in this period. This task, however, meets with many difficulties. First, most sites of the EB

period continued to have several habitational levels, so that not enough digging has been done into the early EB levels. The plan of a building is very difficult to use, because normally a mere examination of the plan is not sufficient to determine which traits are culturally preferred and which are the result of individual needs or whims of the builder.<sup>35</sup>

Those sites which revealed substantial material, such as Jericho, ʿAi, Tell el-Farah and ʿArad,<sup>36</sup> are still mainly in preliminary reports. Few plans have been published, and consequently our illustration is incomplete and our speculation is based on few examples. Some conclusions, however, may yet be drawn from the data available from various sites.

The general situation, as it has been traced, shows that most of the sites, with only a few exceptions, were occupied before fortification walls were erected. In other words, the same site changed from village to town.

In Jericho, Kenyon noted that two major phases in Early Bronze Age housing were evident prior to the building of the city wall.<sup>36</sup> At ʿArad, there also appears to be a pre-wall occupation phase (Strata IV-V),<sup>37</sup> and at Tell el-Farah there are three occupation levels, dated by de Vaux as EB I-II,<sup>38</sup> which predate the city wall. A similar situation exists at ʿAi, where Callaway found tombs near the site dated to the pre-urban settlement on the tell,<sup>39</sup> but was unable to find any architectural feature belonging to this date. Megiddo, Stratum XIX (stages VII-IV), appears to represent an unwalled settlement.<sup>40</sup>

As previously mentioned, the apsidal house survived a bit later than Early Bronze I, and the "L"-shaped two-room house continued and became a characteristic architectural feature. Great variety was made possible by different internal arrangements, namely, by division of the two rooms, the relationship between the big main room and the subsidiary small room, and the location of the doors.

At ʿArad, the smallest unit is one room of the type earlier described with one subsidiary room which sometimes functioned as a cooking area, and at other times as a storage room<sup>41</sup> (see Plate I:3). The two rooms did not have direct connection, but were perpendicular to each other, both opening onto the courtyard, which

was probably enclosed on the other two sides by a thorn fence (like the modern sheepfolds), and used for domesticated animals.

At 'Ai, a house was found at the eastern end of the Lower City, adjacent to City Wall A, comprised of three rooms arranged in an "L" shape. Rooms 104, 102 and 106<sup>42</sup> are relatively small. It is difficult to recognize the relationship between these rooms, since no doors are shown in the plan. Our speculation, based on the previous example, is that they fall in the same category. In Phase III (Wall A), another complex was found which also would be characterized as a two-room house arranged in an "L" shape. Rooms 229 and 227 form a large house<sup>43</sup> (Room 229 measures eight by eight and one-half meters, while room 227 measures four and one-half by six and one-half meters). The house (slightly restored in Plate I:4) shows close similarity to the one found in 'Arad. Room 229 seems to have another door on the west side.

One major variant in the "two-room, 'L'-shaped" type of house was discovered at Tell el-Farah (North).<sup>44</sup> Instead of the doorways being at the long side of the house, they now appear on the short side, forming a long-room rather than a broad-room type (see Plate I:6). In general, the fundamental arrangement consists of two rooms adjoining each other. In the Early Bronze II period, Room 276 adjoins the subsidiary Room 277 from the south side,<sup>45</sup> in the Early Bronze III, the subsidiary Room 274 joins the main long-room (269) from the east side.<sup>46</sup>

The continuity of the two-room house from the end of the Chalcolithic period to the end of the Early Bronze II period is an indication of stability of the people.<sup>47</sup>

Our knowledge of house types of the EB period is very limited, and will require an independent study in the future, when recently excavated sites reach final publication.

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1. A. Anati, *Palestine Before the Hebrews* (New York, 1963), p. 127.

2. D. A. E. Garrod and D. M. A. Bate, *The Stone Age of Mount Carmel* (Oxford, 1937), p. 1-15. It was found that the dwellings have habitational deposits showing continuous occupation; Miss Garrod divides the Natufian level into two phases, upper and lower Natufian.

Along the Dead Sea, inhabited caves were found dating to the Chalcolithic period. In the Beer-Sheba area, subterranean caves have also been dated to Chalcolithic, but these are man-made imitations of natural caves.

2. These excavations have been reported as follows: (1) At Jerusalem, by Anati, *Palestine Before the Hebrews*, p. 146. (2) At Einan, by J. Perrot, "Excavations at Einan," *IEJ* 10 (1960), p. 17. The Einan huts and pits are arranged as hamlets of roughly circular huts with stone foundations. The habitations are between seven and eight meters in diameter, surrounding an area into which plastered pits had been dug. (3) At Jericho, by K. Kenyon, *Archaeology of the Holy Land* (New York, 1970), p. 41. In the Mesolithic period there was still no sign of solid architecture at Jericho, but an earth platform was cut by pits. (4) At Shaar ha-Golan, by M. Stekelis, "The New Neolithic Industry," *IEJ* 1 (1951): 17. At this site a single level yielded many finds of domestic use over a gray earth and broken pebbles, but no buildings were found. (5) At Wadi Shallale, by M. Dothan, "Excavations at Horvat Beter (Beer-Sheba)," *Atiqot* 1 (1955): Fig. 475. Also, J. Perrot, "The Excavations at Tell Abu Mater near Beer-Sheba," *IEJ* 5 (1955), pp. 17-40. These were found as small aggregations of rough, round and oval hut floors. (6) At Tell el-Farah, by E. Macdonald et al., *Prehistoric Fara, Beth Pelet*, 2 (London, 1932), p. 2-20.

3. Kenyon, *AHL*, p. 44, Jericho experienced an excep-

tionally highly developed settlement in the PPN A period, unlike the rest of the country. The settlement was surrounded by a massive wall and assumes an urban character. (A great stone tower was built against the inside of the surrounding wall.)

4. M. Stekelis, "Excavations at Nahel Oren," *IEJ* 13 (1955), p. 15. They had stone walls preserved to a height of up to one meter. Floors were of rammed earth and occasionally of pebbles.

5. J. Garstang, "L'art neolithique a Jericho," *Syria* 16 (1935), p. 354.

6. G. Loud, *Megiddo*, 2 vols. (Chicago, 1948), p. 2: p. 60, Fig. 390. This one is six meters in diameter and goes back to the Chalcolithic period.

7. M. Dothan, "Excavations at Horvat Beter," *Atiqot* 2 (1956), p. 6.

8. R. de Vaux, "Palestine During the Neolithic and Chalcolithic Period," *CAH*<sup>2</sup>, I fasc. p. 46.

9. E. Gjerstad, *The Swedish Cyprus Expedition*, 5 vols. (Stockholm, 1936), 1: pp. 1-26.

10. Kent V. Flannery, "The Origins of the Village as a Settlement Type in Mesoamerica and the Near East," in *Man, Settlement and Urbanism*, eds. P. J. Ucko, R. Tringham and G. W. Dimbleby (London, 1971), pp. 22-58.

Also, in the basal levels at Muraybit (on the middle Euphrates) Van Loon found round-house foundations (M. Van Loon, "The Oriental Institute Excavations at Muraybit, Syria. Preliminary Report on the 1955 Campaign: Part I, Architecture and General Finds," *JNES* 27 (1968), pp. 265-82).

11. Garstang, *Syria* 16 (1935): p. 354, plate LXII-1.

12. Kenyon, *AHL*, p. 48, Plate II.

13. K. Kenyon, "Oldest Walled Town," in *Archaeological*

- Discovery in the Holy Land**, compiler, Archaeological Institute of America (New York, 1967), p. 119.
14. J Perrot, "Le neolithique d'Abu Gosh," *Syria* 29 (1957), p.119.
15. A. Mallon, R. Koepfel, and R. Neuville, **Teleilat Ghasul**, 2 vols. (Rome, 1934-40), 1: Fig.p.12.
16. *Ibid.*, p. 35.
17. G. M. Fitzgerald, "Excavation at Beth-Shan in 1933," *PEF* (1934-35), p.123, Plate IV.
18. M. Dothan "Excavations at Meser, 1957 Preliminary Report of the Second Season," *IEJ* 9(1959), Fig. 14. The dating of this stratum is in some doubt. It may be BB I.
19. *Ibid.*, p. 15
20. *Ibid.*, p. 19.
21. M. Dothan, "Excavations at Horvat Beter," *cAtiqot* 1 (1959), 4, Fig.3.
22. Dothan *IEJ* 9 (1959), p.16.
23. K. Kenyon, "Some Notes on the Early and Middle Bronze Age Strata of Megiddo," *Eretz Israel* 5 (1958):p.52.
24. Dothan, *IEJ* 9(1959), p. 13.
25. Fitzgerald, *PEQ* (1934-35): p. 126.
26. G. E. Wright, "The Archaeology of Palestine," in **The Bible in the Ancient Near East**, ed. G. E. Wright (New York, 1960), pp. 81-83.
27. R. M. Engberg and C. M. Shipton, **Notes on the Chalcolithic and Early Bronze Age Pottery of Megiddo** (Chicago, 1930), p. 3, Fig.2.
28. J. B. Hennessey, **The Foreign Relations of Palestine During the Early Bronze Age** (London, 1967), pp. 6-7.
29. M. Tadmor and M. Prausnitz, "Excavations at Rosh Hanniqra," *'Atiqot* 2 (1959), p.79.
30. Judith Marquet-Krause, **Les fouilles de cAy (Et-Tell) 1933-1935** (Paris, 1949), main plan.
31. H. O. Thompson, "Apsidal Construction in the Ancient Near East," *PEQ* 101 (1969):p. 77,
32. V. Muller, "Development of Megaron in Greece," *AJA* 48 (1944):p. 345.
33. Because the exposed area of this period is not enough to give architectural details.
34. The more sophisticated the tradition of architecture and the plans, the more deviations from the norms can be seen.
35. More than nineteen sites have revealed occupation levels from the EB period. From north to south these are: Rosh Hanniqra, Hazor, Kh. Kerak, Megiddo, Ta 'annek, Beth-Shan, Dothan, Tell el-Farah, Afeq, Tel Aviv, 'Ai, Nasbeh, Jericho, Gezer, Jerusalem, 'Askalan, 'Erani, Lachish, Hesi, Nagila and 'Arad.
36. K. Kenyon, "Excavations at Jericho, 1956," *PEQ* 87 (1956):77, and *AHL*, pp. 108-8.
37. Y. Aharoni and R. Amiran, "Notes and News, Tell cArad," *IEJ* 14 (1964): 221, and **Near Eastern Archaeology in the Twentieth Century**, ed. J. Sanders (New York, 1970), p.95.
38. R. de Vaux, "The Excavations at Tell el-Far'ah and the Site of Ancient Tirzah," *PEQ* 87 (1966), 128-29
39. J. Gallaway, "The cAi (et-Tell) Excavations," *BASOR* 178 (1965), pp. 13-40.
40. Kenyon, *Eretz Israel* 5 (1958). p.52.
41. R. Amiran, "The Beginning of Urbanization in Canaan," in **Near Eastern Archaeology in the Twentieth Century**, ed. J. Sanders (New York. 1970), p.95.
42. Marquet-Krause, **Les fouilles de 'Ay (Et-Tell)**, Plan I.
43. *Ibid.*
44. R. de Vaux, "Les fouilles de Tell el-Far'ah pres de Naplouse," *RB* 62 (1955), 559.
45. *Ibid.*, Fig.7.
46. *Ibid.* Fig.8.
47. "L"-shaped houses were found in later context at Hama (Buildings 3 and 6) (E. Fugmann, **Hamma, Fouilles et Recherches 1931-1938: L'Architecture des Perodes pre-Hellenistiques** (Copenhagen: 1948) ,p.49).



# Excavations on the Upper Citadel of Amman Area A (1975 and 1977)

by  
F. Zayadine

Excavations on the Upper Citadel of Amman (Pl.VI,1 and Figs 1-2) were carried out by the Department of Antiquities<sup>1</sup> in June 1975, at the south-eastern rim of the circular water reservoir, where a trench dug by the army, hit the edge of a stone basin. A Square 3m. by 6m was plotted to include the new discovery. To the east, in the disturbed area, a fragmentary *tabun* whose floor was apparently of pebbles, was impossible to salvage for it was smashed into pieces.

## Umayyad occupation:

When work progressed to the west, undisturbed stratigraphy was found; two layers (Fig.3, 10 and 12) of brown soil and rubble contained Umayyad sherds (Fig. 25). They covered a floor paved with irregular flagstones (pl.VII,1 and Fig. 2a) sealing the stone basin. This belonged to a courtyard which was limited to the north by wall 6, to the south by wall 14 and to the west by wall 8 and was broken by a pit in the south-eastern corner. Against wall 14, in the south-eastern corner, a plastered platform (1.27) of 0.95 by 0.75m appeared and two cubes embodied in the mortar suggested it was paved with white tesserae. It was laid over corbel stones, supported by two small parallel walls which framed a square empty space, about 0.85m above floor level, opening to the west and filled with accumulated brown soil. A small rounded hole drilled through a stone in the south-western corner of the platform is evidence that the platform served as a drain. A bronze coin of Justinus I (518-527) (Pl.XXIV,7) was found on the floor and may be considered as evidence of the latest Byzantine occupation (see below). When the pavement was removed, two layers (Fig.3,24-25) yielded a rich collection of sherds of the 5th century A.D., overlying the plaster floor on which the

stone basin was resting (Pl.VII,2) and sealed by the Umayyad pavement.

An Umayyad house (Fig.2 and Pl.VIII,1), which reused previous Byzantine structures in wall 6, was cleared north of the oil press system. The conquerors blocked the entrance of the oil press room (Pl.VIII), originally vaulted, and added a thick plaster floor which sealed off a stone mortar at the entrance and erected new vaults to replace the older ones. The Umayyad house was accessible from a paved trail (Pl. VIII, 2) which runs along the outer retaining wall of the water reservoir. It was entered from the west, and a rectangular slab (Pl. IX, 2) situated to the north drilled with two holes, was probably a threshold to the vestibule. As they covered the oil collector with a sarcophagus lid which they smoothed, they laid flagstones over the mosaic floor. A Byzantine vault springer is still standing to a height of three courses and was obviously an addition to wall 8 of the early Roman period.

## The Byzantine Oil Press System: (Pl. VII-X and Figs 4-6).

The stone mill which measures 2m across and 0.60m in height and was provided with a square central square, belonged to an oil press system which included two main elements: A) The mill, B) the press. A) The Mill consisted of the circular stone basin and a stone wheel (here missing) which turned around a wooden upright fitted in the square centre of the basin. The space between the mill and wall 14 is narrow and could permit a man and not an animal to pass and work the wheel. As the wheel was of harder stone, it wore away the bottom of the basin which was repaired with small slabs. In a first phase, the olives were crushed by the wheel and then gathered in reed baskets and brought to the press.

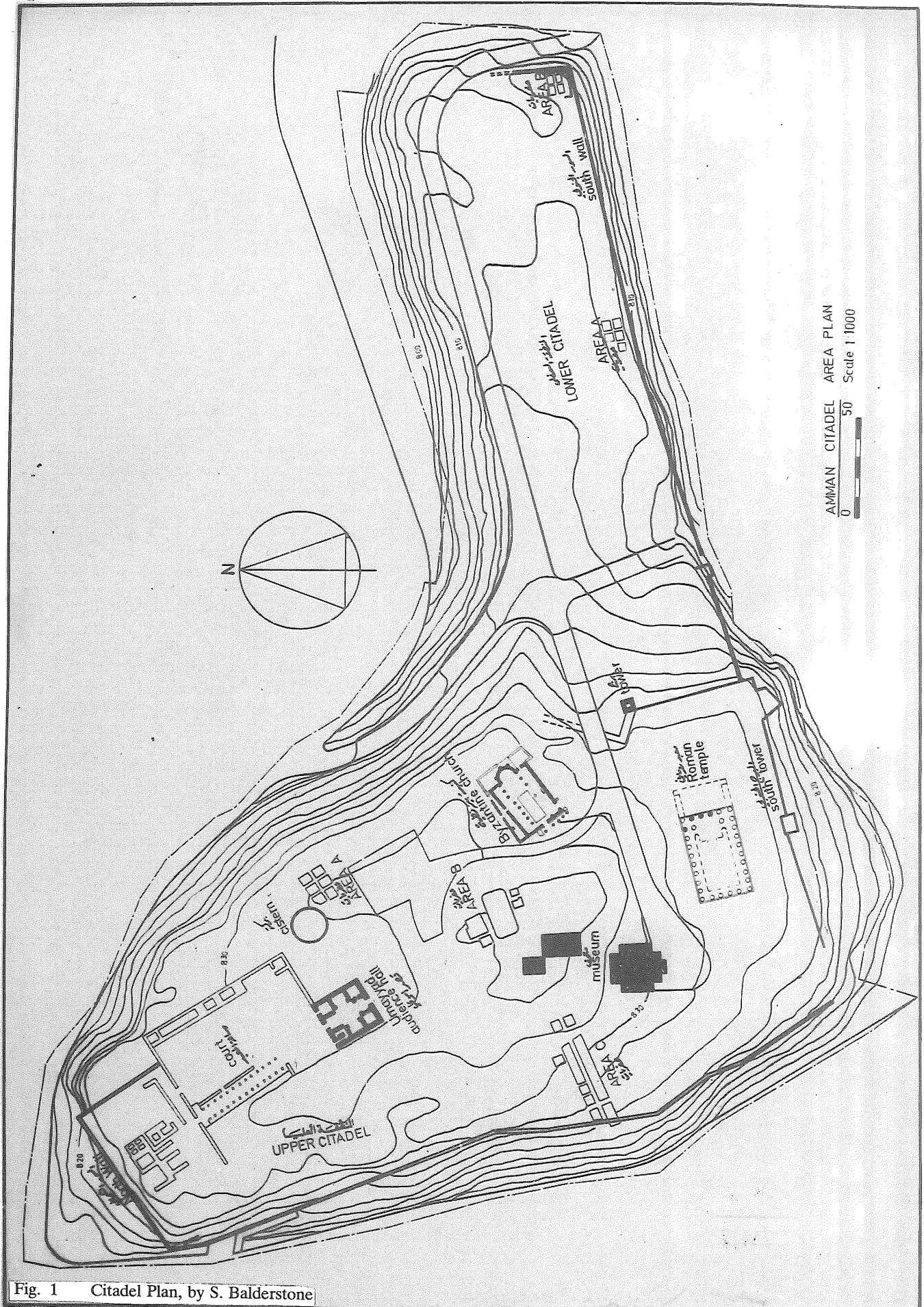


Fig. 1 Citadel Plan, by S. Balderstone

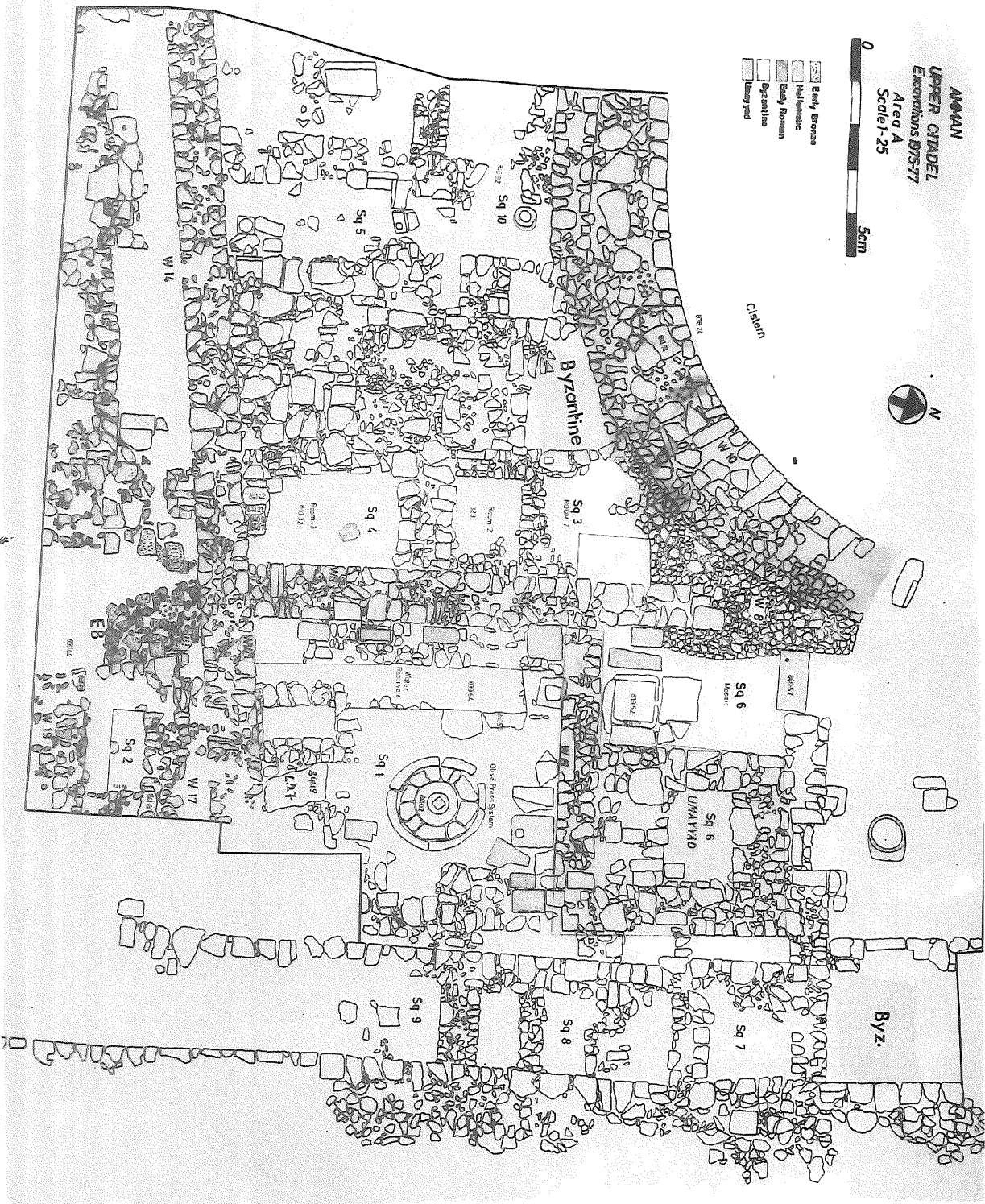


Fig. 2 plan of Excavations

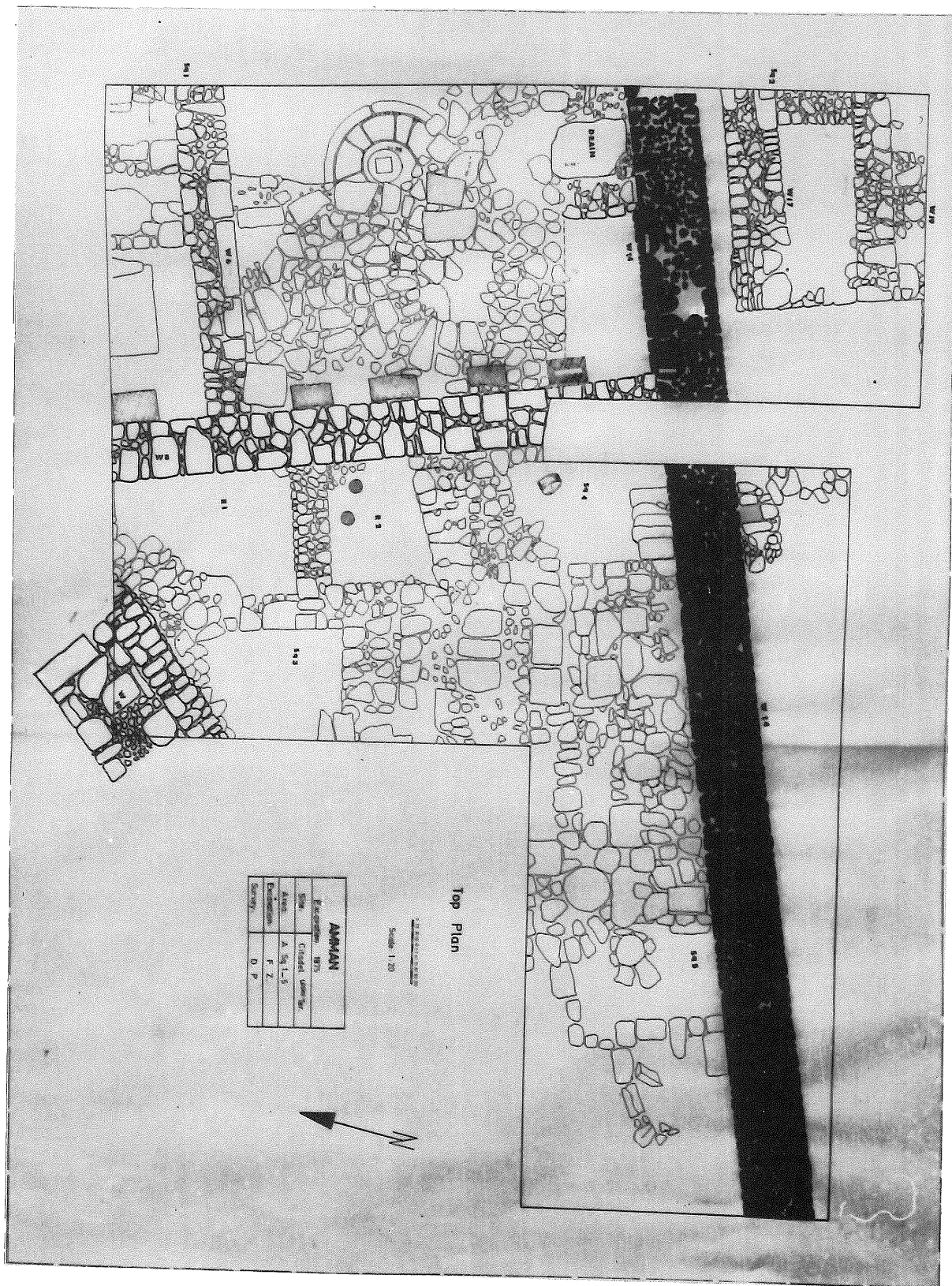


Fig. 2a Plan of Area A / Fig.2a: Plan of Umayyad pavement before removal.

Fig. 3

Area A  
Sq. 1  
West Balk

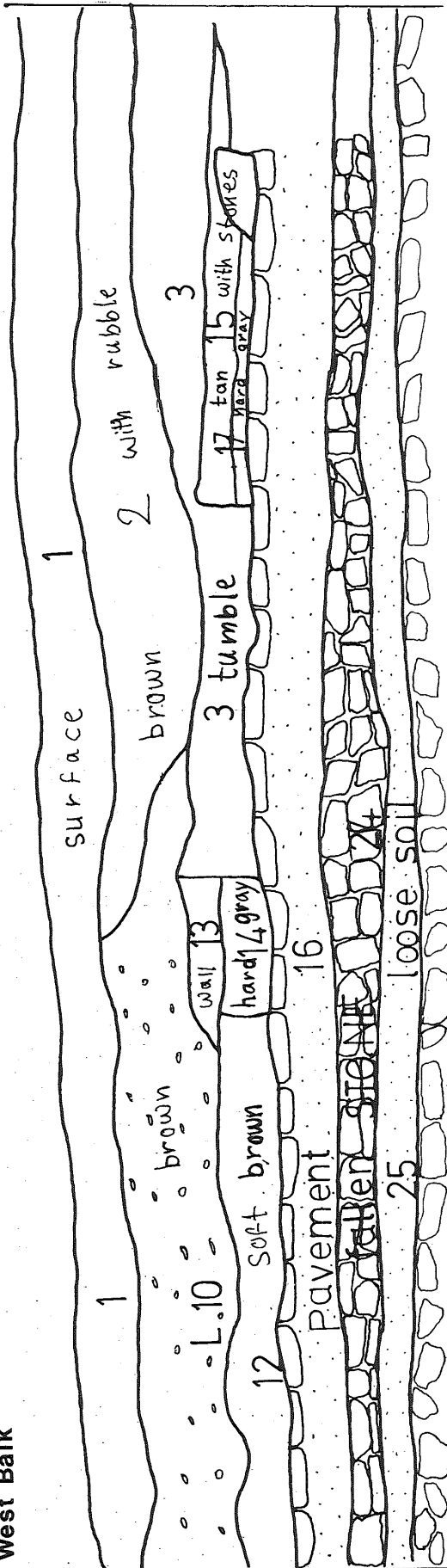


Fig. 3 : Area A, Sq.1 West Balk

Scale 1 : 25



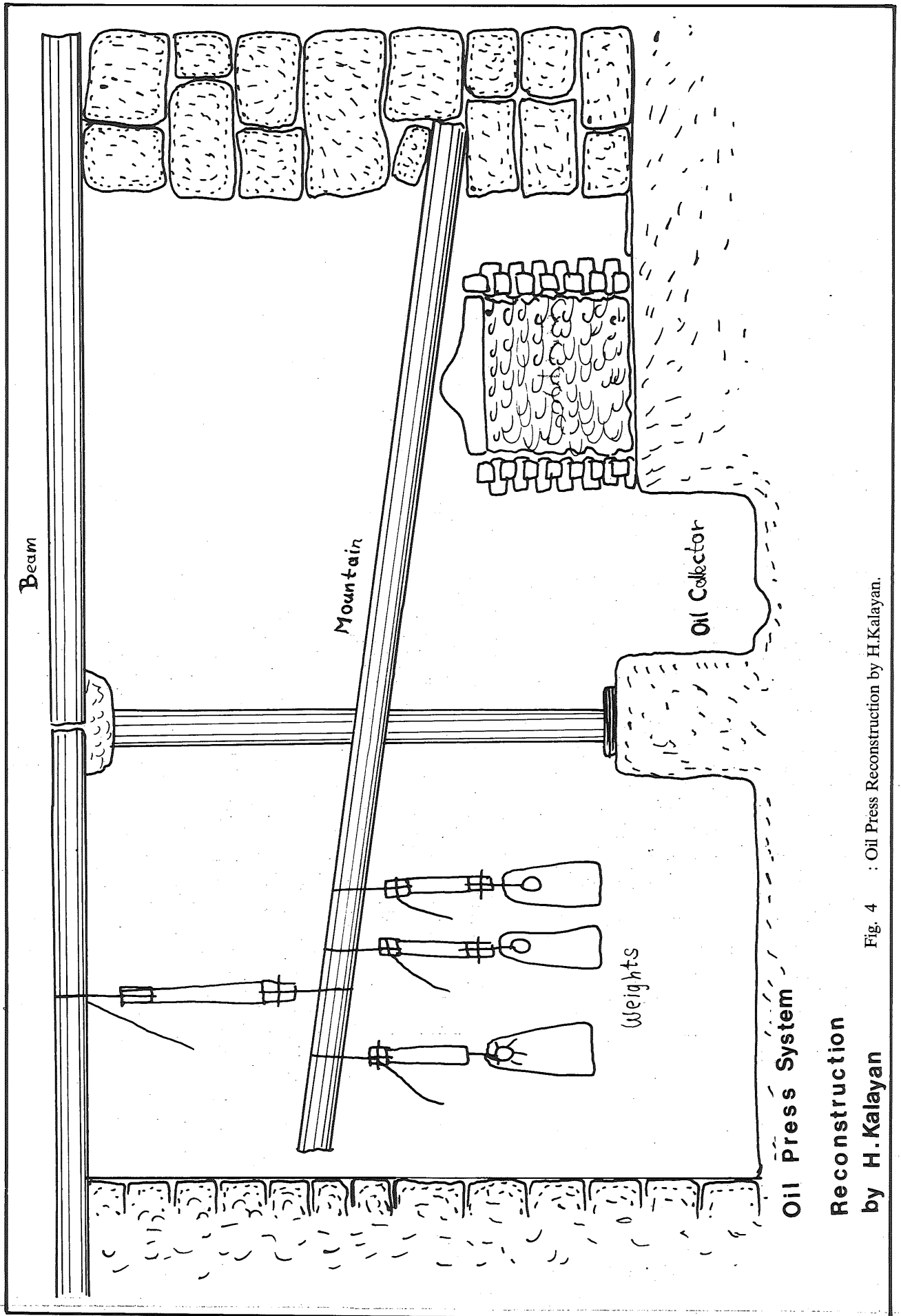


Fig. 4 : Oil Press Reconstruction by H.Kalayan.

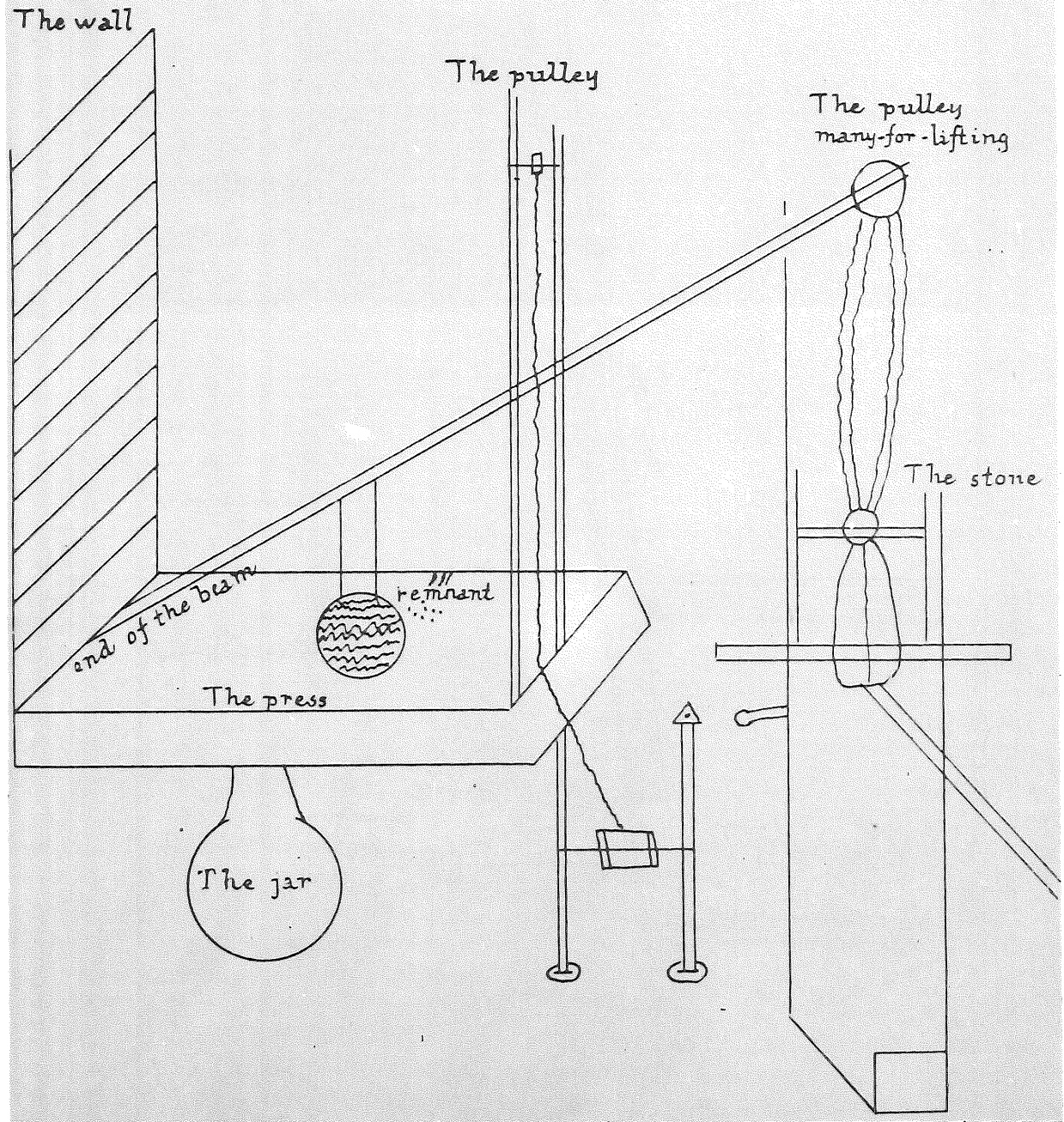


Fig. 5 : Press System, After Heron Mechanics, fig. 45

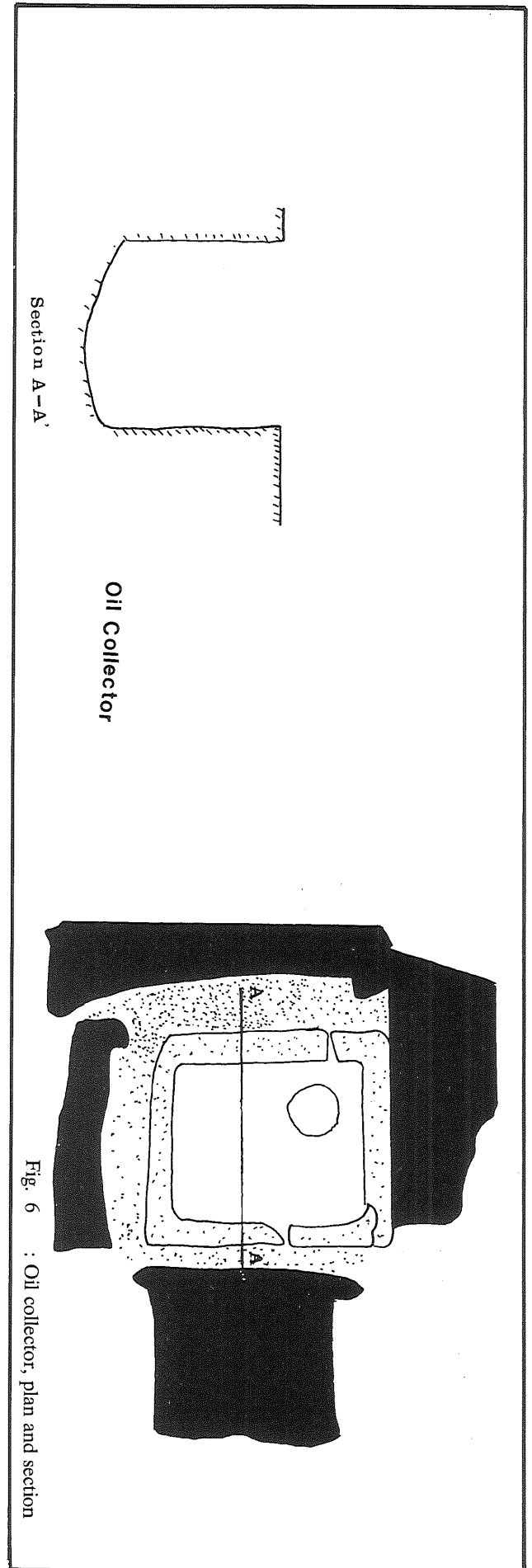
B) The press, which can be restored with the help of Heron's Mechanics (Fig.5), consisted of a wooden beam called mountain engaged at one end in a wall and articulated to move up and down. At the other end are attached three or four weights (Fig.4) movable by pulleys. The baskets full of crushed olives are piled at the opposite end, near the oil collector. By pulling the weights up, the beam presses the baskets, and the oil filters to the collector. It was carved in a limestone block (Pl.IX,2) and measures 0.95 by 0.90m and 0.90m in depth. It was provided with a sump on one side (Fig.6). In front of the oil collector, the slab where the baskets were piled and pressed was probably a swinging stone door of a tomb. It is probable that the above mentioned platform with the hole was prepared to collect the oil which leaked from the crushed olives, before the press.

An important oil press system was excavated by H.O. Thompson in a cave at Yajuz<sup>2</sup>, north-east of Amman. The description of the almost complete system is unfortunately not clear. The weights Pl.X,1, were counter-weights to help the beam move up and down, and were not used to press the olives. Another olive press can be observed at Umm er Rasas and a similar system was recently discovered in Wadi Shu'eib, near Salt in a rock cave. In Lebanon<sup>3</sup> and Palestine<sup>4</sup> oil presses have been fully studied and provide excellent examples of the old press machinery<sup>5</sup>.

A probe trench dug below the Byzantine floor west of the millstone, exposed a basin coated with plaster and filled with black earth (Pl.X,2). Early Roman and a few Nabataean decorated sherds were collected. As wall 14 was coated with an identical plaster from the north, it is likely that the area was originally a water cistern, limited by wall 14 and probably vaulted. The extension of this cistern cannot be determined yet because of the superimposed Byzantine press structures.

#### Hellenistic and Early Roman remains:

These were excavated in Square 1 and 2, where the main architectural feature is wall 14 (Pl.X,2 and XI, Fig.2) about 1.10m wide and preserved to the height of 2.40m. It is con-



structed with irregular stones and runs east-west across the entire excavated area. The Byzantine and Umayyad occupants built over it. Wall 8 which is 0.94m wide, was built with larger boulders, including a moulded fragment (Pl.X,2) and meets with wall 14 at right angle.

Along the northern face of wall 14, in addition to the plaster coating, a thin wall of rubble, about 8cm thick was added and was topped by a layer of plaster. As part of this wall was removed, a decorated Nabataean sherd (Fig. 23, 147) came to light with fragments of eastern Sigillata ware. Since many early Roman sherds appeared in the southern foundation trench of wall 14, it is reasonable to date it to the first half of the first century A.D. and this dating is corroborated by the few decorated Nabataean sherds. A probe trench west of wall 8 provides 1st and 5th century sherds, but the exact function of these two walls cannot be fixed yet. As mentioned above, wall 14 could be part of a water reservoir and it is possible that the Nabataean colony of Philedelphia participated in its construction. A bronze coin of Aretas IV (9B.C.-40A.D) discovered on the floor of the reservoir is further evidence of the Nabataean influence in the city.

Walls 17 and 17a, partly looted by the builders of wall 14 belonged to Late Hellenistic building and were disturbed in the Byzantine and Umayyad periods. Much Hellenistic pottery was recovered from layer 29 of Sq.2 (Fig.7) which consisted of an ashy gray soil overlying the red soil (L.35) of the EBI period.

A Late Hellenistic fill in Squares 4-5 yielded in layers 9 and 10 few Hellenistic lamps (Pl. XXIII,1) and painted pottery of the 2nd century B.C, mixed with Early Roman pottery. Two bronze coins, one of Demetrius I (162-150 B.C.) and the other of Demetrius III (96-87) (Pl.XXV, 1-3) were discovered in Sq.5:9.

#### **EB I Structures:**

As the Hellenistic fill of layer 29 was removed, a thick layer of *terra rossa* (red soil) was reached. In the first day of excavation, it provided no single sherd, and gave the impression that we were dealing with virgin soil. But continuing the excavation, we collected in the following days some body sherds and fragments continuing the excavation, we collected in the following days some body sherds and fragments

of indented ledgehandle of EB 1A type with many flints (Fig. 27). A large portion of a vertical smoothly plastered face, partly covering a wall of large boulders, was cleared (Pl.XI,2). It was probably part of a water reservoir or silo which extended to the east and west, and we hope, will be excavated in the future. If it is indeed a water reservoir, then it is significant that an early Roman basin and a much larger reservoir (to be described below) are constructed in the same area.

#### **Houses in Square 3 and 4 (Pls. XII-XIII).**

In Squares 3 and 4, plotted west of Squares 1-2, three little rooms are propped against the western face of wall 8. The entrance of room 1 had threshold and the right door-jamb in situ, while the northern part of this room was demolished by the outer wall of the circular water reservoir. In locus 15 at about 45 cm from the entrance of Room 1 (Top. point 840m) were discovered a jug and a small glass vase (Pl.XXIV,

J. 13372 and XXIV, J. 13370). An Umayyad coin of Abdel-Malik bin Marwan (Fig. 7 and Pl. XXV,15) was found in layer 24. It is obvious that the Square was disturbed by the building of the Water reservoir. In the adjoining Room 2, an ashy layer containing rubble and animal bones was found below the Byzantine floor. It covered two complete but cracked cooking-pots resting on the floor, one of them closed by a bodyjar fragment. More than 15 bronze coins were gathered from the fill and the legible ones (see coins Pl. XXV) belong to the 4th century A.D. It is clear that the early Byzantine fill was a bedding for the later Byzantine floor. In nearby Room 3, a fragment of a column drum (Pl.XII,1) was discovered over the plaster floor.

A stairway (Pl.XII,2) of five steps built on the northern face of wall 14 led to a doorway (Pl.XII,2) and to a paved passageway running to a cistern dug in Sq. 5. Near it a basalt mill was uncovered. A tumbled layer including door-jambes and corbel stones extended around the cistern and was evidence of a heavy destruction in the Byzantine period, probably resulting from an earthquake. A rebuilding of wall 14 in this period is clear from an offset at 10 cm deep.

A Byzantine house was uncovered in Sq.8,

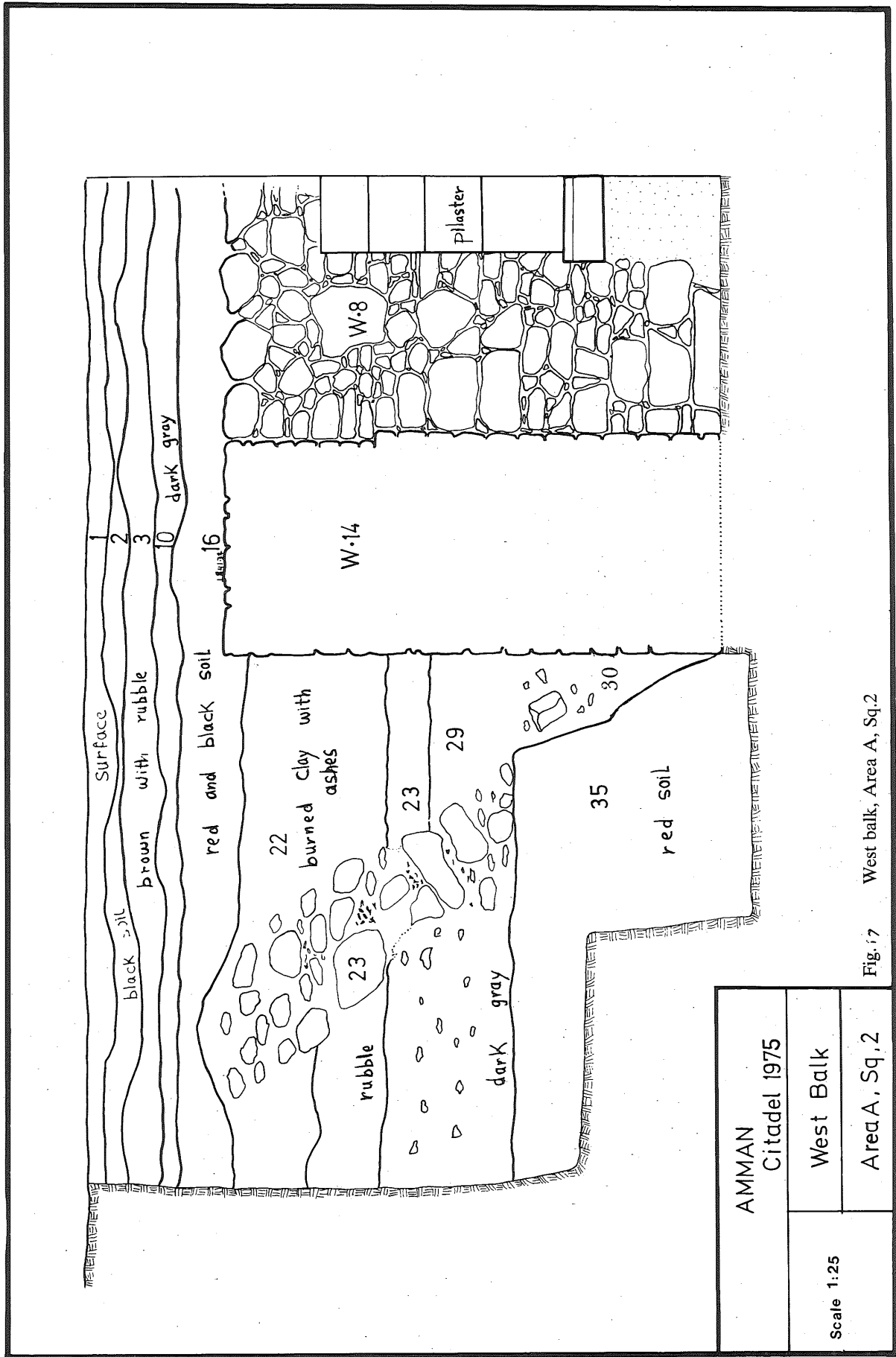
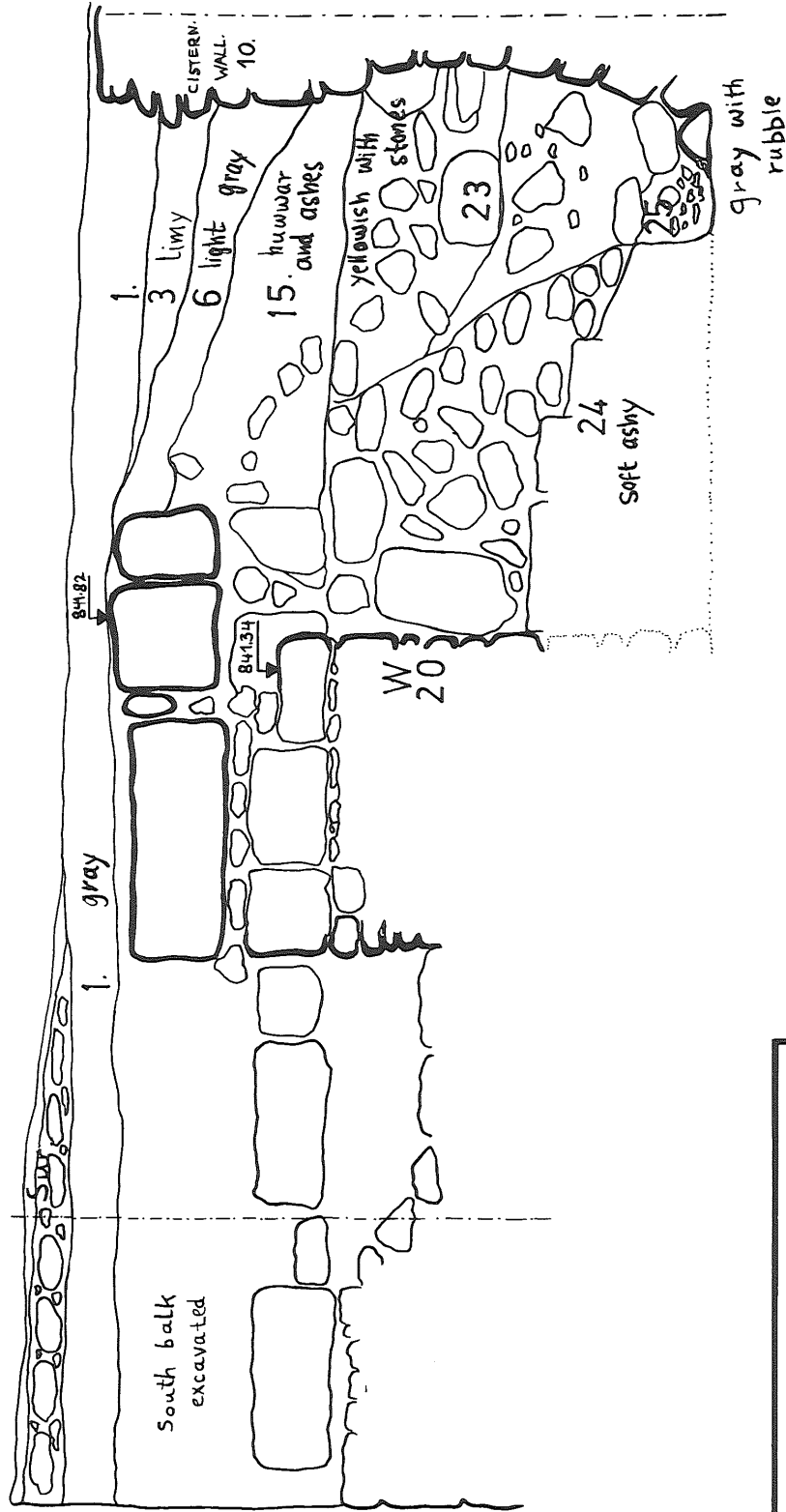


Fig. 17 West balk, Area A, Sq. 2

AMMAN Citadel 1975	
Scale 1:25	West Balk
	Area A, Sq. 2

Fig. 8 Area A, Sq.3 West balk



AMMAN Citadel 1975	
	Area A
Scale 1:25	A. Sq 3 West balk

Fig.9  
Area A

Sq 5

North Balk

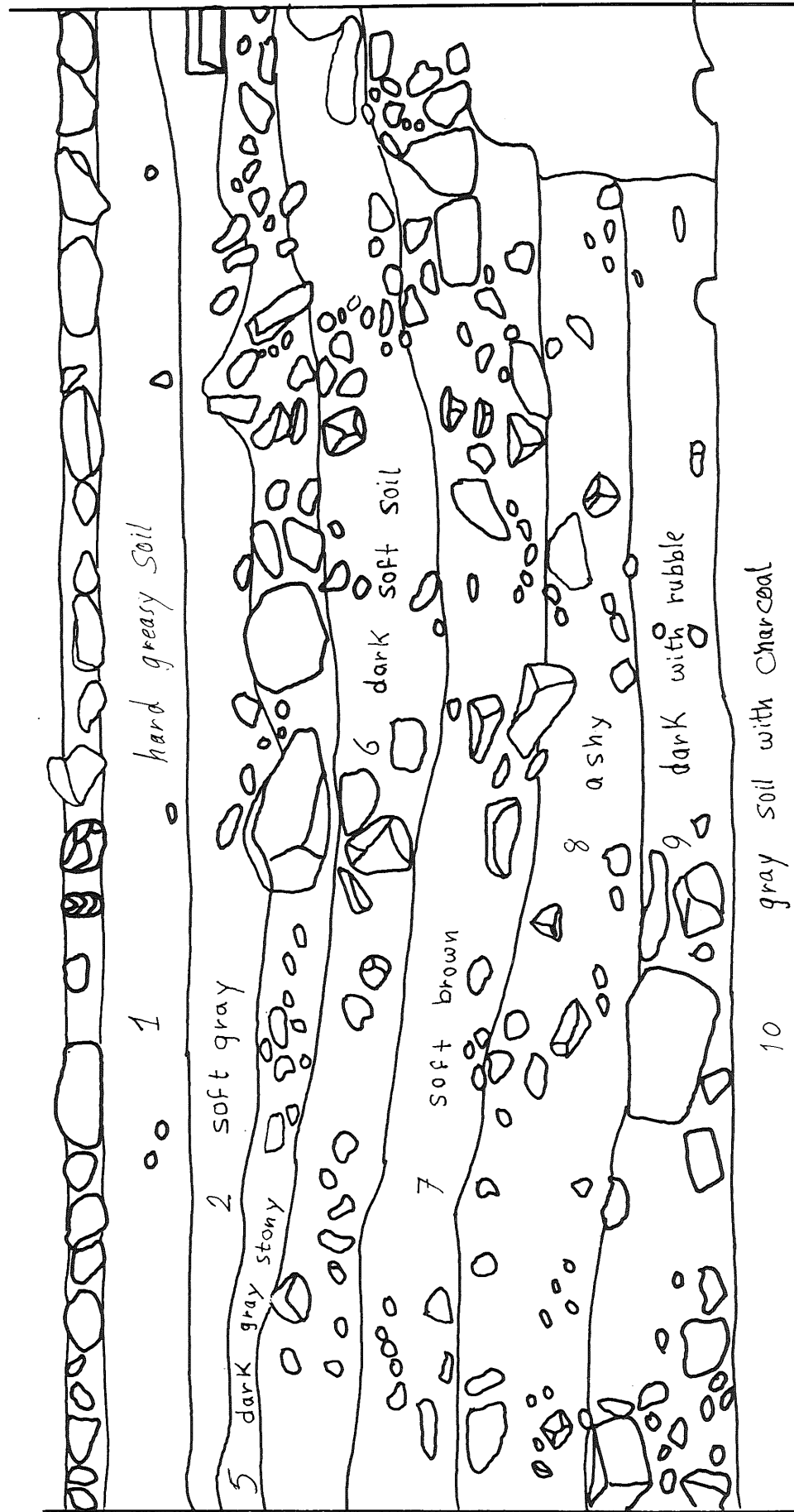


Fig. 9 Area A, Sq.5, North balk

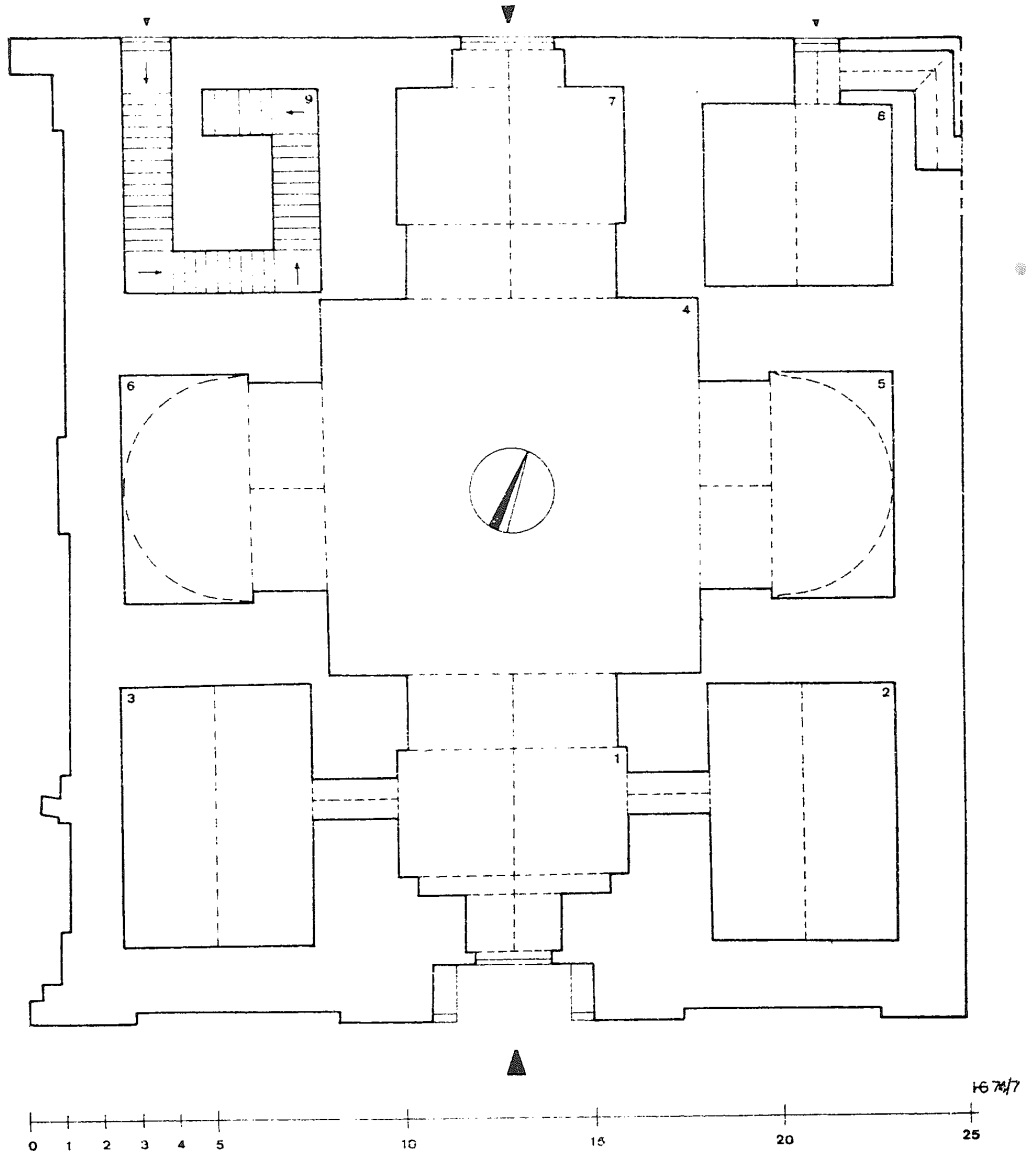


Fig.10 Plan of Qasr (after H. Gaube)



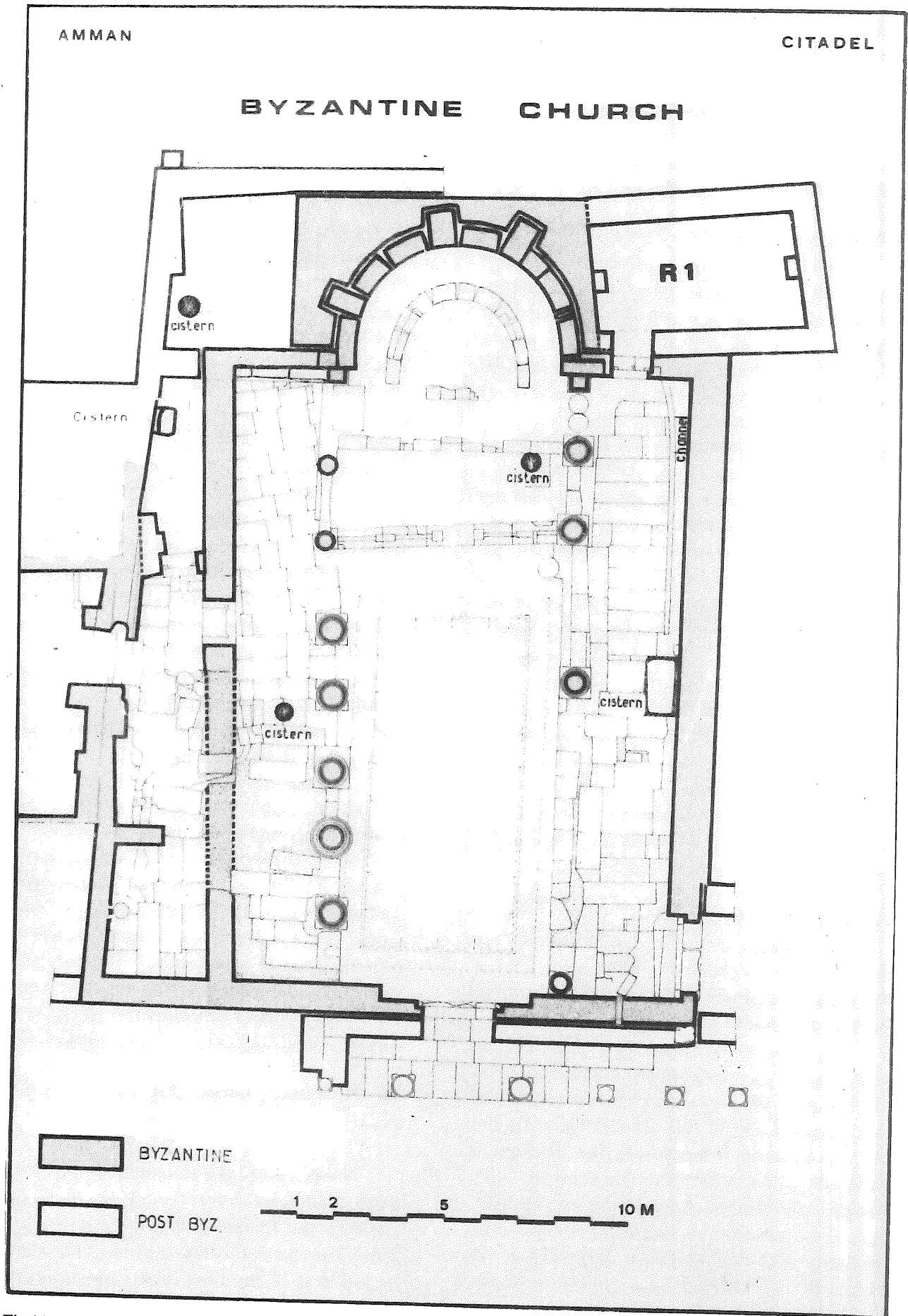


Fig.11 Plan of Church (by J.L. Biscop)

provided with two entrances (Pl.XIII,1-2) from the east and south and partly demolished by the water reservoir. At the southern entrance was found an ionic capital probably belonging to an important monument. Collapsed door-jambes blocked the doorway. At the eastern entrance a stone mortar is *in situ*, close to the northern door-jamb.

**The Water Reservoir:** (Pls VI and XIII,2; Fig.2)

It is a circular cistern, built east of the Qasr and south of the Roman Temenos. It measures at present about 5m in depth and 16m across. A segment of its wall was excavated in Square 3 (PIXII,1) and shows it consists of two parallel walls, about 2m thick; The inner one which is 1.50m wide is built of shaped blocks while the outer wall is of medium size and small boulders. Column drums and capitals are included in the inner face, and two covered water channels run into the cistern, one from the west and the other from the north. A stairway on the western side leads to bottom. Since the outer wall covers Byzantine structures which it destroyed, (Pl.X-III,2), and a trail paved with flagstones similar to that one already mentioned in Sq.1 covers the Byzantine floor of the press system, it was clearly built after that period, and a few sherds from room 1 above the floor were Umayyad. It is possible that the cistern was originally built in the Umayyad period like the one built by Yazid II (720-724) at Muwaqqar<sup>6</sup>, east of Amman. But the final conclusion must await the excavation of the foundation trench in Sq.3.

**The Qasr:** (Fig. 10 Pls. XIV)

North-west of the water reservoir, the Roman paved temenos is dominated by a cruciform monument. It has been recently analysed by H. Gaube.

After his excavations in 1933, R. Bartoccini concludes that the monument is not to be attributed to the Sassanians "but to one of the early Arab lords of the area"<sup>7</sup>. He collected ceramic material from inside the monument which he dates to the 9th-10th century A.D. Besides the Roman Mausoleum of Nweijis<sup>8</sup>, north-east of Amman, the Qasr shows some similarity with the Audience hall of Qaser el Mushatta<sup>9</sup>, terminated by a cruciform dome. The hall probably functioned as an access to a royal residence. A monumental gate was exca-

vated at the Umayyad palace of Minyah<sup>10</sup> near the Lake of Tiberias and consisted of a square building, covered by a dome and decorated by two absidial recess. Other gates at Mafjar and Ukhaider played a major role in the palace structure, and O. Grabar<sup>11</sup> has emphasized the official functions of these halls where the prince displayed favors and justice. Two benches on both sides of the southern entrance may corroborate the suggestion of an audience hall. Facing the northern gate of the Qasr, a colonnaded street (Pl. XV,1) extends to the north and meets the northern gate of the temenos. The cubic bases of 0.60m x 0.60m x 0.25m and the lower drum are monolithic. Since the columns rest above the Roman pavement and their shape is unclassical, they cannot be Roman<sup>12</sup>. A column base of the same type actually inside the Qasr and measuring 0.70m x 0.70 x 0.36 is decorated with a Byzantine cross and is obviously a reuse. In this case, the street is of a later period and leading to a residence (see A. Northedge, in this issue) over the foundations of a Roman temple. The residence is most probably Umayyad and few sherds of that period were collected by the writer at the entrance of the monument. But the final conclusion must await the report of the excavations actually conducted by E. Olavarri in the Qasr area<sup>13</sup>.

During dump clearance north of the Qasr, in the Roman temenos, the Department workers found a lion orthostat (Pl.XVI) engaged in a wall (Pl.XV,1), measuring 1.45 m in length by 0.75m in height. On its back a pedestal, curved with a circular depression suggests it was supporting a statue or a column. The date of the sculpture cannot be determined since it was a reuse, but it could be compared to the lion of Mafjar which supported a statue of Caliph.

**The Byzantine Church.** (Fig. 11 and Pls XVII-XXII)

North-east of the so-called temple of Hercules, a small Byzantine church was partly excavated by the Italian Archaeological Mission of 1928. But due to the interruption of the work by World War II, the final report was never published. However, in 1948, Father Bagatti<sup>14</sup> of the Franciscan Biblical Institute of Jerusalem,

prepared a plan of the church which he sent to R. Bartoccini, director of the Mission. But because of his death, the report was never published and it was only in 1973 that Father Bagatti published the plan with a good description of the monument he visited in 1948. Because Father Bagatti reported that the clearance was never completed, we decided to excavate it when the army moved its camp from the nave. It will appear that our plan and interpretation of the monument differ in some points from the description of Bagatti, for not sufficient information was available to him.

The monument is of the basilical type, measuring 20; 30m in length and 12; 30m in width, which makes a ratio of 1:6 common in the Byzantine churches of Mukhayyat. A distortion in the plan reveals that the building is not rectangular from inside because it is larger from the east than the west. But such irregularity is common in the Byzantine churches.

Three entrances situated in the western, northern and southern walls, each about 1.90m wide provide access to the church.

*The Atrium* was excavated in May 1977 and is paved with slabs, supporting six irregular column bases (Pl. XVIII,2) the one to the north not in situ. More of the pavement is under the modern road and must await a decision to divert the access to the Upper Terrace. A layer of burning can be distinguished in the northern part of the atrium and the ashes covered a plaster floor which overlaid the pavement. Coins and Umayyad pottery relate this floor to the 8th century A.D. Structures of the same period are built against the western wall and a channel which begins in the south-western corner (Pl. XVIII,2) brought water to the large rectangular cistern in the southern aisle whose mouth was carved in the pavement.

## 2. The central nave.

From the many coloured tesserae Father Bagatti collected at the site, he suspected the presence of a mosaic floor<sup>15</sup>, and this was confirmed by the excavations which uncovered a mosaic floor of geometrical pattern of trefoil rosettes and red flowers (Pl. XXI, 2). The colours are red-brown, yellow, blue black and white. Repairs are visible in many places, and a

fragmentary Greek inscription (Pl. XXI) was found near the apse. Semi-circular on inside and square on the outside, the apse was built with large dressed blocks looted from the nearby temple and decorated with mouldings. It was separated from the central nave by a marble chancel which was fixed into a groove of 14-20 cm in width, and two square pilasters flanked the access to the altar. Behind the chancel is the foundation of a wall which probably indicated, as suggested to me by Father M. Piccirillo, an earlier chancel. Close to it was found a large slab with a groove, but which was not in situ. (Pl. XVII,2).

In the semi-circular apse (Pl. XVIII,1) are traces of the square pilasters which supported the altar, and of a synthronon. A marble dado probably adorned the inner face of the apse and the floor was covered with mosaics; a large quantity of tesserae was piled in the south-eastern corner of the southern aisle. This destruction was recent for the debris blocked the entrance of the southern chamber built in the Umayyad period.

3. **The southern aisle** is 2.30m wide, paved with slabs, and originally bordered by seven columns but only three which are in situ. A springer of a pilaster can be noticed against the apse wall, and an isolated smaller base carved with an incision on one side is set in the western wall: it probably belonged to the earlier balustrade. A water channel, mentioned above, starts in a square basin in the atrium at the south-eastern corner (Pl. XVIII,2) and is extended by a canal carved in the pavement which runs into a square cistern (Fig. 11). Because the mouth of the channel is part of an additional structure, it belongs to the Umayyad period. From the east, along the church wall, runs another constructed channel about 30cm wide and 50cm high above floor level; its bottom is plastered (Pl. XVII,1) and it apparently collected water from the roof of the southern chamber (Pl. XVI,1). In his report, father Bagatti described this channel as a "bench" for the meetings of the Christian community. But he was not able to carry out any excavation.

The finding of a new cistern close to the

apse and two others in the northern aisle shows the importance of the water collecting in the Umayyad period, although the Byzantines had already found many solutions to this crucial problem and dug cisterns inside churches<sup>16</sup> in some cases.

#### 4. The southern chamber: (Fig.11 Pl. XIX,1 )

Terminating the southern aisle, a rectangular chamber 3.12 m by 5.50m was previously described as a "sacristy", common in the Byzantine churches, but this seems to be a later addition to the eastern wall of the apse. A doorway, 93m wide, had a door-jamb in situ with door sockets. The threshold, which is lower than the floor of the aisle, was partly paved with grayish marble robbed from the church. From the position of the doorjamb, it is clear that the door was closed from inside the chamber and the plaster floor contrasts with the pavement of aisle. The roof was supported by an arch built with rectangular key-stones and springing from two pilasters visible in the southern and northern walls. Close to the southern pilaster was found a niche with a small pitcher inside (Pl.XXIV, J.13380 and Fig.24). From above the floor, Umayyad sherds were gathered (Fig.25).

#### 5. The northern aisle:

Like the southern aisle, it is about 2.30m wide and paved with rectangular slabs. A cistern the mouth of which is cut in the pavement, is parallel to the southern one and its channel runs over the northern wall of the church. Seven column bases and a pilaster are *in situ*, but they vary in style, some being of the attic type and other pedestals which once belonged to the temenos of the neighbouring Roman temple. A doorway leads to the lateral building reused in the Umayyad period. Rooms were built between the columns and the northern wall. But the excavations demonstrate there is no northern sacristy as is shown on Bagatti's plan. The walls continue (Pl.XIX .2) but in the rectangular space, a courtyard paved with irregular flagstones extends around a cistern, and no doorway exists to the east. Pottery confirms an Umayyad phase in that area as in the southern room. The buildings along the northern wall cannot be described here but a cross (Pl.XX ,

1-2) on the keystone of arches which belonged to the eastern room demonstrates that they belong to the Byzantine period, with a re-use in Umayyad times.

#### The Greek inscriptions:

Two Greek inscriptions were discovered in the process of excavations.

1- The first inscription (Pl.XXII,1) is engraved on a square slab of 0.60m by 0.50m by 0.24m of pinkish limestone. Its original position is unknown for it was built around an army tent in the central nave but was probably found in the vicinity of the church. Two little holes in its side indicate it was reused in the church.

Text [Ἐκ] φιλοτεμμία [σ]  
... λλιου Θεοδώρου.

**Translation:** By the generosity of ...Ilios son of Theodoros. It is a dedication probably robbed from the adjacent temple of Hercules dated to Marcus Aurelius. The first name of the second line is a Roman *gentilium* with a double lamda, possibly Julius or Aurelius, which could be transliterated with double lamda in Greek as suggested to me by M.J.L.Gatier who is going to publish this inscription in his dissertation.

2-The mosaic inscription is unfortunately very fragmentary (Pl.XXI,1) and reads:

1. ΕΨΗΦΩΘΗ

2. ΔΙΑ ΣΠΟΥΔΗΣ ΚΑ [Ι ΚΑΜΑΤΩΝ]

To be translated: Was paved with Mosaics  
by the zeal (and labors)

The letters are black on a white background and average 7-8cm in height. The end of the dedication can be restored with the help of the Swafiyeh inscription.

#### Date of the Church:

The mosaic pattern can be compared to that of the church of St. George at Mukhayyat<sup>17</sup> dated to the 6th century and of the Menas church at Rihab<sup>18</sup> dated to 635, a short time before the Arab conquest. But the mosaic floor could be a later addition which was substituted a flagstone pavement, still existing in the side aisles. The pavement<sup>19</sup>, together with the engaged apse without sacristies, is characteristic of early churches of the 5th or 4th century A.D. Thus, it is likely that the original building of the

church was erected as early as the fifth century A.D. and that the mosaic floor is an addition of the sixth century. A re-use in the Umayyad period is obvious, but probably after the collapse of the Christian monument by a heavy earthquake.

### The Objects: 1. Hellenistic lamps:

Four moulded lamps (Fig.23 and Pl.XXIII,1) were found in Sq.2 and 4, in the fill south of wall 14. They are all of the gray metallic ware, except for J.13374, which is of pale brown to pinkish color. J.13376 decorated with side projection and radiating lines was discovered in

Sq. 2:29, together with a group of second century B.C. pottery. (Fig.12-15). J.13374 decorated with a rosette and rays is probably a local imitation of the imported gray type. J.13377 of almost pear shape is poorly moulded and has no side projection. It could be a later descendant of the second century B.C. lamp and may be dated to the 1st century B.C. The seven spouted lamp J.13378, decorated with two palmettes and semi-circular lines is of an unusual shape. A Hellenistic lamp with seven long spouts was discovered at Samaria-Sebaste, but I was not able to find a close parallel to this lamp in the available publications.

Museum No.	Reg. No.	Prov.	Description	Pl.	Fig.
J. 13374	216	A:4,9	Pinkish to pale brown ware, burned nozzle.	XXIII,1	23
J. 13376	265	A:2,29	Gray metallic ware, burned nozzle.	XXIII,1	23
J. 13377	209	A:4,9	Pear shaped small lamp. gray ware, burned nozzle.	XXIII,1	23
J. 13378	263	A:4,9	Seven spouted lamp, gray ware, burned nozzles.	XXIII,1	23

### 2. Rhodian jar-handles:

Two inscribed Rhodian jar-handles, dated to the second century B.C. were discovered in the same fill.

Museum No.	Reg. No.	Prov.	Description	Pl.
J. 13375	215	A:4,12	Pinkish ware, creamy surface. Oval section ΕΠΙ ΠΑΥΣΑΝΙΑ [Σ]	XXIII,2
J. 13379	264	A:5,9	Pinkish ware, creamy sur. ΕΠΙ ΠΥΘΟΔΩ [Ρ] ΟΥ ΣΜΙΝΘΙΟΥ (180-150) See: Samaria-Sebaste III, p.382.	

### The Objects of Sq.3:

Several complete objects were collected from the fill of Sq.3: in layer 15 (Fig. 8) consisting of ashes and *huwwar*, a glass bottle (J. 13372) and a jug (J. 13370) were found at the top point 840.00m, and about 45cm from the entrance of Room 1. In the next Room 2, below the Byzantine floor, two cooking-pots (J. 13368-69) were discovered, one of them covered by a body jar sherd, and contained traces of white organic material. The fill, which was apparently a bedding for the Byzantine floor, contained ashes and animal bones with 15 bronze coins dated to the 4th century A.D;

(See Pl.XXV, 11-13).

The two cooking-pots show a groove on the rim, characteristic of the Late Roman type. But this groove tends to disappear in many places. The glass bottle finds a parallel from a tomb of Beit Fujjar<sup>21</sup> dated to the 4th century A.D. and from two examples in the Nazareth<sup>22</sup> Franciscan Museum, dated from the 2nd to the 7th century A.D. The neck of jug J. 13370 can be compared to Dhiban<sup>23</sup> Fig. 9,57-58 dated to the third quarter of the sixth century. But this dating is questionable due to the disturbance of the stratigraphy on the site.

It is not possible to propose a close dating of the objects. But the stratigraphy suggests the Early Byzantine period if we consider the hoard

of coins of the 4th century found around the two cooking-pots. More investigations are indeed necessary to provide a much accurate dating.

Museum N <sup>o</sup>	Reg. No.	Prov.	Description	Pl.
J. 13368	261	A,3:31 P.50	Cooking-pot brown to gray surface, burned bottom.	XXIV
J. 13369	262		Cooking-pot, pale brown sur. burned bottom	XXIV
J. 13370	200	A,3:23	Jug, pink ware, brown to pink to orange sur.	XXIV
J. 13372	223	A,3:23	Glass bottle, bluish iridescent color.	XXIV

#### Umayyad Objects:

Though the Umayyad occupation was extensive over the Citadel Hill, the recovered objects are limited because of destructions and erosion of the latest strata.

Two Umayyad vessels appeared in the fill of the houses attendant to the Byzantine church: a small pitcher (Pl. XXIV, J 13380) appeared near the niche, dug in the southern wall of Room 1, close to the springer of the arch. The shape of the vase is Late Roman or Byzantine. But many Umayyad sherds discovered in

the fill point to a date in that period, though no close parallel to the pot is known to me a small pedestal pot was recovered from the Umayyad house of the Citadel<sup>24</sup> and the white slip which covers its surface, is in favor of an Umayyad date.

A cooking-pot of dark-gray surface appeared in the northern chamber where an arch decorated with a Byzantine cross is still standing (Pl. XX,2). From many other sherds, it is obvious that the chamber was reused in the Umayyad period. A slight lid groove can be observed on the rim.

Museum No.	Reg. No.	Prov.	Description	Pl.
J. 13380	266	Church, R.1:3	Pitcher, gray ware, white slip.	XXIV
J. 13381	267	Church R.2:4	Cooking-pot, dark-gray surface, gray ware, smaked bottom.	

#### The Coins(Pl. XXV)

A group of bronze coins was collected from the excavated Squares. They provide an evidence for the span of occupation in the Upper Citadel but in many cases they can be misleading if used without caution for the absolute dating of the strata.

The earliest coins (N<sup>o</sup>s 1-3) belong to Seleucid era; N<sup>o</sup>s 1-2 are of demetrius I (162-150) while N<sup>o</sup>3 is of Demetrius III (96-87). N<sup>o</sup>s 1 and 3 were found in the same layer (Sq.5:9) and were associated with a rhodian jar-handle inscribed with the Eponym Pausanias and with Late Hellenistic pottery. Another inscribed handle (J. 13375), Pl. XXIII,2) was found in Sq.4:12, of the same fill.

(9B.C-40A.D.) appeared together with a hoard of Byzantine coins of the 4th century A.D. Two complete cooking-pots (Pl. XXIV, J. 13368-9) of the Late Roman type. The two coins of Aurelianus and Valerianus 1st came from Sq.3:1 and 3:8 and were associated with Umayyad and Byzantine pottery.

Of special interest is coin No. 14 of Justin 1st (518-527) which was discovered on the floor of platform l. 27 in Sq. 1. It was about 10cm below the level of the Umayyad pavement which sealed the Byzantine oil press system. It could be interpreted as an evidence of the latest Byzantine occupation and could be relevant for the antequem date of the Byzantine pottery (1:24-25) sealed by the umayyad floor.

In Room 2. a Nabataean coin of Aretas IV

A single Umayyad coin of Abdel-Malik bin

Marwan (685-705) was found in Sq. 3:24 in a disturbed layer.

No.	Prov.	Description	Pl.
1.	A,5:9	ob. Artemis bust crowned with a wreath, r. rev. Bow and quiver. ins. Mint of Antioch. Demetrius I (162-150)	XXV, 1-
2.	A,2:10	ob. Artemis bust (?) rev. Thunderbolt Demetrius I (162-150).	XXV,2
3.	A.5:9	ob. Radiated head of king, r. rev. Victory, r. holding palm. and wreath. ins. Demetrius III Philopator. (96-87)	XXV,3
4.	A,3:30	ob. Jugate bust of Aretas IV laureate and Šhaqilat rev. Two cornucopiae crossed. ins. ḤRTT ŠQY (LT)	XXV,4
5.	A,3:1	ob. Bust of Emperor rev. Emperor and Jupiter Valerianus I (235-260) (?)	XXV,5
6.	A,3:8	ob. Bust of Emperor, r. rev. Nike between 2 soldiers. Aurelianus (270-275)	XXV,6
7.	A,2:10	bust of Emperor rev. Two standards between two soldiers. ins. Gloria Exercitus Mint of Antioch Constantinus I (330-3 and 335)	XXV,7
8.	A,3:31	ob. Bust of Emperor rev. Standard between two soldiers Constantinus I	XXV,8
9.	A,3:31	ob. Bust of Emperor rev. Standard between 2 soldiers Constantius II (337-350)	XXV,9
10.	A,3:31	ob. Bust of Emperor rev. Standard between 2 soldiers Constantin I	XXV,10
11.	A,3:31	ob. Bust of Emperor rev. Soldier and enemy Maxentius (?)	XXV,11
12.	A,3:31	ob. Bust of Emperor, r. rev. Nike. Valens (364-378) (?)	XXV,12

13.	A,3:31	ob. Bust of Emperor rev. Worn Constans (337-361) (?)	XXV,13
14.	A,3:31	ob. Crowned head of king rev. M topped by cross. A CON mint of Constantinople Justinus I (518-527)	XXV,14
15.	A,3:24	obv. Standing Caliph, hand on pommel of sword rev. Globe on stepped altar. Mint of Amman ins. عبد الله عبد الملك امير المؤمنين لا اله الا الله وحده محمد رسول الله - عمان	XXV,15

## II. The Pottery

### 1. Early Bronze IA:

Evidence of this period was revealed in the red clay (Sq. 2:35) superimposed by a Hellenistic fill. Unfortunately, the significant pottery is scanty and only three sherds can be analysed: these are two ledge-handles with thumb indentations and a jar rim (Fig. 27). The ware is gray or buff mixed with many dark inclusions. Many flints were collected from the same fill

( Fig. 27 ). Similar material was discovered at

Alayik<sup>25</sup>, Iraq el Amir<sup>26</sup> and Sahab<sup>27</sup>, east of Amman but appears for the first time at the Citadel.

The designation of the period is disputed. Wright, Amiran and P. Lapp<sup>28</sup> refer to it as EB I, Kenyon and Hennessy as Proto-Urban. Albright and Father de Vaux call it Late Chalcolithic. P. Lapp has argued for the designation "EB IA" which I prefer.

Reg. No.	Prov.	Description	Fig.
107	A,2:35 P.89	Ledge-handle, gray ware with red inclusions. Buff sur.	27
108	A,2:35	Jar rim, gray ware, dark gray sur.	
109	A,2:35 Balk	Fragment of a Ledge-handle, gray ware with many white and red inclusions. pink sur. thumb impression.	

### 2. Hellenistic Pottery:

A dark-gray fill (Sq.2:29) was very productive in Hellenistic pottery which forms a homogeneous group. It is characterised by rounded jar rims with an undercut. They can be compared to Samaria Theater<sup>29</sup>, Balatah<sup>30</sup> and Beth-zur<sup>31</sup>. The bowls and plates are decorated with brown, black or red paint, but the black glazed attic ware is rare. Plate fragment 401 is decorated with a black paint and a white floral motif in the West Slope technique. Similar

plates appeared at Samaria<sup>32</sup> and Beth-zur<sup>33</sup> and are dated to the end of the third century B.C. or beginning of the second. The cooking-pots 144,418 and 403 have no lid device as the pots found at the Samaria Theater.

Close dating of the group is not possible since no coins or Rhodian jar-handles were discovered with the group. Nevertheless, the rounded jar-rims and Plate 401 suggest a date in the early 2nd century B.C.



Reg. No.	Prov.	Description	Fig.
139	A,2:29,P.52	Jar rim, buff surface, dark-gray core, small to large lime inclusions.	12
140	A,2:29,P.52	Jar rim, pinkish ware, white and gray grits.	12
409	A,2:29,P.60	Jar rim, buff ware, dark core, large lime inclusions.	12
414	A,2:29,P.52	Jar rim, dark-gray ware, pink sur.	12
415	A,2:29,P.60	Jar rim, gray ware, pinkish sur.	12
416	A,2:29,P.60	Jar rim, gray ware, buff to creamy sur.	12
413	A,2:29,P.56	Rhodian jar bottom, pinkish ware, buff sur.	12
344	A,2:29,P.86	Jar rim, pinkish-buff sur., dark-gray core, small to large lime inclusions.	12
345	A,2:29,P.86	Jar rim, pink ware, buff sur.	12
145	A,2:29,P.52	Bowl base, creamy ware, brown paint out., patchy-brown to dark-brown in.	13
143	A,2:29,P.52	Bowl, dark brown ware, gritty.	13
341	A,2:29,P.86	Bowl, pink ware, red paint.	13
342	A,2:29,P.86	Bowl, pink ware, dark-gray to brown paint.	13
340	A,2:29,P.86	Bowl, creamy ware, black paint.	13
343	A,2:29,P.86	Bowl, pink ware, dark gray out. red in.	13
177	A,2:29,P.72	Shallow bowl, pale brown ware, black to gray paint.	13
402	A,2:29,P.62	Bowl base, gray ware, red-brown paint.	13
407	A,2:29,P.56	Bowl, buff ware, brown to dark brown paint.	13
417	A,2:29,P.60	Bowl, creamy ware, red paint, black patches.	13
408	A,2:29,P.60	Bowl, dark gray ware, red-orange paint.	13
141	A,2:29,P.52	Fish-plate, pink ware, dark-brown ext. orange to brown int.	14
146	A,2:29,P.52	Fish-plate, pink ware, orange to brown paint.	14
178	A,2:29,P.72	Fish-plate, gray ware, black burnished paint.	14
346	A,2:29,P.86	Fish-plate, pink ware, red brown paint only in.	14
401	A,2:29,P.62	Plate, creamy ware, white palmette in.	14
404	A,2:29,P.62	Jug, red coarse ware, dark core.	15
405	A,2:29,P.62	Jug, greenish ware, lime grits.	15
406	A,2:29,P.62	Juglet, buff ware, dark core.	15
410	A,2:29,P.56	Jug, pink ware, white paint.	15
411	A,2:29,P.56	Jug, buff ware, dark core.	15
412	A,2:29,P.56	Jug, pinkish ware, gray sur.	15

420	A.2:29,P.60	Jug, pinkish ware, gray sur.	15
144	A.2:29,P.52	Cooking-pot, dark-brown ware, dark core.	15
403	A.2:29,P.62	Cooking-pot, brown ware, gritty.	15
418	A.2:29,P.60	Cooking-pot, brown gritty ware.	15

### 3. Byzantine Pottery:

An abundant group of Byzantine pottery was collected from Area A. But small collection is published here from Sq.1:24-25. These two layers were sealed, as mentioned below, by the Umayyad pavement. L.24 of gray soil was directly below the flagstone pavement and L.25, a loose brown soil overlaid the Byzantine plaster floor on which the mill stone was resting. There is no significant difference in the ware of the two layers and the group is homogeneous.

Jar rim 249 (Fig. 16) is of a thick folded type common at Dhiban<sup>34</sup>. Basin 291 is compared to Dhiban Fig.11, 13, dated to the end of the 6th century A.D. The cups of Fig.20 have parallels in the Dhiban corpus fig.9-10. Cup similar to Mt. Nebo Fig. 13, 13.

The dating of the group is hard because of the great confusion in the Dhiban material. But this important collection, as mentioned below, is not reliable for the exact dating. The Hesban<sup>35</sup> pottery which came from a good stratified exca-

vation, is unfortunately too limited to allow interesting comparisons.

But several points may help determine a closer dating of our material: the absence of the gray white painted ware of Mt Nebo<sup>36</sup> dated to the 6th and 7th centuries is evidence of an earlier date. If the Pella corpus is considered, the absence of jar type 396<sup>37</sup> and of "the roofing tile"<sup>38</sup> ware assigned to a Late Byzantine period may be an additional evidence. On the other hand, the discovery of a Byzantine coin of Justin I (518-527) found in Sq. 1:27, above the square platform, associated with the oil press system, but about 0.60m above the floor of the stone mill, may be considered as an *ante quem* date of the Byzantine group. Thus the group may be dated to the end of the fifth century A.D.

A lamp fragment Fig. 23, 260 from Sq. 2:10 of creamy ware is pralled at Pella, Fig. 67, 190 and is dated to the 6-7th century A.D.

Reg. No.	Prov.	Description	Fig.
306	A,1:25,P.38	Jar rim, pinkish ware, buff slip.	16
245	A,1:24,P.33	Jar rim, pinkish ware, red-brown sur.	16
249	A,1:24,P.33	Jar rim, gray ware, pink sur.	16
248	A,1:24,P.33	Jar rim, pink ware, buff sur.	16
291	A,1:24,P.33	Jar handle, pink ware, gray sur.	20
292	A,1:24,P.33	Jar handle, creamy ware, dark gray sur.	20
294	A,1:24,P.33	Jar handle, pink ware, gray sur.	21
253	A,1:25,P.38	Jug rim, pale brown to gray ware, buff sur.	16
250	A,1:25,P.38	Juglet, buff to gray ware, brown sur.	16
302	A,1:24,P.33	Cup, gray ware.	20
304	A,1:24,P.33	Jug, pink ware, pink sur.	20
293	A,1:24,P.33	Pitcher bottom, gray ware, white creamy slip.	20
309	A,1:25,P.36	Plate, pinkish ware, dark brown to red brown paint.	19
246	A,1:25,P.38	Plate, pinkish ware, pinkish sur.	19
247	A,1:25,P.38	Large plate, pink ware, brown to dark brown sur.	19

329	A,1:24,P.35	Plate, pink to orange sur.	17
336	A,1:24,P.35	Plate, pink ware, dark brown to orange sur.	17
299	A,1:24,P.33	Cup, red orange ware, lime inclusions	20
257	A,1:25,P.38	Cup, pink ware, red brown sur.	18
316	A,1:25,P.36	Cup, orange to gray ware, orange to dark-gray sur.	16
303	A,1:24,P.33	Cup, pink ware.	20
251	A,1:25,P.38	Cup, brown gritty ware.	18
315	A,1:25,P.36	Cup, brown ware, lime inclusions.	18
313	A,1:25,P.36	Bowl, orange ware, orange to brown sur.	18
256	A,1:25,P.38	Bowl, creamy ware, dark gray sur.	18
252	A,1:25,P.38	Bowl, creamy ware, dark-gray sur. orange in.	
254	A,1:25,P.38	Bowl, gray ware buff sur.	18
310	A,1:25,P.36	Bowl, reddish ware, reddish sur.	18
335	A,24:35	Cooking-pot frag. decorated with wavy incision.	21
331	A,24:35	Cooking-pot, horizontal handle, gray sur: buff in.	21
324	A,24:35	Cooking-pot, brown to gray sur. pink in.	21
336	A,24:35	Cooking-pot, gray sur, pink in.	21
328	A,24:35	Cooking-pot, gray sur, pink in.21	
334	A,24:35	Cooking-pot, yellow creamy in, brown sur.	21
312	A,1:25 P.36	Cooking-pot, gray ware, dark gray sur.	22
314	A,1:25 P.36	Cooking-pot, pinkish ware, gray sur. pale brown to pink in.	22
255	A,1:25 P.38	Cooking-pot, buff ware, gray sur.	22
311	A,1:25 P.36	Cooking-pot, pinkish ware, pale brown sur.	22
317	A,1:25 P.36	Cooking-pot, buf ware, reddish to gray sur.	22
296	A,1:24 P.33	Basin, pink ware, buff sur.	17
297	A,1:24 P.33	Basin, buff-pinkish ware.	17
298	A,1:24 P.33	Basin, pink ware, buff sur.	17
300	A,1:24 P.33	Basin, pink ware.	17
305	A,1:24 P.33	Basin, buff ware.	17
258	A,1:25 P.38	Mortar, pink ware, large and small inclusions.	19
259	A,1:25 P38	Mortar, gray ware, dark-gray sur.	19

#### 4. Umayyad Pottery:

Umayyad occupation extends over the whole excavated area, covering or re-using the Byzantine buildings. Unfortunately, this occupation was eroded or disturbed in modern time.

Most of the ceramic group came from Square 1 and were found in two stratified layers (10 and 12). Layer 10 was a destruction locus of brown soil and rubble while 12 was a loose brown soil mixed with ashes over the pavement

L. 18, which can be considered as an excellent sealing for the pottery. Below it, the layers 24-25 yielded the Byzantine pottery described below. Thus, the stratification is reliable.

Unfortunately, the only datable coins were found out of context in Squares 2 and 3. A bronze coin of Justin I (518-527) and the Umayyad coin of Abd el Malik bin Marwan in Square 3:24. Nevertheless, they are a good evi-

dence for the limit of the later occupation in the area.

The Umayyad ware is finely levigated with few inclusions and of buff color and white slip, contrasting with the Byzantine corpus where the reddish or orange ware with a gray or dark surface is dominant.

Decoration techniques are characteristic of the period. Combing and thumb impressing are noticeable on the basins 507, 508 and 243. It is remarkable that the combing decoration shows a horizontal band alternating with a wavy one. This kind of decoration is common at Mount Nebo but does not appear at Pella. The cup 505

with an undulating incision under the rim has a good parallel at Pella<sup>39</sup> but dated to the Byzantine period, though the author recognises it may extend to the Umayyad period. Similar vases appear at Mt. Nebu<sup>40</sup> and Dhiban<sup>41</sup>.

Painted decoration was found in Room 1 in the Byzantine church and shows the common spiral design in red-brown. A bowl fragment is decorated with a red-brown wavy paint over the rim on the inside, and was found in 1:12.

More Umayyad pottery was discovered in the church atrium and in the surrounding buildings. But only a limited amount can be published here.

Reg. No.	Prov.	Description	Fig.
260	A,2:10,P.16	Moulded lamp, creamy whitish ware, white slip.	23
502	A,1:10,P.16	Jar handle, pink ware, gray sur.	23
244	A,1:10,P.16	Jug, reddish ware, gray core	
503	A,1:12,P.17	Cup, pinkish ware, brown sur.	
504	A,1:12,P.17	Bowl, buff ware, brown paint, white slip.	
245	A,1:10,P.16	Bowl, pinkish ware, white slip.	25
246	A,1:10,P.16	Bowl gray ware, white-gray slip.	
505	A,1:12,P.17	Bowl, fine pinkish ware.	
506	A,1:12,P.17	Basin, gray ware, white gray slip.	
507	A,1:12,P.12	Mortar, gray ware, wavy incision	
243	A,1:10,P.16	Mortar, gray ware, horizontal and wavy incisions.	
510	Church,R,1:3	Plate, creamy ware, red-brown slip.	
508	Church,R,1:3	Basin, pink ware, white slip, wavy and horizontal combing	
509	Church,R,1:3	Decorated sherds, buff ware, white slip, spiral in brown.	
511	Church,R,1:3	Buff ware, white slip, brown paint.	

#### General conclusion:

Several phases of occupation are now determined by the last excavations on the Upper Terrace of the Citadel in Area A:

1. The earliest phase can be dated to the E.B.I A and consists of a large plastered cistern or silo which was partly cleared in Sq.2. Few flints and pottery sherds were recovered.

2. E.B. structures were covered by Late Hellenistic buildings and an Early Roman wall.
3. A wall (14) about 1m wide, extending over Sqs 1,2,4,5 was partly used as a retaining wall of a water reservoir.
4. A late Roman fill in Sqs 3,4 covered Early Roman strata.
5. Extensive Byzantine occupation was

uncovered in the whole area and an olive press mill points to a domestic area, in connection with the Byzantine church N-E of Hercules temple.

6. An important Umayyad occupation dated to the 8th century was recorded. The Qasr and the circular water reservoir are prob-

ably to be dated to that period. But little Ayyubid-Mamluk pottery was found in the latest strata, contrasting with the important occupation of that period in Area B.

F. Zayadine

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#### Footnotes

1. The staff consisted of F. Zayadine, A. Abu-Diyyeh, I. el-Hajj-Hassan and M. el Muhaisen. Mrs CM. Bennett and her team of Area B provided appreciable help: the pottery drawings were partly prepared by Noamy Assinder and Susan Balderstone was responsible for the Citadel plan. Mrs Nancy Lapp and G.L. Harding helped in the edition of this report. J.A. Sauer was always ready to assist in the pottery reading. To all of them the writer wishes to express his gratitude.
2. *ADAJ*, XVII (1972) p.37-41 and Pl. III, 1.
3. R. Cresswell, *L'Homme*, V, 1 (1965) p.33-63
4. R. Hasterin and Z. Yavin, *Qadmoniot*, IV (1971) p.92-95 (in Hebrew.)
5. See Drachman, A.G., *The Mechanical Technology of the Greeks and Roman Antiquity*, Copenhagen, 1963, Fig.45.
6. R.W. Hamilton, *QDAP*, XII (1946) p. 70-72
7. *Bolletino D'Arte*, 28 (1934) p.282.
8. K.A. Cresswell, *Early Muslim Architecture*, Oxford (1932) p.313-14, and Fig. 382.
9. *Ibid.* p.351ff and Fig.430.
10. O. Grabar, *The Formation of Islamic Art*, New Haven and London (1973) p.148ff.
11. *Ibid.* p.148ff.
12. *ADAJ* (1975) Pl. XLIX, 2.
13. In a recent article (*ZDPV*, 93, 1977, p.52-86) H. Gaube came to the conclusion that the Qasr was Umayyad.
14. *Liber Annus*, XXII (1973) p.277-283.
15. *Ibid.* p.279.
16. S.J. Saller and B. Bagatti, *The Town of Nebo*, Jerusalem (1949) p.47, 3.
17. *Ibid.* Pl. 22, 2.
18. S. Mittmann *ZDPV*, 83 (1967) p.34-41.
19. *The Town of Nebo*, p.48.
21. *QDAP* IV (1935) Pl. LXXXV, 5.
22. *Liber Annus*, XVII (1967) Fig. 1, 36, et 6, 131.
23. A.D. Tushingham, *AASOR*, XL (1972).
24. G.L. Harding, *ADAJ*, I (1951) Fig. 2, 28.
25. J.B. Pritchard, *AASOR*, XXXII-XXXIII (1958) p.14ff.
26. The pottery was kindly shown to me by Mrs N. Lapp.
27. The information was supplied by my colleague Dr. M. Ibrahim.
28. *Near Eastern Archaeology in the Twentieth Century*, New York (1970) p.10ff.
29. *ADAJ*, XI (1966) p.53-64 and Pl. XXVII.
30. N. Lapp, *BASOR*, 175 (1964) p.14-26 Fig. 1a-1b.
31. O.R. Sellers, *AASOR* XXXVIII (1957) Fig. 22.
32. *Samaria-Sebaste*, III (1957) Fig. 47, 2.
33. *AASOR*, XXXVIII, Fig. 24, 18b.
34. *AASOR*, XL, Fig. 5, 16-23, and 12, 55.
35. J.A. Sauer, *Heshbon Pottery 1971*, Andrews University Press, 1973.
36. H. Schneider, *The Memorial of Moses*, III, p.44.
37. R.H. Smith, *Pella of the Decapolis*, London (1973) Pl. 66 and p.219.
38. *Ibid.* p.235.
39. *Ibid.* p.222 and Pl. 28, 1233.
40. *Op.cit.* Fig. 13, 4, 7.
41. *Op.cit.* Fig. 10, 78-79.

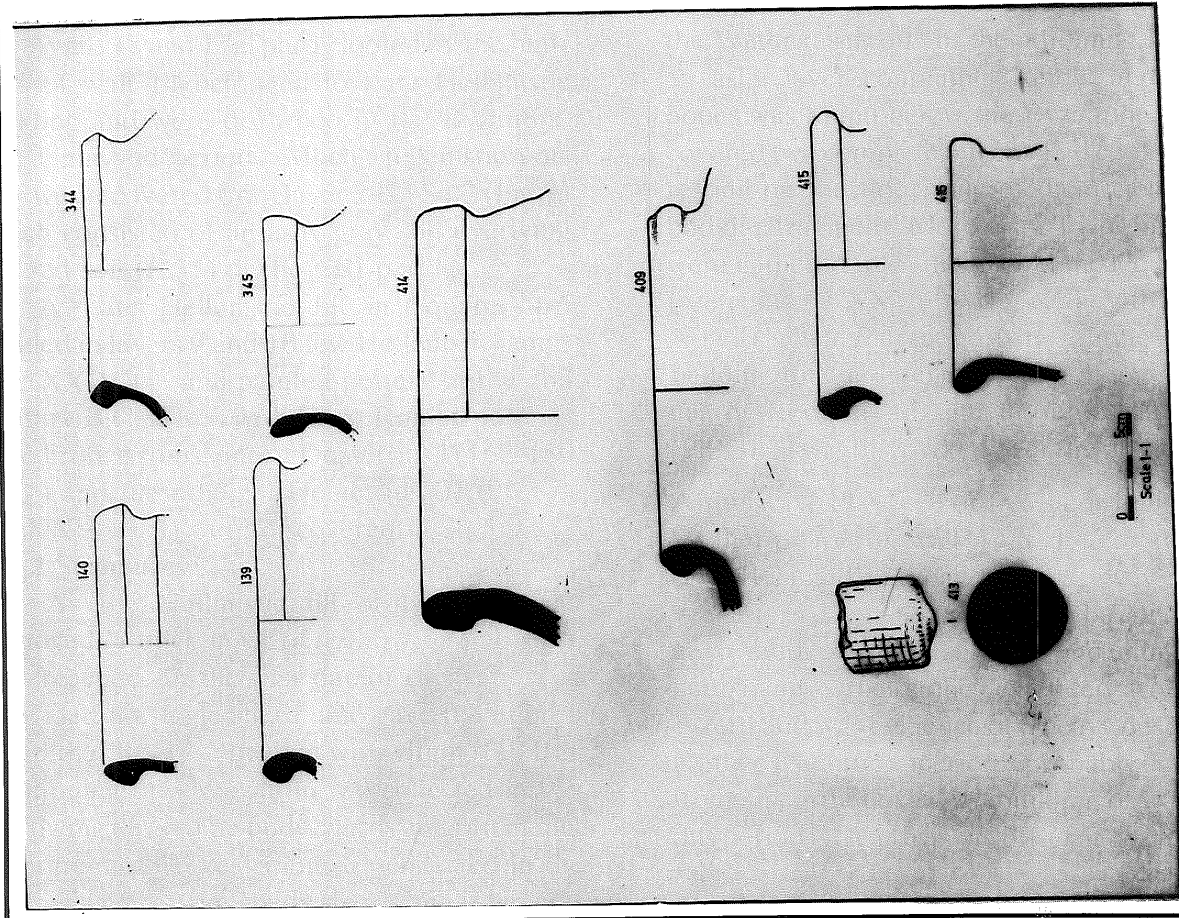


Fig. 12 Hellenistic Pottery A2:29

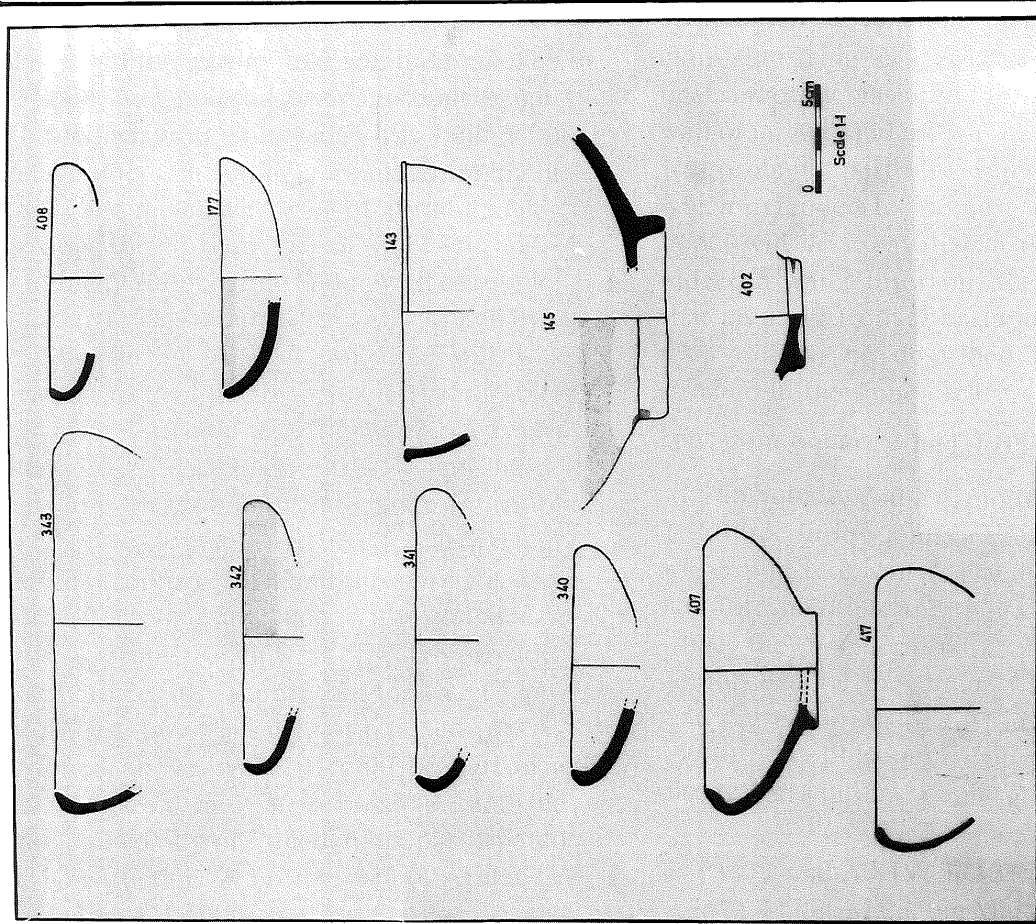


Fig. 13 Hellenistic Pottery A 2:29

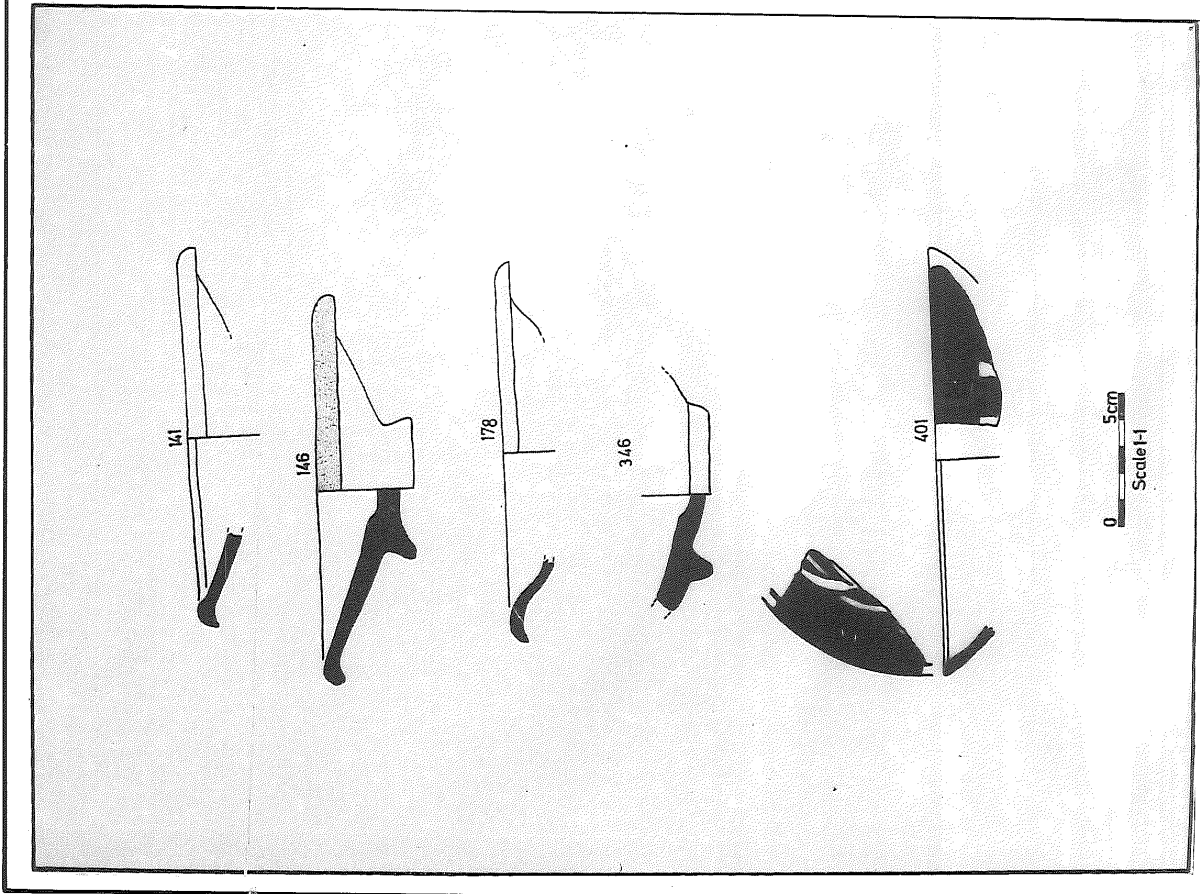


Fig.14 Hellenistic Pottery A 2:29

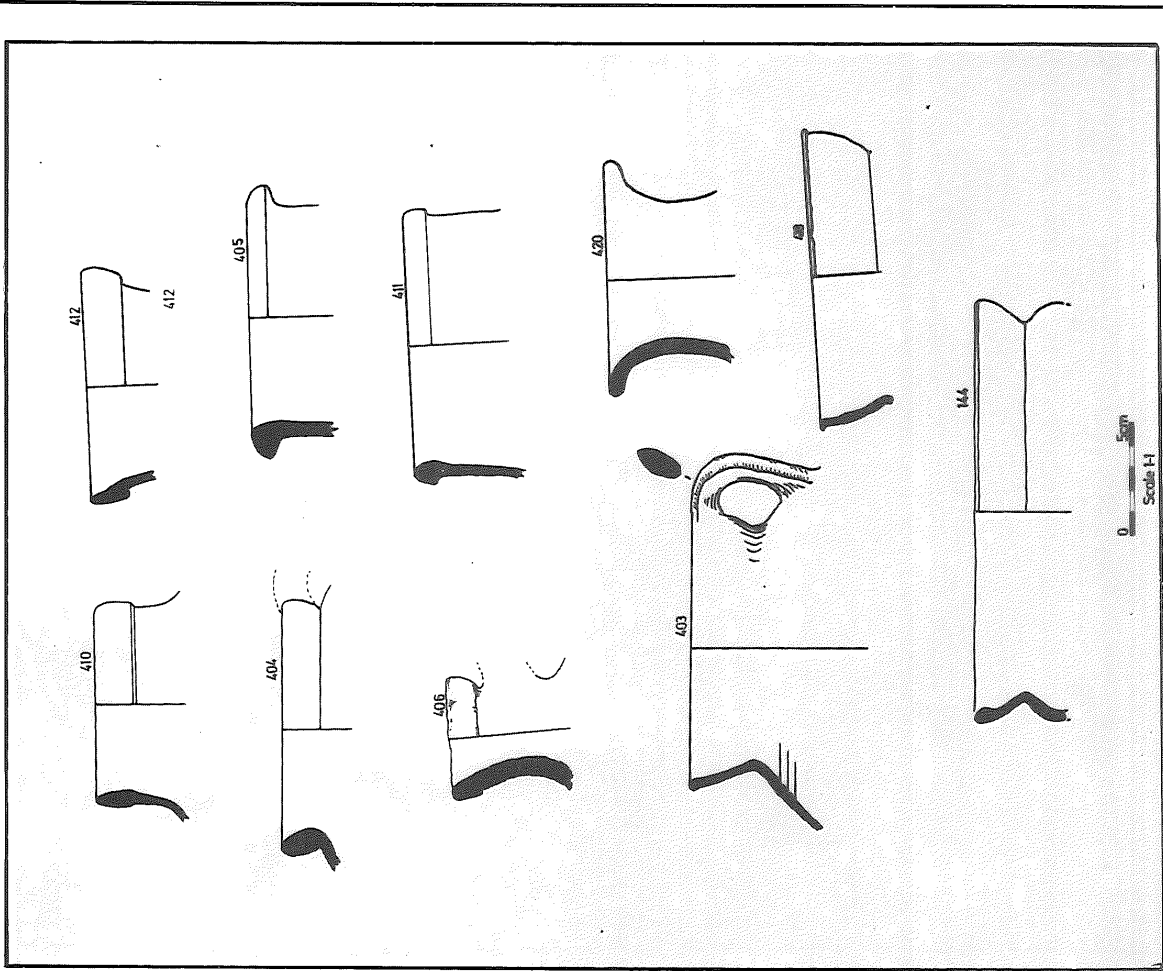


Fig.15 Hellenistic Pottery A 2:29

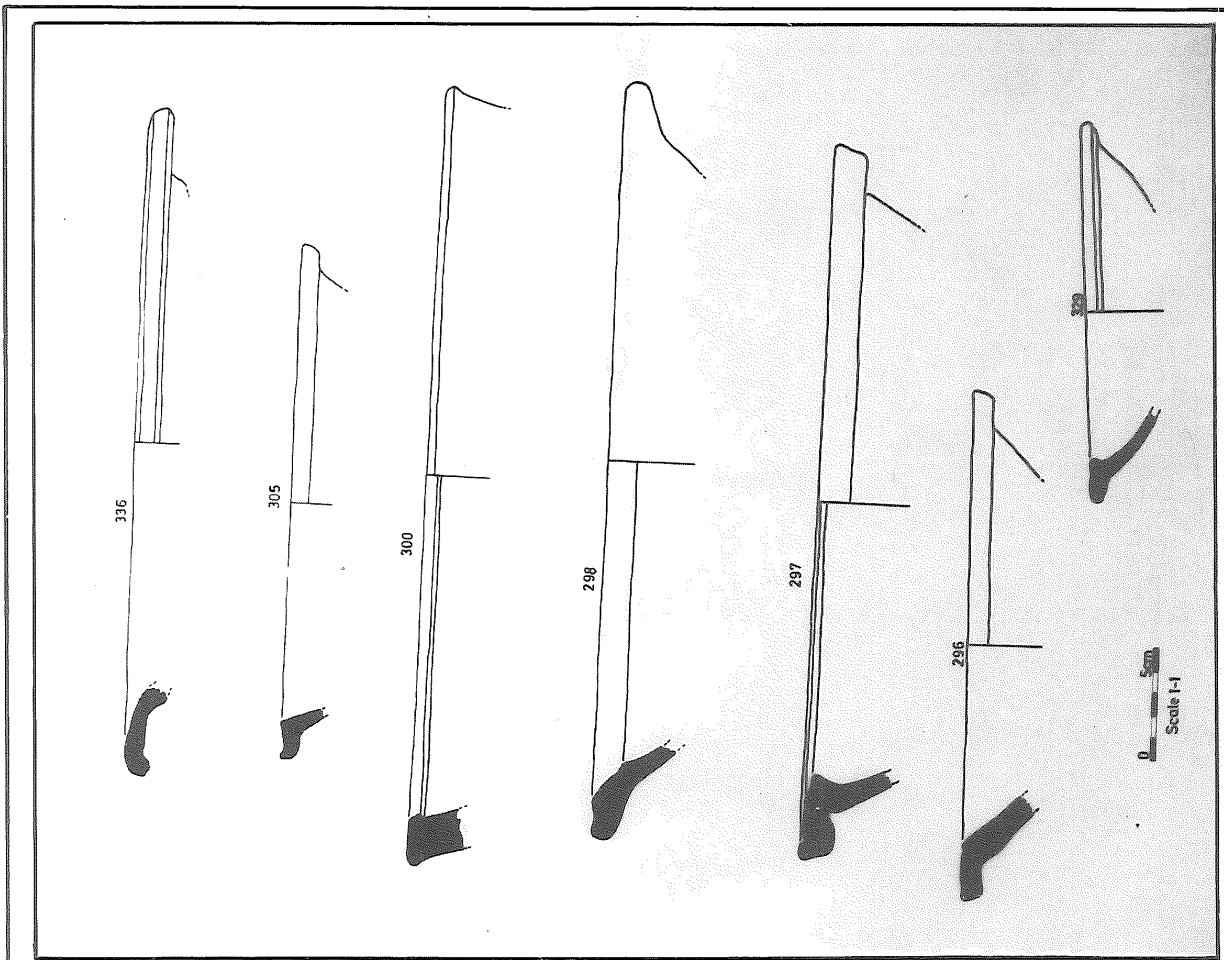


Fig.17 Byz. Pottery A 1:24-25

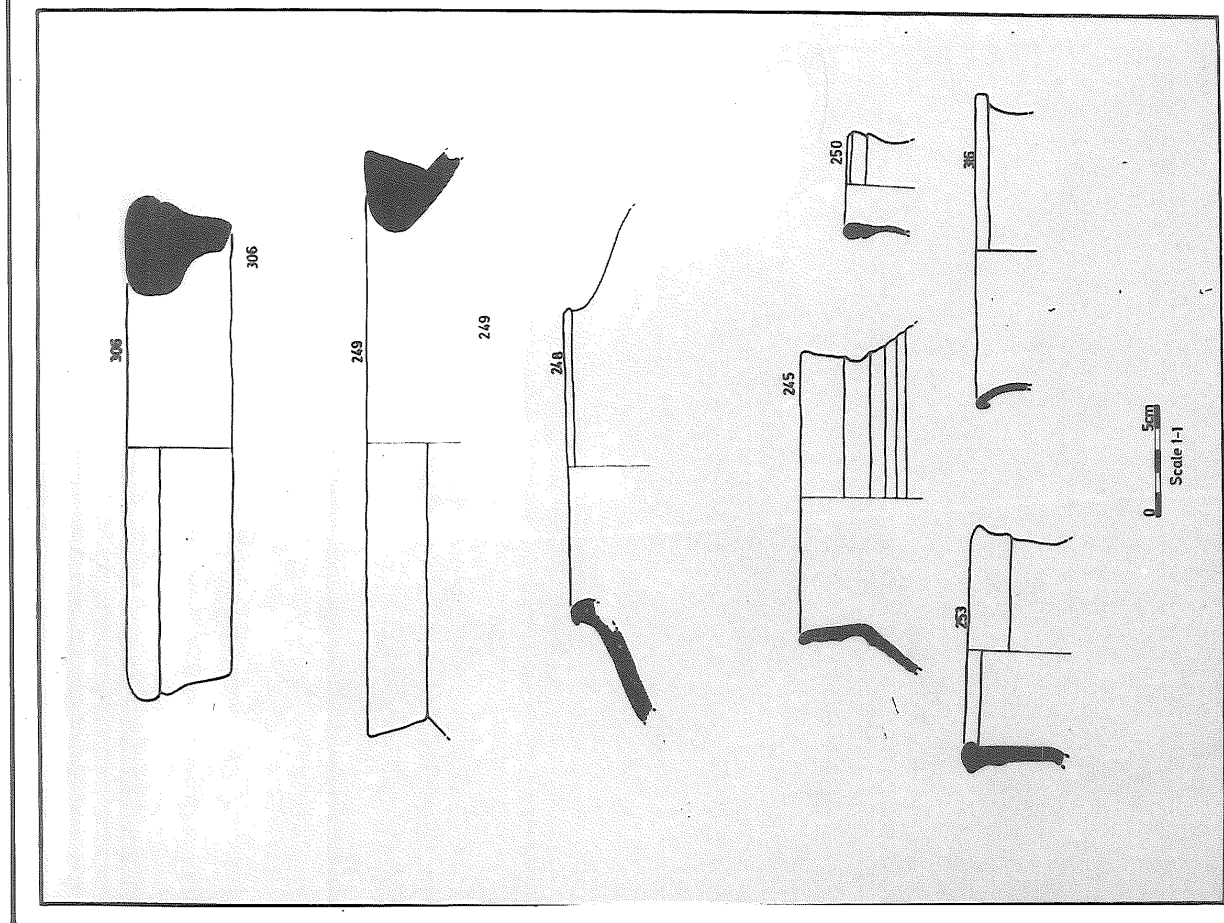


Fig.16 Byz. Pottery A 1:24-25



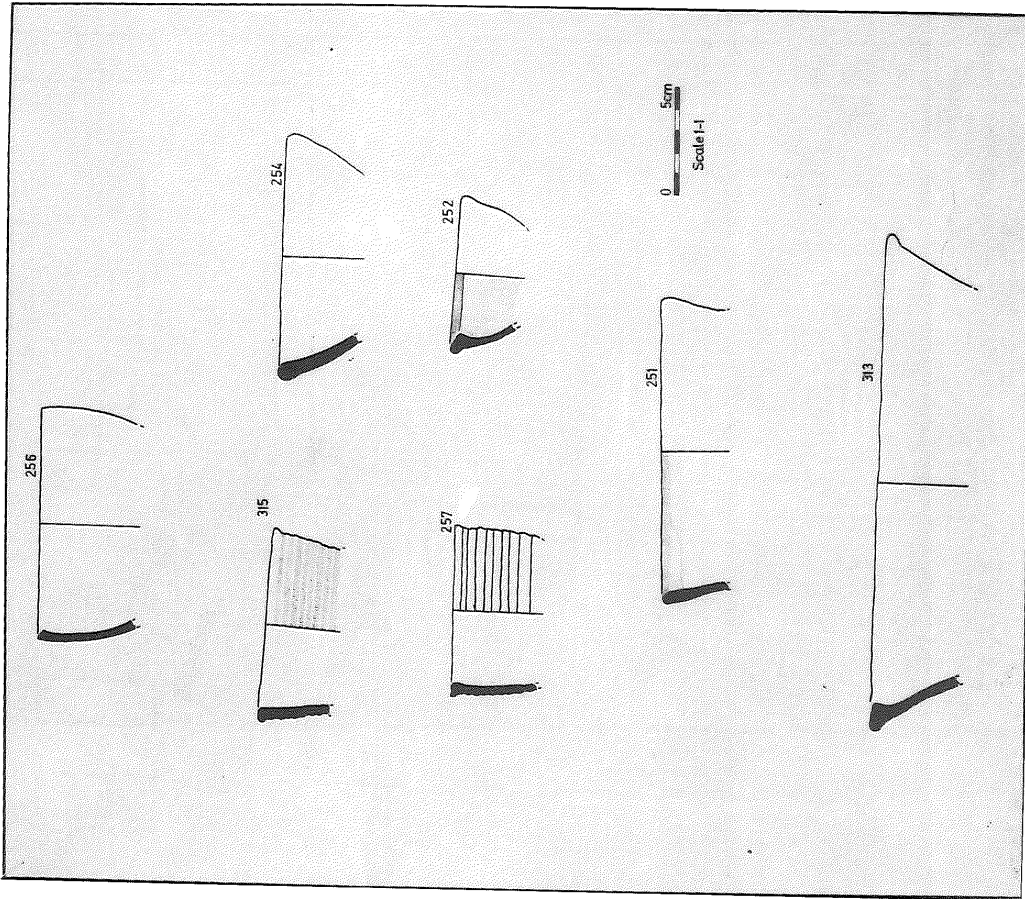


Fig.18 Byz. Pottery A 1:24-25

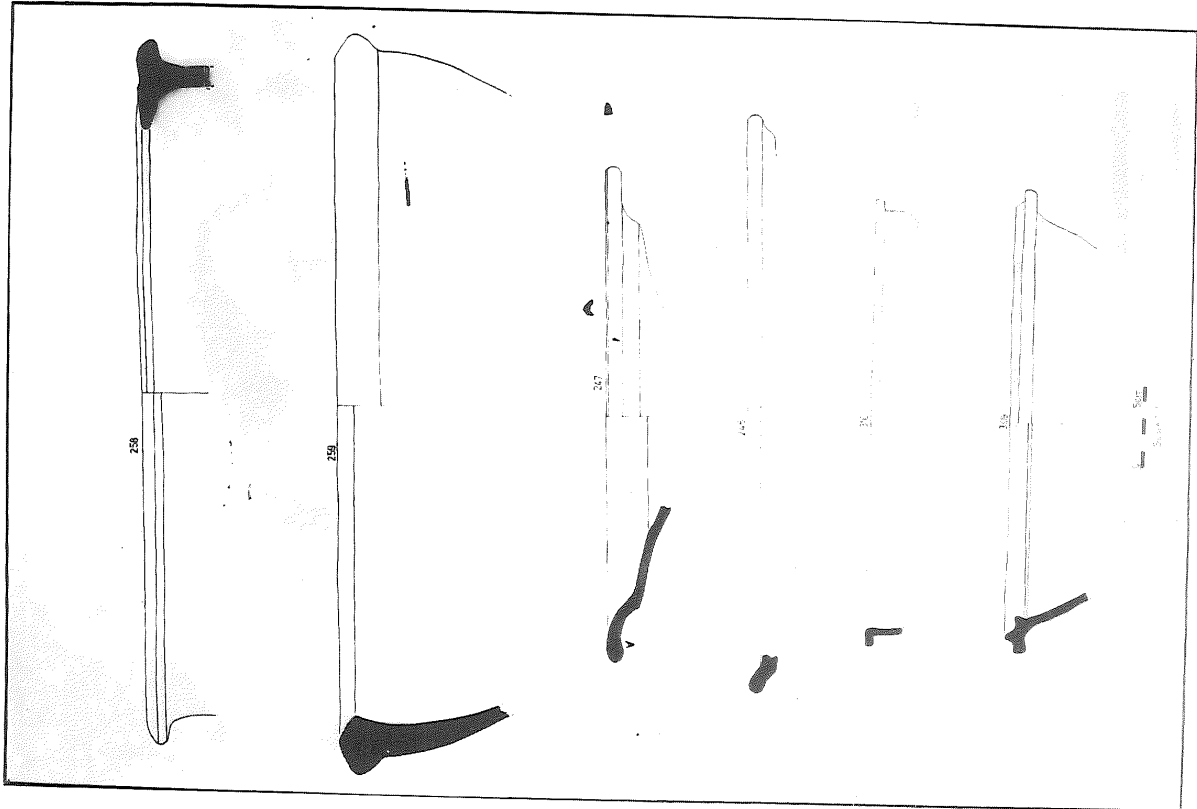


Fig.19 Byz. Pottery A 1:24-25

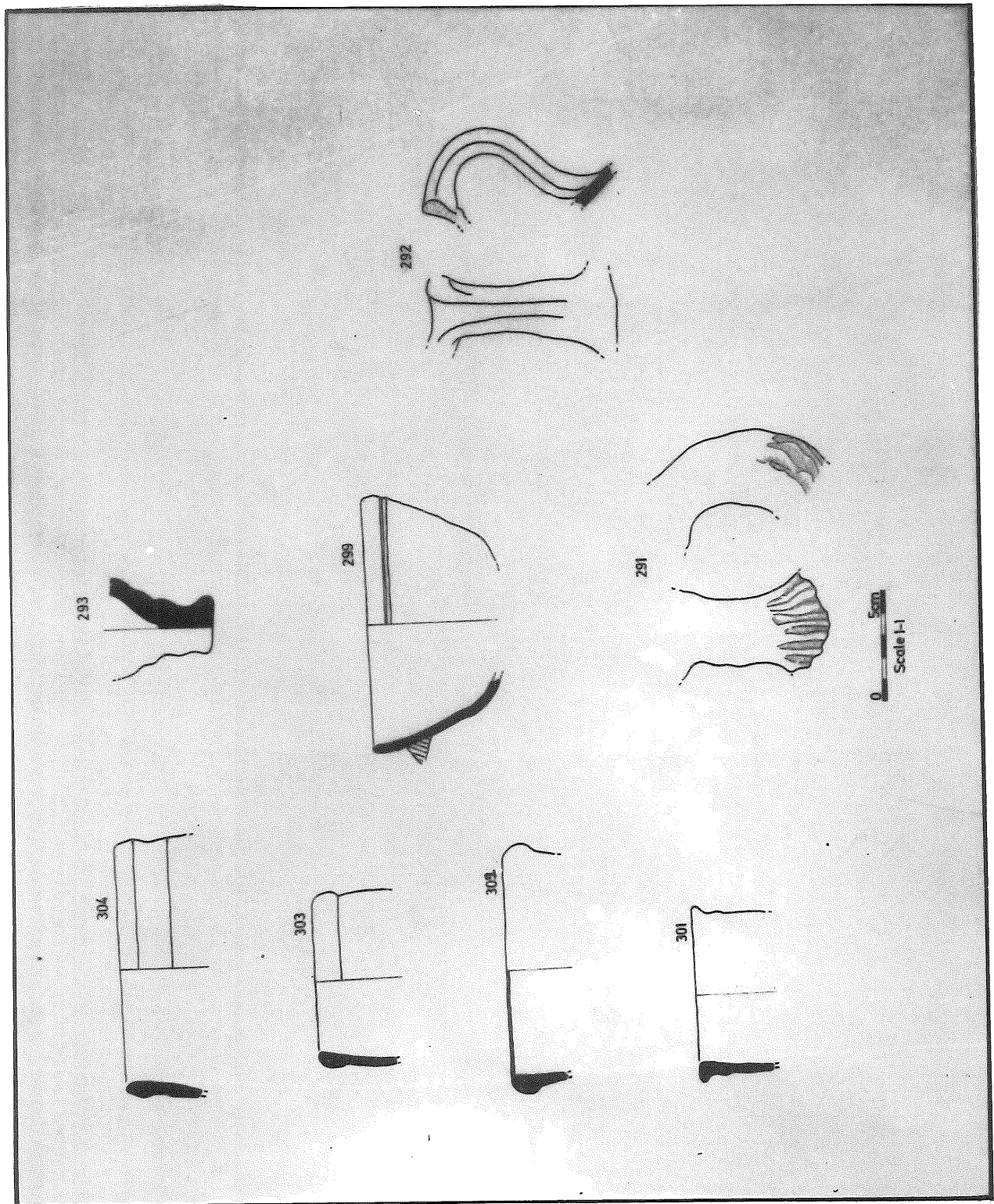


Fig.20 Byz. Pottery A 1:24-25

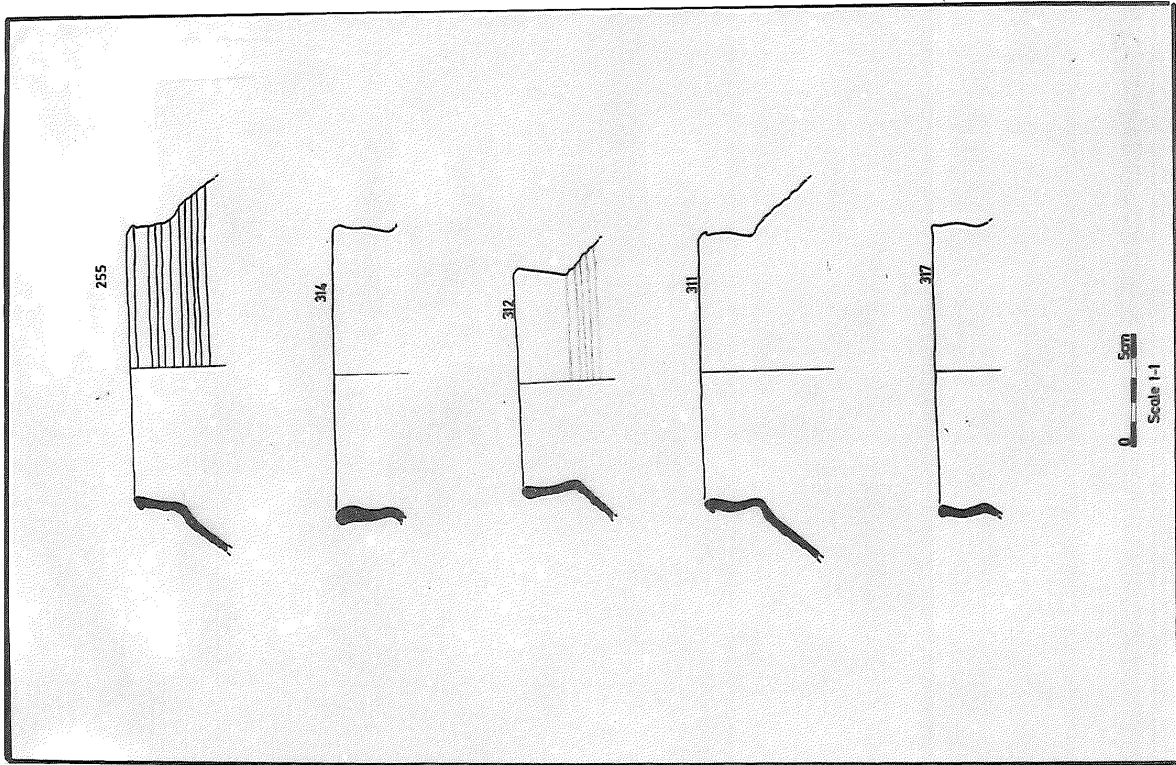


Fig.22 Byz. Pottery A 1:24-25

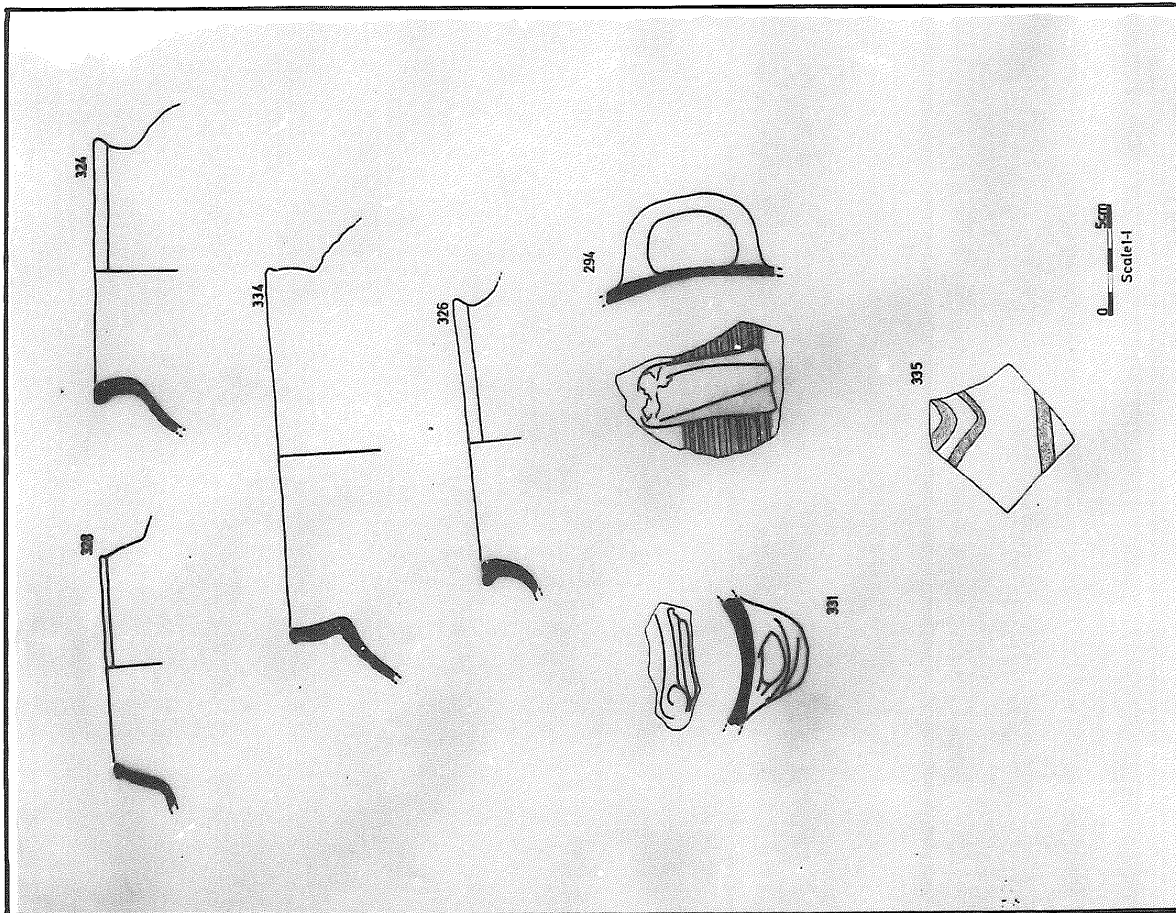


Fig.21 Byz. Pottery A 1:24-25

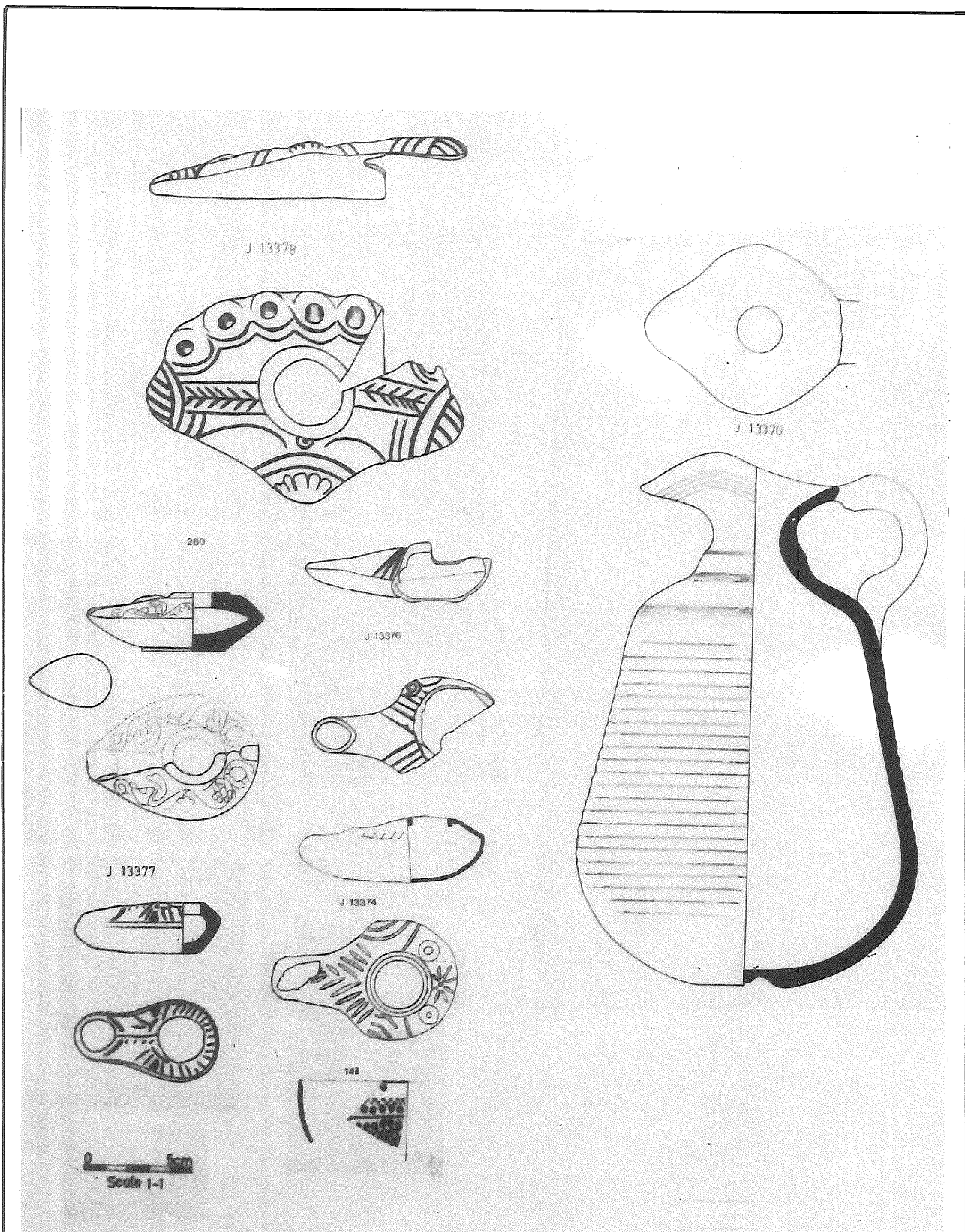


Fig.23 Pottery of Area A.

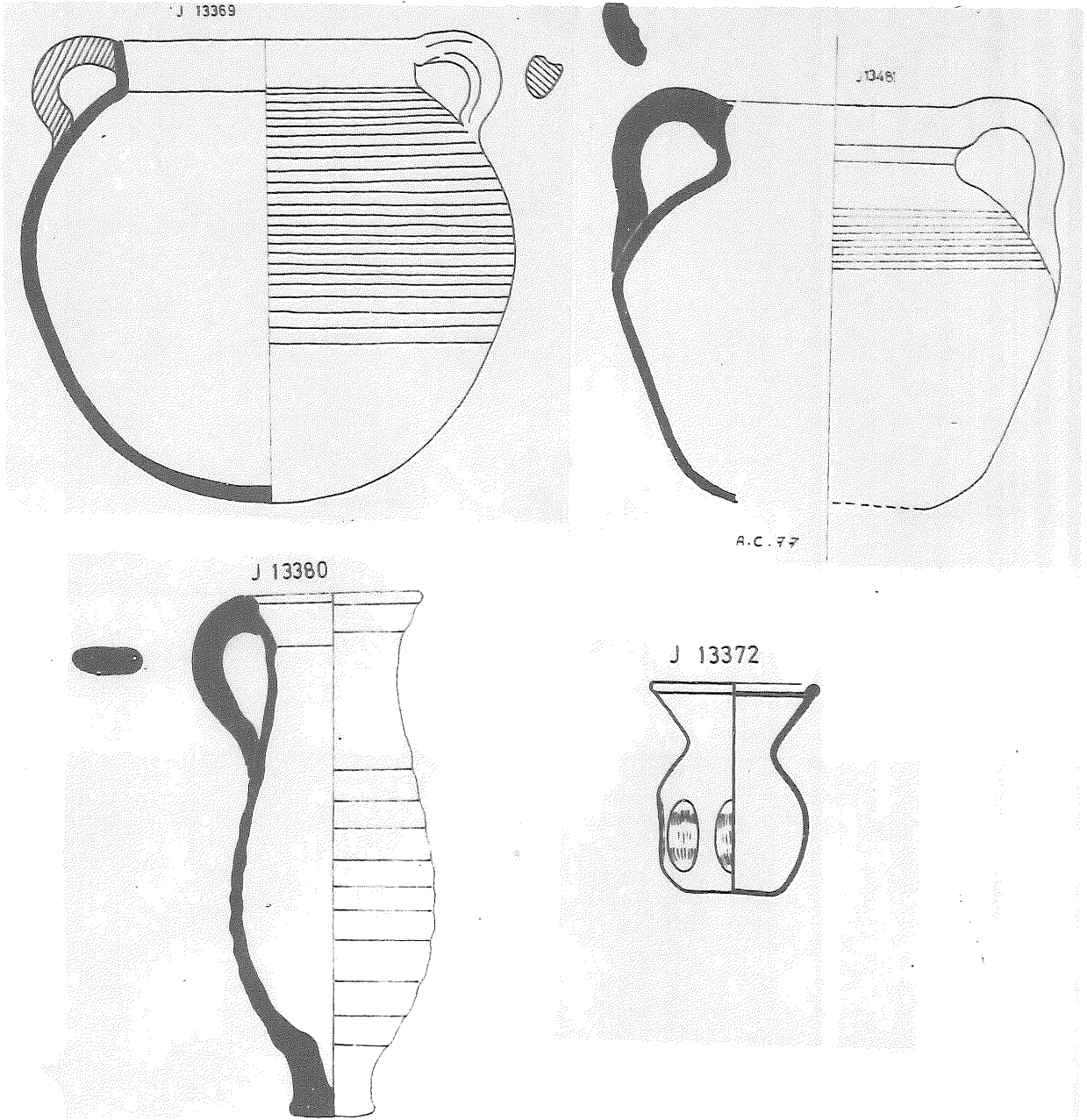


Fig.24 Pottery and glass bottle. Area A and Church.

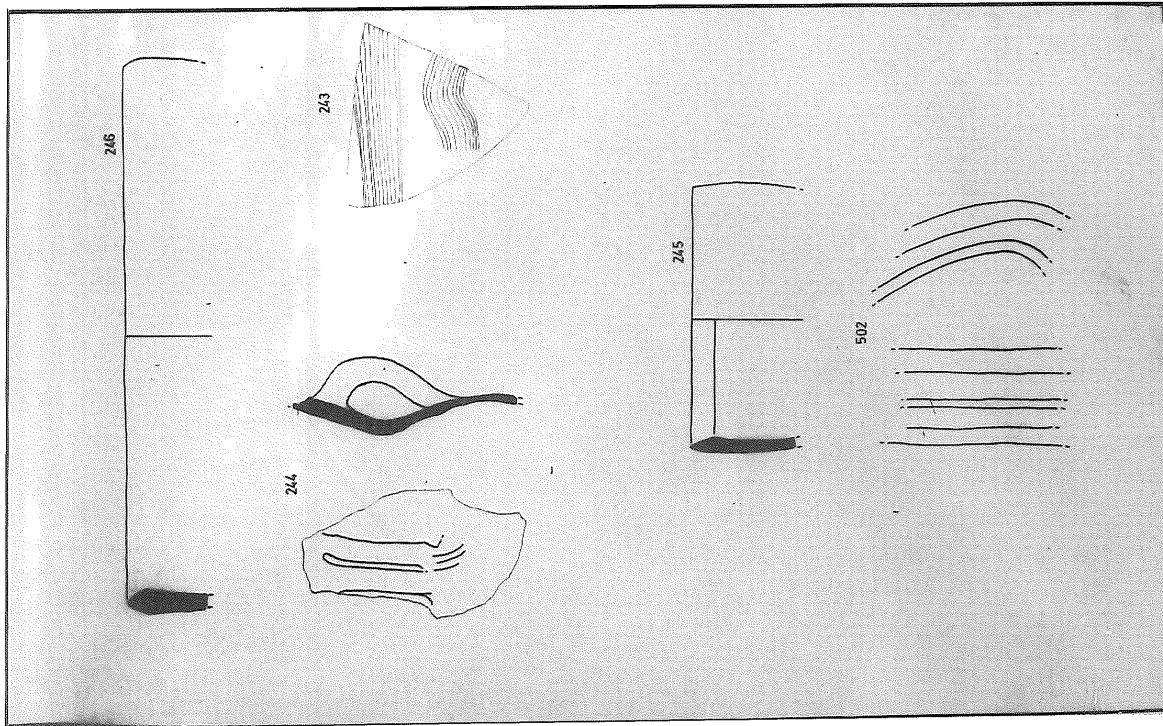


Fig.25 Umayyad Pottery Area A, 1 and Church.

by D. Oursaud

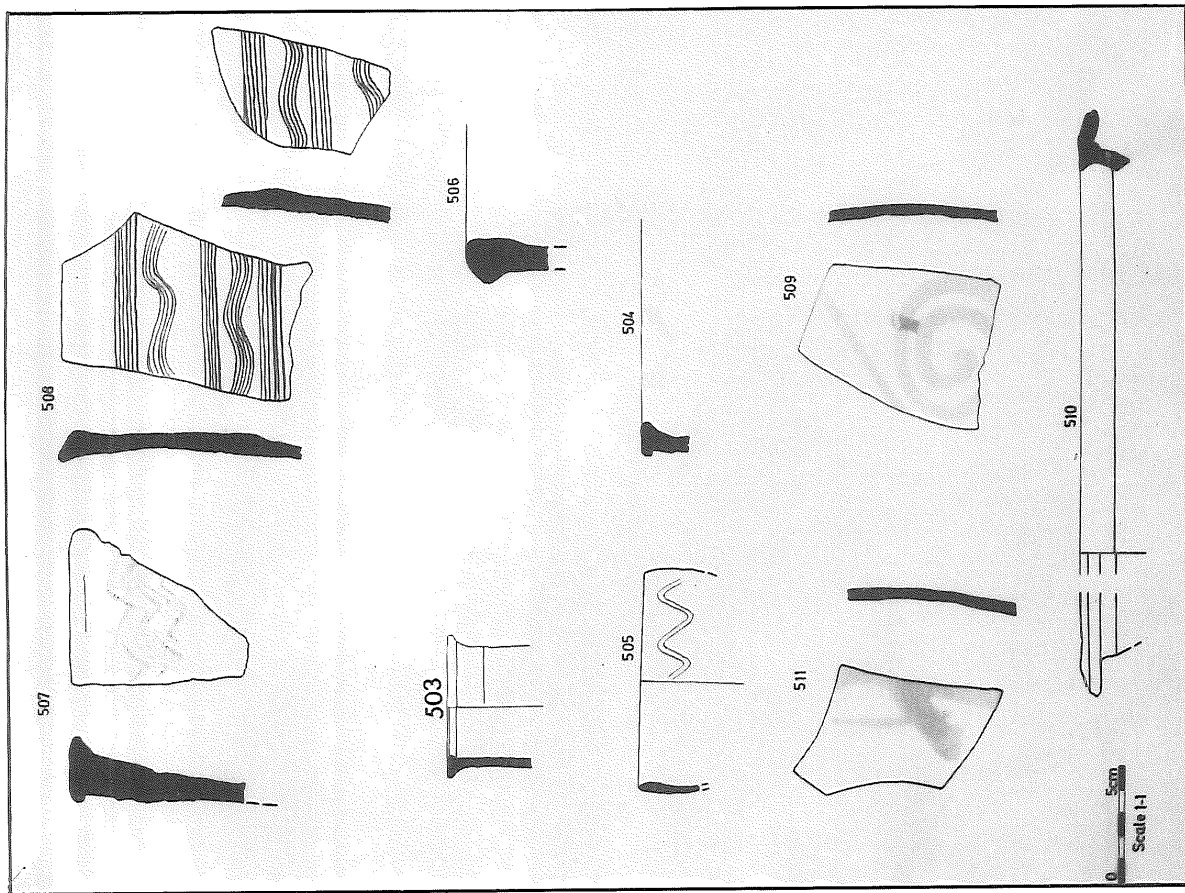
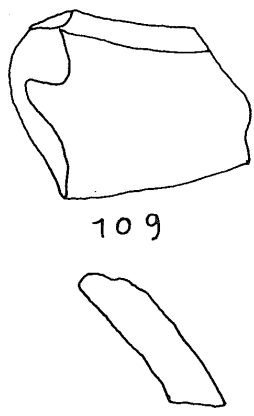
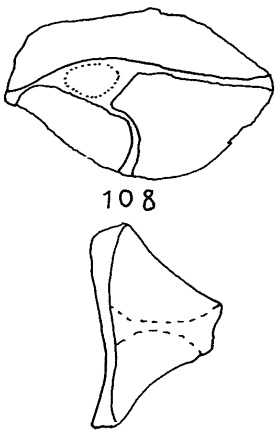
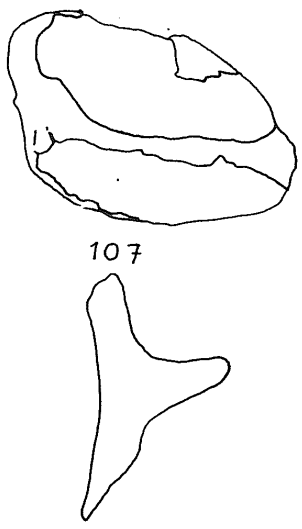
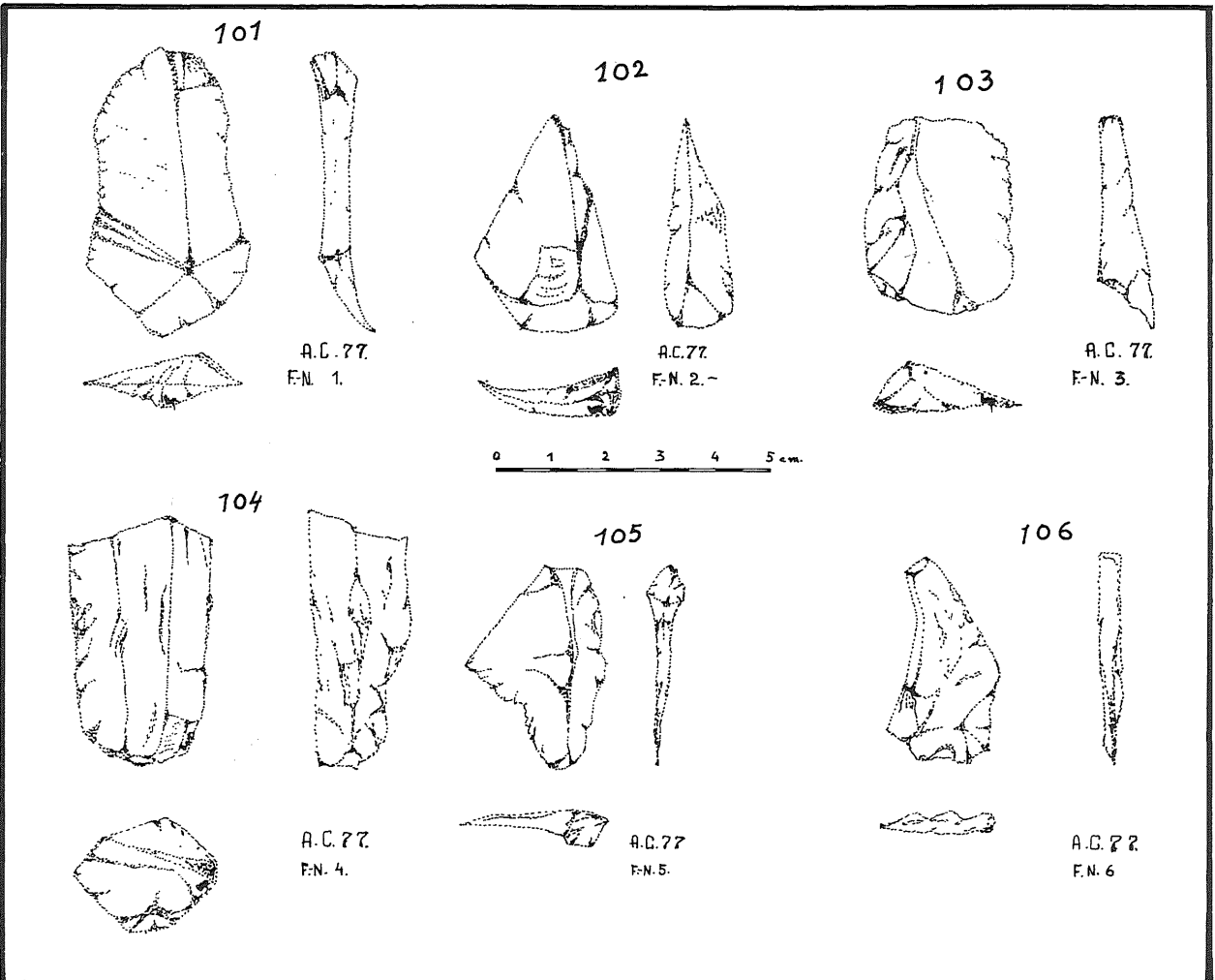


Fig.26 Umayyad Pottery Area A, 1 and Church.



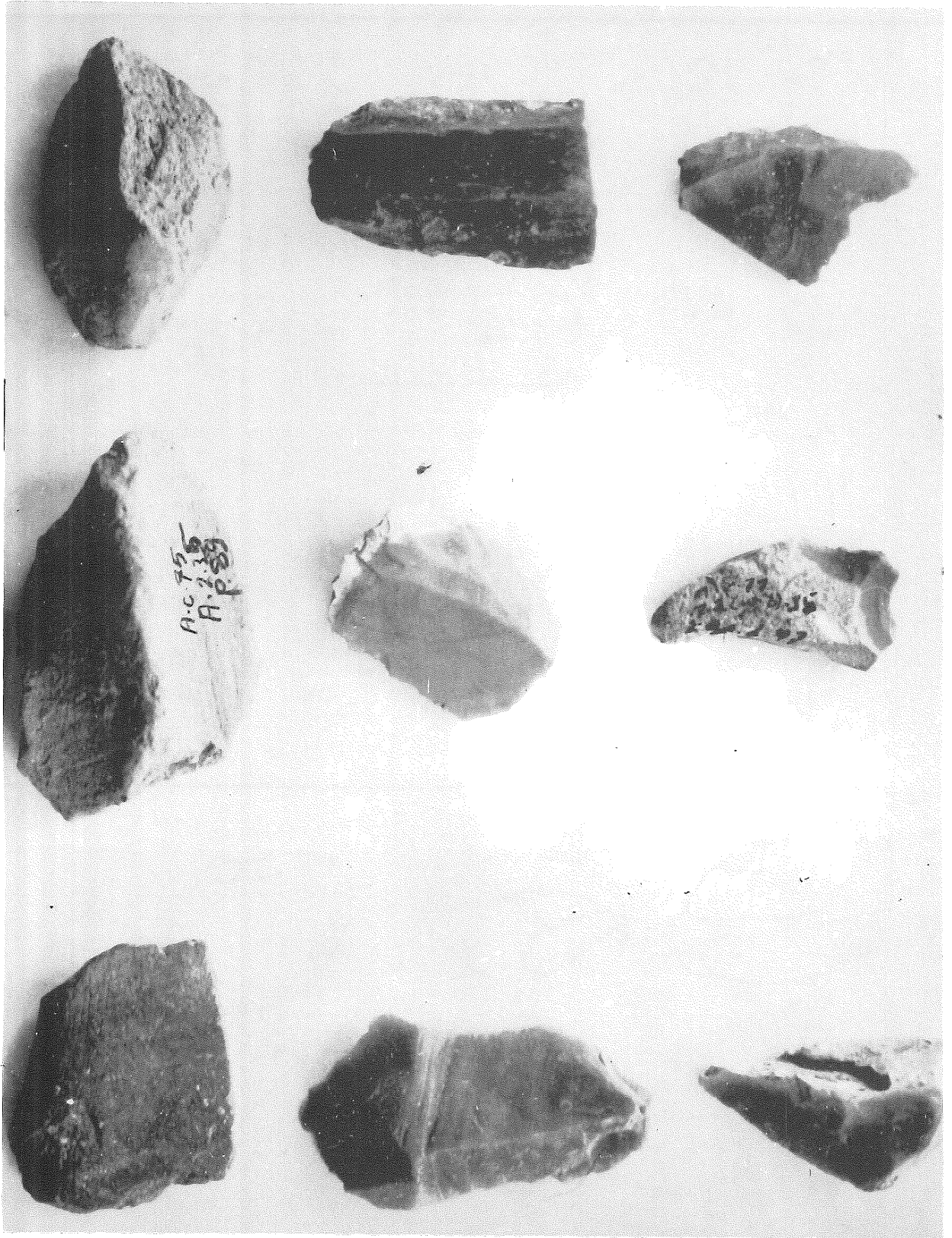


Fig.27 Early Bronze Pottery and flints.



# Two Seasons of Excavations at Tell Deir 'Alla, 1976- 1978\*

by

Henk J. Franken and Moawiyah M.Ibrahim  
(Fig 1-14)

## Introduction and background

After an interval of nearly ten years, excavations at Tell Deir 'Alla, in the Jordan Valley, have been reassumed. The previous five seasons of excavations were between 1960 and 1967, and had been executed by Dutch teams under the direction of Dr. H.J.Franken from the University of Leiden.

In the two seasons of 1976 (27th Oct.-16th Dec.) and 1978 (1st Jan.-28th Feb.) excavations were carried out by a joint expedition of the Department of Antiquities in Amman and the University of Leiden. The directors were Dr. H. Franken and Dr. M.M.Ibrahim of the Department. The other members of the team were: Mrs. Franken-Burggraaff (household, registration of finds 1976, 1978), Mr. Hubert de Haas (Photography and drawing 1976, 1978), Mr. Flip Pronk and Mohammad Yousef (draftsmen 1978) Site supervisors were:- Mr. Bram van As (1976), Mr. Chiv Chirimar (1978), Mr. Mohammad Darwish el-Ghoj (1978) Mr. Ibrahim el-Haj Hassan (1978), Mr. Mohammad el Jamrah (1976, 1978), Mr Gerrit van der Kooij (1976-1978), Mr. Mohammad Murshed Khadijah (1976), Dr. Marshall Martin (1976), Mr. H. Eduard LaGro (1978), Mr. Mujahed el-Muhaisen (1976-1978), Mr. Tim Potts (1978), Mr. Nabil el Qadi (1978), Mr. Ali es-Sa'idi (1978), In addition to two Archaeology-students from the University of Jordan: Miss Basmah Jarallah and Miss Mozeh el-Heddi who joined the dig on part time basis.

This co-operation between Amman and Leiden was not only limited to team membership, but was extended to discussion of ideas and financial support. The expenses were covered by the Department of Antiquities in Amman, the University of Leiden, and the

Netherlands organization for the advancement of Pure Research (Z.W.O), which had financed all the previous expeditions at the site. Besides this mention should be made of the use of household equipment kindly put at our disposal by several Jordanian and foreign archaeological organizations. Special thanks are due to Dr. Subhi el-Qasim, Dean of the Agricultural Faculty of the Jordan University who supplied the housing and facilities available at the University Farm. (fig. 1)

Tell Deir 'Alla is a large mound in the Jordan Valley, close to the Zerqa river; cf. H.J.Franken, *Excavations at Tell Deir 'Alla I*, Leiden, 1969; see also fig.1 and plate 1:1

Previous excavations have shown intensive occupation during the L.B. Age and the Iron Age (I and II). Several Iron Age phases could be distinguished, ranging from phase A-O (A being the lowest). During the L.B. Age the main part of the site (E) was taken up by a sanctuary (see H.F.Franken in *V.T.* XI, 1961, and XVI, 1964). This was probably also the case during the Iron Age.

## Aims and methods

Excavations at Deir Alla were started in 1960 with the aim of studying well-stratified pottery, especially that belonging to the later part of the L.B.Age and the earlier part of the Iron Age. The result of this, after four seasons of digging and much homework, has been published by H.J.Franken, *op.cit.*, 1969, as far as the main part of the Iron Age is concerned. The publication of the L.B. pottery is forthcoming.

In 1967 a new series of digging seasons started with the main aim of uncovering more of the L.B. sanctuary area.

However, the accomplishment of this aim

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\* This report was prepared in co-operation with all sitesupervisors, including Gerrit van der Kooij with whom stratigraphic problems were discussed. Mr. van der Kooij worked also hard on the preparation of major top-plans, drawings and palaeographic remarks.

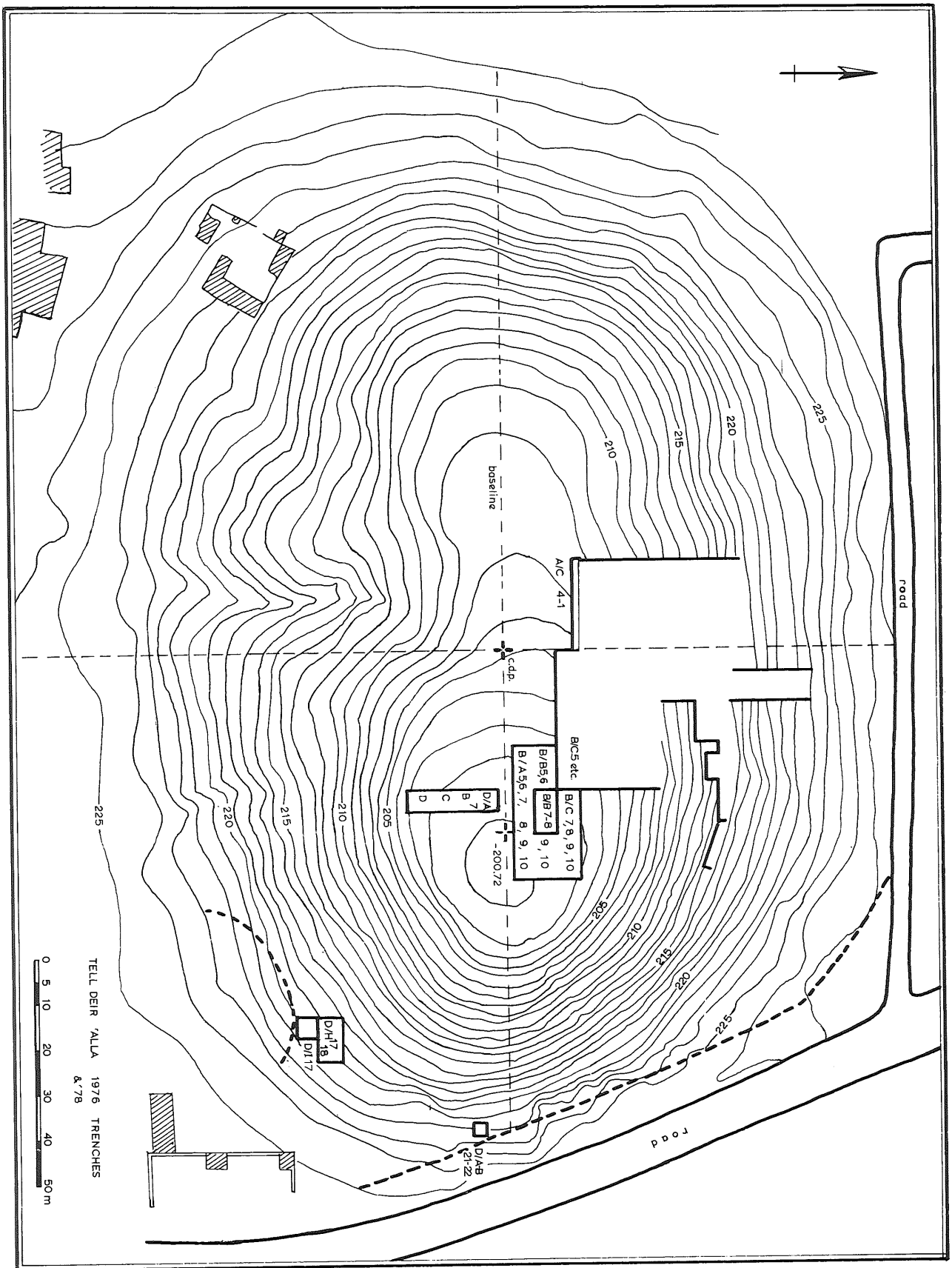


fig.1 Tell Deir Alla excavation trenches.

was delayed by the discovery of a probable sanctuary area attributed to phase M. The importance of this phase was stressed by the discovery of Aramaic texts (see J. Hoftijzer and G. van der Kooij, *Aramaic Texts from Deir Alla*, Leiden, 1976). The hostilities of 1967 stopped this series of seasons.

The specific aims in 1976 were as follows:

-Training archaeologists in interpreting the stratigraphy of a mud-brick tell (squares A/Cl-4 were especially opened for this purpose; digging there should also help to solve some outstanding problems in the adjacent area excavated earlier).

-More information should be obtained concerning the immediate stratigraphic context of the Aramaic plaster texts uncovered in 1967, also more samples for C14 dates connected with this should be looked for (excavations in square B/C5 and surroundings).

-More general information than is now known about the formation, history and type of occupation (including function) of the site as a whole should be obtained (for this squares D/A-B21-22, D/I17, H/7-19, B/A 5-10, B/B5-10, B/C 7-10, D/A 7, D/B 7, D/C 7, D/D7) were opened; at the top of the tell which would also clear a wider area for digging in phase M.).

-Furthermore the study of pottery, especially from the earliest and latest phases. In camp Dr. Franken registered all the sherds from these squares in a detailed system which, in particular, included technical marks, fabrication methods and date for working out statistically. A selection of these sherds and all the sherds coming from the other trenches, except A/Cl-4 were sent to Leiden for a primary study. The complete pots are going to be studied in Amman. Also sampling for both soil and material analyses selected among sherds was not forgotten, because this could be helpful in determining the use of pots. The Royal Scientific Society in Amman was found interested in this type of research. It is also keen to do analyses of bones, metal, clay, and vegetable material, including impressions of this. Apart from this importance was attached to finding more data about the position of Deir Alla among contemporary and other sites in the Jordan Valley, especially those in the vicinity. For the under-

standing on this aspect, several lectures and excursions were undertaken (see M. Ibrahim, J. Sauer, K. Yassin, *The East Jordan Valley Survey*, 1975 in BASOR 222, 1976; 1976 (Forthcoming)).

The basic concept in our approach to the site became clearer during various discussions we had in camp. Tell Deir Alla was to be taken as a site *per se*. The archaeologically obtained data should speak for themselves without any imposed theory derived from more or less historical sources. Working hypotheses are, of course, necessary in the interpretation of data, but contradictory data should not be angled into them but should either modify or destroy them. The fundamental requisites of working in this way are a sound and detailed stratigraphy recording and an open mind. (It seems important to pronounce this rather self-evident attitude.)

#### **The Excavations**

Work was done in a number of small squares. Much of the dump soil was used to make small dykes following the contour lines of the tell, to prevent a rush down of rain water—the tell surface had been weathered quite a lot since 1967.

The two season's dig was seen as the first of a new series, in which excavation area unconnected with the old trenches would have to be chosen. Therefore it was felt necessary to adopt a new reference number system for the trenches. A system was chosen in which the old trenches fitted well. A grid of 5x5m squares was spread over the horizontally projected tell surface with two imaginary main lines. One going EW through the length axis of the tell is called the base line (it was already in use during the previous excavations and was indicated on the tell surface by iron pegs and heavy stones at 10m distance from each other). The other goes NS perpendicular to the base line through the middle of the site. The cross point (called central dividing point-c.d.p.) was marked by one of the heavy stones mentioned above. On both sides of the base line, 1.50m had to fall out of the 5x5m grid. The NW part of the tell is labelled A, the NE part B, SWC, SED. The 5x5m squares are indicated by letters of the Roman alphabet on the NS line (on both sides

of the base line starting with A), and by Arabic numbers on the EW line (also starting at the c.d.p to both sides). It should be emphasized that this grid is meant as a reference aid and not to define where to dig. The leveling was done (as in the previous expeditions) from a fixed point (indicated by an iron tube) on top of the tell which was taken as 220m. below sea level.

Phasing: Temporary phasing system was applied to the stages identified during the last two seasons, on top as well as at the south east bottom, of the tell. Phases were given capital Roman numbers starting from the top, while deposits or loci Arabic numbers. This was made to avoid overlapping with the earlier phases designation.

#### Squares A/C1-4

For stratigraphical training a special area was chosen in the SW part of the previously excavated area. The worn south sections of trenches B 100, B200, A100, A200 (cf. Franken, *op. cit.*, 1969 p. 13) at 16.50m from the base line were cut back 1.25m towards the S, i.e. 15.25m from the base line. In this way digging was done in squares A/C1-4 (new grid).

The old sections included phases G-L which are discussed by Dr. Franken *op. cit.*, 1969 pp.48-63 (cf. fig.81) The area provided many stratigraphical complexities, especially in the W part (A/C4), which during the previous excavations had remained rather obscure.

#### Squares A/C1, 2 (site supervisor A. van As).

Parts of the newly made section drawing are reproduced here (fig.2), namely the section in A/C1, parallel to the old section at 15-20m. The NS walls, H18 and H17 (see Franken, *op.cit.*, 1969, fig.81), as well as H15 (mistaken called H19 on section fig. 81) to the E of them still exist, but a connecting EW wall appeared. Also E of wall K4 there seems to be an EW wall. The water hole between walls K3/L2 and K4/L3 still exists, with a continuous sedimentation at its bottom. An EW wall also appeared in the section to the W of the given drawing, W of the NS wall H14. It goes through the new section at a slightly oblique angle; it has a plastered face to the S, connected with a plastered floor. A nicely rounded small oven (ca 60 cm) was built against this EW wall close to NS. wall H14.

Close to it a horse head figurine was found (see pl. XXVI, 2)

#### Squares A/C3,4 (site supervisor M.E.Martin).

The excavated area lies between the old lines O.37 m and 10m. The NS walls H13/J5/K1 and H1/J1 are still clear and a wall on top of J1 in phase K also appeared. It is interesting that these walls have a thin layer of reed at their base visible at several places. The thick deposits of street layers between these accumulations of walls still extended as far as the new S section. Part of an EW wall appeared in section W of the NS wall H1 (see fig. 3). Wall 4 (see fig.3) probably belongs to phases H and J, and wall 3 to phase K. A thick rusty coloured floor (level c.-209.60m) was found; it stopped just before the new S section against mud-brick debris. It probably belonged to phase J. The thick deposits of rubble and ashy layers between the walls belong to phase K or L. Wall 1 (phase L?) seems to have been dug into the contemporary surface of the tell and was based first on a row of flat stones, which were also lying more to the SW. It was connected with an EW wall running about 1m N of the new S section. Stones had also been put obliquely against the base of these walls (cf. Pl.XXVII.1). On top of the stone pavement, clay debris had fallen and the fill was continuously used for pits (e.g. graves). (Pl-XXVII.1) shows the pavement consisting of flat stones, with stones standing against and partly inside the base of two walls that are forming a corner. The complex is in the process of being unearthed-looking towards the WSW.)

#### Square B/C5 and surroundings (site supervisor G. van der Kooij)

B/C5 equals the 1967 square EE300, in which the Aramaic plaster texts were found (cf. especially Hoftijzer, Van der Kooij, *op. cit.*, 1976. In the following paragraphs frequent reference will be made to this publication, using the abbreviation *Aramaic Texts*). Many obscurities in the stratigraphy immediately connected with this find made it necessary to do some additional digging without really extending the excavation area. The 1976 dig gave some suggestions which seem to be important for the interpretation of the texts. This is reason enough to report rather extensively about the excavations in this area.

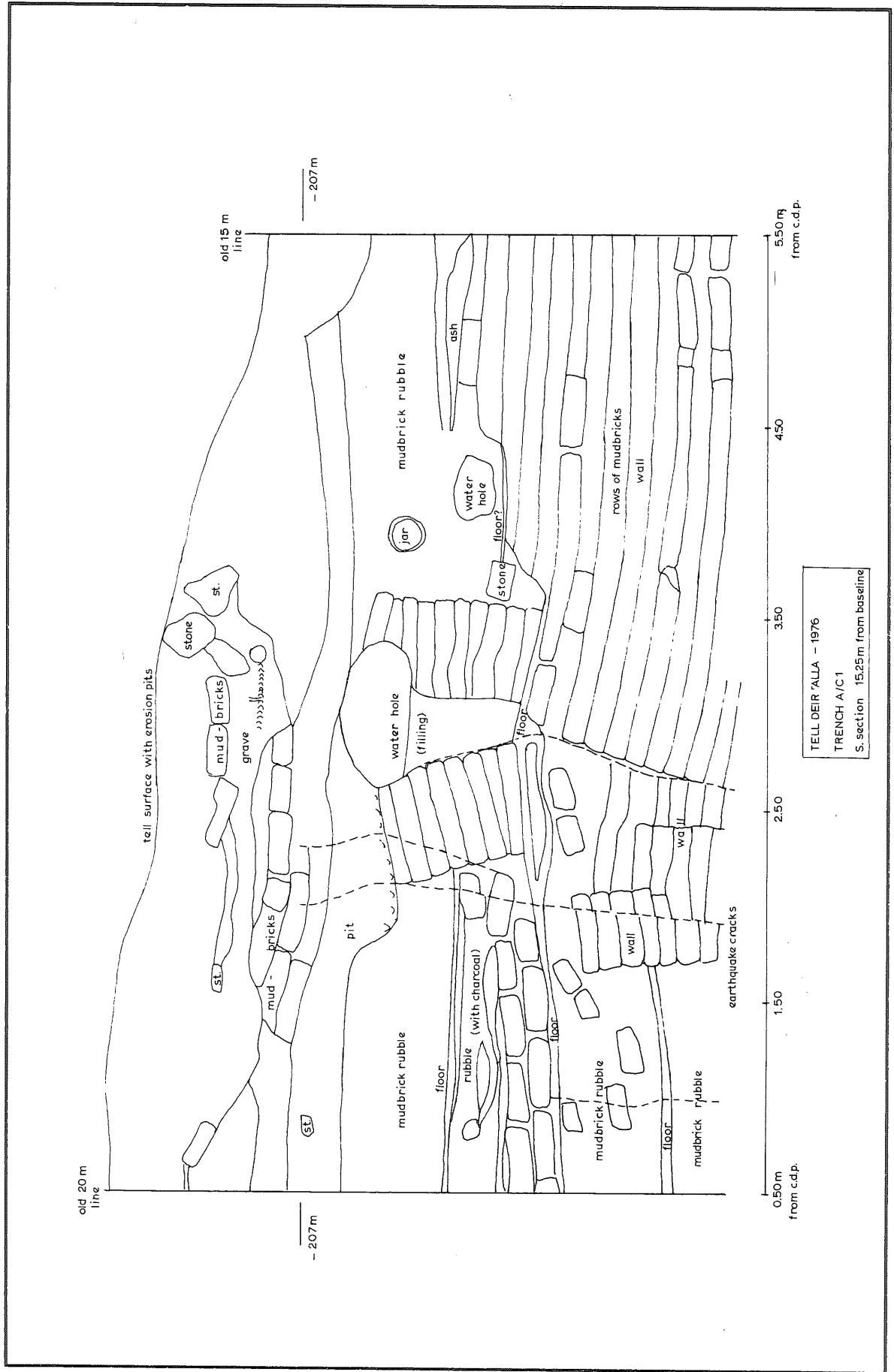


fig.2 Square A/C1,S section.

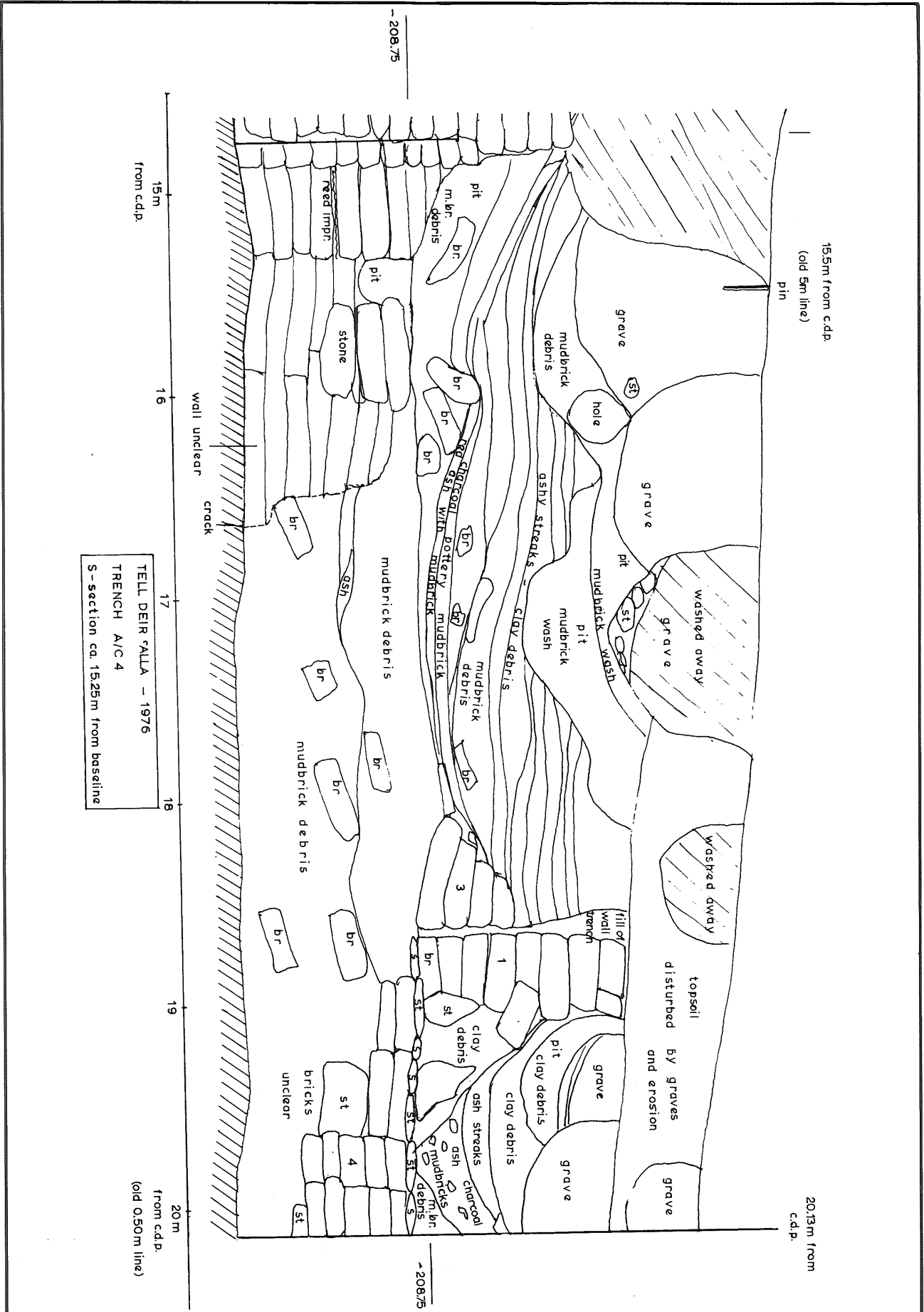


fig.3 Square A/C4, S section.

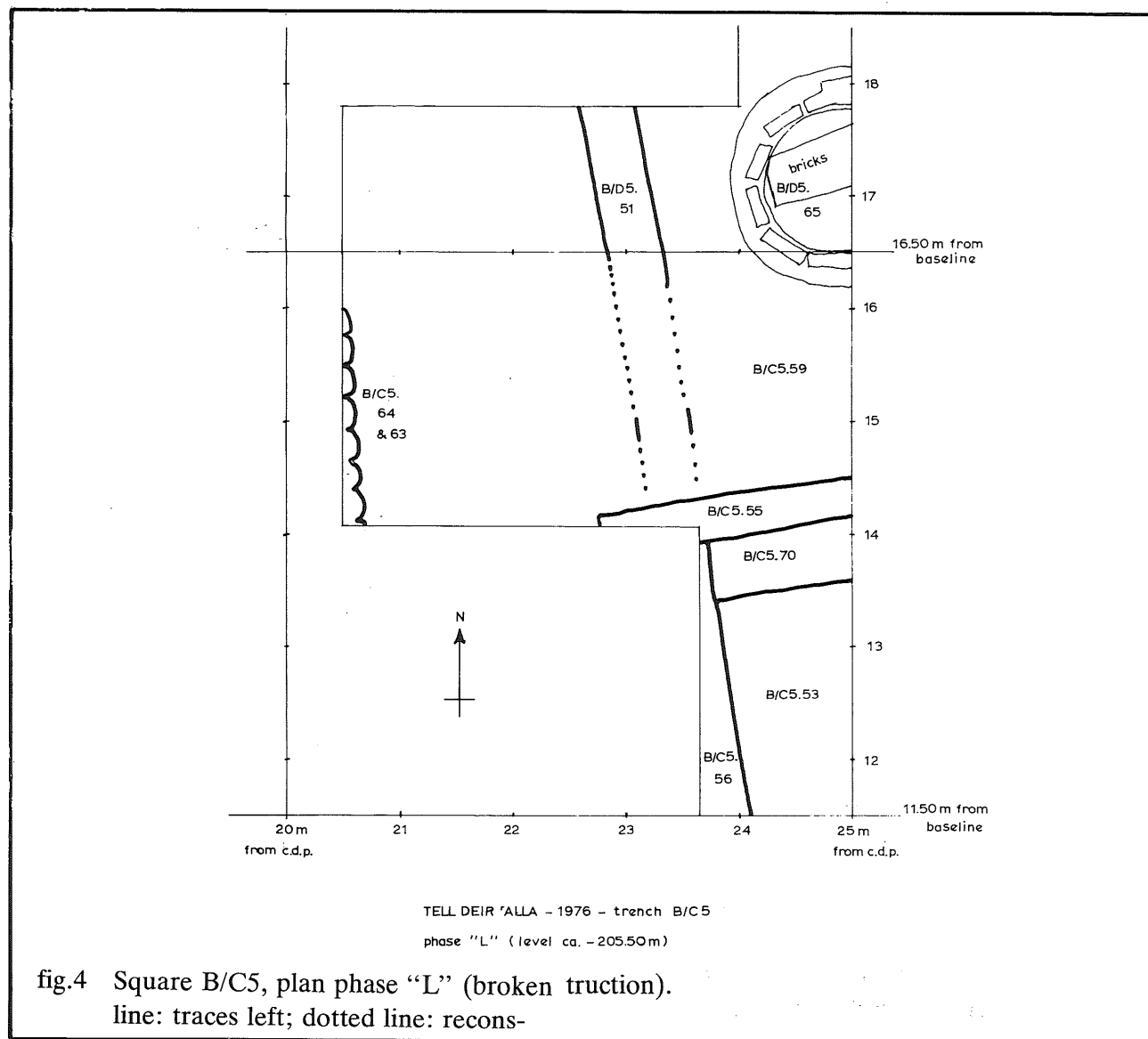
Firstly, a general presentation of the stratigraphy of the area.

In 1967 excavations were carried out in the area reaching the earthquake and fire destroyed phase M - the top of it being c. 2.25m below the tell surface at that spot. The stratigraphy has not yet been published, but some of it has been described in *Aramaic Texts*, pp.8-10, and 26-27. (A full report of it can be expected after more of this phase has been unearthed). This season work concentrated on the stratigraphy in the immediate surroundings of the plaster texts find spot. In '67 the plans of the walls in the area had many lacunae-no time was left for a thorough study then. What was known was published - provisionally - in *Aramaic Texts*, cf. Pl. 17b (N.B.: The NS grid-lines of the '67 excavations 40.50 and 45.50 m about equal the new

grid-lines 20 and 25 m from c.d.p. The EW lines-4.50 and 0.50 m equal 11.50 and 16.50m from the base line). This 1976 season excavations penetrated somewhat deeper at a few places than what is labelled phase M (in '67 too digging had gone deeper than this phase at a few small spots). it seems useful to give a short description of the chronological order of the excavated deposits and the phases. (Date from '67 combined with those from '76)

a. The earliest deposits touched are charred wash layers, which presumably have to be attributed to phase L.

b. Some structures were built; provisionally they are also taken as belonging to phase L ("L"). Their walls have been excavated, but their floors generally not (see figs.4 and 6-plan and section). The S extension of wall B/D5.51 is



uncertain. In '67 a few bricks had been seen at the place indicated by two short parallel lines. There was, however, another indication of this extension: the mat of reed leaves (see below) was seen and described in '67 as going upwards at that spot. Wall B/C5.55 was, apparently, built against the stump of a still older wall (B/C5.70); the same may be true for wall B/C5.56 (still to be excavated). Wall B/C5.63/64 consists of a row of stones with mud-bricks on top of them.

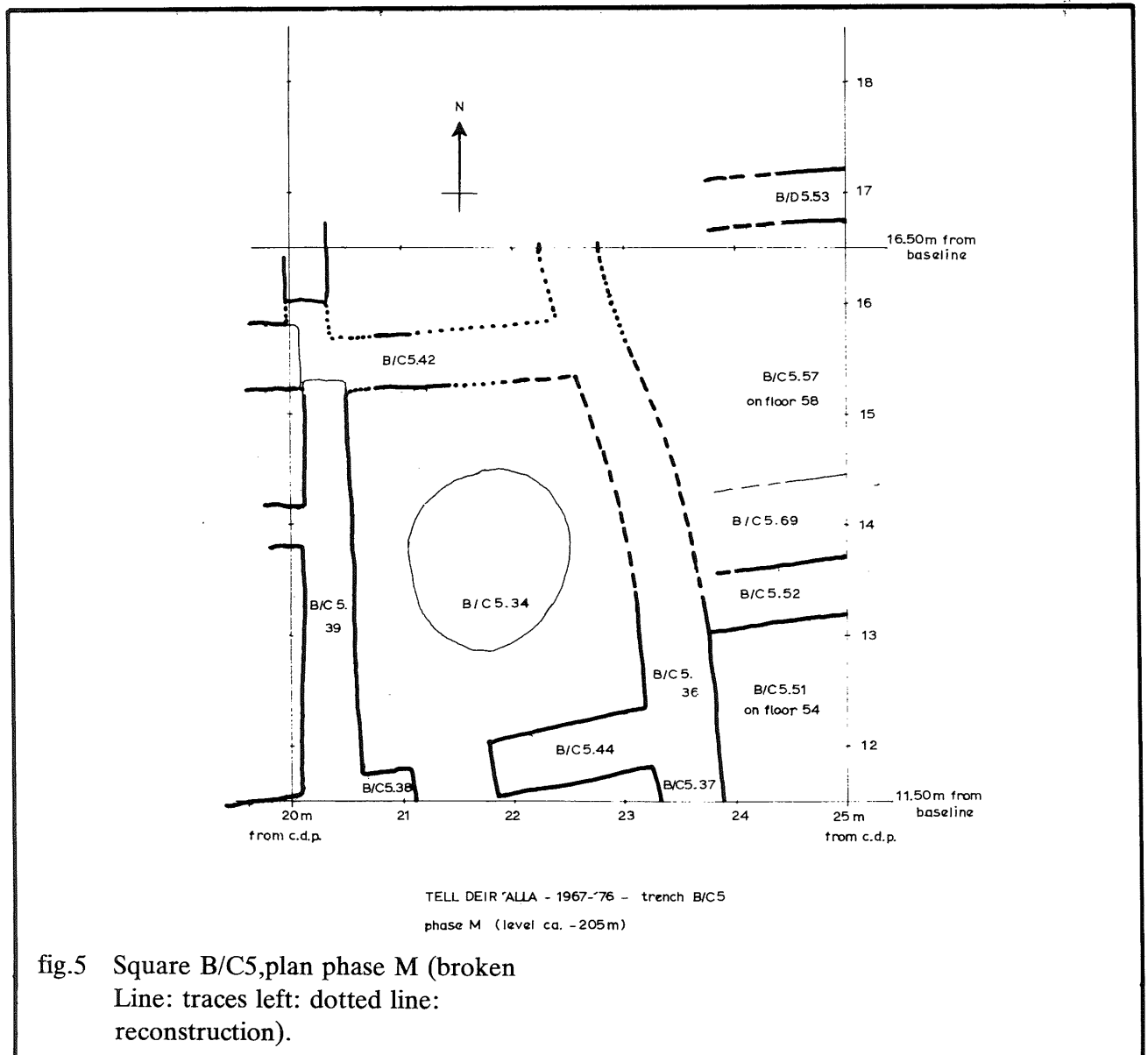
The building was burnt and destroyed.

c. After the destruction much weathering had taken place, which may indicate several years' exposure. Pit B/D5.65 was constructed (a hole was dug, and the pit was constructed of clay bricks and lined with three layers of clay plaster,

coloured grey, yellow and red-B/D5.64; the room outside this structure was filled in again).

Then this well made pit was filled with a wall of mud-bricks, some brick rubble, and vegetable material, which shrunk considerably after some time (no traces of another function for the pit were found). Then the heavily charred earth of B/D5.52 was deposited together with some stones.

d. After an apparently short time new buildings were erected (taken as belonging to phase M). The surface, however, still bore traces of the old walls. A glance at figs. 4 and 5 shows that at least parts of the old "L" plans were used. It became clear in '76 that the joint between walls





B/C5.39 and 38 was made with differently coloured mud-bricks than had been used for the walls themselves. (The bricks of the walls contained much of the locally found banded clay; the bricks of the joint did not have this clay at all, but a lot of straw temper; they were grey, the others yellow) A crack in the W extension of this wall 38 had been penetrated by fire, which proves that the fire and crack existed at the same time - probably both caused by an earthquake. In the plan of fig.5 the same difference in brick type is presumed to have been used at the joint between walls B/C5.39 and 42. The N extension of B/C5.36 is unclear. Its existence is probably testified by bricks seen and drawn (in '67) at the point where it crosses the 16.50 m line, and is strongly suggested by the sloping position of the fallen mat of reed leaves seen and photographed in '67. Very little was seen of B/C5.42 in '67. B/D5.53 probably (not certainly) was a row of fallen bricks. Wall B/C5.52 was built on a layer of reed stems (not leaves). B/C5.69 is a structure made of mud-brick clay on top of the stump of "L" wall B/C5.55. Two "floors" should be mentioned: the one of room B/C5.34 with a rounded pit with a graduated sloping edge (see *Aramaic Texts*, Pl.17a), and floor B/C5.58 which is clearly visible. Judging from the rubble on top of floor 58 there certainly was no permanent roof above it. There was, however, a large mat woven from reed leaves, at least five layers thick. The size of the mat was roughly 3.5 m (NS) to 5.5m (EW) (a small EW trench had been made, supervised by A.van As, in B/D6, NE of B/C5, which produced this evidence).

Then some destruction occurred, with fire. In B/C5.34 burning rubble (with brick clay and wood) tumbled down, possibly the roof or something coming from a higher place (so Franken). The heat penetrated into the unplastered floor and the wall bases. Burning rubble also fell into the room SW of this room 34, but NE of it very little burning rubble fell on floor B/C5.58. Brick rubble (unburnt) fell on B/C5.69, and probably by now the B/D5.53 bricks had been deposited. Very little weathering took

place, and then a complete destruction followed. At first the mat of reed leaves came down, but it was immediately followed by the chalk plaster with (and without) writing and whatever object it adhered to, and parts of the walls. No burning occurred, but some of the bricks were still charred, apparently by the previous small scale destruction. The main rubble deposits are B/C5.30 (on top of 34) with combination 1 of the plaster texts and B/C5.57 with combination 2.

Cracks inside the deposits indicate earthquake shocks. The destruction was complete, though some of the walls were still standing 1 m high; rubble engulfed them. Erosion and wash affected the surface and this made phase M clearly distinguishable from layers deposited later.

A special paragraph has to be devoted to a **reconstruction of the original position of the plaster texts**, deduced from the data from '67 and '76 (see fig.7).

The direction in which the pieces had fallen has been reconstructed already (see *Aramaic Texts*, pp.26f.) by indications given by the positions of the different fragments. The result was that the original position must have been around the NE "corner" of room B/C5.34 (=EE334 of the old grid) The plaster of Comb. 1, the upper part of a column, and some other pieces, had fallen inside room 34, together with unburnt brick rubble on top of the previously fallen burnt rubble. The pieces of Comb.2, the lower part of a column, had fallen together with rubble B/C5.57 on top of the NW corner of floor B/C5.58 (slightly more to the E than indicated on Pl.17b in *Aramaic Texts*). Most probably there was a continuous wall between 34 and 57, namely wall B/C5.36 (see above), although a doorway cannot be excluded for certain.

Combination 2 must have been fallen from a very short distance (this can be deduced from the arrangement of the fragments in situ). Comb.1. came from a greater distance (the

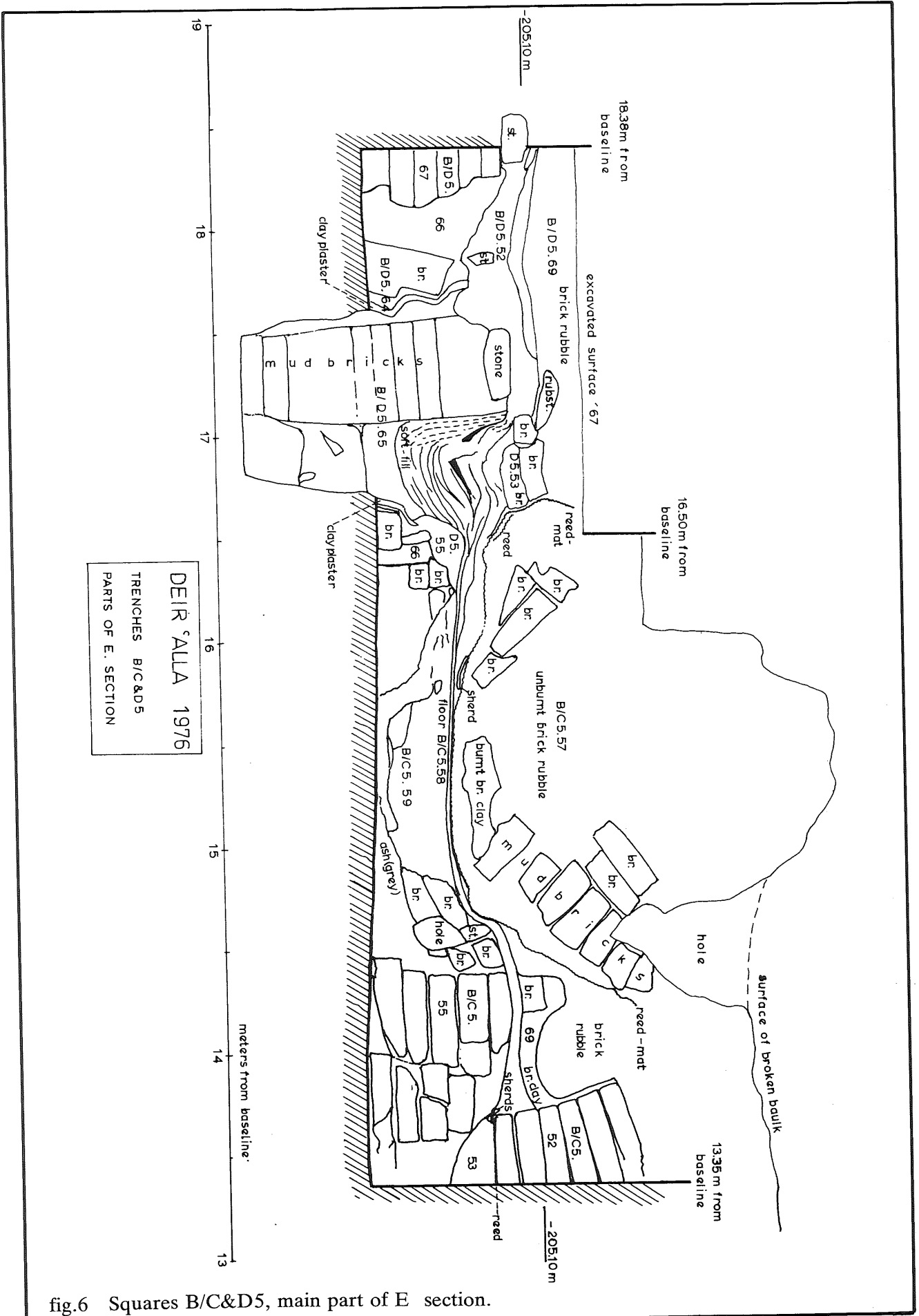


fig.6 Squares B/C&D5, main part of E section.

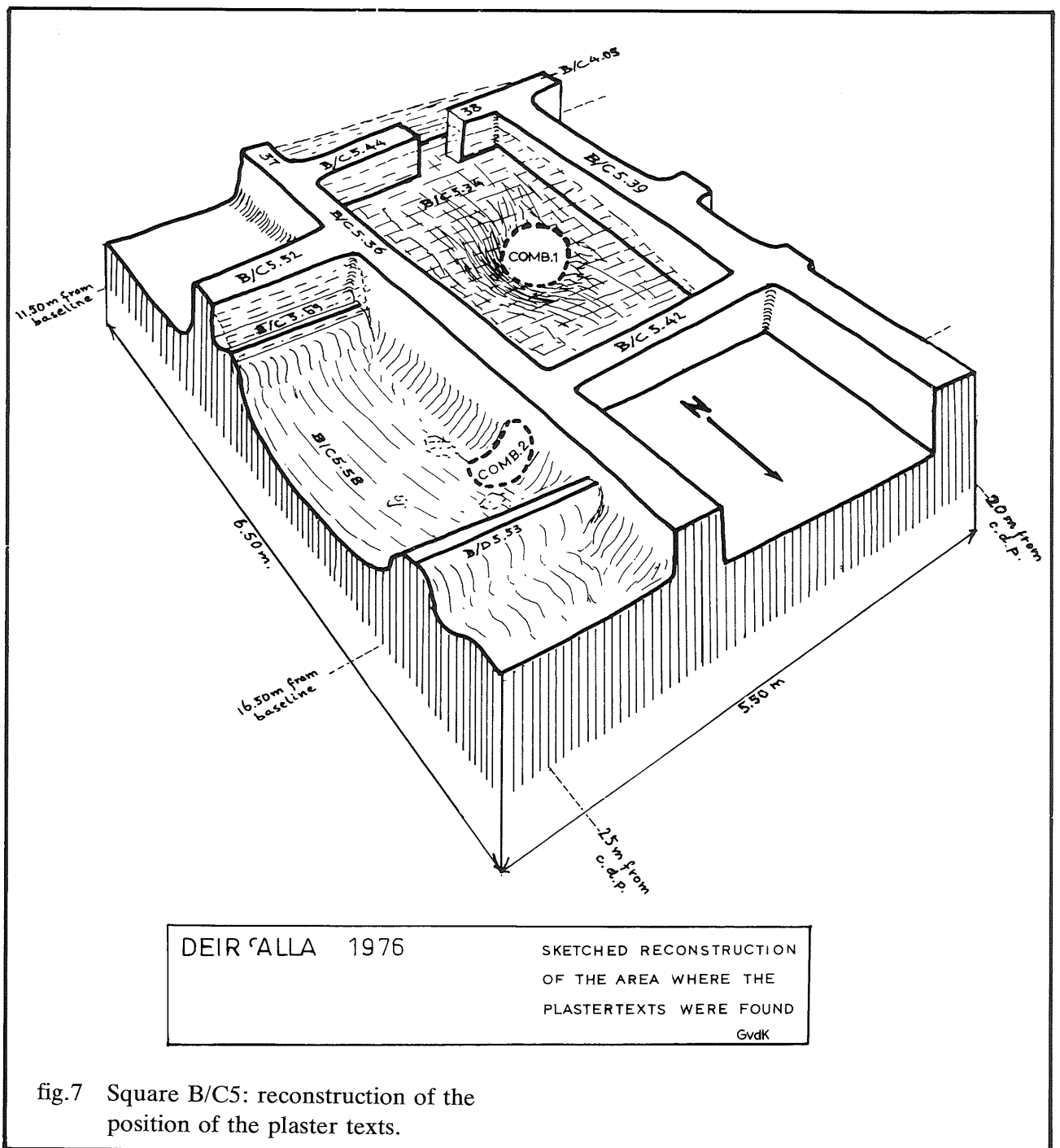


fig.7 Square B/C5: reconstruction of the position of the plaster texts.

fragments were lying together quite unrelated). Comb.2 was apparently lying against the slope of the stump of old wall B/D5.51 and the new wall B/C5.36 (some rubble had fallen in between).

Consequently it most probably had been attached to something flat standing against the E face of this wall (The flat object may have been solidly connected with the wall, e.g. just projecting a little bit out of it; there are reasons enough to maintain the idea that the plaster was

attached to something else than just a wall, see *Aramaic Texts*, pp.25ff.). It is reasonable to assume that all the writing and reading was done at one side only as the texts with related contents are close together. This would mean, that Comb.1. had been originally rather high up on the object against the E side of wall 36, and had fallen, together with parts of the wall, towards the W or SW inside room 34. The conclusion from this would be that the texts were written on plaster applied to something flat standing high

up against the E face of wall 36. The wall (this part being c.3m long) formed the W end of an area which was bordered to the S by wall B/C5.52 and structure B/C5.69 along the base of this wall; to the N it was bordered in one way or another by the bricks of B/D5.53 and /or a wall standing there or slightly more to the N. The area stretched about 5 m towards the E. Its floor B/C5.58 had clearly often been used (indicated by numerous thin floor layers; in the NW part some large sherds and a complete lamp were found). The woven matting cover has been described above. Only the W end and the N edge of this area has been excavated. Doorways have not yet been found.

The surroundings of the area are partly clear: rooms border it to the W (34, with a strange pit-floor) and S (probably a room, with some useful finds - see below) and at a greater distance, at 5m from bricks B/D5.53, also to the N (the complex of four rooms excavated in '67; see *Aramaic Texts*, Pl.16a); the area in between is unclear.

It is not clear how long the plaster with text had been in existence. However, it can be taken for certain that it was there already before the first small scale destruction with fire took place, by which room 34 got the burnt rubble on its floor, and the few pieces of burnt and some unburnt rubble fell on floor 58 and structure 69. The weathering of the rubble on or close to floor 58 was negligible and less than that of rubble 34. Probably no roof covered 34 after the first destruction (this is indicated by the fact that there was very little or no rubble between the lowest pieces of plaster and the surface of the burnt rubble). So rain could do its work in 34. Above 58, however, a new woven matting cover was quickly placed (it is possible also that the old matting cover was not destroyed at all). The writing on the plaster of Comb.2 had a lot of damage, probably caused by water. Most or all of this damage was done during the time before the collapse (the

places on the different fragments where this damage occurs indicate this). Comb 1 also had water damage, but very little, and this may have happened after the collapse, as the fragments were lying in the apparently wet rubble, or during the destruction (the matting cover had fallen just before the plaster came down). This would mean that it was raining during the final destruction.

A few *finds* from B/C5 and surroundings should be mentioned:

A tiny thinly made juglet (see Pl.XXVII,2) from phase M floor B/C5.54 (cf. fig. 5).

-A small hand shaped spoon made of black stone (generally connected with incense) found on floor B/C5.54 (phase M), lying against wall 37 (see Pl. XXVIII).

-A short inscription (reg. nr. D'A 2530; see Pl.XXIX,1 and fig. 8) from B/D5.55 (cf. fig.6; apparently dating from just before phase M). Surprisingly only the sherds with parts of the inscription were found in the deposit. The sherds are part of a small bowl, and inscribed on the burnished lower outside. The writing was done after burnishing, but probably before firing, following the curve of the bowl (it is not an ostrakon). At least some of the strokes are made by scratching with the nib of the stylus two or more times, but not always precisely in the same (first) groove. This feature sometimes makes it impossible to decide about the order of writing of the stroke of each sign.

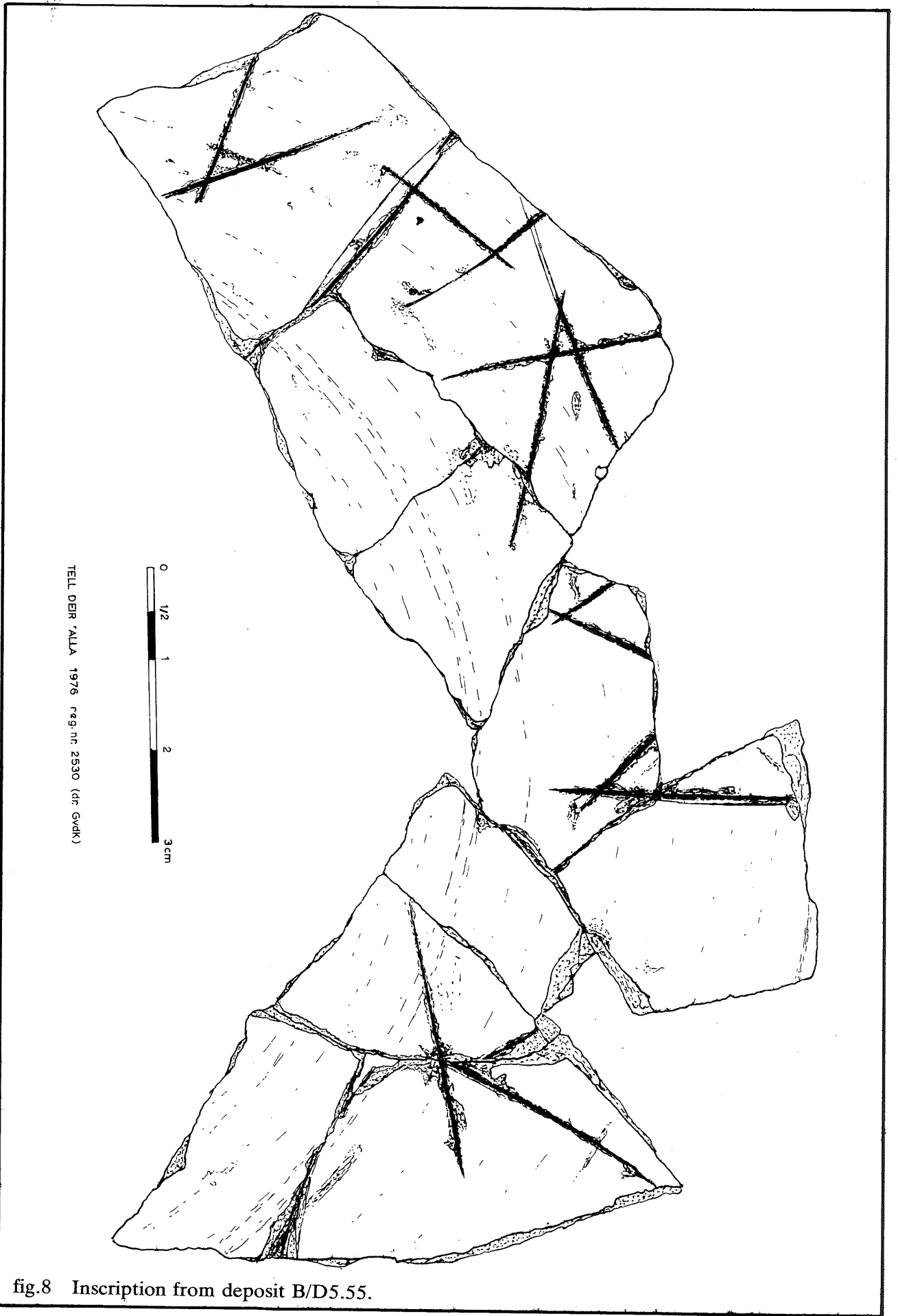
**The signs are:**

*lamed* (the short stroke went too far to the left; to the right some room is left, but no part of a sign)

*šin* (damaged, but no other identification possible; there is some room to the right, but in the lacuna no sign except a word divider would be possible).

*'alef* (note the two thin separate scratches to the left)

*het* (defective, but no other possibility seen. The main groove of the left hand stroke is broken because of a small piece of stone in



TELL DER 'ALLA 1976 reg. nr. 2530 (dr. GvdK)



fig.8 Inscription from deposit B/D5.55.



the clay; a thin continuing scratch besides it stresses it being meant as one line. The right hand vertical stroke is shorter than the left hand one. The composition of the sign on the line suggests two rather than three horizontal lines).

*zayin*, *yod* or *lamed* (the first one is improbable if the script has a close relation with scripts found in 1967, see especially Hoftijzer, Van der Kooij, *op. cit.* 1976, Plts. 20 and 33. The short crossing "groove" is a pock in the surface of the sherd).

For an interpretation of this short inscription see the *note* by Prof. J. Hoftijzer on pp....

-Some bones have been collected (especially from deposit B/D5.52) and two samples of burnt vegetable material have been taken for C14 dating. One from phase "L" (from deposit B/C5.53) and one from phase M from a deposit in the room W of B/C5.34.

#### PHASE I

The excavations of the last two seasons and earlier ones show that the mound including the slopes was used intensively as a cemetery during the Islamic period, apparently contemporary with the settlement of the nearby Tell Abu Gourdan.\* Graves found during the 1976 and 1978 seasons were dug into the upper layers of the tell, but a large number of the skeletons were partly visible on the surface, because of weathering of the site.

Generally the skeletons were lying in east-west direction (head to west) with the face towards south. Some of the bodies had been buried with mud-bricks and / or broken sugar pots around them; also stones were used and in one case a large flat stone was covering the grave. In connection with the skeletons, a few beads, ear-rings and bracelets made of bronze were found.

#### PHASE II

This phase is represented, at least in the area excavated, through a number of pits only. Most of the pits were shallow and of irregular shape, while a few others are of the deep silo-type. In some cases it was not possible to attribute pits either to phase II or the earlier phase III. The very large pit in squares B/A9 and 10 measuring ca. 10m. along the south section, is particularly remarkable. The function of this pit and most of

the others is uncertain. No clear indication was given by the fill which consisted of dumped loose grey soil mixed with stones and small mud-brick fragments. Apart from pottery sherds there are no specific finds to be reported. The possibility can not be ruled out that the pits were made to obtain earth for mud-bricks.

#### PHASE III

There must have been a large building on top of the Tell. Stone foundations of some of its walls have been preserved, partly visible on the surface. Apart from these walls and fallen stones, many other parts of stone foundations were excavated close to the surface (Pl. XXXI, 1). The preserved parts of these walls do not yet show coherent plan. Heavy walls in squares B/A8 and D/A7 had sunk down into the soft layers of phase IV. Connected with one of these walls, a floor with unburnt mud-brick tumble on top of it was preserved. Walls in B/A6-7 and B/B6-7 were also associated with floors. The fragmentary character of this phase is due to the fact that no major occupation took place, and to the disturbances of phase I-II. Present evidence does not give indication about the function of these buildings. Preliminary study of the pottery shows that this phase dates from the fifth to early fourth century B.C.

#### PHASE IV

The fourth phase to be distinguished consists merely of accumulation of what may be called "courtyard layers" (Pl. XXXIII, 1). The height of the accumulation is generally less than 1m., but at a few places it is more. The layers consist of red-brown material and at places alternating with grey soil. The red-brown material is very soft decayed vegetable matter; the grey too has much plant matter in it. An analysis of the material may give a clue to the origin of this thick slowly grown accumulation. The layers were found concentrated on the highest part of the mound, at places appearing just under the surface. Related layers, but much less highly accumulated, were found in the N and W part of the excavated area.

It became clear that the courtyard layers started just before or immediately after the slow destruction of the buildings of the older phase V. Stumps of the old walls were partly bordering the lower accumulation, and much of the grey soil in between the lower part of the layers originated from the erosion of the walls. So far

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\* Franken Kalsback, *Potters of the Medieval village; Franken, A Catalogue of Finds from the Medieval Arabic Tell Abu Gourdan and Cemetery at Deir Alla (to be published).*

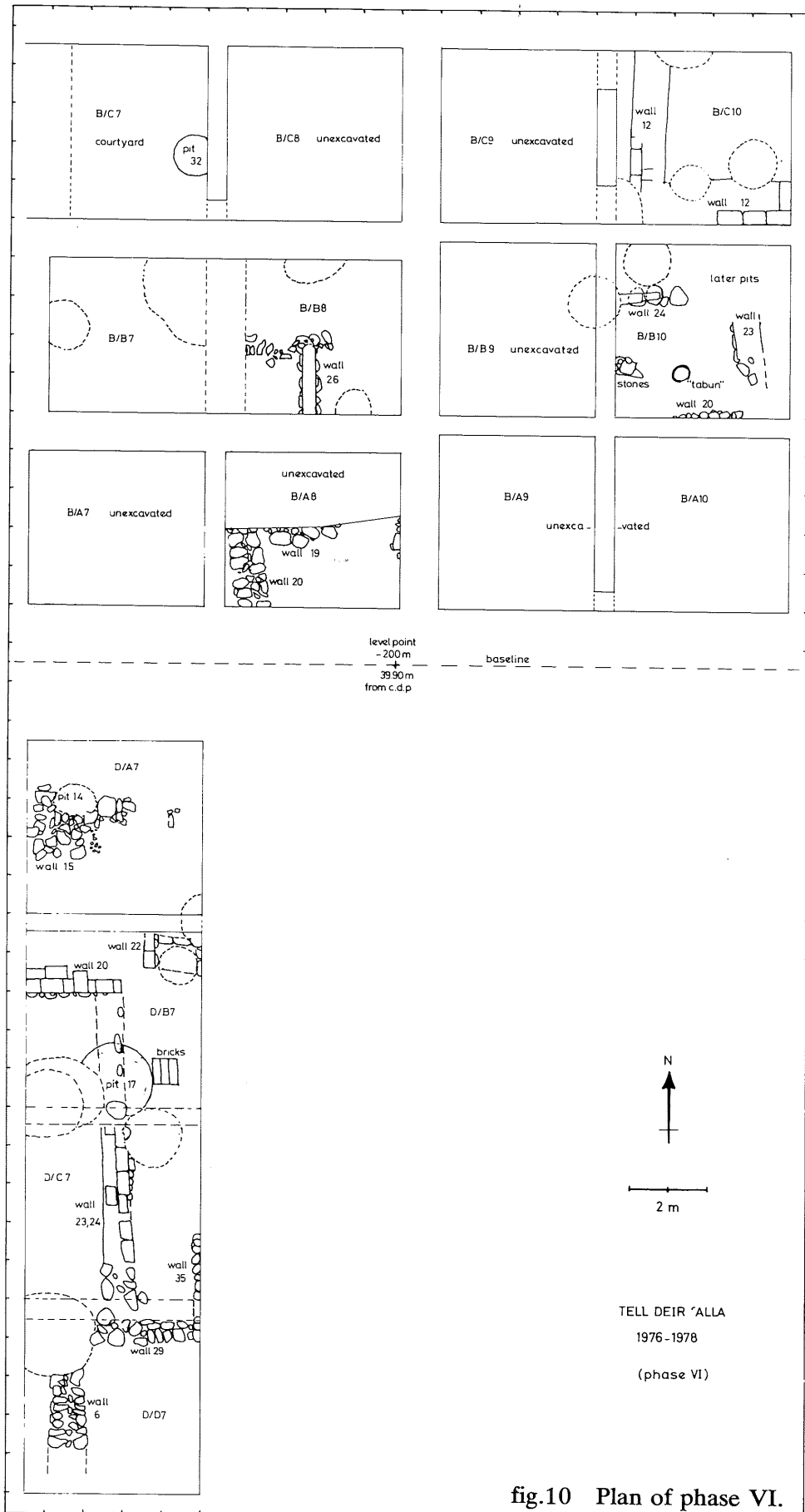


fig.10 Plan of phase VI.



no walls have appeared associated with this phase.

#### PHASE V

Phase V is a building phase (see plan drawing, fig. 9.). However the buildings of it seem to have been concentrated rather on the N part than the S and SE part of the top of the tell. Outside the buildings many clock-shaped silo pits were found. Most of them still had at their bottom a layer of white-pinkish or brown decayed plant matter of sometimes up to 10 cm thick. Samples of it were taken for identification. The walls were mainly built of mud-brick mostly on a foundation of stones, which was sometimes up to four rows high. Square bricks measuring 40x40cm. and half ones (40x20 cm) were used in the walls. Normally the courses consist of two rows of bricks with small and large sizes alternating in position with mortar in between. In some parts of the walls only the stone foundations were preserved, while in some others the bricks were placed on leveled surface only without stone foundation. The average width of the walls is c. 60 cm, but parts of these walls (B/A8.8) measure over 1 m. The large room with thicker walls has a central location and it may have had a special function within this architectural complex.

The western part of the excavated complex had a few tabuns. B/A5.14, B/B6. 23, 21, 27. With B/B6.21 and 27 (Pl.XXXIV,1) the walls of the tabuns were surrounded with an extra layer of clay with large potsherds, partly belonging to one jar which had a seal impression on its handle (Pl.XXX,3).

The parts of the buildings in squares B/C9-10 as indicated on the drawing need some remarks. Wall B/C10.2 and wall B/C 10.10, there was an intrusive row of square bricks of which the Pl. XXXI, 2 function is unclear. The bricks of wall B/C9.6 are drawn schematically. Wall B/C9.9 was built later than the *other wall within square B/C9, but it was taken as belonging to phase V.*

The silo pits indicated on plan fig 9 seem to be located close to each other in the open air, outside the major buildings. The content of these pits, including 4 pits in squares D/A7, D/B7, D/C8 (not shown on the plan), consists of a thick layer of dark brown and whitish decayed vegetable material. This suggests that the pits had been used for storage purposes. Samples of

the vegetable material was taken for analysis. The pits are similar in shape and size measuring over 1m deep and ca.1m in diam. at the top, while they become wider at the middle and bottom. Some of the pits were plastered at the bottom and sides with greenish clay similar to the mud bricks. This storage area had apparently been used by the whole community living in the settlements of phase V since no pits of the silo-type were found within the excavated parts of this phase.

The evidence from the pottery and other artifacts suggests a 6th-5th century dating.

#### PHASE VI

This seems to be a major building phase (see plan fig 10). It was represented in all squares which were excavated to the level of this phase. In some of the squares (B/B5-6, B/A5-7, B/A10, B/C9) only phase V was reached. normally the mudbrick walls were built on foundation of stones. In some areas (D/A7, B/A8), only the foundations were preserved. In square B/C10, the walls reach a height of over 1m.

This phase has a thick tumble of burnt mud. Bricks lying on floors with an ashy occupation layer. Parts of the tumble contained roof material including pieces of wooden beams, some of the floors had a number of objects on which the destruction layer was lying.

Findings of this phase include a few assyrian bottles (Pl.XXXIX,3) storage jars, hole-mouth jars, loomweights, basalt tools. A small weight (Pl.XXXIX,4) found in B/A8 has the number sign for 2-sheqel. A small seal was found in Sq. B/C7. The seal (Pl.XXX,1) shows standing human figures in connection with an animal and a tree. Some of these objects may date from the 7th-8th century B.C.

#### Squares D/I17, D/H17, D/H18

Three 5x5 m squares (I17, H17, H18), were opened at the southeast corner of the foot of the mound. There is a large modern bulldozer cut on the south west side of square H17, which exposed a few mud-brick walls of the early settlement of Tell Deir Alla. One of these walls was standing to a height of ca. 1.50m against which a thick layer of virgin soil had been dumped at the same period as the building of the wall. After clearing part of the area, it

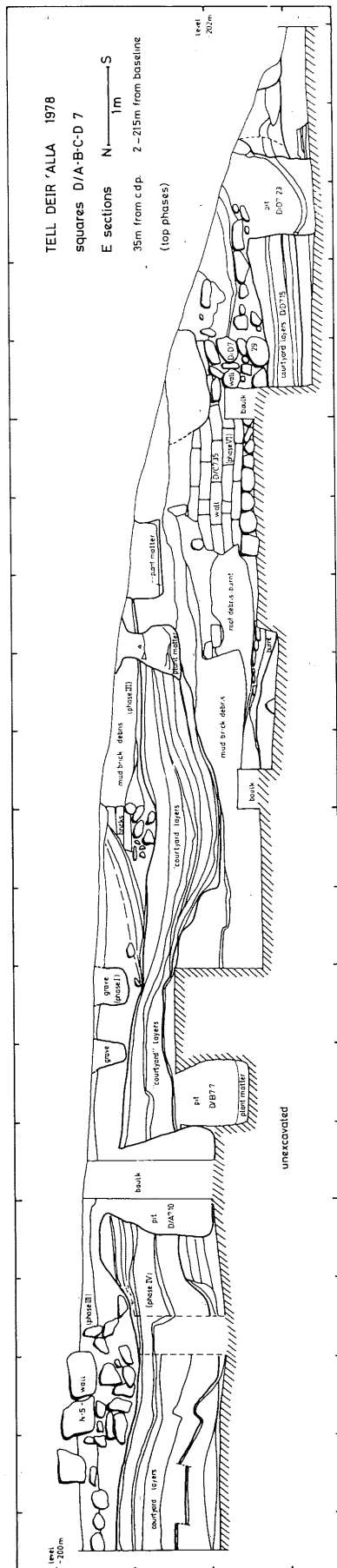


fig.11 Squares D/A-B-C-D7, E sections.

seemed that this wall belonged to a defensive building of the earliest phase which is well represented in the three squares.

The latest deposits to be excavated in this area are a number of Islamic burials of a large grave yard cut through early deposits which started to appear as soon as the thin layer of topsoil was removed.

Four other successive phases including an intermediate phase were differentiated in the area excavated (fig. 13). The upper three phases are well represented in the north section of this square (see fig 13).

The latest (PHASE I) is identified in the north-west corner of sq. HI7 through two walls D/H17. 2, 8, a foundation stone pavement D/H17.16, a series of floors D/H17.15 (Pl.XL,1), and a destruction deposit (Loc.15A). Both walls 2 and 8 were built of one row of large mud-bricks measuring 55x40x11 cm. with a thin layer of mortar between the bricks. Six courses of each wall were preserved. Wall D/H17.2 comes from the north section and meets D/H17.8 at a 90 corner in the SE. The walls were built on a foundation of hard-packed dark brown mud-like soil mixed with lime grits D/H17.17 on top of which a stone pavement D/H17.17. Thin dark grey layers D/H17.15 between the walls, might have served as floors.

The small amount of pottery found in these loci has been provisionally assigned to the MB/LB period. More precise dating awaits further excavation.

#### Intermediate PHASE II:

This phase falls between phase I and III and is represented by a large deep pit D/H17.20 in the west part of the square. The pit was cut into the earlier deposits of phase III and IV.

Its maximum depth in the north west side is 1.20m and ca. 60cm in the south west corner. It was filled with brick fragments, ash layers, lime grits and charcoal. Some of its content seems to be wash fill. This pit is possibly related to a settlement outside this square.

#### PHASE III:

There is a mud-brick wall D/H17.7 and a heavily burnt destruction layer of mud bricks

and charcoal. Both the wall and the destruction layer were cut by the large pit of phases II of wall 7, only one course of bricks was preserved and it consisted of two brick rows. Each brick measures 56x40x10cm. The wall comes from the north section, where it is disturbed by a small modern pit and extends ca.1.80m. towards SW where it was stopped by the large pit. Under wall 7 are two layers of yellowish-red and dark-gray color which were considered as leveling and wash layers. Some of the pottery sherds from these loci may provisionally be dated to the MB/LB period, though further study is still to be made.

Phase IV:

This is the earliest and the major phase excavated in this area (fig. 12, Pl. XL, XLI). It is represented in the three squares excavated by several architectural features of a defensive character. During the two seasons, excavation revealed part of a building which has 1m thick mud-brick walls, some of which were standing up to a height of 2-2.5m. The walls were built in two rows of brick (60x40x10 cm) on a stone foundation. The building consists of almost rectangular rooms producing a symmetrical shape. The floors were reached in all squares.

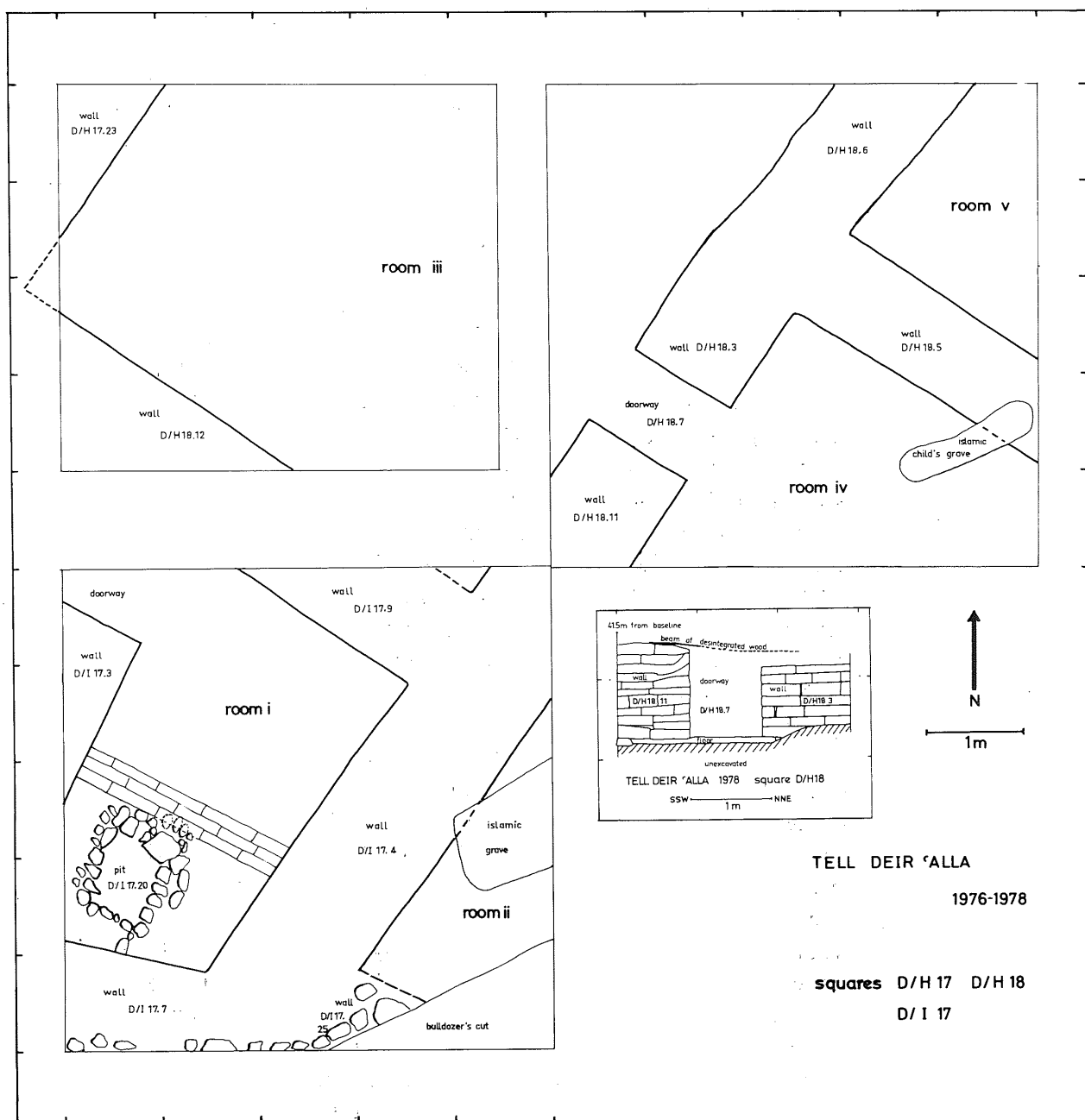


fig.12 Plan of Middle bronze structure (phase IV).

They were made of hard packed dark grey soil mixed with pebbles and small stones. A thin ashy layer mixed with charcoal was covering the floor. Though little pottery was found, most of the sherds and animal bones come from above the floor (Pl. XL11). The small amount of pottery may indicate that these rooms were not of domestic use.

Within the rooms there were thick deposits of a rather homogeneous brick fall which reached in the north and west sides a height of ca. 2.5m. The way the bricks were lying shows that major parts of walls at the edge of the tell to the south and west seem to have suffered from the destruction more than those on the north and west sides.

During the 1976-78 seasons, four rooms of this phase were partially excavated (see top plan). Room I to the south is roughly rectangular; connected with it are walls D/I 17.3, 4, 7, 9, which enclosed a few other deposits to be mentioned briefly.

Wall D/I 17.3 measures ca. 3.5m and it is interrupted at its northern side by a door opening which is ca. 1m high and the width must be ca. 1m, though a small part of it is still in the north balk of sq. I 17. This opening reached the floor. A thin wooden beam, ca. 2m. long, served as a lintel on top of which several brick courses were built. This door-opening is similar to that found in Sq. H 18 (D/H 18.7). The upper loci D/I 17.1, 5, 10, 11 within this room were a mixture of fallen brick (complete and broken) from the walls mentioned above. Among the bricks were thick burnt grey patches mixed with carbonised pieces of wooden beams which probably fell down from the roof when the building was destroyed.

The floor of this room D/I 17.12 was made of hard packed mud and pebbles laid on virgin (?) dark red soil. Between wall D/I 17.3 and wall D/I 17.4. there is a bench which starts in the NW, three rows of mud-bricks rising ca. 15cm above the actual floor level dividing it into two parts. The south part is smaller and includes in the middle a rounded pit lined with stones (pl. XLI, 2). It measures from the inside 70-90 cm; its depth is 1.5 m. Two bronze tools (fig. 14) were found on the floor of the pit\*. The pit was

filled with dark brown loose soil. On top of the floor of the room in the north part a number of MB sherds were found.

Within Sq. D/I 17 a small part of another room II to the east of room I was uncovered. The south east part of it was completely disturbed by the modern bulldozer cut. Wall 4 divides the two rooms. A small part, including one course of mud-bricks on stone foundation, of the south D/I 17.25 in the south west corner was preserved. This wall was built almost on the same line as wall 7 which is most probably the extension of an exterior wall of the settlement. A floor, covered with pieces of wooden beams and other roof destruction material, was uncovered.

Room III seems to be a very large rectangular one; it is ca. 5.5m wide and over 6m of its length along walls D/H 18.3, 11, was excavated. Walls D/H 17.12, 23, and walls D/H 18, 11, 3, 6 are connected with this room. Wall D/H 17 was partly cut from the top by the pit D/H 17.20 and was preserved to a height of ca. 1.5m, while walls D/H 18.11, 3, were preserved to a height of 1.25m. This room was accessible from room IV through a door way D/H 18.7 (pl. XLI:1) between wall D/H 18.11 and wall D/H 18.3. The height of the door way is ca. 1.15m, while the width is ca. 90cm. There was a wooden beam covering the whole of the top of it, extending ca. 50 cm beyond both edges, as that of the doorway in room I. Two courses of bricks were still preserved on top of the wooden beam, which was broken and sloping down from west to east and from south to north. This and the way upper bricks were lying indicated a kind of shifting in both walls D/H 18.11, 3. The doorway was filled with brick material mixed with a few fragmentary lines of plaster but no real bricks could be identified. 1.75m along the north section of Sq. H 17 and the part of the room within Sq. H 18 were excavated to the floor level. There was no clear evidence that this room had been roofed. Only a thin layer (5-30cm) of relatively soft dirt was identified above the occupation layer covering all parts of the floor excavated; this layer becomes thicker along the walls. The small amount of pottery from this area (Pl. XLII) mostly found on top of the floor together with

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\* Observation made by Helga Weippert, concerning the parallels to these bronze tools or weapons, as they were found at Megiddo and Byblos within MB II context, are much appreciated.

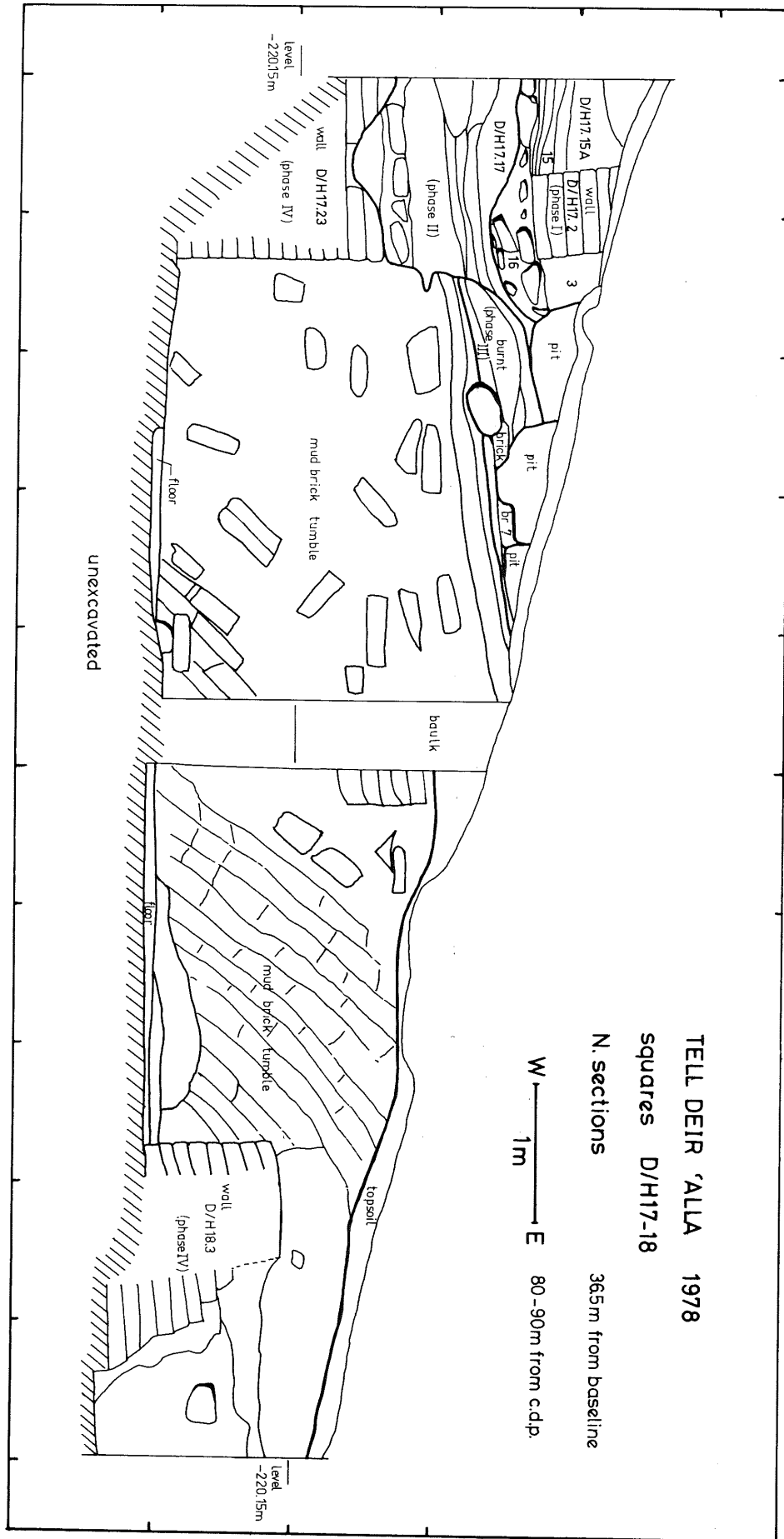


fig.13 Squares B/H17-18, N sections.

ashy patches and pieces of charcoal. The fill inside the room consisted of brick fall over 2m. high, mainly from the east walls as is clearly shown, especially in the north section (see fig.13).

This large room seems to have served as an open courtyard among the rooms close to the fortification, probably of the earliest settlement of the site.

Rooms IV and V are located to the east of room III within Sq. H18, they are divided by wall D/H18.5 which links up with walls D/H18.3,6. Wall D/H18.5 is interrupted by a burial of a child from the Islamic period. Other walls belonging to these rooms may lie beyond the present excavation area. Access between room III and IV is gained through a doorway D/H18.7 (see above). The south eastern corner of the square was partially disturbed by the large bulldozer cut, mentioned above, which slopes down steeply towards the east. The fill deposit up to the top of the walls belonging to this room differs from those of the other rooms discussed above. It consists of dumped virgin soil mixed with a few fallen bricks. Apparently this occurred when the east walls collapsed together with the supporting dump. The floors of rooms IV and V, as so far excavated are very similar to those of room I and II. On the top of the floor of room IV typical sherds of MB - II period, including incised examples of black highly burnished pottery and a flat-based hand-made tray with low walls, were found.

The floor in room V seems to be ca.35cm lower than that in room III. Wall D/H18.6 connected with this room becomes thicker (over 1.50m), at the bottom. A flat wooden beam was found against this wall extending from the north section until it reaches wall 5. The situation in this part could not be further clarified during this last season.

Objects with script found in 1978\*

1. Scaraboid seal (see Pl-XXX:2) found on the surface at the top of the tell (reg, nr. 2550). The old aramaic script suggests as date the 8th c. B.C. In between the two lines of writing there is a row of two birds

\* Prof.J.Hoftijzer, University of Leiden, is in charge of the publication of this text material. The aim is to publish all the inscribed objects from this season together.

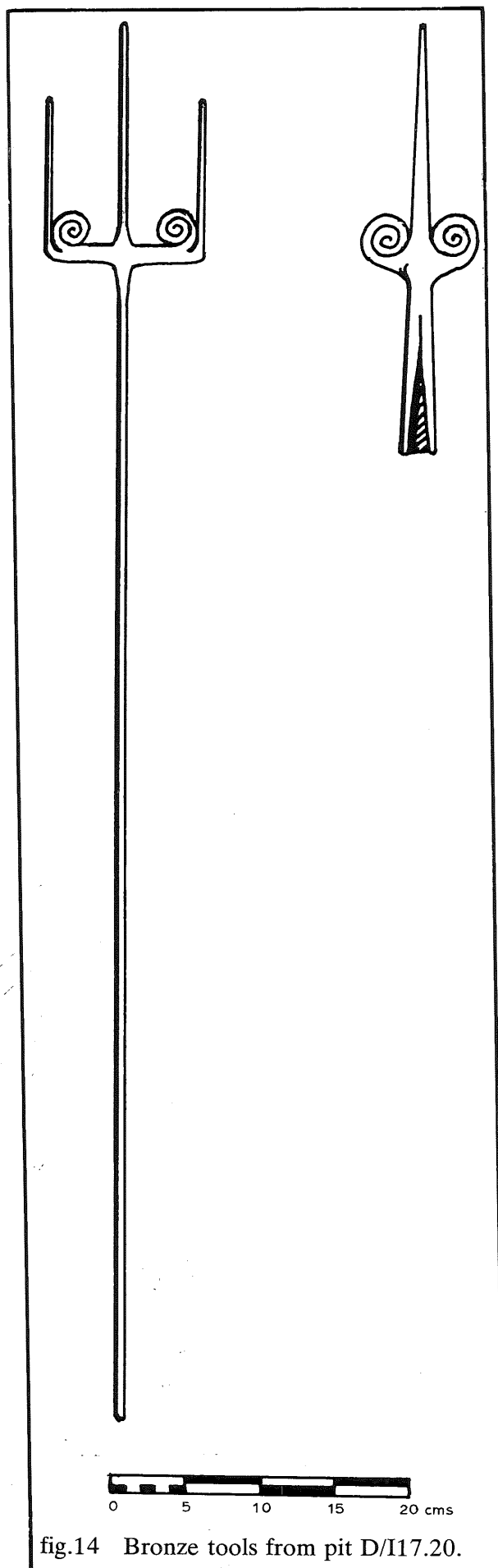


fig.14 Bronze tools from pit D/I17.20.

- and a not yet satisfactorily identified figure.
2. Two sherds of a thick walled jar fitting together (reg. nr. 2555) with four letters in old aramaic script. The sherds come from B/B9.5 (end of phase V, beginning of IV).
  3. A lamp with 8 lightly incised signs at the outside of the rim (parts missing) from B/B6.8 (Phase III), reg.nr.2598. The script is still obscure.
  4. A jar sherd with probably six signs, written in the soft clay, from B/C7.20 /Phase VI), reg.nr. 2599. The script is still obscure.
  4. A jar sherd with probably six signs, written in the soft clay, from B/C 7.20 (Phase VI), reg. 2599. The script is still obscure.
  5. A complete ostrakon (see Pl.XXIX,2), reg.nr. 2600, consisting of four sherds which were found at some distance from one another in B/B5.9 (probably lower part of phase IV). Parts of the six lines in aramaic script written in ink, are still very clear. The writing suggests a date in the 5th. c. B.C.
  6. A part of an ostrakon (jar sherd) coming from B/A8.9 (Phase III, or end of IV) with two lines of small writing in ink. The script, of which only a few letters are well preserved, appears to be the same as that used on ostrakon 2600.

**NOTE ON A NEWLY FOUND TEXT  
FRAGMENT ON A BOWL FROM  
DEIR 'ALLA**

by J. Hoftijzer

The bowl in question and the script of the text are described by G. van der Kooij on p.... It is highly probable that a part of the text is lost.

This conclusion is based on the following considerations. On the part of the bowl preserved for us, one can discern five consonantal signs. The signs 1-4 can be read with certainty ; they are *l š' h*. The fifth sign offers more difficulties: it can be either *y* or *z* (or eventually a *l*). Between the first and the second consonantal sign there is quite a distance and it seems excluded that once there stood any sign, except perhaps a word divider. This distance suggests that the *l* is the last sign of one word and that the *š'* is the first sign of the next one, to which also the signs 3-5 belong. Unfortunately it cannot be said with any certainty whether the fifth sign was the last one of the second word. Self evidently only a tentative interpretation is possible for these few signs.

The text is found in a layer which is narrowly related to the one in which the Deir 'Alla plaster texts are found, be it that it must be dated

somewhat earlier. This fact makes it probable that it will be written in the same type of language as the plaster texts, although one cannot be absolutely certain. If indeed the text is written in some type of Aramaic it is highly improbable that the *š'* represents the well known "relative pronoun" *šē'*<sup>1</sup>. Therefore it seems probable that the signs 2-5 (partly) represent either a nominal form or a name (a verbal form seems out of the question). Because I cannot find a reasonable interpretation of them as (part of a) nominal form, I suggest that we have to do here with a name, probably a personal name. In that case the *š'*- can be the theophoric element discussed in length in recent years<sup>2</sup>. Unfortunately the difficulties with the fifth sign make a further interpretation still more uncertain. In my opinion there are two possible interpretations. If we interpret the last sign as *y*, one could have to do here with a form of the root *hyy* (e.g. *hay-living*)<sup>3</sup>. If we interpret the last sign as *z*, we probably have to do with a form of the root *hzy*, the more so because we also find an Akkadian parallel<sup>4</sup>.

Of the word of which the first sign was the end, nothing can be said with certainty. One can only exclude the possibility that the sign standing before the *l* had a shaft right to left<sup>5</sup>. I do not dare to decide whether one has to do here with the end of a nominal or verbal form. One could make the suggestion that once there stood here a form of the root *p<sup>l</sup>*, but all this must remain conjectural<sup>6</sup>.

The suggestions made here are based on the probability that we have to do here with an Aramaic text. If this would not be true after all, the *š* could be the "relative pronoun" and the eventual *y* could be a *mater lectionis*. (In that case I would suggest for signs the 3-5 an interpretation as first element of a personal name).

For the time being the best interpretation seems to be either...*l* Shi' - *ḥāzā* or Shi' - *ḥay*.

Leiden May 1977

#### Notes

1. Originally one presupposed that there were two instances of *šē* in Aramaic texts, namely *KAI* 225:1, 226:1 (both texts from Nerab), see e.g. *DISO sub voce š.*; but St. Kaufman (Si'gabbar, priest of Sahr in Nerab, *JAOS* xc (1970), pp. 270-1 has convincingly shown this to be untrue; see also J. Teixidor, *Bulletin d'epigraphie semitique* 1971, *Syria* xlvii (1971), pp. 453-485 on p.461, and J.C.L. Gibson, *Textbook of Syrian Semitic inscriptions*, Volume 2, *Aramaic inscriptions including inscriptions in the dialect of Zinjirli*, Oxford, 1975, pp. 96,97f.

2. See the article of Kaufman quoted in the preceding note. See also e.g. K. Deller, *Neusyrisches aus Sultantepe*, *Or.* xxxiv (1965), pp. 457-477 on pp. 474f.; F.M. Fales, *West semitic names from the Governor' palace*, *Annali della facolta di lingue e letteratura straniera di ca' foscari* (Serie orientale 5) XIII, 3 (1974) pp. 179-188 on p. 186. E. Lipinski, *Studies in Aramaic inscriptions and onomastics* (*Orientalia Lovaniensia Analecta* 1), Leuven, 1975, pp. 63f. (But see also the remarks of R. Zadock in

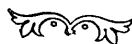
his review, *BiOr* xxxiii (1976), pp. 227-231 on p. 227). I wish to thank my colleague M. Stol who on this and other points helped with references to literature on Akkadian subjects.

3. One could also think of the possibility that one had to do here with a name like Shi' - aḥi, but names of this type are extremely rare to say the least, see on this point also J.J.Stamm, *Die akkadische Namengebung* (=Mitteilungen der vorderasiatisch-egyptischen Gesellschaft 44), Leipzig, 1939, p.301, n.1. One could also think of a name of an Akkadian type, consisting of a) theophoric element - b) nominal element: 'aḥ - c) verbal element. In that case the *y* has to be the first sign of the third element, because in the Aramaic texts from Deir 'Alla *mater lectionis* do not occur within the word, see the author's remarks in J. Hoftijzer and G. van der Kooij, *Aramaic Texts from Deir 'Alla* (-*Documenta et Monumenta Orientis Antiqui* 19), Leiden, 1976, pp.284f. if we have to do with a name of Akkadian origin the *y* as first consonant of the third element would offer difficulties. If we have to do with the theophoric element Shi' - and an element from the root *ḥyy*, this last element also could be a verbal form.

4. See the name *Si-e-ḥa-za-a* (probably 7th century B.C.) in K.L.Tallqvist, *Assyrian personal names* (*Acta societatis scientiarum fennicae*, Tom.xliii, n°1), Helsingfors, 1914,p.194.

5. So a *k,m,n,p* and *t* are excluded and it is impossible to read a word like *spl*, meaning *bowl*, which is attested for Aramaic and Hebrew (and also for other semitic languages).

6. If this text is written in Aramaic, it seems less probable that we would have to do with a verbal form of this root, cf. the author, *op. cit.*, p.192, n.19. However, one cannot be absolutely certain, because especially in Deir 'Alla there are quite a lot of instances which show either grammatical or lexicographical features uncommon for Aramaic languages. On this point see the author, *op. cit.*, pp.288f., n.14 and elsewhere





# Excavations at Petra 1975 — 1977

by  
Philip C. Hammond

The American Expedition to Petra, in cooperation with the Department of Antiquities of Jordan, has completed three further seasons of excavations at that site since its initial preliminary report (*Annual. The Department of Antiquities*, XX, 1975),<sup>1</sup> in 1975, 1976, and 1977. The project continues to be a field school in Middle East archaeology, under the academic sponsorship of Department of Anthropology, the Middle East Center, and the Division of Continuing Education of the University of Utah. The excavation seasons covered by this second preliminary report took place from 18 July through 4 September 1975, 16 June through 23 August 1976, and 17 June through 15 August 1977.<sup>2</sup>

The 1976 season was sponsored by the generous patronage of His Majesty King Hussein, the Triad Foundation (Mr. Adnan Khashoggi, donor), Mssrs. Tawfiq and Nabiah Nazzal, the University of Utah and Dr. Philip C. Hammond.

Senior staff was composed of Dr. Philip C. Hammond, Professor of Anthropology of the University of Utah (Director); Francesca L. Xaiz (Recorder); J.L. Brydson and K. Russell (Area Supervisors); S. Cuddy (Camp Manager); and R. Sorensen (Surveyor); student participants were A. Lichty, W. Glanzman, B. Verhaaren, M. Usfuja, J. Coleville (all of the University of Utah), N. Armstrong (Smith/Stanford), M. Hebert (University of Rhode Island), and N. McBroom (Graceland College). Department of Antiquities Representatives were Mssrs. Baseem Rihani and Abdusemih Abudiah.

The 1977 season was sponsored by the Triad Foundation (Mr. Adnan Khashoggi, donor) the

University of Utah and Dr. Philip C. Hammond.

Senior staff included Dr. P. C. Hammond (Director), F.L. Xaiz (Recorder), M. Najjab (Camp Manager), K.J. Hammond (Surveyor), K. Russell, A. Lichty, B. Verhaaren, and R. Sorensen (Area Supervisors), T. La Pine, F. Lisi, L. Malvitz, V. Smith, G. Stringer, and J. Williamson. Mssrs. Hifzi Haddad and Zaidun Muhasin were Department of Antiquities Representatives.

The Expedition's thanks are also especially due the late Mr. Yaqub Oweis, former Director-General of Antiquities, His Excellency Mr. Ghalib Barakat, Minister of Tourism and Antiquities, Dr. Adnan Hadidi, Director-General of Antiquities, National Citibank of Amman, Mssrs. Nasri and Elias Mukhar, Dr. S. Parker chairman Department of Anthropology (U. of U.), and Dr. Khosrow Mostofi, Director, Middle East centre, (U. of U.).

## Excavation:

Excavations have continued during the past three seasons in the Areas selected as a result of the sub-surface survey and originally opened in 1974. PI: XL11 1,2

In 1975 excavation in Area I concentrated upon further clarification of the Nabataean structure on the West side and upon the features which had begun to emerge at higher levels on the East side of Site I.2. The extent and nature of the Byzantine hydraulic system which disrupted the South side and Southwest end of the Nabataean house court was determined and the floor surface of the court fully exposed. On the East side of I.2 excavation of the Byzantine structural features was begun.

In 1976 Site I.2 was not continued because of

1. This preliminary report included the seasons of 1973, during which an electronic remote sensing survey was made on the site, and 1974, the first season of excavations.

2. The 1975 season was sponsored by the University of Utah, the Triad Foundation (Mr. Adnan Khashoggi, donor), Mr. Adnan Khashoggi, and Dr. P. C. Hammond.

Senior staff included Dr. P.C. Hammond (Director), F.L.

Xaiz (Recorder), B. Bowman (Camp Manager/Drafting Chief), K. J. Hammond (Surveyor), J. Brydson and K. Russell (Area Supervisors). Participating were K. and G. van Lehrbergh-Voet, G. Hoagland, P. Bowman, P. Wyllie, M. Connelley, and T. Parker. Department of Antiquities Representatives were Mssrs. Nabil Qubain and Ibrahim Ismaadi.

the hazard posed by the Byzantine walls overlying the lower Nabataean structures at the lower levels. As a consequence, excavation was renewed in I.5, initially opened in 1974, but suspended at that time in order to carry I.2 into the Nabataean levels.

In 1977, I.5 was continued to the North, and I.2 was again re-opened, after approval was secured for the removal of certain of the more hazardous later walls in the area. Excavation was carried to bed-rock in parts of both site sectors, thus permitting completion of the entire stratigraphic sequence for this area and the chronology of occupation from the Nabataean period through the Early Islamic period. Pl. XLV,6

This Area (200 m<sup>2</sup>) has produced a total of 859 interrelated Stratigraphic Units since excavation began in 1974.

### Details and Cultural Remains

Throughout all seasons of excavation this Area has produced specifically **domestic** cultural remains and structures, except for the necropolis period following occupational use. Pl XLIV.

Since the Area represents successive occupational use from (at least) the Nabataean period onward, the ceramic sequences recovered there will prove to be of exceptional importance for ordering the Byzantine period of this sector of Coele-Syria **and** for observation of Nabataean "influence" (actually **continuation**) into the "Byzantine" (Late Roman) period and possibly beyond.

Although this material will be considered elsewhere in publication, the range of the "domestic" cultural remains may be noted here.

**1975:** Grinding and rubbing equipment (R.I. 33, 144, 145, 196, 213, 209); spindle whorls (R.I. 198, 201); molded lamps (R.I. 36, 181, 184, 190); needles, pins, and miscellaneous small tool fragments (R.I. 24, 83, 84, 171); bone inlay fragments (R.I. 194); iron and copper/bronze architectural fixtures (R.I. 39, 80, 81, 93), including iron nails and copper plastering tacks (R.I. 59, 64, 88, 92, 73, 75, 79); a house type miniature incense burner (R.I. 30); a stone weight (R.I. 191); beads (R.I. 35, 49); gaming pieces (R.I. 37,

28); a large number of coins, generally illegible because of the effects of slope wash, but some identifiable as Nabataean and Roman mints; along with considerable pottery of distinctly domestic function--i.e. cups, plates, jugs, juglets, storage jars, and cooking pots, in sherd and complete/semi-complete forms, ranging from the Nabataean **through** the Late Roman periods (e.g. R.I. 183, 186, 164, 185, 188, 199, 214, 187, 207), including domestic and imported wares--e.g. stamped Rhodian jar handles (R.I. 146, 147, 148), and Late Roman "A" wares. Pl XLVI 2,3 XLV11,2.

During this season the East side of I.2 produced a Byzantine paved court, in association with the wall lines and rooms of the "Later House" complex. Included there was a deep storage sub-floor room filled with sterile drift/wash sand, extending below the wall lines of both that later building and the adjacent Nabataean wall lines beneath it.

Clarification was also possible, because of the occurrence of further burials on the East side, of stratigraphic questions raised concerning related burials found in 1974. Interrment was found to have been consistently made in "L" shaped graves (thus **undercutting** lower s.u.'s, as well as cutting **into** them).

**1976:** As noted above, Site I.2 was not reopened this season because of the Byzantine period architectural remains overlying the Nabataean complex discovered in 1974 and the generally hazardous situation produced by walls of the same period on the East side of I.2 as a result of excavation of that sector in 1975.

As a consequence, excavation was renewed in the adjacent sector of the Area (I.5), connecting it in depth with the stratigraphy of I.2 to the South.

Some 27 Byzantine Period burials were recovered in the course of excavation of the (upper) necropolis strata of the the site, none of which contributed burial goods of any significance. However, the manner of burial in almost every case (i.e. in an "L"- shaped dug grave) furnished conclusive evidence of standardization of interment and confirmed previous conclusions that this area served as a formal cemetery, rather than simply as a convenient, casual, burial area. This information further supports the previously offered view that a Byzantine

Period religious complex (church or chapel) probably is indicated close to the cemetery - a matter to be investigated in future excavations.

Below the necropolis strata the Byzantine Period architectural remains already recovered in Site I.2 were again encountered, providing a rather broad picture of the living complex constructed during that period in this area of Petra. Connections with wall complexes of Site I.2 were made and greatly expanded the size of the recovered complex, as well as significantly adding to information concerning daily life in the phases represented. Excavation was stopped for a short period at this site in order to use personnel for survey purposes below the temple complex of Site II. Upon resumption of work, connection was made, in one restricted part of the area (I.5.S), with the Nabataean house complex recovered in 1975. Significantly, a collection of Nabataean vessels was recovered in that sector, suggesting the importance, noted above, of removing the Byzantine wall systems overlaying the Nabataean remains of Site I in general!

Because of the domestic nature of the structures of this area, ceramic and other remains still reflected common wares, every-day vessel types and domestic-use artifacts. Noteworthy, in this respect, was the recovery of a small collection of Late Roman A ware vessels (along with the probable storage closet remains in which they had been kept). The presence of this ware suggests a relatively high level of living standards still being maintained at Petra, as do other sherds apparently also imported from outside of Petra during this period. Certain objects were also recovered which suggest a considerable carry-over of indigenous (i.e. Nabataean) cultic life, rather than any considerable rise in Christianization of the inhabitants. Pl.XLVIII, 1,3. The continued presence of the "eye-idol" type votive block, incense burners of earlier design, and the recovered "horned altar" all tend to support this view.

Among the recovered items of interest should be noted: the ostraca (R.I. 64, 65), the bronze cooking pot (R.I. 234), grinders, whetstones, whorls, and stone vessel fragments, cosmetic

items (R.I. 208, 20, 195, 169), cultic objects (R.I. 24,25,26,244,194), a hoard of cups, unguentaria and plates (R.I. 216-21, 222-24, 226-227), lamps and lamp fragments, ornamental bells, beads, tool fragments, one coin of Trajan commemorating his assistance in augmenting the food supply of Italy (R.I. 247), along with a hoard of coins (R.I. 329-414), generally from the reign of Constantius II which assist in the chronology involved. Pl.XLV,5 XLVI, 1,4,5 XLVII,1 LVI,5

**1977:** During this season bed-rock was reached in two sections (I.5 S, I.2), completing the stratigraphic sequence of the Area. The chronology of occupation has, therefore, been established from Nabataean (1st century A.D.) through E. Islamic (mid-8th century A.D.), with time markers especially at A.D. 355 and A.D. 747-48.

The Area produced totally domestic artifacts and architecture as in previous seasons. Among the former were: playing pieces (R.I. 2, 80), grinding stones (R.I. 6, 31, 104), tool fragments (R.I. 12, 17), spindle whorls (R.I. 14, 34, 159), beads (R.I. 16, 19, 119, 120, 121, 156, 157), plastering tacks, nails, and spikes (R.I. 26,29, 30, 79, 81, 132, 137, 143, 144), door sockets (R.I. 32, 138), lamps (R.I. 108, 109), juglets (R.I. 8, 201), coins (R.I. 4, 13, 14, 18, 19, 38, 41, 42, 44, 52, 54, 60, 61), cups and bowls (R.I. 93, 92), unguentaria (R.I. 95, 96), a figurine fragment (R.I. 111), and an associated group of bowls, jugs and cooking pots (R.I. 97, 100, 102; 94, 103, 140, 147). Recovered from the Hellenistic fill of a later building phase also came four Rhodian wine jar handles bearing stamps (R.I. 126, 127, 128, 129), in association with black glazed vase fragments. (Pl.XLIX,2-3). Architectural additions (floors, walls, foundation trenches, etc.) were also recovered for the plan of the successive occupations of this Area, along with additional data concerning building techniques, decoration, and every-day use.

### Phasing

Although analysis has not been completed<sup>3</sup>, preliminary field phasing<sup>4</sup>, strongly suggests some 20 phases, with correlations to the ear-

<sup>3</sup> Forthcoming as a Ph. D. dissertation, K. Russell, University of Utah.

<sup>4</sup> Dr. P. C. Hammond/K. Russell, 1978.

thquake chronology established at the Main Theater in 1961-1962 and the adjacent temple site (Areas II-III) during the course of the present excavations. Ceramic and numismatic markers within this framework currently tend to strengthen the chronological conclusions offered below.

Phase II: Burial phase. Reuse of Area I as cemetery.

Phase III: Disuse Phase Possible use of Area as dump (?)

Phase IV: Disuse and Silting Phase.

Phase V: Occupation Phase (Transient).

Phase VI: Destruction Phase

Destruction of "Later House" structure.

Phase VII: Remodelling Phase- "Later House."

Phase VIII: Building Phase- "Later House." Filling, levelling and construction.

Phase IX: Occupation Phase.

Shift of occupation to SE sector of 1.2.

Phase X: Destruction Phase (ca.A.D. 355)

Collapse of Phase XI structure; associated with coin hoard, Late Roman "A" hoard and evidence of violent destruction (earthquake).

Phase XI: Remodelling Phase- "Middle House."

Phase XII: Building Phase- "Middle House."

Rebuilding, with destruction of parts of Phase XIII structure.

Phase XIII: Occupation Phase.

Shift of Area use towards W part of 1.5.

Phase XIV: Disuse and Silting Phase.

Phase XV: Destruction Phase.

Collapse of "Earliest House." Pl.XLV,4

Phase XVI: Rebuilding Phase- "Earliest House."

Phase XVII: Building Phase- "Earliest House." Pl.XLIV XLV, 1-4.

Phase XVIII: Disuse Phase.

Phase XIX: Occupation Phase.

Scant Hellenistic wares present; clay floor, pits and hearth.

Phase XX: Non-Occupation Phase.

Natural deposition of sand on bed-rock surface; no evidence of use.

#### AREA II/III

##### Excavation

The 1975 season completed the partially

excavated portion of Site II.3 and carried II.5 to the covering level of the first destruction phase. It was thus possible to secure a preliminary plan of the total structure at the conclusion of the season, as well as to secure the complete vertical stratigraphy of the temple interior. The additional 27 S.U.'s identified during this season also permitted clarification of the main building/remodelling phases which had appeared probable at the end of 1974, as well as additional internal phases absent elsewhere.

In 1976 work was completed in II.5 and the final sector of the temple interior (II.2). In order to examine the exterior wall of the structure at its highest remaining point, II.2 was carried to the West, beyond the SW wall line. Likewise, in order to examine the main entrance of the structure, portions III.8 and III.9 (designated III.SAS N and S) were opened. In addition, plane and topographic survey was carried out from the temple entrance area downward to and over the **Wadi** bed to the Paved Street in order to investigate the probability of an ascending monumental entry leading up to the temple complex. Archaeologically, therefore, the interior of the temple complex was completed during this season. The appearance, in the western portion of II.2, of a narrow room parallel to the "exterior" wall of the temple disclosed a far more complex architecture than had been previously apparent, as did the appearance of an arched sub-structure supporting that SW parallel room. Likewise, the apparent **absence** of any entry stairway on the exterior of the temple's main entry raised an entirely new set of architectural problems to be investigated.

The concentration of effort expended in the temple area during this season permitted the identification of 189 S.U.'s in the sectors excavated.

During the 1977 season the problems concerning the SW sector of the temple complex, as well as those associated with the design of the entire entry area, were given especial attention, with the opening of portions of II.1 and III.7 in the SW sector, along with III.8 and III.9 along the front wall of the temple. At the same time, the probable presence of structures adjacent to the rear of the temple--and possibly of cultic or administrative function--dictated the opening

of II.8 and 9 North of the rear wall of the complex. The southern sectors clarified the SW architectural features adjacent to the West wall of the temple, as well as disclosing the entry substructure as a whole. In the North, an entirely new complex of buildings was disclosed in close architectural connection with the rear wall of the temple complex, *per se*, which must be considered as an integral part of that structure.

A total of 258 S.U.'s were defined in the 1977 season in the 392 m<sup>2</sup> of area excavated. This brings the total of interrelated S.U.'s in Area II to 575, with about 688 m<sup>2</sup> now excavated or in progress.

### Details and Cultural Remains

In contrast to Area I, the focus of Area II/III is obviously the temple complex, rather than the succession of phases subsequent to its building, use, and destruction. Further, no "occupational" sequences are substantively involved above the temple phases, as is the case in Area I. Hence major discussion of both details of excavation results and of cultural remains recovered will be concentrated upon the temple complex itself.

However, it is necessary to note certain details and certain cultural remains recovered in order to clarify architectural, decorative, and cross-cultural aspects emerging from the materials involved, as well as to support certain conclusions drawn from the cumulative data subsequent to the earlier preliminary report.

**1975:** With the exception of sherds, four molded lamps (R.I. 48, 184, 189, 197), a pendant (R.I. 149), a copper earring (R.I. 203), two beads (R.I. 21, 23), a bone tool fragment (R.I. 16), a stone pounder (R.I. 27) and a quantity of coins (mostly illegible), all from post-use phases, the majority of significant cultural remains recovered from Area II/III were, understandably, architectural, decorative, and, broadly, "cultic" objects from the build or use phases of the temple itself.

Among the latter were plaster affixes, floral (R.I. 7, 8, 9, II, 18, 205) and human heads (R.I. 3, 12, 85), including "tragic mask" types; fragments of felines from the altar pedestal capitals (R.I. 4, 5, 6, 208); fragments of plaster

sculpture (R.I. 1, 2); one fresco fragment showing a "putti" figure (R.I. 14); a great quantity of iron and copper plastering nails and tacks (R.I. 52-58, 60-71, 74, 76, 77, 87-91, 153, 157, 158, 160, 162, 174-180, 200, 202); and fixtures, generally in the form of lead strips (possibly curtain hangers?) (R.I. 38, 40-46, 86, 152, 155, 159, 161, 172, 223). Cultic objects or paraphernalia included a molded goddess figurine (R.I. 17), a fragment of copper (lamp?) chain (R.I. 210), tweezers (R.I. 211), a fragment of an Egyptian (locus-Athribis in the Nile Delta) funerary statue, probably placed in the temple because of the Osiris figurine still intact in front of the main figure (R.I. 13); a bell (R.I. 82); and an "eye-idol" block, unfortunately missing the upper register of its inscription, naming "the goddess" to whom it was dedicated by a named votary on the lower line of its inscription (R.I. 217).

In addition, an enormous quantity of plaster fragments were recovered, which further assist in reconstructing fresco moldings, architectural moldings and colours employed in decoration, along with certain "technological" materials showing how plastering, in particular, was done, the design of floor tiling, and ceiling techniques.

The 1975 season also provided more detail of the plan of the structure and of certain of its parts, clarifying certain questions still open at the end of the initial season.

**1976:** Archaeologically the interior of the temple complex was completed this season and future attention must be given to its entrance, side complexes, and the (probably related) structures directly to the North.

This season's excavations also provided answers to a number of architectural detail questions and raised a number of others to be resolved by future excavation. Most interesting, architecturally, was the discovery of vaulting below the SW side room adjacent to the West wall of the temple-- similar to that below the so-called "Hall of Justice" (Urn Tomb) on the West side of Jebel Kubtha. When this feature is related to the revetting on the East end of the temple, chronological implications are now apparent for cross-dating the Palace Tomb group on architectural grounds.

In the SW side room were also discovered a

row of stacked ashlar blocks, each bearing Nabataean letter (s) on their faces--probably indicating "work-in-progress" unfinished.

Likewise, the entrance to the temple is now seen to be relatively complex, with probable vaulting in that area as well.

The significance of the temple excavations in this season must also be appreciated from the point of view of new cultural contributions. In 1975, the Nabataean connection with the Arabian Peninsula and with Egypt was made through the recovery of inscribed artifacts related to those areas. In 1976 a further international connection was made via the fresco decorations (Site II.2.) In this case the connection is with the West, since the motifs of the fresco fragments recovered are "classical," in the sense of Graeco-Roman art forms and reflect the same approach as did the single "putti" figure shown on a fragment from 1975. However, the extremes of such motifs would appear to have been unacceptable locally, either originally or during subsequent remodeling of the building, and were pecked over and replastered. This may be the result of local artistic pride--or reflect a growing anti-Roman sensibility on the part of the population. In any case, the fact of the replastering of these particular motifs is culturally significant in the history of Petra.

The attribution of this temple to Atargatis (sic!) was further strengthened in 1976 by the recovery of a ring seal showing the nude goddess riding a dolphin (R.I. 99). This symbolism ties in with the dolphin motifs recovered on plaster niche moldings, the feline decorations of upper capital elements, and the votive block inscription of 1975 ("... the goddess of...").

In addition to the seal noted above, this season produced the usual collection of valuable (architecturally) fixtures in iron and copper, lead hangers, plaster moldings, shaped blocks and other architectural elements as did previous seasons. Better preserved plaster fragments, both painted and plain, were also recovered, along with a few fragments of more legible fresco panels. In addition, roof beam fragments, heavier copper fasteners (R.I. 137, 151, 210), floral and human affixes, two new types of votive blocks (R.I. 27, 152), fragments of a female

figurine (R.I. 93), a votive (?) warrior bust (R.I. 2), ornamental bells, a bronze lion affix (R.I. 87), more fragments of feline capital decorations (R.I. 1, 4, 52, 85, 163, 164), all added to the growing picture of the structure and its decoration. A great deal of detail on architectural technique was also secured (e.g. the applied column decoration- R.I. 240). Aside from the inscribed building blocks noted above, no inscriptional materials were recovered during the 1976 season, however.

**1977:** Site III represents the entrance area of the "Temple of the Winged Lions," the interior of which was completed in 1976, and is part of the probable monumental approach to the Temple from the *wadi* bed, some 125 m. in length, on ascending terraces.

Extreme architectural complexity, in terms of the entrance area to the Temple, was revealed in the Area: a forward platform carried on E-W arches, forward rooms pierced by doorways at each side, N-S arching, descending (once veneered) wall at least one marble stairway (on the W side) leading up along the walls of the complex from lower terrace levels. The presence of monumental (ca. 1.34 m. in diameter) columns in front of the main exterior wall was also demonstrated this season. Evidence was also secured of (ancient) clearing of internal debris resulting from the Temple's destruction, massive filling, and rebuilding of the frontal complex. Stratigraphic connections maintained throughout the four years of excavation will permit the chronological reconstruction of the complex up to the time of its final destruction in A.D. 747-48.

Although most of the artifacts recovered in this Area represent destruction debris from the Temple fall, they, along with sherds and architectural stone fragments recovered, assist further in the reconstruction of both interior and exterior aspects of the Temple complex. Most particularly of note among these were molded plaster affix fragments, mainly human heads (R.I. 23, 112, 113, 114, 152, 153, 154, 155, 184, 186, 187, 188, 189, 190), plastering tacks and nails (R.I. 25, 27, 142, 149, 150, 151, 166, 202, 203), and bits of statuary (esp. R.I. 163--a more than life-size toe in marble). One pavement slab fragment showed two Nabataean

letters (R.I. 181) and one fragment of dark red-painted wall plaster bore a Greek graffito (Pl.XLIX,1).

Of major importance in the above regard--and extremely valuable from the standpoint of local craftsmanship and technology--was the recovery of a painter's workshop on the floor of the vaulted SW side room adjoining the W wall of the Temple complex. That side structure had been found in 1976, but was not completely excavated. On its floor, near an entrance to the outer platform of the Temple complex, a hoard of pottery emerged, consisting of bowls (R.I. 36, 41, 42, 44, 48, 49, 50, 52, 54, 55, 59, 60, 61, 62, 63, 64, 65, 90), cups (R.I.37, 38, 39, 40, 43, 45, 46, 47, 51, 53, 56, 57, 58, 170), reused cooking pots (R.I. 68, 70, 71, 88), jugs (R.I. 66, 67), jars (R.I. 89, 91), small pots (R.I. 75, 76, 83, 84, 85, 86), a strainer-bottomed pot (R.I. 87), and funnels (R.I. 72, 73, 74). These were all completely crushed by destruction fall above them, but were *in situ* and were temporarily restored in the field for drawing and photography.(Pls.LIII,2-4, LIV,1-4, LV,1-4).

Even more rewarding than the fact of associated ceramic forms, however, was the fact that they contained the mixed paint-plaster pigments being used to refurbish the Temple decoration. Along with them was also a supply of raw, unworked pigment materials(e.g. balls of azurite and raw fibrous gypsum) along with a supply of 19 raw tile blanks in the (local) brown marble used extensively elsewhere in the Temple. Samples of each of the pigments and paint-plaster remains were taken for analysis.

Also recovered in the forward area were similar domestic artifacts and sherds belonging to the post-use period of the Temple--figurine fragments (R.I. 11, 198, 199), a lamp (R.I. 204), buttons/ornaments (R.I. 177, 178), coins (R.I. C8, 16, 22, 28, 39, 59, 62), and a pendant (R.I. 15), among others.

Two cast bronze handles (R.I. 205), also found in the forward area, may well have belonged to original door, main or otherwise, of the Temple, itself.

Site II.8 was newly opened this season against the North West wall of the Temple, in part to the foundation course of the Temple wall. The main feature uncovered was the

westward extension of a wall complex (most clearly defined in II.9 East), forming an adjunct building to the North of the Temple.

Aside from the destruction debris, the recovered materials from this site were generally (as in the frontal area of the Temple and in Site I) post-cultic occupational debris, resulting from casual ("domestic") use of the area after the destruction of the 4th century A.D. onward. Since the Temple fall line was toward the South-East, as previously demonstrated, little of its debris filled the area, but the adjunct building to the North contributed considerable stone debris which impeded excavation.

Recovered artifacts from this include: playing pieces (R.I. 1, 3), grinding stones (R.I. 5, 106,167, 175), a spindle whorl (R. I. 122), plastering nails (R.I. 131, 135), a weight (R.I. 161), a lamp (R.I. 180), a bead (R.I. 183), and coins (R.I. c9, 10, 11, 12, 30, 46, 47, 48, 50).

Site II.9 also represents a second one newly opened in 1977, adjacent to II.8 to the East, directly North of the Temple. On the extreme eastern side (II.9 East) the slope of the hill permitted excavation to reach the foundation level of the Temple complex--and the floor level of the adjunct building to the North. A series of complex cross-walls were explored, terminating at the North end in a corner with a podium set against one face. Flag floors and sub-floor drains were uncovered which further add to the picture of the architecture of this structure.

Once again, the majority of recovered materials were sherds, and domestic objects stemming from the post-Temple periods, along with fall debris from the actual use-period of the structure. Most obvious of the latter category were the number of plastering tacks/nails recovered (R.I. 24,28, 130, 133, 136, 148, 174, 176), along with wall plaster debris. In the former category was a bead (R.I. 9), pendants (R.I. 15, 23, 197), a grinding stone (R.I. 162), weights (R.I. 107, 146), lamps (R.I. 164, 165), a juglet (R.I. 200), and number of coins (R.I. 1, 2, 3, 5, 7, 20, 21, 26, 27, 29, 31, 33, 34, 35, 36, 40, 43, 45, 49, 51, 53, 55, 56, 57, 58).

Most important, aside from the architectural materials, however, was the recovery of a slightly larger than life-size statue head (R.I. 169). The break lines on the torso would indi-

cate that it probably fell *in situ* as a result of earthquake destruction and was not simply part of a fill. As a consequence, it is anticipated that the remainder of the lower torso may be below the destruction debris which broke off the upper part and may therefore be recovered in subsequent excavation. The break line at the neck precludes a decision at this time as to whether the statue represented a human (King?) or a deity. Should it be the latter, a cultic nature would also be established for the newly discovered northern complex--possibly in a *syn-naoi* relationship with the main Temple complex.

#### **Phasing**

At the conclusion of the 1974 season a tentative phasing of the temple area was put forward.<sup>5</sup> In 1975 additions to the internal definition of that preliminary phasing were possible, along with final definition of the suspected building/remodelling stages then represented by Phase XV A/B. Subsequent to that season, no further modifications have come to light. The tentative chronological framework (especially concerning the use and destruction phases of the complex) originally suggested, with accommodations to the 1975 results, has likewise been strengthened by subsequent excavations. Additional S.U. equivalences have similarly strengthened earlier conclusions concerning phase function, generally by the addition of further cultural remains or by expanding the view of individual phases.

The succeeding seasons have, however, substantially advanced understanding and definition of architectural features of plan and markedly clarified certain of the architectural and decorative details involved. Likewise, recovery of certain cultural remains of a "cultic" nature have added to general understanding of the role of the temple, even if not the details of cultic practice, *per se*.

The following summary therefore represents the presently held phasing of the temple area, with additional data beyond that previously noted.

#### *Phase I: Modern Surface.*

No change noted from preliminary report.

#### *Phase II: Disuse Phase.*

The continued presence of architectural and

ceramic materials in this Phase--particularly as II. 5, II.3, and II.2 contributed to the makeup of it--reaffirms the effects of wash and erosion action seen also in Phase I, as noted in the preliminary report.

#### *Phase III: Occupational Phase.*

Additional S.U.'s in this Phase did nothing to change its original complexion from one of casual use, as previously noted. Sites II.5 and II.3, in particular, added to the quantity of ceramic materials previously encountered in II. 6--i.e. of the ribbed and plain store jar and cooking pot classes of the "Byzantine" period, with wares of light red-orange, light red, fine hard red, light orange, and black slipped orange-tan. Generally speaking, tan slips were preferred, along with a high occurrence of black slips. Other fire-pits emerged on the surface of this Phase, especially in II. 5, confirming its casual use as seen in II.6, previously.

Also recovered in this Phase were wooden beam fragments (again especially in II.5,) which showed obvious effects of fire, relevant both by that fact and position to the probable partial destruction postulated in Phase XVII below.

#### *Phase IV: Localized Dumping phase.*

No new evidence was recovered relating to any further clarification of this rather ephemeral "use" Phase and its previous description remains unaltered, since no additional S.U.'s could be associated with it.

#### *Phase V: Occupational Use (Transient) Phase.*

This Phase is the "cover" of the lower destruction debris, along with the phase below it, but its surface continued (especially in II.5) to indicate transient occupational use only (i.e. fire pits), without other significant indications.

The same (relative) decrease in the orange-red wares of higher phases was again evident, as were a few examples of black-slipped rim edges and continuation of the occurrence of the "wavy" combing patterns previously seen. The presence of "green" wares is to be noted in the additional extent of this Phase and for Phase VII immediately below the intervening destruction debris, which also shares the same characteristic ware. This relationship thus considerably narrows the total chronological difference between the two phases as well.

<sup>5</sup> ADA, XX, 1975, pp. 6ff.



As a result of re-analysis of the partial stratigraphy of Site II.5, with the resumption of its excavation in 1975, the burial assigned to Phase VIII in the initial preliminary report, has been determined to have had its entrance in this Phase. Raising this burial to this Phase removes the possible explanation for the battered condition of the face of the skeleton, however, and possible frontal head blows may have to be postulated as the cause of death, rather than considering that defacement was the result of later fall damage as previously suggested. Since this Phase dates, ceramically, from the Byzantine period, location of this burial here presents no stratigraphic problem.

No change is necessary, also, in terms of the "industrial" nature of this Phase, as previously suggested.

*Phase VI: Disuse/Silting Phase* ( S.U. makeup of Phase IV and V above)

No change is necessitated here from previous description.

*Phase VII: Destruction Phase.*

No change in either description or chronological set has been necessitated for this Phase. Additional S.U.'s from this Phase in II.5, II.3, and II.2 are composed of the same architectural debris as previously encountered and only add data for the reconstruction of the original building of the complex noted below.

*Phase VIII: Occupational Use Phase* (Transient).

With the exception of the removal of the burial previously assigned to this Phase (now to Phase V), no major change in ceramic materials was encountered.

However, the recovery of additional lamps (e.g. AEP 1975, R.I. 197), similar to that found in II. 5 in 1974, help to depress the use of this phase closer to phase X below (*cf* Horsefield's lamps of similar types and decorations, *cf* by him to Broneer Type XXVIII and dated to the 3rd/4th centuries A.D.; *cf* also the Beit Faijar lamps, 5, 10, 11, and 12, dated to first third of the 4th century A.D.). This would *increase* the duration of the use of this Phase, when compared with the suggested date of Phase, VII above. At the same time, the presence of "green" wares in this Phase, along with "wavy"

combing and other ceramic indicators, also suggests a relationship with Phase V above. This would suggest proximity in time, difficult to maintain stratigraphically and on the basis of the external markers (i.e. the datable earthquakes). Hence, it must be concluded that, although the datable lamps appear to establish ties of this Phase, chronologically, with the destruction date of Phase X, the other apparent ceramic links with Phase V above may indicate continuing technologies and decoration into later periods or, equally probable, indicate the intrusion of wares and decorations attributable to Phase VIII into the makeup of Phase V above.

*Phase IX: Disuse and Silting Phase.*

Additional S.U.'s in this Phase contributed no further changes to its previous description.

*Phase X: Destruction Phase.*

Again, the tremendous quantity of architectural debris of all kinds found in correlative S.U.'s during the succeeding seasons did nothing to modify previous characterization of the Phase nor its probable chronological set.

*Phase XI: Disuse and Silting Phase.*

This "floor" of the destruction of Phase X above produced larger cumulative quantities of ceramic materials with the extension of area, but no startling changes in their previous composition. However, more decorative treatments were able to be observed with the increase in quantity of sherds. Among these should be noted some incidence of "wavy" combing and some occurrences of "black drip" exterior painting, along with grey slipped wares, previously not encountered. These techniques further strengthen the chronological position suggested for Phase X.

The character of the surface of this Phase remained as previously described, further supporting the conclusion stated there that this Phase was, indeed, deposited *prior to* the destruction represented by Phase X above, but *after* a partial destruction (Phase XVII), during a period in which the structure was unroofed.

Hence, the materials recovered in the makeup of this Phase (Phase XII) and on its surface (Phase XI, *s.s.*) represent a combination of deposits (i.e. those imbedded after the fall of Phase X, or during it, and "belonging" to it, as

well as those representing the occasional dislodgement of elements during the build-up of phase makeup, along with wash debris).

That the temple complex was *not* totally destroyed previous to the fall of Phase X, as was also concluded in the earlier preliminary report, was further illustrated by the recovery of the Nabataean votive block (of the "eye-idol" type) noted above lying on the surface of this Phase (hence belonging to Phase X above). Had a previous destruction (other than that suggested for Phase XVII below) taken place this block would have been previously dislodged from its place in one of the North wall niches and would have rested at a lower level in the stratigraphy. Likewise, had partial destruction of the temple meant its desecration, prior removal of the block is also probable.

*Phase XII: Disuse Phase-Building Open.*

This phase must be postulated in order to account for the makeup of Phase XI above, as was previously suggested.

*Phase XIII: Casual Use Phase.*

In 1974, the single S.U. of this Phase then excavated (II. 6(34)) suggested that its non-fall related contents were too scant to consider as anything but a disuse period and it was combined with the S.U. below (II. 6(35)) into one such phase.

As a result of the 1975 season, however, further excavation modified that view and still subsequent excavation in later seasons confirmed the fact that the over-all phase had at least some casual surface use, on the basis of much greater non-fall related debris not able to be seen as simply wash material. At the same time, the other contents of the phase must be placed in the two latter categories and a dormant, silting, phase postulated to account for such materials.

Ceramic materials assignable to this Phase, include generally common crude thick and thin wares, plain and ribbed, from store-jars and cooking pots, especially. Wares were generally red, with tan, yellow and black slips. Late black painted Nabataean sherds also found here were probably intrusive wash debris, in the light of other evidences of date. Fragments of glass, bone, and shell also point to casual use of the surface, as do certain of the registered items.

Among the latter, the ones attributable to this Phase, *per se*, include the coin of Rabbel II and Gamilat, of the first five year mintage of that King, noted earlier; a coin probably of Elagabalus (A.D. 218-222), which may be close to the actual date of this Phase (1975 R.I. 94); two molded lamps (1975 R.I. 218, 168), the former of tan ware with a light tan slip, an unpierced knob handle, with raised lines around the nozzle and filler hole, decorated with vestigial volutes on the nozzle, slash decoration on the body and a six-pointed star on each side (*cf* Horsfield 239, *cf* to Broneer Type XXVIII, 3rd-4th century A.D.), the latter was of red ware with a light tan slip, a slightly elongated nozzle, raised lines around nozzle and filler hole, decorated with vestigial volutes with a center-line between on the nozzle and slash decoration on the body--both probably in the range suggested by Horsfield. The two lamps would place the probable use of the surface of this Phase in the early part of the fourth century A.D., quite reasonable in terms of the sequence above it and below it.

Not attributable to the period of this Phase were a number of architectural fragments, including registered items, which must be considered to have fallen during the silting and disuse period which built up the constituent S.U.'s of the Phase (see Phase XIV below).

As further evidence of the lesser destruction postulated in Phase XVII below, this Phase produced a quantity of ceiling plaster, recognized in the 1975 season and thereafter, along with geometric floor tiles from the "platform" floor whose surface was cleared in the 1975 season. The ceiling plaster fragments showed the impression of wood/bundles of reeds used as spanning elements. Some of these were cord wrapped in the fashion described by Vitruvius (*De Architectura*, VII, iii, 2) for the construction of curved ceilings. Paucity of spanning timber in any great abundance may well have been met at Petra by the adoption of this device even for flat plane ceilings.

*Phase XIV: Disuse and Silting Phase* (the contents of phase XIII above) As was noted above, the results of the 1975 season caused a change in the interpretation of the S.U. surface

and content, in comparison to the results of the 1974 season. Hence, this Phase was postulated to account for the non-“occupational,” non-fall debris recovered.

In any event, the comparative lack of weathering of architectural debris recovered in this Phase constituent S.U. build-up suggests a relatively rapid deposition of silt and no weathering period to be accounted for, even though the building was standing open to the elements.

*Phase XV: Casual Use Phase.*

Isolation of constituent S.U.'s into a separate phase here resulted from the discovery of five marks on the surface of II.3(104) in the 1975 season, although silt mixed with ash had characterized the make-up of II.6 (35) in 1974. Even with that surface evidence, however, the “use” of this Phase surface must have been extremely slight.

The material content of the Phase must reflect that use, but it also is the result of wash intrusion with silting, along with continued fall from the upper structural elements of the unroofed building. The latter are easily identified and will be discussed later, but differentiation, in terms of ceramic materials especially, of non-architectural material cannot actually be done in regard to “occupational” versus “wash” debris.

In any event, the ceramic remains recovered from the Phase as a whole were relatively scant, but included an increase of fine thin wares, common thin wares, and some light thicker common wares, both plain and ribbed. Red wares were predominant, with some light tan wares. Slips included red, tan, light tan and black. Some fine thin Nabataean wares in both red and black paint were recovered, probably indicating a date close to the transition in style.

Some bone fragments, including one worked specimen, glass, and shell were also recovered here, and probably belong to the “occupational” use of the Phase surface, as do some of the registered items.

*Phase XVI: Disuse and Silting Phase* (the contents of Phase XV above). This phase is just subsequent to the probably partial destruction of the structure (Phase XVII below), and thus represents the first silting in of the interior. The contents of Phase XV above, not assignable to

wash, as part of that silting, or to “occupational” use, therefore belong to this Phase, *per se*, and probably are mainly, if not all, architectural element fall resulting from the loss of the roof.

*Phase XVII: Partial Destruction Phase.*

Other than a change of number, necessitated by the insertion of the additional phases identified above, no new materials recovered modify the previous conclusions reached concerning its chronological set.

*Phase XVIII: Remodelling Phase.*

As a result of subsequent excavation, the tentative identification of a “remodelling” phase, following the original building and use of the temple complex, made in the first preliminary report was verified.

No change of plan or of internal parts is to be seen during this stage, but decorative changes were made. Some of these, at least, seem dictated by some sort of political reaction—possibly the increased pressure of Rome—rather than from actual necessity or even cultic austerity.

Most obvious was pecking of the surface of “classically” (i.e. Graeco-Roman) decorated niche fresco panels for replastering and repainting in solid, non-iconographic, colors. It was only in the 1976 season, when the area of II.2 was excavated and larger fragments of niche panels were recovered, that this specific remodelling step became clear.

Fragments of column plastering showing an originally fluted finish with subsequent overplastering to achieve a smooth surface (then painted) also began to be recovered to suggest more general “remodelling” than just that of the panels noted above. The painter’s workshop of the 1977 season may thus date to this “remodelling” stage, along with the lettered blocks found in 1976 along the W wall of the SW room. The partial destruction postulated for Phase XVII may have interrupted this work, accounting for the hoard of work materials found stored in the SW room, or that material may simply be continuing “maintenace” supplies dating closer to the time of Phase XIX below. No significant data were recovered subsequent to the completion of the 1974 season to

modify the tentative date of this "remodelling" as suggested earlier, however.

*Phase XIX: Main Building Phase.*

Likewise, the conclusions of the first preliminary report in regard to the possible dating of this phase to the reign of Aretas IV have not met with any conflicting data recovered in the subsequent seasons. The arguments put forward at that time appear to continue to be acceptable.

What *has* undergone subsequent modification, however, are the *details* of this Phase in regard to a more complete plan and more definitive identification of architectural parts, function, and form.

**Plan**

Fortuitously, as was noted in 1974, the layout of the excavation grids coincided with lines (and limits) of the structure, so that the East and West walls, with their exterior, followed the N-S excavation limits of II.3, II.6 and II.5, while those of II.5 and II.6 similarly coincided with the North wall of the structure, while II.3 and II.2 covered the southern wall line and immediate frontal exterior. Since the structure is symmetrical and square this exposure permitted a reconstruction in 1974 of almost all of the building plan, with the exception of the forward part of the central interior build which was obscured by a baulk, subsequently removed in 1975. Moreover, by staggering the depth of excavation possible during the 1974 season a complete vertical view of the stratigraphy of the area had been able to be secured. At the same time, certain questions remained to be stated and specific emphasis was made upon them during the excavation of the remaining parts of the structure in 1975, 1976 and 1977 in order to resolve them.

Additions to the plan were therefore made, as well as revision of certain tentative views held concerning plan, architectural techniques, and decoration in the initial preliminary report.

The original dimensions (17.42x17.42 m.) given for the temple apply to the *cella*, with the entry portico extending about 9.58 m. beyond the front wall.

Traces of double wall lines, running N-S, descend the slope of the hill on which the temple

rests for another 85m. A cross wall, within the inner set of descending wall lines, appears about 35 m. down the slope, with a narrower cross wall (?) about 2.2m. from the front wall of the entry portico.

Thus far, one side room, with its own exterior wall, has been found on the W side of the main structure. This is carried by arches, with a sub-basement room was blocked, in antiquity, from the N, against one of the supporting arches, and has not yet been excavated. A parallel room and sub-basement appear probable on the (as yet unexcavated) E side of the main structure also.

The floor of the entry portico appears to have been carried by arches running parallel to the E-W line. Two doorways (the one on the W having been subsequently blocked) open into the forward wall of the portico area.

One (only) fallen column, some 1.35 m. in diameter, with relatively short drums (to assist in reducing weight for handling?) lies near the main entry of the temple, on the W side, and suggests that the portico contained another on the E side (of which nothing can be detected), flanking the main entry.

No stairway from portico floor to the threshold of the main entry to the temple has been found, suggesting that it may have been originally carried by arches, ascending toward the entry door, as is the case at the "Hall of Justice" tomb on the West face of Gebel el-Kubtha.

Initial traces of a marble faced and treaded stairway were found in 1977, rising parallel to the exterior wall of the SW side room. This may have given access to both the top of the slope and the presumed main entry cross stairway.

Traces of columns along both of the wall line pairs leading up the slope from the *wadi* suggest that these walls were double colonnades, not full fence walls.

Behind the main temple structure in the N, a new complex was found in 1977, with integral connection with the temple proper. On the E side, where fall and other debris is sloped lower, a series of small rooms connected with the rear wall of the temple. The presences of bolt holes in the temple side of one of these rooms confirms the connection. The area E of these rooms was paved, probably forming a corridor, if the

side colonnade walls actually continue all the way up the slope. A sub-floor drainage system kept this area dry, as well. Continued excavation of this northern area is expected to define both extent and nature of the new complex.

The relation of the "monumental" colonnades to what appears to be a bridge springing across the *wadi* is as yet unclear. The latter would seem to be disaxial to a central N-S line through the main entry of the temple on top of the slope, but this may simply suggest a narrow pedestrian bridge, on the East side of the colonnade line, by which the *wadi* was crossed to reach the colonnade itself. A stairway leading up to the badly disturbed top of the presumed springing platform gives credence to the function suggested for it.

### **Walls.**

The coursing of the main walls of the *cella* stand as originally described, but the inset-outset noted in the earlier preliminary report refers only to the NE and NW corners of the building.(Pl.LII,2.). The exterior face of the *cella* walls continued to be extremely well coursed and finished as it was further exposed. On the W side, however, definite evidence of plastering was found—probably since that "exterior" face actually formed one of the side (interior) walls of the SW room.(Pl.LII,3.)

The basic building technique continued to be that originally described, with the front face of the *cella* showing variation in build below the probable level of visibility (i.e. behind the suggested stairway arrangement) and with *crustae* holes appearing all along the (visible) face.

### **Internal Plan.**

The identification of the interior wall niches, each flanked by semi-engaged column, made in 1975, was further clarified as the I. 5 and, especially, I.2 sectors were excavated.(Pl. LI,2). On the W side the walls had been preserved to a greater height and the niches were more visible.

As a result of the improved state of preservation found in the I.2 sector, the interior decoration of the niches was clarified. Each had a border molding around a flat panel, all done in applied plaster. The SW niche in the S wall showed faint traces of a bordered (painted) male (?) bust executed in a smaller panel within

the larger fresco panel face. Fragments apparently belonging to the SW niche of the W wall showed a scene or scenes of male and female figures in classical (ritualistic?) poses, comparable to some Pompeian examples.

The probable role of the niches, aside from architectural decoration, as loci for votive materials is also now more apparent, with the recovery of the fragment of the Egyptian funerary statuette and the virtually complete Nabataean block—both of which must have come from a position on a niche ledge in the vicinity of their find spots. In addition, the fresco fragments found in 1975 (e.g. the *putti* fragment), along with the decorative motifs (e.g. dolphins) of the niche frames, also point to a *cultic*, as well as architecturally decorative, role of these recesses.

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Below the SW corner niche on the W wall was a bench-like installation (asymmetrical to the E side!) whose purpose is unclear and which may have been a later addition, perhaps during the "remodelling" phase.

The internal column treatment described in the earlier report was unchanged after subsequent excavation had cleared the entire *cella*.

### **Altar Pedestal**

In 1974, a "platform" had been partially uncovered in the *cella*, which clearly emerged as an altar platform /pedestal after excavation of the interior was completed.(Pl.LI,3). This platform was set off by columns engaged to the height of the platform and free-standing above its floor. These columns are line-positioned between the free-standing columns of the *cella* on the E and W sides, but not on the exact setting lines of the engaged semi-columns of the wall niches. This was apparently necessitated by the platform plan, *per se*, and resulted in some visual distortion.

Intercolumnation distances varied along the East and West sides of the platform to accommodate the columnar placing, i.e. North to South—1.23 m., 1.16 m., 1.18m. Columnar setting along the North and South ends of the platform was further interrupted by the entries to the sub-floor crypt and stairways on those

sides and again resulted in dislocation of position in regard to the semi-columns of the niches, although with less of a visual distortion apparent. Intercolumnation distances on the North and South end were, from East to West—1.40 m., 2.08 m. and 1.40m.

The ashlar faces of the platform, when completely cleared, showed typical diagonal dressing and were undoubtedly plastered and probably veneered with *crustae* as were the main interior walls of the building. The columns of the platform all also showed diagonal dressing for keying plaster.

A local brown marble was used for the base rings of the platform columns and were about 25% narrower than the white marble base rings used elsewhere in the structure.

Because of destruction (in Phase X) of the floor of the platform at the North end, the presence of a sub-floor “crypt” was first recognized there and excavated in 1975. (Pl.LI, 4). Considerable stratigraphic confusion was introduced to the interior because of the floor destruction and consequent siltings (Phases XVI-XI), but that affects only artifacts and not structure.

The open crypt at the North end of the platform originally contained three flat shelf-like slabs, set one above the other, each measuring ca. 80 cm. x 38 cm. These were supported by slabs, set on their narrow edges, with the highest one (destroyed by fall debris) inset slightly from the other two. The side walls of this feature were of relatively well-laid blocks, some diagonally dressed (indicating plastering?), but poorly bonded at the joints. At the “entrance,” there appears to be an inset cut for a door on each side. II.5 (115) marks the floor of the crypt, with an under-floor build consisting of S.U. (116), of rough flagging, with (117) and (118) serving as under-fill. These must correlate with II.3 (106) + (107) + (108) + (109) and II.6 (37) + (38) + (102), which are all the floor and sub-floor build of the main structure. No door or other closure was found in *situ*, but six shaped slabs, found in II.6 (35) and II.5 (112) may possibly represent the remains of the original crypt closure (?). Four (in II.5 (112)) of the fragments make up a thin slab with a circular hole off-set near the edge, the other two (in II.6 (35)) consist of part of a similar slab, with a

counter-sunk hole and a heavier slab with a long “tang” or “post” extending from one edge. The latter slab also has a rectangular recess cut into its wider portion. The dimensions of the “tang” or “post” (ca. 12 cm. x 12 cm.) conceivably could have fitted into the circular openings in the one or both of the two flat slabs (ca. 12 cm./15 cm. diameters), but no certainty of relationship can be established at this time. The “entry” opening was about 1.12 m. between the upright inset cuts, but the tanged slab measures only about 69 cm. wide and a second slab would have been necessary to span the opening, although no other similarly shaped stone was recovered.

At the southeastern end of the platform a stairway emerged in 1975 and another, on the southeastern side, in 1976. Although badly damaged, the stairways each consist of three steps, with plastered treads and backs, leading from the main floor level to that of the platform, occupying the entire intercolumnar distance between the side and front columns at that point. Since this feature is lacking on the North end of the platform, access to its floor level must have been from the South side only. On the southern side, a marble floor slab was found, next to the lowest riser of the stairway on that side, which had a semi-circular groove and a post hole, indicating a gate across the stairway. Traces of iron stain probably indicate an iron gate or one with an iron rod or pin as a pivot.

The destruction to the platform floor and crypt disclosed the internal build of the structure to be similar to the main walls--i.e. external (finished) ashlar blocks encasing cement-laid rubble.

The find spots of certain of the “winged lion” capitals or fragments thereof--i.e. adjacent to or between platform columns--strongly suggest that **only** the platform columns bore such capitals. The total number of such fragments recovered would seem to be confirmation of this use of the motifs. (Pls. LVIII, 1-2; LIX.)

As was noted above, the disturbance within the crypt interior, caused by the earthquake destruction and fall of Phase X, renders suspect the actual provenance, stratigraphically, of artifacts found within the silt deposits (II.5 (112), (113), (114) and even possibly those of

(108). Since the silts could not have been laid down prior to the destruction of the platform floor, they belong to Phases XVI-XI and their contents should be so assigned. However, it is also possible that certain of the recovered artifacts can be assigned to the crypt interior, on the basis of type or intrinsic date. Among the latter, it is suggested that fragments of a copper tweezer (1975 R.I. 211) and possibly a short length of chain (1975 R.I. 210), possibly from a lamp hanger (both identified by the Recorder, F. Xaiz, after cleaning) many belong to the crypt as part of ritual paraphernalia. A handle and a flat hook (1975 R.I. 216) formed of an iron core overlaid with copper, may likewise be seen as *in situ* (II.5 (114)) and may have functioned as the latch to crypt closure. A minute fragment of gold leaf (1975 R.I. 212), two illegible, but probably Nabataean coins (1975 R.I. 220, 221) and two coins attributable to Aretas IV (unusual series) (1975 R.I. 222, 224) can similarly be seen as probably *in situ* by nature and date. A number of brown spotted cowrie shells found, pierced for hanging or stringing, could also be considered as *in situ*, and presumably served as chimes. Other materials, largely consisting of architectural plaster and stone, along with a few bone fragments, and Nabataean black painted sherds, are seen as intrusive, i.e. belonging to the silting phases in the post-destruction period between the two earthquakes.

In view of the clarification of the over-all building use during the 1975 season, the purpose of the platform likewise was clarified. There can be no doubt that this structure represents the same "altar pedestal" feature as that found in the temple at Et-Tannur (N. Glueck, *Deities and Dolphins*, 1965: Pl. 101 a-b, p. 225; Pl. 110 b, p. 235). On the basis of the lead fixtures found in higher destruction fall levels, it may also be that the platform was partially curtained, being lit by hanging lamps (?). Since no "sacrificial" paraphernalia or installations were recovered, the manner of its exact use is not able to be determined. However, movable cult equipment and /or a cult image would have undoubtedly been removed (along with similar materials in the crypt) after the burning of the roof, postulated for the evidence of Phase XVII. Thus far, the platform floor has not revealed

any traces (i.e. wear, scratches, etc) of movable equipment, but its disrupted and robbed condition probably explains the lack of such evidence.

### Free-Standing Columns

As was previously noted, the free-standing columns creating the double bays on each side of the interior were drum-built, of a reddish sandstone. The height of individual drums varied rather considerably--from 23 cm. to 72 cm.--but averaged about 45.6 cm., with a maximum of six drums (as far as recovered data suggest). In the only case of drum fall closely associated with a partially standing column (column (10) in II.6, recovered in 1974), the column height, less capital, appears to be about 2.87m., the double capital segments bringing the full height to between 3.62 and 3.65 m. Drum diameters appear to have been of two ranges: 65 - 66 cm. and 58 - 59 cm. As yet, no basis, architecturally, can be offered for the range variation and all may have been adjusted to one size via subsequent plastering. Since recovered capital segments appear to have a join diameter of 68 cm., it is assumed this was the final diameter achieved.

After further excavation, it now appears that intercolumnar distance (unplastered drum to unplastered drum, not base to base) was 1.75 m. for the free-standing columns, and 1.71m. between those and their facing engaged semi-columns on the walls. The asymmetry of the spacing of the North and South end platform columns has been noted above. Taking into account the base rings and final plaster coats, the free-standing columns were therefore set at roughly two diameters apart. None of these distances however actually respond to any exact multiple of the column diameters, even when the intercolumnar distance is reduced by the subtraction of adjacent base ring (36 cm.) diameters. Yet the regularity observable *does* suggest some intentional unit involved. Pl.LI,5.

Subsequent to the 1974 season more drums were recovered with the roughly rectangular cuts in tops or sides noted then, indicating even more certainly the use of the pulley for raising them into position. Such recesses were all covered by subsequent plastering, as were other

irregularities in the drum surface or joins.

As was discovered in 1974, and reaffirmed in subsequent seasons, the original plastering of the columns was worked into a flat-fluted surface, with 2 cm. flutes separated by 7 cm. valleys, resulting in the 24 flutes set by Vitruvius (III. V. 14) for the Ionic order in conventional form. (Pl. LXII,1). This coat was then painted in blue and yellow. A second plastering (during Phase XIX) covered the fluting and produced a smooth surfaced column which was painted in blue and black, or with red diagonal lines. Fragments of rather involved floral-type applied designs on column plaster were recovered in 1976 and 1977, suggesting that at least some of the columns (possibly those of the altar platform?) were so decorated. The designs were traced in red paint on the smoothsurfaced columns, and then additional plaster was applied over the guide lines. (Pls. LXI,2; LXII,3). Since no examples were definitive, it cannot be said whether this was part of original or later decorative treatment in terms of phases involved.

#### Engaged Semi-Columns

Flanking the niches were the engaged semi-columns noted above. (Pl.LI,1, 2, 6.). These were formed, in many cases, by rounding the faces of actual wall-build blocks, thus serving as part of the wall construction, as well as decorative features. A number were also composed of partial blocks, the result being neatly hidden when the surfaces were plastered.

The average drum height of these semi-columns was about 34.2 cm., which is probably to be explained by their greater bulk (i.e. and hence the need for reduction of handling weight) and the need for them to fit into the coursing of the walls of which they constituted a part.

#### “Bases”

The “bases” of the free-standing columns, the engaged semi-columns of the platform, and of the engaged semi-columns of the wall niches, were produced by affixing two or more partial rings or collars around the bottom of the lowest drum of each column and cementing them in place. (Pl.LI,5). These elements were of white local marble for the free-standing columns and of a dark brown marble for the platform col-

umns. The latter were also about 25% narrower than for the aisle columns.

This device would seem to be unique to this structure.

#### Capitals

The seasons following that of 1974 have permitted securing a more definitive view of the capitals of this structure. Basically, they are all similar in execution to those elsewhere at Petra and at certain other sites, with especial affinity to those of the first story of the Khazneh Far‘un -i.e. combining the acanthus and volutes of the (Nabataeanized) Corinthian order, as earlier noted.

The complexity of the upper elements of recovered capitals from the temple was noted in the first preliminary report; but subsequent examples have permitted a detailed analysis of the styles (A and B) involved (Hammond, **BASOR**, 226, April 1977, pp. 47ff.). Further excavations also suggest that the altar platform was the locus for the less frequently occurring (and more ornate) B type.

#### Floor

The main floor of the building was paved in local marble paving tiles, white and brown-banded, set in cement, with a secondary sub-build beneath (rubble and flagging), set in clay. (Pl.LI,5, 6.). Although most of the floor was robbed away (probably very soon after Phase XVII), the thick cement has preserved the general pattern. The tiles vary somewhat in size, but measure some 63 cm. x 86 cm. on the West side, reducing in size toward the East side. The pattern is straight lined, with curved cuts made for abutting the columns, but with both the base rings and wall **crustae** cemented to the floor surface.

The sub-floor build levels have produced interesting mixtures of architectural and ceramic debris, wherever examined, indicating that building trash was simply incorporated into the floor sub-building operation. One section of the floor still intact produced hollow sounds during excavations (II.6)-- which were (illicitly!) “investigated” following the 1975 season. Although subsequently relaid, a report (B. Bowman) on that portion of the sub-floor area revealed conventional methods of sub-floor construction, already partly known from the



excavations -- i.e. clay and rubble bedding, with or without sub-floor slabs for the marble floor tiles. Timber being scarce in Petra, that nicety of Vitruvius was ignored, since sandstone slabs set on clay would have served the same purpose for providing "resiliency." A sub-floor drain, constructed of flat tile work, was also uncovered by the illicit digging and is similar to that found in 1977 in II.9.

#### **Doorway**

The main entry doorway area of the South end of the building measures about 4.36 m. in width. Such a width probably necessitated double--or folding--doors.

#### **Crustae**

In view of the relatively shoddy interior build of the structure, interior decoration must have completely covered the ashlar construction. It was originally (1974) felt that entire decorative technique was that found in the Main Theater--i.e. marble **crustae**. However, in view of the preservation of portions of the interior of the South and West walls found in the course of excavations this view is modified.

Remnants of **in situ crustae**, recovered in 1974 and again in subsequent seasons all were found bonded to the side walls only at floor surface level. On the evidence of exposed walls, therefore, it is evident that plaster, rather than **crustae**, was liberally applied from about 12 - 13 cm. above floor surface level.

Hence, it is now suggested that **crustae** were employed only as a baseboard molding, with the rest of the height of interior walls completely finished in plaster.

The **crustae** were, however, affixed in the same manner as at the Main Theater, namely by laying the marble against a thick layer of plaster covering the ashlar surface, and pinning the **crustae** in place with copper fixtures. Contrary to the situation at the Main Theater. However, few fixtures have been recovered at this structure, although the notches in **crustae** sides, discolored by copper oxide stains, indicates the similarity of methods.

The view offered in 1974, that extensive robbery of marble **crustae** took place following the destruction of the roof (Phase XVII) must therefore be modified in terms of gross diminution of quantity of **crustae** involved.

The **crustae** beddings of plaster would suggest lengths of some 120 cm. to 180 cm., allowing for slab widths similar to those used at the Main Theater. **Crustae** thicknesses, continuing to average about 1.7 cm., in recovered examples, were slightly thicker than at the Main Theater.

#### **Vertical Moldings**

In 1974, gaps in plastering residue were obvious along the East and, as far as uncovered, South wall lines in II.3. These were then seen to indicate the probability of vertical moldings, presumably also of local marble and presumably having suffered the same fate as suggested for the **crustae** following Phase XVII. The gaps varied from 6 cm. to 13 cm., not unlikely for applied stone moldings.

However, when the South interior wall face in II.3 was fully revealed in 1975, and the rest of the West interior faces were revealed in 1976, modification of viewpoint again is necessary. As far as can be seen from the few places where the "gaps" were first noted, these are merely breaks in plastering caused by the shifting of the ashlar masonry during the first earthquake period, and were originally filled with the finished plasterings of the whole interior wall face. That these gaps are all remarkably straight suggests that a vertical molding, in plaster, was applied or affixed, in the final plastering coat decoration. This possibility is confirmed when the "molding" against the South-east corner of the South wall interior is compared with the "gap" in the niche area adjacent to the doorway, to the West.

#### **Ceiling**

Following the 1974 season, as noted above, the discovery of building plaster with the molds of reed-like bundles, some string-tied, disclosed the presence of a plastered ceiling, otherwise unidentifiable in the debris of other architectural plaster remains, but completely in keeping with known techniques of this period.

#### **Interior Stonework**

The "concave-sided" blocks, "bevelled-ended slabs," and "L" shaped blocks, which proved so enigmatic as to function in 1974 were all clarified as to use following that season--namely as bearers of **plaster** decoration.

Likewise, occurrence of such blocks remained primarily in Phases V and VIII, evidencing probable height above the floor level--hence indicating such blocks as carriers for upper decorative elements above the capitals.

Although the plaster had fallen off in most cases of such speciality stones recovered, two examples initially provided the necessary data: one "bevelled-ended slab" was found with a molded egg-and-dart (tongue) molding; and one "concave-sided" block was recovered with plaster dentils still in place. Both examples were found in the 1975 season and subsequent season provided further ones.

Presumably, also, the "L" shaped blocks served a similar purpose--as a carrier to one or more types of (plaster) decoration. Blocks with plug-holes had been recovered in 1974, but subsequently, examples were found with plaster and plaster (molded over wood?) plugs still visible. Thus it is clear that the "speciality" blocks, along with plain interior ashlar, served as carriers for the lavish interior plaster decorations of the building.

#### Plastering Fixtures

As in 1974, succeeding seasons recovered large quantities of iron and copper nails and tacks, mostly fragmentary, used to key plaster to ashlar. The distribution difference, noted in 1974, continued, with the copper plastering tacks primarily in the two earthquake cover phases, whereas the more plentiful iron fixtures, although heavily concentrated in those two phases, were distributed through phases XI, XIII and XV, as well. This underlines the fact that the former are to be related to more delicate plaster applications, as their size also suggests, while the iron was employed to key the heavier frieze / *fasciae* plaster elements not affixed by the plugs noted above. Likewise, the susceptibility of copper to oxidation probably caused an apparent loss in sheer numbers of recovered specimens, as the specks of green in the cover S.U.'s of the second destruction debris clearly attest.

#### Tesserae

The presence of *tesserae* in rather prodigious quantities, especially in II.5 (from S.U. (9)

downward to (11)), is totally anomalous, but the distribution spread, as noted in 1974, still is seen to provide a possible explanation, namely, a result of the "casual use" of the area as a quarry for (later) constructions in the Byzantine period. Although tessellation is part of the decorative approach to the floor of the platform (hence in S.U.'s (107), (109), (110), and (111)) the vast quantity of *tesserae* recovered cannot be accounted for from that floor, nor could their heavy occurrence in the post-destruction S.U. levels higher.

#### Pavement Slabs

Pavement slabs recovered in excavation must now, as a result of subsequent excavations, be differentiated between floor and "platform" paving sources. Excavation of the latter showed the same type of paving stone as that found earlier on the actual floor level of building, although with the addition of geometric variations from floor tile (i.e. triangles, especially). The possibility of misidentification of the latter was acknowledged in 1974 and now ascertained.

#### Roofing

As was noted in the discussion of Phase XVIII above, it would be reasonable to suggest a conventional roofing of this structure on the basis of evidence recovered. Ash, charred stone, charcoal, and (in 1975) charred beam members and *tegulae* along with structural masonry (II.3 (11), II.5 (12)) now recognized as probably beam supports (i.e. with grooves along their width) all point to that conclusion

#### Tegulae

Roof tiles continued, in succeeding seasons, to be low in occurrence in recovery and continued to be found in the cover S.U.'s of the two destructions. Hence, the conclusion reached in 1974--i.e. that the postulated roof damage in Phase XVII resulted in the fall and "reclamation" of *tegulae*--remains. The fragments found to date were between 3.1 cm. and 3.5 cm. thick, with the usual right-angle upturned edge for overlap laying of the roofing cover (cf. Hammond, 1965, Plate XXXIX, 5, 6).

#### Drain Pipe

Following the 1974 season, the distribution

of fragments of recognizable drain pipe makes it reasonably certain that their location must have been as part of the roofing of the building, and not part of any floor drainage system. As previously noted, they are similar to drain piping found elsewhere at Petra (the Siq, the Theater) and cannot have served any other purpose here. Their occurrence continued to be high, especially in the Phase V debris (i.e. actual debris from the destruction of Phase VII in the 8th century A.D.), confirming the 1974 attribution. Similarly, their occurrence in Phase VIII (the actual fall debris of Phase X) also remained high, offering still further confirmation of that attribution.

### Ashlar

General, unspecialized building stone continued to be encountered primarily in the two fall-related cover phases (V, VIII). As a result of other indentifications made in 1975, noted above, less confusion now exists in terms of the identification of wall ashlar, roof beam supporting ashlar and trabeation and other special internal wall blocks.

### Entablature / Exterior Wall Decoration

The architrave and upper elements of the order of this building presumably would have been of stone, of which at least a few remains **should** have been recovered, especially in II.5 and II.2, following the direction of fall. Few (e.g. carved decoration elements) were actually found, however, and it must be tentatively concluded that the exterior was possibly left plain, with architectural decoration left to the interior only, aside from marble veneer over the front (South) exterior wall face

### Interior Decoration-Plaster

As has been noted, the major decorative medium employed within the interior of the building was plaster. Here use and architectural ordering must be combined in discussion for the sake of clarity.

Considerable variation in plaster quality was encountered during the 1974 and the succeeding seasons, as would be anticipated. Masses of rather crude architectural (i.e. building) plaster were recovered, often contaminated by the charcoal residue of the firing

of the raw materials, along with pebbles, grog (pottery sherds), straw marks, and other impurities. This plaster formed the base coats or fill for the successive layers (2-3) of finer "finishing" plasters which were the bases for painted decoration. Pl.LXI,3.

However, a number of aspects may be noted at this points, as a result of the cumulative body of materials recovered, in addition to the discussion of fragments made in the earlier report.

a) **Niche frames.** Contrary to the view held in 1974, it became apparent in the succeeding seasons that the wall niches were decorated with plaster, not **crustae**. This decoration consisted of molded border frames and interior panels. The frames consisted of a series of flat bands with quarter and half-round moldings. These were apparently painted with a relatively fixed order, from outside to interior edges:

**fascia** in blue

ovals in red

torus in red

cavetto in blue

wide fillet in white (?) /gold (?)

fillet (?) in blue.

The cavetto appears to have carried at least two painted motifs--dolphins flanking a chalace, and "flame" or "tongue" geometric decorations. In at least one case both appear, with the "tongue" motif on the **fascia**. Eye-and-rhombus "hearts", "sawtooth," "gralands," floral motifs also occur.

All motifs were generally outlined in black, using the base color of the molding element as interior color, with or without additions. However, many variations in color usage appear in fragments recovered including white outlines and red outlining of motifs.

b) **Niche frescoes.** It would appear that, although a single color might even been used to fill the rear wall panel of a niche (e.g. red-11.6 area especially; 11.5, 11.3 - dark blue), in the original building period (Phase XIX) and certainly later (Phase XVIII), floral and other motifs were also present, including "**putti**" types, which can be referred to the "Pompeian IIIrd Type" seen at EL-Barid, the "ritual" scene type (also Pompeian style), and simply framed busts (as on the SW wall).

Some fragments were recovered showing faintly incised (scratched) outlines, which may

have been the result of a "master-apprentice" type of painting guild or school at work on the Temple decoration (e.g. II.3 (101-3), II.6(34)), in the same vein as the tracing of designs for applying plaster decorations on the columns.

The possibility also exists that some relief work was present--but whether in the niche panels or elsewhere cannot be determined (e.g. II.3 (103), II.6 (22), II.5 (110)).

The niche framing was a unit with the panels and, on the exterior, formed a continuous finish coat over the semi-columns on each side. Hence the gaps noted in 1974 must have been the result of the plastering technique and not recesses left for applied stone moldings, as noted above.

c) **Cornices.** Since a tremendous quantity of cornice-related elements on plaster were recovered, it is possible now to suggest that a number of cornices were involved in the interior decoration--i.e. at the ceiling level, probably at the altar platform level, and probably at the top of the niche level. This would seem to be indicated by the presence of at least three size categories of molded dentil elements and related egg-and-dart (tongue) elements, along with painted varieties of both **and** variations within that category. In addition "double dentils" (lengthwise) were also recovered, in molded and painted types. Large molded dentils were recovered in II.5; painted varieties were recovered in II.3, II.6, and II.5; large egg-and-dart fragments were found in II.6 and II.5; painted varieties appeared in II.3, II.5, and II.6; and corner fragments were recovered in II.6.

Variations in sequence of moldings were observed, as well, further suggesting a number of such cornice levels. Egg-and-dart motifs appeared in connection with dentils and with decorated **fascia** bands.

Affixed egg-and-dart elements were also recovered, including one showing traces of a copper fastener.

All of these elements were affixed to their carrying/ support stones, sometimes by means of the same "plugs" used to affix molded heads.

The colours of all of these elements were extremely tender and fugitive, with the result that some recovered fragments displaying no

paint were probably painted and had lost their colour.

Gilding was also in evidence on a number of elements, but it, too, was extremely tender and fugitive.

Rather hasty work was also observed, and in actuality, the painted dentil and egg-and-dart elements may be a result of expediency or haste in completing the interior decoration, but appears elsewhere.

In addition to the more common reds, blacks, and blues, other colours appeared, including green, tan, brown, fuchsia, orange-red, light blue, brick-red.

d) **Affixes.** Affixes in plaster had already been recovered in 1974 (fragments of molded "tragic masks", floral and leaf fragments), to which succeeding seasons added a number of molded head fragments and a large number of floral fragments. More of the "plugs" used to affix these additional decorations have also been recovered. The specific locus of these affixes on the walls is still in doubt, but **fasciae** bands above the columns would seem to be reasonable locations, particularly in view of the probable "Doric" nature of the cornice remains (i.e. dentils/ mutules with egg-and-dart astragals, wide **fasciae**, dentils/ guttae and lower fillets). (Pl.LX; LXII,2, 4).

### Summary

The seasons succeeding the 1974 excavations have clarified the stratigraphy of Site I and contributed considerably to the quantity of cultural materials recovered. Most especially in this regard the quantity of ceramic materials from strictly controlled stratigraphy will contribute greatly to an understanding of the ordering of such materials in this part of Coele-Syria. It is anticipated, also, that the contributions of originally "Nabataean" potters into the Late Roman period ("Byzantine") will be able to be appreciated for the first time.

In the area of occupation history Site I has shown that the Roman occupation of A.D. 106 did **not** materially alter the lifeway of Petra and that a relatively high standard of living persisted. In addition, evidence is now much more firm for suggesting that the population level at Petra continued to be fairly high through the Later Roman period.

Still further, both the site strata and the later burials recovered from this site contribute new insights into the religious history of Petra. The lack of specifically Christian indications in both the burials and the cultural remains from occupational strata suggests a very attenuated form of Christianity was present at Petra. Rather, the recovery of "eye idols" and house altars, the absence of Christian iconography, and the lack of Christian small finds, all suggest that some form of the original cults of Petra appear to have continued. Likewise, from the lack of any clear evidence of destructions present, it would also appear that conversion or accommodation to Islam took place with a minimum of local resistance, as well. The implications of this, for the continuation of (originally) Nabataean-inspired ceramic and other artistic elements into the Early Islamic period, are also made more possible, if not actually probable.

The contributions of Site II are of an equal value, in terms of the cultic history of the Nabataeans. The fact of the temple, its decoration, its plan, and the material remains recovered from its use period are all of primary importance, as are the evidence of "influences" at work--from the Arabian Peninsula and Egypt, as well as from the Graeco-Roman world. The suggested influence from the latter area upon the "Painted Tomb" at El-Barid has

been considerably magnified (and clarified) by the temple materials. Similarly, architectural details not otherwise reported from Petra will contribute to further understanding of technology during the Nabataean period.

Basically speaking, Site I has been completed, with the completion of the stratigraphic sequences to bed-rock in 1977. Further excavation will therefore concentrate upon the remaining aspects of Site II--the North complex, the entry and arch complexes, and the monumental entry from the wadi floor.

The succeeding seasons have also seen advancements in the processing, field cleaning and preservation of artifacts, pottery drawing, and other aspects under the direction of the Recorder and laboratory staff. These advances obviously enhance the accuracy of recording and preserving data secured by excavation. When the methodology of both excavation and recording is advanced, the validity of analysis and interpretation of results is similarly advanced.

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# Recherches Archéologiques à Araq El-Emir: Fouilles de la porte monumentale<sup>1</sup>

Par  
J.M. Dentzer

**Choix du site.** L'Institut français d'Archéologie du Proche-Orient, sous la direction de M. Ernest Will, est engagé depuis 1975 dans l'étude du *Qasr el-Abd*, ensemble monumental le plus important du site d'Araq el-Emir.<sup>2</sup> Cette grande fouille doit être complétée par une étude d'ensemble du site et en particulier des installations très originales décrites par Flavius Josèphe (Ant. J., XII, 229 sq.). Un programme de prospection portant sur l'ensemble du site et s'appuyant sur un certain nombre de sondages et de fouilles limitées a été établi en collaboration très étroite avec le Département des Antiquités de Jordanie et devra être réalisé en commun avec les archéologues et le personnel de ce Service à partir de 1978. Je me dois de remercier ici le Dr. Adnan Hadidi, Directeur Général des Antiquités, pour son accueil et pour le soutien très efficace qu'il n'a cessé de nous apporter, ainsi que le Dr. Fawzi Zayadine, dont l'amitié est à l'origine de ce travail et qui doit continuer à prendre part à la direction et à l'exploitation scientifique de ces recherches. Il faut rappeler que le Département des Antiquités de Jordanie a pris généreusement en charge la main-d'œuvre nécessaire pour la campagne de trois semaines d'avril 1977 et les moyens mécaniques indispensables pour le déplacement d'un certain nombre de gros blocs.

Le premier objectif choisi a été la porte monumentale située à 150 m environ à l'Est-Nord/Est du *Qasr el-Abd*. Ce point peut représenter, en effet, une clef pour la compréhension du secteur dont le *Qasr* représente le centre et des relations qu'il entretient avec le reste du site. Ce

monument de dimensions limitées et relativement bien conservé devait, d'autre part, fournir des parallèles intéressants dans la technique de construction et le décor pour l'étude du *Qasr*, comme l'a confirmé déjà la première campagne de fouilles. On peut espérer également préciser, sur des bases stratigraphiques, la chronologie et les conditions d'implantation de cet ensemble monumental, lorsque les sondages auront atteint une profondeur et une extension suffisantes. La première campagne a permis de commencer le dégagement du monument et de réunir un certain nombre d'éléments pour sa restitution graphique, mais elle n'a atteint le niveau du seuil et les couches plus profondes (au maximum 0,50 m sous le seuil) que sur une surface très limitée.

**Implantation de la Porte.** (Pl. LXIII, 1). Cette porte qui s'ouvre vers la vallée dans une direction sensiblement Sud-Est est manifestement liée au dispositif de murs de soutènement et de digues qui limitent au Sud et à l'Est le secteur dans lequel est implanté le *Qasr* et qui renaient autour de lui un étang, mentionné par Josèphe. L'emplacement de la porte est déterminé par le point où le mur Est se rattache à la pente naturelle du terrain. Son orientation, sans rapport avec celle du *Qasr*, ni avec celle de la voie qui relie le *Qasr* au secteur des grottes, est imposée par celle de la chaussée rectiligne et presque horizontale sur une longueur d'une centaine de mètres environ qui suit, en contrebas, la section Est du mur de retenue. A l'extrémité Sud de ce tronçon, H.C. Butler place une deuxième porte monumentale

(Gate No.II) dont il pouvait reconnaître encore une partie du soubassement, à présent invisible, et à laquelle il attribue un certain nombre d'éléments de décor conservés dans les murets en pierres sèches voisins ou réemployés dans une ferme ancienne placée un peu plus bas sur la pente. Une partie de ces fragments est conservée. La chaussée, qui aboutit à la porte et qui suit extérieurement et toujours en contrebas, semble-t-il, toute la longueur du barrage, rejoint à l'Ouest la pente qui domine le site en un point où aboutissait, à l'époque de De Saulcy, un itinéraire provenant de la vallée du Jourdain. L'ensemble des relations du site avec les régions voisines devra être réexaminé au cours des prochaines campagnes. Il conviendra, en particulier, d'étudier la liaison entre la porte et l'enceinte dont un tronçon, orienté vers le nord-est, semble prolonger l'alignement de la façade alors que le tronçon qui bute contre l'extrémité sud-ouest du monument tourne à angle droit vers le sud-est, après un court tronçon rectiligne, et borde la chaussée qui aboutit à la porte.

**Etude d'ensemble de la Porte.** (Fig 1) Avant le début des fouilles, le monument se pré-

sentait pratiquement dans l'état où l'avait fait dessiner De Saulcy. La végétation s'est considérablement développée, en particulier depuis une plantation récente de citronniers immédiatement au nord-ouest de la porte. Un figuier implanté près du montant droit de la porte pénètre profondément dans l'épaisseur du pylône nord-est qui est menacé. Cette porte se présente comme un ensemble monumental constitué par deux pylônes presque carrés (3,26 x 3,35 m) flanquant une baie large de 3,70 m. Dans les faces des pylônes tournées vers le passage sont ménagées des feuillures destinées à recevoir les battants de la porte quand celle-ci est ouverte. De cette feuillure se détachent en façade deux piédroits de dimensions légèrement différentes. Le même dispositif se retrouve sur la face postérieure de la porte où le piédroit est un peu moins profond. Une différence sensible dans la technique de construction et aussi dans le matériau montre la volonté de donner plus d'éclat à la façade de l'édifice. Le calcaire utilisé en façade est dur et blanc; son apparence cristallisée fait penser à du marbre

(cf.  $\xi\kappa$  λίθου λευκοῦ

Fl. Josèphe, Ant. J. XII, 230). En revan-

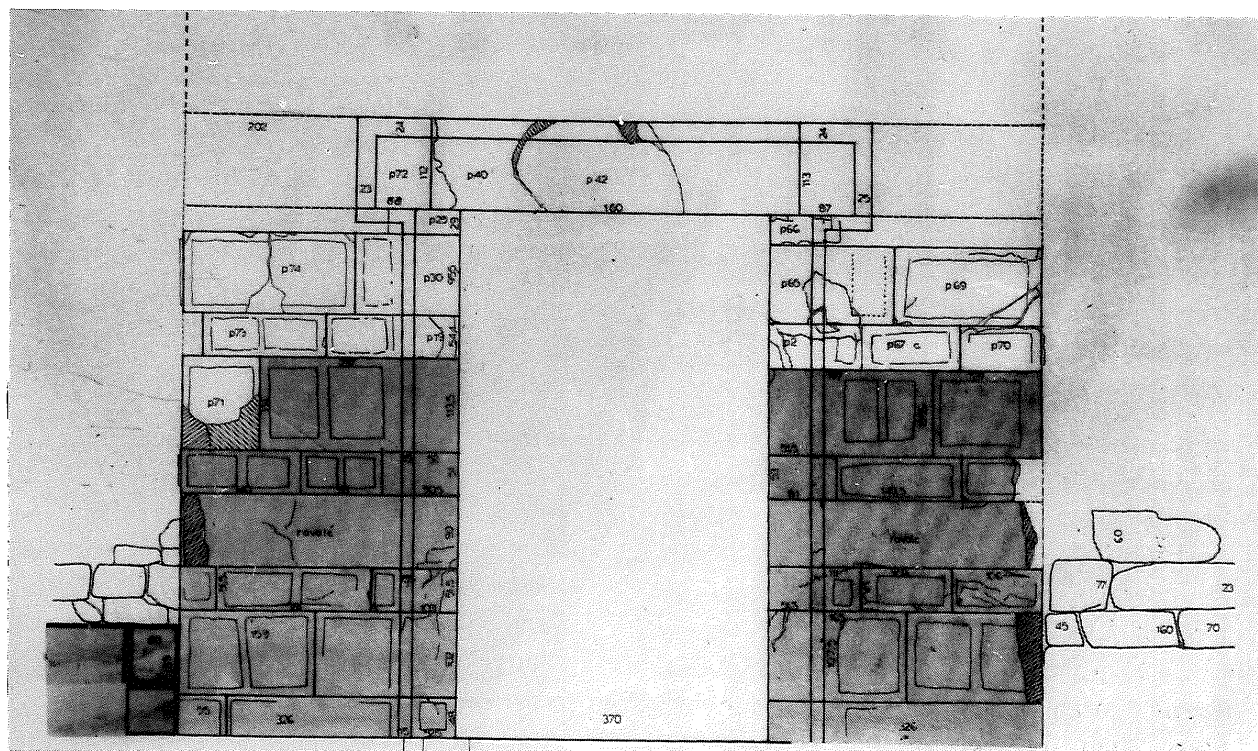


Fig. 1 – Elévation de la porte.

che, à l'intérieur de l'édifice, une partie des pierres semble d'une qualité différente, plus tendre (les arêtes sont facilement émoussées), plus grisâtre. Dans tout le monument, les blocs sont assemblés à joints vifs, mais ceux de la façade sont de dimensions plus considérables qui rappellent à une échelle moindre celles des blocs du *Qasr*. La disposition de chant d'une partie des blocs de façade, dont les plus longs ont près de 3,20 m de long, représente l'aspect le plus caractéristique de cette technique mégalithique. Cependant dans la porte monumentale, les assises hautes (d'environ 1 m) ainsi constituées alternent régulièrement avec des assises basses (de 0,50 m environ) formées en façade par des blocs placés sur leur lit de carrière et dont l'extrémité fait retour dans la baie de la porte. Cette disposition correspond à l'alternance de carreaux et de parpaings, classique dans l'architecture grecque. Dans les blocs étudiés jusqu'à présent, aucune trace d'éléments d'assemblage métallique n'a été trouvée. En revanche, comme au *Qasr*, des mortaises carrées (de 0,25 m de côté) groupées par deux étaient taillées dans le lit d'attente de certains blocs et recevaient des tenons, parfois conservés, réservés au lit de pose de l'assise supérieure. L'intérieur et la face postérieure du monument sont réalisés en blocs plus petits assemblés avec moins de soin. Sur la face postérieure de l'édifice, les piédroits de la porte ne sont pas soulignés par un bandeau comme sur la façade mais détachés par un ressaut du reste du mur. On n'y retrouve pas le dispositif monumental des blocs placés de chant.

**Elévation.** Avant fouille étaient visibles en façade 5 assises. Un sondage effectué près du piédroit gauche de la porte (Pl. LXIII, 2) et parvenu jusqu'à une semelle qui doit correspondre au seuil a permis de retrouver une assise supplémentaire basse (0,48 m) qui avait échappé à Butler. La hauteur totale conservée est donc de 4,54 m. Dans les assises 2 et 6 (numérotées de bas en haut à partir du niveau du

seuil (= niveau 0), les blocs de façade ont une profondeur qui correspond à l'épaisseur du piédroit alors qu'à l'assise 4 le bloc correspondant a été dédoublé en épaisseur par deux blocs superposés dont l'un pénètre dans l'épaisseur de la maçonnerie. La surface des blocs de la façade a été traitée d'une façon irrégulière. Certains blocs ont été soigneusement ravalés et dressés. D'autres conservent des bossages manifestement destinés à être ravalés comme le montrent les ciselures qui traversent le bossage de plusieurs blocs des assises supérieures conservées. Sur la face du pylône sud-ouest tournée vers le passage, on reconnaît un linteau, à présent brisé, reposant au niveau du lit d'attente de l'assise 3. Une porte haute d'environ 2 m et large d'environ 0,90 m s'ouvrait donc, semble-t-il, dans ce pylône. Le raccord entre les pylônes et le mur qui les prolonge devra être étudié après dégagement plus complet de la façade. On peut noter cependant que le dernier bloc en place à l'extrémité gauche de l'assise 5 semble présenter un bossage sur la face perpendiculaire à la façade alors que l'assise inférieure semble interrompue d'une façon irrégulière, ce qui laisserait à penser que le mur venait s'appuyer à ce niveau et montait à une hauteur de 2,91 m au-dessus du niveau du seuil.

Dans le passage de la porte à l'arrière des piédroits, une cavité de section carrée (d'environ 0,25 m de côté) a été ménagée dans les deux assises 4 et 3 à une hauteur de 1,90 m, aussi bien dans le pylône sud-ouest que dans le pylône nord-est. Elle servait à recevoir une poutre qui renforçait la fermeture de la porte. Sa profondeur était suffisante pour recevoir toute la longueur de cette poutre lorsque la porte était ouverte. Une autre cavité, toujours taillée avec la même technique dans la face externe de plusieurs blocs avant l'assemblage, se place dans le piédroit nord-est au sommet de l'assise 4. Il ne s'agit donc pas d'un remaniement tardif, mais sa fonction reste difficile à établir:



on ne trouve pas de cavité correspondante dans le piédroit sud-ouest.

**Restitution des parties hautes.** Un grand nombre de blocs trouvés dans et autour du monument peuvent être restitués à leur place grâce à la technique de construction particulière du monument et en particulier à l'alternance des assises et à leurs dimensions légèrement différentes dans les deux pylônes. La largeur des deux piédroits et des feuillures et les dimensions du bandeau qui encadre la baie sont différentes également. On peut ainsi compléter sans difficulté l'assise 6 du pylône sud-ouest et restituer sur chacun des pylônes deux assises courantes, l'une basse, l'autre haute. On peut se demander si d'autres assises du même type ont existé. Une telle hypothèse n'est imposée par aucun des blocs retrouvés jusqu'à présent et qui, fait remarquable, trouvent place exactement dans les assises que l'on vient d'évoquer. On a retrouvé d'autre part deux fragments du linteau (P 40 et 42) qui permettent de restituer avec les blocs P 29 et P 76 l'angle supérieur gauche du chambranle et le dispositif de fermeture. Une cavité cylindrique d'un diamètre de 0,14 m était taillée dans la feuillure du linteau destiné à arrêter la porte et dans le bloc voisin. Elle est à l'échelle d'une porte de 3,70 de largeur et de 6,34 de hauteur au minimum. Le retour à angle droit du bandeau sur le bloc P 29 permet de restituer un chambranle à crossettes dorique encadrant la baie.

Au-dessus de l'assise du linteau qui peut être complétée, on peut replacer encore quelques éléments, mais d'une façon plus conjecturale. C'est au-dessus du linteau qu'il faut situer une assise représentée par un bloc (P 81) qui conserve des mutules permettant de restituer immédiatement au-dessus une frise dorique. Un bloc (P 51, Pl. LXIV, 1) orné, de bas en haut, d'un astragale, d'un rang d'oves, d'un listel et d'un cavet décoré de palmettes alternant avec des fleurons appartient à la même corniche que le bloc d'extré-

mité dégradé par les intempéries, présenté par H.C. Butler.<sup>3</sup> La face latérale du bloc de Butler s'évasant vers le haut force à le placer à l'extrémité gauche du monument. Cette corniche semble donc avoir couronné toute la largeur du monument et non pas seulement la largeur de la baie, au-dessus du linteau.

A la surface des deux pylônes ont été trouvées deux grandes plaques brisées en

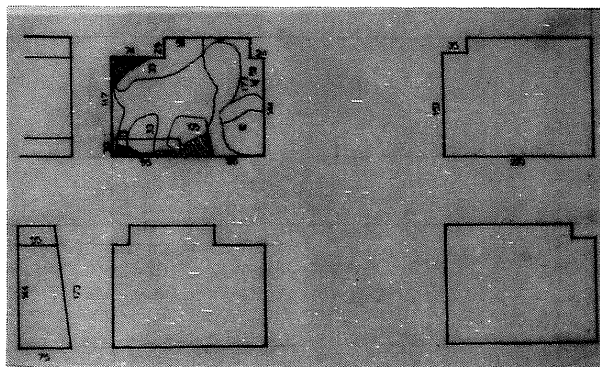


Fig. 2 - Bloc au lion.

plusieurs morceaux dont la surface autrefois ornée de reliefs a été gravement et sans doute intentionnellement dégradée. En réunissant les blocs P 77 et P 78 qui formaient un seul bloc, on devine la silhouette d'un fauve comparable à ceux du *Qasr*. La partie inférieure des pattes postérieures prenait place sur un bloc indépendant qui a pu être retrouvé (P 85). Le bossage que ce bloc présente sur sa face latérale gauche indique que le bloc était placé à l'extrémité sud de la facade. L'animal tourné vers le centre du monument, c'est-à-dire vers l'ouverture à protéger, levait une des pattes antérieures. Le bloc P 68, plus gravement dégradé encore, portait un relief analogue, vraisemblablement aussi un fauve.

Ces fauves prenaient place certainement dans les parties hautes du monument, au-dessus de tous les éléments présentés jusqu'ici. Dans l'état actuel des trouvailles, il n'est pas possible de décider si ces deux blocs s'ajoutant à d'autres, perdus, formaient une frise continue sur toute la largeur du monument ou si les

deux pylônes s'élevaient plus haut que la partie centrale de l'édifice formant ainsi deux tours, seules couronnées de fauves.

Un dernier bloc figuré (P 90, Pl. LXIV, 2) était orné d'un aigle de trois quarts, aux ailes éployées, retournant la tête vers la gauche. Trouvé à environ 6,70 m au sud-est de la façade, ce bloc est très semblable à celui que H.C. Butler attribue à la porte II<sup>4</sup>. Les dimensions cependant ne sont pas identiques et le nouveau bloc, plus gravement détérioré dans sa partie supérieure, ne présente pas la même cassure traversant l'aile droite de l'oiseau. La place et même l'appartenance de ce bloc au monument fouillé ne sont pas assurées.

#### Stratigraphie et histoire du monument.

Cette première campagne n'a rapporté que des données stratigraphiques limitées, l'essentiel des efforts ayant été consacré aux couches superficielles dans lesquelles étaient englobés les blocs tombés. La céramique, trouvée en très petite quantité, est en cours d'étude. On a pu observer déjà, sur l'ensemble de la surface fouillée, un remblaiement en deux couches de la porte après abandon du monument. Un sondage limité près du piédroit sud a fourni des indications plus intéressantes sur l'histoire du monument.<sup>5</sup> Dans les deux couches de remblais déjà évoquées n'apparaît aucun sol alors que les couches situées plus bas conservent les traces de plusieurs phases d'occupation et d'utilisation qui devront être vérifiées dans les campagnes ultérieures. Ce sondage a permis de retrouver le dispositif du seuil dont le dernier élément est conservé sous la forme d'une semelle débordante portant la dernière assise du piédroit. Le bloc voisin a disparu, mais non sans laisser de trace dans la stratification. De l'implantation primitive de la porte on reconnaît peut-être encore les traces d'une tranchée de fondations, ainsi que le niveau du sol extérieur correspondant. Dans une phase ultérieure, un petit bloc portant une crapaudine de fer a été encastré dans la semelle entaillée à l'aplomb de la feuillure de la porte. Il suppose un remaniement de

la porte avec sans doute des battants plus petits car le diamètre de la cavité pour le gond est réduit à 3 cm. De plus, le gond se trouve ainsi écarté de l'angle de la feuillure où était placé le gond primitif. On peut identifier, tant à l'intérieur qu'à l'extérieur de la porte, un niveau qui correspond à la surface du bloc à la crapaudine de fer. Enfin, à une dizaine ou une quinzaine de centimètres au-dessus de ce niveau, on a reconnu un foyer assez étendu (traces de cendre et de bois carbonisé) qui est responsable de la coloration rougeâtre prise par la surface de la couche sous-jacente, qui correspond à un sol dans une phase d'abandon de l'installation.

**Conclusion.** La courte campagne de 1977 conduit déjà à des conclusions intéressantes en permettant, en particulier, de restituer à partir des blocs retrouvés une construction d'une ampleur inattendue. La technique mégalithique utilisée en façade se rattache à une tradition régionale, vraisemblablement phénicienne, mais semble, en même temps, conforme, plus qu'au *Qasr*, aux habitudes grecques de l'alternance d'assises. Le décor ajoute les motifs les plus caractéristiques du *Qasr*, fauves et aigles, à une combinaison de formes décoratives empruntées à la fois à l'ordre dorique (cadre de la porte à crossettes, mutules et frise dorique) et à l'ordre ionique (corniche avec oves, perles et pirouettes, palmettes et fleurons). Ces combinaisons d'ordre semblent caractéristiques du décor architectural hellénistique dans la région. Il suffira de citer des façades de tombes rupestres hellénistiques à Pétra<sup>6</sup> ou à Jérusalem<sup>7</sup>. La campagne de fouilles prévue pour 1978 devrait permettre de préciser ces rapprochements et de compléter la restitution de l'élévation du monument, d'étudier la structure interne d'un des pylônes et le lien entre la porte et l'enceinte dans laquelle elle s'ouvre. Elle permettra surtout d'étendre la fouille en profondeur pour tenter de préciser les conditions d'implantation du monument.

J.M. Dentzer

## NOTES

1. Cette porte monumentale, qui n'a jamais cessé d'être visible, a été examinée rapidement dans les publications de M. de Saulcy, *Mémoire sur les monuments d'Aârâq el Emyr*, dans *Mémoires de l'Institut de France, Académie des Inscriptions et Belles - Lettres*, 26, 1870, p. 87, 103 - 196, pl. V; C.R. Conder, *The Survey of Eastern Palestine*, Londres, I, 1889, p. 84 avec fig.  
H.C. Butler, *Publicat. Princeton University archaeological Expedition to Syria*, Div. II, sect. A, part I, p. 19-20, fig. 9.  
J.-M. Etchemendy. *Le site d'Araq el-Emir en Transjordanie*, Jérusalem (1960) (mémoire dactylographié à l'Institut de France, Académie des Inscriptions et Belles-Lettres) p. 75-76.
2. E. Will, *Comptes Rendus de l'Académie des Inscriptions et Belles-Lettres*.
3. *op cit.* note 1, p. 20, III. 10 et 11.
4. *Ibid.* p. 21, III. 12 c.
5. Je voudrais remercier ici P. Leriche qui a amicalement participé au relevé de ce sondage.
6. Combinaison d'une frise dorique avec des chapiteaux nabatéens au Deir: M. Lindner, *Petra und das Konigsreich der Nabatäer*, Nüremberg (1974), p. 140; combinaison d'une frise dorique avec une corniche ionique à denticules au Qasr Bint Firaoun: *ibid.* p. 146.
7. Par exemple *IEJ*, I (1950/51), p.100, fig. 5; p. 102, fig. 7.



# An Archaeological Survey of Three Reservoir Areas in Northern Jordan, 1978:

by  
T.M. Kerestes  
J.M. Lundquist  
B.G. Wood  
K. Yassine

## Organisation and Purpose

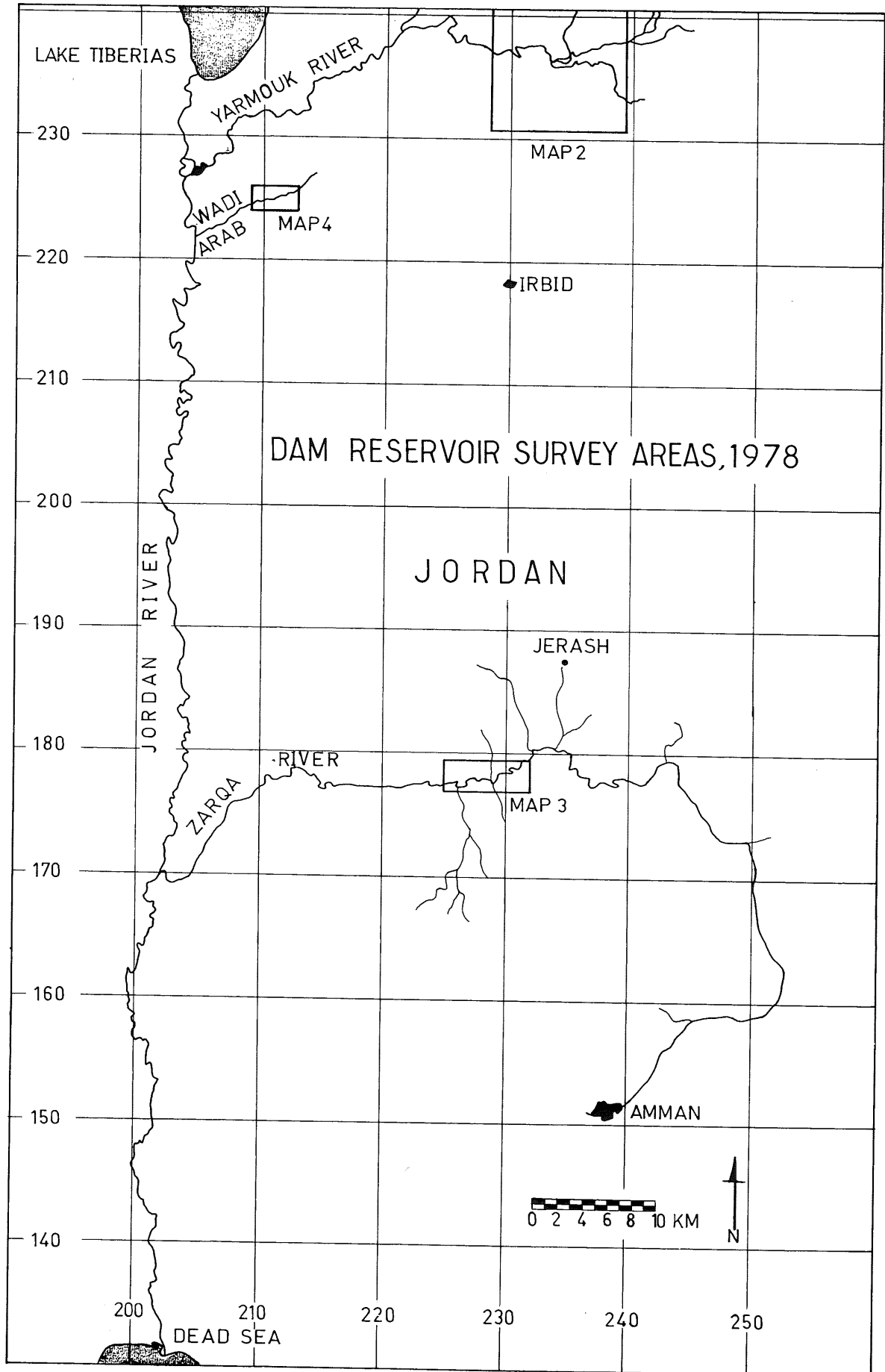
An archaeological salvage survey was carried out between January 14 and March 15, 1978 in the Yarmouk, Zarqa and Wadi Arab Valleys in northern Jordan. The project was commissioned by the Jordan Valley Authority (JVA) and the Department of Antiquities of Jordan. The field work itself was carried out in the reservoir area of the King Talal Dam in the Zarqa Valley, and the projected reservoir areas of the Maqarin Dam in the Yarmouk River Valley on the Jordanian-Syrian border, and the Wadi Arab.

The survey work was part of the environmental impact studies commissioned in connection with the dam construction. The specific purpose of the archaeological survey was the investigation of the reservoir areas in order to identify sites of ancient human occupation which would be lost due to dam construction or flooding. Based on these findings recommendations are presented concerning future archaeological salvage work which would be advisable in the affected areas.

The team consisted of John M. Lundquist and Terrence M. Kerestes of the University of Michigan, Bryant G. Wood of the University of Toronto, and Dr. Khair Yassine of the University of Jordan, all co-directors. Lundquist, Kerestes and Wood were contract employees of the JVA during the project. Mr. Ali Mousa, Inspector of the Jerash District, accompanied the team as a representative of the Department of Antiquities. Dr. James A. Sauer, Director of the American Center of Oriental Research in Amman served as archaeological adviser to the project. Project photographer was Lundquist, with additional photography carried out by

Yassine and Kerestes. Yassine and Mousa served as liaison between the team and local residents in seeking information on place names and other pertinent data. Professor William J. Fulco, S.J., kindly assisted in the transliteration of Arabic place names. Maps were drafted by Mr. Abdel Razeq Yousif and Wood. Six days were spent surveying in the King Talal Dam reservoir area in the Zarqa Valley, followed by three weeks in the Yarmouk and one day in Wadi Arab; from January 21 through February 20, 1978.

The successful completion of the survey in an expeditious manner was made possible by the generous cooperation received from numerous individuals connected with the sponsoring institutions in Jordan. We are especially grateful to Drs. Munthir Haddadin, Senior Vice President of the Jordan Valley Authority and Adnan Haddidi, Director of the Department of Antiquities of Jordan. Excellent maps of the three survey areas and feasibility reports were graciously supplied by the staff of the JVA. Survey data collected in the field was plotted on topographic maps in the scale of 1:10,000 for the Maqarin reservoir area, 1:2,000 for the King Talal Dam reservoir area and 1:1000 for the Wadi Arab. The engineers and geologists at King Talal Dam and at the Yarmouk and Wadi Arab dam sites were very generous with their time and facilities. Special thanks go to Mr. Zafir Allem, Project Director at Maqarin, and to Mr. Dean Wilson, Head Geologist at Maqarin for comfortable accommodations and trolley transportation on the Hijaz rail line while working in the Yarmouk Valley. The team is especially grateful to Dr. James A. Sauer of the American



Center of Oriental Research in Amman for his time in initiating the survey and providing technical direction for the duration of the project. We also wish to thank Ambassador Thomas R. Pickering for his helpful support. Finally, we wish to thank Dr. Edward F. Campbell for handling arrangements in the U.S. during the formulation stage of the project.

### **Methodology**

The methodology was essentially that of an intensive area survey of the three reservoir areas. Virtually all accessible terrain in the affected areas, up to an elevation ca. twenty meters above the ultimate reservoir levels was covered. After having conducted a general reconnaissance of a given dam site the reservoir was divided into areas. These areas are designated in Maps 2,3, and 4, with the rivers and wadis serving as boundaries. The team members walked over the accessible areas of each section, the distance between team members determined by the nature of the terrain covered. Surface artifacts (primarily potsherds and worked flint, but also including glass, worked stone and fragments of building materials, among others) were collected from each area surveyed. Other evidence of ancient occupation, such as building foundations, walls, terraces, burials, or identifiable architectural remains was noted. A photographic record was kept.

A site was distinguished within a particular area by the concentration of artifacts (e.g., potsherds and flints) and /or architectural remains. In general, a site could fall within the range between a prehistoric open air station and a major city. After collecting a representative sample of artifacts the site was described and photographs taken. The location of the site was also plotted on the map.

### **Geographical and Geological Background**

The Yarmouk and Zarqa Rivers and the Wadi Arab all descend from the high eastern plateau of Jordan, and drain into the Jordan River. Of the three, the Yarmouk and Zarqa are

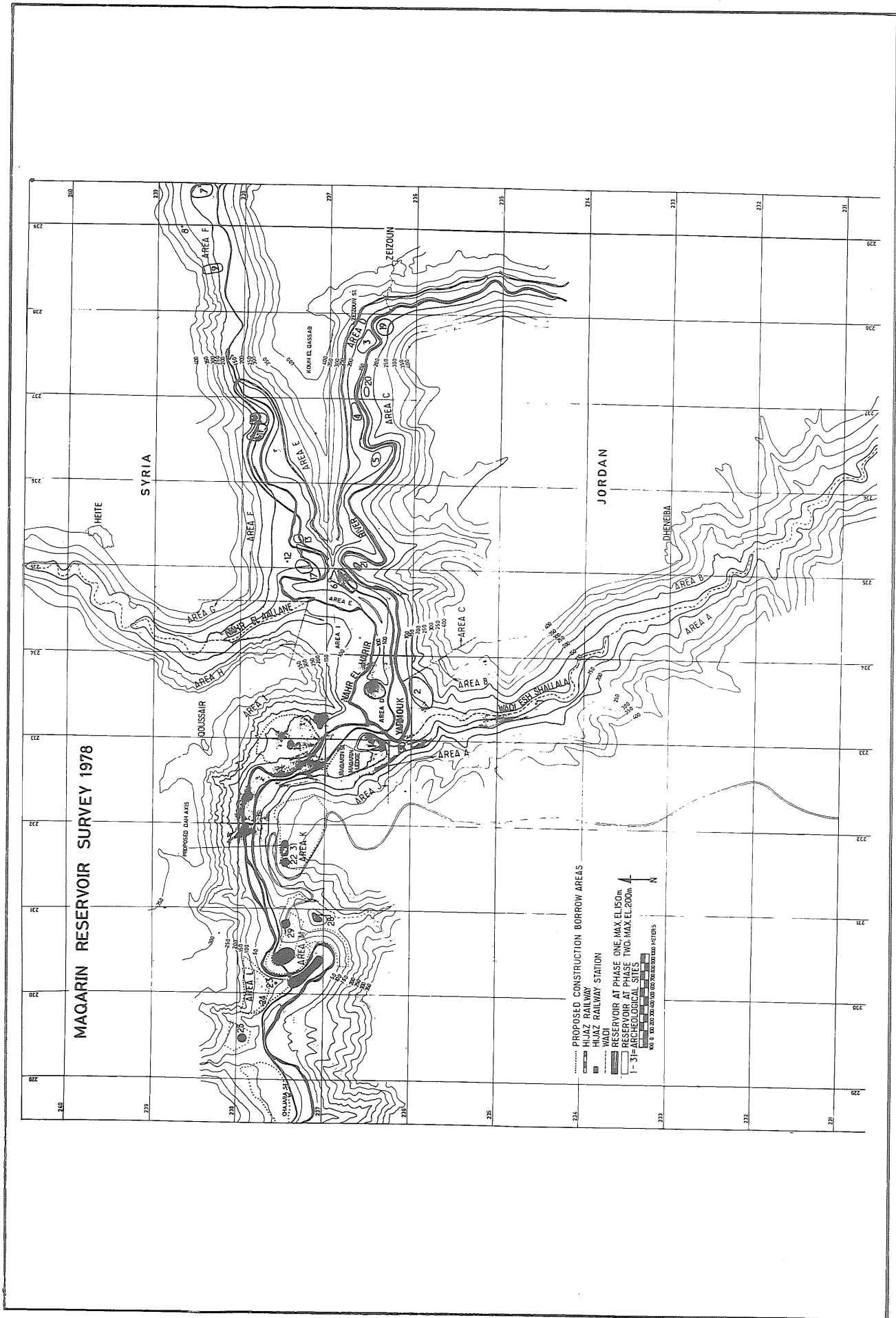
perennial streams, with the Yarmouk being the most important Jordan River tributary. The three cut rather deeply into the sloping eastern side of the Jordan Valley as they descend.

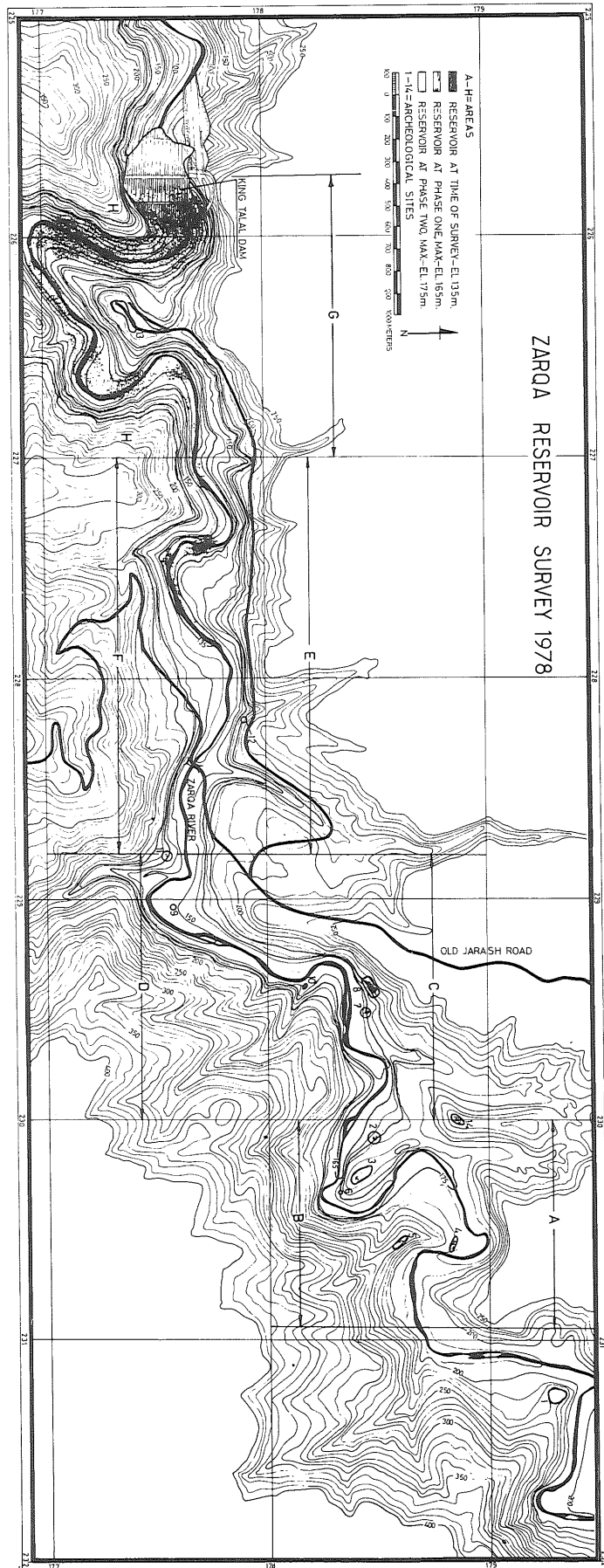
Geologically, most of Jordan is post-Eocene in age, with much of the area having been eroded into mature topographic forms. In some areas, particularly the Yarmouk, these mature forms have been covered by substantial outpourings of basalt. The eastern highlands of the Jordan Valley rise abruptly to elevations between 300 and 500 m. Because of the much lower elevation of the Jordan Valley itself, westward flowing streams and their tributaries are deeply incised. These streams commonly show a youthful form with narrow steep sided valleys indicating a rapid downcutting. The downcutting comes about because of the continual subsidence of the Jordan Valley.

The rock formations near the area of the proposed Maqarin Dam (the dam site is situated about 40 km. upstream of the Yarmouk's confluence with the Jordan River, near the Maqarin Station of the Hijaz Railway) consist of a bituminous marl unit, which extends up both sides of the valley wall about 100 m. above the valley bottom. This stratum is overlain by a thick bed of chalky limestone, which in turn is overlain by a thin layer of chert. Over the chert layer is a layer of basalt. Talus, or shallow landslides, overlie bedrock on parts of the valley sides. Alluvium overlies bedrock in the valley bottoms.

More generally, the Maqarin reservoir area exhibits a rather narrow alluvial flood plain, above which rise gently sloping alluvial terraces. These terraces then give way to the steep, often talus strewn slopes of the canyon, which rise to the plateau at ca. 400 m. The reservoir of the proposed Maqarin Dam will rise between five and six km. up the Yarmouk River Valley. In addition, it will inundate parts of the Yarmouk tributaries: the Nahr Aallane, the Nahr el Harir, and the Wadi esh Shallala (see Map No.2).

In the Zarqa River Valley the King Talal Dam is located ca.30 km. upstream from the confluence of the Zarqa with the Jordan. The river itself is immediately bordered by a layer of gravel and sand, with coarse boulders of gravel predominating. The alluvial terraces which rise







above the river bottom are comprised of a silty sandy clay with rock fragments and gravel boulders. The steep slopes which rise above the alluvial terraces consist of a layer of sandstone, which is overlain by a stratum of dolomitic limestone. The reservoir of the King Talal Dam will inundate an area stretching ca. six km. upstream (see Map No.3).

### **Modern Settlement Patterns and Land Utilization**

Modern land use in the three valleys is very similar. Villagers from the villages perched on the plateaus just on the lips of the canyons come down into the valleys and use the alluvial plains and the terraces for agriculture and grazing. One extended family unit was living permanently in Nahr el Harir near site No. 7 in the Yarmouk Valley. Several beduin groups were also located in the Nahr el Harir and were cultivating and grazing flocks and herds there. In all three areas there is considerable seasonal pasturing and grazing of sheep, goats and cattle. Many corrals of varying shapes and sizes were observed in the Yarmouk Valley. These were constructed of field stones and, in some cases, dressed blocks of basalt and limestone reused from earlier periods. Numerous pathways and tracks gave both horizontal and vertical access to the valleys.

The alluvial terraces in the Maqarin reservoir area are widely planted with pomegranate orchards. Those in the Zarqa Valley are planted with orange and lemon groves, and in the Wadi Arab with bananas. Irrigation is widespread in all three valleys, water being channeled through the fields by pumps and by dams and canals which crisscross the valley walls at many different levels. At the lower levels the water is diverted from the river into canals by ingenious, in some cases laboriously constructed dams. Among the cultivated crops grown on the alluvial plain and the terraces were turnips, beans, tomatoes, radishes and lettuce. The team observed a logging operation in a grove of sycamore trees on the W side of a wadi stretching S of Site No. 11 in the Zarqa Valley.

Numerous ephemeral wadis feed into the larger river systems. Some of these were active during the time of the survey, but most were

dry. There are thick cane brakes along the S side of Nahr el Harir in the Yarmouk Valley which the villagers harvest and use for building material. Various wild vegetables were gathered daily by the village and beduin women and girls. This gathering often constituted a full day's work for those involved.

Present-day settlement patterns clearly reflect the differences of topography on each side of the Yarmouk River and its tributaries. While the southern slopes are generally very steep with a great concentration of thorn bushes and other types of overgrowth which make land use difficult, spacious terraces graduating up the slopes of the north side are generally observed. Thus there is more usable land on the N side of the Yarmouk Valley, and this is reflected in both the modern and the ancient settlement patterns (see Map No. 2).

Agricultural terracing is very much in evidence in all three river valleys. The most common form which this takes is the low, rock built terrace wall. Along the S side of the Zarqa Valley the hill sides are dense with shallow terracing cut into the earth--some of it apparently used for vineyards. In the Yarmouk the terracing is often achieved with varying sizes of the basalt rocks which are so numerous on the slopes. In several cases worked limestone and basalt blocks from earlier periods have been reused in terrace walls. In several instances it was difficult to determine whether a terrace wall was recent or ancient, or in fact whether the wall line was a terrace wall or part of an ancient building foundation.

There is evidence of early modern land use in the areas in the form of sugar and flour mills and ovens. Some of these structures appear to stem from Ottoman times. Lime and charcoal kilns were also observed, one of which was in current use. (see Pl.LXV,1).

Perhaps the most striking recent building development in the Yarmouk Valley is the Hijaz Railway, which borders the river. Built around 1905, this line runs from Haifa to Damascus. There are three railway stations in the survey area, the Maqarin, Zeizoun and Chajara. (See Map No. 2 and Pl.LXV,2). An abandoned village near the Maqarin bridge appears to have been associated with the railway, as do other recently abandoned buildings

in the area. The railway itself serves as the international border between Jordan and Syria when the rail line runs south of the Yarmouk River. Otherwise the river is the border.

A very interesting architectural feature of the Zarqa Valley is the presence of the remains of two former bridges near the present Old Jerash Bridge over the Zarqa. Remains of the modern high bridge, which were destroyed during the fighting of 1970, stand on the E of the footings of the Ayyubid/Mamluk bridge.

### Archeological Background

Some previous survey work has been carried out in Jordan in the Yarmouk, Zarqa and Wadi Arab Valleys, but as far as is known no previous work has been done on the Syrian side of the Yarmouk Valley in the reservoir area. The first to publish scientific observations on the archeological remains in the areas of interest was Gottlieb Schumacher who surveyed the area E of Lake Tiberius in 1884 in preparation for the construction of a railway from Haifa to Damascus. A general report of his observations is given in *Across the Jordan* (Schumacher 1886). Here he gives a brief description of Tell Jamid in the Yarmouk Valley (1886: 100). He also published further details of his visits to a number of ancient sites in northern Jordan in *Zeitschrift des Deutschen Palastinvereins (ZDPV)*. Unfortunately, this work was not available to the authors of this report at the time of preparation. According to later references by Nelson Glueck, Schumacher described Tell Jamid in *ZDPV* 36:114-23 and *ZDPV* 49: A526; Tell Qurs in the Yarmouk Valley in *ZDPV* 49: A531, and Tell Zer'ah in the Wadi Arab in *ZDPV* 49: 464-65 ) Glueck 1951: 122, n. 299; 130, n. 320; 182, n. 452).

As part of his extensive surface surveys of Palestine in the 1930's and 1940's, Nelson Glueck visited a number of sites in the Zarqa, Yarmouk and Wadi Arab Valleys. In 1938 he visited Kh. es-Suwari, Tell Tunyah, Kh. es-Seqi and Tell er-Reheil in the Zarqa reservoir area (Glueck 1939: 222-24). (See the discussion on pp. 28-29 with regard to the location of Tell Tunyah and Kh. es-Seqi). Of the four sites Glueck published only a plate of photos of pottery sherds from Tell er-Reheil (1939: pl.17).

In the Yarmouk reservoir area, Glueck visited Tell Jamid and Tell Qurs in 1942 (1951: 122-24, 130). Photos of the pottery from these two sites was published in plates 84 and 85 and described on pp. 491-93. Also in 1942 Glueck visited Tell Zer'ah in the Wadi Arab reservoir area (1951: 182-84). A photo of one flint from the site was published in plate 114 (No.9).

As part of the Point Four Irrigation Project the Yarmouk and Jordan Valleys were surveyed by James Mellaart and Henri de Contenson in 1953. They described four sites in the Yarmouk reservoir area, all on the Jordanian side. Mellaart and de Contenson, as well as Glueck before them, were not able to visit the Syrian side of the Yarmouk River. Mellaart conducted a sounding on Tell Jamid (Mellaart 1962: 131), but did not publish the material from the sounding. He also briefly described the prehistoric site on the Maqarin ledge, Tell Qurs, and the site at the present location of the JVA camp. (1962: 140-41, sites 2,3 and 4). De Contenson described flints from Tell Jamid (1964: 30, pl. VII: 1-9, Pl. VIII: 1-3), and from the Maqarin ledge (1964: 31, Pl. VIII: 4,5), pottery from Tell Qurs (1964: 31,32), and flints from Tell Qurs (1964: 32, pl. IX: 1,2).

### Presentation of Results

During the survey a total of 48 sites were identified, of which 31 are in the Maqarin reservoir area, 14 in the King Talal Dam reservoir area, and three in the Wadi Arab. There is a large variety of types represented among these sites, including small, flat prehistoric sites, tombs, rock shelters, towers, tells and even a town. Each is described below in numerical sequence according to its respective reservoir location. The area and site sheets, which were used in the field for recording the archeological data and on which the site descriptions are based, are available through the Department of Antiquities of Jordan in Amman.

Of the total number of sites identified during the survey, only six were known previously. The remaining 42 sites are new additions to the archeological record.

Tables 1, 2, and 3 present the distribution of archeological periods of the three reservoirs by area and site, according to the pottery and flint

evidence. Each table is followed by the site descriptions for the particular reservoir. A number of the artifacts from the three reservoir areas are shown in photos 17 to 38.

The abbreviations used throughout the report are as follows:

P	Paleolithic	—14,000 B.C.
M	Mesolithic	14,000-8,000 B.C.
N	Neolithic	8,000-4,500 B.C.
N/C	Neolithic/Chalcolithic	8,000-3,300 B.C.
N/CF	Neolithic/Chalcolithic Flints	8,000-3,300 B.C.
C	Chalcolithic	4,500-3,300 B.C.
C/EB	Chalcolithic/Early Bronze	4,500-2,100 B.C.
C/EBF	Chalcolithic/Early Bronze Flints	4,500-2,100 B.C.
EB	Early Bronze Age	3,300-2,100 B.C.
EBF	Early Bronze Age Flints	3,300-2,100 B.C.
EB-MB	Early Bronze Age IV-Middle Bronze Age I	2,300-1,950 B.C.
MB	Middle Bronze Age II	1,950-1,550 B.C.
LB	Late Bronze Age	1,550-1,200 B.C.
IA	Iron Age	1,200-539 B.C.
PE	Persian Period	539-332 B.C.
H	Hellenistic Age	332-63 B.C.
R	Roman Period	63 B.C.-A.D. 324
B	Byzantine Period	324-640 A.D.
EI	Early Islamic Period	630-1174 A.D.
LI	Late Islamic Period	1174-1918 A.D.
Ott/M	Ottoman/Modern	1516-Present
M	Modern	1918-Present
UDS	Undetermined Sherds	
UDF	Undetermined Flints	
TS	Total Sherds	
TF	Total Flints	
?	Probable	
/	Either/Or	

Table 1

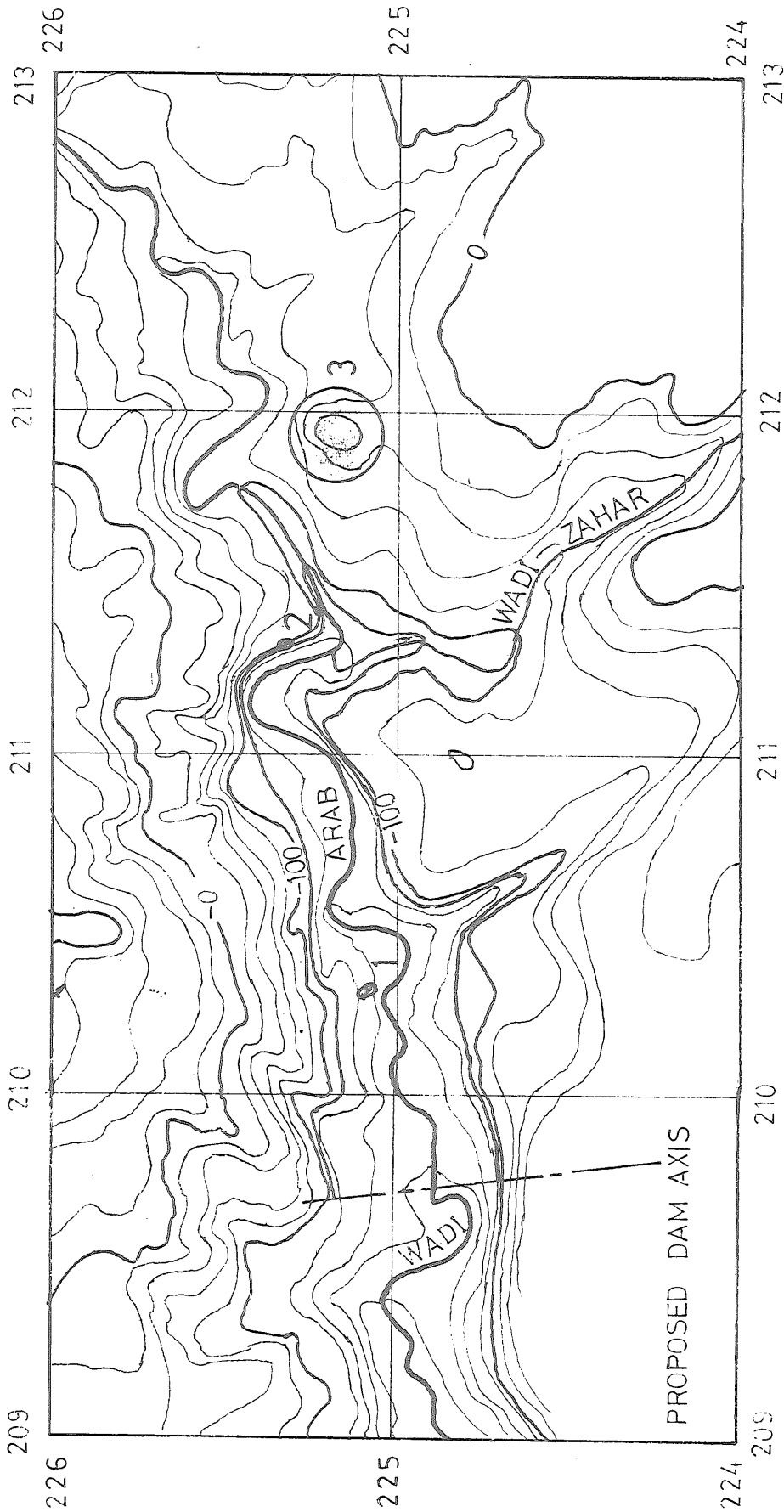
Archeological Analysis of Maqarin Reservoir Area

Period	Area												
	A	B	C	D	E	F	G	H	I	J	K	L	M
P	8	10	1	10		15			26			2	
M													
N				7		13							
N/C	25	8		1		2							
N/CF													
C													
C/EB				3		9							
C/EBF													
EB		1		1								2	
EBF				1									
EB-MB													
MB		6		2									
LB													
IA	1			4									
PE													
H				2									
R		2		9	2	5			1				
B	6	4		25	3	5			2				
EI				8									
LI													
OTT/M			1	70		3							
M		2							1				
UDS	9	2		49	12	15			14			1	
UDF	8	5	1	52		63			9				
TS	44	55	1	332	17	237			20			5	
TF	30	64	2	80	30	95			35			2	

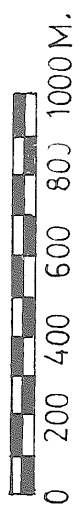
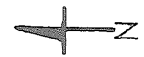
**Table 1 (cont.)**  
**Archeological Analysis of Maqarin Reservoir Area**

Period	Sites														
	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
P	5?	50	6	43	4	1?		3	10	26	39	1	11		13
M													2?		
N		18						26?		715	162				29
N/C															24
N/CF															1?
C															
C/EB				5											
C/EBF															
EB		1			4							13	41		
EBF				3	6		1?						53?		
EB-MB															
MB			3		2		12								
LB	4		17												
IA			3									1			
PE															
H												3			
R	5	1	6	3		33					3	11	1		3
B	14			1	5					2					
EI															
LI															
OTT/M															
M	1	1			1	2			1	1					
UDS	13	5	15	5	12	10					5	7			1
UDF	39	21	13	22		42			25	122		12		3	7
TS	200	18	178	129	26	181	39		1	41	7	68	42	24	4
TF	44	93	19	68	10	69	1	39	35	863	201	13	72	4	49

# WADI ARAB RESERVOIR SURVEY, 1978



□ PROPOSED RESERVOIR: EL. -112m.  
 1 - 3 = ARCHEOLOGICAL SITES  
 AREA A = N. SIDE OF WADI  
 AREA B = S. SIDE OF WADI



## Site Descriptions

### Maqarin Reservoir Area

#### Site Number 1

grid coordinates: 233 460/234 550

elevation: 100m.

estimated size: 10x5m.

Site 1 is a rock shelter located above a spring. It is inhabited seasonally by nearby villagers who grow winter crops and graze herds and flocks. A stone wall has been built along the front of the rock shelter. Fields are cultivated below the shelter on the W side of Wadi esh Shallala. A small sample of weathered sherds was found below the shelter.

#### Site Number 2

grid coordinates: 233 540/235 900

elevation: 70-140m.

estimated size: 400x200m.

Site 2 is a large prehistoric site on the E side of the Wadi esh Shallala where the Wadi gorge opens up into the Yarmouk basin. It is located on a partially cultivated alluvial terrace below a limestone ridge. A heavy concentration of worked flints was found, with Early Neolithic flints dominant. Few sherds were found, most of which are undateable. However, a few Byzantine and Mamluke-Ottoman sherds were identified. A cave is located on the SW edge of the terrace, which may be a cut tomb or a cistern. The interior of the cave consists of three chambers separated by a low wall surmounted by pillars cut from the rock. There is also a round cut in the roof of the cave, visible from the inside, and a depression in the ground above, visible from the outside. A canal runs along the 70m. contour from the east along the western edge of the site. There is a pomegranate orchard on the NW edge.

#### Site Number 3, El Habis:

grid coordinates: 237 700/236 500

elevation: 160-200m.

estimated size: 300x200m.

Site 3 is N of the Yarmouk River between the railway and the river, below the Zeizoun station. The predominant period of occupation as indicated by the sherds was Byzantine. In

addition, worked flints from the Paleolithic and Neolithic periods were found, as well as a number of pottery fragments from the Neolithic through Early Roman periods. Comprised of a series of terraces, the site today is heavily cultivated. The striking feature of Site 3 is the abundance of finely dressed stones in the area. Examples which were observed are: a limestone sarcophagus and lid (see pl.LXVI,1), limestone doorjam, basalt mortar, rectangular basalt blocks, a flared basalt block, and a one-meter section of a sculptured entablature (see pl.LXVI,2).

#### Site Number 4, Umm Qala<sup>6</sup>a

grid coordinates: 236 860/236 680

elevation: 150-180m.

estimated size: 200x100m.

Site 4 is a series of terraces on the N side of the Yarmouk River between the railway tracks and the river. The sherds found were predominately Byzantine, with a concentration of flints found at the E corner. At the time of the survey, the area was heavily cultivated. There are numerous worked rectangular basalt blocks on the terraces. At a number of places these form distinct courses of walls which may have served as terrace walls or as building or defense walls. Along the E side of the site a path leads towards the river to a cave cut into the rock of the hillside. The interior of the cave consists of three chambers separated by a low wall surmounted by pillars cut from the rock. A number of worked limestone and basalt blocks line the path. Some of these are *in situ* and form courses of a wall. One large block measures 112x47x26cm. Another basalt block is tapered from top to bottom and has a hole cut in the top. A basalt cylinder with a conical top was also observed, as was a worked limestone block which appears to be a Roman altar.

#### Site Number 5, Sheikh Faris

grid coordinates: 236 300/236 450

elevation: 170-190m.

estimated size: 150x100m.

Site 5 is located N of the Yarmouk River on terraces between the railway and the river. The major period of occupation was in the Byzan-

tine period. On the N side of the site are basalt foundations of two buildings. South of the buildings the land slopes gently toward the river and is terraced. The area is heavily cultivated today.

#### Site Number 6

grid coordinates: 234 880/236 940

elevation: 90-160m.

estimated size: 300x150m.

Site 6 is the summit and S slope of the E end of a ridge between the Yarmouk River and the Nahr El Harir. The pottery collected was predominately Iron IB-C (see Pl.LXXVIII,1,2), although the MB II, H (see Pl.LXXVII,1), and Early Roman periods were also represented. A number of building foundations and well-dressed basalt blocks were observed on the ridge SW and NE of the summit, as well as along the S slope. A completely exposed foundation on the top of the ridge SW of the summit is ca. 36x4m. with six rooms (see Pl.LXVII,1).

West of the six-room building is a possible unfinished cistern. The summit is an acropolis-like promontory triangular in shape, measuring 50x50x10m., with occupation debris of ca. one m. thick, determined from a recent pit. A large number of recently dug pits were observed on the summit and slopes of the site. Along the S slope of the site is a well-cut trail ca. 3m. wide, which leads to a lower terrace ca. one km. to the SW. SW. (see Pl.LXVII,2).

Nelson Glueck observed this site from Tell Jamid in 1942 speculated on its importance, although he was unable to visit it personally. He called it "Tell el-Ehdeb" or "el-Mardashiyeh." (Glueck, 1951:124).

#### Site Number 7, El-Roba

grid coordinates: 239 400/238 500

elevation: 190-210m.

estimated size: 200x150m.

Site 7 is located on the N side of Nahr El Harir just W of the junction of a tributary coming from the NW. A large collection of worked flints were obtained at this site, all from the Early Neolithic period. The site is situated on a series of low terraces which are currently cultivated fields and orchards. A small village is located at the site.

#### Site Number 8:

grid coordinates: 238 975/238 730

elevation: 275m.

estimated size: see below

Site 8 consists of two tombs exposed by road construction in the recent past on the N side of Nahr el Harir. The tombs are cut into the limestone hillside. Many bone fragments were scattered about inside the tombs, but no pottery sherds were found. The western-most tomb is complete and is comprised of a large chamber with a bench on the right side. Cut into the back wall of the large chamber is a smaller chamber with benches on three sides. The entrance to the eastern-most tomb had been sheared away by the road construction. It is comprised of a large chamber with benches cut into three sides. In the back right-hand corner a small chamber was cut which appeared to go down to the floor level of the large chamber. Both tombs were filled with earth debris so it was not possible to determine their height nor examine the floor for artifacts. A possible linear inscription was found on the upper right corner of the entrance into the western tomb (see Pl. LXXVIII,1)

#### Site Number 9

grid coordinates: 238 500/238 360

elevation: 180-350m.

estimated size: 240x100m.

Site 9 is a steep slope on the N side of the Nahr El Harir. A heavy concentration of pottery was found on the hillside, predominantly of the Early Roman period. At the top of the slope is a basalt cliff rising to the Syrian plateau above. The slope is much too steep for occupation. Upon investigating the base of the cliff and the plateau above, however, no evidence of a habitation area was found.

#### Site Number 10, El-Madkhanah

grid coordinates: 236 780/237 860

elevation: 135-180m.

estimated size: 200x100m.

Site 10 is to the N of the Nahr El Harir and is composed of a natural hill-top with terraces S of the hill-top. The railway cuts through the site, between the hill-top and the terraces. Surface



artifact remains indicated that the predominant period of occupation was Early Roman. Numerous building foundations were observed on the hill-top. Along the N side of the hill-top is a low wall of large basalt blocks, ca. 100m. long, which appears to be a diversion wall to protect the site against water runoff from the cliffs above. On the terrace below is a round structure, recently made, ca 10x5m. It is constructed of fieldstones and dressed basalt and limestone blocks (see Pl.LXXVIII,2). On the S side of the structure is a round pit, ca 3m. in diameter and ca. 2m. deep.

Site Number 11, El-Madkhanah

grid coordinates: 236 550/237 790

elevation: 130-170m.

estimated size: 200x200m.

Site 11 is on a terrace on the N side of Nahr El Harir. The artifacts found at this site are predominately Early Neolithic, Early Roman and MB IIB-C, with some Early Bronze including a four-spouted lamp. The railway line cuts through the N side of the site and a small wadi borders the W side. Much of the site is now under cultivation. The cultivated areas are strewn with flint, basalt and limestone stones. Large stones have been placed in piles by the farmers. A canal runs along the S side of the site. A natural embankment, running from the wadi to the E seems to define the perimeter of the site.

Site Number 12, Abu Taha

grid coordinates: 235 080/237 460

elevation: 130m.

estimated size: 14m. EW and unknown NS

The foundation of an EW wall is visible. It is made of dressed limestone and basalt. There are undressed stones scattered about the site. Its condition is poor because a road cuts through the site, destroying the NS wall. A small sample of the pottery was found only in the road cut, mainly EB IVB-MB I. The site is on a natural ridge protruding towards the S. A grinding stone was found on the N side of the cut road.

Site Number 13

grid coordinates: 235 340/237 355

elevation: 115-130m.

estimated size: 100 m. diameter

Site 13 is on a low terrace S of the Nahr el Harir. A low density of sherds, mainly representing the R period was found. Also observed on the terrace were modern terracing and corrals made of field stones.

Site Number 14, Tell Jamid

grid coordinates: 232 965/236 510

elevation: 123m.

estimated size: 300x150x60m.

Tell Jamid is located on the S side of the Yarmouk above Maqarin station. (see Pl. LXIX,1). It is a major tell along the Yarmouk river, representing all four phases of the Early Bronze period (see Pl. LXXVI,1,2). The top of the tell is eroded, with an army road running across the tell and an army bunker placed on the NE corner facing the Yarmouk basin. Turkish buildings are also on the top of the tell along the E side S of the army bunker. At the time of the survey, the heavy vegetation made it difficult to collect artifacts. There are caves cut into the high cliff on the S and W sides of the tell. In addition to the sherds several grinding stones were noted.

Tell Jamid was visited by Gottlieb Schumacher in 1884 and briefly described (Schmacher 1886: 100). Glueck collected surface sherds there in 1942 and identified the periods of occupation as EB I-III (Glueck 1951: 122-24, Site No. 88). He published photos and descriptions of a number of these sherds (1951: 491-92, pl. 84: 1-6,8,9, 11; pl. 85: 1-15). Glueck also reported finding a massive wall of unhewn basalt blocks around the top of the tell, worked flints, and numerous fragments of basalt querns and dishes.

In 1953, James Mellaart and Henri de Contenson visited the site (their No.1). Mellaart reported the basalt wall as well as a gateway on the S side and building foundations (Mellaart 1962: 130). He conducted a sounding on the tell which revealed a large stone building and pottery from the EB I-III period (1962: 131). The material from this sounding was not published.

Contenson described 31 flint artifacts from Tell Jamid which he dated to the EB I-II period (Contenson 1964: 30-31, Pl.VII: 1-9., Pl.VIII: 1-3).

Site Number 15, Ez-Zawr

grid coordinates: 232 930/237 400

elevation: 85m.

estimated size: 100x50m.

Site 15 contains a small building (21x19m.) destroyed down to the first course. It is positioned on the summit of a natural hill on top of a bedrock foundation. The building is square, apparently with a south entrance built of rough limestone and basalt. There is a cistern-like pit inside this building. The mound is heavily eroded with numerous recently dug pits around the slopes. On the S slope towards the river there are several small piles of stone, possibly burials. Traces of what could have been a road ascending the tell on the NE side are present. A good sample of Early Roman sherds was collected. Site 15 is located in a primary borrow area.

Site Number 16

grid coordinates: 233 210/237 060

elevation: 100-150m.

estimated size: 150m. dia.

Site 16 represents an Upper Paleolithic concentration of flints on a high sloping terrace overlooking the flat basin to the W. Located on the N side of the Yarmouk, a foot-path leads from the terrace W up to Qoussair village on the plateau above.

Site Number 17, Et-Tahuna

grid coordinates: 235 020/237 290

elevation: 100m.

estimated size: 100m. dia.

Site 17 occupies several cultivated terraces covered predominantly with B sherds. On the lower terraces stand several recently made buildings now abandoned. The structures are made of stone and mud, and are in fair condition. Many dressed blocks were found and a possible piece of a basalt grinding wheel. An

unfinished limestone column base was located on an upper terrace. On the S end of the site there is a rock-cut channel leading from the river which was probably associated with a mill. A large well-cut basalt block was found in the mill area. An orchard is located on the S side and several canals are on the W side running N to S.

Site Number 18

grid coordinates: 233 600/236 430

elevation: 75-90m.

estimated size: 250x200m.

Site 18 is a large prehistoric site with a heavy concentration of worked flints. The Middle Paleolithic period is well represented. Also evidenced are the Early Neolithic and to a far lesser degree Lower Paleolithic. The terrace overlooks the basin where the Yarmouk and the Nahr el Harir join. The terrace is partially cultivated with several corrals made of field stones.

Site Number 19; El Baidar

grid coordinates: 237 850/236 370

elevation: 170-200m.

estimated size: 200m. dia.

Site 19 is located S of the Yarmouk river across from the Zeizoun station. The pottery artifacts were predominantly from the LB period. The site is strategically located on a high terrace at a point where the Yarmouk changes its course from N to W. On the E and N sides of the site there are steep cliffs going down to the river. It is also at this point that the Yarmouk Valley widens out to provide terrace areas suitable for cultivation and habitation (see Pl. LXIX,2). Dominating the site is a circular wall approximately 45m. diameter constructed of partially dressed basalt blocks, some of megalithic proportions (see Pl.LXX,1). On the N side, the wall stands to a height of ca. two m. On the E side is a gateway of dressed stones. The lower terraces to the N and W of the circular wall are littered with pottery indicating ancient habitation. The higher terraces to the E and S of the wall contain no pottery, but were

cleared of fieldstones as if for cultivation. The area is somewhat isolated and there is no evidence of recent cultivation. An E-W trail passes along the E edge of the site at the base of the steep incline rising to the Jordanian plateau above.

#### Site Number 20

grid coordinates: 237 090/236 570  
elevation: 150-170m.  
estimated size: 100x50m.

Site 20 is a natural terrace on the S side of the Yarmouk river. A road leading to the river is cut into the N side of the site. The terrace is eroded and is scattered with basalt outcropping. The artifacts collected were largely worked flints from the Middle Paleolithic through the EB.

#### Site Number 21, Umm El-Hasinat.

grid coordinates: 235 035/236 650  
elevation: 150m.  
estimated size: 100x50m.

Site 21 consists of dressed rectangular limestone blocks on the N end of a high ridge. Some foundation stones are also visible. A small sample of sherds was found with several periods of occupation represented. The range of the sample is EB, MB II, with a gap to Late Byzantine. The site commands a view of the Yarmouk river at a large bend on the S side. A well-worn path leads to the site. Because of the overgrowth it was difficult to find artifacts.

#### Site Number 22

grid coordinates: 231 550/237 450  
elevation: 300m.  
estimated size: 200x100m.

A building of partially dressed basalt stones was found on a high basaltic hill in a secondary borrow area. On the E side of the structure there appears to be an entrance into the building. A large concentration of sherds was found over the hill and on the slopes leading E to Site 31. These sherds are predominantly Early Roman II-IV. Basalt quarrying activity is evident near the building, as there is an abun-

dance of stone chips. To the SW of the building is a pile of basalt gravel, possibly used to pave the modern road that circles around the site to the N and down to the JVA camp. About 250m. to the east there is a pile of badly weathered basalt stones about 10m. diameter. Possibly this is a watchtower associated with Site 22.

#### Site Number 23, El-Burj.

grid coordinates: 230 130/237 550  
elevation: 70m.  
estimated size: 30m. dia.

Site 23 is located in a secondary borrow area. It consists of a square foundation (ca. 12x12m.) of undressed basalt field stones with a possible gateway of dressed stone. This badly destroyed structure is N of, but adjacent to, a Turkish complex, apparently built in connection with the Hijaz railway line. All of the structures are located on a natural hillside. Most of the sherds were picked up on the slopes of the hill side and represent the MB II B-C period. Several basalt grinding stones were also noted.

#### Site Number 24

grid coordinates: 229 861/237 688  
elevation: 73m.  
estimated size: 5x4m.

Site 24 is a small prehistoric site located in a primary borrow area. It is about 10m. SW of a geological test pit (HR2-2) on an eroded slope of a terrace. Early Neolithic flint dominates the small sample which also includes a few P flints.

#### Site 25

grid coordinates: 229 480/237 930  
elevation: 70m.  
estimated size: 100m. dia.

Site 25 is in a secondary borrow area and consists of a flat terrace with a large circular pile of undressed basalt stones at the S edge. The stone pile is ca. 15m. in diameter and ca. 4m. high with rock fall to the S side. A concentration of worked flints was found covering this terrace and also around the pile of stones. The identifiable flints are Lower to Middle Paleolithic. On a slightly lower terrace, SW of the pile of

undressed basalt stones, a foundation of a wall ca. 9m. long was found.

#### Site Number 26

grid coordinates: 230 215/237 225

elevation: 40m.

estimated size: 500x100m.

Site 26 is located on a flat ridge oriented NW-SE on the N side of the Yarmouk river. The ridge is washed on the NE, SE, and SW sides by the river. A heavy concentration of worked flints was found dating to the Early Neolithic period. The railway line cuts through the NW end of the site and the SE end is presently under cultivation. Site 26 yielded the heaviest concentration and highest quality of flint of any of the flint sites located in the survey. In dam construction this site could be damaged severely, as it is surrounded by borrow areas.

#### Site Number 27, Tabaqat Nasrah

grid coordinates: 230 540/237 450

elevation: 30-65m.

estimated size: 400x100m.

Site 27 is a large prehistoric site located in a secondary borrow area downstream from the proposed damsite. It is predominantly Early Neolithic with evidence of some P occupation. The site spreads over a natural terrace that is partially cultivated. Some lines of field stones are visible which may be terrace walls or structure walls. Three grinding stones were found of which a broken saddle mortar was photographed (see Pl.LXX,2). The summit at the NE end is strewn with rocks. At the time of the survey, the overgrowth made it difficult to find artifacts. Cultivated fields lay between the site and the river on the lower terrace. The railway line cuts through the NE end of the site.

#### Site Number 28, Tell Qurs.

grid coordinates: 230 890/237 065

elevation: 150-180m.

estimated size: 140x90m.

Tells Qurs is a natural hill located on the S side of the Yarmouk river, W of Wadi es Sijn. The predominant periods of occupation were

the EB and the R periods There are a number of dressed blocks on the site indicating the presence of stone structures.

Nelson Glueck visited the site in 1942 and reported finding hewn stones and pottery from the first part of the EB, the IA, and the R and B periods, (Glueck 1951: 130, Site 89). A description and photo plate of two of these sherds was published (1951: 492, pl. 84: 7, 10).

#### Site Number 29

grid coordinates: 230 875/237 390

elevation: 80-85m.

estimated size: 100x100m.

Site 29 is situated on a high terrace on the S side of the Yarmouk river. The worked flints and pottery sherds collected here are predominately from the EB period. Presently, the JVA engineering camp is located on the site with some cultivated area around the camp.

Mellaart saw the site in 1953 and reported finding "Neolithic/Chalcolithic type flints", (Mellaart 1962: 140-41, Site No.4).

#### Site Number 30

grid coordinates: 232 990/236 050

elevation: 75m.

estimated size: 3.4x1m.

Site 30 is a N/C ash pit filled with sherds and small pebble stones. It is located on the W side of the Wadi esh Shallala just before the wadi intersects the Yarmouk and is SE of Tell Jamid. The pit is visible because of a road which cuts through the steep slope. It is on the W side of the road.

#### Site Number 31

grid coordinates: 231 645/237 440

elevation: 300m.

estimated size: ca. 200m. in one direction, unknown in the other direction.

Site 31 is located on a high terrace S of the Yarmouk river above the proposed damsite. It is a cultivated field N of the paved road which leads to the JVA camp. The artifacts collected are nearly all worked flints, predominately P and N. One artifact of special interest is an

Acheulian handaxe from the Lower to Middle P period. The site is located in a potential secondary borrow area.

Site: Maqarin Ledge

grid coordinates: 232 700/236 770

elevation: 80-100m.

estimated size: unknown.

The survey team did not visit this due to the presence of a mine field. It is a prehistoric site on a low terrace on the S side of the Yarmouk river to the NW of Tell Jamid and W of the Maqarin station. It is in a primary borrow area and thus threatened by dam construction. The site was visited in 1953 by James Mellaart and Henri de Contenson (their site No.2.). Mellaart reported finding some Mousterian flints (Middle Paleolithic), but the majority of the flints were from the N/C period (Mellaart 1962: 140-41). Contenson believed the site to be a flint workshop and reported flints from the Lower Paleolithic, Upper Paleolithic, and N periods (Contenson 1964: 31, pl. VIII:4,5).

#### King Talal Reservoir Area

Site Number 1, Khirbet es-Suwwari

grid coordinates: 231 250/179 300

elevation: 238 m.

estimated size: 65 m. dia.

Khirbet es-Suwwari (Glueck's No. 340), is located on a high natural hill that is heavily eroded. A large number of IA sherds (Pl. LXX-XII, 2), and very few MB were found, where Glueck found a large number of EB IV-MB IIA and numerous Iron I-II (1939:222). Two Persian sherds were also collected, a period not represented in Glueck's sample. Since Glueck visited the site, a modern building has been built on the top.

Site Number 2, El Maida

grid coordinates: 230 085/178 490

elevation: 175 m.

estimated size: 50 m. dia.

Site No.2 is a prehistoric site located on a low terrace next to the river on the N side. The terrace is well cultivated with a lemon and

orange orchard covering it. Early Neolithic flints are dominant, a few M and possibly a few P flints. The sherd sample is small with Modern Mamluke/Ottoman, and Byzantine periods represented.

Site Number 3, Umm Er-Rumman

grid coordinates: 230 250/178 410

elevation: 200 m.

estimated size: 110 x 50 m.

Site 3 is an elongated hill with a narrow ridge on top. The hill is a sandstone formation and is heavily eroded on top. The sherds were taken from the slopes. Sandstone formations along the E side just below the summit appear to be natural rather than remnants of a wall. Umm Er-Rumman rises above the terrace where Site No. 2 is located. A door socket of sandstone was found at the base of the hill on the W side. The sherds are predominantly Early Roman, with a fairly good representation of Iron IA.

The survey work in the Zarqa introduced a number of problems associated with identifying local names of sites, particularly tells. One objective of the survey was to verify or modify Nelson Glueck's site identifications where-ever possible. In the case of Sites 1 and 13, the verification proved a simple matter. The names supplied by the villagers for these sites, as well as their description, matched those given by Glueck. In other cases, however, complications arose. The description given by Glueck of his Site 341, Tell Tunyah, seemed to match Site 3 Umm Er-Rumman. The local names however did not match. The villagers indicated that Tell Tunyah was located farther W. Upon further investigation a long ridge was located, on which a village was recently built. This ridge is just W of the old Jerash road, overlooking the bridge on the N side of the river. A villager working in the field stated that this was Tell Tunyah. Glueck's Site 342, Khirbet es-Seqi, was located just W of Tell Tunyah. But the villager said that Khirbet es-Seqi was on the S side of the river. And in fact, on the map of the area on the S side of the river at this point is called Haud es Saqi. Glueck also described a spring called Ain Dalla

Table 2

Aicheological Analysis of King Talal Reservoir Area

Period	Areas																				
	A	B	C	D	E	F *	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
P	2	7	20					6	4	3			7				5				
M		5	9					5							6		5				
N		3						85		15							25				
N/C																					
N/CF																					
C																					
C/EB																					
C/EBF																					
EB							2				23					6				15	
EBF																					
EB-MB																					
MB	1	9					3							28						4	6
LB		1					4													8	
IA							20		10											3	
PE							2														
H																					
R	3		4			1			37				1								9
B								2								1		123			
EI																					
LI	13		1	10	28			5				3					4				
OTT/M			9																		
M	13	8	4				7	6	6						3	20					
UDS	1		5				5		18								26			5	2
UDF	7	8	17	3	29	8	2	5	13				1	13	4	13	3			2	18
TS	34	31	31	5	14	29	163	20	73		23	3	1	29	4	20	35	123	225	87	
TF	12	8	32	3	58	8		97	20	18	2	1	20	4	19	3	72			2	18

\* G—H No Artifacts

on the S side of Khirbet es-Seqi. Upon asking the villager where Ain Dallal was located, he said that it was just below Tell Tunyah. And in fact, there was a spring in that location. At first however, the villager replied that Ain Dallal was atop a distant plateau. Some minutes later he said that he had lied about the location of Ain Dallal because he thought the survey team knew of the location of gold near Ain Dallal.

In any case, neither the ridge identified by the villager as Tell Tunyah (or Glueck's Khirbet es-Seqi), nor a ridge to the W of it (conceivably Glueck's Tell Tunyah), showed any traces of ancient occupation. In other cases, not associated with Glueck's sites, the team was given conflicting names for the same site by different local residents. For example, a villager identified himself as being better informed than other villagers, and his identification should take precedence. One villager said that the name Tell Tunyah had been introduced into the area by a foreign cartographer who had worked in the area recently. Lastly, it often happens that a name given to a specific mound is actually a general name for the entire district, such as Haud es-Saqi mentioned above: All of the above problems are pointed out by way of caution to future researchers. They may encounter great fluidity, fluctuation, and uncertainty in the identification of modern place names in the remote areas of the Near East.

#### Site Number 4.

grid coordinates: 230 600/178 825  
 elevation: 180 m.  
 estimated size: 75 x 10 m.

Site 4 is a relatively small site where a concentration of flints was found at the intersection of two tracks at the edge of the Zarqa on the W side. Wash coming down from the terraces above could have carried the flints to this place. Flints were found in the road above to the W for ca. 50m. The flints appear to be predominantly Early Neolithic.

#### Site Number 5, Tell Freiji

grid coordinates: 230 550/178 600  
 elevation: 250 m.  
 estimated size: 80 x 30m.

Tell Freiji is located on a very high hill, which is badly eroded and bare on the top and upper slopes. The top is rocky and few sherds were found--all possibly EB II. The top slopes were also cultivated.

#### Site Number 6

grid coordinates: 230 335/178 325  
 elevation: 175 m.  
 estimated size: 4x4m. average

Site 6 is a series of four large caves in the cliff at the SE end of Umm Er-Rumman overlooking the Zarqa. No artifacts were found in the caves which are presently being used by shepherds. Three Late Ottoman/Modern sherds were found on the slope outside of the caves.

#### Site Number 7, Abu el Samar

grid coordinates: 229 517/178 443  
 elevation: 165 m.  
 estimated size: 50m. dia.

Site 7 is a prehistoric site located on a low terrace, which is currently a well cultivated lemon and orange orchard. The flints are predominantly unidentified, with about one third P.

#### Site Number 8, Abu el Samar

grid coordinates: 229 404/178 456  
 elevation: 172-179 m.  
 estimated size: 100 m. dia.

Site 8 covers four terrace walls which are possibly ancient and modern. The hillside slopes down to a flat cultivated terrace next to the wadi on the NE side. The sherds were solely MB II (see Pl.LXXXII,1). A large sample of sherds was inadvertently left at the site.

#### Site Number 9

grid coordinates: 229 041/177 573  
elevation: 149 m.  
estimated size: 30x20m.

Site 9 is on a low terrace on the N side of the Zarqa river. A small quantity of worked flints were found here, of which one-third can be identified as M, the remainder being unidentified and require further analysis. The site today is under cultivation, with a ruined mud-brick building on it.

Site Number 10  
grid coordinates: 229 393/178 172  
elevation: 153 m.  
estimated size: 30x12m.

Site 10 is a burial on a hillside to the E of the Zarqa river. It is located between a rock outcropping on the W edge and a ravine on the E edge. One grave had been recently opened. Modern pottery sherds were found in the vicinity of the cemetery.

Site Number 11, Abu Shawmar  
grid coordinates: 228 800/177 548  
elevation: 165 m.  
estimated size: 50 m.-dia.

Site 11 is located on a high terrace on the S side of the Zarqa river. Today it is under cultivation and has a line of Eucalyptus trees along its upper (S) edge, some of which are being cut by villagers. There is a deep wadi on the E side of the site. Flints and sherds predominantly from the Early Neolithic (see Pl.LXXXI,2) and EB periods were found thinly scattered about the site.

Site Number 12  
grid coordinates: 228 190/177 910  
elevation: 185 m.  
estimated size: 30x30 m.

Site 12 is a ruined site located at the edge of a deep wadi overlooking the Zarqa on the N side. The site is about 15 m. below the level of

the modern road leading to King Talal Dam. The site was virtually destroyed by the road building activity. There are remnants of a possible tower made of undressed stone. It is possible to follow the line of the tower wall. A deep cistern is located on the W side underneath the tumble. The sherds are predominantly Late Byzantine, with considerably smaller concentration of Early Byzantine (see Pl. LXXXIII,1).

Site Number 13, Tell Er-Rehil  
grid coordinates: 226 320/177 360  
elevation: 200 m.  
estimated size: 140x40m.

Site 13 is located on a natural hill on the Zarqa river, with the river sweeping around its E,S, and W sides (see Pl.LXXI,1). It is currently the site of the permanent buildings for the King Talal Dam personnel. Because of the modern construction, the top of the site is almost totally destroyed. The sherds collected were predominantly from the EB period, although the MB, LB and IA are also represented. On the SE side of the hill, ca. 10m. below the top are two rock-cut chambers (which appear to be tombs. See Pl.LXXI,2). They are comprised of a single chamber each. The westernmost chamber is ca. 97 cm. wide 1.57m. deep and 1.2m. high (see Pl.LXXII,1) while the easternmost is 1.22m. wide, 1.89m. deep and 1.14m. high. It was reported that there are a series of such chambers further down the hill, but this area was under water at the time of the survey. Possible remains of walls were also observed on the SW and NW sides of the hill, and a possible road on a lower terrace on the SW side.

Site 13 was previously reported by Nelson Glueck (1939:223, Site No. 343), who observed wide cultivated terraces between the base of the hill and the river which are today under water. He also observed several cisterns, foundations, and a tower which have been destroyed by the modern construction.

Site Number 14, Tell es-Safh et Tawil



grid coordinates: 230 000/178 850  
 elevation: 235 m.  
 estimated size: 60x40m.

Site 14 is located on a natural hilltop on the N side of the Zarqa river. It is in the middle of a horseshoe bowl formed by wadis, with cultivated fields in the bottom of the bowl on the W, N and E sides of the site. The hilltop is bare, with rock outcropping at the N end. The predominant periods represented in the pottery sherds collected were R and MB IIA-B.

**Table 3**  
 Archeological Analysis of Wadi Arab  
 Reservoir Area

Period	Areas		Sites		
	A	B	1	2	3
P	2				
EB				2	8?
EBF				1?	
EB-MB					
MB				8	1
LB					
IA	1				1
PE					
H					
R	4	6	20	1	3
B	18				14
EI					
LI	1?				
OTT/M		1			10
M	1			5	
UDS	1	7	2		5
UDF	3			1	
TS	61	14	40	17	159
TF	5			1	5

**Wadi Arab Reservoir Area**

Site Number 1  
 grid coordinates: 210 302/225 093  
 elevation: 119m.  
 estimated size: 75x20 m.

Site 1 is located on a natural tongue projecting into the wadi from the N side. The foundation of a two-room building is clearly visible. The building follows the natural contour of the ridge, and a well-worn path passes in front of the building continuing along the N edge of the wadi. The small sample of sherds reflects the Early Roman period.

Site Number 2  
 grid coordinates: 211 320/225 323  
 elevation: 100 to -104 m.  
 estimated size: 50x20 m.

Site 2 is located on a natural hill on the N side of Wadi Arab. Today there is a small village on the site. Foundations on the S edge of the site ca. 4m. long appear to be ancient. The artifacts collected were predominantly from the Middle Bronze II period.

Site Number 3, Tell Zer'ah  
 grid coordinates: 211 940/225 180  
 elevation: 40 m.  
 estimated size: 300 m. dia.

Site 3 consists of a high, isolated natural hill and the surrounding lower terraces on the S side of the Wadi Arab, E of the intersection of the Wadi Zahar with Wadi Arab (see pl. LXXII,2). The hilltop commands a view of the Wadi Arab Valley both to the E and W. The site was of major size in antiquity. Scattered about the hilltop are abundant foundations and building stones. One large cistern was observed. A recently excavated hole ca. 4 m. in diameter and 1.5 m. deep revealed a floor of tesserae about .5 m. below the surface. The sherds collected were predominantly from the Late Byzantine period (see pl. LXXXIII,2), with also a good representation from the Early Bronze period.

Tell Zer'ah was visited by Nelson Glueck in 1942 (Glueck 1951: 182-84, Site No. 100). In addition to the above observations, Glueck noted a second cistern and a natural spring on the hilltop.

**Recommendations**

The following recommendations are based

both upon urgency (available time) and the intrinsic archeological merit of the sites themselves. In no case is it recommended that construction on a dam be stopped, that a dam site be moved, or that a reservoir level be changed. The goal implicit behind the recommendations is that salvage excavations be carried out on certain sites before they are destroyed. Ideally, it would be advisable to salvage all the archeological remains in the reservoir areas. In more practical terms however, a plan is presented below with a suggested timetable for excavation of the most important sites in the reservoir areas. It would be possible to carry out this kind of timetable within the projected schedule of dam construction and reservoir filling. Along with the timetable, projected manpower needs connected with the excavations are estimated. It is important that copies of this report and the accompanying maps be given to the on-site officials at the dams so that sites will not be inadvertently destroyed prior to salvage work.

The archeological remains in the three river valleys surveyed may not, at first appearance, possess the monumental or spectacular physical features of those in other areas, such as the Jordan Valley (Ibrahim, Sauer, Yassine 1976). Nevertheless, it is the opinion of the authors of this report that these valleys represent important areas in the cultural history of Jordan, as habitation areas, as E-W and possibly N-S passageways, and as border zones. Even though the survey itself has provided important new data for our understanding of the ancient cultural history of northern Jordan, relatively little archeological excavation has been carried out in the area. In addition, there are major gaps in

our knowledge of several of the archeological periods of northern Jordan, and of Jordan in general, particularly the prehistoric periods, but also the Middle Bronze, Late Bronze and Iron Ages, and the Hellenistic and Late Byzantine periods. The prehistoric periods are richly represented in the sites discovered in the reservoir areas. The other periods mentioned above are also represented.

It is important to emphasize the newness of the majority of sites discovered in the reservoir areas. Additional excavation work in these areas would add richly to our understanding of Jordan's cultural history.

The following tables embody the recommendations for further excavation. The archeological sites of the Maqarin Dam reservoir area are grouped together, as are those of the King Talal Dam and the Wadi Arab. Within each group the table is divided into three parts: part one lists the sites by their intrinsic archeological value (Excellent, Medium, Low); part two lists the sites according to when they will be destroyed, either by the dam construction phase (in the case of the Maqarin sites), or by the successive flooding phases; part three then combines sites by these two previous factors (intrinsic value and time). For example, when a site of great intrinsic value is going to be destroyed in an early stage of dam construction, excavation is recommended. In each case where excavation is recommended, an estimate of the number of supervisors needed to carry out the excavation and the approximate amount of time they would need is included in the table. The recommendations for excavation embody the bare minimum of what actually should be done in these areas.

**Table 4**

Maqarin Dam Reservoir Area

Sites Grouped by Intrinsic Archeological Value  
(With Major Periods of Each Site Identified)

Excellent:

6-Middle Bronze, Iron, Hellenistic, Roman

14-Early Bronze

19-Late Bronze

26-Neolithic

Medium:

1-Cave

2-Neolithic

3-Byzantine

4-Byzantine

7-Neolithic

10-Roman

11-Middle Bronze, Roman

16-Paleolithic

17-Byzantine

18-Paleolithic, Neolithic

27-Neolithic

31-Paleolithic

Maqarin Ledge

Low:

5

22

8

23

9

24

12

25

13

28

15

29

20

30

21

Sites Grouped by Urgency

Dam Construction Phase:

15

26

22

27

23

29

24

31

25

Maqarin Ledge

Flooding Phase I.

1

2

14

6

16

10

17

11

18

12

21

13

30

Flooding Phase II.

3	
4	9
5	19
7	20

Not Threatened:

8
28

Recommendations Based on Intrinsic Value and Urgency

URGENT (These sites will be destroyed by construction activity within the next few months to one year).

Site No.	Elevation	No. of Supervisors	Time for Excavation
26		4	one 6-8 week season
27			
31		2	one 6-8 week season

PHASE I (These sites will be flooded within 4-6 years at 150 m. elevation).

6	160	3	Two 6-8 week seasons
14	123	4	Two 6-8 week seasons
2	70-140		
18	75-90	2	One 6-8 week season
1	100		
17	100	2	One 6-8 week season
16	100-150	2	One 6-8 week season
11	120-170	2	One 6-8 week season
10	135-180	2	One or more 6-8 week seasons

PHASE II (These sites will be flooded within 20 years at 200 m. elevation)

19	170-200	4	Major salvage excavation
3	160-200	4	Two or more 6-8 week seasons
4	150-180		
7	190-210	2	Two or more 6-8 week seasons

**Table 5**

King Talal Dam Reservoir Area

Sites Grouped by Intrinsic Archeological Value

Excellent:

1-Iron

8-Middle Bronze

Medium:

2-Palaeolithic, Mesolithic, Neolithic

6-Caves

- 11-Paleolithic, Mesolithic, Neolithic
- 12-Byzantine
- 13-Early Bronze

Low:

3	9
4	10
5	14
7	

#### Sites Grouped by Urgency

Flooding Phase I:

- 9
- 10
- 11

Flooding Phase II:

- 2
- 6
- 7
- 8

Not Threatened:

1	12
3	13
4	14
5	

#### Recommendations Based on Intrinsic Value and Urgency

**Urgent** (These sites will be flooded in a time period based on the amount of rainfall into the present reservoir, at 165 m.

Site No.	elevation,m.	No. of Supervisors	Time for Excavation
11	165	2	One 6-8 week season

**Phase II** (These sites will be flooded within 20 years at 175 m. elevation).

8	172-179	2	One or more 6-8 week seasons
2	175	2	One 6-8 week season
6	175	1	One 3-6 week season

**Not Threatened:**

Site No.	Elevation,m.	No. of Supervisors	Time for Excavation
1	238	4	Major excavation
12	185	2	One 4 week season
13	226	3	Two 6-8 week seasons

**Table 6**

Wadi Arab Dam Reservoir Area

**Sites Grouped by Intrinsic Archeological Value**

Excellent:

3-Early Bronze, Roman, Byzantine

Medium:

None

Low:

1

2

**Site Grouped by Urgency**

Flooding:

1

Not Threatened:

2

3

**Recommendations Based on Intrinsic Value and Urgency**

Flooding (Four Plus Years)

Site No.	Elevation	No. of Supervisors	Time of Excavation
----------	-----------	--------------------	--------------------

None

Not Threatened:

3

—40

Major excavation

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# Sondeo Arqueológico en Khirbet Medeineh junto a Smakieh (Jordania)

Por  
E. Olavarri

La misión arqueológica de la Casa de Santiago de Jerusalén ha realizado un breve sondeo de exploración arqueológica en Khirbet Medeineh junto a Smakieh (Jordania), de solo doce días de trabajo (17 al 29 de septiembre de 1976) (1). Smakieh es un pequeño pueblo, todo él cristiano, situado a 9 Kms. al Este de Qasr, villa esta de alguna mayor importancia al Sur de Wady Modjib que atraviesa la carretera de Kerak a Mádaba. Khirbet Medeineh se encuentra a 7 Kms. al ESE de Smakieh. Se trata, como más adelante veremos, de una ciudad-fortaleza de finales del 2º milenio a.C., construida en el borde oriental del Wady — Mo'adrradje, arroyo profundo y sinuoso que más al Norte desemboca en el Wady Modjib. El tipo de construcción que aflora en superficie y, sobre todo, su situación estratégica nos hicieron pensar desde un principio que, más que una ciudad, sus ruinas ocultaban una ciudadela cuya función consistía en vigilar y defender la frontera natural que forma el valle profundo del Wady Modjib al dividir el plateau del antiguo reino de Moab y la llanura desértica que se extiende al Este hacia Qatrana. Idénticas funciones asignamos a las ciudades o fortalezas de Tell el-Medeiyineh junto a Ader (a tres Kms. al Sur de nuestro Khirbet-Medeineh) y Tell Balu'a (a 4 Kms. al Norte), situadas ambas igualmente en el borde mismo del Wady Mo'adradje, uno de los brazos meridionales del Modjib (2). Las ruinas de nuestro Medeineh se asientan sobre una colina ovalada, cuyo eje central está orientado al Norte, exenta casi totalmente, si no es por su parte Sur en que un estrecho pasillo de rocas cortadas, a modo de istmo, la une a la llanura de Moab (3). Las caras Norte y Este de la colina se desploman abruptamente sobre el wady.

La ladera occidental no es tan pendiente y al fondo de la misma corre un arroyo seco que nace en el pliegue meridional de la misma. El trazado de las murallas, perfectamente visible, va siguiendo el contorno superior de la colina formando un recinto ovalado que alcanza un diámetro longitudinal de Norte a Sur de 170 ms. y de 80 ms. de Este a Oeste en su parte más ancha. En el pasillo Sur que une la colina al plateau (v. Foto LXXXIV, línea A) se observa un corte profundo y transversal que podría interpretarse como un foso defensivo artificial. Sobre la arista Norte de este foso (v. Foto LXXXIV, línea B) se aprecian claramente los restos de una construcción de recio aparejo de sillares. Se trata probablemente de un torreón de defensa, aparentemente desvinculado de la muralla de la ciudadela, que protegía el punto más vulnerable de la colina, puesto que a sus pies pasaba el camino de acceso a la fortaleza. La ladera occidental, de pendiente algo más suave que las otras, está defendida por una doble muralla (v. Foto LXXXIV, líneas D y F) de ocho metros de ancho cada una; entre ambas corre un pasillo de irregular anchura en el que no se observan restos de casamatas (4). Estas dos murallas, construidas con grandes piedras rectangulares aparejadas en soga y tizón, se juntan en su extremidad Noroeste formando una gran torre esquinual (v. Foto LXXXIV, línea G).

Las laderas Norte y Este de la colina son, como ya hemos dicho, de pendiente muy fuerte y por ello van defendidas con una sola línea de muralla de unos siete metros de ancho. La puerta de la ciudadela, a juzgar por el relieve de las piedras acumuladas (v. Foto LXXXIV, línea D) parece situada en el término del primer tercio suroccidental de esta doble muralla.



La localización de la necrópolis parece cierta. Mirando desde la Khirbet en dirección Sur-Oeste y a la misma altura que su superficie más alta, como a unos doscientos metros de distancia, se ven unos huecos en la roca: son las entradas de las tumbas (v. Foto LXXIV, línea C), excavadas y abovedadas con un diámetro horizontal de unos cinco metros. La nota más destacable en ellas es que están emplastecidas con un estuco grisáceo muy bien pulimentado, hecho de cal y arena gruesa, con el que se evita la infiltración de agua y de arenillas por entre las numerosas grietas de la roca dura (5).

Dentro del recinto de las murallas queda una explanada de suelo ligeramente inclinado, según se aprecia en la foto. No parece que aquí existan restos ocultos de edificaciones, pues la roca virgen aflora en bastantes puntos. Únicamente hacia el centro (v. Foto LXXXIV, línea E), se constata el derrumbe de una sólida construcción rectangular adosada a la muralla Este de la ciudadela. Probablemente sea en este punto donde haya que buscar las dependencias y habitaciones en que se albergaban las familias o la fuerza militar de la ciudadela. En el ángulo Sur-Oeste de esta construcción, justamente en el punto señalado por la línea E de la Foto, emergían cuatro pilares verticales. Fue aquí donde abrimos la trinchera de excavación de 7 x 12 m<sup>2</sup>, suponiendo, como así fue, que allí encontraríamos una o dos casas del Hierro con pilares centrales. Al final de la excavación tuvimos que prolongar la trinchera 1,50 ms. hacia el Norte para descubrir el muro "F" que cierra la cara septentrional del locus 2 y que en el plano Fig. 1 designamos con la coordenada 0.

Quiero hacer constar que no hemos observado en superficie indicios de cisternas o estanques para recoger el agua, como ocurre en Aroer o en Dhiban. Esto no debe significar que el agua se acarree desde el wady, lo que supondría un

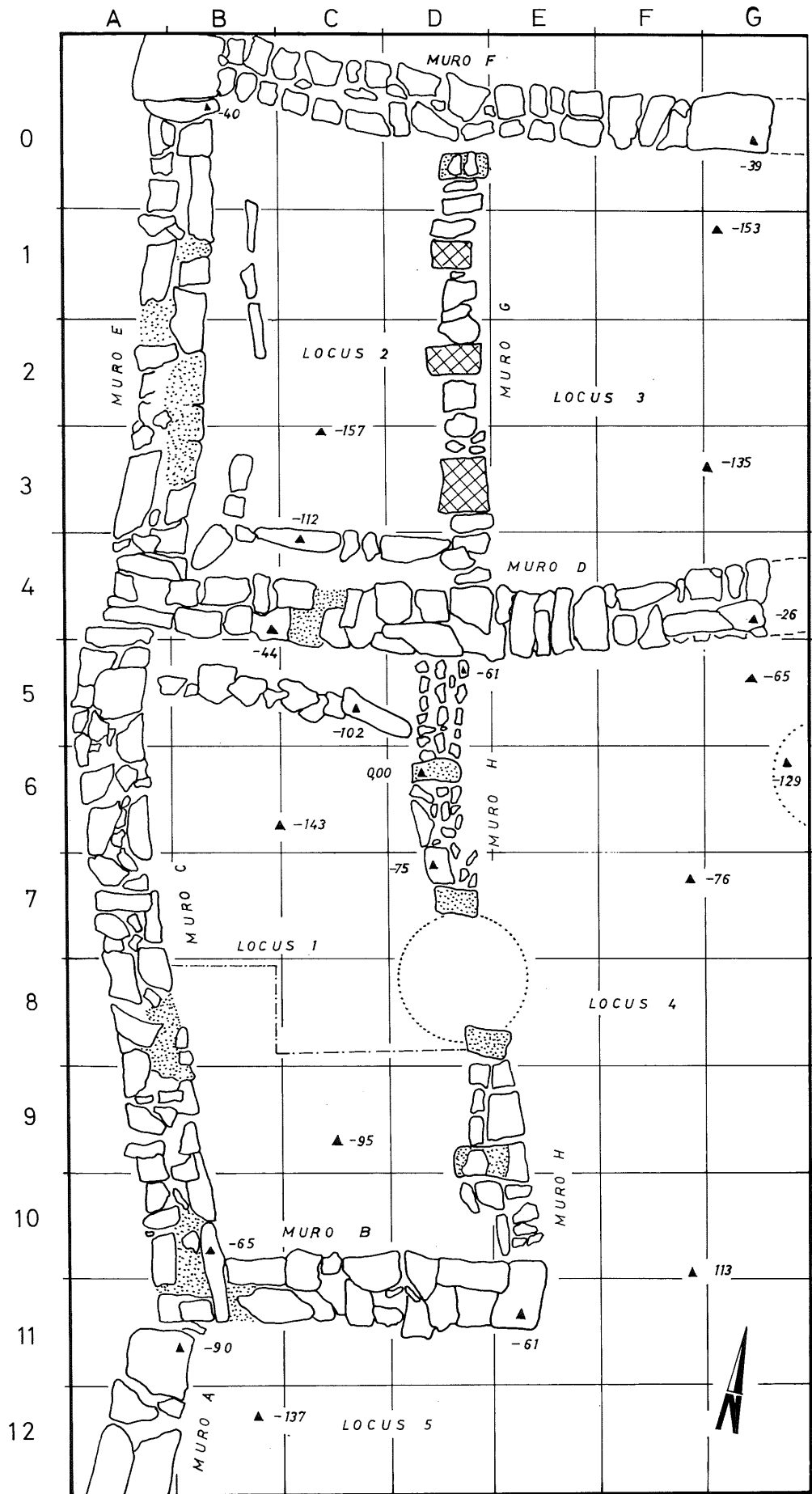
trabajo extremadamente penoso. Posiblemente las cisternas donde se recogía el agua de la lluvia hayan quedado completamente cubiertas por las piedras de demolición y por la arena depositada por el viento y sean hoy imposibles de detectar.

Para terminar esta descripción introductoria, quiero referirme a los restos de antiguas torres construídas en la cornisa del Wady Modjib. N. Glück habla de una de ellas situada como a unos 250 ms. al Sur de la Khirbet Medeineh en el camino de Smakieh (6). Desde la colina de Medeineh se ve otra al Occidente y es nota común de ambas el estar construídas justamente en el punto en que sendos caminos que suben desde el wady, entran en el plateau. Son aparentemente redondas y miden entre unos 15 y 25 ms. de diámetro. Desde estas dos torres se divisa perfectamente el Tell Medeiyineh del Sur junto a Ader. No habiendo encontrado en ellas ningún resto de cerámica, yo no dudaría, sin embargo, en atribuir las a la época del Hierro I. Son pequeños puestos fronterizos de vigilancia que controlaban el paso, a través del wady, del plateau oriental al reino moabita.

**Estructuras.** — La minuciosa prospección en superficie que hicimos en Junio de 1.974 nos hizo ya sospechar que en Kh. Medeineh solo había habido un período de ocupación en el Hierro I. Contra lo que suele ser frecuente en estos telles de Transjordania, no recogimos ni un solo tesón del Bronce Antiguo y de Períodos posteriores (Hierro II, Helenístico, Nabateo, Romano y Arabe). Este juicio previo ha quedado completamente confirmado, al menos en el área excavada por nosotros. No existe secuencia estratigráfica. El corte, en sección vertical, en las dos casas excavadas, presenta estas tres únicas capas: I, el humus superficial de unos 30 cms. de espesor, esparcido entre grandes piedras caídas; II, el nivel de demolición de 1,20 ms. de espesor, com-

SONDEO EN KHIRBET MEDEINEH

SMAKIEH - JORDANIA



puesto de piedras de irregular tamaño provenientes de los muros de las casas y mezcladas con tierra muy fina depositada por el viento. Este nivel es muy pobre en cerámica; III a y b, suelos de las Casas I y II, de tierra batida, sobre los que se encontró cerámica y otros útiles domésticos, situados a - 143 cms. el del locus 1 y a - 157 el del locus 2 (7).

El locus 1 tiene forma rectangular y mide 250 cms. de ancho por 550 cms. de largo. Sus muros están contruídos con piedras asentadas (aparentemente) sin mortero y muy rudimentariamente. Están cimentados directamente sobre la roca de la colina. Son piedras de escasa calidad que se exfolian como un hojaldre, detalle que en el dibujo señalamos con punteados dentro del muro. Todo esto, unido a la fuerte pendiente que presenta la superficie de la roca en esta zona que buza hacia el Oeste, ha facilitado el desplome del Muro C, visiblemente abombado en esta misma dirección a la altura de las coordenadas verticales 5.6.7. Ello se debe a que este muro no va ensamblado dentro del Muro D que hace de pared medianera entre los locus 1 y 2, habiendo así cedido a la presión de los escombros acumulados en el interior de la habitación. El Muro H tiene unas características especiales: es una pared continua dividida por cuatro pilastras verticales monolíticas entre cuyos intersticios se han levantado muretes de piedras más pequeñas, a veces dispuestas en triple hilada (primer intersticio Norte). Estas pilastras, algunas un poco inclinadas hacia el Oeste por el peso de las piedras demolidas, se apoyan en el piso inferior del locus 1 sin transpasarle y tienen una altura media de 150 cms. Es evidente que no se trata de pilares exentos interiores de la casa, sino que forman una unidad solida dentro del Muro H, cumpliendo en éste funciones de vigas maestras para sostener la techumbre. También es cierto que el Muro H cierra la vivienda del locus 1 en su fachada Este, separándola del locus 4, puesto que el Muro B nunca se prolongó más hacia el E. Dentro del locus 1 hay

una hilada de piedras hincadas verticalmente, en línea paralela al Muro D, cuya parte interior está rellena de tierra parda oscura. Se trata muy posiblemente, de un bancal adosado al Muro D y que no pudimos comprobar que se prolongase por la cara interior del Muro C. El piso interior de esta vivienda (- 143 cms.) es de tierra ocre oscura apisonada horizontalmente sobre la roca. Sobre este suelo hay una gruesa capa de cenizas mezcladas con arena muy fina depositada por el viento. El espesor medio de estas cenizas nunca es inferior a los 12 cms. Esta capa es relativamente rica en fragmentos de cerámica doméstica. En la parte Sur del locus 1, señalado por la línea discontinua en zigzag, dejamos visto un posible suelo más alto (- 95), de tierra color ocre más claro. Sobre él aparecieron algunos fragmentos de cerámica de características morfológicas idénticas a las del suelo inferior. Ello podría indicar un segundo periodo de ocupación de la vivienda dentro siempre de la misma estructura de muros.

El locus 4 es un patio exterior a la habitación del locus 1. En las coordenadas 10.11 - F.G, aflora la roca virgen, cuarteada e irregular. En las coordenadas E.F.G - 5.6.7.8., hay un piso encachado de losas rectangulares dispuestas verticalmente (en chapacuña). En el locus 5 se levantó una capa de cenizas de 60 cms. de espesor, mezcladas con arena muy fina, y entre las que aparecieron grandes piedras desprendidas del Muro B. En esta capa de cenizas se encontró abundante cerámica y algunos huesos de cabra y oveja (14 fragmentos).

Al no haber encontrado la puerta de la Casa del locus 1, suponemos que ésta estaría situada entre los dos pilares que encuadran la zanja de robo (coordenadas 7.8 - D.E., señalada con un circulo) o bien que, por efecto de la masiva demolición, haya desaparecido el umbral y la escalera interior que unía el suelo - 143 del locus 1 con el exterior - 76 del locus 4.

Los Muros D, E, F, de paramento doble salvo en pequeños tramos, circunscriben parte de un conjunto doméstico (locus 2 y 3) dividido por el Muro G interior, de paramento simple. Las escasas dimensiones del área excavada nos dejan sin aclarar las características generales de esta casa, a saber: su forma, dimensión y distribución interior de apartamentos, si es que, como ocurre en las casas del Hierro I en Palestina, ésta también comprende varias dependencias. Sí parece probable, no obstante, que el Muro D separa dos recintos de habitación arquitectónicamente independientes: los locus 1 y 4 del lado Sur, y los locus 2 y 3 del lado Norte.

El locus 2 es una habitación rectangular de 4,5 x 2 ms. Los Muros D (sector Oeste), E y F que la circunscriben por el Sur, Oeste y Norte, son de doble paramento y están levantados con piedras de tamaño grande, dispuestas con aparejo rudimentario y sin mortero. Algunas aparecen exfoliadas o descompuestas (partes del muro punteadas en el plano). El conjunto, sin embargo, muestra una mayor solidez de fábrica, debido principalmente a que estos muros están ensamblados en sus esquinas. Únicamente el Muro F presenta una clara comba, o caída hacia el interior de los locus 2 y 3, originada por la presión que ejercen los derribos en su cara Norte y por el vacío de la puerta situada entre el pilar Norte hendido del Muro G y el referido Muro F (cuadrícula 0: D).

El Muro G cierra el locus 2 por su cara Este y tiene, como el Muro H, cuatro pilastras separadas por intersticios regulares rellenos de piedras, de un tamaño lo suficientemente grande como para levantar un muro de paramento simple. A excepción de la última pilastra monolítica (cuadrícula 0: D), hendida en su mitad superior, las otras tres constan de varios elementos (piedras grandes y cuadradas superpuestas a modo de columna). Esta alternancia de pilastras monolíticas (pillares) y compuestas (piers),

intercaladas en los muros interiores divisorios de las casas, es una técnica de construcción ampliamente atestada en el Hierro I en Palestina, como enseguida veremos. Dentro del locus 2 se dejaron vistas dos hileras de piedras paralelas a los Muros D y E, que levantan unos 45 cms. sobre el suelo del locus 2 y que están rellenas de tierra en su interior. Como en el locus 1, se trata sin duda de bancos adosados a la pared. El suelo del locus 2 es de tierra ocre. Sobre él aparecieron varios útiles domésticos, tales como una piedra grande de molino de basalto, con una cara plana ligeramente concava, dejada in situ en el interior del banco en el ángulo S.W. del locus 2, marcada con puntos en el plano (cuadrícula 4: B); una piedra rectangular de basalto para moler a mano; otra más pequeña y esférica, que interpretamos como triturador para majar el grano u otros frutos antes de ser molidos y bastantes fragmentos de cerámica. Notemos que este locus 2 es el único recinto sobre cuyo suelo (-157) no ha aparecido la capa de cenizas existente sobre los suelos de habitación de los cuatro restantes locus.

Los escasos ejemplos de casas con pilares conocidos en Transjordania (Sahab, Tawilan, T. es-Sa'idiyeh) pertenecen todos al Hierro II. Sin embargo, en las excavaciones de Palestina encontramos analogías en la arquitectura doméstica del primer periodo del Hierro I. Los paralelos más notables nos los ofrecen las casas B-XV y B-XXXI de 'Ai (C1<sup>a</sup>Me-false del Hierro I, c. 1220-1050) (8). Aquí encontramos como en Medeineh, habitaciones rectangulares, con muros divisorios de 4 pilastras, monolíticas unas (*pillares*, casa B-XV), y otras de piedras superpuestas (*piers*, casa B-XXXI), con sus intersticios rellenos de piedras menores formando un muro continuo y bancos de piedra adosados a los muros interiores de las habitaciones que Callaway señala acertadamente como "una nota peculiar del estilo de construcción de los habitantes del Hierro I" (9). Casas con pilares, pertenecientes al siglo 12<sup>o</sup> a.C. o

comienzos del Hierro I, se han excavado también en Bethel, construidas éstas sobre las ruinas de la ciudad del Bronce Tardío II (10), en Radana (2ª fase de ocupación Hierro Ia) (11), en Gibeón (12), en Ta'anak (13) y en T. el Far'ah del Norte, Nivel 3 (siglos XI-IX) (14). Suele ser normal en Palestina encontrar cisternas dentro o junto a las casas del Hierro I, fenómeno no verificado en Kh. Medeineh, debido quizá a la escasa extensión del área excavada.

Queda por señalar un detalle que considero de importancia. Cotejados el estilo arquitectónico y las formas cerámicas de Kh. Medeineh con los yacimientos contemporáneos de Palestina, debemos concluir que las gentes que inician la ocupación del Hierro Ia en Moab y en Palestina provienen de o pertenecen a un milieu socio-cultural más o menos homogéneo. Existe, sin embargo, un hecho diferencial evidente. Los inmigrantes que invaden y habitan la Palestina central a principios del siglo XII, se instalan en ciudades recientemente destruidas o tiempo ha abandonadas, o bien en colinas nunca habitadas, pero no construyen murallas defensivas alrededor de las ciudades. No es este el caso de Kh. Medeineh, donde el escaso núcleo de población apenas justificaría las sólidas murallas defensivas, si no es, como ya hemos indicado, por la posición estratégica que nos obliga a definirla como una fortaleza fronteriza (15). Esto parece indicar que Kh. Medeineh se construye en el Hierro Ia cuando, consolidado ya política y militarmente el Reino de Moab, puede y necesita defenderse de las invasiones o de las razzias de las tribus nomadas que merodean al Este del W. Modjib, en el desierto oriental.

**La cerámica.** — No podemos decir que sea bien conocida la cerámica del Hierro I en Transjordania. Es un período no atestado en las excavaciones de Umm el Biyara y Tawilan; hasta la fecha tampoco

se ha publicado cerámica de esta época proveniente de Buseirah.

En Dhiban (16) han aparecido algunos ejemplares, no muy abundantes, sin que los excavadores hayan podido referirlos a pisos o estructuras de ocupación. Los únicos depósitos claramente estratificados se hallan en Balu'a (17) y 'Arair (18). En la Transjordania central se ha encontrado una ocupación de este período en las excavaciones de Sahab, Area D, con estructuras y cerámica que aún no ha sido publicada (19). También en su informe preliminar los excavadores de Tell Hesbán comunican que durante las campañas de 1.973 y 1.974 ha aparecido cerámica del Hierro I claramente referida a un suelo de habitación (Areas B y C), a estructuras de muros (Area B), y dentro de una amplia cisterna emplastecida (Area D) (20).

De toda la cerámica encontrada en las numerosas tumbas del Hierro excavadas en Transjordania, la que más afinidades ofrece con la de Kh. Medeineh es, sin duda, la publicada por Harding proveniente de una Tumba de Madaba, datada en la primera mitad del siglo 12º a.C. (21).

Los ejemplares de cerámica encontrados en Khirbet Medeineh no componen un repertorio ni mucho menos completo del período arqueológico a que pertenecen. Se trata, en efecto, de fragmentos de vasos domésticos con formas muy repetidas, pertenecientes todos ellos a la última ocupación de la fortaleza.

Las notas generales y típicas de esta cerámica podemos resumirlas en los siguientes rasgos. No se ha encontrado ni un solo fragmento de cerámica pintada. Todos los vasos están hechos a torno y sus formas son más bien simples y utilitarias. Es típico el engobe blanco, color hueso, aplicado generalmente a las paredes exteriores del vaso y con menor frecuencia a las interiores. La técnica del

bruñido es completamente desconocida. La cerámica es toda ella de origen local, no habiéndose encontrado ni un solo fragmento de vaso importado. La tradición cerámica del Bronce Reciente II, tan patente durante el Hierro Ia en Palestina y atestada en Transjordania (en Arôer del Arnón y en la tumba de Madaba), es muy débil en Medeineh. La pasta suele ser de un color pardo leonado, mezclada con gruesas partículas calcáreas, y muy porosa. La cocción es siempre muy regular.

Tratándose de una cerámica perteneciente toda ella al Hierro Ia, llama la atención que no haya aparecido ningún fragmento de las grandes jarras (pithoi) con borde grueso, tan típicas en Palestina durante los siglos 12º y 11º a.C. y a las que Albright asigna un valor decisivo como criterio cronológico (22). Quizá se trata de un tipo de cerámica palestino que no llega a penetrar en Moab durante el Hierro I, si es que su no atestación en Medeineh no se debe, como ya hemos insistido antes, a las reducidas dimensiones del área excavada (23).

En la fig. 2: 4.5.6, presentamos tres fragmentos de boles carenados que tienen como nota común el característico engobe blanco de la cerámica moabita del Hierro I. Su base (atestada en otros yacimientos) suele ser plana y a veces peraltada. Es un tipo cerámico que tiene una larga tradición en el Bronce Reciente. En Transjordania encontramos boles carenados semejantes en la última fase del Bronce Reciente II de Aroer (24) y en los comienzos mismos del Hierro I (primera mitad del siglo 12º a.C.) en la Tumba de Madaba (25) y en Dhiban (26). Son sin duda boles morfológicamente afines (si bien la línea de carenación es más aguda y el cuello algo más corto), aunque algo anteriores a los de Kh. Medeineh, datables estos últimos entre la segunda mitad del siglo 12º a.C. y primer cuarto del siglo 11º a.C. (1.150-1.075). Con esta cronología coinciden en conjunto los para-

lelos que podríamos citar de Palestina, como son p.ej., los de Hazor (Hazor III-IV, Pl. CLXIV: 11 ss., estrato XII; Pl. CLXX: 1 ss., estrato XII), y dos boles de Megiddo, uno, proveniente de la tumba 1101, de paredes algo más gruesas (MT, Pl. 8: 21, Hierro I) y otro perteneciente al estrato VII B-VI en el tell (M II, Pl. 72; 1).

En la Fig 2: 1.2.3. presentamos tres ejemplares de bordes de marmitas. El nº 1, con un diámetro estimable en unos 30 cms., tiene el cuello inclinado hacia el interior, típico del Hierro Ia. Por su forma podemos datarla con seguridad en la primera mitad del siglo XI a.C. (27), aunque es de advertir que nos Palestina este tipo de "cooking-pot" perdura hasta el Hierro II (28). Las marmitas nos 2 y 3 son tipos reinantes en Kh. Medeineh. Se caracterizan por el escaso diámetro de la boca, por las asas cilíndricas que van desde el borde superior hasta el arranque de la espalda y los cuellos verticales. Se diría que tipológicamente responden más a las formas del Hierro II que a las del Hierro I. En efecto, un ejemplar idéntico a nuestro nº 3 encontrado en Dhibán es datado por su excavador entre los siglos IXº y VIº a.C. (29). Sin embargo, tengo que decir que estos dos ejemplares de Kh. Medeineh han sido hallados perfectamente estratificados dentro de un nivel no removido, siendo por otro lado cierto que todo el contexto cerámico al que pertenecen está unívocamente referido al Hierro Ia. No dudo por tanto en asignarlos a esta primera época del Hierro, a pesar de su forma aparentemente anacrónica.

El nº 17 es una base de pequeña jarra ovoidal de almacén que, en diferentes tamaños, es relativamente abundante en Kh. Medeineh. Su forma difiere notablemente de las jarras ovoidales típicas del s. 12º a.C. en Palestina con base cónica apezonada (Knob-bases), como p.ej., las de Beht-Zur (30), en las que es patente la tradición del Bronce Reciente. Presumiblemente, sus paralelos habría que encontrar-

los en algunas jarras de este tipo de Megiddo y Beisán (31).

Los bordes n.ºs. 7 y 8 pertenecen a jarras con una sola asa. Estas jarras tienden a tener panzas globulares durante el Hierro I (32), en contraste con el mismo tipo de jarras del Hierro II que son más esbeltas (33).

Los dos bordes n.ºs. 18 y 19 y las dos bases en anillo n.ºs. 9 y 10 pertenecen a un tipo de cráteras con (generalmente dos) asas verticales, ya conocidas en los catálogos de la cerámica del Hierro Ia transjordano (34) y palestino (35). En su forma está aún vigente la tradición del Bronce Reciente II y son bastante frecuentes en Kh. Medeineh.

La base plana n.º 12 puede pertenecer o bien a un tipo de crátera algo más pequeña que las anteriormente citadas o, más probablemente, a un bol profundo como el encontrado por L. Harding en la tumba de Madaba, Fig. 13: 42.

Los dos boles de labio redondo n.ºs. 15 y 16 y el bol con ligeros rebordes n.º 14, cuentan igualmente con paralelos en la cerámica del Hierro I de Transjordania (36).

Hacemos referencia por último a las dos bases planas n.ºs. 11 y 12 que posiblemente pertenezcan a jarras pequeñas. Las reproducimos aquí únicamente por ser fragmentos relativamente frecuentes en Kh. Medeineh, aunque por su forma conjeturable carezcan de valor tipológico.

Concluyendo, podemos decir que se trata de un conjunto cerámico muy uniforme, perteneciente todo él a las últimas fechas de ocupación de la fortaleza y claramente desvinculado ya de las tradiciones del Bronce Reciente II, vigentes en los vasos de la tumba de Madaba de L. Harding y en algunos especímenes de Aro'er. Por otro lado, se observa la ausencia de aquellos elementos típicos que

se introducen en la manufactura de la cerámica de Palestina en el último tercio del siglo 11<sup>o</sup> a.C. (engobe rojo de hematita, bruñido a mano, etc.). Yo asigno en consecuencia a la cerámica de Kh. Medeineh una datación global entre los años 1.125 y 1.050 a.C.

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\* \*

**Conclusión.** — Khirbet Medeineh es una ciudadela defensiva construida durante el siglo 12<sup>o</sup> a.C. (o a finales del 13<sup>o</sup>) al borde del plateau occidental del W. Modjib, frontera natural entre Moab y el desierto oriental. En esta misma época y con idéntica intención estratégica se edifican las ciudades de Balu'a y Tell Medeineh junto a Ader (37) y, más al Norte, la fortaleza de Aro'er (38) en la vertiente Norte del Arnón. Estos simples datos se conjugan perfectamente con la tradición bíblica recogida en el Deuteronomio, según la cual a finales del s. XIII<sup>o</sup> o comienzos del XII<sup>o</sup> a.C. las tribus nomadas de Israel (probablemente se trata de un movimiento nomada más generalizado que comprendía otras tribus semitas) venían atravesando el desierto oriental de Moab buscando tierras de cultivo donde sedentarizarse (39). Israel había recibido de su Dios y de los reyes de Moab la prohibición de atravesar y sedentarizarse en territorio moabita. Estas fortalezas fronterizas velaban por el cumplimiento de esta prohibición, guardando el territorio de Moab de la amenaza de estas tribus nómadas que a lo largo de toda la historia han sido el azote constante de las ciudades y cultivos de Moab y Ammon.

La ciudadela de Kh. Medeineh tuvo una corta historia. Termina su existencia, probablemente por destrucción violenta (40), en la primera mitad del siglo XI<sup>o</sup> a.C. y nunca más fue reedificada ni habitada, bien sea porque a lo largo del siglo XI<sup>o</sup> decrece la amenaza invasora de

los nómadas orientales, o bien porque la importante ciudad de Tell Medeineh junto a Ader cumple suficientemente las funciones de vigilancia de la frontera, supliendo la importancia estratégica del Kh. Medeineh ya desaparecido con torres de control apostadas al pie de los caminos que suben del valle.

En síntesis, los resultados del sondeo arqueológico en Khirbet Medeineh pueden formularse con las siguientes afirmaciones. Las ruinas enterradas en esta Khirbet pertenecen a una ciudad-fortaleza moabita que solamente tuvo un período de ocupación. Fue construída en el siglo XII<sup>o</sup> a.C. (o quizá en la segunda mitad del XIII<sup>o</sup>) y es abandonada definitivamente entre los años 1100 ó 1075 a.C., destruída a lo que parece por un incendio. Tanto las formas cerámicas como el estilo arquitectónico evidencian una clara afinidad con el medio cultural de Palestina durante el Hierro Ia. Por otra parte, su recia construcción y la situación estratégica de su emplazamiento dan a entender el interés con que Moab defiende su frontera oriental (las ciudades de Baluá y Tell Medeineh junto a Ader entran en juego en esta misma función) frente al peligro de las tribus nómadas que merodean por el desierto oriental. Es la época en que, según los relatos bíblicos (cf Num 21, 11; Juec 11, 18) las tribus de Israel, formando parte quizá de un movimiento nomada más amplio en vías de sedentarización, pasan bordeando la frontera oriental de Moab a la altura de Khirbet Medeineh.

Emilio Olávarri

El Bricial, Fiesta de Todos los Santos de 1.976

#### NOTAS

1. El equipo director de los trabajos lo componíamos el Dr. J.M. Apellániz y la Srta. Margarita Muñoz, ambos de la Universidad de Deusto de Bilbao, más el que suscribe. Agradecemos la valiosa cooperación del Dr. F. Zayadín del Depto. de Antigüedades

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2. Véanse los resultados del sondeo arqueológico realizado en Baluá en J.W. Crowfoot, *An Expedition to Baluá*, PEF - QD(1934), pp. 76-84, y las noticias sobre la prospección en superficie hecha por Glück en Tell Medeiyyeh junto a Ader en N. Glück, *Explorations in Eastern Palestine*, I. AASOR XIV (1933-1934), pp. 15 ss.
3. V. la descripción de nuestra Khirbet Medeineh en N. Glück, *ibid.*, pp. 53 ss.
4. El uso de la doble muralla defensiva que protege los flancos más débiles de la ciudad es ampliamente conocido por la arqueología en las ciudades del Hierro de Palestina. Suele citarse como ejemplo típico, el de la ciudad de Lakish representada en los relieves del palacio de Assurbanipal de Nínive, cf. J.B. Pritchard, *Ancient Near Eastern in Pictures*, Princeton New Jersey (1969), nos. 372 y 373.
5. Se trata, repetimos, de tumbas y no de cisternas, puesto que la puerta de acceso es lateral, a media altura de la tumba. El uso del estuco para emplastecer las paredes de muros, cisternas y tumbas es conocido en el Hierro I de Transjordania, cf L.T. Geraty, *The 1974 Season of Excavations at Tell Hesbân*, ADAJ XX (1975), p. 51.
6. Cf. N. Glueck, *Explorations...*, p. 53.
7. Las alturas están todas tomadas en profundidad y referidas a la cota O situada en la parte más alta del pilar de la cuadrícula 6 D.
8. J.A. Callaway, *The 1968-1969 'Ai (et. Tell) Excavations*. BASOR, n<sup>o</sup> 198, (April 1970), pp. 7-31. Véase también, del mismo autor, el artículo Aien la *Encyclopedia of Archaeological Excavations in the Holy Land*, Vol. I (Jerusalem 1975), pp. 49 ss.
9. *ibid.*, p. 17.
10. W.F. Albright - J.L. Kelso, *The Excavation of Bethel (1934-1960)*. AASOR, Vol. XXXIX, (1968), p.32 y Pls. 22b. 23a. 24a. 25a.
11. J.A. Callaway - R.E. Cooley, *A salvage excavation at Radana in Bireh*. BASOR, n<sup>o</sup> 201



- (Febr. 1971), pp. 9-19. Las habitaciones de estas casas tienen unas dimensiones casi idénticas a las de kh. Medeineh.
12. J.B. Pritchard, *Winery Defenses and Soundings at Gibeon*. Princeton (1964), pp. 35 ss., Fig. 84
  13. P.W. Lapp, *The 1968 Excavations at Tell Ta'anak* BASOR n°195 (oct. 1969), p. 37 s., Figs. 25 y 26.
  14. R.de Vaux, *La quatrième campagne de fouilles à Tell el Fara'ah, près Naplouse*, RB 59 (1952), pp. 558 ss.
  15. En la primera fase del Hierro I prácticamente todas las ciudades de Palestina, con las posibles excepciones de Bethel y Gibeon, carecen de murallas defensivas, p. ej. Beit Mirsim, Megiddo, Ai, Tell en-Nasbe, Mikmas, Tell el-Full, Tell el Far'ah del Norte, Radana, etc.
  16. Cf. A.D. Tushingham, *The Excavations at Dibon (Dhiban) in Moab. The third Campaign 1952-1953*. AASOR, Vol. XL (1972), pag. 21. Aparte de estos escasos fragmentos del Hierro I, el conjunto de la cerámica del Hierro que nos ofrecen las publicaciones de Dhiban es claramente del Hierro II (véase además F.V. Winnet — W.L. Reed, *The Excavations at Dibon (Dhiban) in Moab*. AASOR Vol.s XXXVI-XXXVII (1957-1958), New Haven 1964, Pls. 72-79).
  17. J.W. Crowfoot, *An Expedition to Balu'a*. PEF, QS, 1934, pp. 76-84
  18. E.Olávarri, *Sondages à Arô'er sur l'Arnon*. RB, LXXII, 1965, pp. 77-94.
  19. M.M. Ibrahim, *Third Season of Excavations at Sahab, 1975*. ADAJ, XX, 1975, pp. 69 ss.
  20. L.T. Geraty, *The 1974 Season of Excavations at Tell Hesbân*. ADAJ, XX, 1975, pp. 59 ss. Véase además el rapport que sobre las excavaciones de esta misma campaña realizadas en el AREA B y en SQUARE D.4 presenta el Dr. J.A. Sauer en *Andrews University Seminary Studies*, Vol. XIV, n° 1, (1976), pp. 60 ss.
  21. G.L. Harding, *An Early Iron Age Tomb at Madaba*. PEFA, VI, 1953, pp. 27-47, Pls. III-V. Harding data el inventario de esta tumba entre los años 1250 y 1150 a.C., mientras que B.S.J. Isserlin lo encuadra entre 1200 y 1160 a.C.
  22. W.F. Albright, *The Archaeology of Palestine* (London 1954), p. 118.
  23. Entre los fragmentos de cerámica han aparecido varios tiestos de panza y algún asa vertical pertenecientes a grandes jarras de almacén. No hemos encontrado sin embargo ningún fragmento de borde que nos permita definir la forma de las mismas.
  24. E. Olávarri, *Sondages...*, p. 85, Fig. 1:3.
  25. G.L. Harding, *An Early Iron Age Tomb...*, Fig. 13: 38 y 39.
  26. Cf. F.V. Winnet — W.L. Reed, *The Excavations at Dibon...*, Pl. 73: 14. Véase también en esta misma Plancha el n° 4, de carenación algo más suave y con el borde más extrovertido.
  27. Podemos citar como paralela la marmita de Dhibân (Winnet-Redd, *The Excavations at Dibon...*, Pl. 76:12) que Tushingham en su posterior publicación compara con otra de Hazor perteneciente al Estrato XII (cf. Hazor III-IV, Pl. CLXX: 7).
  28. Tipos semejantes y más tardíos de marmitas volvemos a encontrarlas en Hazor, Field B, Estratos IX-X, v. Hazor III-IV, Pl. CCX: 16,22. Semejantes, no iguales, porque estas de Hazor tienen el cuello y el borde de la boca algo más inclinados hacia adentro.
  29. Cf. A.D. Tushingham, *The Excavations at Dibon...*, Fig. 1, 21. Esta marmita ha sido encontrada no en su nivel original, sino en un relleno tardío en el que aparece conjuntamente cerámica del Hierro y de época nabatea y sobre el cual se asienta el podium del templo nabateo. Tushingham no duda en afirmar (*ibid.*, p. 15) que toda la cerámica del Hierro recogida en este relleno pertenece al Hierro II y él la data entre los años 850 y los comienzos del siglo VI a.C.
  30. Cf. O.R. Sellers et al., *The 1957 Excavation at Beth-Zur*. AASOR, XXXVIII, 1968, Fig.1: 1-3.5.7; Pl. 24: 1-3.5.7.
  31. Cf. G. Loud, *Megiddo II* (Chicago 1948), Pl.81 Nivel VIA-VIB. F. James, *The Iron Age at Beth-Shan*, (Philadelphia 1966), Fig. 54: 16, Nivel VI.
  32. Véanse p. ej. las jarras de la tumba de Mádaba (G.L. Harding, *An Early Iron Age Tomb...*, Fig 15:65) y de Beth-Zur O.R. Sellers et al., *The 1957 Excavation at Beth-Zur...*, Fig 8:1.2; Fig. 9:3-10).
  33. Este detalle se puede apreciar perfectamente en el tipo de jarra de transición entre el Hierro I y II de Bethel (cf. W.F. Albright — J.L. Kelso, *The Excavation of Bethel...*, Pl. 61:15, cf. además el comentario de Kelso, *ibid.*, p.66).
  34. Cf. p. ej., J.W. Crowfoot, *An Expedition to Balu'a...*, Pl. II:15; E.Olávarri, *Sondages...*,

- p.85, Fig. 1:1.2.12; G.L. Harding, *An Early Iron Age Tomb...*, Fig. 14:54.56.58.
35. Podemos citar, entre otras, las cráteras de Beth-Zur y de las tumbas de Megiddo (cf. O.R. Sellers et al., *The 1957 Excavation at Beth-Zur...*, Fig 11:16 y Pl. 24:5 P.L.O. Guy, *Megiddo Tombs*, (Chicago 1938), Pl. 68:15, Hierra I).
36. Compárense los boles de la tumba de Mádaba, G.L. Harding, *An Early Iron Age Tomb...*, Fig. 12:16 y 17.
37. Las excavaciones llevadas a cabo en Tell Balu'a por J.W. Crowfoot, a las que nos hemos referido repetidas veces en este trabajo, atestiguan una ocupación de esta ciudad en la primera fase del Hierro I (siglo XII a.C.) Independientemente de estas excavaciones y con anterioridad a ellas, fue encontrada en esta ciudad una estela en cuya mitad inferior hay unos bajorelieves egipcios grabados muy probablemente en el siglo XII a.C. durante el reinado de Ramsés III, 1198-1166 a.C. (v. una buena reproducción de la misma en J.B. Pritchard, *Ancient Near Eastern in Pictures*, Princeton - New Jersey, 1969), n°488). En cuanto a
- la ciudad de Tell Medeinek junto a Ader, situada a cuatro kilómetros al Sur de nuestro Medeinek, la prospección en superficie de N. Glueck nos asegura de que esta importante ciudad fue ocupada también en la primera fase del Hierro I.
38. Cf. E. Olávarri, *Sondages...*, p. 91.
39. Sobre los itinerarios bíblicos de Israel en Transjordania propuestos por las fuentes bíblicas, cf R. de Vaux, *Histoire Ancienne d'Israël*, París 1971, pp. 511-522.
40. Las reducidas dimensiones del área excavada en este sondeo previo, no nos permiten afirmar con seguridad si la ciudad enterrada en Khirbet Medeinek fue destruida o abandonada. Yo me inclino a pensar que fue destruida e incendiada. A excepción del locus 2, cuyo suelo de ocupación apareció limpio e intacto, en los restantes locus (el 1.3.4. y 5) aparece una capa de cenizas depositadas sobre el suelo de 15 a 20 cms. de espesor (su espesor en el locus 5 alcanza los 60 cms.). Estas cenizas provienen, según yo interpreto, de las techumbres de paja incendiadas.

#### FIGURA 2

Nº	Bolsa	Fecha	Locus	Capa	Descripción
1	1	18-9-76	2	I	Borde de marmita. Tierra roja oscura con abundantes partículas calcáreas. Diámetro estimado: 30 cms.
2	3	18-9-76	1	I	Fragmento de boca de marmita con asa y mitad superior de la panza. Pasta color rojo oscuro con partículas calcáreas. Banda gris en la sección.
3	32	27-9-76	3	IIIa	Borde marmita. Tierra roja oscura con partículas calcáreas blancas. Cocción homogénea.
4	10	21-9-76	5	IIIa	Borde de bol carenado. Tierra color rosa con algunas partículas. Cocción homogénea. Engobe blanco en el exterior e interior del vaso.
5	5	20-9-76	5	IIIa	Borde y panza de bol carenado. Tierra roja con escasas partículas. Cocción homogénea. Engobe blanco en el exterior e interior del baso.
6	17	23-9-76	3	IIIb	Borde y panza de escudilla carenada. Tierra parda clara asalmonada con algunas partículas calcáreas muy diminutas. Engobe blanco muy ténue en el exterior. Cocción homogénea.
7	26	25-9-76	3	IIIa	Borde y arranque de asa de jarro. Pasta blanca de mala calidad con grandes y abundantes partículas.
8	29	27-9-76	2	III	Borde de jarro. Pasta de color pardo con algunas partículas calcáreas.
9	4	18-9-76	3	I	Base en anillo de crátera. Pasta color naranja con algunas partículas calcáreas. Cocción homogénea. Zonas de engobe blanco exterior.

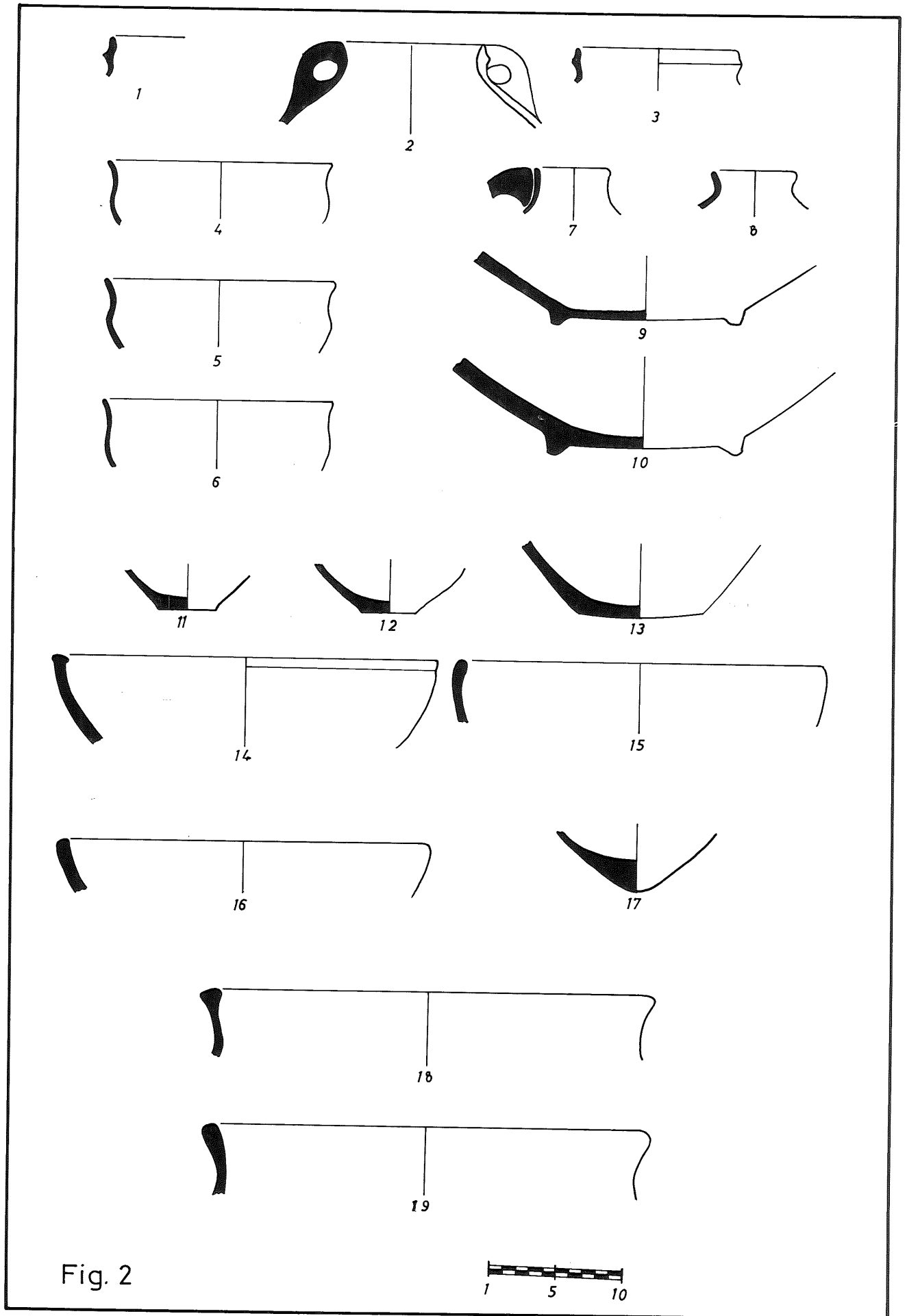


Fig. 2

10	1	18-9-76	1	I	Base en anillo de crátera. Pasta color rosa con algunas partículas. Cocción homogénea.
11	25	25-9-76	1	III	Base plana de jarra pequeña. Pasta parda clara con abundantes abundantes partículas. Cocción homogénea.
12	4	18-9-76	1	II	Base plana de jarra pequeña. Tierra parda oscura con partículas y bien amasada. Cocción homogénea.
13	29	27-9-76	2	III	Base plana de jarra. Pasta color pardo claro con partículas grandes. Cocción homogénea.
14	7 y 10	20-9-76	5	IIIa	Borde y panza de bol grande. Pasta de color rosa con partículas calcáreas muy pequeñas y abundantes. Cocción muy fuerte y homogénea. Zonas de engobe blanco exterior e interior.
15	26	25-9-76	3	IIIa	Borde de bol grande. Pasta color rojo violeta con partículas calcáreas. Cocción fuerte y homogénea. Engobe exterior blanco muy ténue.
16	24	25-9-76	2	III	Borde de bol grande. Pasta de color rosa asalmonado con abundantes partículas. Cocción homogénea.
17	7	20-9-76	5	IIIa	Base de jarra ovoidal de almacén. Pasta de color pardo leonado, muy tosca, con grandes partículas calcáreas. Banda gris en la sección.
18	1	18-9-76	4	I	Borde de cratera. Pasta de color rosa claro con partículas calcáreas. Cocción homogénea.
19	8	21-9-76	1	II	Borde de crátera. Pasta de color ocre claro con partículas calcáreas abundantes y grandes. Cocción homogénea. Engobe blanco exterior muy ténue.



Fig. 3 - Khirbet Medeineh : vista aerea

# Preliminary Report of the A.P.C. Township Archaeological Survey

by  
David W. McCreery

## 1.0 Introduction

The purpose of this article is to report the preliminary findings of the archaeological survey of the proposed Arab Potash Company's township site in the Southern Ghor.<sup>1</sup> The survey was conducted under the auspices of the American Schools of Oriental Research and the Jordanian Department of Antiquities and financed by USAID. The staff was comprised of personnel in residence at the American Center of Oriental Research in Amman, Vincent Clark, Linda McCreery and the author and two representatives from the Department of Antiquities, Mr. Sami Rabadi and Miss Nazmiah Rida Tawfig. The operation spanned the entire month of November 1977 with a one week break during the Adha Feast.

## 1.1 Background

During the course of the 1977 Bab edh-Dhra' excavation, our attention was drawn to a plot of ground immediately south of the Early Bronze Age cemetery where coring engineers and surveyors were working. From our inquiries we found that the Arab Potash Company was considering this site along with four others, as a possible location for a township intended to house some 2,000 persons who will be working on the Dead Sea potash project by 1980. By mid-October we learned that the site near Bab edh-Dhra' had been decided upon and that construction plans were moving ahead rapidly. Prompted by concern over the close proximity of the proposed township to the Bab edh-Dhra' cemetery and the possibility that significant antiquities might be found on the site, Mr. Sami Rabadi, supervisor of the Kerak District for the Department of Antiquities and the author, visited the site on October 21, 1977 to examine the exact perimeters of the township and check for signs of ancient human activity in the area.

We found that the cemetery proper and the township site were as close as 200 meters at one point and separated by a small but rather deep wadi. Although we found very little pottery on the site, what we did pick up was contemporary with the cemetery's EB IA shaft tombs. Of greater interest were a number of poorly preserved cairns, a long wall running roughly E-W through the site and a number of heavily patinated Paleolithic flint implements. Our findings were not startling but did seem to be significant enough to warrant further investigation of the site before the commencement of construction. Dr. Adnan Hadidi, Director of the Department of Antiquities and Dr. James A. Sauer, Director of the American Center of Oriental Research agreed with this assessment and preparations for putting a team in the field were begun. By November 1, 1977, all preliminary arrangements had been taken care of and we traveled to Kerak to pick up additional equipment and then on to the Bâb edh-Dhra' cemetery where we set up our headquarters in the midst of an abandoned army encampment.

The major objectives of the project were clearcut. We were to thoroughly examine the township site in order to determine the areas of concentration, date and significance of pottery, artifacts and architecture found to be present. Of special importance was assessing the evidence for Early Bronze burials within the township since the southern boundary of the Bab edh-Dhra' cemetery has never been defined. The strategy we adopted to accomplish these goals was to conduct a careful surface survey followed by soundings in areas where pottery and/or architectural remains were concentrated.

## 2.0 The Surface Survey

As the map (Fig. 1) indicates, the township

site consists of a narrow strip of land separated by a shallow wadi from a larger land mass to the south. By the time we began the survey, the A.P.C. surveyor had staked out a center line through the southern half of the site with points assigned a letter of the alphabet every 50 meters. We were able to tie into these points and use the maps supplied by the A.P.C. to great advantage for recording the location of architectural remains and keeping track of pottery and flint concentrations. We began the survey at the northwest corner of the township setting up four survey poles which defined a strip of ground 50 meters wide, corresponding to the F and G points on the center line. We then swept slowly through this area picking up pottery and other artifacts, plotting architectural remains on the map and taking notes on the general nature of the surface, e.g., noting rock concentrations, erosional patterns, etc. The finds were then bagged and labeled F<sub>1</sub>/F<sub>2</sub> and we moved on to the next 50 meter section where the process was repeated. The site was thus divided into 55 sections, 50 meters wide running perpendicular to the township center line.

### **2.1 Pottery and Flint Artifacts Pl.LXXXV 3 and LXXXVI.**

Since pottery appeared to be relatively scarce, we decided to pick up all sherds whether diagnostic or not in order to see if patterns of ceramic concentrations would show up. The sherds were counted and recorded at our camp in the evening and then all but potentially diagnostic sherds were discarded. This strategy worked quite effectively and we were able to pinpoint two areas of Chalcolithic and Early Bronze 1-11 pottery concentration indicating human occupation or at least intensive activity in those areas in spite of little surviving architectural evidence.

Of the grand total of 1,126 sherds collected during the surface survey, 1,031 or 84% came from the northern section of the township and only 195 sherds or 16% from the southern section. This is a surprising distribution pattern not only because the southern section is much larger, but almost all of the architectural remains on

the site are concentrated in the southern sector. Table 1, which lists the results of the pottery reading, indicates that most of the diagnostic pottery, i.e. 639 sherds or 81% of the total, come from the Chalcolithic and Early Bronze Periods and of this total, 444 or 69% come from the EBI-II periods. One final observation concerning the distribution patterns is the fact that 472 sherds or 74% of all Chalcolithic and Early Bronze pottery came from two areas within the northern section of the township between points F<sub>1</sub>-K<sub>2</sub> and S<sub>1</sub>-X<sub>2</sub> (Cf. Fig. 1).

All of the flints found could be roughly assigned to the Chalcolithic--Early Bronze periods and the Paleolithic period. Detailed comparative study of the implements will have to be conducted before more precise dates can be assigned. The Paleolithic flints were distributed fairly evenly over the entire site but concentrated along the ancient beachlines which run along a northwest-southeast line. As is shown by Table 2, the Chalcolithic and Early Bronze flints, like the pottery, were concentrated in the northern section of the township.

On the last day of the survey, while examining the proposed routes for an access road, we picked up 83 Chalcolithic and 16 EB I sherds in the foothills just west of the northern section of the site. Further west, adjacent to the Mazra'a-Safi highway, we found 92 Paleolithic flints which represents a much heavier concentration of early flint implements than anything encountered within the township proper. Subsequent examination of the land between the township site and the Bab edh-Dhra' cemetery revealed a trail of Chalcolithic and Early Bronze pottery all along the foothills. As one approaches the cemetery from the southwest, less early pottery and more Byzantine material appears.<sup>2</sup>

### **2.2 Architectural Remains**

The first significant architectural feature encountered was a long wall which runs along an east-west line through the township site and

TABLE 1  
Distribution of Surface Survey Diagnostic Pottery

Period	N. Section of Township	S. Section of Township	Totals
Chalcolithic	53	25	78
Chalco-EB	35	--	35
EB	30	52	82
EB I	149	33	182
EB I-II	241	21	262
Nab.	6	11	17
Byz.	74	32	106
Modern	16	13	29
<b>GRAND TOTALS</b>	<b>604</b>	<b>187</b>	<b>791</b>

TABLE 2  
Distribution of Surface Survey Flint Implements

Period	N. Section of Township	S. Section of Township	Totals
Chalco-EB	142	73	215
Paleolithic	43	55	98
<b>Grand Totals</b>	<b>185</b>	<b>128</b>	<b>313</b>

Sherds within the categories Chalco-EB or simply EB are body sherds whose ware and technique of manufacture place them in these periods generally but the absence of rims, bases or other diagnostic components make a more precise dating impossible.



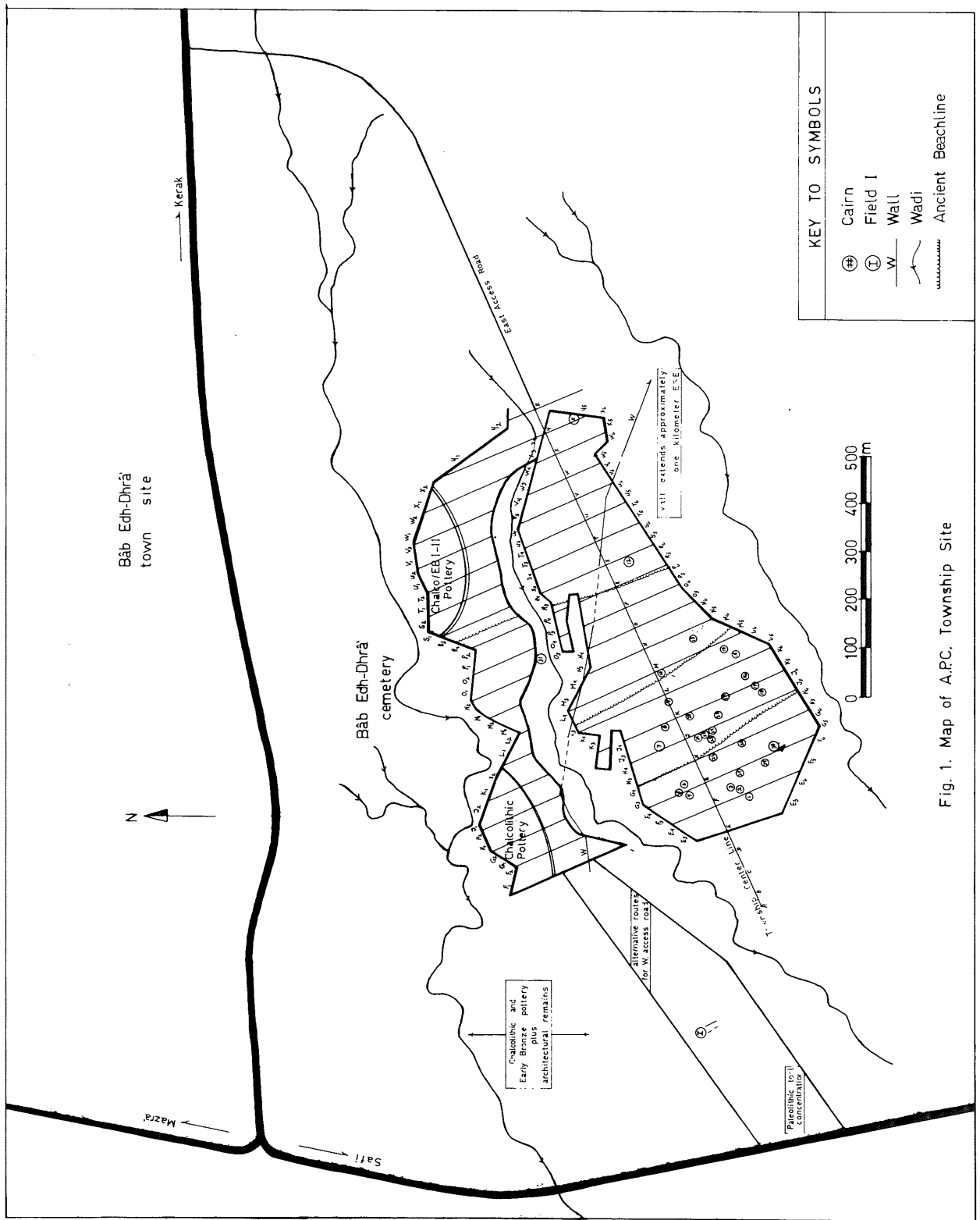


Fig. 1. Map of A.P.C. Township Site

extends for another kilometer eastsoutheast of the site where it disappears at the edge of a cultivated field (Cf. Fig. 1). The wall is approximately one meter thick, roughly faced on both sides with small field boulders averaging 20 cm. in diameter. The fill between the faces is composed of small and medium size rocks, gravel and scil (Cf. Fig.2). None of the stones used in the construction of the wall show signs of working. The first course of the wall is well preserved over most of its length and at some points is preserved to two courses. Judging from the small amount of debris strewn along the wall, it was probably never more than three courses high and if there was a mud brick superstructure it has disappeared without a trace. Only three early, but nondiagnostic sherds and a few flint tools were found on top of the wall.

The most prominent architectural remains on the site are 31 poorly preserved cairns all but one of which are located in the southern section of the township. The cairns are roughly circular with diameters ranging from 2-6 meters with the average around 4 meters. They range in height from .40-1.20 meters with an average of 75 centimeters. The foundation stones which are usually visible since few of the cairns are preserved more than two courses high, were set on the natural soil surface and form concentric rings (from 2-4) around the burial cavity. Quite often, the burial in the center of the cairn is flanked by boulders much larger than those used in the construction of the rest of the cairn.

All of the rocks used in the cairns appear to have come from the immediate area and none of them show signs of quarrying or dressing. In those cairns which are preserved to two or more courses, the rocks of the upper courses are often noticeably larger than those of the lower courses.

Although there are variations in the construction of the cairns, only two stand out as being distinctively different from all the rest. Like the other cairns, they are constructed of natural field boulders arranged in concentric

rings but both the rocks and the cairns themselves are larger than average and a large upright megalith is set in the center of the cairns. The "orthostats" or "monoliths" measured .70m x .70m x 1.35m (cairn 12) and .60m x .60m x 1.65m (cairn 13) and are unique to these two cairns. For lack of better terminology, these two cairns will be referred to in this report as the "orthostat cairns".

The poor state of preservation of most of the cairns makes it difficult to judge whether they were robbed in antiquity<sup>3</sup> or simply have suffered the effects of natural erosion which has stripped the area of its fertile top soil. The excavations carried out after the conclusion of the surface survey indicated that both nature and man have tampered with the burials over the years but the former seems to have inflicted the most damage. Another factor which has contributed to the demise of the cairns is a number of subsidiary burials which abut the cairns and are made of stones robbed from them.

Another interesting architectural feature was a large circular ring of stones approximately 25 meters in diameter with the remains of two cross walls connecting two rock platforms on the northwest and southeast edges of the circle (Cf. Fig.3). A poorly preserved cairn ( 30 ) was situated at the inner edge of the rock concentration in the northwestern section of the circle and what at one time may have been a cairn (G6/2) was located 3 meters directly north, abutting the inner edge of the circle. The outer ring of the circle is well preserved along the southwest edge but completely eroded or only faintly visible elsewhere. The wall appears to have originally been approximately one meter thick and no more than two or three courses high. A few coarse body sherds and a couple of diagnostic Chalcolithic sherds were found on the surface in and around the ring.

A very similar installation was found 200 meters to the northeast near orthostat cairn 13. It is not as well preserved as the above mentioned ring but appears to have been almost identical in terms of construction and dimensions. The wall which forms an almost perfect circle 25 meters in diameter was approximately

1 meter thick. The two roughly parallel crosswalls have a northwest-southeast orientation and consist of a single row of stones comparable in size to those used in the other installation. Two rock concentrations or "platforms" are located on the north and southeast edges of the circle but unlike the other installation, the crosswalls do not connect the platforms and there are no cairns within the circle.

The last significant architectural remains to be located were several walls found in the midst of Chalcolithic surface pottery along the proposed west access road route. Like most of the other architectural features on the site, the walls were seldom preserved above the foundation course but that course is in several instances quite well preserved.

### 3.0 The Soundings

The architectural and ceramic remains, although not abundant, were judged to be significant enough to merit further investigation following the completion of the surface survey. The project was not designed nor did time allow for full scale excavations but it was necessary to conduct limited soundings in an attempt to date the walls and cairns. Eleven local men were hired to work under the direction of the core staff in five major areas.

### 3.1 The Cairns Pl.LXXXV

The cairns, being the dominant architectural feature on the site, were an obvious candidate for further investigation and 12 of them were excavated with interesting but rather disappointing results. They were found to be burials frequently containing only a few poorly preserved bones. The large number of snail shells commonly found mixed in with the bones suggests that the remains may simply have been covered with rocks and were thus exposed to the elements until soil and snails gradually collected around them. Such an explanation would account both for the presence of the snail shells as well as the state of the badly weathered bones. All of the burials were disarticulated and contained no "grave goods" except in cairn

25b where 11 tiny beads but no bones were found and cairn 1 where sherds, apparently

from the same vessel, were found with the bones inside the cairn as well as on the surface outside the cairn. In some instances there were signs of burning of the soil upon which the bones were placed but the bones themselves showed no signs of having been burnt.

The lack of ceramic evidence precludes the possibility of dating the cairns at this point. Hopefully, bone samples submitted for C-14 analysis and sherds from cairn 1 undergoing thermoluminescence analysis will yield consistent dates.

### 3.2 The Large Ring in G6

Cairn 30 and the large stone ring of which it is a part (Cf. Fig. 3) were also investigated with somewhat more gratifying results. The soundings located two burials within cairns 30 as well as one burial 3 meters to the north (G6/2) and five burials in the platform on the southeast edge of the circle (G6/3A, B, C, D, E). Probes were also made against the two crosswalls. The crosswall probes and burials of cairn 30 and G6/2 yielded no pottery but two other burial cavities (G6/3B & C) produced a homogeneous group of 58 Chalcolithic sherds. Carbon 14 analysis of the bones and thermoluminescence analysis of the pottery will be used to check this date arrived at from the pottery reading. If in fact this large ring and the burials associated with it do stem from the Chalcolithic period, it is probable that the other cairns on the site which are similar in construction to cairn 30 should also be assigned a Chalcolithic date.<sup>4</sup>

### 3.3 The Long Wall

Three probes were made on the long wall which runs along an eastwest line through the northern section of the township and then angles off to the southeast near T point on the center line (Cf. Fig. 1). Figure 2 is the top plan of the first probe (located in xx section F<sub>2</sub>) showing the construction of the foundation course which has already been briefly described in section 2.2 of this report. Cuts were made through the wall in all three probes with similar results. Only the foundation course of stones was preserved, no evidence of a foundation trench was detected and only 3 nondiagnostic body sherds were recovered. We thus have no evidence for

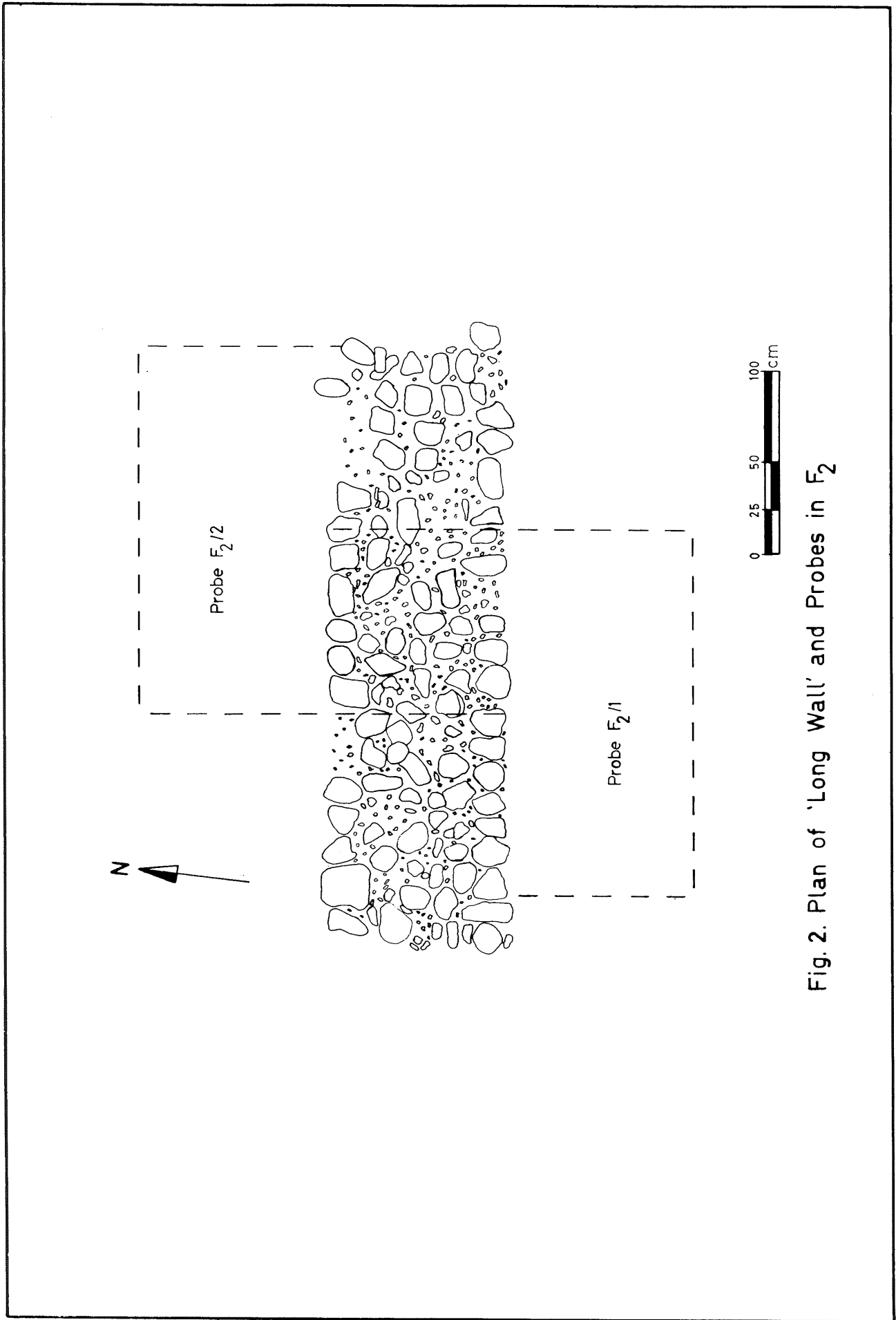


Fig. 2. Plan of 'Long Wall' and Probes in F<sub>2</sub>

dating the wall and its function remains a mystery.

### 3.4 Area of Chalco-EB Pottery Concentration

Even though no architectural remains were visible on the surface, a small square was opened in the midst of an area (U<sub>1</sub>) where a concentration of Chalcolithic and EB I-II pottery had been found in order to determine whether or not subterranean signs of occupation had been preserved. The first 10-15cm. of soil was wash containing gravel and a few scattered Chalcolithic and Early Bronze sherds. From 10-20cm. below the surface mud brick detritus and a couple of intact, white, unfired mud bricks were encountered. Although both pottery and charcoal were found embedded in the mud brick detritus, no clearly defined occupational layers or 'living surfaces' could be distinguished. Bedrock was found to lie just 20 cm. below the surface.

Although the evidence is scanty, the charcoal as well as 40 Chalcolithic and 26 EB I-II sherds recovered from the sounding indicate that there was at least limited occupation in this area. If, as seems to be the case, dwellings were made from sun baked bricks with a high marl content, it is understandable how the architectural features could erode away to almost nothing over the past 5,000 years. Nearby surface finds including a sandstone mortar and basalt saddle quern also attest to ancient occupation in this sector of the township.

### 3.5 Walls along the West Access Road

Since most of the Chalcolithic pottery was found concentrated in the northwest corner of the township and along the west access road, we decided to probe two walls in the foothills roughly 400 meters west of the township proper. The surface pottery around the walls was a homogenous group of coarse Chalcolithic body sherds.

The two roughly parallel walls with a northwest-southeast orientation are perched on the top of a small hillock with deep washes running east-west on the north and south sides

of the hill. If the walls were ever connected by crosswalls at the north and south ends, they have disappeared off the edge of the slopes and have washed away without leaving a trace. As the top plan indicates (Cf. Fig. 4) the two walls are approximately 2 meters further apart at the north end than at the south end. It seems doubtful therefore that the two walls were ever connected unless one envisions a building in the shape of a polygon rather than a rectangle.

The first two probes against the east wall were attempts to date and examine the wall's foundation course. We found that like the long wall examined within the township, the rocks visible from the surface wash in fact the only surviving course. Unlike the long wall on the site, we did find faint traces of a shallow foundation trench and numerous potsherds, most of which disintegrated when handled. Soft wind blown soil deposits were found east of the wall and a 25-35cm. layer of a gravel wash lie between the two walls. Ten centimeters above bedrock (25-35 cm. below the surface) a hard packed surface of mud bricklike material emerged. This surface, found west of the east wall at approximately the same level in probes 1 & 2 (cf. Fig.4), displayed characteristics typical of an occupational layer, i.e., sherds, worked flint and charcoal embedded in a hard packed, artificial surface.

Probe 3 was laid out between the two walls in order to examine their stratigraphical relationship. The attempt to follow the living surface found in probes 1 and 2 was only partially successful owing to the disturbance of this layer by erosional factors. Fairly well preserved sherds were found within one meter of the east wall but as the excavation progressed towards the west wall, the surface became increasingly difficult to follow and only disintegrated sherds were found. Two small pits cut into the sandy bedrock were found along the northwest balk near the center of the probe, one of which underlies the living surface and one of which clearly cuts it. The pits contained gray ashy soil and a few traces of disintegrated sherds but no salvageable diagnostic sherds. The pit underlying the living surface represents the only clear

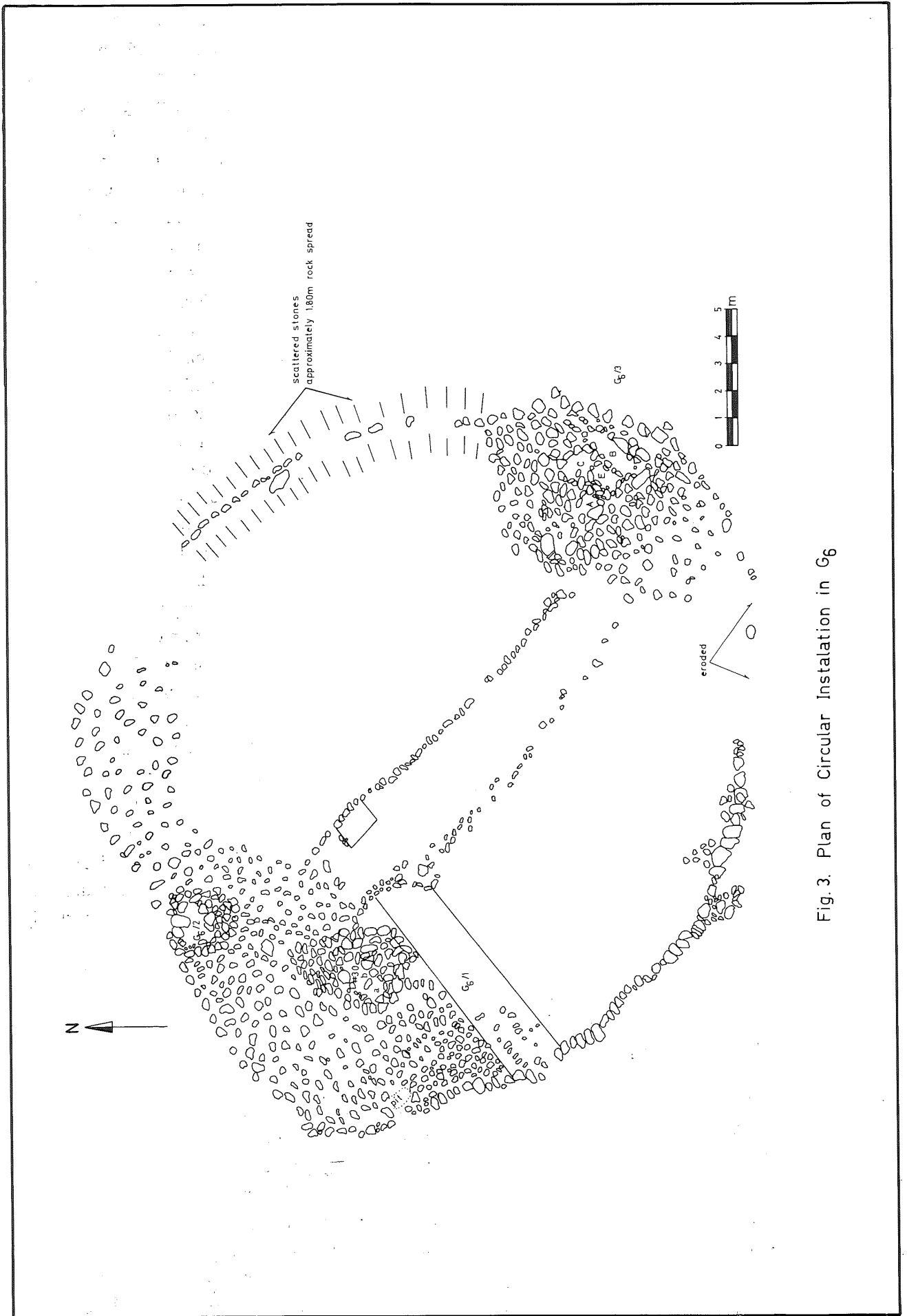


Fig. 3. Plan of Circular Installation in G6

evidence of occupation which precedes the living surface and the east wall associated with it. The disturbance caused by natural erosion and the pit cutting through the living surface makes it impossible to relate the two walls stratigraphically with any degree of certainty.

Having only a couple of days left to finish the project, we decided to clear as much of the area as possible in order to recover a diagnostic corpus of sherds for dating purposes. We did find a number of rims, handles and bases, almost all of which came from the living surface adjacent to the east wall at a depth of 25-35 cm. Evidently the wall had protected these sherds from the wash which had inundated most of the area between the two walls and carried away the center section of the west wall. Most of the sherds found in the gravel wash between the walls were treated with PVA before being removed but even this precaution often proved fruitless as many of the sherds had been reduced to dust.

#### **4.0 Conclusions**

##### **4.1 The Surface Survey**

From the pottery and flint implements collected during the surface survey, a rough outline of the history of human activity at the A.P.C. township site can be deduced. Paleolithic flint tools concentrated along the ancient beach lines were found in sufficient quantities to indicate a substantial presence during this period but not necessarily occupation. The small area 200 meters southwest of Field I from which 92 Paleolithic flints were collected represents a much denser concentration of artifacts from this period than anything found within the boundaries of the township and could be interpreted as a small but fulfilled Paleolithic site. No evidence was found to indicate occupation during the Mesolithic or Neolithic periods but the pottery and walls found at the northwest corner of the township site and along the west access road suggest a well established though probably small Chalcolithic settlement.

Pottery concentrated near the eastern end of the northern section of the township (Cf. Fig.1)

indicates that this was an area of limited occupation during the Chalcolithic and EB I-II periods. A few EB III-IV sherds were found scattered about the site but not in sufficient quantities to suggest occupation during those periods.

No pottery or artifacts dating from the Middle Bronze Age through the Hellenistic Period were found. A total of 17 Nabatean and 106 Byzantine sherds probably represents transient presence at the site during those periods. The relatively large number of Byzantine sherds is not surprising since there are three known Byzantine sites within 5 kilometers of the township. An absence of pottery from the Islamic periods to modern times indicates that again there was very little human activity at the site from the end of the Byzantine Period until the mid-20th century. Four broken EB IA pots and a basalt vase found lying on the surface between the H and J points on the center line almost certainly represents some of the pottery robbed from the Bab edh-Dhra' cemetery shaft tombs in recent years.

It should be emphasized that the preceding sketch of human activity derived from the surface survey, applies only to the township proper and not to the Ghor edh-Dhra' as a whole. If a thorough survey of the Lisan and the area between the Wadi Kerak and Wadi Numeria were conducted, pottery and artifacts from periods not represented at the township site would doubtless be found. Evidence confirming this to be the case was found by the author in February 1978 in the form of Neolithic pottery and flint implements collected near 'Ain Weida' a in the Wadi edh-Dhra' just 2 kilometers east of the township.

##### **4.2 The Soundings**

The results of the soundings confirm the outline of human activity in the area which the surface material suggests and makes further refinement of the site's history possible. The excavations established that the areas of Chalcolithic and Early Bronze pottery concentrations were in fact occupational areas and

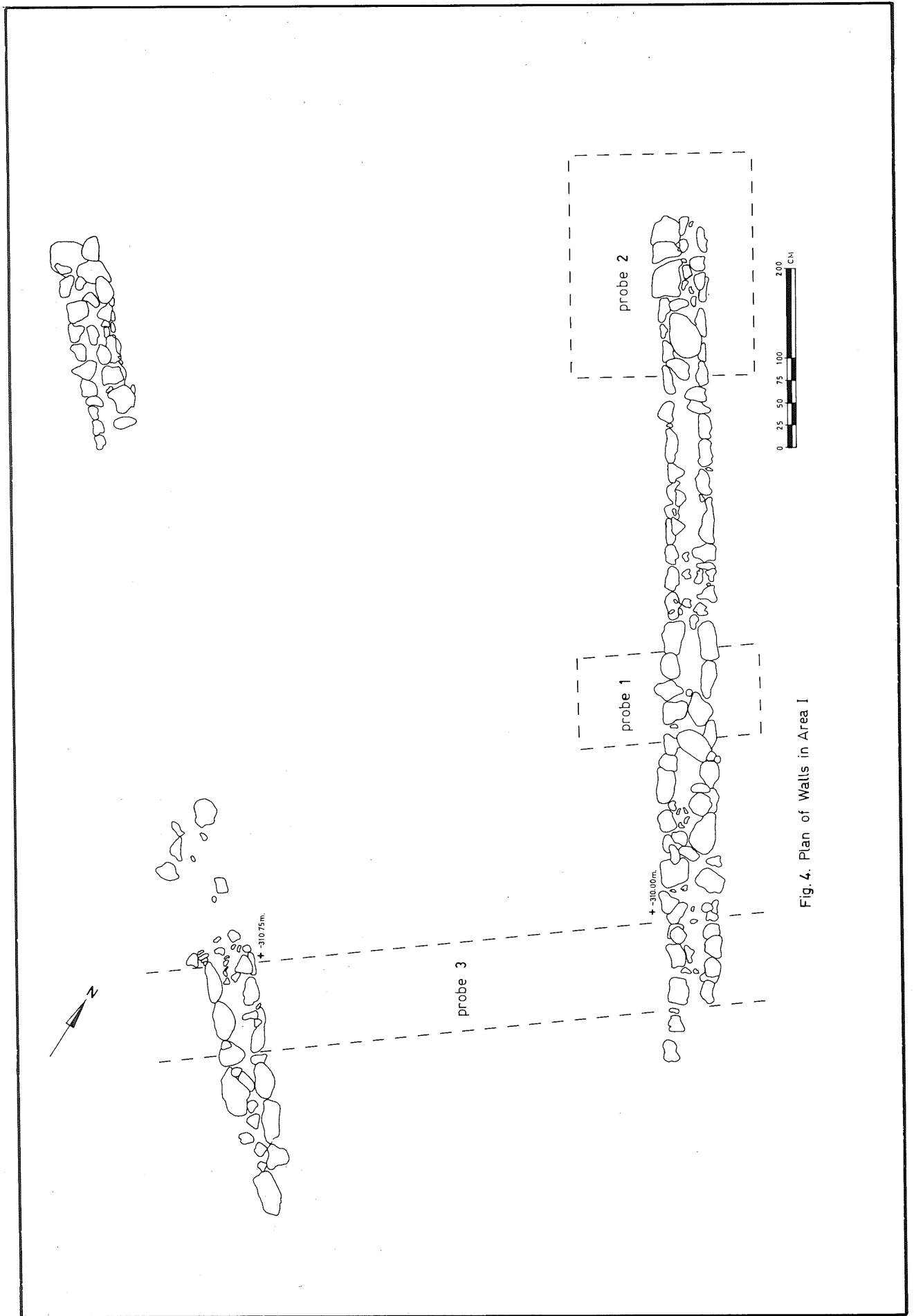


Fig. 4. Plan of Walls in Area I



that these are apparently the only periods of occupation at the township site. This fact suggests the distinct possibility that the cairns and long wall were constructed during either the Chalcolithic or EB I-II periods. Since the cairns are burials and the dominant burial practices in this region during the EB I-II periods as reflected in the nearby Bab edh-Dhra' cemetery were subterranean shaft tombs or semi-subterranean mud brick charnel houses<sup>5</sup>, it would seem that a Chalcolithic date for the cairns is most likely<sup>6</sup>. Such a date is further suggested by the fact that all of the pottery, some 58 sherds from the soundings of the large circular ring G<sub>6</sub> (Cf. Fig.1 & 3). were Chalcolithic in date. At the present time, there is no clear evidence for determining either the date or function of the long wall which runs through the site.

The sherds recovered from the probes against the walls located along the west access road constitutes a homogenous corpus of mostly coarse ware pottery with large calcite inclusions and typical Chalcolithic forms such as steep angled, simple rims, rope molding decoration and loop handles. Absolutely no paint was found on any of the sherds. Although isolated parallels can be found for some rims and handles, according to our pottery expert Dr. James A. Sauer, the assemblage as a whole is atypical. Thus a great deal of comparative research lies ahead before a detailed report on the exact nature and date of the Chalcolithic pottery can be published.

Extensive occupation of the northern Jordan Valley during the Chalcolithic period is a well documented fact<sup>7</sup> and surveys conducted in the 1960s located numerous caves containing Chalcolithic remains along the western edge of the

Dead Sea<sup>8</sup>. On the other hand, surveys by Fritz Frank in 1932<sup>9</sup>, Nelson Glueck in 1934<sup>10</sup> and more recently by Drs. Thomas Schaub and Walter Rast in 1973<sup>11</sup> make no mention of finding evidence of Chalcolithic occupation in the Southern Ghor along the east edge of the Dead Sea. The Chalcolithic walls and pottery found on and around the A.P.C. township site thus represents the first reported evidence of Chalcolithic occupation in this area.

All of the material from the survey and sounding is presently housed at the American Center of Oriental Research in Amman where it is being processed for final publication.

#### Acknowledgements

The author wishes to express his gratitude to several individuals and organizations without whose help this project would never have materialized. A word of thanks is due to the personnel at the American Embassy in Amman, in particular the staff of USAID and Ambassador Thomas Pickering for their interest in the project and financial assistance. The cooperation and hospitality extended by the Arab Potash Company was also greatly appreciated. Dr. James A. Sauer, director of the American Center of Oriental Research has given freely of his time and expertise in the pottery reading and has provided valuable guidance for the project from its inception to the present time. Dr. Edward F. Cambell, our A.S.O.R. contact in the U.S., has saved us much time and worry by personally taking care of all stateside arrangements. The Department of Antiquities, under the direction of Dr. Adnan Hadidi, was a pleasure to work with. Dr. Hadidi's personal interest in the project, his patience and generosity have been a constant source of encouragement.

David W. Mc Creery

## Notes

1. Once the detailed study of the pottery and artifacts has been completed, another final report will be issued.
2. During the course of our survey, the Department of Antiquities carried out a salvage excavation at a Byzantine cemetery located several hundred meters due west of the Bab edh-Dhra' cemetery where several graves had been opened up by bulldozers preparing a base camp for highway construction workers.
3. No evidence of recent digging was found around any of the cairns.
4. Mr. Vincent Clark who excavated several cairns himself and oversaw the excavation of all the other cairns is working on a separate report devoted wholly to their excavation and interpretation. Hopefully by the time his article appears (also in *ADAJ*) the laboratory analyses will be completed.
5. Cf. Paul W. Lapp, *The Tale of the Tell*, ed. by Nancy Lapp, Pittsburgh: The Pickwick Press, 1975. pp. 104-110. And Paul W. Lapp, "The Cemetery at Bab edh-Dhra', Jordan," *Archaeology*, Vol. 19, 2, 1966. pp. 104-111.
6. The results of the C-14 analysis of bone material recovered from the cairns will provide the necessary control for testing this hypothesis.
7. Cf. Mo' awiyah Ibrahim, James Abbot Sauer and Khair Yassine, "The East Jordan Vally Survey, 1975," *BASOR*, 22, 1976. pp. 41-66. And R. de. Vaux "Palestine during the Neolithic and Chalcolithic Period," pp. 498-538 in *The Cambridge Ancient History*, Vol. 1. Part 1, eds. I.E.S. Edwards, *et. al.*, Cambridge: Cambridge University Press, 1966.
8. Y. Aharoni, N. Avigad. P. Bar-Adon, and Y. Yadin, "The Expedition to the Judean Desert, 1960," *IEJ*, Vol. 11, 1-2. 1961. pp. 1-52. Cf. also Y. Aharoni, "The Caves of Nahal Hever," *Antiqot*, Vol, III, 1961. pp.148-62.
9. Fritz Frank, "Aus der Araba 1: Reiseberichte," *ZDPV*, Vol. 57, 1934. pp. 191-280.
10. Nelson Glueck, "Explorations in Eastern Palestine, II," *AASOR*, Vol 15, 1935.
11. Walter E. Rast and R. Thomas Schaub, "Survey of the Southeastern Plain of the Dead Sea, 1973," *ADAJ*, Vol. 19, 1974. pp.5-53.



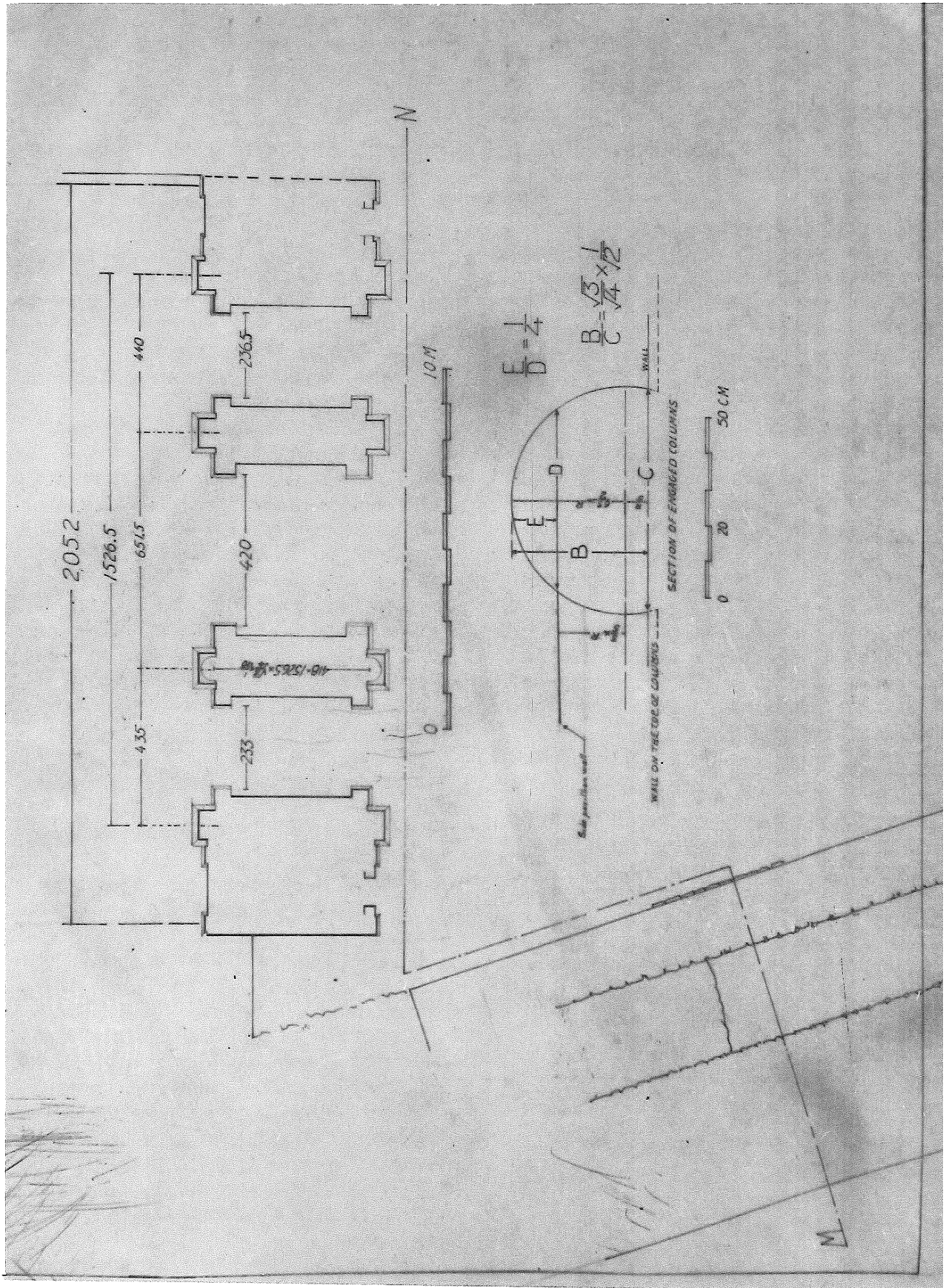


Fig 1

# Restoration in Jerash

## (With observations about the related Monuments)

by  
H. Kalayan

**I The South Gate:** The five year Touristic Project Plan, includes among others the restoration of the south gate of the old city, to serve as main entrance gate for all visitors, with its visitors centre and restaurant facilities immediately to the south of the gate. Pl LXXXVII, I

The plan and the parts still in place of the south gate suggest that its elevation was similar to the triumphal arch of Hadrian, as already described in detail by Detweiler<sup>1</sup>. The south gate is similar in conception, but not in dimension to the triumphal arch in front of it.

The elevation of the south gate represents a problem, the engaged columns have no entasis, nor a reduction of diameter, to determine graphically or by calculation the probable height of the column, although the wall of the engaged column inclines backward at the top of the column about 2 cms, but keeps the diameter of the column the same. This same observation applies to the triumphal arch; (I could not measure the exact backward inclination of the wall, because there are no drums with part of the engaged wall on it).

### Help of Arithmetic

Our previous experience had shown that the section of the engaged columns have the same symmetry with ratio or proportion as the elevations of doors and columns connected to the design.

The engaged column sections are designed at the base 1/5 radius more than semicircle. Thus the ratio of the cord C of the section, to its bisector B limited by the circumference:

$$\frac{B}{C} = \frac{1}{2} \sqrt{\frac{6}{24}} = \frac{\sqrt{3}}{\sqrt{4}} \times \sqrt{\frac{1}{2}}$$

Thus the height of the doorway H, to its width W, must have the same ratio or proportion; (see plan of south gate fig 1)

$$\frac{W}{H} = \frac{\sqrt{3}}{\sqrt{4}} \times \frac{1}{2}$$

The exactitude of this is verified by the width

and height of the capital still in place on the western side entrance doorway.

$$\frac{W}{H} = \frac{236.5 \text{ cm}}{386 \text{ cm}} = \frac{\sqrt{3}}{4} \times \frac{1}{2}$$

236.5 has to be 236.37 taking 386 as correct. Hence the height of the columns must be in inverse ratio. The axial distances measured from west to east;

$$440 + 561.5 - 435 = 1526.5 \text{ cms.}$$

Hence the height of the columns with the base and the capital Ch.

$$Ch = 1526.5 \times \frac{\sqrt{3}}{\sqrt{4}} \times \frac{1}{2} = 934.8 \text{ cm.}$$

Since the layers of the courses are practically the same, i.e. between 58-59 cm., then there should be 16 courses with average height of 58.4 cm. This does not apply to the doorways. This can not be the foot as well. The number 934.8 is commensurable with 1526.5 in square only, so the former is called a MEDIAL line. (Book X proposition 21, Euclid (2)). The foot can be the axial distances 1526.5 which divided by 52 gives 29.36 and such a distance is marked on a level line on the south podium of the temple of Artemis.

If we consider the axial distribution of distances

$$\frac{440}{-526.5} = \frac{1}{3} \times \frac{\sqrt{3}}{\sqrt{4}} \quad 440 \text{ should be } 440.6 \text{ cm}$$

The same symmetry expression  $\frac{\sqrt{3}}{4}$  as in the  $\frac{\sqrt{3}}{4} \times \frac{1}{2}$ . The expression  $\frac{\sqrt{3}}{4}$  is called the symmetry-commensurability- of the sides of the rectangle formed by base line axial distances, and the height of the column. It is a geometrical expression, and Vitruvius (Book I c.I, 4 and Book III c.I, 1) states, "The planning of temples depends upon symmetry; the difficult problems of symmetry are solved by geometrical rules and methods, and the method of this architects must deligently apprehend" (The Loeb Classical Library). In this case, the south gate symmetry, or commensurability, is as the long side of a 60° right angle triangle to its hypotenuse.

The symmetry in this case, as the square areas formed by the two lines; this kind of symmetry is defined by Euclid in Book X def. 2:<sup>2</sup>

"Straight lines are commensurable in

square (symmetrical in square) when the squares on them are measured by the same area". Thus the squares formed by the lines  $\sqrt{3}$  and  $\sqrt{4}$  will have the areas 3 and 4 units square and their difference is one unit square which measures the 3 unit square.

According to Plato "Commensurability in square" or "symmetrical in square" nomination was due to Theaetetus, (148 B) where Plato states on behalf of Theaetetus, such numbers, as  $\sqrt{3}, \sqrt{4}$ , "we called roots as not being commensurable (symmetrical) with the other in length, but only in plane areas to which the squares on them are equal".

The expression "symmetrical in square" may belong to Theaetetus, while its use is common in Egyptian monuments. A nice example, (that even the drawings were made on papyrus with proper grid), is a drawing on papyrus belonging to the 18th dynasty, published in Architecture of Kalabsha, the grid of papyrus is not a square but the sides are

$$\frac{\sqrt{15}}{\sqrt{16}}$$
 horizontal to vertical as I could measure it on the plate.

Again the grid on a stone published in Kalabsha, measuring 42 mm by 42 mm, ten of them 42cm;  $\frac{42}{\sqrt{2}} = 29.698$  cm, which corresponds to the dimension of Roman foot. So the square of the foot was used in Kalabsha.

In an altar of the Egyptian Middle Empire displayed in the Museum of Brussels (Ciquantenaire), the dimensions are in the ratio of  $\frac{\sqrt{4}}{\sqrt{3}} \times \frac{1}{2}$

The formula for any two numbers, A and B, which are symmetrical and in harmony is given by Theon of Smyrna (section XXXI):

$$A^2 - 2B^2 = \pm 1$$

In this case again the symmetry is in square and, A and B, have the ratio.

$$\frac{B}{A} = \frac{\sqrt{N+1}}{\sqrt{N}} \times \frac{1}{2}$$

Thus  $N \pm 1$  and N is the commensurability in square while  $\frac{1}{2}$  is the proportion.

Plato refers to the same formula in the numerical form (Republic 546 C)  $\frac{\sqrt{50}}{\sqrt{40}} \times \frac{1}{2}$  stating that the rational diameter of 5 is  $\frac{7}{18}$ .

The above formula governs the triumphal arch of Hadrian, and is confirmed by the height of the three doors where  $\frac{W}{H} = \frac{5}{7}$

Accordingly the height of the columns must be with the following axial distances

$$581.5 + 967 + 581.5 = 2129.5$$

$$2129.5 \times \frac{5}{7} = 1521 \text{ cm}$$

Detweiler has designed with 13 m. (on scale), one error of design is the height of the niches on top of side entrances, according to evidences on ground it is two courses higher. In this case the inscription of Hadrian can be placed on top of central arch way, below the crowning entablature.

The same formula of design for the triumphal arch is verified by the section of engaged columns, the section is around  $\frac{1}{3}$  radius away from the centre, actually it must be 0.342 radius. It is difficult to measure the difference between  $\frac{1}{3}$  and 0.342, unless one can find original design lines on the section, specially on lower drums.

According to authors of classical period the symmetry between two lines must differ by one unit. "whatever the unit may be", as in the case of 3 and 4, so that there may be harmony in design. The famous mathematician of Gerasa, Nicomachus, expresses the rule for harmony; "Everything that is harmoniously constituted is knit together out of opposites and, of course, out of real things; for neither can non-existent things be set in harmony, nor can things that exist, but are like one another, nor yet things that are different, but have no relation one to another. It remains, accordingly, that those things out of which a harmony is made are both real, different, and things with same relation to one another."

"Of such things, therefore, scientific numbers consist, for the most fundamental species in it are two, embracing the essence of quantity, different from one another and not of a wholly different genus, odd and even, and they are reciprocally woven into harmony with each other, inseparably and uniformly, by a wonderful and divine Nature...."<sup>3</sup>

The harmonious symmetry consists of two quantities differing by one quantity, thus one even the other odd number.

The proposition 17 of Book X of Euclid's Elements, for commensurability in square gives the same result, that is, the square on two unequal lines should differ by a unit measure symmetrical with the shorter line.

The proposition 17

"If there be two unequal straight lines, and to the greater there be applied a parallelogram equal to the fourth part of the square on the less and deficient by a square figure, and if it divide it into parts which are commensurable in length,

then the square on the greater will be greater than the square on the less by a square on a straight line commensurable with the greater.” (2)

If **a** the greater line and **b** the lesser line;

$$x(a-x) = \frac{b^2}{4}$$

$$x = \frac{a + \sqrt{a^2 - b^2}}{2}$$

the value of **x** to be rational  $a^2 - b^2$  should be equal to unity, what ever it may be, which will measure  $b^2$ , and hence **a** and **b** are symmetrical in square.

Already all the propositions of Book X (115 in number) are made to serve the architect, about the lines he is using if they are commensurable with each other, as the height of the columns of the south gate and the axial distances as a whole, they are not commensurable, hence he has to calculate it graphically and mark a unit of measure for laying out.

Why should there be a difference in symmetry for the same kind of construction in the same city; The triumphal arch symmetry is  $\sqrt{50}/\sqrt{49}$  while that of the south gate is  $\sqrt{3}/\sqrt{4}$ , but their proportions are the same  $1/\sqrt{2}$ .  $\sqrt{3}/\sqrt{4}$  represents Baalshamin (8).

Let us examine some cases to find a plausible answer: The temple of Artemis in its peristyle column, breadth from center of column to center of column B, and the length L:

$$\frac{B}{L} = \frac{1952}{3730} = \frac{\sqrt{12}}{\sqrt{11}} \times \frac{1}{2}$$

Artemis was a patroness of Gerasa, the same symmetry is found in Parthenon of Athena, patroness of Athens,

$$\frac{B}{L} = \frac{2876.5}{6745.5} = \frac{\sqrt{12}}{\sqrt{11}} \times \sqrt{\frac{1}{6}}$$

There are similarities in the characters and attributes of Artemis and Athena, so both have the same number of symmetry for their temples, or the above symmetry is for the patroness of the cities. The proportion depends on the planning required from the architect. In the Parthenon the need was for a long cella so the architect chose the proportion as  $1/\sqrt{6}$ , while in Gerasa where there was no need for a long cella, the architect has chosen  $1/2$ . (4)

Another example is the Zeus temple in Jerash,  $\frac{B}{L} = \frac{\sqrt{9}}{\sqrt{10}} \times \frac{1}{\sqrt{2}}$  while the temple of Jupiter in Baalbek ( $\frac{B}{L} = \frac{\sqrt{10}}{9} \times \frac{1}{2}$ ) The former has 8 columns in front and 12 on the side, while the

temple of Jupiter has 10 columns in front and 19 on the side. Both the numbers 9 and 10 are attributed to Sun and 10 to unwearied God.<sup>5</sup> In Jerash the architect has intended to have a larger front; around 0.67 L, while in Baalbek it is 0.53 L. But in octastyle the height of the column is  $B/\sqrt{3}$ , and this will be true for the temple of Zeus if  $\frac{B}{L} = \frac{\sqrt{10}}{9} \times \frac{1}{2}$  as calculated in Baalbek, then  $B/\sqrt{3}$  is exactly the height of the column as given by Kraeling.

(Above statement of  $B/\sqrt{3}$  for the height of the columns, is based on the temple of Bacchus in Baalbek<sup>6</sup>, and that of the Temple of Bel in Palmyra<sup>7</sup>.)

The above discussion suggests that there were special numbers attached to Gods or they were their attributes, and there is a symmetry for each temple, and any common measure for B and L is not possible if the symmetry is in square; rounding of measured figures may have a common highest factor, but it must not be taken as a correct one. The Palmyrean temple of Baalshamin was published with a common measure<sup>8</sup>, and it was  $\frac{B}{L} = \frac{\sqrt{4}}{\sqrt{3}} \times \frac{1}{2}$ . The Temple of Bel in the same city is published with a common measure, but  $\frac{B}{L} = \frac{\sqrt{13}}{\sqrt{12}} \times \frac{1}{2}$ , the same proportional number of interspacing of columns 24 to 26 on the opposite side of the entrance of the court, shows that the symmetry was 12 to 13, and the doorway of the peristyle colonnade is placed with 5 intercolumnar space on one side and 7 on the other side so it is  $\frac{\sqrt{50}}{\sqrt{49}} \times \frac{1}{2}$  thus it is, not an arbitrary one.<sup>4</sup>

The south gate elevation was designed on the above mentioned mathematical basis. The elements of previous excavations were piled

inside the city (Pl) LXXXVII, about 50 m in front of the gate. The pile contained elements belonging to the eastern door leading into the lower courtyard of the temple of Zeus, two elements belonging to the main entrance from the forum in to the lower court of Zeus temple, and two corbels belonging to the same door (probable), other elements of doors with letters A and B.

The elements belonging to the south gate had enough drums to complete practically one facade, but since the excavation had dug both outside of the gate and inside, we reasoned that it must belong to both facades, and a tentative distribution was made on the sketch. (see elevation Fig. 2)

The western side gate, because its width, the extrados of the arch was entering into the

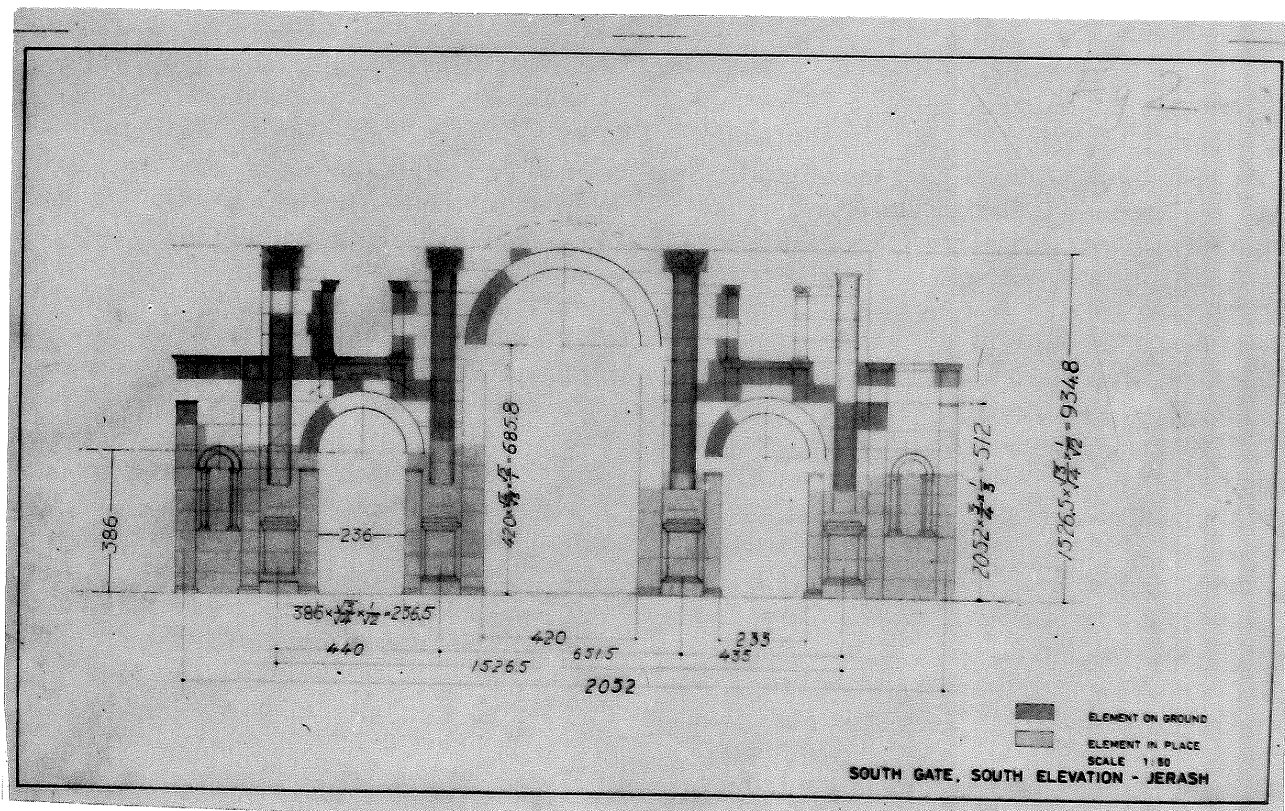


Fig 2

course with corbelling for the niches above the side doorways, an element with corbelling and with the required reduction just after corbelling was found, thus verifying the elevation. On the near side of this element a curved tracing designed the inner arch for the passage way between two sides of the door.

The elements of the niches with their capitals were there, but none of the elements of the projecting architrave on to the columns supported by the corbelling. We could not find any element of the pediment which would crown the top of the capitals. Due to the works around the new visitors' center, some excavation was done in front of the gate, which revealed parts of the western column and its capital, and a capital belonging to the pilasters of the west pavillon, and some elements of the eastern side. (PI LXXXVIII).

The excavation conducted on the north side of the gate revealed elements still in order, fallen down probably due to an earth quake, specially the western pavillon, and part of central door pilasters and the capitals. The western pavillon had fallen on top of the fallen walls of Zeus court yard. (PI LXXXIX,1

The facade of the Zeus temple court yard facing the forum has fallen in a row, probably

from the same earth quake. (PI) XCI, 2

The intact form of the elements of the temple of Zeus indicate that the temple had not served as a quarry to Byzantine period constructions, but this is not the case for the temple of Artemis, where so many of its architraves served as lintels to churches. One might conclude that the temple of Zeus was already in ruins when Byzantine construction was flourishing, or the Zeus area was a forbidden zone.

The entrance to the court of the Zeus temple, from the east side, has a second period sill-stone with a cross and a Greek inscription on it; this might suggest its use during the Arabic period. Thus the city wall built against the eastern temenos of Zeus temple, may be dated to a later period than the same wall in other areas. The addition of the city wall on temenos has left the door intact, and the door is not extended to the additional part of the wall.

The temenos wall is decorated with engaged columns which are quite worn out, showing a long period of exposure to weathering. Except for a few pieces of the flat arch, the other elements of the door are in place <sup>10</sup>. These facts may lead one to suppose that the wall along the temenos is an addition of either late Byzantine or early Arab times. This may explain why some

elements of the flat arch have found their way down to the south gate to block probably the side doors. Old photographs show that the side gates were blocked. The Central entrance has three distinct periods. During the second period the door way was reduced by additional Pilasters 79cm, on each side, with no additional sill. In the third period there were added two layers of dressed stone not fitting very well in joints; the top one is a sill in two pieces, and reveals that the closing doors were of 135 cm. and 120 cm on their outer faces, and 120 on the east side was placed about 5 cm higher than 135 cm. At the level of this later sill on the outside facade of the south gate, (at a man's height) there are Omayad period inscriptions, and it can be assumed that the last sill of the gate was of this period, and the additional pilasters of the second period were most probably of the late Byzantine period when there was a Persian menace. At the level of Omayad period entrance, inside on the west side, there are a row of sills suggesting the probability of shops bordering the central entrance in use; the ones on the east side have disappeared, due to excavation or quarrying in the past. The south pavilion has fallen on these shop constructions, thus the west pavilion has been demolished by an earthquake of late Omayad period.

The Entrance sills of the three doors of Roman period reveal that the carriages entered only through the west side door. There are no carriage traces on the east side, and as far as I could see there are none on the central door.

A wall on the eastern side of the south gate, (due to its stepping up foundation towards the city, under well dressed courses,) suggest that there were wide steps on the eastern side to go to the constructed city level, (fig 3), and only the east side gate and the central gate were leading the pedestrians in to the city through the steps. A second wall on the east side of the above mentioned one, show that the ground was higher than the first five drums of the columns.

(Pl) LXXXIX,2. And when the doorway retaining wall for the steps were constructed they dug down into 3 layers marked by the red soil, and the lower layer contains hellenistic pottery. (see section MN fig 3)

Thus there were two level of entrances from the south gate; one from the western side

door, arriving probably level with 89 meter long (without the apse)<sup>11</sup> subterranean vault, below the level of the forum 2.78 m. (fig 4) The vault has three entrances, two on each side of the main entrance in to the lower court of the Zeus temple, and one further to the west, (pl) XC,XC1 there is evidence, due to the wall limiting the extension of landing in front of the main entrance (pl) XCII in the court of the Zeus temple that this wall extends further to the east into the front of the door of the vault, suggesting the possibility of steps leading up in the landing from the interior of the vault. This is not the case for the second door on the west side of the landing, and the third one is further on. Thus while passing through the west side door, with carriages, the pilgrims had to pass through the vault and climb up to the so called forum, (Fig 5) which was a sacrificial ground, with two altars.

Pl.XCII,1 One is partly restored, but of the second all elements are lost, except that it was a rectangle  $\frac{405}{450} = \frac{9}{10}$  with probable steps on the west side, and there was a piped (probably) channel leading down the liquid, along the south facade, while the square restored one had it on its west side<sup>12</sup>. These were the main altars for sacrifice, with devotees as spectators on the seats found near the altars<sup>13</sup>. And further, the columns limiting this sacrificial ground called the Forum, on its western side, between the two doors of wider intercolumnal space,--six intercolumnal space from the southern one and five intercolumnal space from the northern one,--there are five intercolumnal space, with special cut made on the Ionic capitals to receive a curtain or a closure in between columns, and in the middle spacing the closure or the curtain would stop, a little higher than a man's height and, in a special cut on the column and on the bases, probably a wooden door construction was inserted, so back to these column there was an area which was concealed with an obstruction and a door way was connecting it with the altar ground. (Pl.) XCIV

Similar semicircular ground connected to a rectangle all along the length of the propylaeum of Baalbek was found in 1975, (pl.) XCV with seats along the circumference of the whole enclosure; a paved ground, with several altars in it, which is shown on the coin of Philip the Arab, with a circular line extending from one tower of propylaeum to the other. A road, from the triumphal-arch-like, northern gate of Baalbek, led towards the northern tower of the Prop-



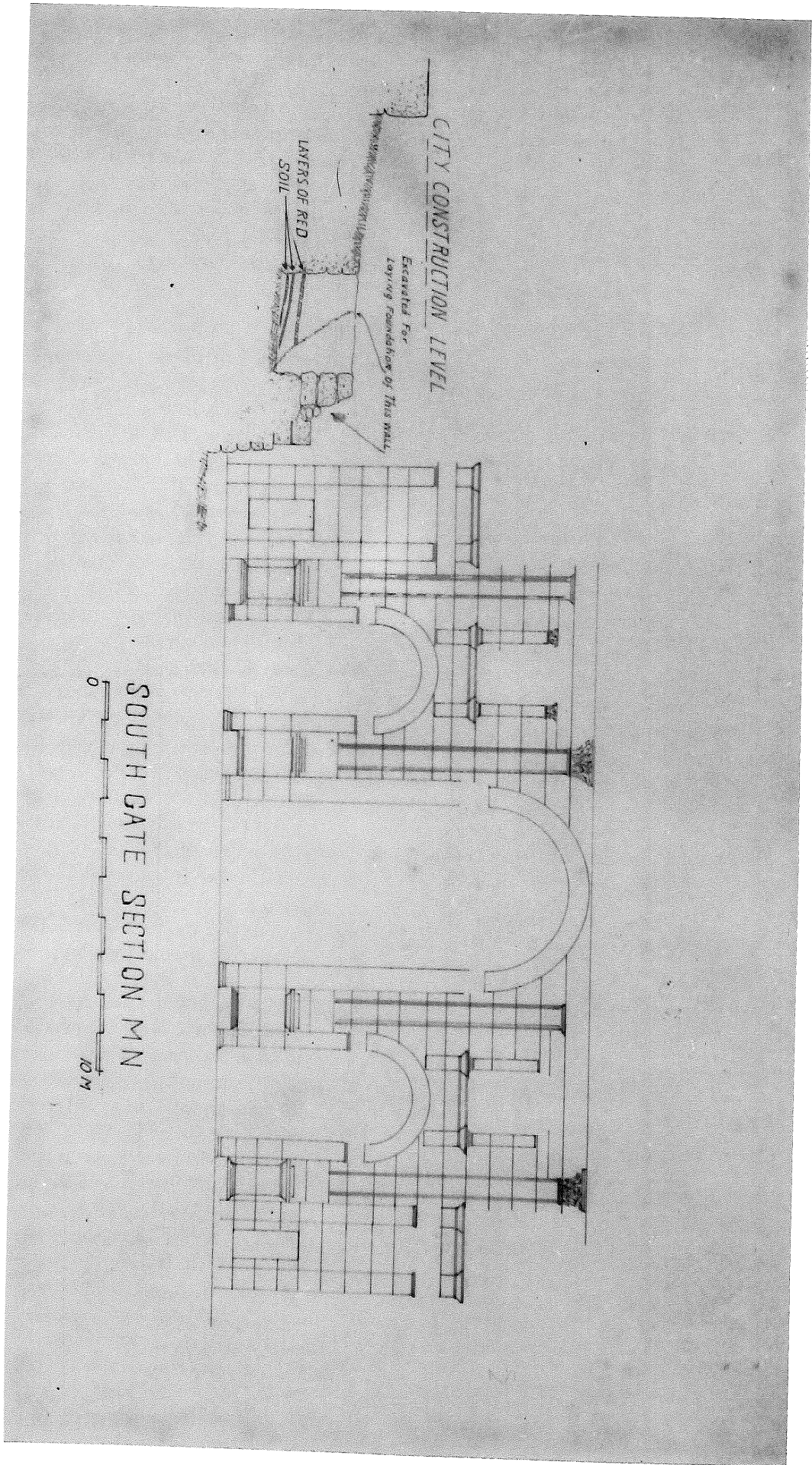


Fig. 3

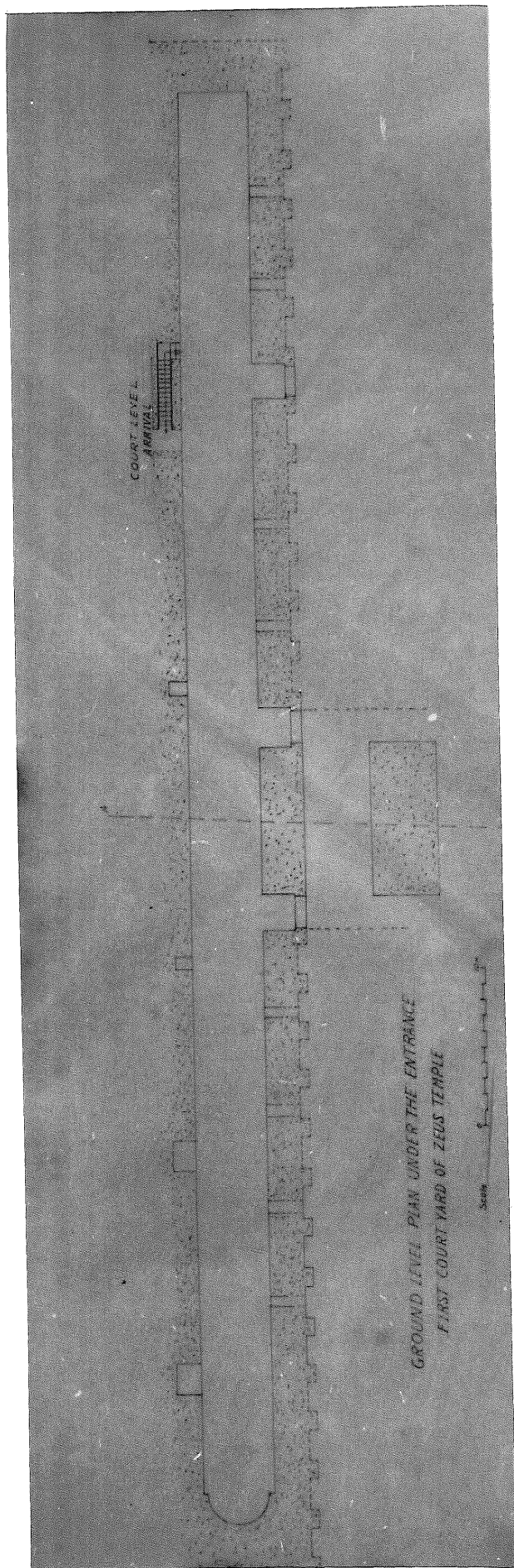


Fig. 4

ylaeum, which had two gates, one on the road side, and the other leading into the sacrificial ground, as it is in Gerasa.

The same remark can be made about the paved ground just after the triumphal arch in Petra, with two rows of seats, still existing on the left side, while those on the right side have been lost, and on the pavement there are traces of construction, probably altars, and this space would lead into the temenos of Qasr el Bint.

Notes:

- 1) Gerasa, City of the Decapolis, C.H. Kraeling, (1938) page 73, south gate page 149.
- 2) The thirteen Books of Euclid's Elements, by Sir Th. L. Heath, (1926). Cambridge.
- 3) Nicomachus of Gerasa, Introduction to Arithmetic, M.L.D'ooge, University of Michigan press, (1938.) Book I, ch. VI, even and odd identified with sameness and otherness. The chapter on "Philosophy of Nicomachus" mention that most of the classical writers express the same idea about Harmony.
- 4) Vitruvius, Book III ch. IV, 3: "The length of the work will be twice the breadth." Book IV, ch. IV. 1; "The length of the temple is so arranged that the breadth is half the length."
- 5) Nicomachus of Gerasa, page 106-107, quotation from Theologumena Arithmeticae.
- 6) Bulletin du Musee de Beyrouth, T. XXIV, page 58.
- 7) **Le Temple de Bel, Paris (1975) Not calculated in the publication.**  
H. Seyrig, R. Amy, E. Will,
- 8) **"Le Sanctuaire de Baalshamin a Palmyre," Paul Collart, and Jacques Vicari, 1969, Institut Suisse de Rome; Geometrical solution, Annales Archeologiques Arabes Syriennes, 1972, page 157, by H. Kalayan.**
- 9) **Le Temple de Bel....Page 119**
- 1) Gerasa, A.H. Detweiler, page 152. "Voussoirs of the flat arch of the old south gate were found in the debris, having probably been reused in the core of the new." This refers to the flat arch voussoirs we are identifying as part of the door on the eastern temenos of Zeus temple.
- 11) GERASA, page 18, note 27
- 12) **Bulletin du Musee de Beyrouth T. XXII** page 151 "The altar had a canalisation (tubular) from the west facade leading down into two shallow successive bas-

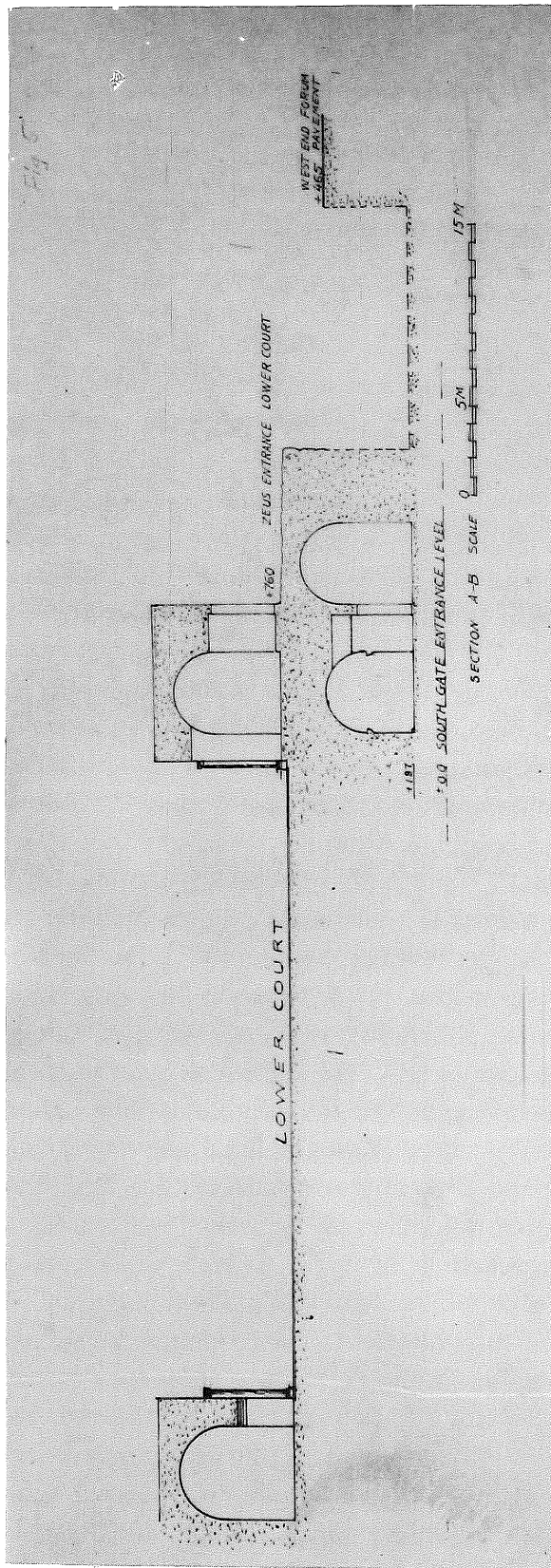


Fig. 5

sins.” The remark is about the small altar at Baalbek.

In the forum the small square altar is constructed in a rectangular area of 845 by 750,  $\frac{750}{840} = \frac{9}{10}$  showing that with symmetry it has the same concept as the temple of Zeus, although the altar is a square. The altar is later addition inserted into the rectangle, the altar must have had a direct dedicating in the name of Zeus, to be square, the symbol of sameness. Another rectangular area situated to the east of the square altar has the dimensions of 335 by 500  $\frac{335}{500} = \frac{\sqrt{9}}{\sqrt{10}} \times \frac{1}{2}$ . This same fact is true for Baalbek all constructions in the rectangular courtyard have a symmetry of 9/10 the publication of petit Autel by P. Collart and P. Coupel is based on a distorted dimensions so it is all unfounded although the plans of the first period, second course on are my plans and they have the correct dimensions. The  $\frac{B}{L} = \frac{\sqrt{9}}{\sqrt{10}}$  and the height of the altar  $H = \sqrt{B \times L}$ . “Le Petit Autel” P. Collart P. Coupel PARIS 1977.

13) L.Harding “Recent work on the Jerash Forum”. P.E.Q(1949)p.12-20

# Excavations at The Citadel, Amman, 1976 Second Preliminary Report

by

Crystal-M. Bennett and Alastair E. Northedge.<sup>1</sup>

A second season of excavations from the middle of May to the end of October, 1976, took place on the Citadel (el Qal'ah) (Plate XCVII, 1) in Amman, under the direction of Mrs. Crystal-M. Bennett<sup>2</sup>. It was hoped that the Department of Antiquities and the University of Jordan would have participated, but this was not possible<sup>3</sup>. The senior personnel of the team were key members of the British excavations at Buseirah<sup>4</sup>.

As was mentioned in the previous and first Preliminary Report published in the *A.D.A.J.*, Vol XX, (1975), the immediate reason for the excavations on this highest part of the Citadel is the possibility of either a new Museum being erected or a vast expansion of the present one. In 1975, attention was concentrated on the area to the north of the present Museum, (Areas A and B on Fig.1.). In 1976, it was decided that a more suitable area for the Museum might be on the south west slope of the Citadel, our Area C on Fig. 1. The area is bounded to the North by a number of barrack buildings which house the remaining garrison of the Citadel and to the east, by the Museum and its associated ancillary buildings. To the west, the area is bounded by the defensive wall of the Citadel, (which we took the opportunity to examine,) and the steep slope of the hill. This area of the Citadel has never been excavated, though the site of the present Museum was the subject of a rescue excavation by G. Lankester Harding in 1949<sup>5</sup>.

The main result of these excavations was a series of fine Umayyad private houses, whose foundations were laid upon bedrock.

The long season of more than five months

was envisaged as sufficient time to allow us to get to bedrock and thus define the total history of this part of the Citadel. An area of approximately 660 square metres was subjected to investigation by means of two lines of 5 metre squares, running up eastwards from the Citadel wall towards the Department of Antiquities' store rooms. Bedrock was reached only in one area, C.VII (see Fig.2), in a cistern which was stone lined to a depth of 8.02 metres below ground level. As this cistern is more than two-thirds east of the present western limit of the excavations, it can readily be understood how much work has to be done if the line of the bedrock is to be traced over the area. Despite the fact that bedrock will rise as the summit is approached, it will deepen as the excavations move west-wards down the slope towards the Sharia es Salt. The deliberate infill of earlier buildings and the loose rubble so often encountered make digging a hazardous occupation, particularly as the trenches deepen. It is of the utmost importance, however, that bedrock be reached in strategic areas if the successive periods of occupation are to be brought to light.

Broadly, what we uncovered falls into three major phases, all of which produced structures and stratified pottery, while there is some fragmentary information from earlier periods. The latest period of occupation is an Islamic phase, whose precise dating remains uncertain, but which may be assigned tentatively to the 10th/11th Century. This covers about two-thirds of the area and overlies an Umayyad phase, which was found over most of the area, particularly in the east. This Umayyad phase is distinctly separated from the Byzantine structures underneath.

### 10/11th Century Phase.

The latest phase of occupation consists of a series of small buildings clearly distinct from the underlying Umayyad phase. (Fig. 2). In some cases Umayyad walls have been reused, but in others, the Umayyad plan has been ignored. The setting out of the buildings bears no relationship and it is clear that there is a gap in the occupation. These buildings are constructed of uncoursed rubble, with considerable reuse of earlier masonry, including Roman, Byzantine and Umayyad items, and there is either a one course foundation or none at all. The rooms often exhibit low internal subdivisions of one course: these may have been foundations for low mud walls, but apart from hearths, the rooms show little sign of specialised function.

The eastern limit of this occupation is the Umayyad street in trenches C.V. and XV (Fig.2.), although there is some undated evidence of post-Umayyad occupation in trench C.VI Room A (discussed below). In trenches C.V/IV, there is a roughly rectangular house resting on Umayyad walls in the Northeast corner, with a low cross-wall joining the two long sides, and a single doorway in the Northwest corner. To the North, in trenches C.XV/XIV, Umayyad walls were reused, adding new upper courses and new cross walls and doorways. The Umayyad floor level appears to have been reused, 1.20m below those of the adjacent house mentioned above, and it would be reasonable to assume that these rooms were sunk into the ground at this period. This structure extends as far West as a possible "alley" running North-South in C. III and XIII, and has a doorway on to it. The Umayyad wall continues to the West under the "alley" surface, which was otherwise mud.

To the west of the "alley", a complex of rooms runs as far as the defensive wall of the Citadel. The four rooms in C.II and XII all belong to one house, (Plate XCVI,2) which is similar in construction to the C.IV/V house, though it is more complex. The three rooms abutting the Defensive wall in trenches C.I/XI

also belong to one house, which is the most elaborate and the most interesting of this period (Plate XCVII,1). In the first place, the northernmost room in C.XI/XII is larger (5.7 metres wide) and utilises a reused column drum of 40.cm. diameter. The walling is a finer form of snecked rubble construction with a carefully built up raised threshold. This leads into a room with a stone-paved floor- the only non-earth floor in this phase. Beyond this lies a further room with a hard clay floor and access by an opening 1 metre high, which we have described as an animal door (See Fig.2).

Clearly, this phase represents domestic occupation of a fairly simple unwarlike community.<sup>5b</sup> The western walls of the rooms in C.I/XI are built on top of the defensive wall, and, in the case of the northernmost room, the defensive wall line is no longer used and the room is built into the rubble of the wall core. Thus it seems that the site was unwalled in this period. There was no certain occupation east of C.V/XV, and with large spaces between buildings, a sparsity of population is indicated.

The dating of this phase may be put tentatively in the late 10th/early 11th Century. The build up of deposits from the Umayyad floor levels is limited to a maximum of 1.20 metres and is often less. There is one securely associated coin from the floor of the C.IV/V house, an unfortunately illegible dirham with an inscription in a developed Kufic and best placed in the 10th/11th Centuries.

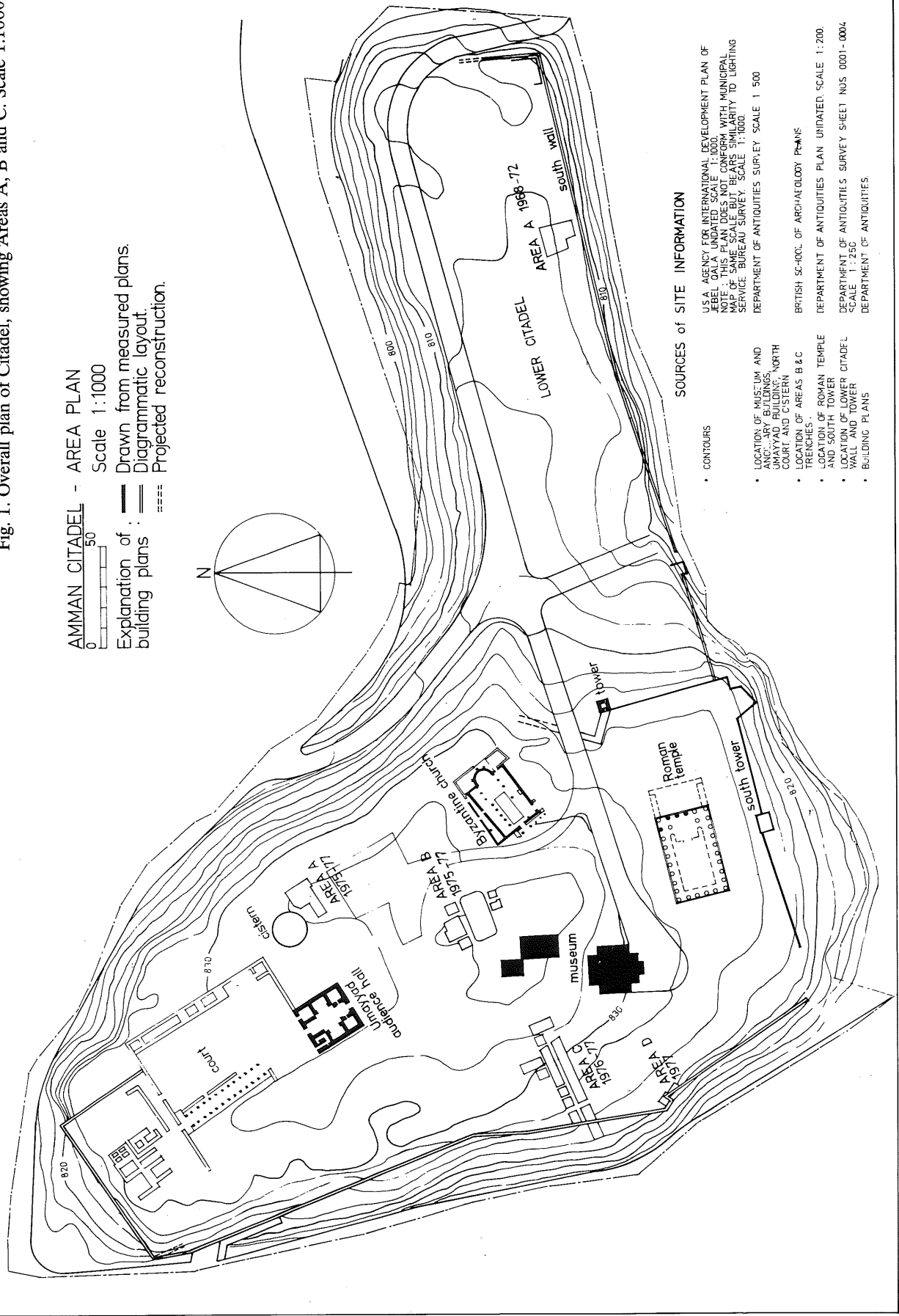
### Umayyad Phase

Underneath the 10th century phase, there is Umayyad construction over much of the area of excavations. Adjacent to the defensive wall in C.I/XI (plate XCVII,1 and to the east of the street in C.V./XV, Umayyad buildings and levels are well preserved (Plate XCVIII,1)

### Defensive Wall. (Plates XCVII,1) and (XCVIII,2)

The section of the Citadel wall adjacent to the trench line was examined by excavation on

Fig. 1. Overall plan of Citadel, showing Areas A, B and C. Scale 1:1000.



AMMAN CITADEL - AREA PLAN  
 Scale 1:1000

Explanation of:  
 — Drawn from measured plans.  
 - - - Diagrammatic layout.  
 - - - - - Projected reconstruction.

SOURCES of SITE INFORMATION

- CONTOURS
  - LOCATION OF MUSLIM AND ANCILLARY BUILDINGS, NORTH UMAYYAD BUILDING, NORTH COURT AND CISTERN
  - LOCATION OF AREAS B & C TRENCHES
  - LOCATION OF ROMAN TEMPLE AND SOUTH TOWER
  - LOCATION OF LOWER CITADEL WALL AND TOWER
  - BUILDING PLANS
- USA AGENCY FOR INTERNATIONAL DEVELOPMENT PLAN OF REBEL DALLA PLAN DOES NOT CORRELATE WITH MUNICIPAL MAP OF SAME SCALE BUT BEARS SIMILARITY TO LIGHTING SERVICE BUREAU SURVEY. SCALE 1:1000.  
 DEPARTMENT OF ANTIQUITIES SURVEY. SCALE 1:500
- BRITISH SCHOOL OF ARCHAEOLOGY PLANS  
 DEPARTMENT OF ANTIQUITIES PLAN UNDATED. SCALE 1:200.  
 DEPARTMENT OF ANTIQUITIES SURVEY SHEET NUS 0001-0004 SCALE 1:250  
 DEPARTMENT OF ANTIQUITIES

both sides of the wall and some removal of the fill. The outer face consists of ashlar blocks of very soft limestone, of which six courses have survived at the point of excavation. Below this there is a foundation of snecked rubble construction. The ashlar blocks are a facade for a rubble core set in red clay, and the inside face of the wall is again snecked rubble with an unusually large number of snecking stones, giving a total width of 4 metres. The foundation on the inside is rubble set in red clay. The inner face has a ledge 0.30 metres wide and between 0.80 and 0.50 metres above the associated floor level. On both faces of the wall there are traces of lime plaster with an ash content and inset with a sprinkling of limestone chips.

The main feature of the exterior of this section of the wall is a series of buttresses, on average 14.5 metres apart and 6 metres long. The buttress in trench C.C,2 projects 0.70 metres. These buttresses are not related to strengthening the rubble fill of the wall, nor do they function as towers, for they do not project sufficiently to give a protected field of fire along the length of the wall. Rather they appear to be decorative, patterned on a section of walling, which is undoubtedly Roman, on the south side of the Citadel.

Pottery from the rubble fill and the associated floor level on the inside, dates the visible construction to the Umayyad period. On the inside, the wall line runs over a Byzantine building and from the evidence of the foundations on both sides of the wall, it is clear that this wall is the first wall on this line and is not a rebuild. There is no evidence, so far, as to where an earlier wall line might have been on the Western slope of the Citadel. The Umayyad construction on this side extends from a gate opposite the Umayyad "Palace" to the Southwest corner of the Citadel and is extensive elsewhere on the Citadel.<sup>6</sup>

There is some evidence of refacing with rubble stones on the outside face, but as a whole this Umayyad wall was never rebuilt, and in the

10th Century phase, domestic structures were built over the inside face (see above, page 174). Later, a battered revetment was added, whose date is uncertain; it is not contemporary with the main wall, neither is it a modern buttressing wall. We hope, on the basis of this excavation, to survey the western wall of the Citadel in the 1977 season.

#### **Umayyad Buildings.**

At both ends of the trench line, the Umayyad levels are clear; adjacent to the Citadel wall and associated with it, is a fine Umayyad plaster floor (trench C.I) with a pier of uncertain date in the south-east corner of the trench. No building walls have been uncovered and the floor fades out to the east. The floor is laid on a thin layer of red clay and the whole covers 2-2.5 metres of loose rubble, in which is interred three walls of a Byzantine building.

In the area east of the street in C.V. and XVI (Fig 2) a series of rooms was uncovered, almost identical in architecture and finds to the Umayyad houses excavated by G.L. Harding in 1949, 40 metres away to the east under the present Museum. (See n. 5). Almost certainly, the rooms constitute a single large building of which the limits are not yet known. A frontage of 18 metres on the western side has so far been uncovered, but including partially excavated rooms, the building must measure a minimum of 25 metres in the North-South direction. The walls are rubble-built with a large number of snecking stones, to provide a smooth surface for plastering,<sup>7</sup> though the wall construction deteriorates in rooms intended for storage. The foundations are 2 metres deep, set in a levelling fill intended to compensate for the slope of the hill.

The foundation work varies between rubble walling without snecking and carefully finished walling similar to the upper walls. All the floors are earth except for one fine mud plaster, (Room D)<sup>8</sup>, and one thin lime plaster floor (Room A).

The building does not appear to be an

architectural entity, but to be constructed of units: one unit is the foundation, all of which line up square. The second basic unit is Room E, which seems to have been constructed before Rooms A, B, and C, although there is no evidence of a major time gap. The upper walls are not built straight on the foundations, but rather diverge at a small angle.

Of the rooms extensively excavated, Rooms A, B, D and F. were clearly dwelling rooms, while C was a store room with three stone bins. A is the only room with signs of a lengthy period of use, with a second floor level of earth above the original lime plaster floor. After the destruction of the building, it was the only room to be used later with a third, higher floor level, a buttressing wall added on to the side facing the street, and a later tomb containing the skeletons of two children in the north-east corner. The second floor had two smashed pots which covered up by the later floor. Room B contained six pots, a lamp and a small hearth. Room F in trench C. VIII provided the best evidence of a dwelling room. In the south-west corner there was a rectangular stone pan, and, on the west side, the remains of a bread oven. Arranged around the walls of the room F were nine cooking pots, water jars and cups (Plate XCIX, 1). Room E contained a pair of interconnected basins faced with an ashy plaster that was cut with herringbone keying impressions. (Pl. XCIX, 2).

In trench C. VII and adjacent to the east wall of Room A (C. VI) was a plastered basin leading into a cistern. (Plate C, 1). This cistern has a shaft 0.42-0.65 metres in diameter, which bells out after 6.80 metres to a diameter of 2.80 metres. The cistern is stone-lined to the point where it begins to bell out, and below that it is plastered bedrock. The cistern seems to have been constructed originally in the Byzantine period, for it has a second ring-shaped stone for a mouth, 2.25 metres below the present mouth. The surround to the mouth has two phases: in the first, the Byzantine cistern is rebuilt with an extended shaft to suit the new ground level,

which has been raised by a fill to level the surface for the Umayyad building; it was built into the East wall of Room A and a channel from the adjacent plastered basin fed into it. In the second phase, the channel from the basin was blocked off and a new surround to the cistern head was built.

This building was destroyed suddenly, from the evidence of pottery on the floors of Room A, B and F, and the skeleton of a young adult found curled up on the threshold of the eastern doorway to Room B. Cracks and leaning (Plate C, 2) walls indicate an earthquake at that time, for the west wall of Room A was buttressed later. The evidence of these excavations coincides with that of the 1949 excavations<sup>9</sup>, but no evidence of earthquake destruction at this period has yet been found elsewhere on the Citadel. The destruction level of this building includes pottery and coins datable to the Umayyad period, while the building shows no signs of long use.<sup>10</sup> Therefore, the building may be assigned to the Umayyad period, that is, the first half of the 8th Century A.D.<sup>11</sup> and its destruction to within a few years of the end of the dynasty, possibly the severe earthquake of 747 A.D.

To the west of this building was uncovered the north-south street, Plate XCVII, 2 approximately 3 metres wide, and with an earth surface, to which there are three levels, the lowest of which is Umayyad and the latest certainly post-Umayyad. The street lines up with the pattern of Islamic buildings in the Roman temenos at the North end of the Citadel, thus suggesting the possibility that there may have been at least a partial chessboard pattern of streets in the Umayyad period.

To the west of the street in trenches C. X-III, XIV, XV and V, are a series of walls, which we have assigned to the Umayyad period, partly because of their construction with a mortar containing ash, and partly because, in some places, they immediately overlay Byzantine levels, with



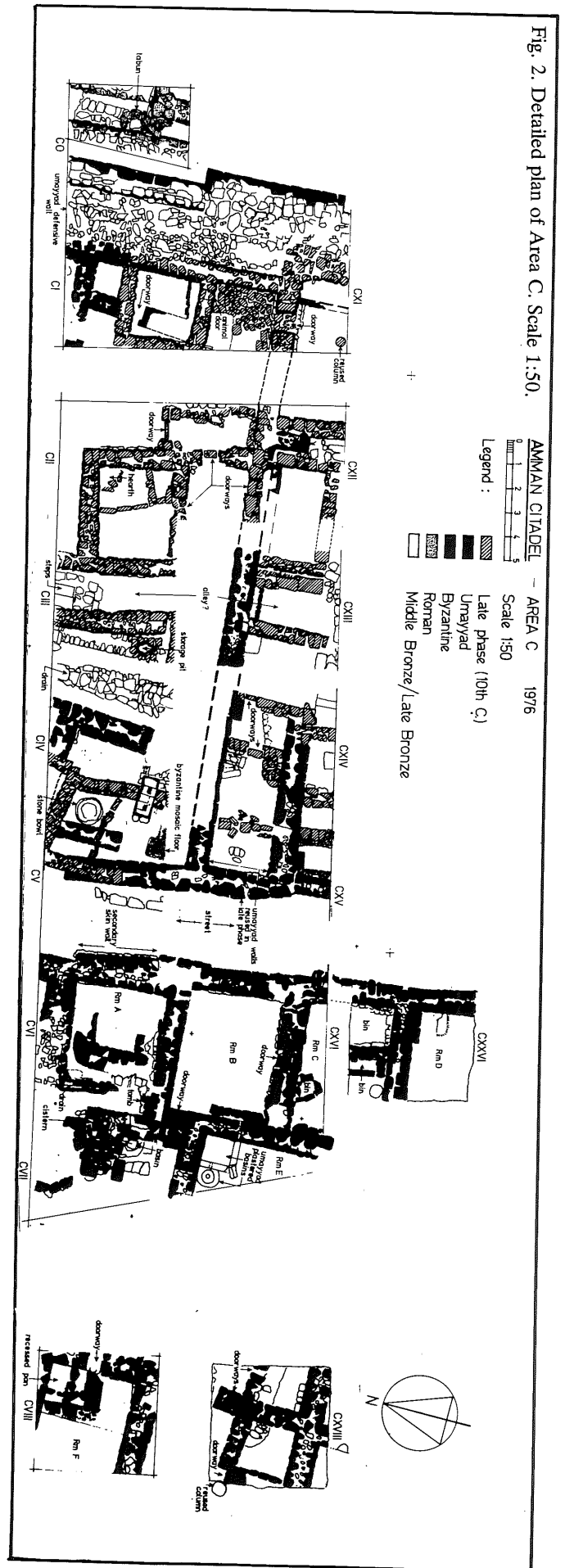
a Byzantine and Umayyad pottery mix in between. However, they have been rebuilt and reused in our last phase, apparently utilising the same floor levels. Nevertheless what has survived indicates a substantial building, at least 19 metres in a west-east direction, and which included two probable store rooms in C.XIV and XV.

Thus there are two large buildings, one at least 25 metres and the other 19 metres in length, a street and a new defensive wall in the Umayyad period. The whole is laid on a fill, which was intended to level the site. This fill varies in thickness between 0.5 and 2.5 metres with the building to the west of the street stepping down the slope from the building to the east. Adjacent to the Citadel wall the fill encloses remains of a Byzantine building, near the floor of which was found a complete Umayyad jar. (Plate CI,1) Thus we may suggest that the Umayyad period saw a complete reconstruction of this part of the Citadel. Although the plan of the Umayyad building has not been worked out completely, and some of the evidence has been destroyed by later structures, there is enough material to suggest a similarity to Umayyad rectangular block buildings found at Anjar<sup>12</sup> and adjacent to the Haram al Sharif in Jerusalem<sup>13</sup>. This phase of construction is almost certainly contemporary with the 'Umayyad Palace', which may be dated to the first half of the 8th Century on architectural grounds, which cannot be discussed here.

### Byzantine, Roman and Pre-Roman Material

Material relating to pre-Islamic levels was somewhat fragmentary as areas of penetration through the Umayyad fill levels were necessarily limited. However, in three main areas, structures of the Byzantine period were found.

Removal of part of the Umayyad floor in trench C.VIII uncovered a group of roughly constructed walls, one of which included a column capital. The associated floors were beaten earth and the pottery, including a lamp, was Byzantine.



In trenches C.IV and III, the Umayyad floor levels had disappeared and the first structures encountered under the 10th/11th Century levels were associated with Byzantine pottery. In C.IV, there is a square structure on a diverging alignment from the Umayyad walls. This building was destroyed down to and below floor level. On the north side four blocks remain, which may have formed a threshold and to the north is a small mosaic floor of medium-sized white tesserae laid diagonally and three rows of edging stones laid straight. In the rubble of these levels is the lower half of a wine press. To the west of this building is the line of a drain and a staircase, which may be dated to either the Byzantine or Umayyad periods, but this area has lost any precise stratigraphic relationships. (See Fig. 2.)

In trench C.I, removal of the Umayyad overall floor uncovered a Byzantine building in the rubble fill with a doorway in the middle of the trench with two well-cut door jambs. The nature of the Byzantine occupation remains unclear.

The trench C.0 laid outside the defensive wall produced the only evidence of pre-Byzantine occupation. Here Islamic occupation is missing and the first walls discovered were late Roman/Byzantine. The nature of the building remains unclear, but there was at least a *tabun* in the corner and next to it a cooking pot set in the floor. Immediately below the Roman levels was a crushed but substantially whole late MB/early LB jug painted in red on white and with a snake handle. (Plate CI,2) Close to this were structures possibly relating to this period.

#### Summary.

Although excavation to Byzantine levels was limited, it is clear from the nature of the building construction that the western slope of the Citadel had domestic occupation, but that the buildings are small and not finely constructed. In the early 8th century, the area was cleared and rebuilt as a single entity, with buildings related to the Umayyad 'Palace' to the

north. These were destroyed or collapsed about the end of the Umayyad period and after that, there was a gap in the occupation until houses were rebuilt over the ruins of the Umayyad town in the late 10th/early 11th Century. This period of occupation does not seem to have been long, and after that the area was not occupied, though Mamluk sherds have been found in the topsoil.

Crystal-M. Bennett  
Alastair Northedge  
13 th August, 1977

#### Footnotes

1. The bulk of this Report has been written by Mr. Northedge in consultation with the Director and represents their joint conclusions.
2. In Mrs. Bennett's unavoidable absences, initially, Mr. H. Houghton-Russell and subsequently Mr. A. Northedge assumed responsibility for the excavations.
3. Unfortunately, Dr. F. Zayadine, who had been in charge of Area A for the Department of Antiquities in 1975, could not continue in 1976 because of very serious injuries sustained in a car crash, from which he has now happily recovered. The University of Jordan, because of other outstanding commitments, could not join the excavations.
4. These included; Miss Naomi Assinder as Draughtswoman, Mr. Alastair Northedge as Deputy Director and Miss Rosalind Wade as Senior Field Supervisor. Mr. Michael Upton joined the excavations as a qualified architect and Mr. Ghassan Ramahi represented the Department. Volunteers included Mr. Robert Killick, Mr. Simon Khano, Fr. Florentino Diez, Miss Juliet Dearbergh and Miss L. Johnston. We were most grateful to Mr. Michael McDonald for his help in so many spheres and to Professor Kalayan for coming to our rescue with the planning when our architect was incapacitated.
5. G. Lankester Harding, Excavations on the

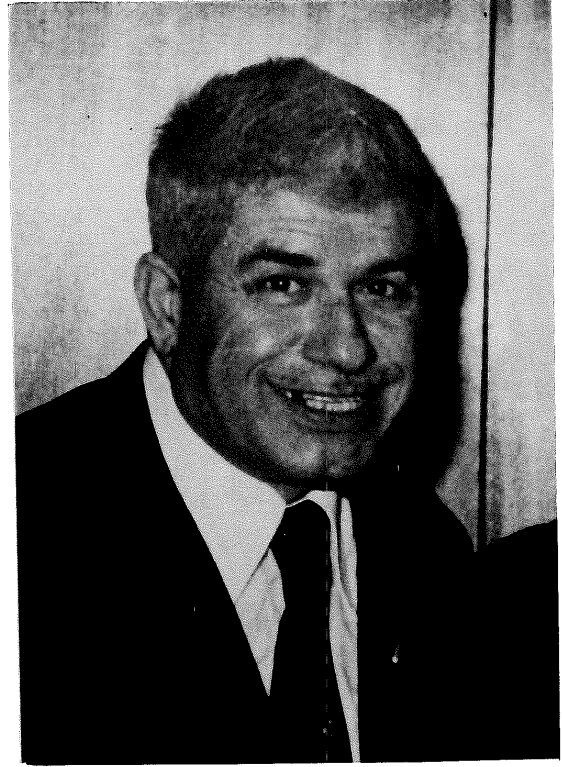
- Citadel, Amman, **A.D.A.J.**, Vol.1., 1951, pp. 7-16
- 5b. There is a contemporary description of Amman, c 985 A.D. in Muqaddasi, **Ahsan at-Taqasim**, ed. de Goeje, BGA iii, pp.175, 179.
  6. cf.f. Zayadine, Recent Excavations on the Citadel of Amman, **A.D.A.J.**, XVIII,(1973) pp.17-35, see p.22 and pl.XI for another excavated section; but also visible on the surface in many places.
  7. Quantities of ashy plaster were found in the fill of the rooms but only a little on the walls. This wall plaster is similar to that on the Defensive wall and on walls in the B XXX. complex.
  8. The Room letters are provisional.
  9. Harding, *op.cit.*, pl.1-3 inclusive, where similar wall collapse may be seen.
  10. cf. **Fr. S.J. Saller**; The Memorial of Moses on Mt. Nebo, Jerusalem 1950, for a range of pottery in the destruction level, indicating a similar destruction date, but Byzantine buildings.
  11. All Umayyad buildings for which a precise dating is known postdate the Dome of the Rock 691/2 A.D.
  12. Kindly pointed out by Professor H. Kalayan; see also **M. Chehab**, The Umayyad Palace at Anjar in **Ars Orientalis**, V, 1963, pp. 17-27.
  13. **M. Ben-Dov**; The Umayyad Structures near the Temple Mount Jerusalem, 1971.

## In Memoriam

### YACOB OWEIS

Mr. Oweis was born in 1926 in Ajlun, and received his preliminary education there and in es-Salt. For his higher education he went to the American University of Cairo where he took a B.A. in Journalism. On his return to Jordan Mr. Oweis was active in writing political and social commentaries in the local Jordanian newspapers, and he made a collection of his writings in a book called *Fi as-Sameem*. Then in September 1968 he was offered and accepted the post of Director General of Antiquities, which post he held until February 1972. He was re-appointed to the post in December 1972 and only relinquished it in April 1977 when he was promoted to the rank of Ambassador in the Foreign Office and posted to Romania, where he died in Dec. 26, 1977.

Mr. Oweis was a person of great integrity and sincerity, and had no pretensions to being an archaeologist. But he was a good administrator, would always listen to what the expert had to say, and there is no doubt but that under his administration the Department flourished. He was one of the organisers of the Amman Folklore Museum, which now has a fine collec-



tion of objects housed in the Roman Theater. One of his last efforts was the enactment of a new law to prevent the buying and selling of antiquities in Jordan.

His sudden and unexpected death at so early an age cut short what might well have been another bright career for him.

Dr. Adnan Hadidi

### يعقوب عويس

عام ١٩٧٢. حتى عين سفيراً للأردن في جمهورية رومانيا في نيسان عام ١٩٧٧. الى ان توفي فيها في ٢٦ كانون الاول من نفس العام.

لقد كان المرحوم السيد يعقوب عويس يتحلى بصفات الامانة والنشاط وعزة النفس وكان ادارياً ناجحاً حاول بكل جهده حماية التراث الاثري وتنمية وتطوير الجهاز الاداري والفني في دائرة الاثار. وقد اسهم في تأسيس وتنظيم متحف الحياة الشعبية في عمان وفي حث الحكومة على اصدار قانون تجارة الاثار.

ولد السيد يعقوب عويس عام ١٩٢٦. في مدينة عجلون وتلقى تعليمه الابتدائي والثانوي فيها وفي السلط. ثم حصل على درجة بكالوريوس في الصحافة من الجامعة الامريكية في القاهرة. وحين عودته الى الأردن اخذت كتاباته وتعليقاته السياسية والاجتماعية تحتل تدريجياً اماكن بارزة في الصحف الأردنية ثم جمع عدداً من هذه الكتابات والتعليقات في كتاب مصور برسوم «الكاريكاتور» بعنوان (في الصميم). وفي ايلول عام ١٩٦٨ عرض عليه منصب مدير عام الاثار فقبله واستمر فيه حتى شهر شباط

## In Memoriam Reginetta Canova, A Pioneer Archeologist in Jordan

The name of Reginetta Canova is linked with the Transjordan region of Kerak. She lived there from 1936 to 1939 at the side of her husband, Francesco, who was a doctor in the Italian Hospital. With a doctorate in literature from the University of Padua, she was capable of doing scientific work and the occasion soon presented itself. Some Greek inscriptions reused in the pavement of the piazza of Kerak caught her eye and she wrote them down, measured and photographed them. Her actions did not go by unobserved, because some boys, in the hope of a good tip, led her to more unexpected places where they thought there would be some inscriptions. The young Moslem butcher who worked at the hospital, used to go

to outlying villages looking for lambs and he busied himself keeping an eye on the stones. Whenever he saw some signs or letters, he made it a point to indicate them to the lady. Thus, in a relatively short time, she was able to amass a great amount of unedited material, predominantly Christian. To better succeed in her project she undertook learning to read and speak enough Arabic to be able to succeed in her task quite well.

But then came World War II and the Mandate Authorities thought it well to send her back to her own country while they put her husband in a concentration camp for the sole reason of his Italian nationality. Reginetta did not lose courage, however, and slowly proceeded to



Dr. Reginetta Canova at the Italian Hospital of Kerak with a collection of Byzantine steles.

illustrate her collected material in a way that it could be presented to scholars. The volume appeared as No. IV of a series entitled, "Sussidi allo studio delle antichità cristiane del Pontificio Istituto di Archeologia cristiana" ("Aids for the Study of Christian Antiquities of the Pontifical Institute of Christian Archeology"). The title of her volume is: **Iscrizioni e monumenti protocristiani del paese di Moab** (Città del Vaticano 1954) (Early Christian Inscriptions and Monuments of the region of Moab, Vatican City 1954).

The volume passed under the critical scrutiny of Fr. Ferrua (**Rivista di Arch.Crist.** 1954, pp. 146-150) who judged it "a work in its totality excellent from every aspect" and he expressed admiration for both its "scientific thoroughness" and "elegance of presentation". Père Vincent of the **Ecole Biblique** of St. Stephen's in Jerusalem considered the work as "a precious contribution to the history of Christianity in the region of Moab" and noted its "precise erudition" under its epigraphic as well as its historical and geographical aspects (**Revue Biblique**, 1955, pp. 301-302). With pleasure he pointed out how there were unpublished churches studied in the book and a total of 400 Greek inscriptions of which only forty had been somewhat known before. Scholars without doubt have placed the volume alongside the works of the very best explorers of the region.

From the use which they have made of the

volume, it can be established that, by means of the research done by Mrs. Canova, scholars have been able to identify certain religious currents which sprang up abundantly in the first centuries of Christianity-over and above those trends of Christian History in general. The region had a very ancient Christian character.

Mrs. Canova generously gave some of her material to the *Studium Biblicum* of Jerusalem when she did not re-enter the Christian field to which she had been able to carry her word with such certainty and precision. So it happened, for example, concerning an Aramaic inscription of a religious nature from the Persian period which was the object of study by the Orientalist J.T. Milik, edited in **Liber Annuus** of the **Studium Biblicum Franciscanum** (9(1939) pp. 330-341).

Just when this avenue of study was opening up for her, her husband founded and began directing the CUAMM or the University College for Medical Missionary Aspirants which has reaped so much good for the Church. So Reginetta put herself at the side of her husband to expedite the necessary correspondence, thereby giving up any personal satisfaction she might have obtained by pursuing her own field. With a smile on her lips she carried on that kind of work for many long years, silent and hidden away, but with great merit before God. It was thus that Sister Death came and took her away to the Lord on November 28, 1977.

Bellarmino Bagatti

## Fr. Sylvester (John) Saller of the Franciscan Biblical Institute

Fr. Sylvester Saller, a distinguished archaeologist of the Holy Land, passed away in the peace of God on January, 22, 1976.

Born in Petoskey (Great Falls, Michigan, U.S.A.) on Sept. 25, 1895, he joined the Franciscan Province of the Sacred Heart in 1913, and was ordained a priest in 1922.

From 1922 to 1928 he taught English, German and Greek in the Seminary at Teutopolis, III. In 1928 he was sent to the "Antonianum" in Rome, where he specialized in Biblical Studies, and in 1932 he completed his training at the Flagellation in Jerusalem, where he obtained the title of Lector generalis.

Since 1932, for more than forty years, Fr. Sylvester was a professor of archaeology at the Studium Biblicum Franciscanum in Jerusalem. He is well known for his excavations at Mount Nebo (1933, 1935, 1937), Ain Karem (1941, 1942), and Bethany (1949-1953). The results of these excavations were published in five volumes. Besides, he published a volume on a Jebusite Burial Place from "Dominus Flevit" (Jerusalem), and many articles on Bab edh-Dra; Mount Nebo, Bethfage, Bethlehem, on the evolution of temples in the Old Testament, on Jewish synagogues, etc.

His meticulous and scholarly dealing with any archaeological subjects, coupled with a vast and up to date knowledge of related materials from other excavations, made his publications a landmark in the field of Palestinian archaeology. As a result, he enjoyed the highest esteem from archaeologists of this country: he was appointed a member of the Commission for Antiquities during the British Mandate, and gave public lectures both at the Rockefeller Museum in Jerusalem and in the meetings of the Palestine Oriental Society.



Fr. Sylvester (John) Saller.

### Main Publications of Fr. Saller.

#### Books

**The Memorial of Moses on Mount Nebo Part I, Text; II Plates** (Maior, I), Jerusalem (1941).

**Discoveries at St. John's 'Ein Karim** (1941-1942). (Maior, 3), Jerusalem (1946).

**Excavations at Bethany** (1949-1953). (Maior, 12), Jerusalem (1957).

**The Jebusite Burial Place** (Maior, 13), Jerusalem (1964). With Fr. Bagatti:

**The Town of Nebo (Khirbet el-Mekhayat)** with a Brief Survey of other Ancient Christian Monuments in Transjordan (Maior, 7), Jerusalem (1949).

#### Main Articles

"Ancient Rock-cut Burial-chambers at Bethany", in *Liber Annuus* 1 (1951), pp. 191-226.

"Excavations in the Ancient Town of Bethany", *L.A.*, 2 (1952), pp. 119-162.

"Stamped Impressions on the Pottery of Bethany", *L.A.*, 3 (1953), pp. 7-36.

“A Catalogue of the Ancient Synagogues of the Holy Land”, **L.A.** 4 (1954), pp. 219-246.  
Ez-Zahiriyye in the light of Ancient Pottery, **L.A.** 7 (1957), pp. 53-63.  
“The Archaeological Setting of the Shrine of Bethphage”, **L.A.** 9 (1961), pp. 172-287.  
“Jerusalem and its surroundings in the Bronze Age”, **L.A.** 12(1962) pp. 147-176.  
“Sacred Places and Objects of Ancient Palestine”, **L.A.** 14 (1964), pp. 161-228.  
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Bellarmino Bagatti

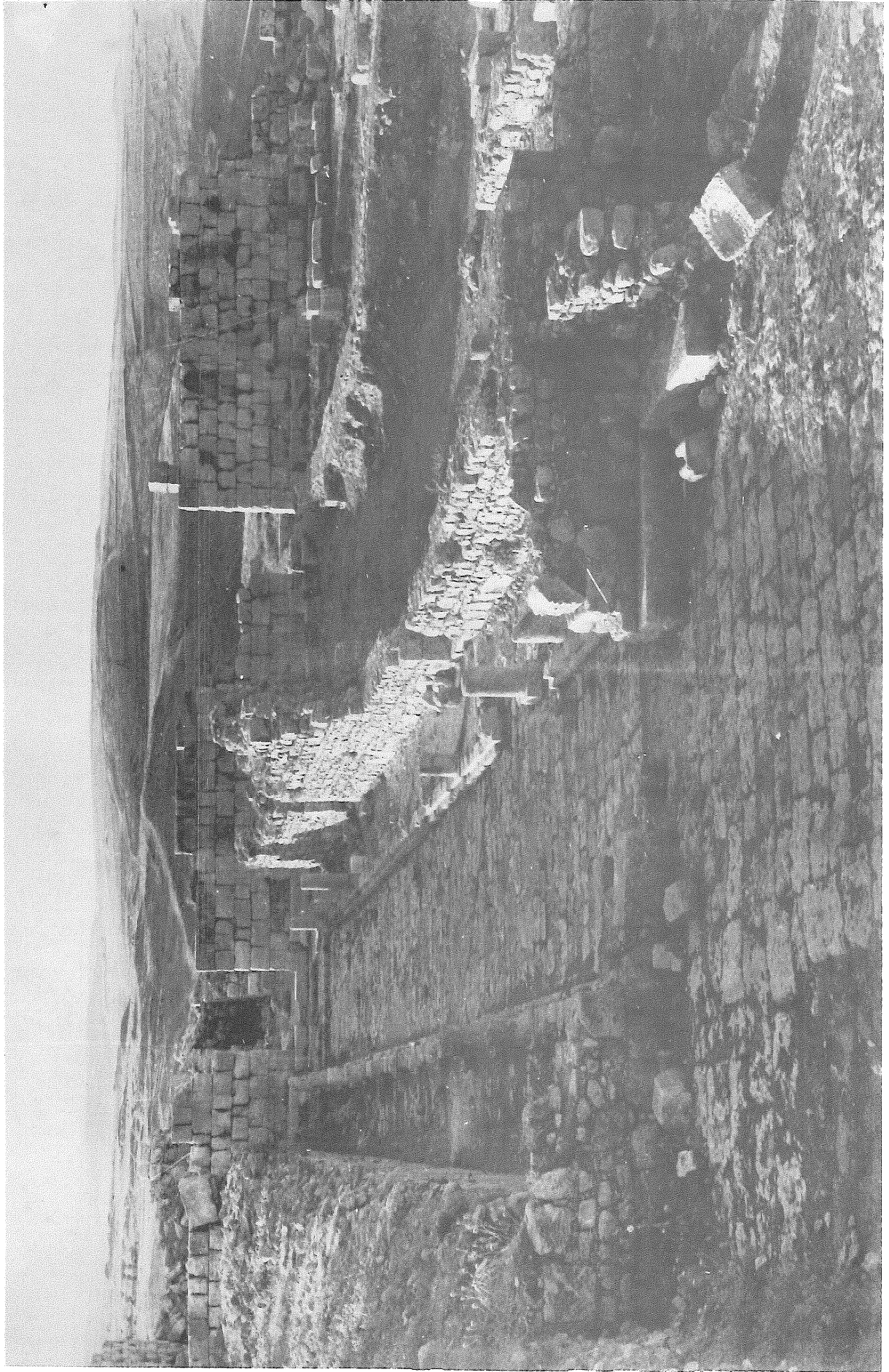




## PLATES

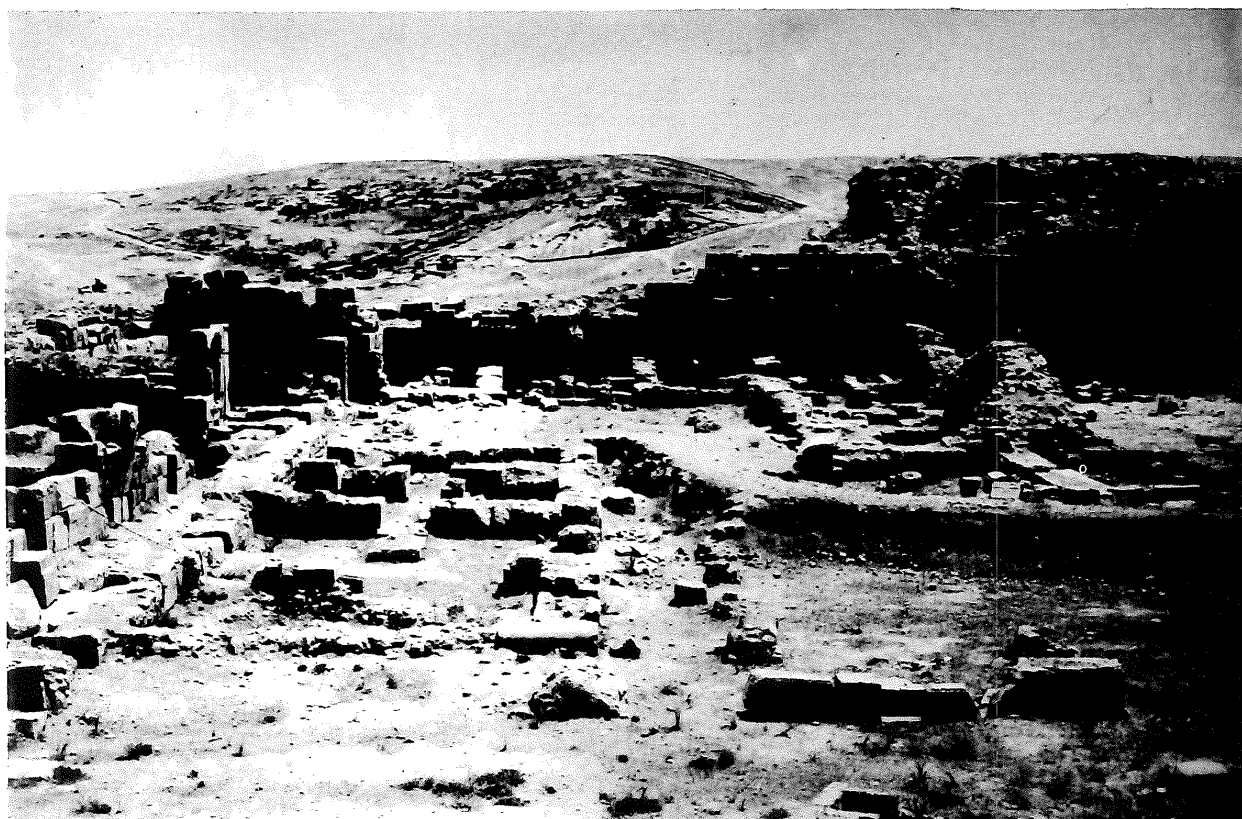


Pl.I- The Columned Street, looking North (DoA Photograph, 1943)



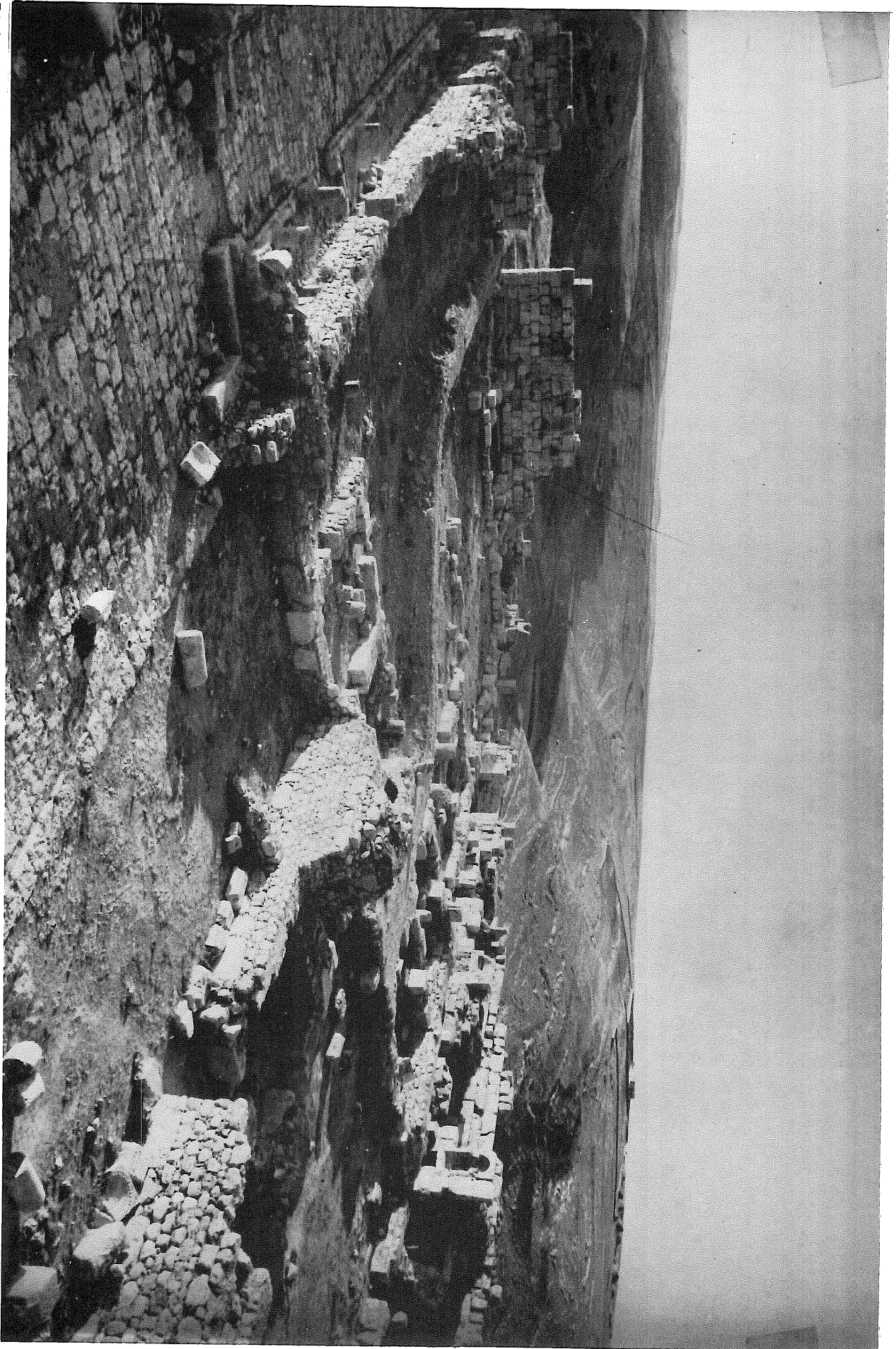


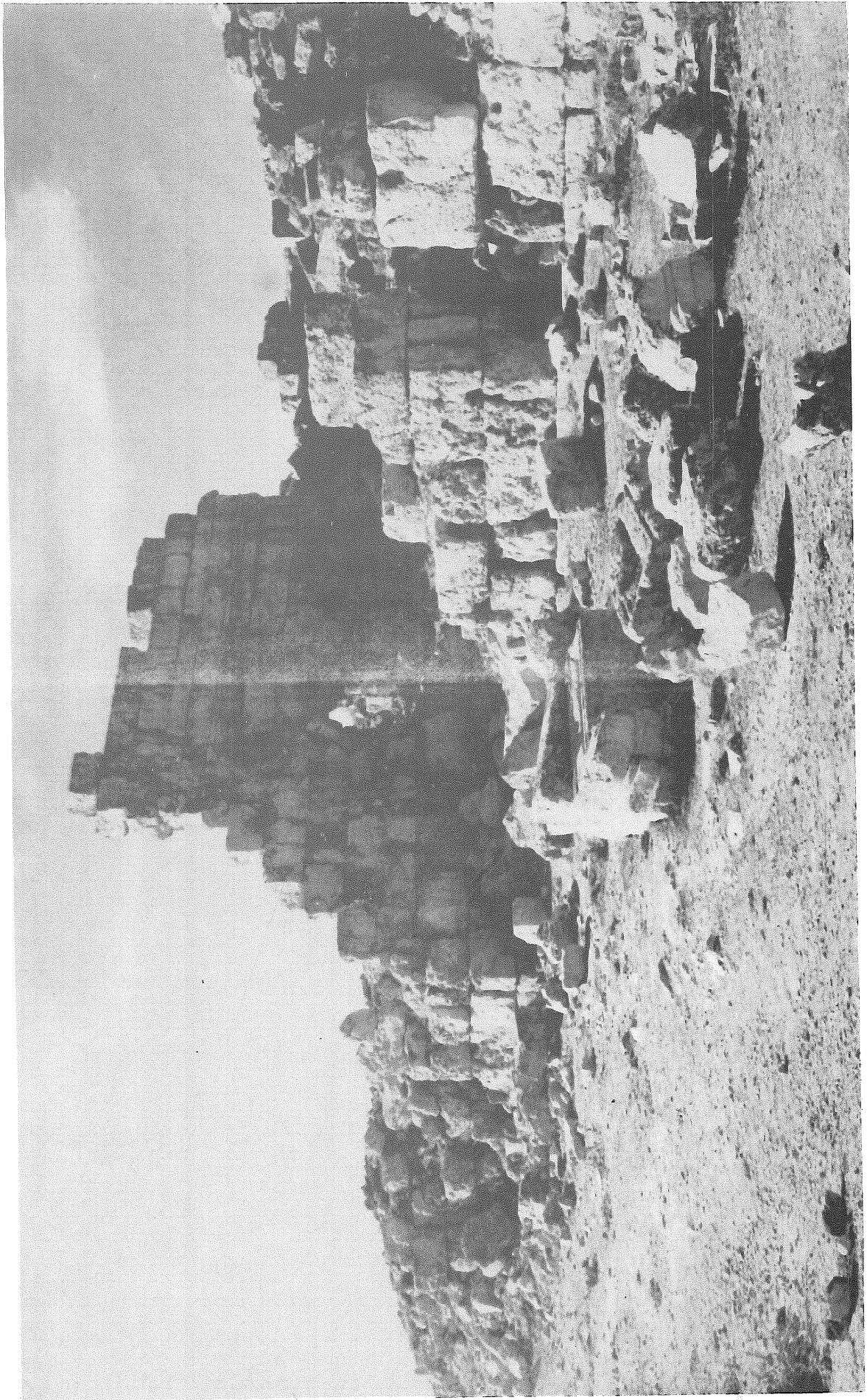
Pl.II, 1- The Columned Street and the Qasr,  
looking South (DoA Photograph)



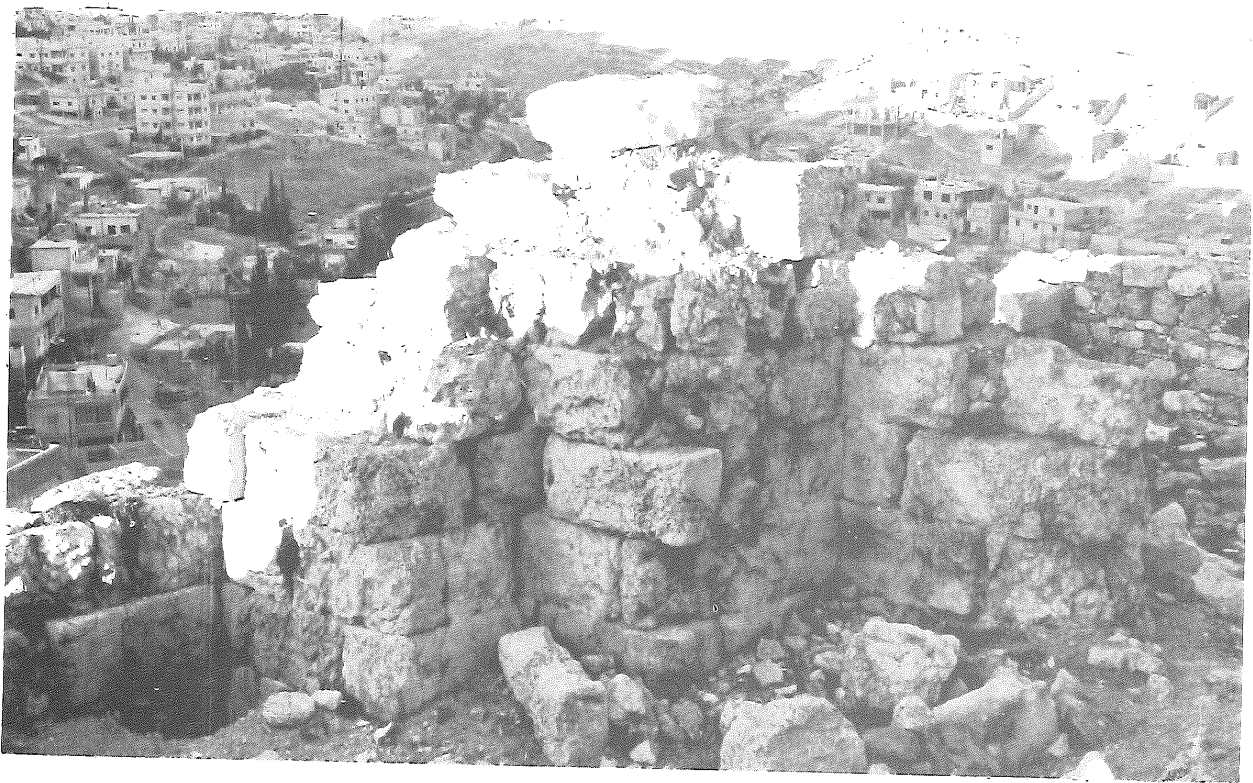
Pl.II, 2- The East Side of the Courtyard, looking South (DoA Photograph, 1943)

P1. III.-The East Side of the Courtyard, looking North East (DoA Photograph 1943)





P1. IV-The North Palace, looking North West



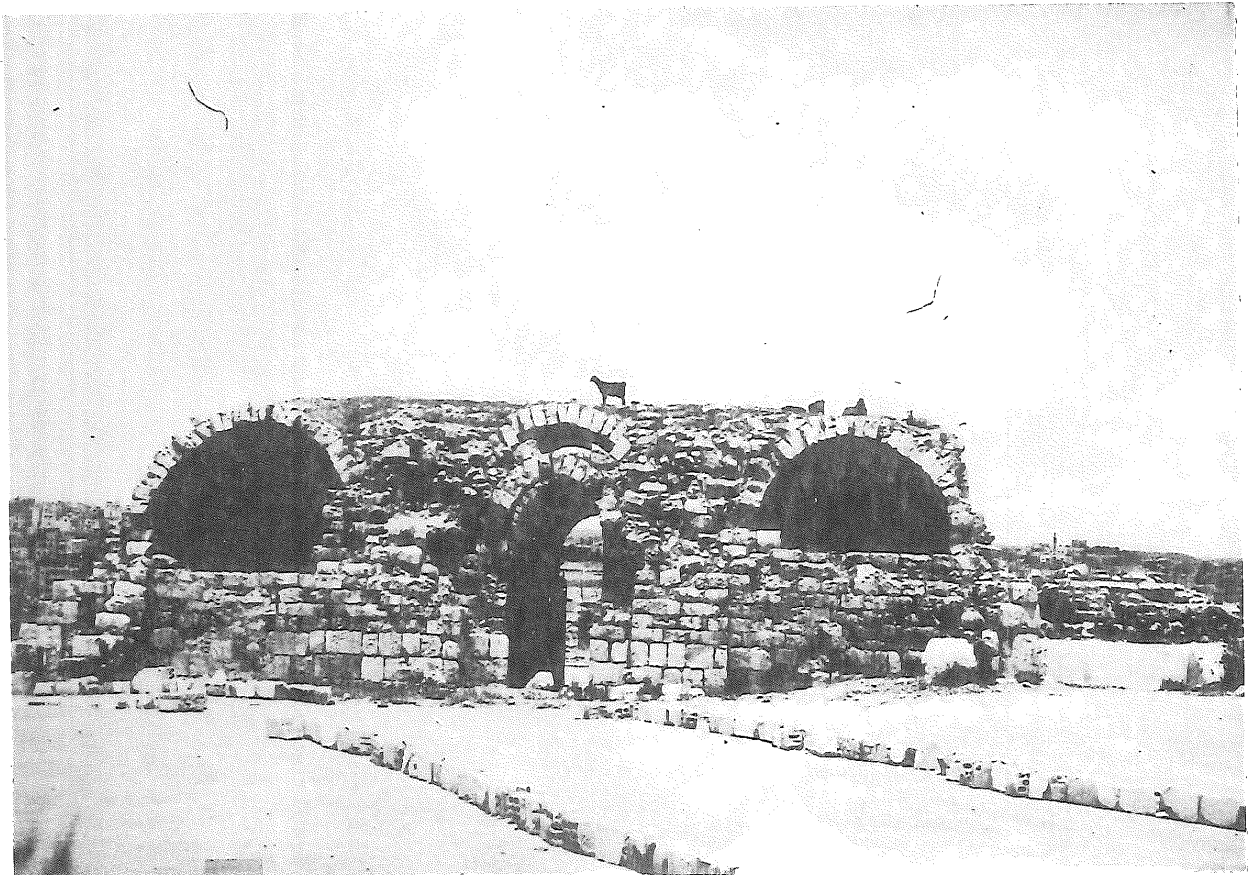
P1. V, 1-Buttness in the Dome Chamber.



P1. V, 2-Architechtural Fragment in the North Palace.



Pl.VI, 1-General view of Area A from top of the Qasr, 1. East.



Pl.VI, 2-The Qasr, 1. North.





Pl.VII, 1-Area A, Sq. 1 Umayyad pavement sealing the oil press, I.S.-W.



Pl.VII, 2-The mill after removal of pavement. Three weights to the left, I.N.-E.



Pl.VIII, 1-Sq.6. The oil collector covered by a sarcophagus lid. In the background, Umayyad house, I.E.



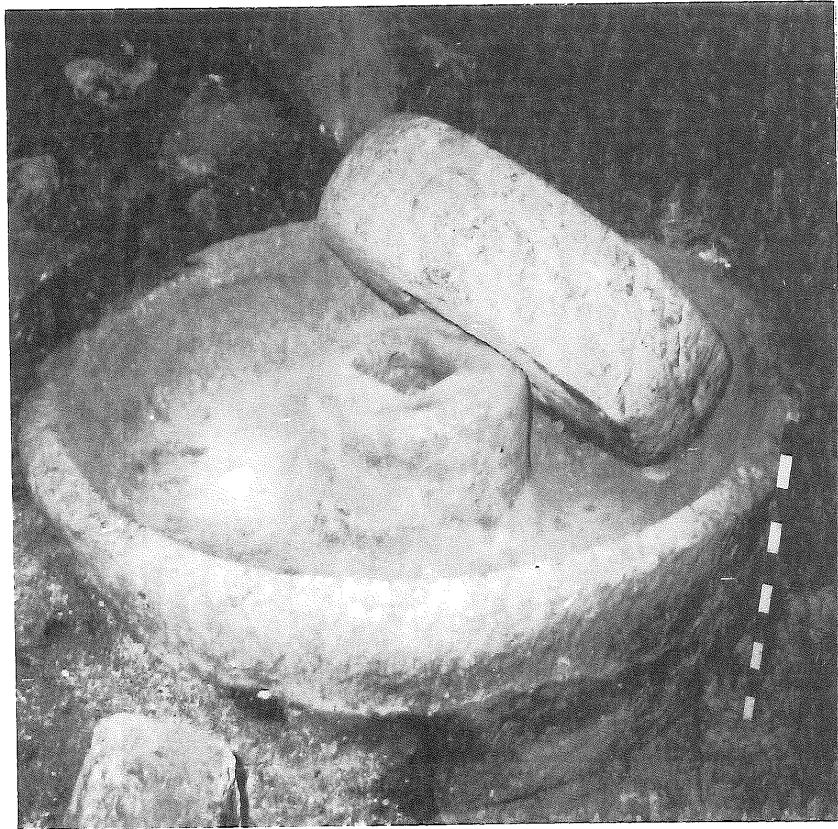
Pl.VIII,2-Entrance to Byzantine hall of the oil press blocked in the Umayyad period, I.S. To the right, paved trail around cistern.



Pl.IX, 1-sq.1: The press area, partly paved with white tesserae. The oil collector is covered by a lid, L.N.



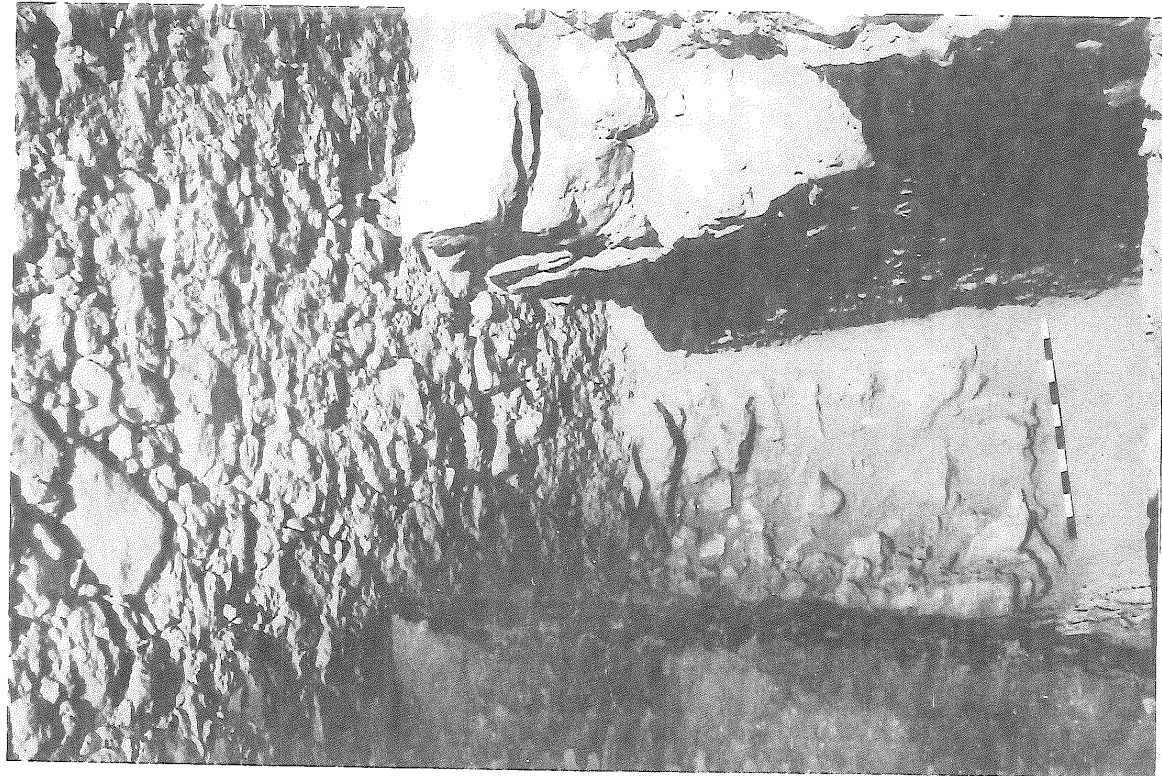
Pl.IX, 2-Oil collector after removal of cover, 1.W.



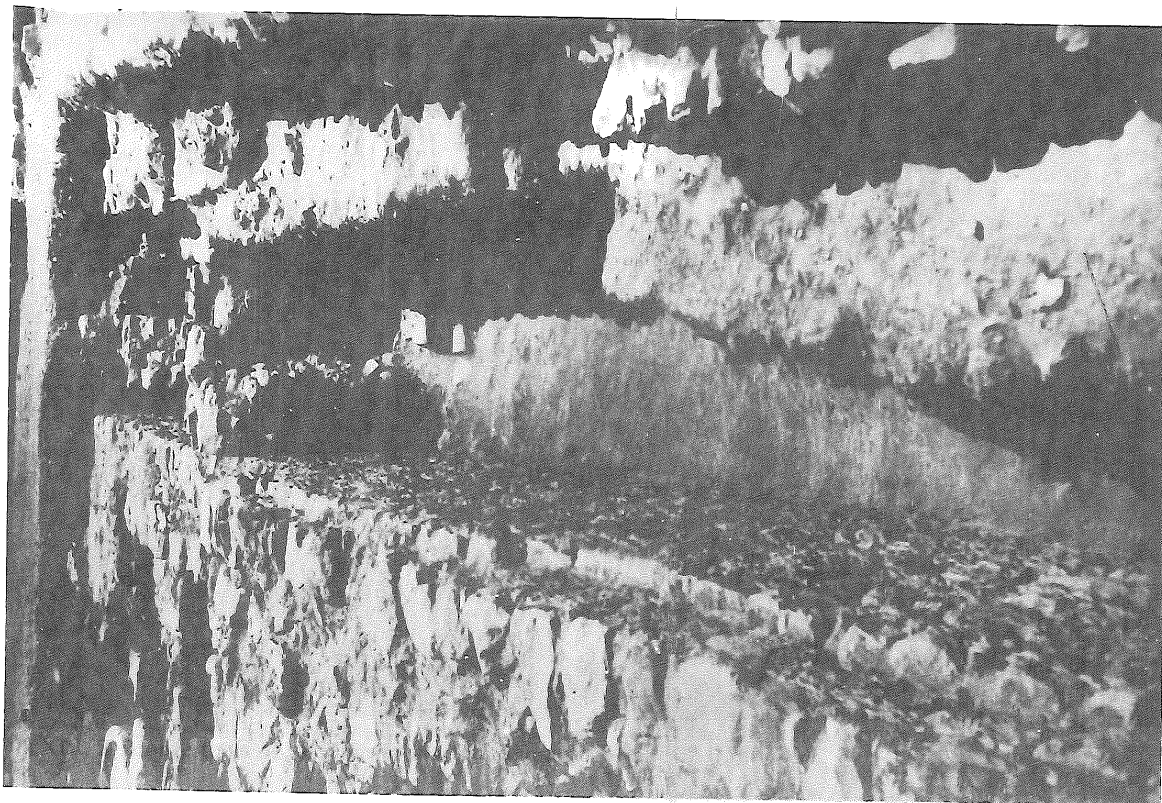
Pl.X, 1-Olive mill at Yajuz cave.



Pl.X, 2-General view of olive mill. Foreground, wall 14 and platform 27.



Pl.XI, 2-EB I structures under Early Roman and Hellenistic walls.



Pl.XI, 1-Left, Early Roman Wall 14, rebuilt in later periods.  
Right, late Hellenistic walls, 1.E.



Pl.XII, 1-Sq.3: Houses west of wall 8. Room 3 in front, 1.N.



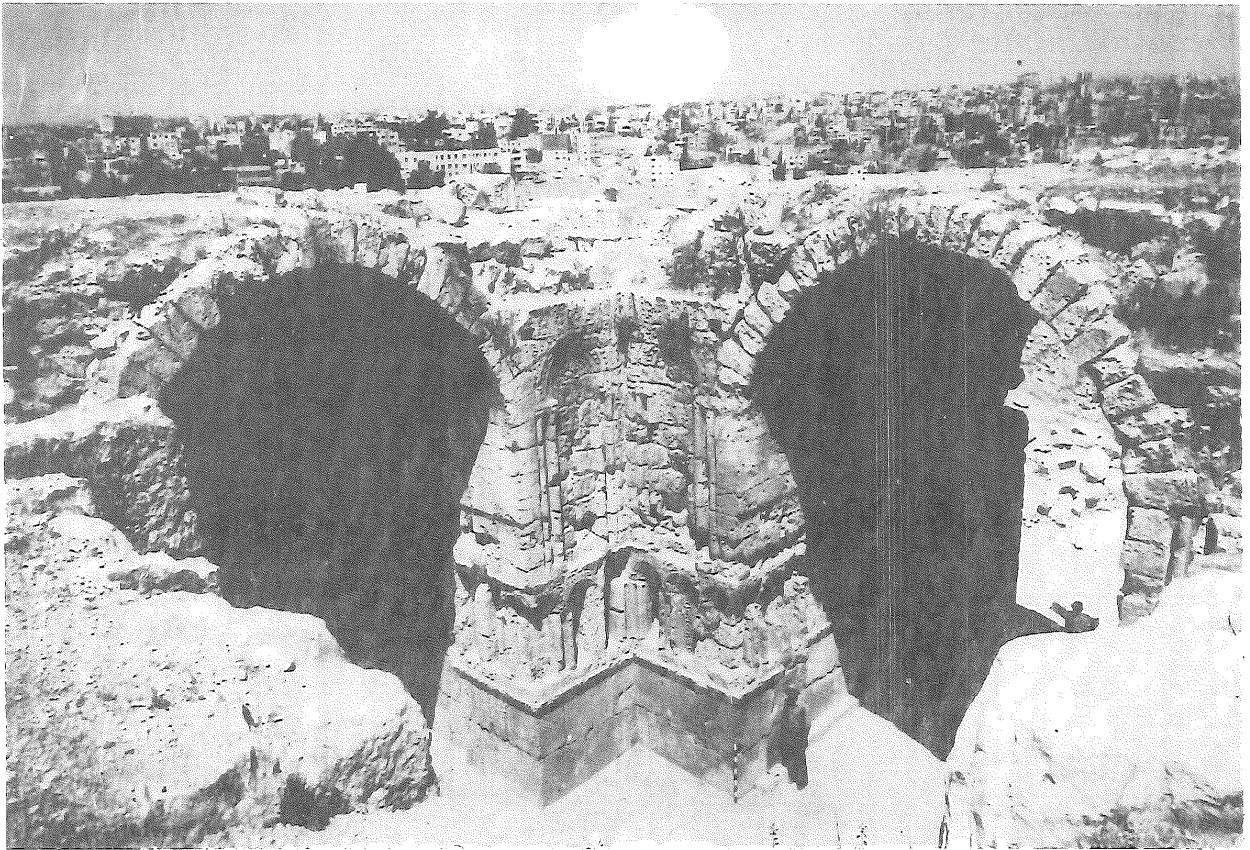
Pl.XII, 2-Stairway leading to upper houses, 1.S-W.



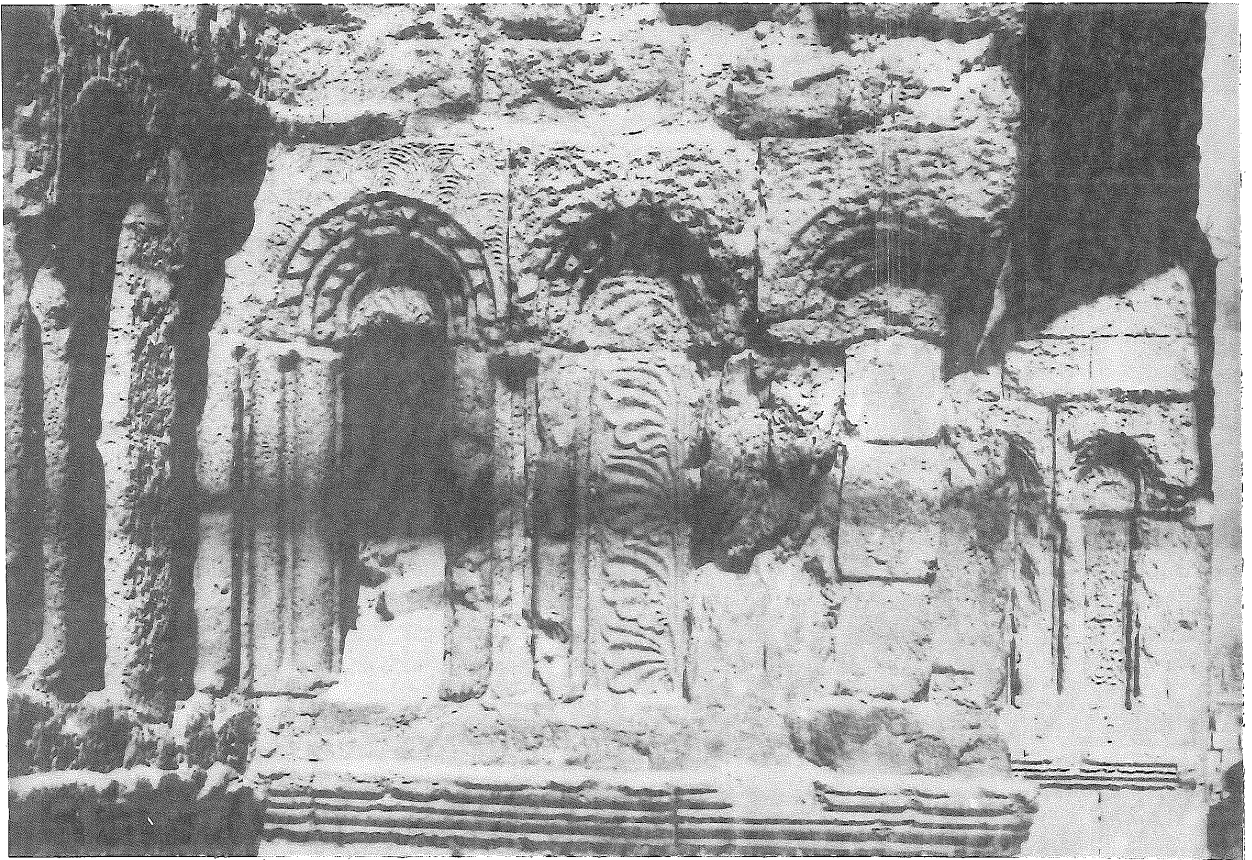
Pl.XIII, 1-Byzantine houses in Sq.5 and 10, I.N-E.



Pl.XIII, 2-Entrance to Byzantine house. Ionic capital to wright.

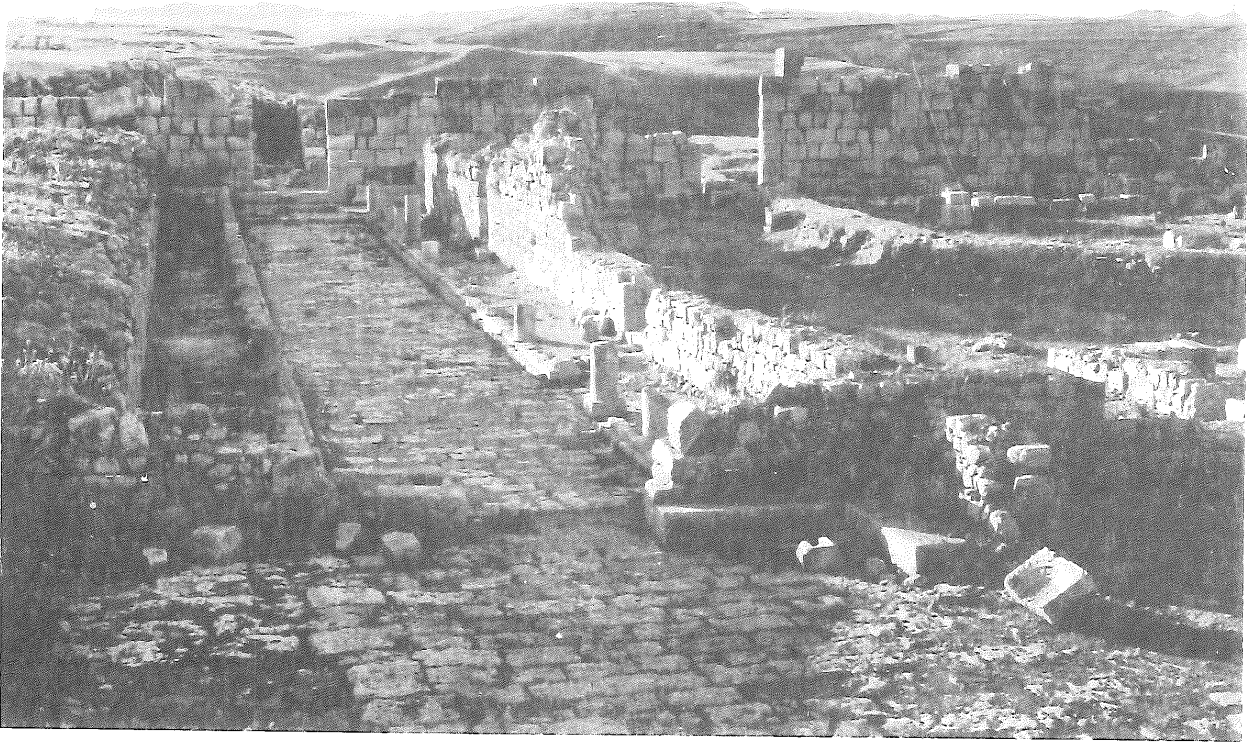


Pl.XIV, 1-Interior of Qasr, I.N-W.

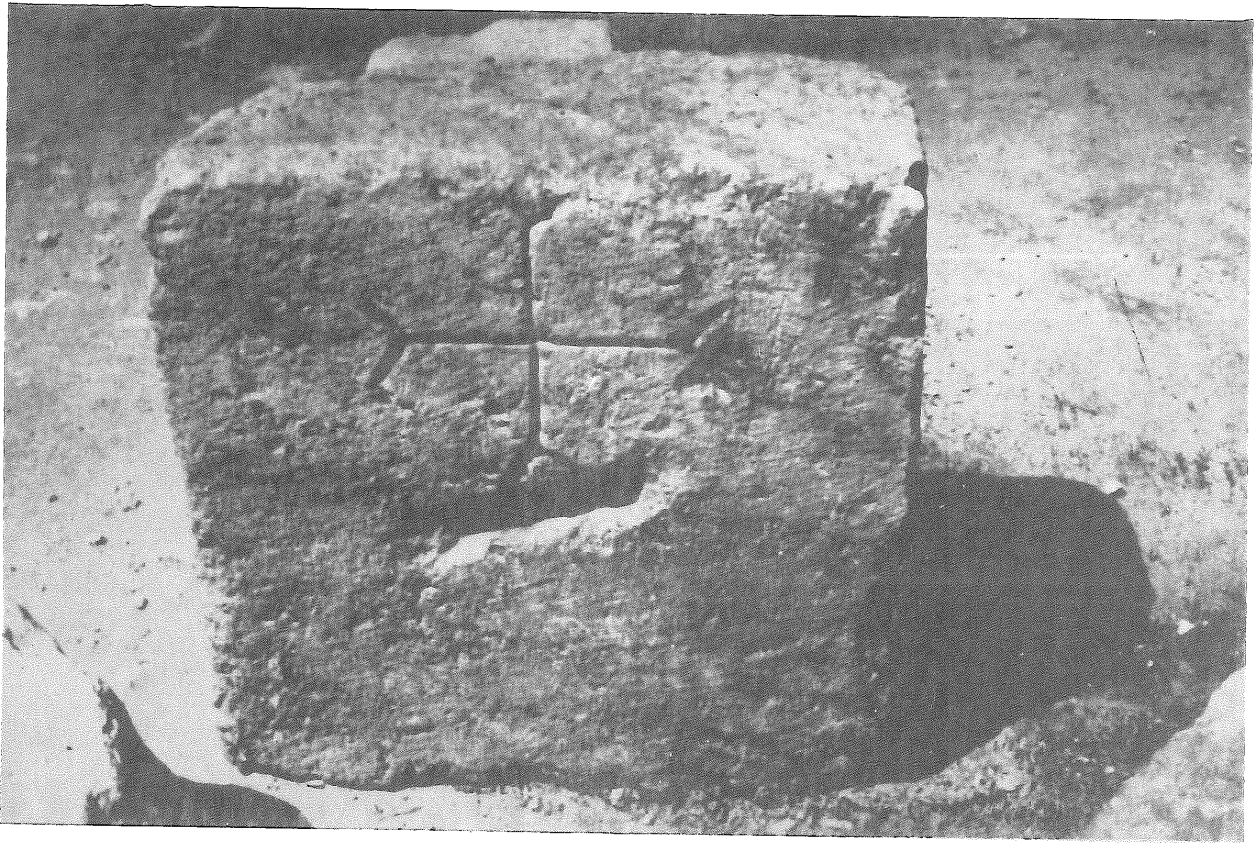


Pl.XIV, 2-Blind niches decorated with palmettes.





Pl.XV, 1-General view of the Roman temenos, prior to excavations, I.N.



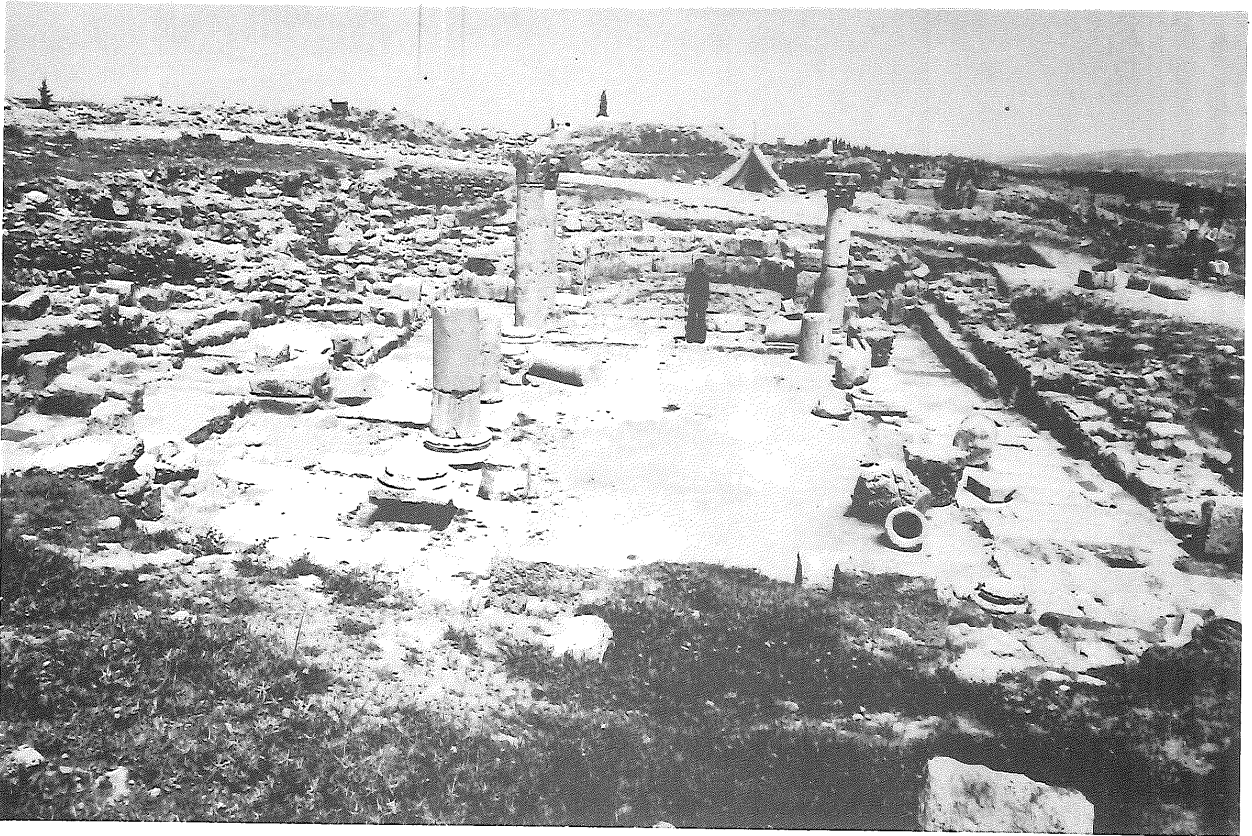
Pl.XV, 2-Base of column decorated with Byzantine cross.



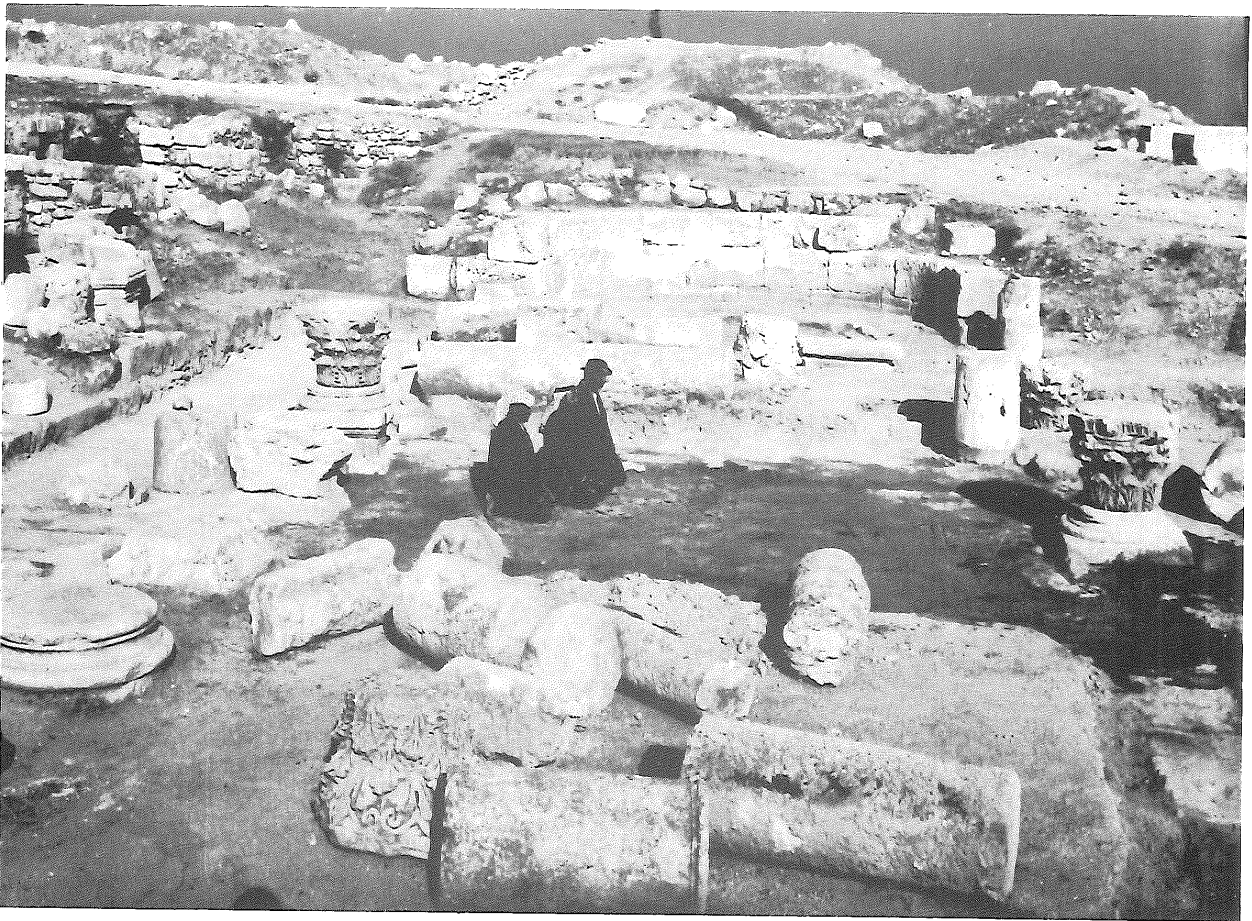
Pl.XVI, 1-Lion orthostat discovered in the Roman temenos in front of the Qasr. Note the pedestal on back.



Pl.XVI, 2-Detail of lion head.



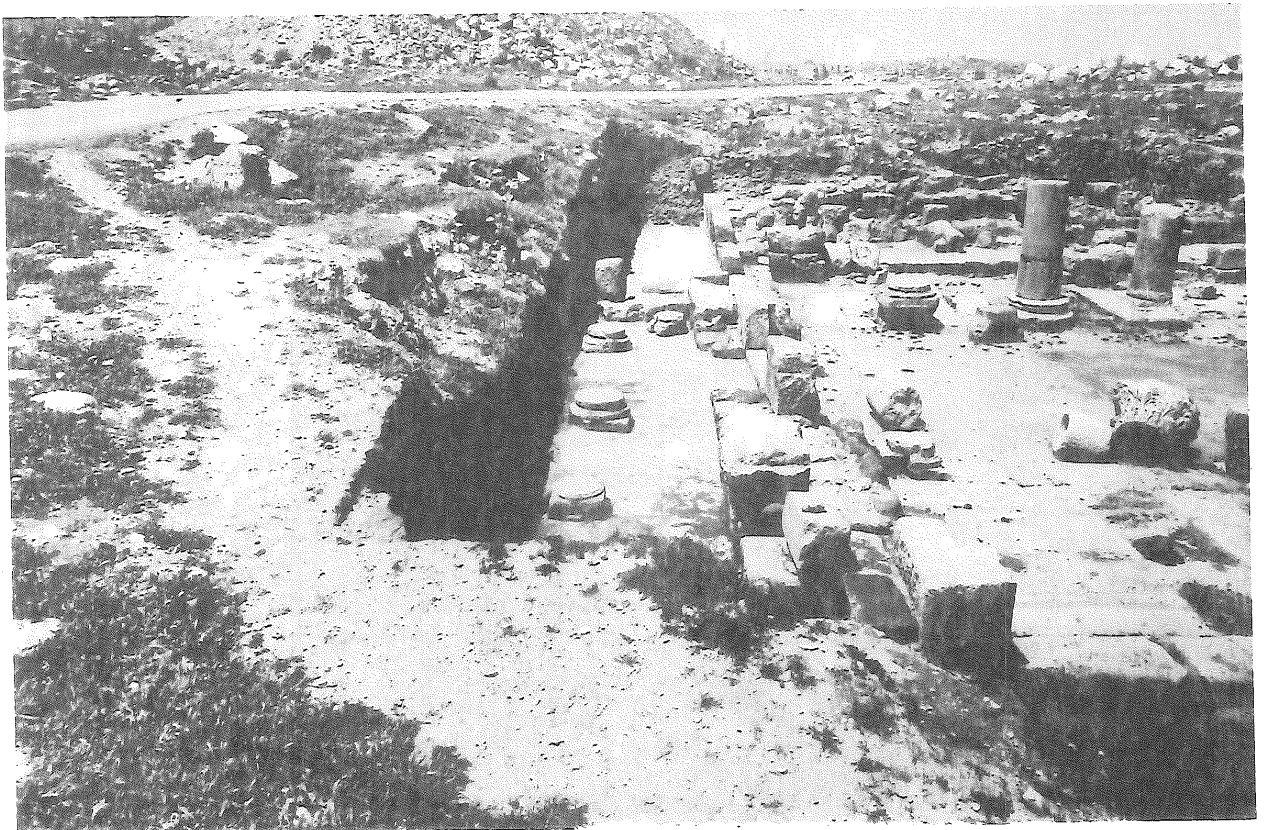
Pl.XVII, 1-Byzantine church, 1.E.



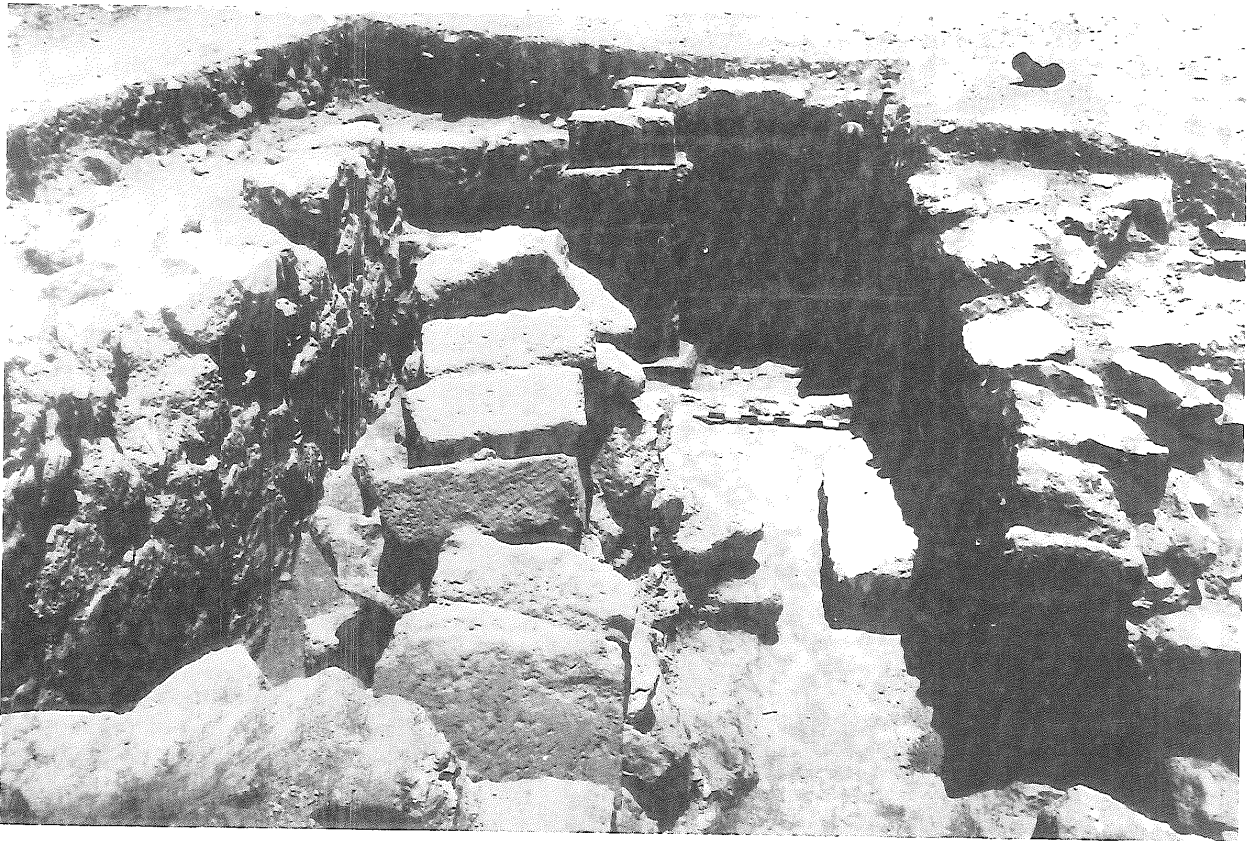
Pl.XVII, 2-The apse and mosaic floor before restoration of columns.



Pl. XVIII, 1-Apse of church, 1. S-E.



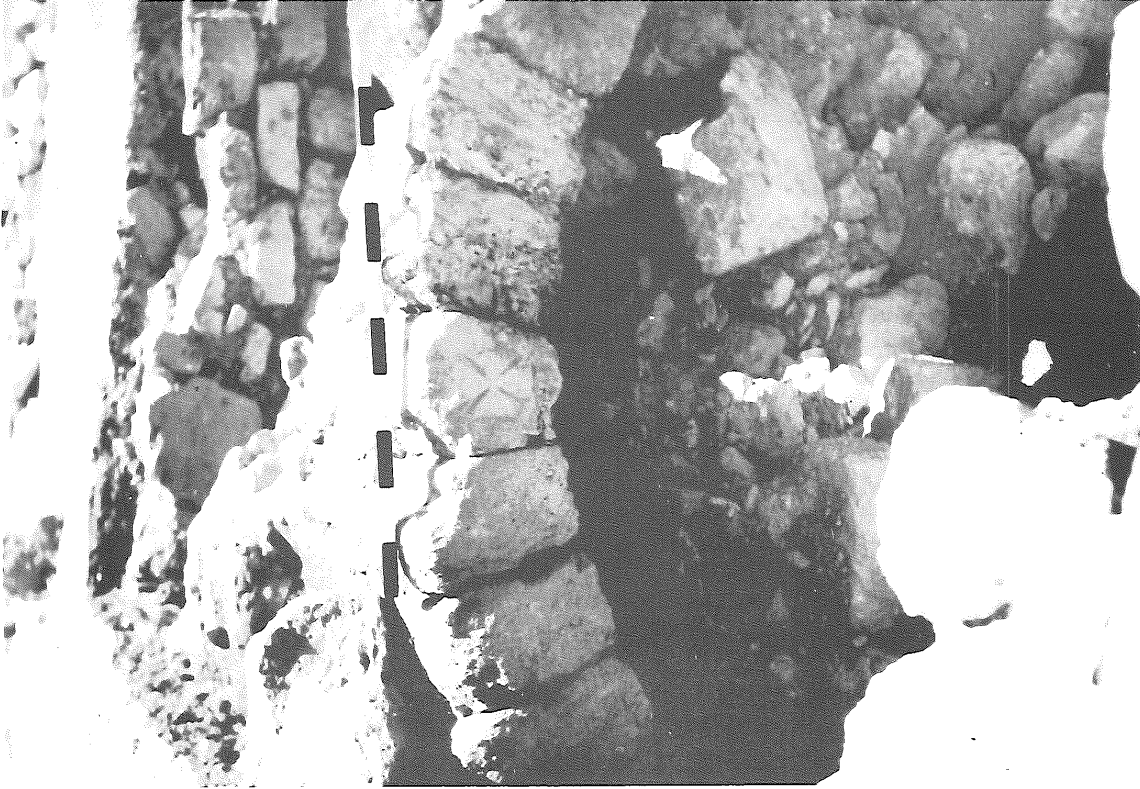
Pl. XVIII, 2-The atrium, 1.N.



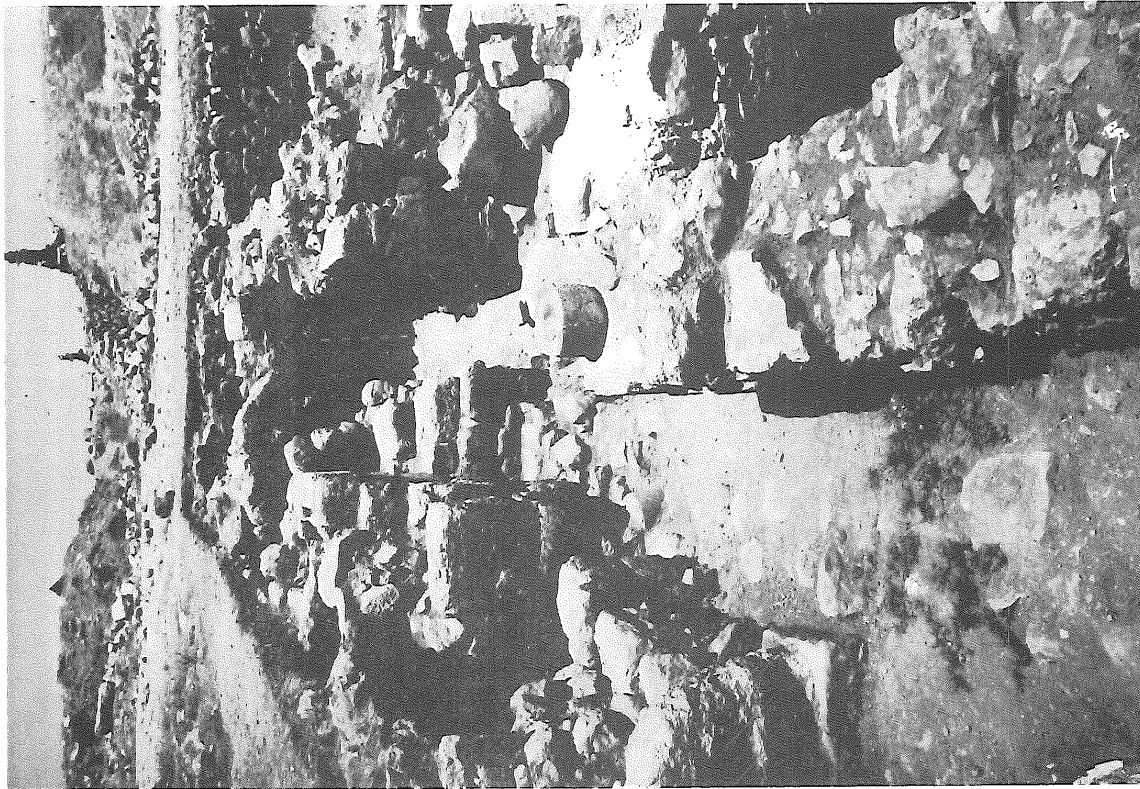
Pl.XIX, 1-Room 1 south of the apse. I.S.



Pl.XIX, 2-End of northern aisle, blocked by a wall, I.E.



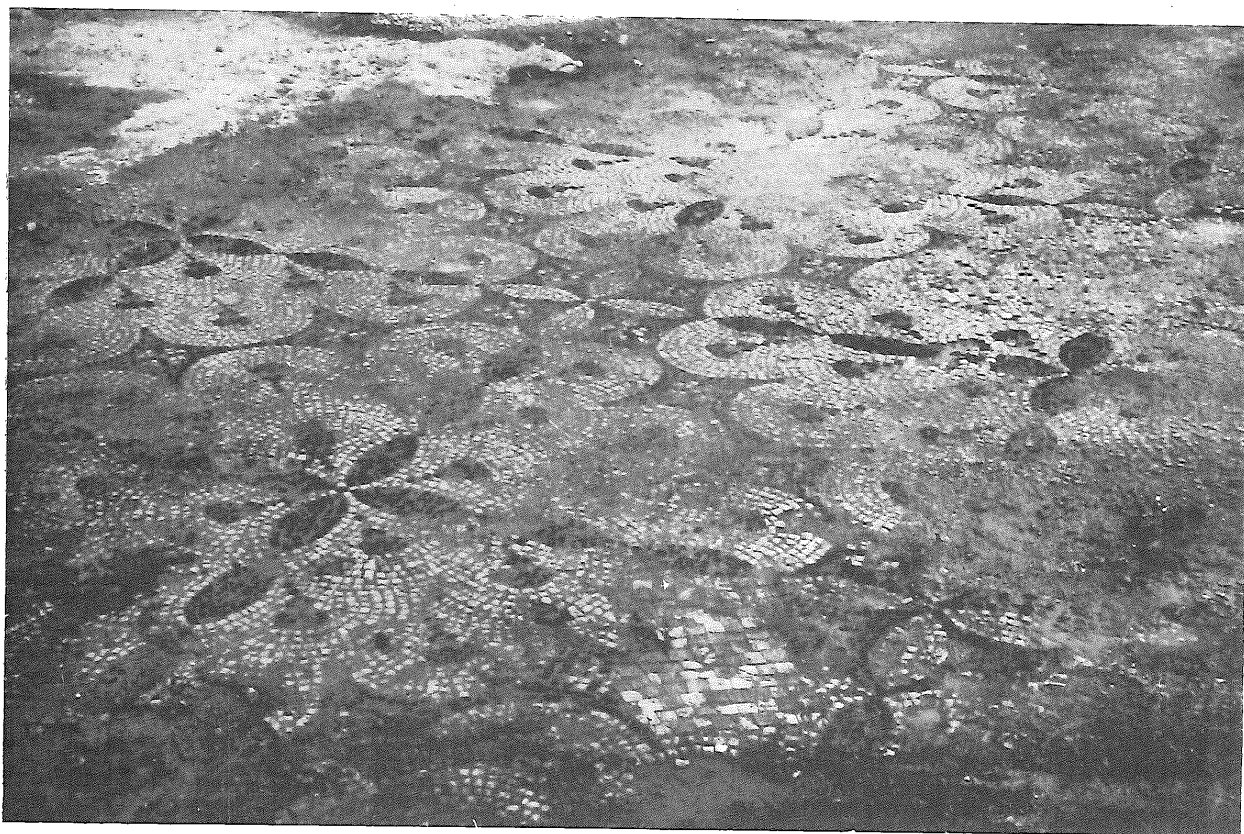
Pl.XX, 2-Vault decorated with Byzantine cross.



Pl.XX. 1-Part of the presbytery, north of church.



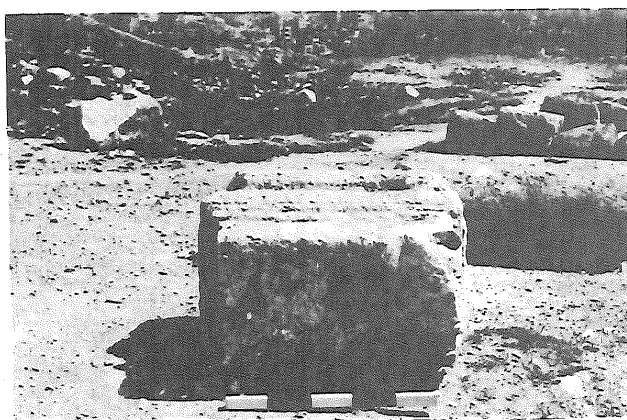
Pl.XXI, 1-Greek inscription on mosaic floor.



Pl.XXI, 2-Mosaic pavement.



Pl.XXII, 1-Greek inscription re-used in church.



Pl.XXII, 2-Pilaster capital.



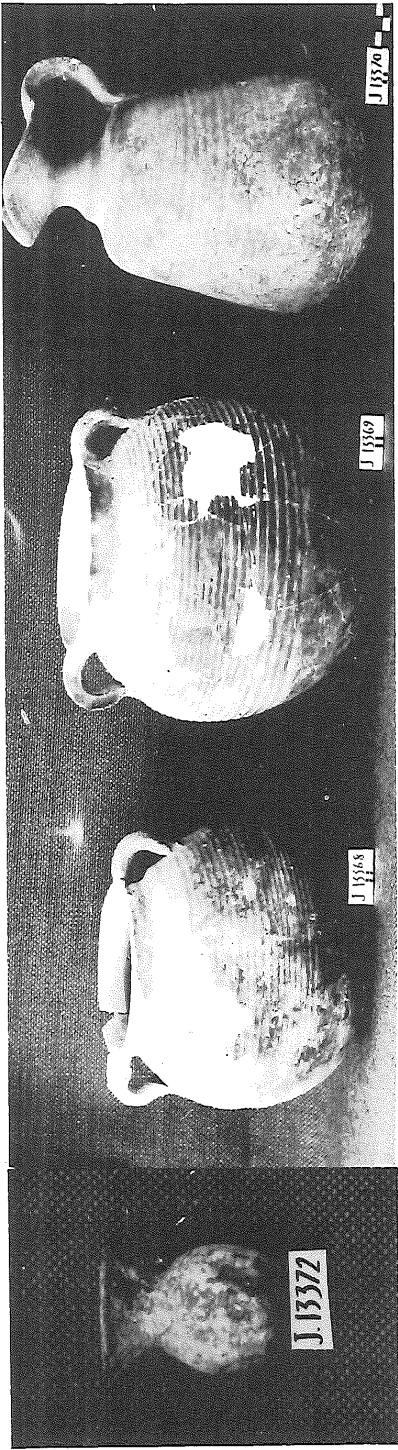
Pl.XXII, 3-Roman Corinthian capital in the church.



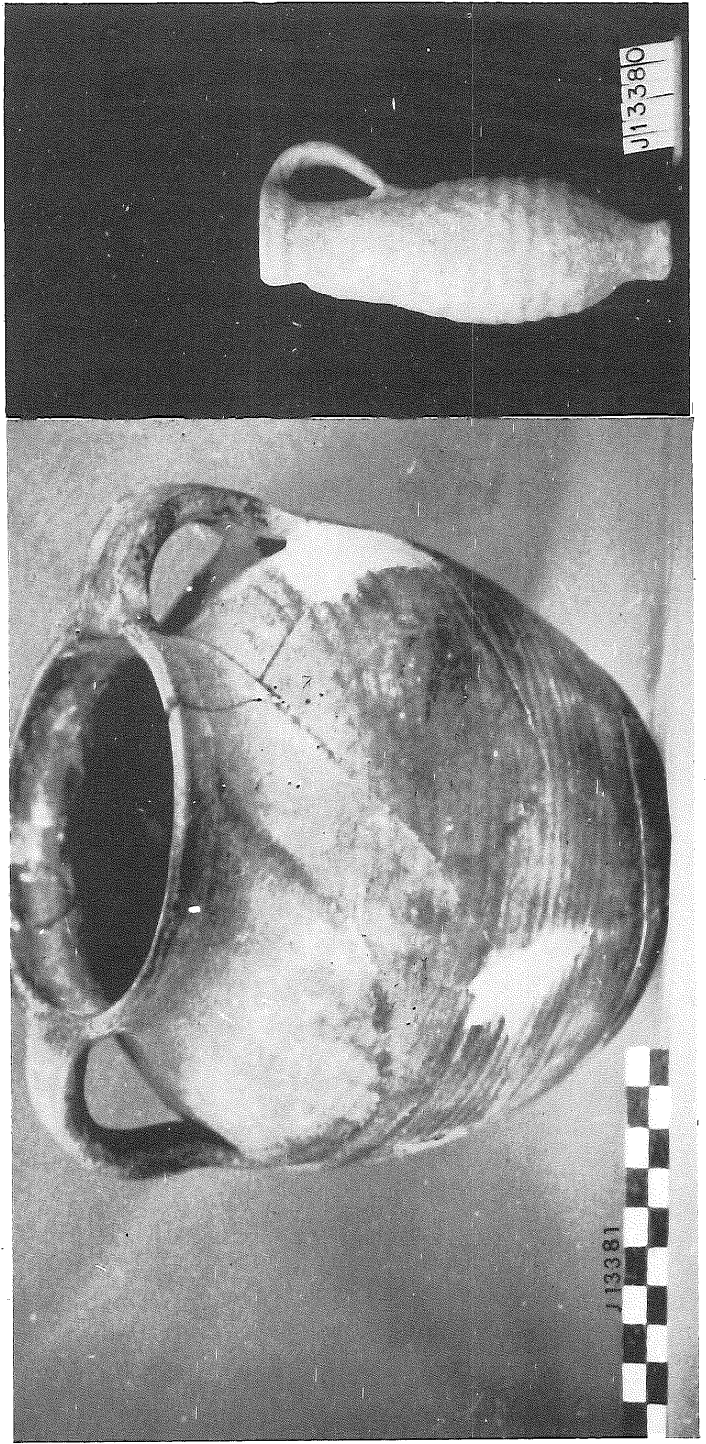
Pl.XXIII, 1- Hellenistic lamps and  
Loom weight



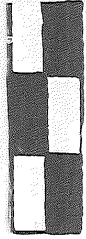
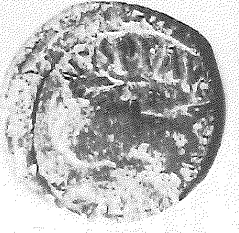
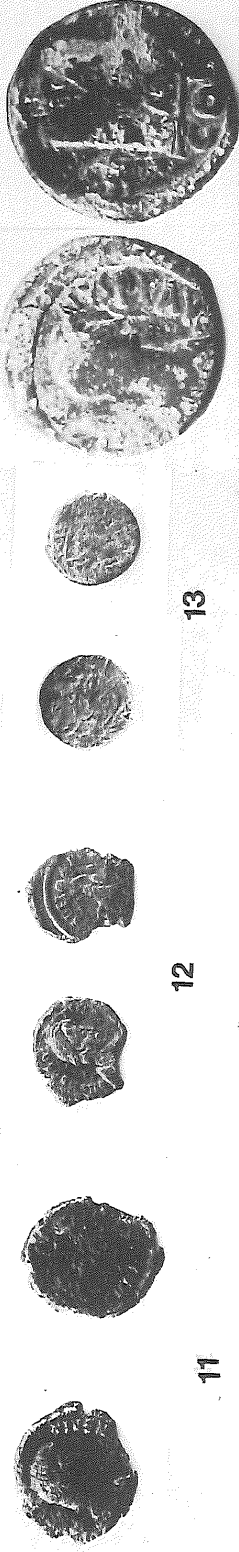
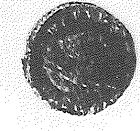
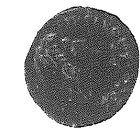
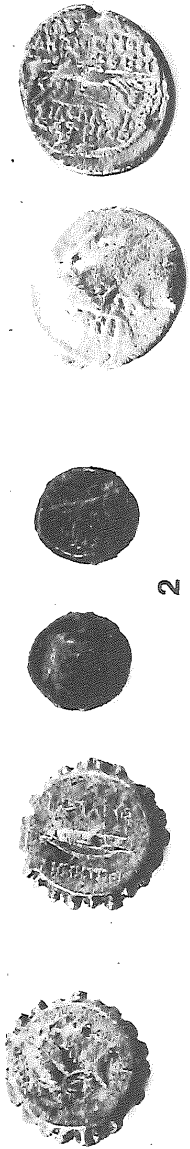
Pl.XXIII, 2-Rhodian jar-handles.

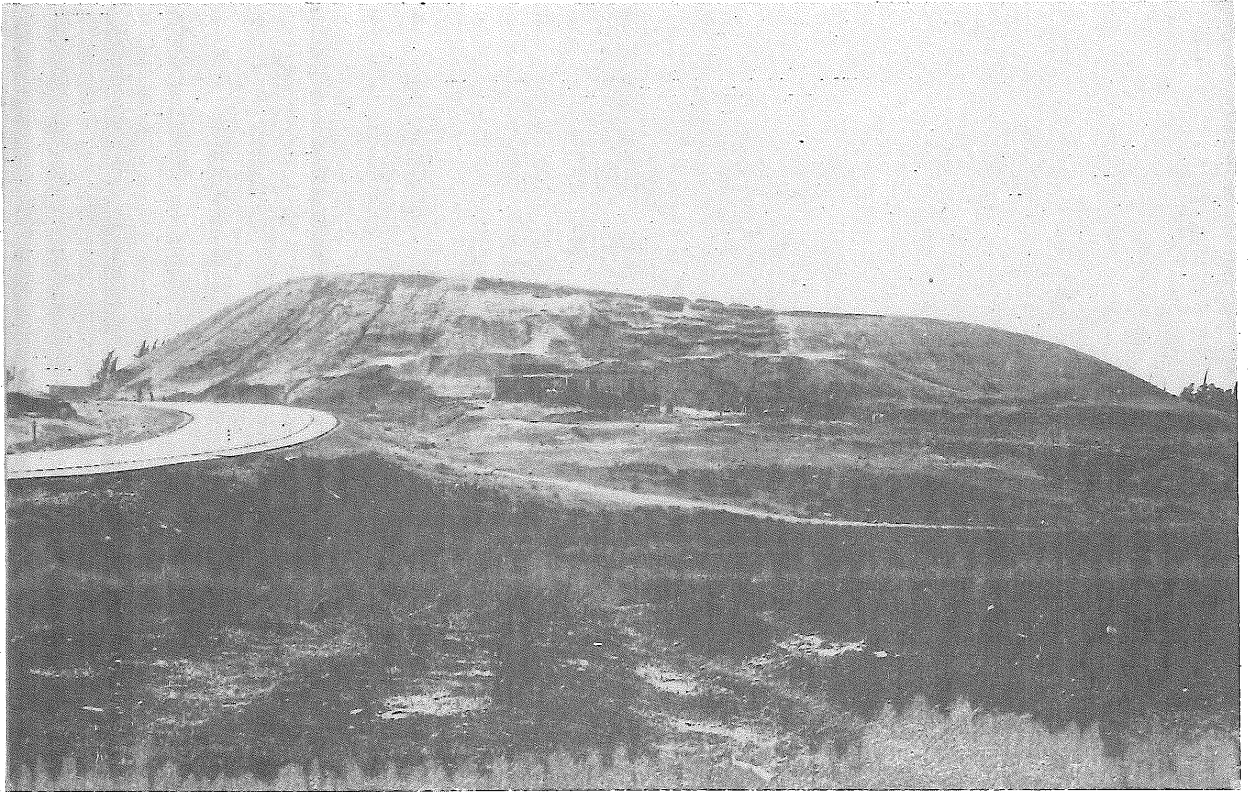


Pl. XXIV Pottery objects from the excavations.

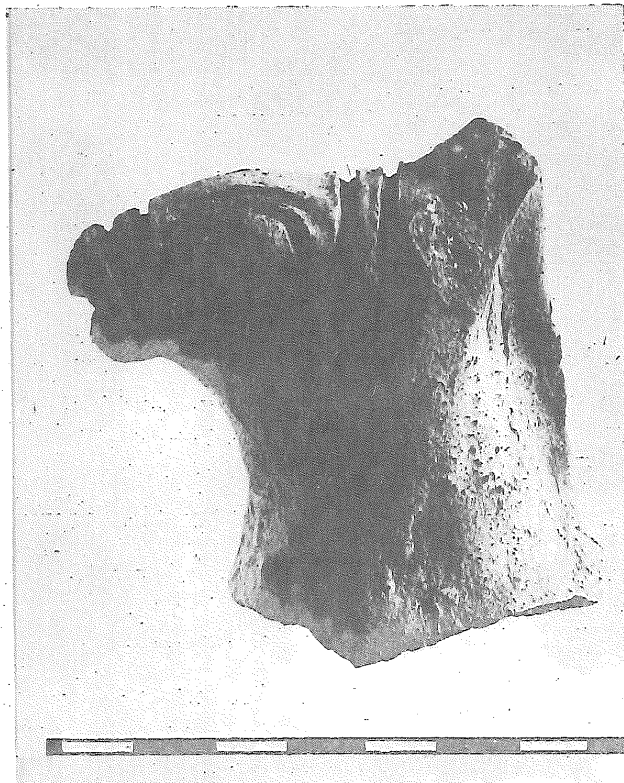


Pl. XXV  
Amman Citadel

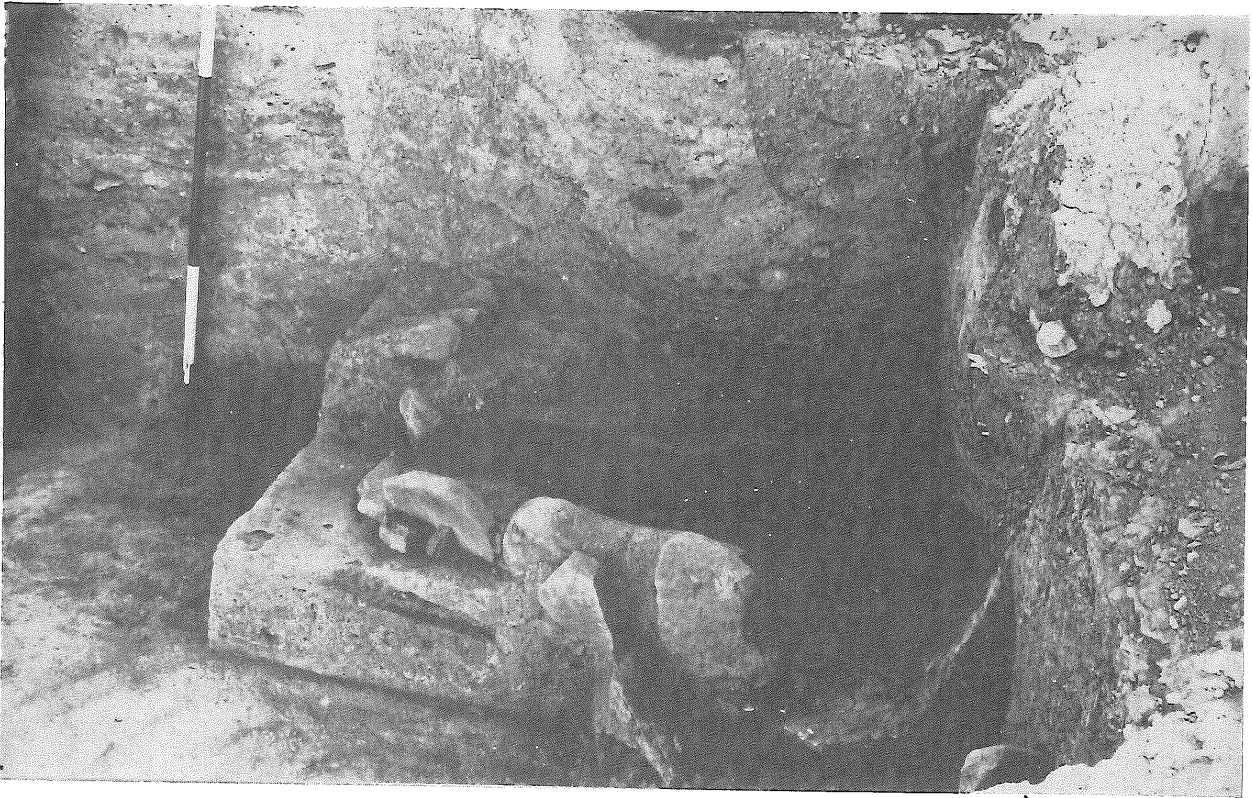




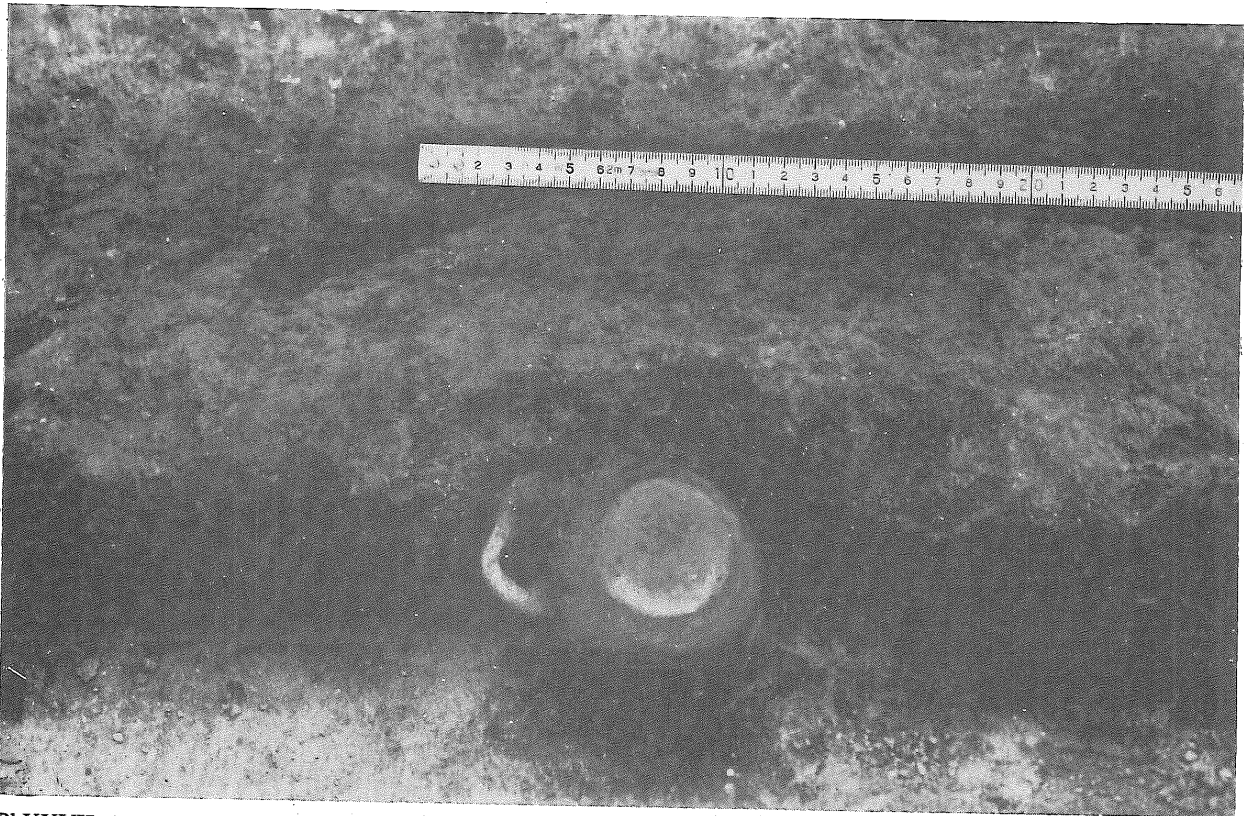
Pl. XXVI, 1-Tell Deir Alla from the N (1976)



Pl. XXVI, 2-Horse-head figurine from A/C2



Pl.XXVII, 1-Pits in square A/C2



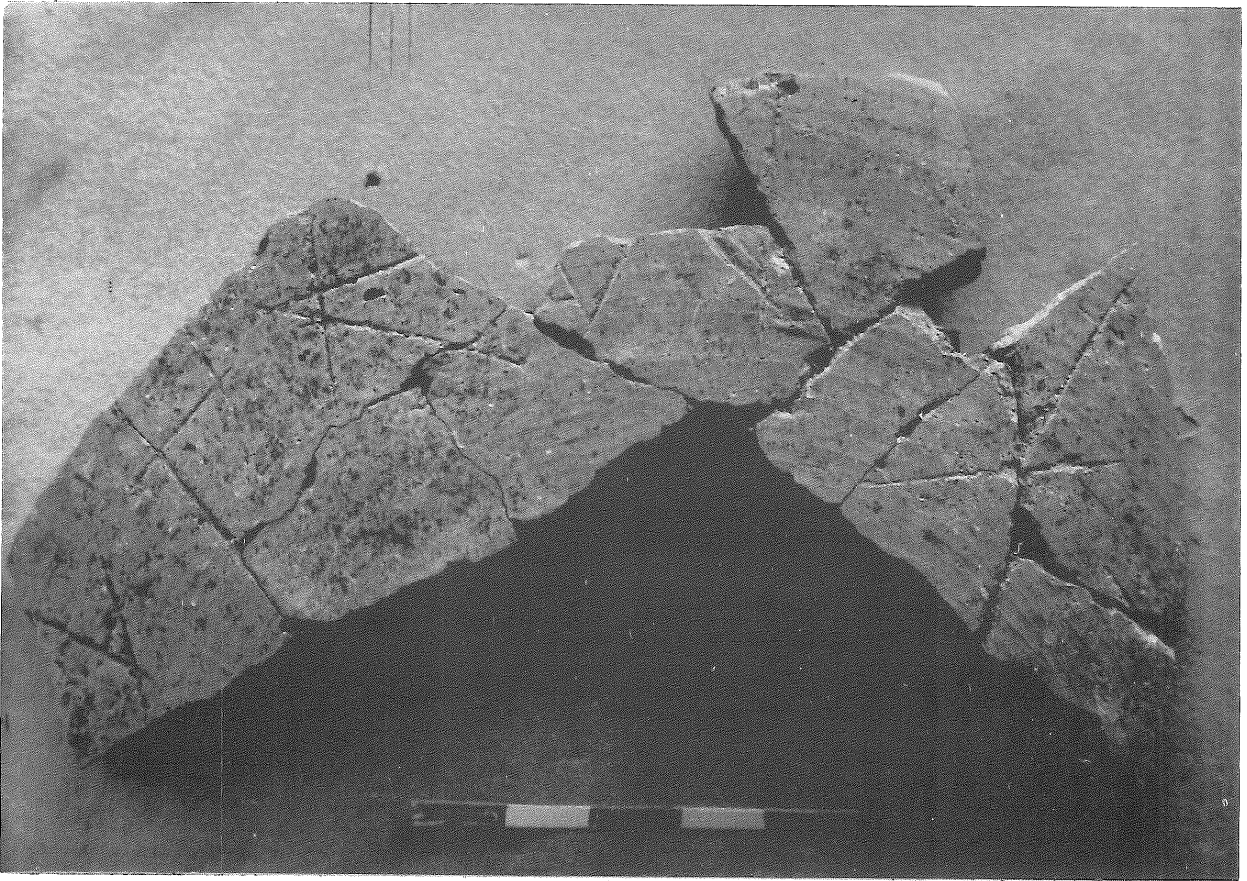
Pl.XXVII, 2-Juglet from B/C5.54 *in situ*

Pl.XXVIII, 1,2-Hand shaped spoon from B/C5.54



Pl.XXIX, 1-Inscription on a sherd from B/D5.55





Pl.XXIX, Ostrakon from B/B5.9



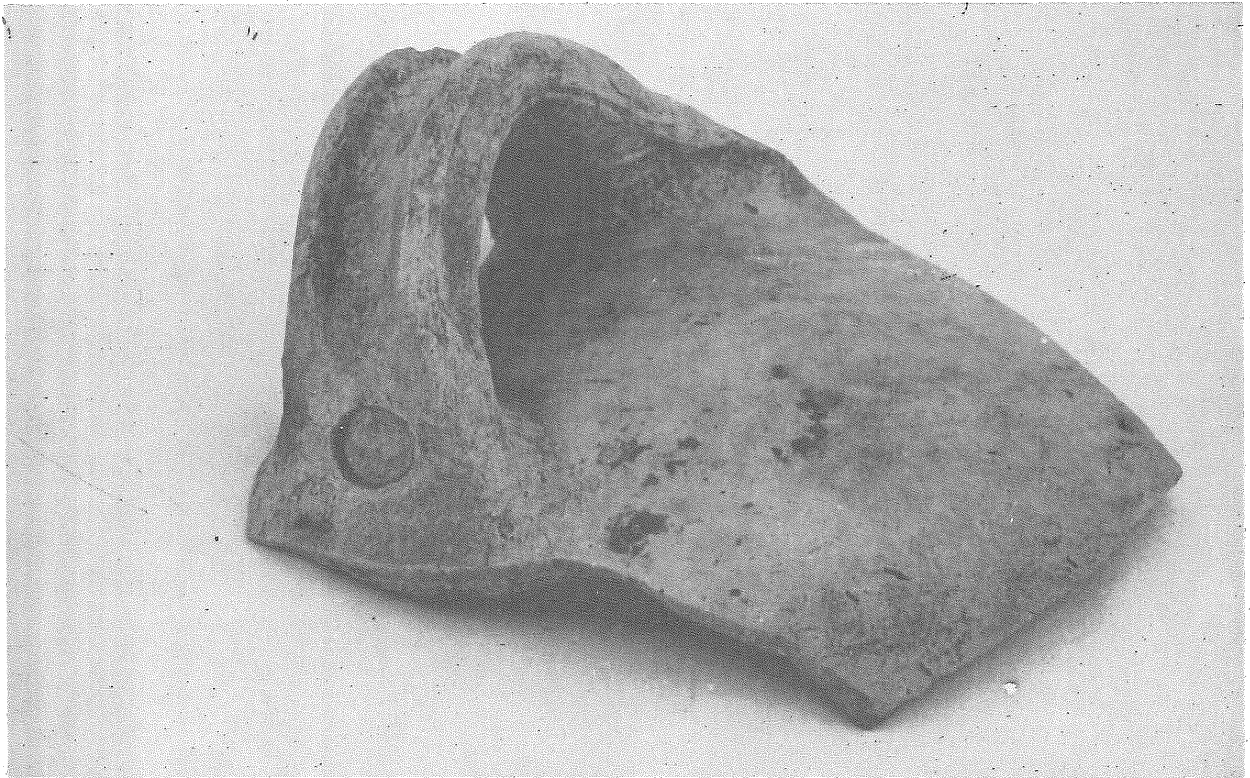


Pl.XXX, 1-Impression of a seal from B/C7

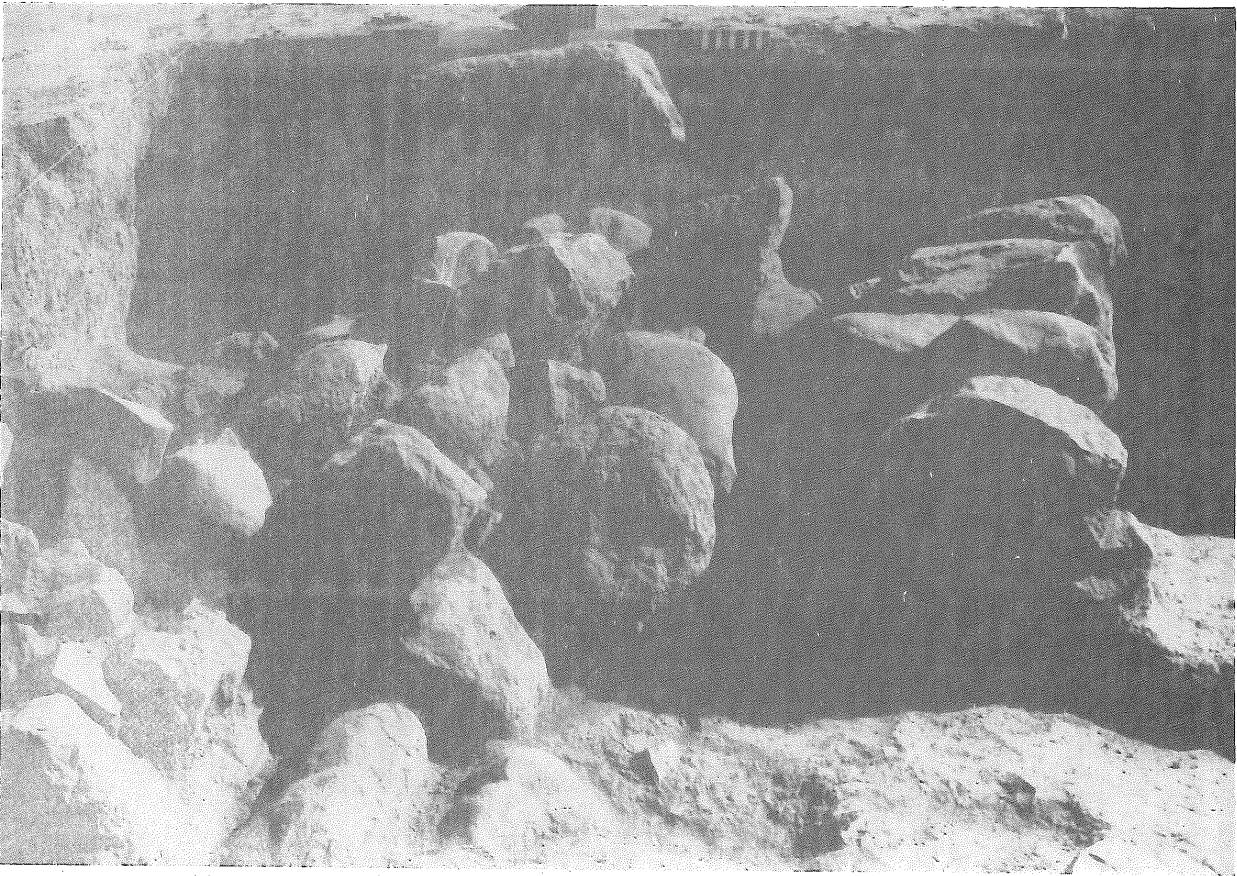
Pl.XXX, 2-Scaraboid seal from the surface.



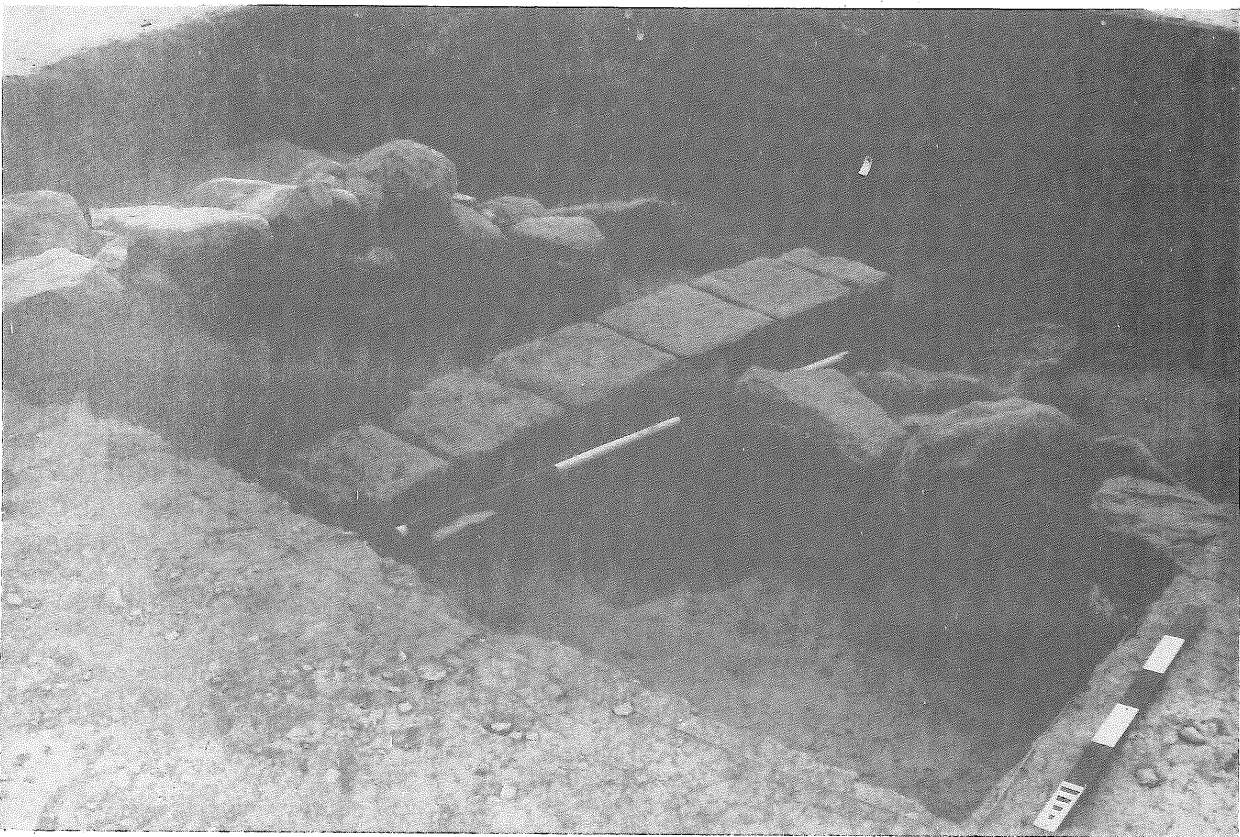
Pl.XXX, 3-Stamped handle from B/B6.21 (Phase V)







Pl.XXXI, 1-Stone wall in B/A5-B/A6 to the west (Phase III).



Pl.XXXI, 2-Stone walls with a mud-bricks line from B/C10.2,6 (Phase V)



Pl.XXXII, 1-Square B/B8 (Phase VI).



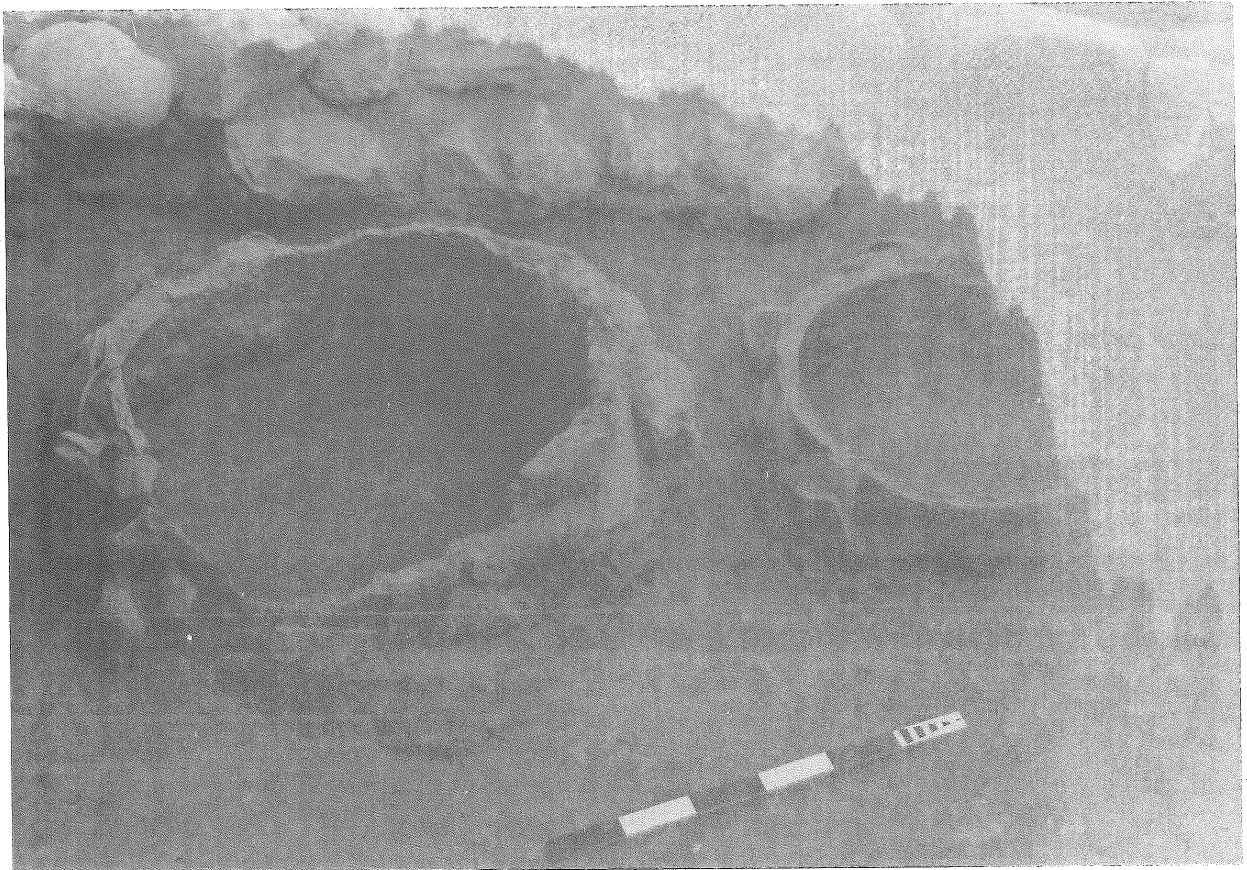
Pl.XXXII, 2-Square B/B10 (Phase VI).



Pl.XXXIII, 1-Courtyard layers and an elongated bottle *in situ* in Sq. B/A9 (Phase IV) to the NW



Pl.XXXIII, 2-A Silo-pit from B/B9.8 (Phase V).



Pl.XXXIV, 1—Two *tabuns* in B/B6 (Phase V).

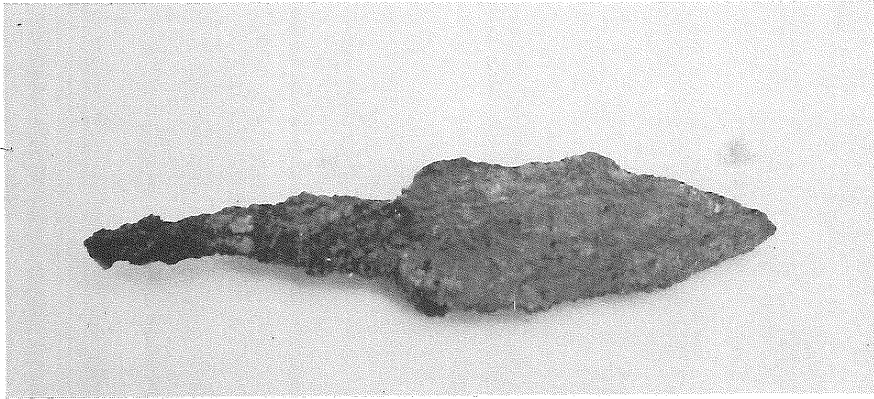


Pl.XXXIV, 2—Strainer from B/A8 (Phase VI)

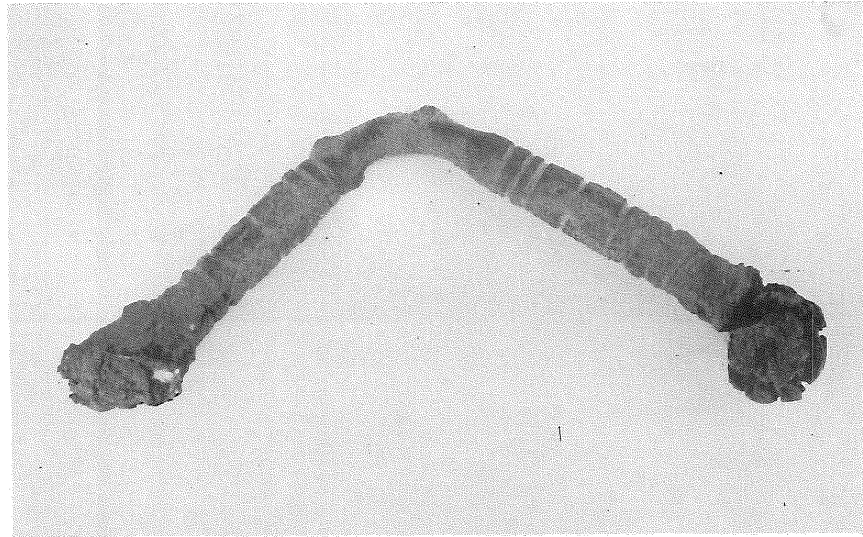
Pl.XXXV, 1-Bowl from B/B5.2 (Phase III).



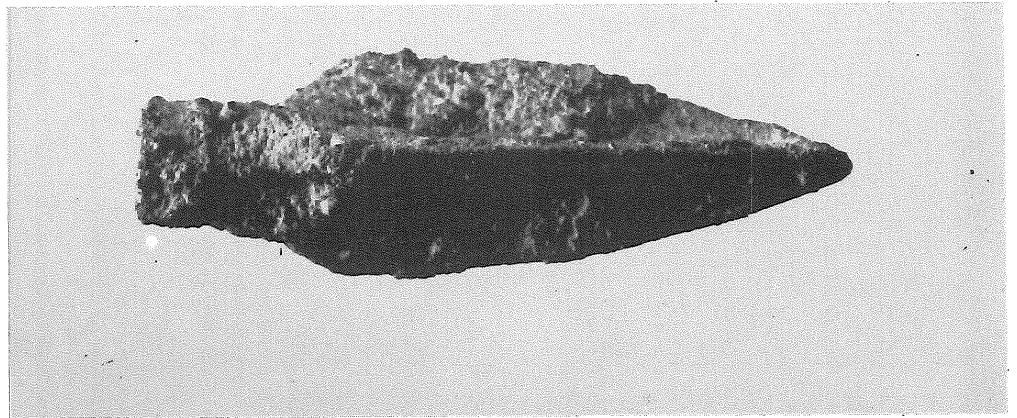
Pl.XXXV, 2-Deep bowl from B/A5.24 (Phase III).



Pl.XXXVI, 1-Iron arrow-head from B/C 7.20 (Phse VI).



Pl.XXXVI, 2-Bronze fibula from B/B5.9 (Phase IV).

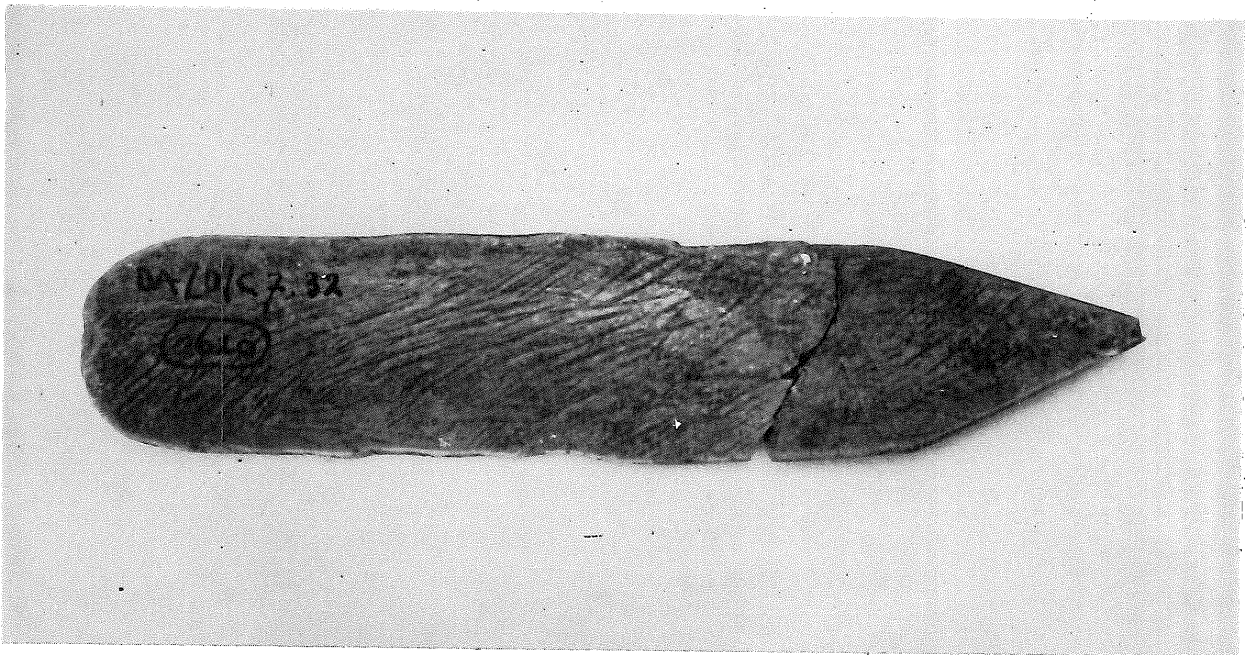


Pl.XXXVI, 3-Bronze arrow-head.



Pl.XXXVII, 1-Basalt Grindingstone from B/C7.4 (Phase IV).

Pl.XXXVII, 2-Bone tool from D/C7.32



Pl.XXXVIII, 1-Bowl from B/A6.13 (Phase III).

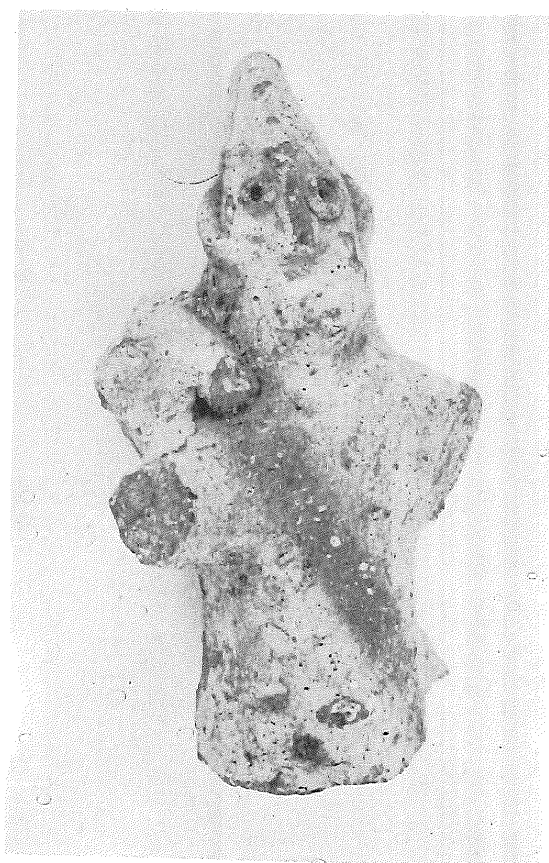


Pl.XXXVIII, 2-Jug from B/A6.13 (Phase III).





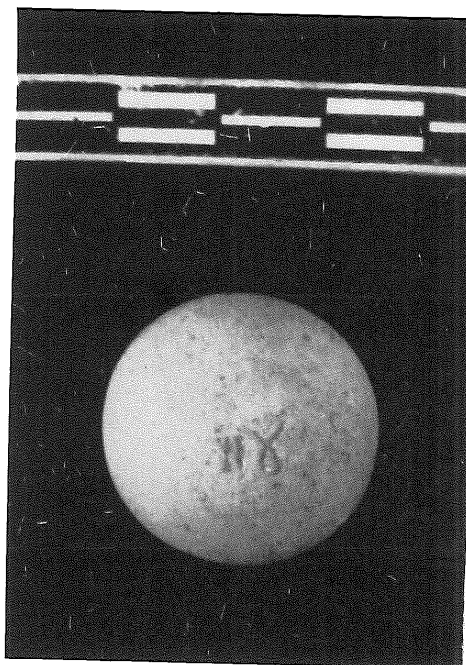
Pl.XXXIX, 1-Handled bottle from D/C7.29



Pl.XXXIX, 2-Human figurine from D/D 7/12 (Phase IV).



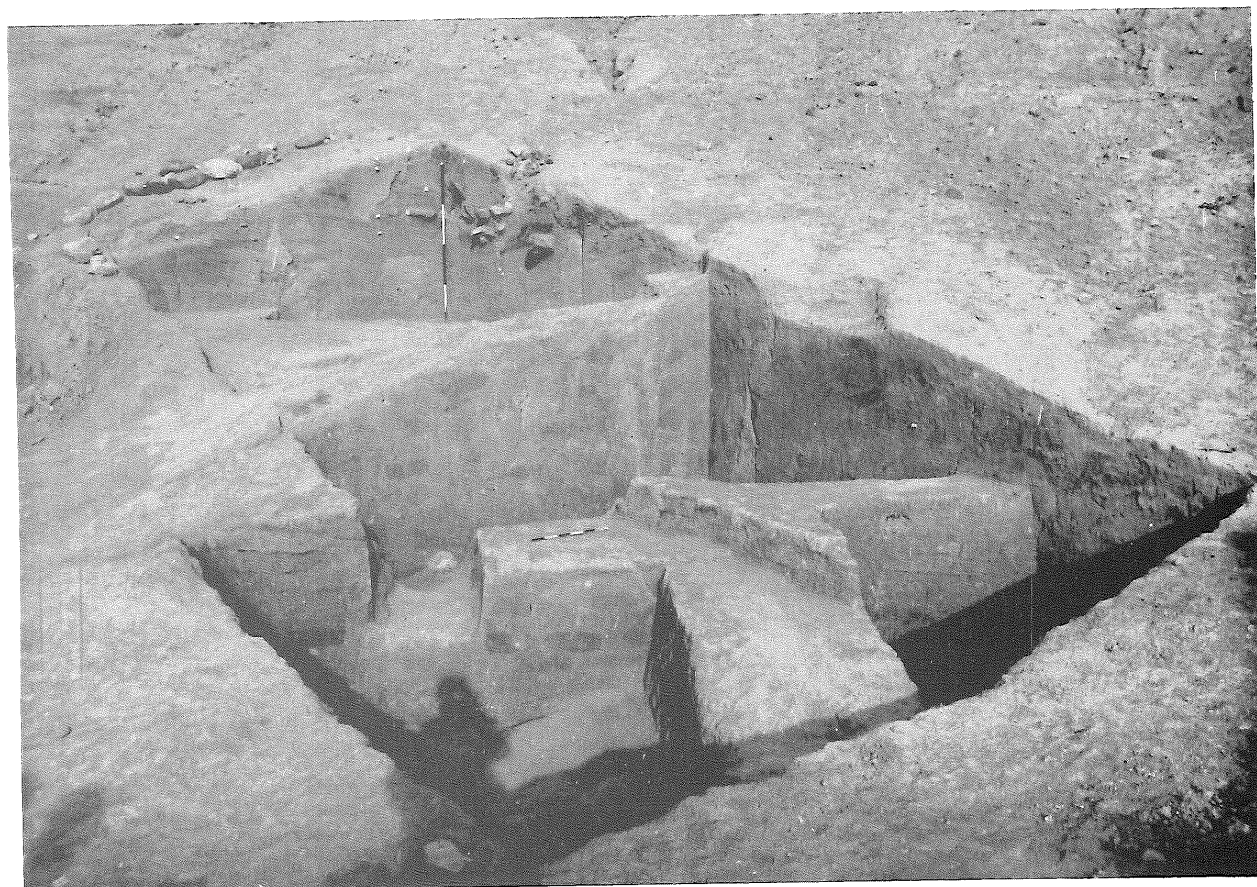
Pl.XXXIX, 3-Painted bottle from B/B10 (Phase VI)



Pl.XXXIX, 4-Weight with the number sign  
for 2-Sheqel from B/C7.

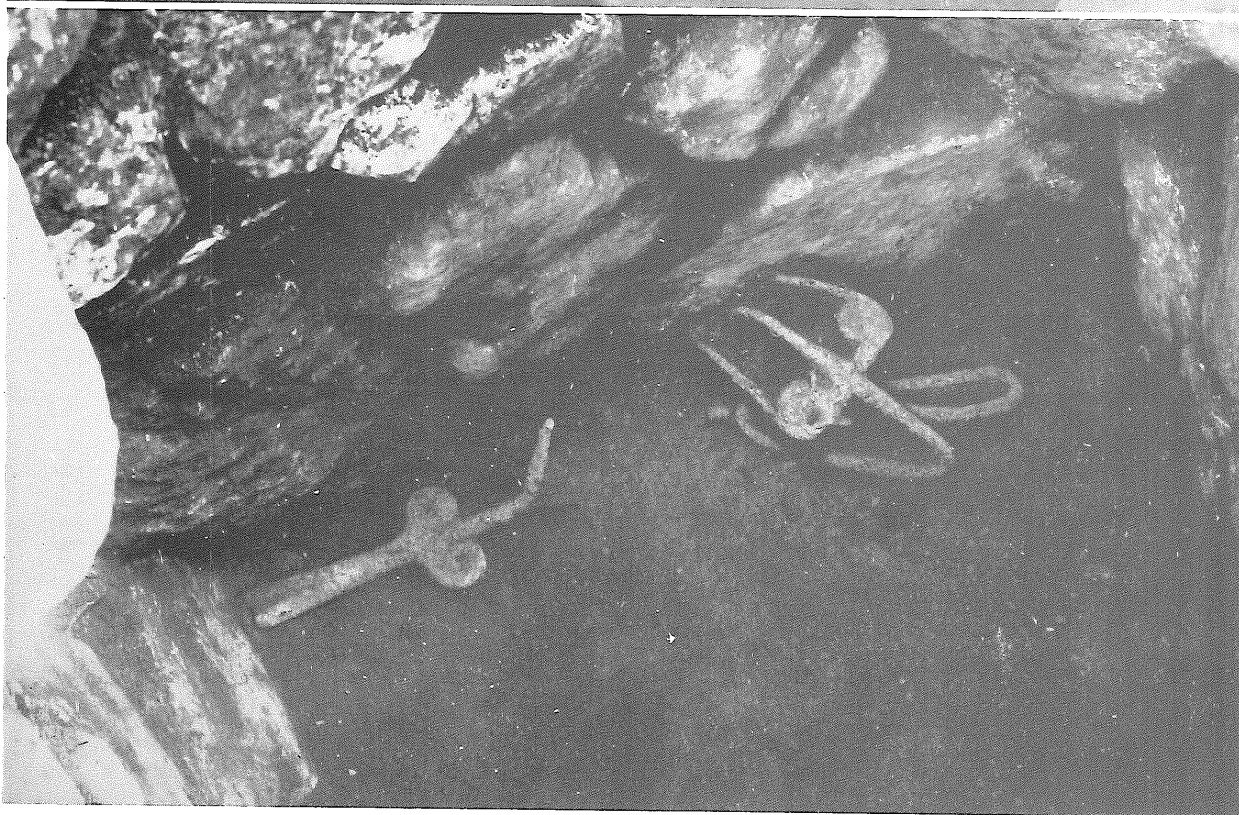


Pl. XL, 1-MB/LB mud-brick wall on stone pavement in D/H17 (Phase II).

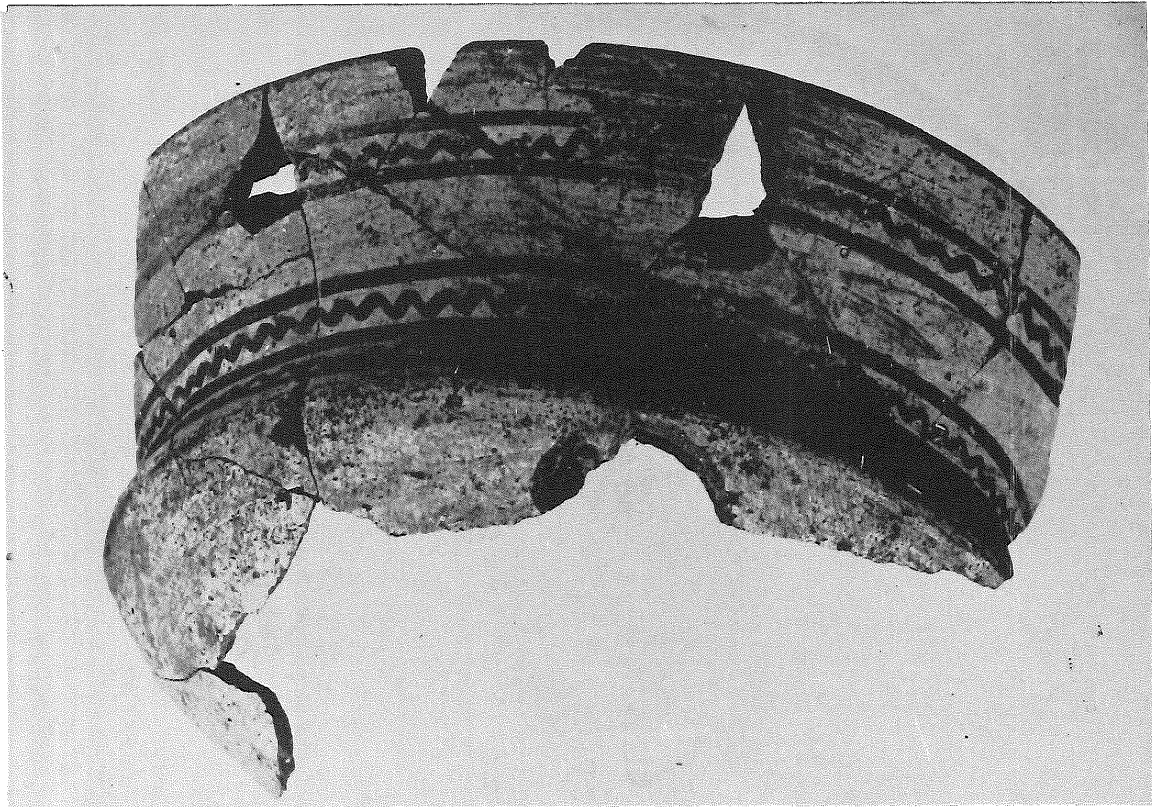


Pl. XL, 2-MB mud-brick structure in D/H17 and D/H18 (Phase IV).

Pl.XLI, 1-Doorway in D/H18.7



Pl.XLI, 2-Bronze tools or weapons *in situ* found in a pit D/I 17.20 (Phase IV).



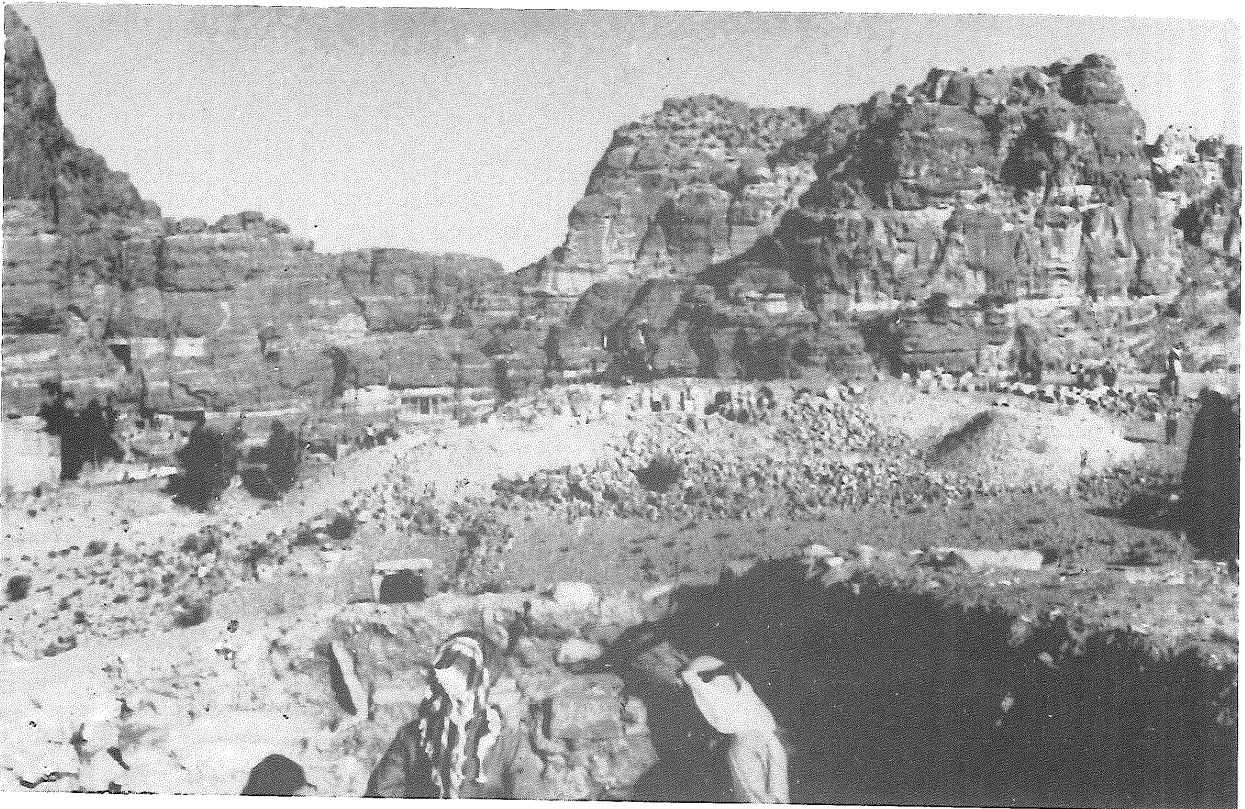
Pl.XLII, 1-MB painted carinated bowl from D/I 17 (Phase IV).



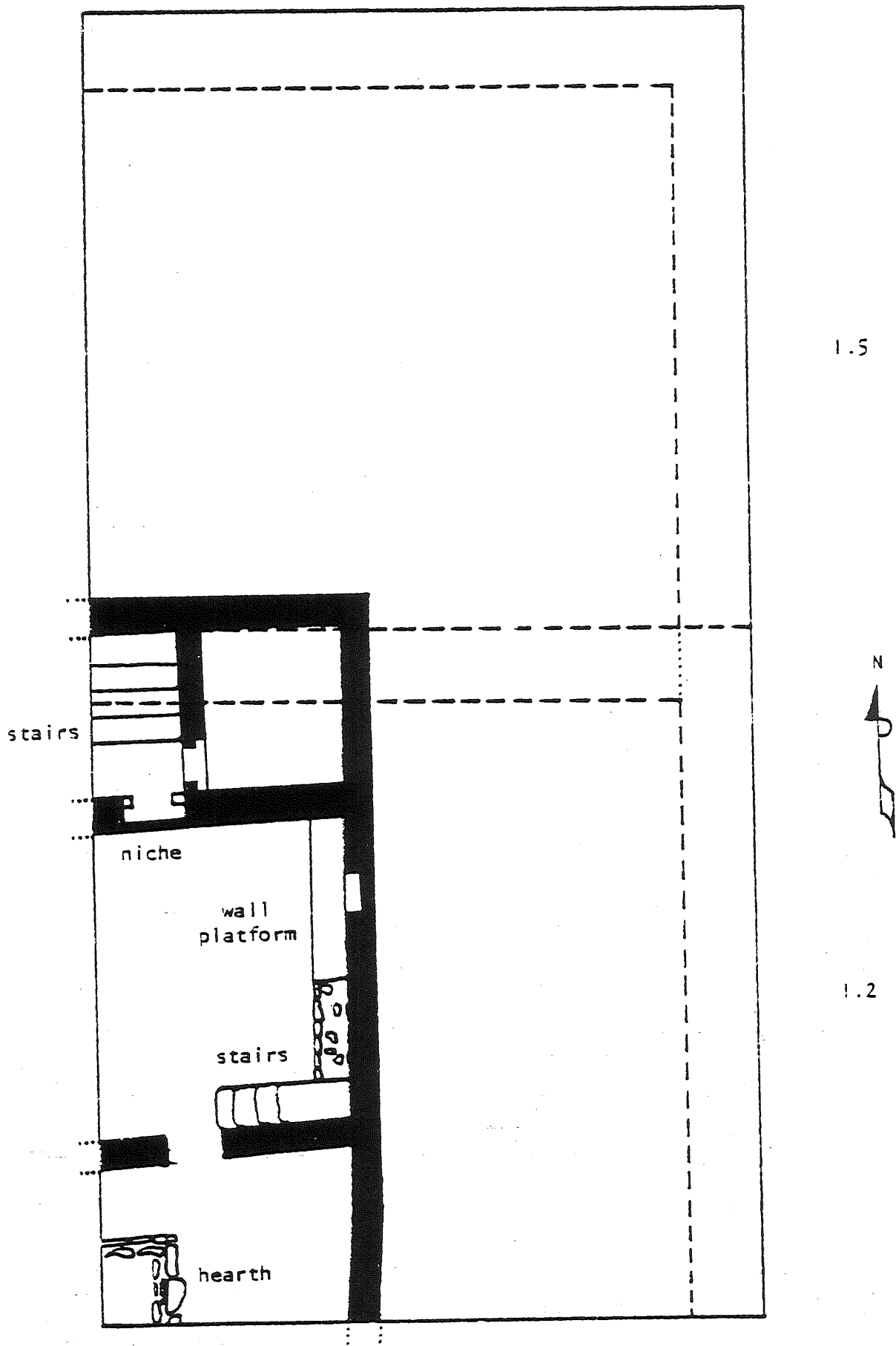
Pl.XLII, 2-MB small bowl from D/H 17.14 (Phase IV).



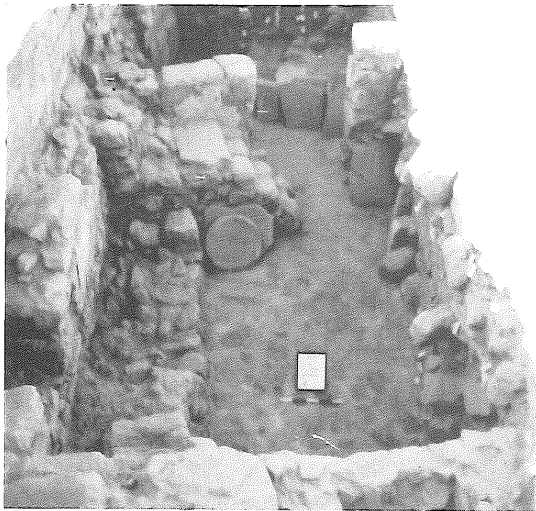
Pl. XLIII, 1 - Site I, background, from Site II.



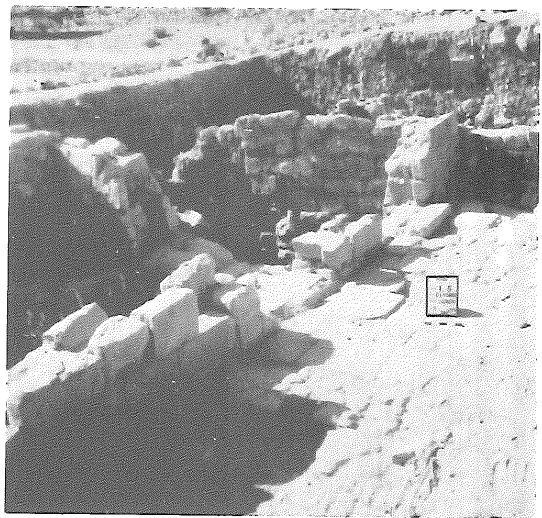
Pl. XLIII, 2 - Site II, showing rise of entry slope, from site I.



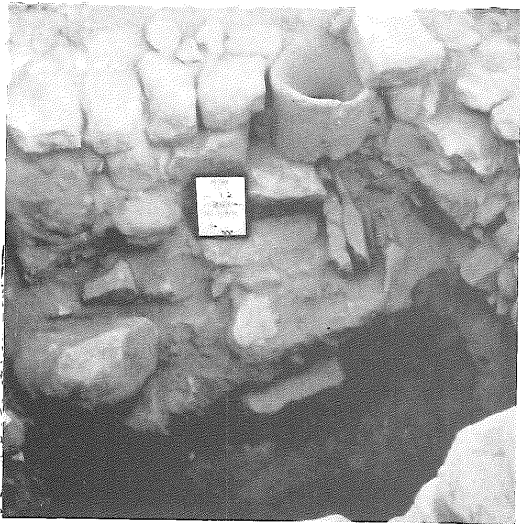
Pl. XLIV - AREA I: Earliest House.



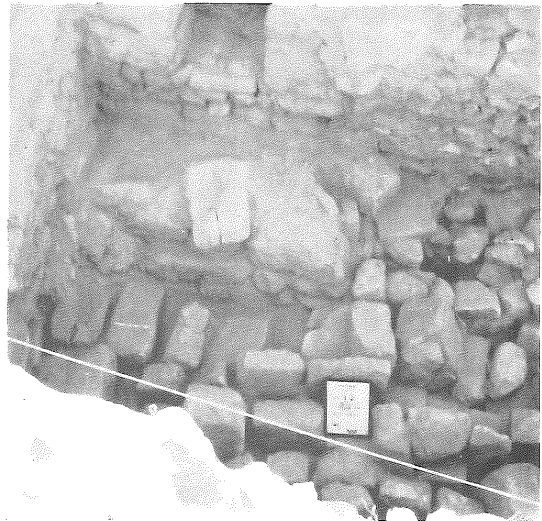
Pl. XLV, 1- Site I, floor of Early Building showing stairway, mortar in situ, and hearth area in background.



Pl. XLV, 2 - Site I, paved courtyard and wall lines of Later Building (Byzantine).



Pl. XLV, 3 - Site I, Byzantine cistern cut into walls and floor of Early Building, with mill as conduit.



Pl. XLV, 4 - site I, destruction phase of Early Building.



Pl. XLV, 5 - Site I, ringed Byzantine pot and other pieces in situ.



Pl. XLV, 6 - Site I, bed-rock, at completion of excavation.



**AEP '76**

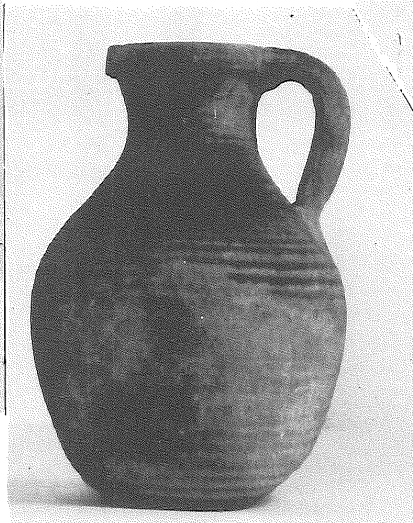
Pl. XLVI, 1 - Site I, pilgrim flask, Byzantine.



**AEP '75**

REG. NO. **207** AEP75

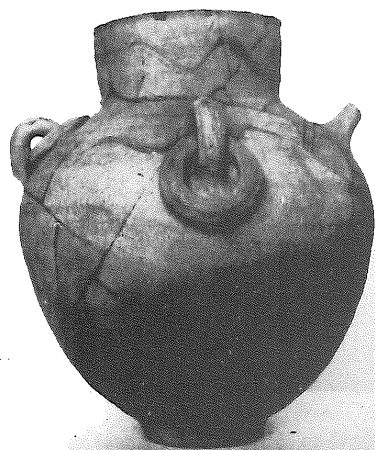
Pl. XLVI, 2 - Site I, cooking pot, Byzantine.



**AEP '75**

REG. NO. **214** AEP75

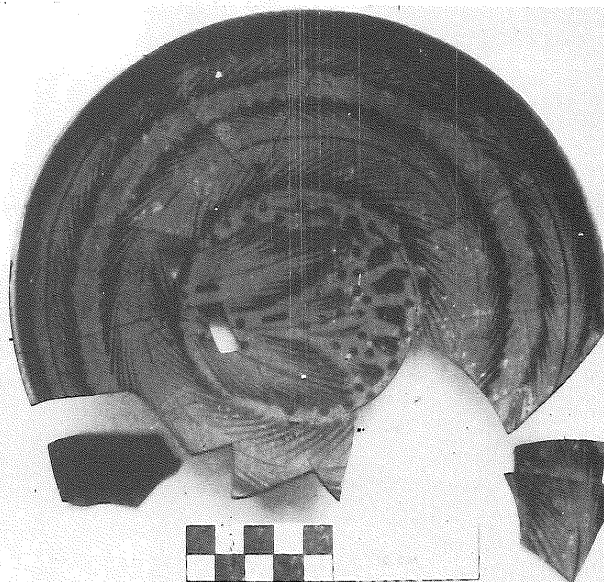
Pl. XLVI, 3 - Site I, jug, black drip paint on body, Byzantine.



**AEP '76**

REG. NO. **214** AEP76

Pl. XLVI, 4 - Site I, jug with ring handles, Byzantine.



**AEP '76**

REG. NO. **14** AEP76

Pl. XLVI, 5 - Site I, Nabataean fine thin ware painted plate, part of Nabataean hoard.





Pl. XLVII, 1 - Site I, sculptured head, local white marble.



Pl. XLVII, 2 - Site I, "housewife" figurine, yellow sandstone;



side view, showing braided hair down back.



*AEP '76*

REG. NO. 7 AEP 76

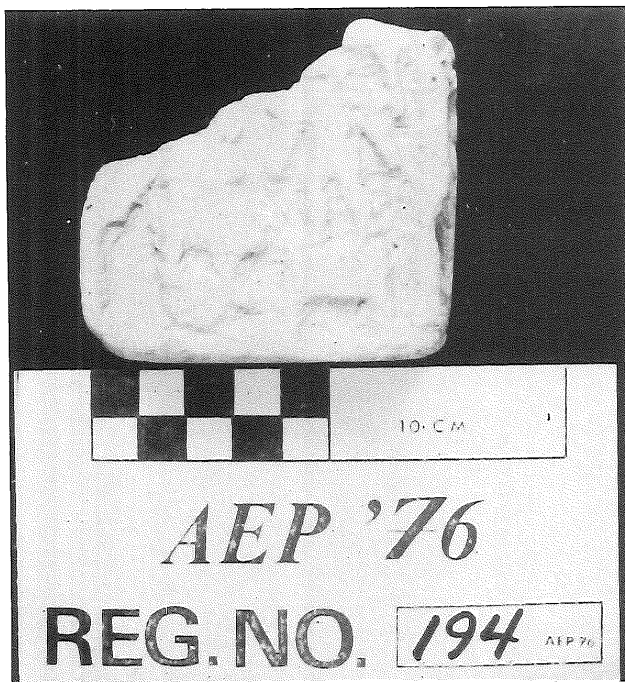
Pl. XLVIII, 1 - Site I, molded lamp handle, Atargatis (?).



*AEP '76*

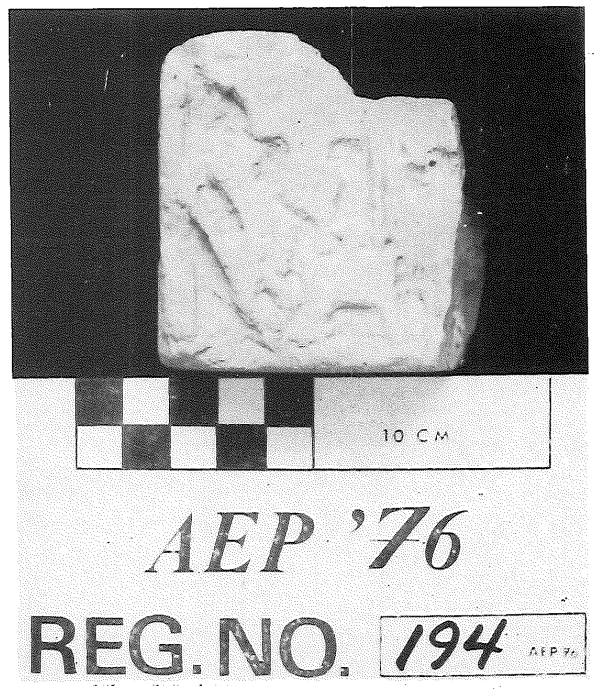
REG. NO. 25 AEP 76

Pl. XLVIII, 2 - Site I, incense burner, sandstone, Nabataean (?).



*AEP '76*

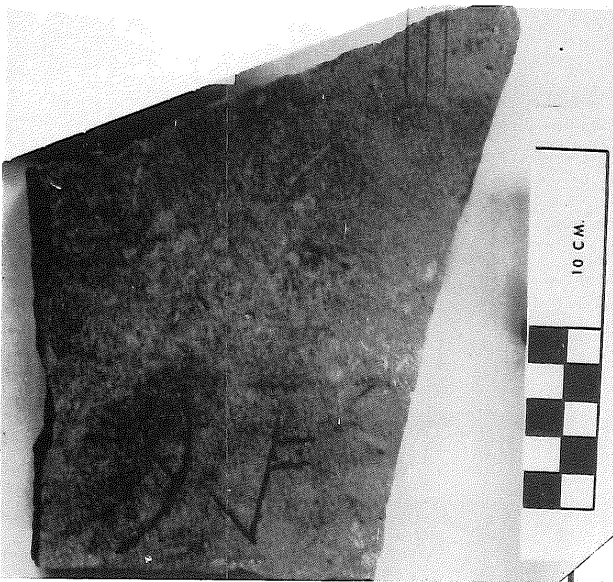
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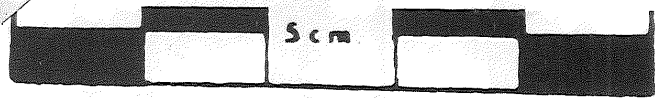
*AEP '76*

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Pl. XLVIII, 3 - Site I, cultic box, decorated on two remaining sides.



Pl. XLIX, 1 - Site II, graffito on fallen plaster.



**AEP '77**

Pl. XLIX, 2 - Site I, inscribed wine jar handle fragment.

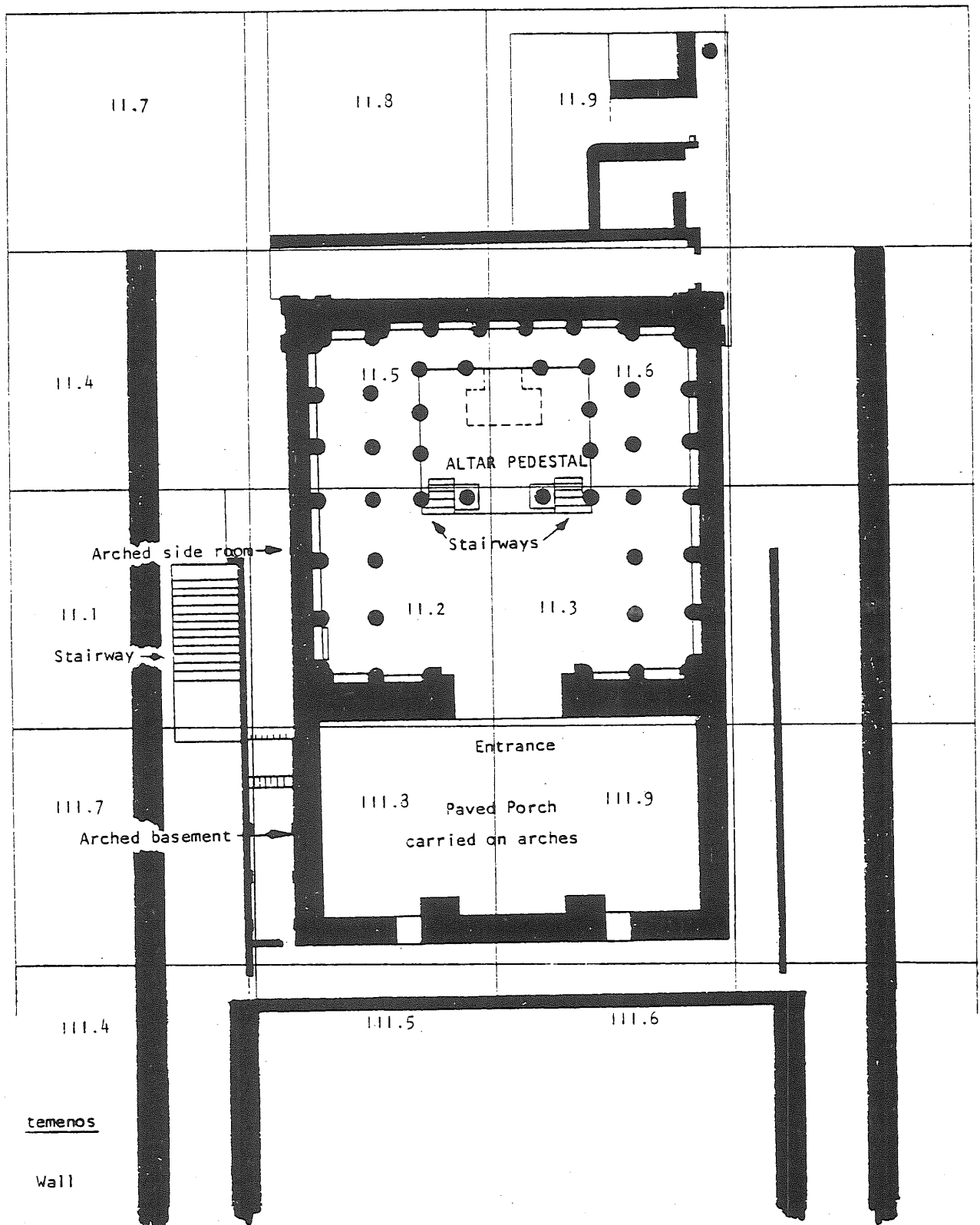


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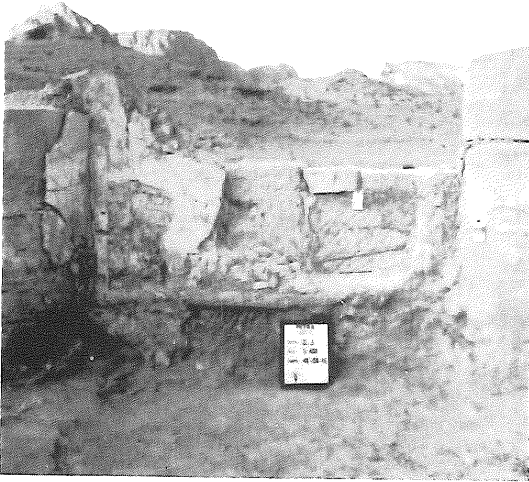
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Pl. XLIX, 3 - Site I, inscribed wine jar handle fragment.



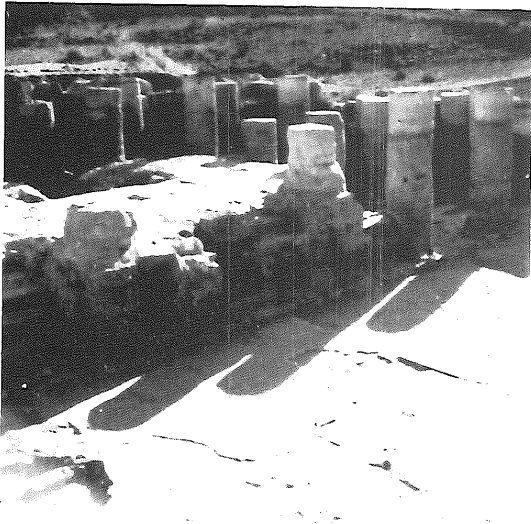
Pl. L - SCHEMATIC PLAN: Site II-III. Templex.  
 Survey indicates a monumental approach to the Temple extending from the Paved Street, adjacent to the Monumental Gate, leading across Wadi Musa upward approximately 100m. The traces of the temenos wall lines suggest that they were colonnaded. This area to be excavated.



Pl. LI, 1 - Site II, Southeast interior wall; fallen niche.



Pl. LI, 2 - Site II, Southwest interior wall; niche with fresco.



Pl. LI, 3 - Site II, altar platform, front view.



Pl. LI, 4 - Site II, rear storage area, with shelves, of altar pedestal.



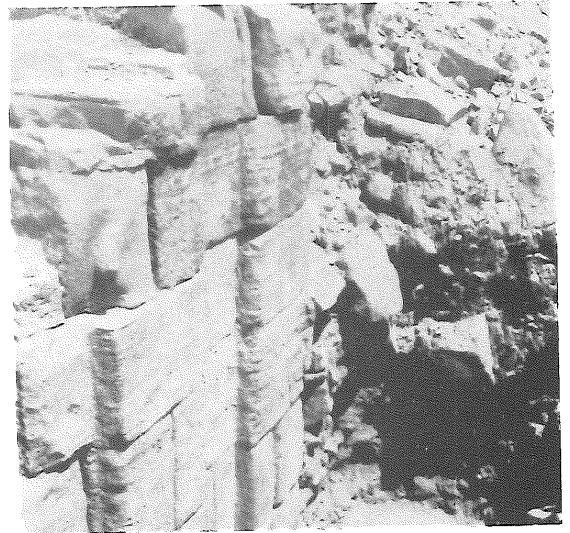
Pl. LI, 5 - Site II, West bay of cella.



Pl. LI, 6 - Site II, Northwest corner of cella, showing corner niche treatment, paving, and column base rings.



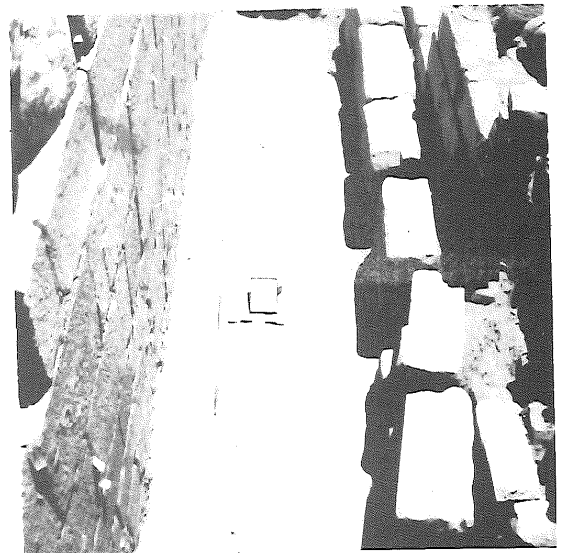
Pl. LII, 1 - Site II, North complex adjoining rear wall of Temple.



Pl. LII, 2 - Site II, inset-outset corner treatment of Northeast corner, exterior face of wall.



Pl. LII, 3 - Site II, exterior of West wall of cella, forming interior, plastered wall of Southwest vaulted room.



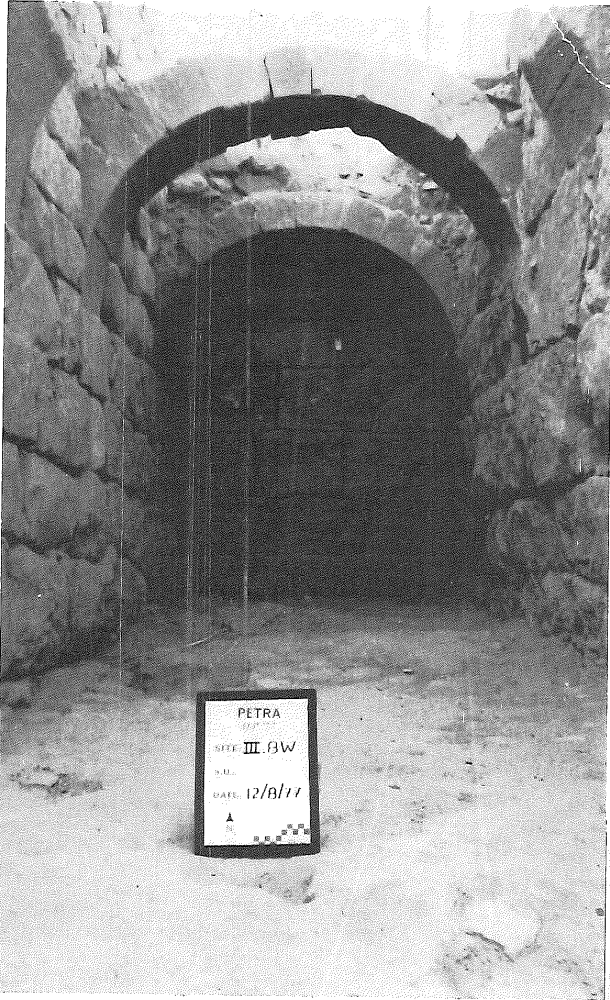
Pl. LII, 4 - Site II, Southwest vaulted room, upper floor, showing lettered ashlar blocks on floor next to wall, awaiting ancient reconstruction.



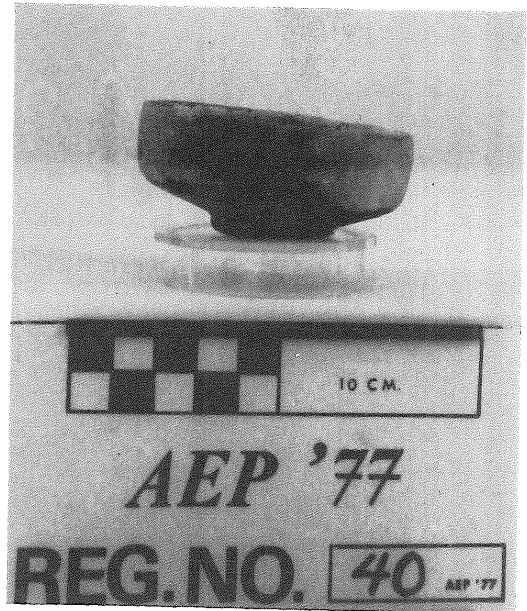
Pl. LII, 5 - Site II, lower build of South entry of Temple, showing springers for entry stairway (?), destroyed by earthquake.



Pl. LII, 6 - Site II, fragment of architectural block, showing traces of molded plaster decoration of cella interior.



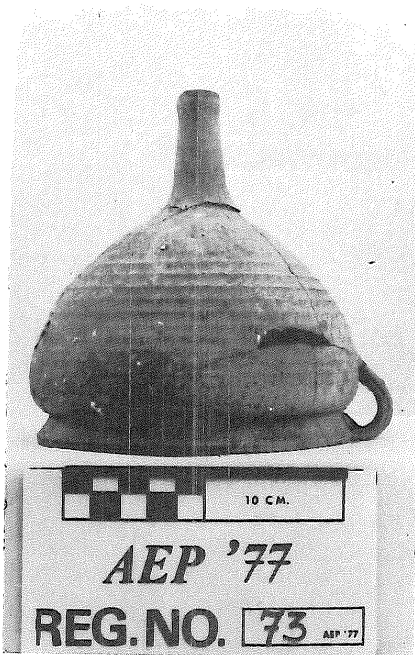
Pl. LIII, 1 - Site II, upper vault and floor of Southwest room, showing blocking of vaulted passage.



Pl. LIII, 2 - Cup, with traces of paint, from "Painter's Workshop" hoard.



Pl. LIII, 4 - Site II, "Painter's Workshop" on floor of lower vaulted passage of Southwest room.



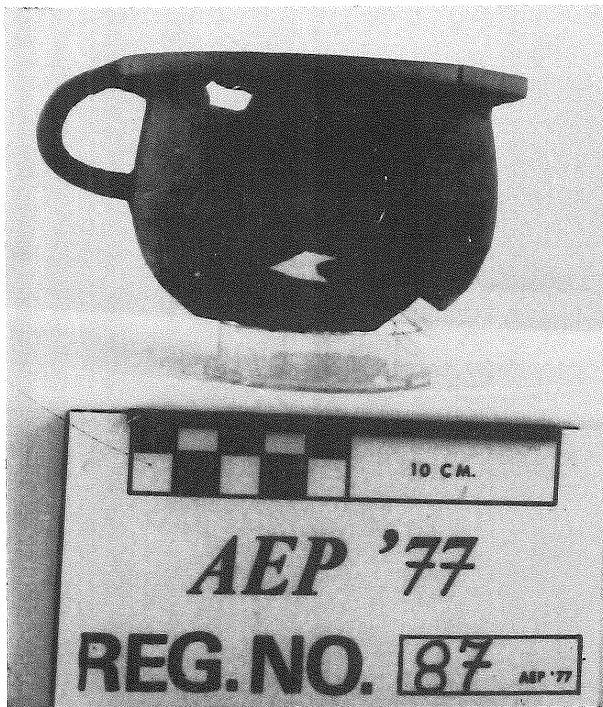
Pl. LIII, 3 - Funnel from "Painter's Workshop" hoard.



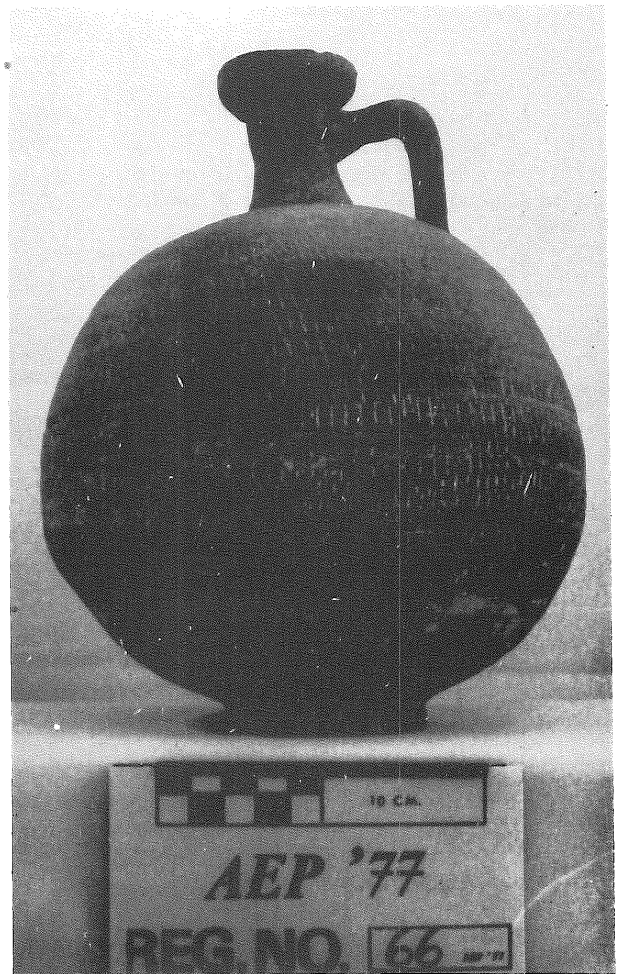
Pl. LIV, 1 - Site II, jar, "Painter's Workshop" hoard.



Pl. LIV, 2 - Site II, pot, blue paint caked in interior, blue paint and white plaster on exterior, "Painter's Workshop" hoard.



Pl. LIV, 3 - Site II, strainer pot, "Painter's Workshop" hoard.



Pl. LIV, 4 - Site II, jug, "Painter's Workshop" hoard.



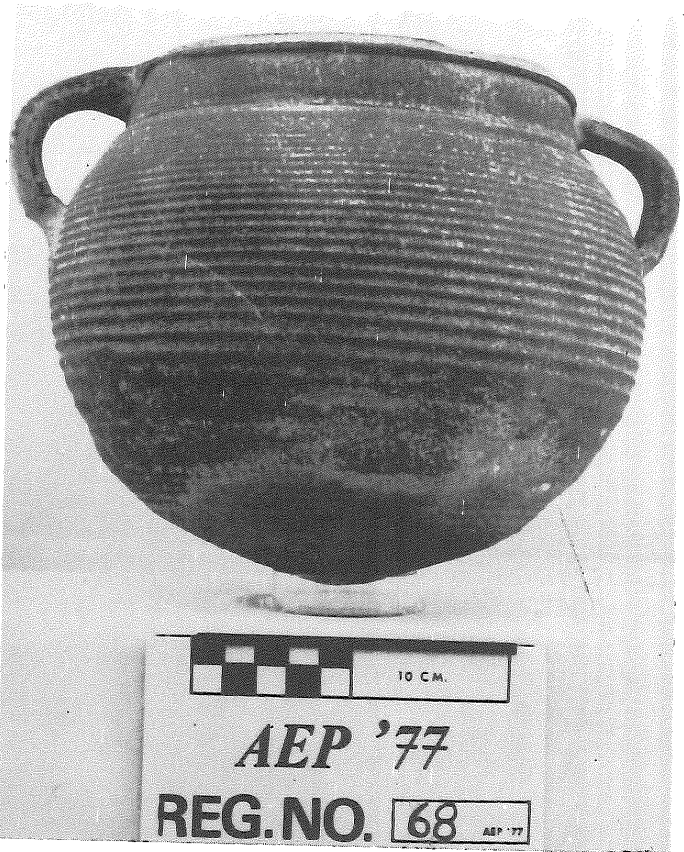
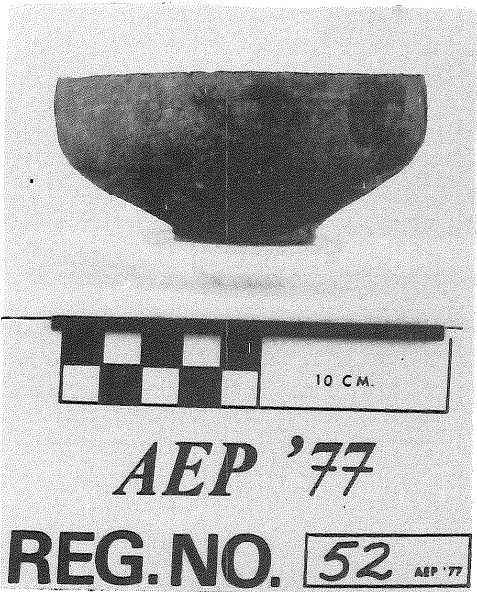


Pl. LV, 1 - Site II, cup, with paint traces, "Painter's Workshop" hoard.

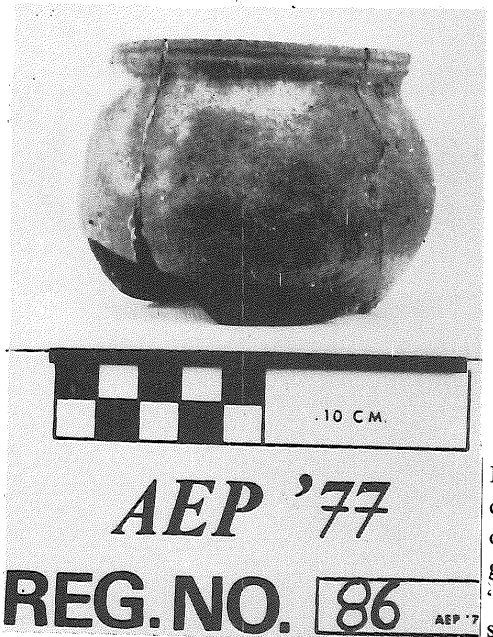


Pl. LV, 2 - Site II, cup, with traces of black paint, "Painter's Workshop" hoard.

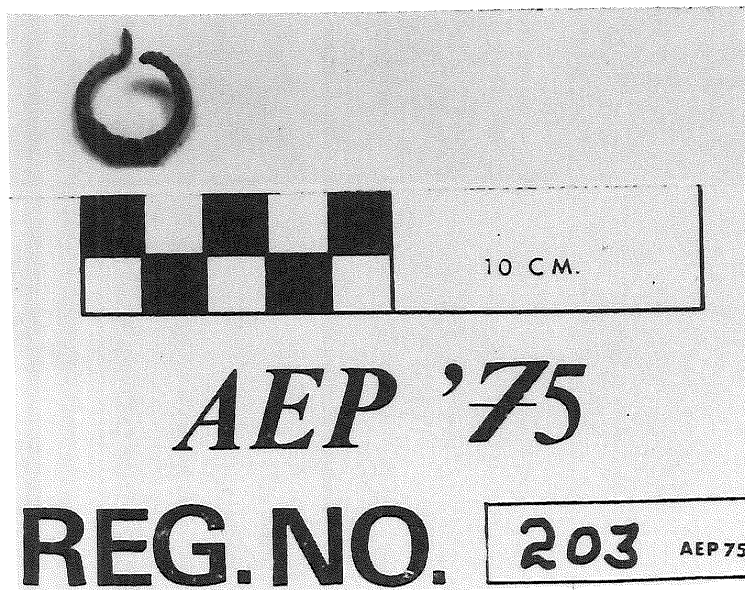
Pl. LV, 4 - Site II, pot, "Painter's Workshop" hoard.



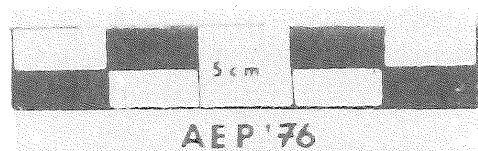
Pl. LV, 5 - Site II, cooking pot, filled with plaster, "Painter's Workshop" hoard.



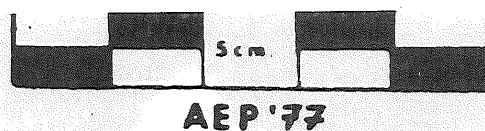
Pl. LV, 3 - Site II, cup, with traces of black and green paint, "Painter's Workshop" hoard.



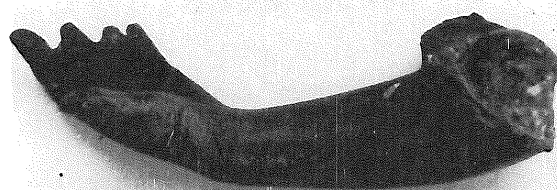
Pl. LVI, 1 - Site II, copper earring, Nabataean.



Pl. LVI, 2 - Site II, bronze feline head, apparently affixed to figurine, Temple cella area.



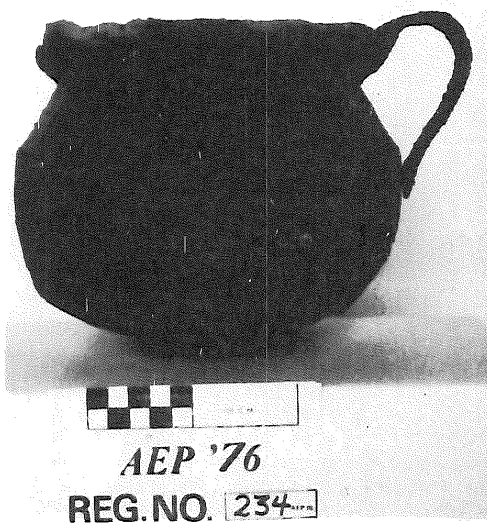
Pl. LVI, 3 - Site II, bronze arm, probably from statue, North building complex, Nabataean (?)



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Pl. LVI, 4 - Site II, dolphin handle, with locust riding on head, bronze, North building complex.



Pl. LVI, 5 - Site I, copper pot, with iron handles, Byzantine.



Pl. LVII, 1 - Site II, human torso, plaster, from *cella* decoration, formed on flat stones.



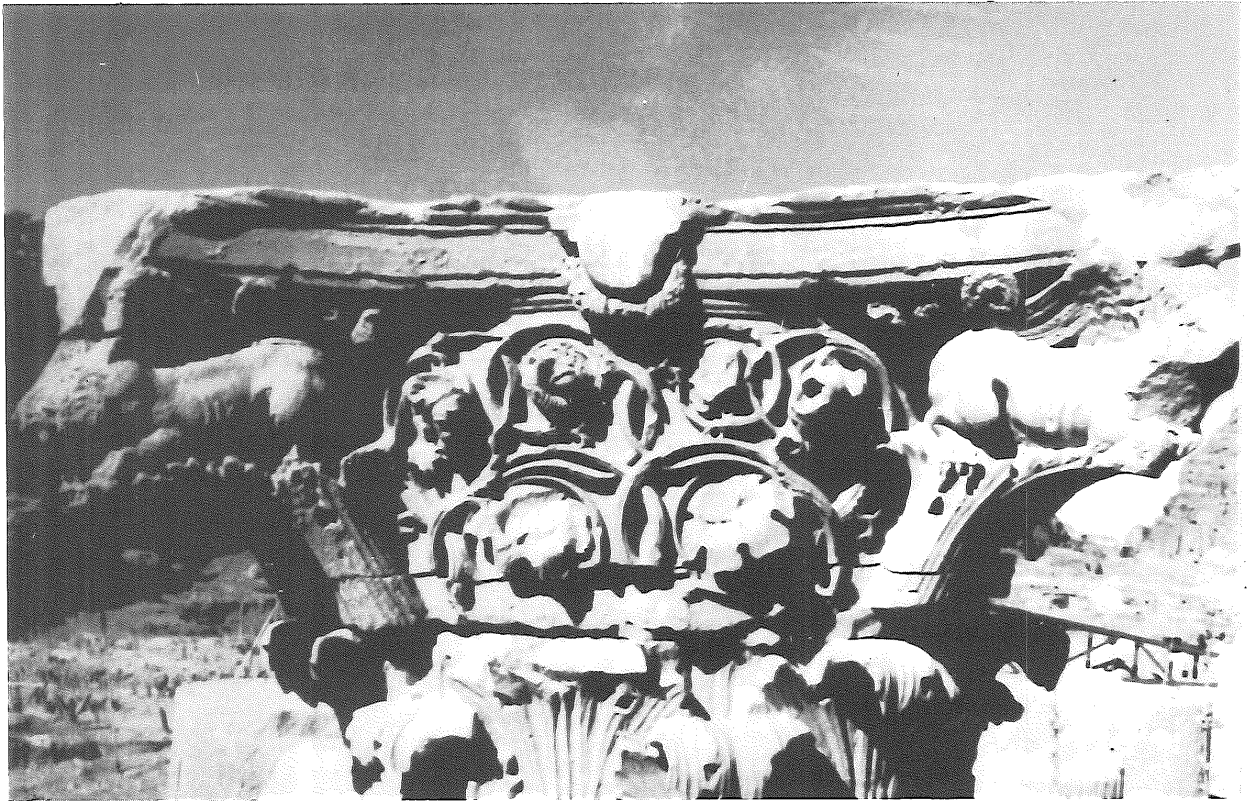
Pl. LVII, 2 - Site II, fragment of Egyptian funerary statue, used as offering, *cella* area.



Pl. LVII, 3 - Site II, seated marl statuette, female, enthroned, Nabataean.



Pl. LVII, 4 - Site II, "eye-idol," showing holes for copper pins to affix plaster features, *cella* area.

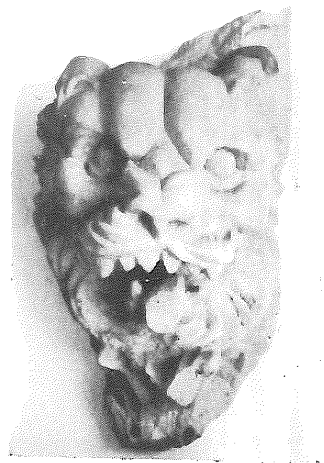
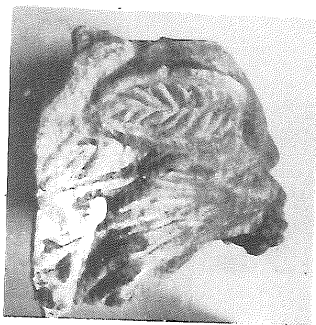


Pl. LVIII, 1 - Site II, capital, "Winged Lion" type from altar pedestal column.

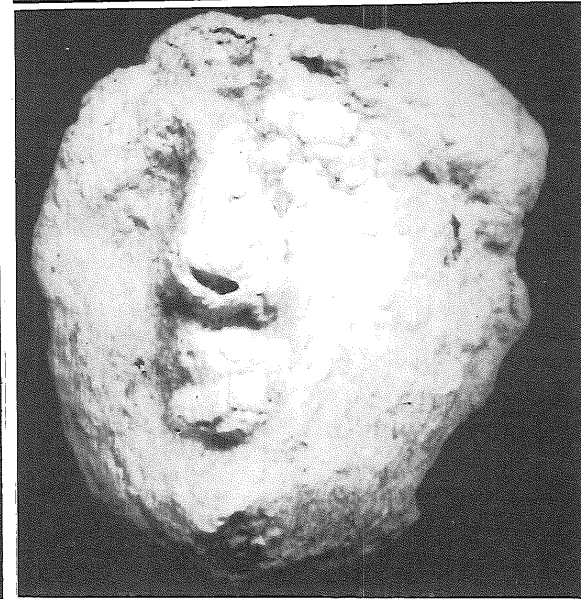
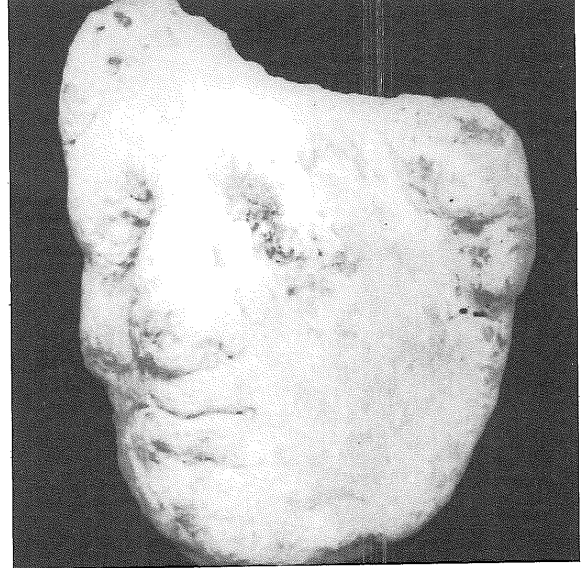
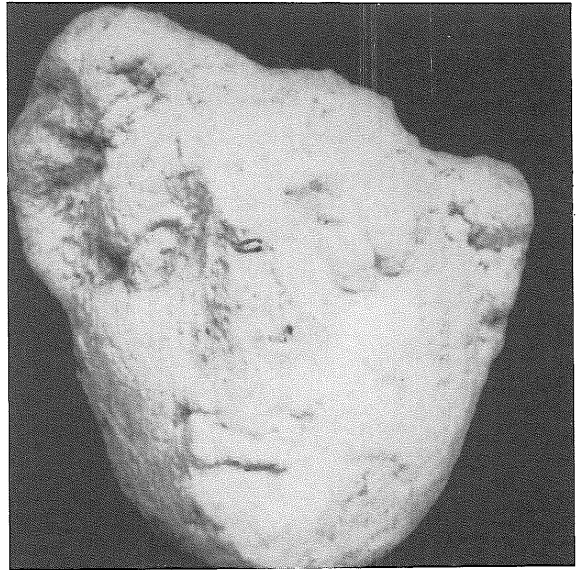
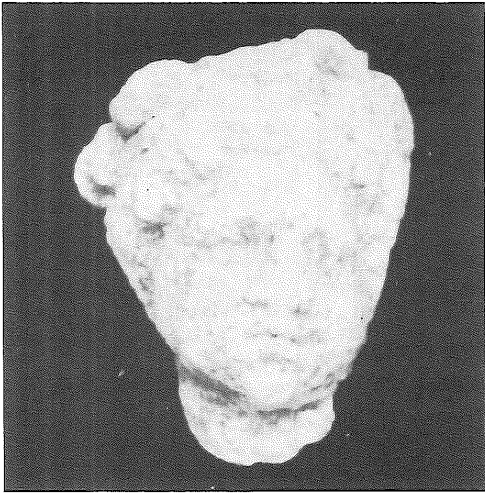


Pl. LVIII, 2 - Site II, capital fragment, from altar pedestal column, showing winged feline.

Pl. LIX - Site II, Temple Complex. Selected capital fragments, showing felines, from altar pedestal columns.



Pl. LX - Site II, selected affixes, molded plaster, showing individuality of faces.





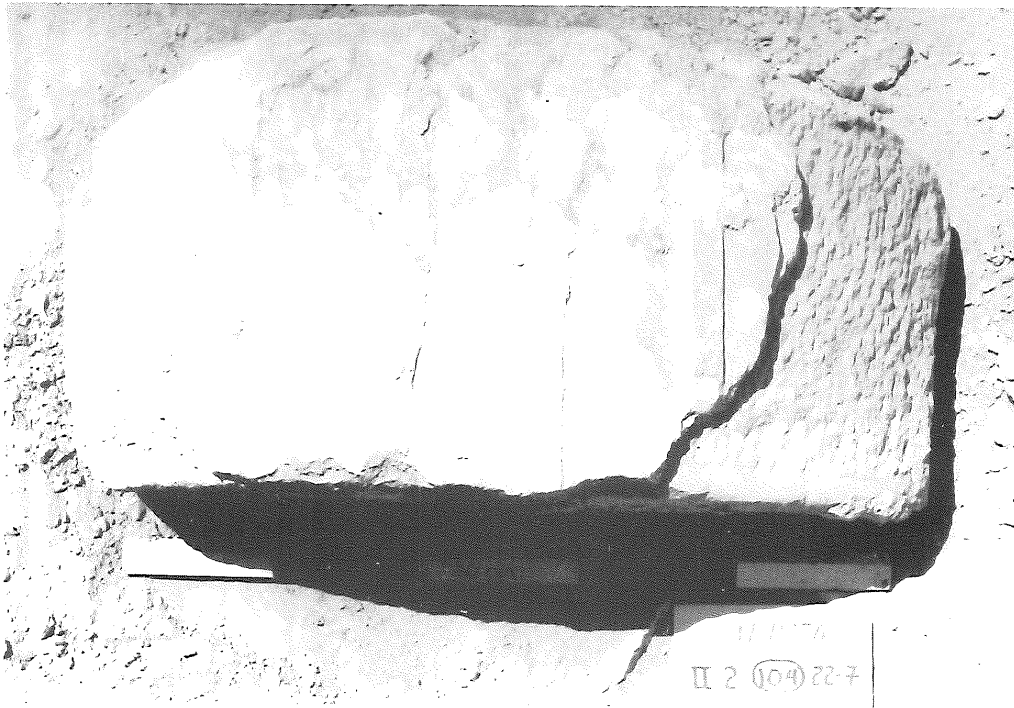
Pl. LXI, 1 - Site II,  
fresco border fragment,  
Southeast  
niche area, interior of  
cella, showing classical  
motif first  
period of decoration.



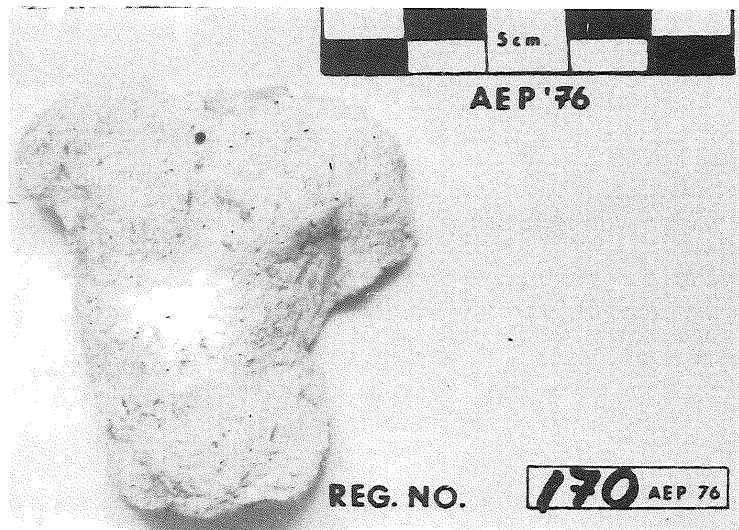
Pl. LXI, 2 - Site II, applique plaster decoration, from  
curved stone block, cella area.



Pl. LXI, 3 - Site II, fragment, showing "pecking" techni-  
que for keying plaster coats.



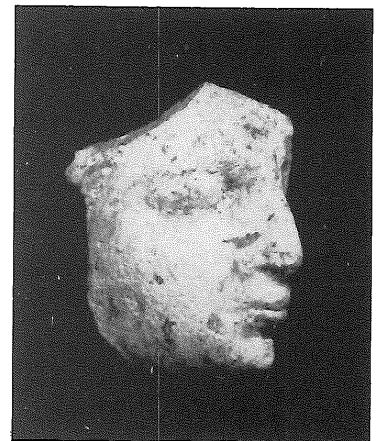
Pl. LXII, 1 - Site II, column drum, showing fluted plastering of first period of decoration.



Pl. LXII, 3 - Site II, applied plaster decoration, showing pre-plastering lines as guide to application of raised design.



Pl. LXII, 2 - Site II, human torso fragment, probably used as affix in cella decoration.

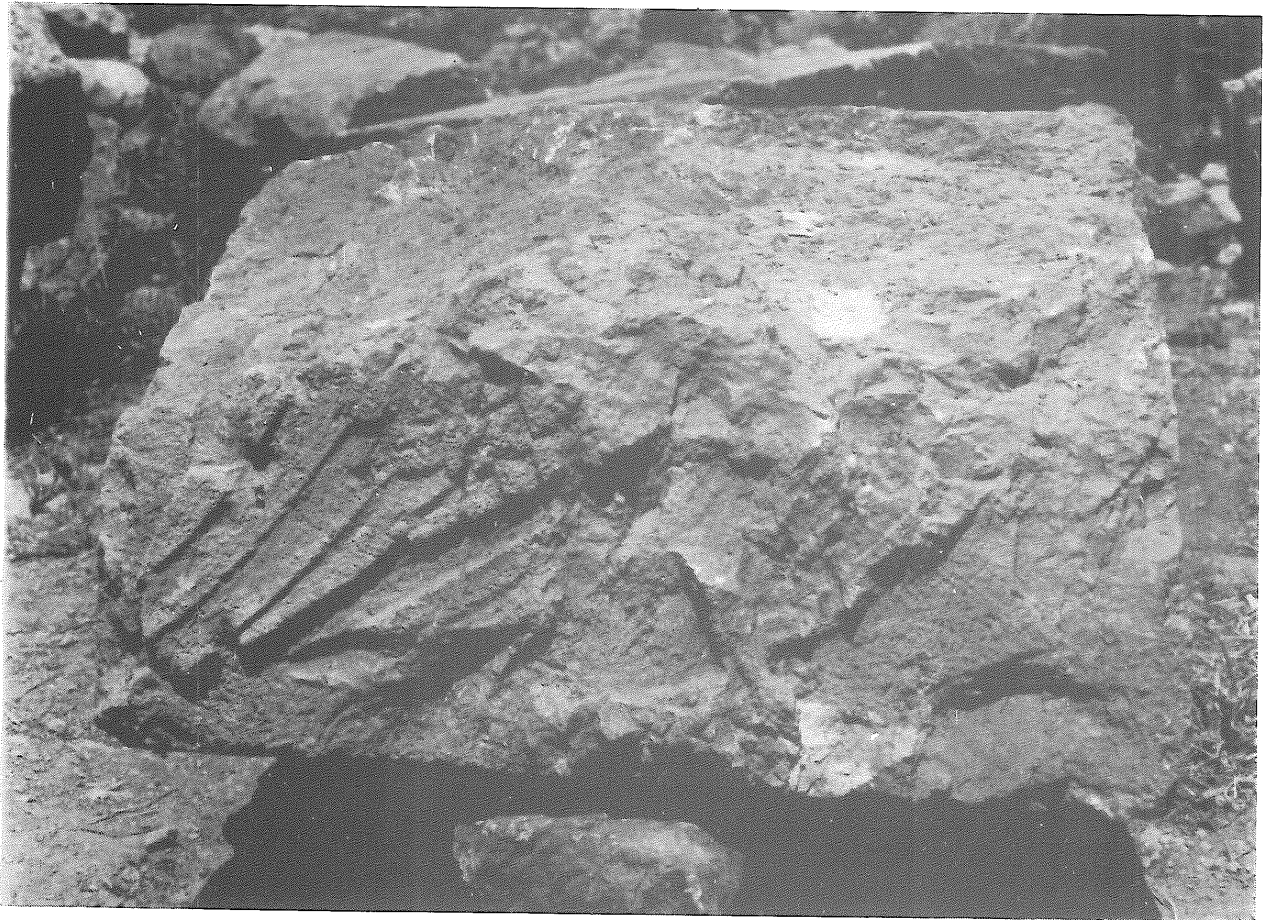


Pl. LXII, 4 - Site II, plaster human head affix used in cella decoration.

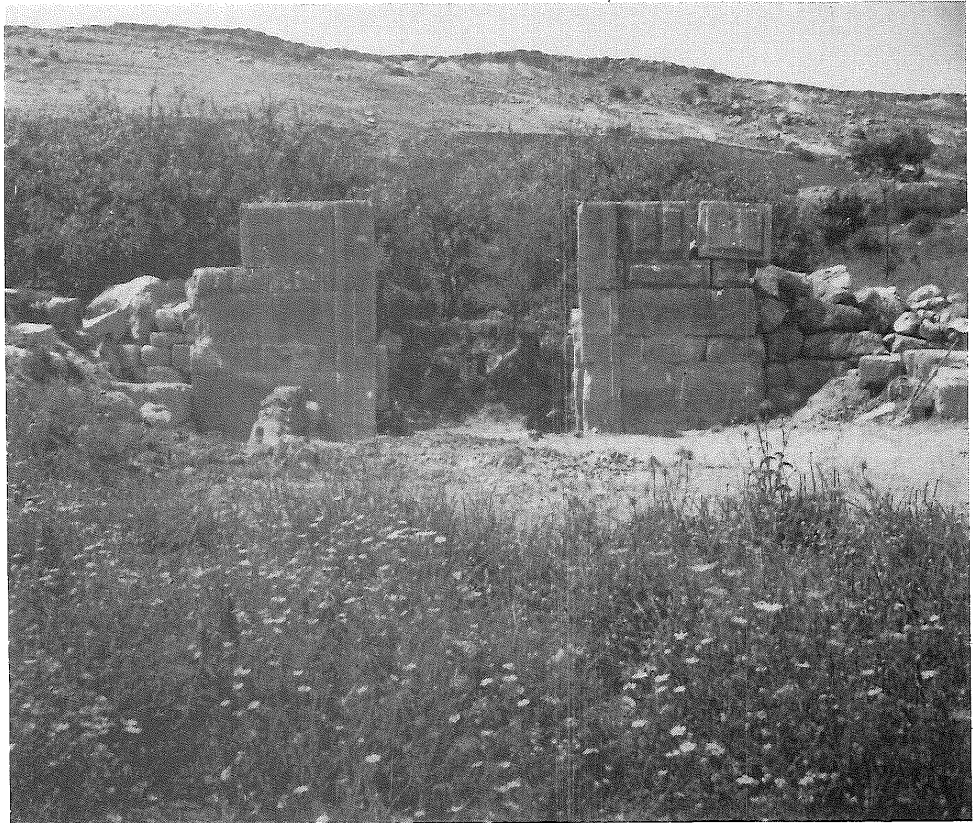




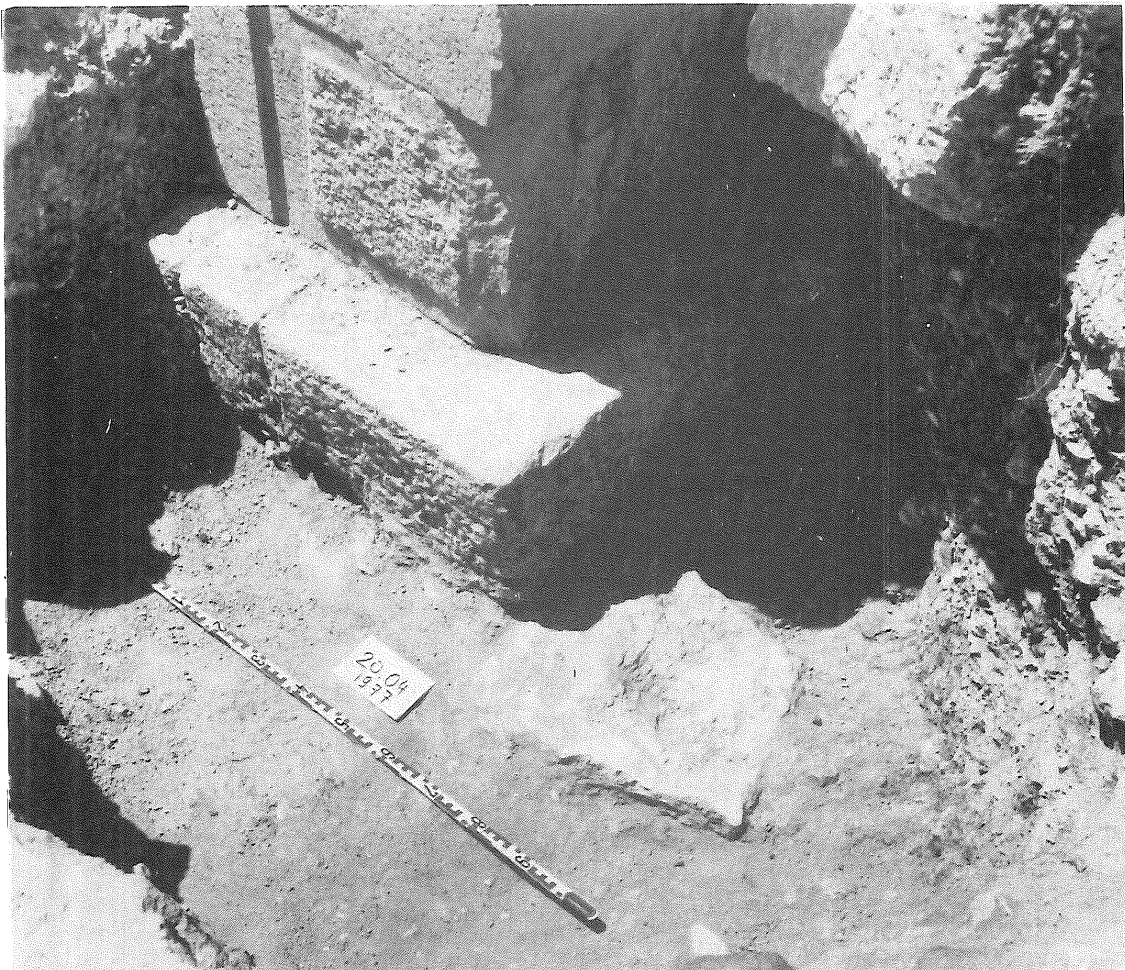
Pl. LXIV, 1 - Bloc corniche. (cliché V, 169).



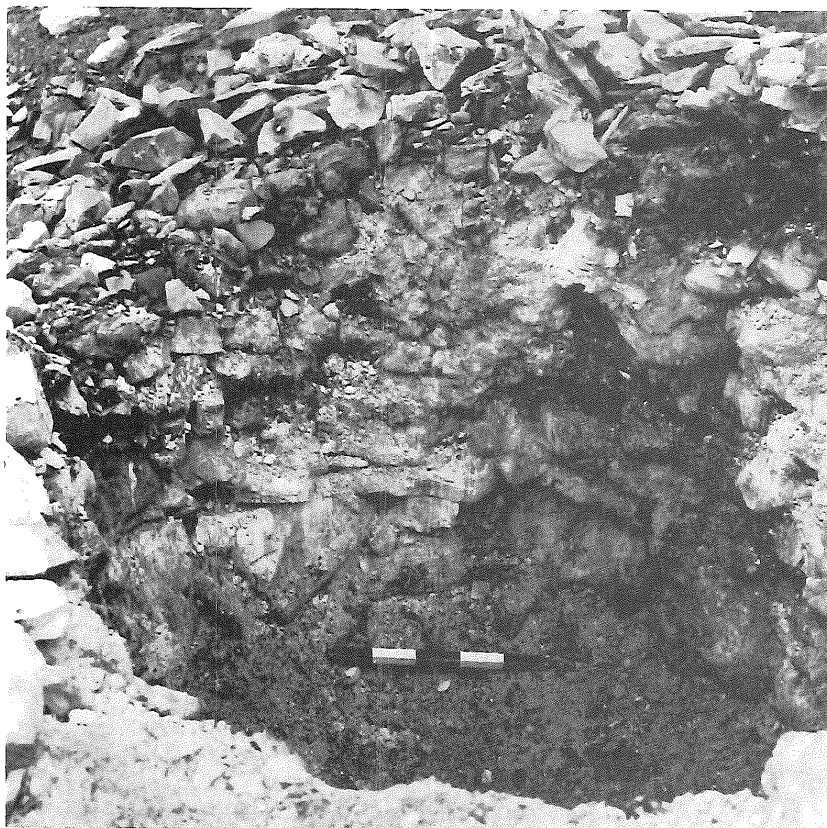
Pl. LXIV, 2 - Bloc à l'aigle P 90: aigle (cliché VI, 150).



Pl. LXIII, 1 - Vue générale de la porte.



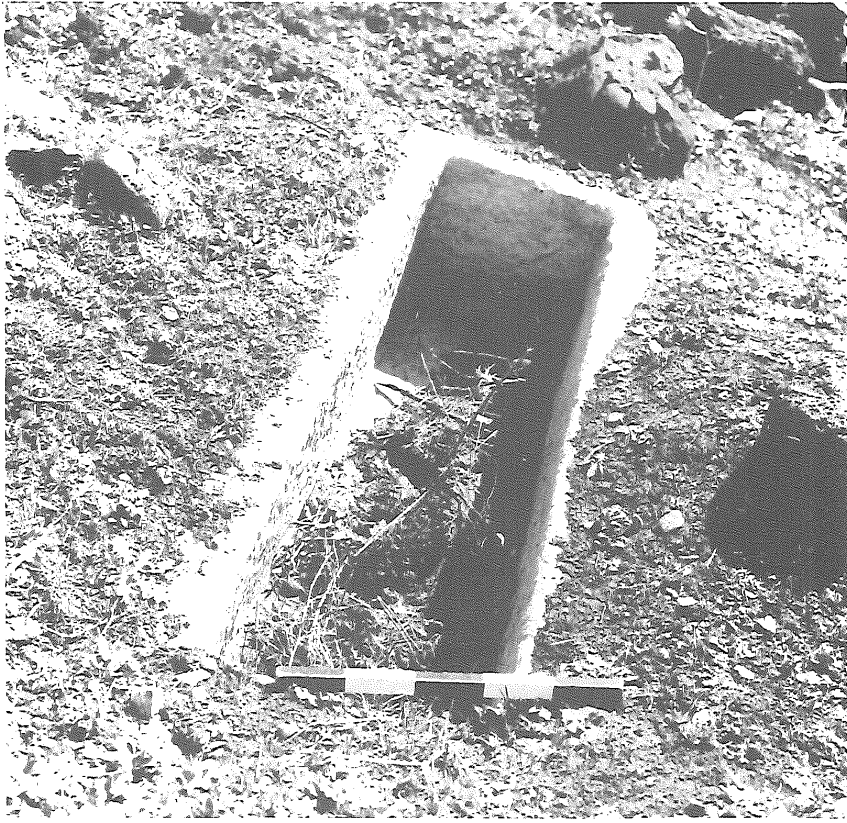
Pl. LXIII, 2 - Base du piédroit sud-ouest avec la semelle du seuil. (cliché V, 151).



Pl. LXV,1: Lime Kiln on W side of Wadi Shallala (Maqrom Area A)  
(Lundquist)



Pl, LXV, 2: Maqarin Sation. View N.



Pl. LXVI, 1: Sarcophagus from El Habis (Maqarin Site 3(Lundquist)



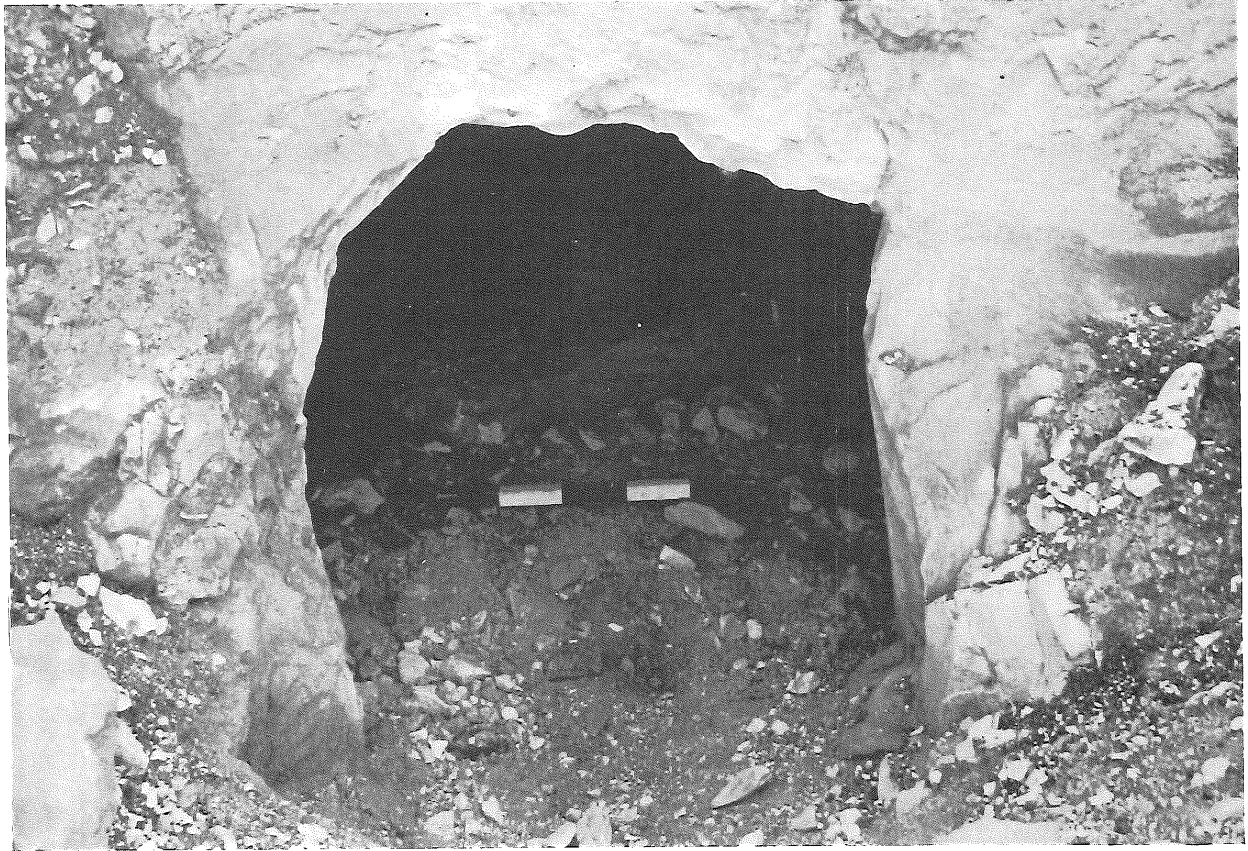
Pl. LXVI, 2: Sculpted entablature from El Habis (Maqarin Site 3).



Pl. LVII,1: Six-room structure on Maqarin site 6. View SW.



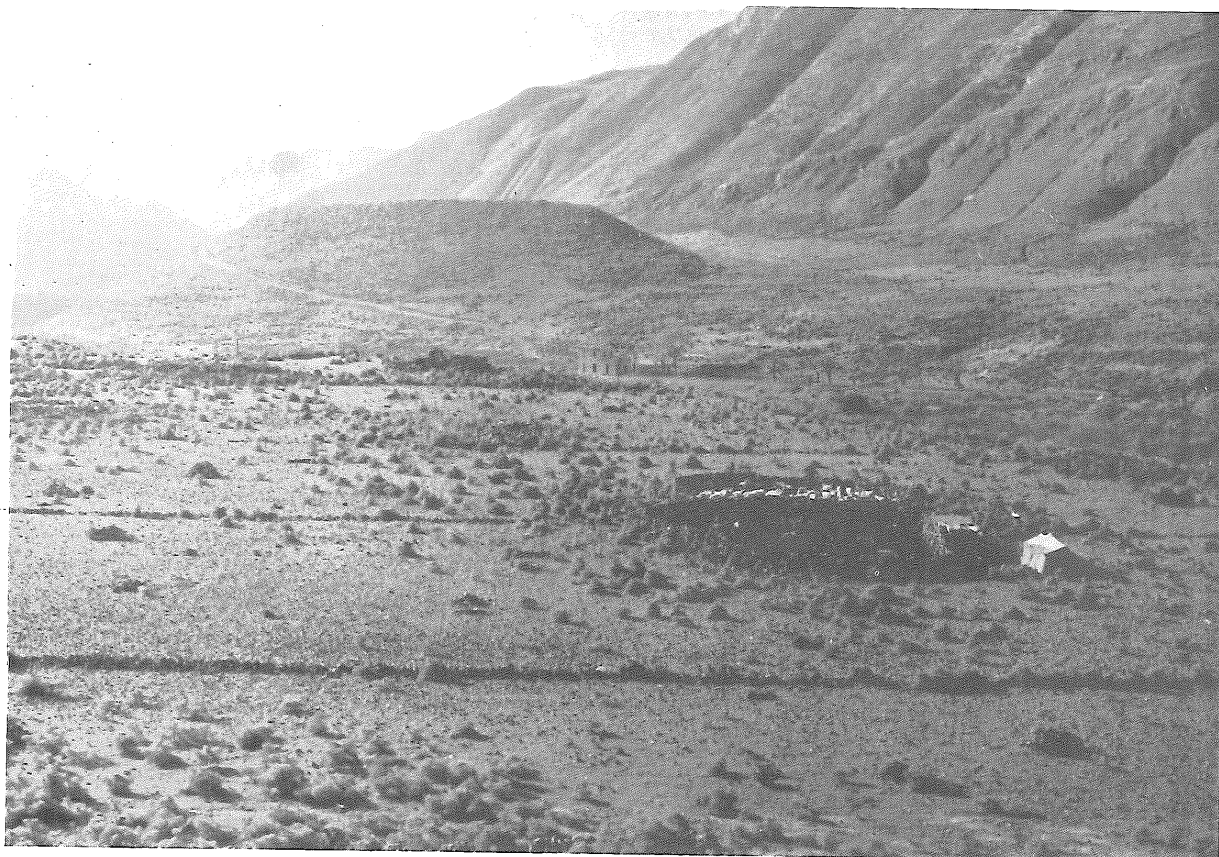
Pl. LXVII, 2: Well-cut trail along S slope of Maqarin Site 6. View ENE.



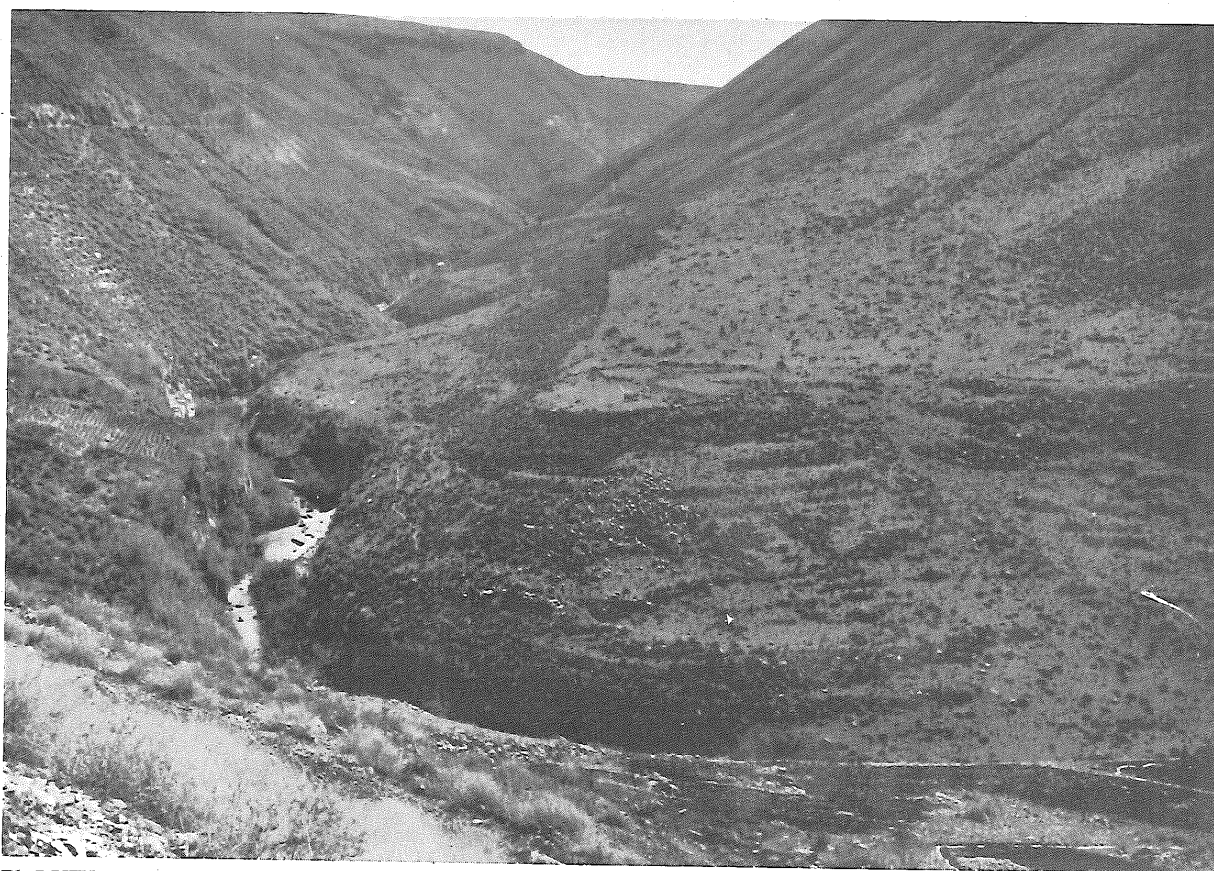
Pl. LXXVIII,1: Entrance to W tomb of Maqarin Site 8. View N.



Pl. LXXVIII,2: Modern structure at base of El Madkhanah (Maqarin Site 10 showing reuse of earlier building materials. View N.



Pl. LXIX, 1: Tell Jamid (Maqarin Site 14). View S.



Pl. LXIX, 2: el Baidar (Maqarin Site 19). View S.

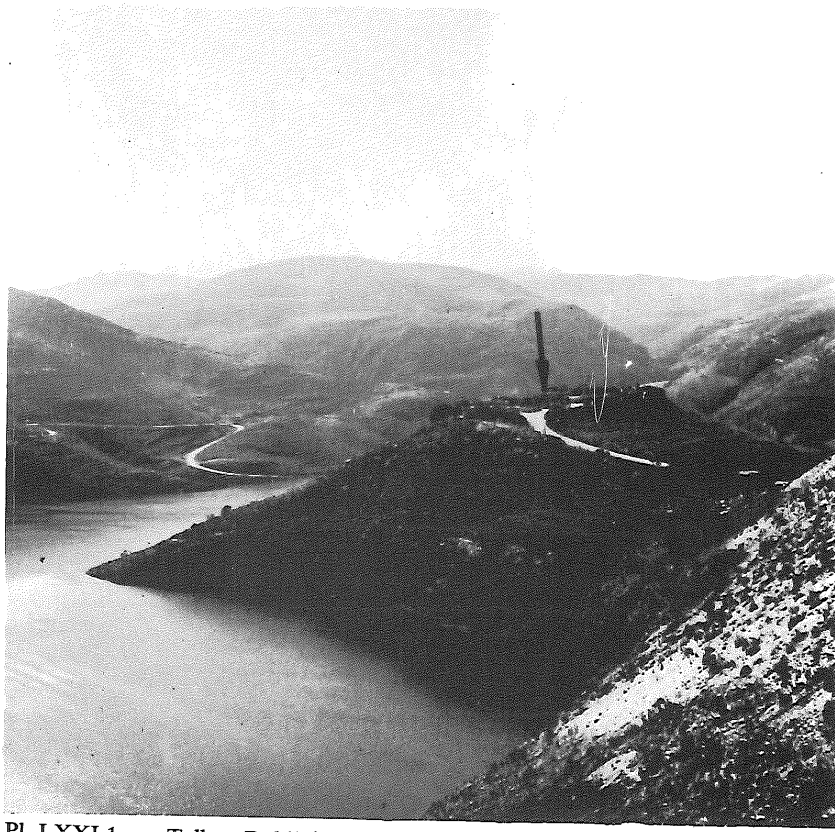


Pl. LXX,1: Circuit wall of El-Baidar (Maqarin Site 19). View SW.



Pl.LXX, 2: Grinding stone from Tabaqat Nasrah (Maqarin Site 27)

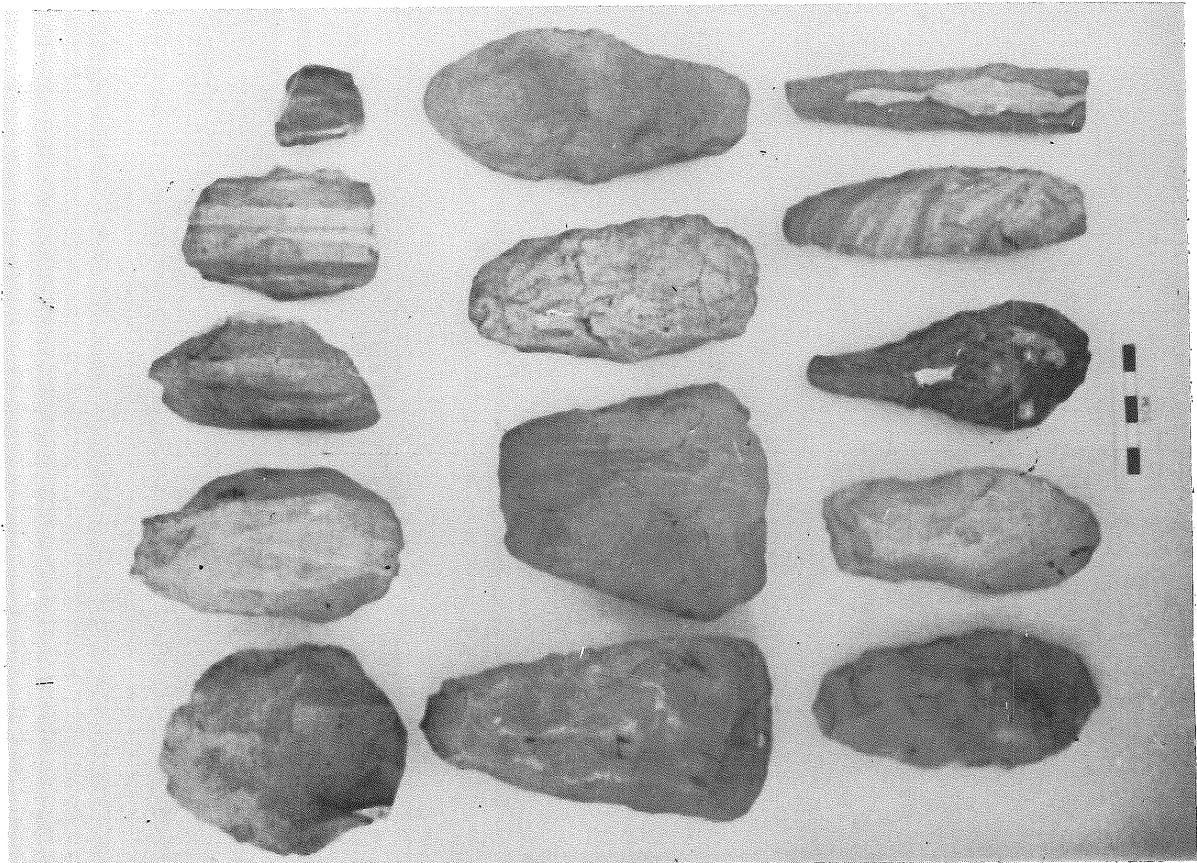




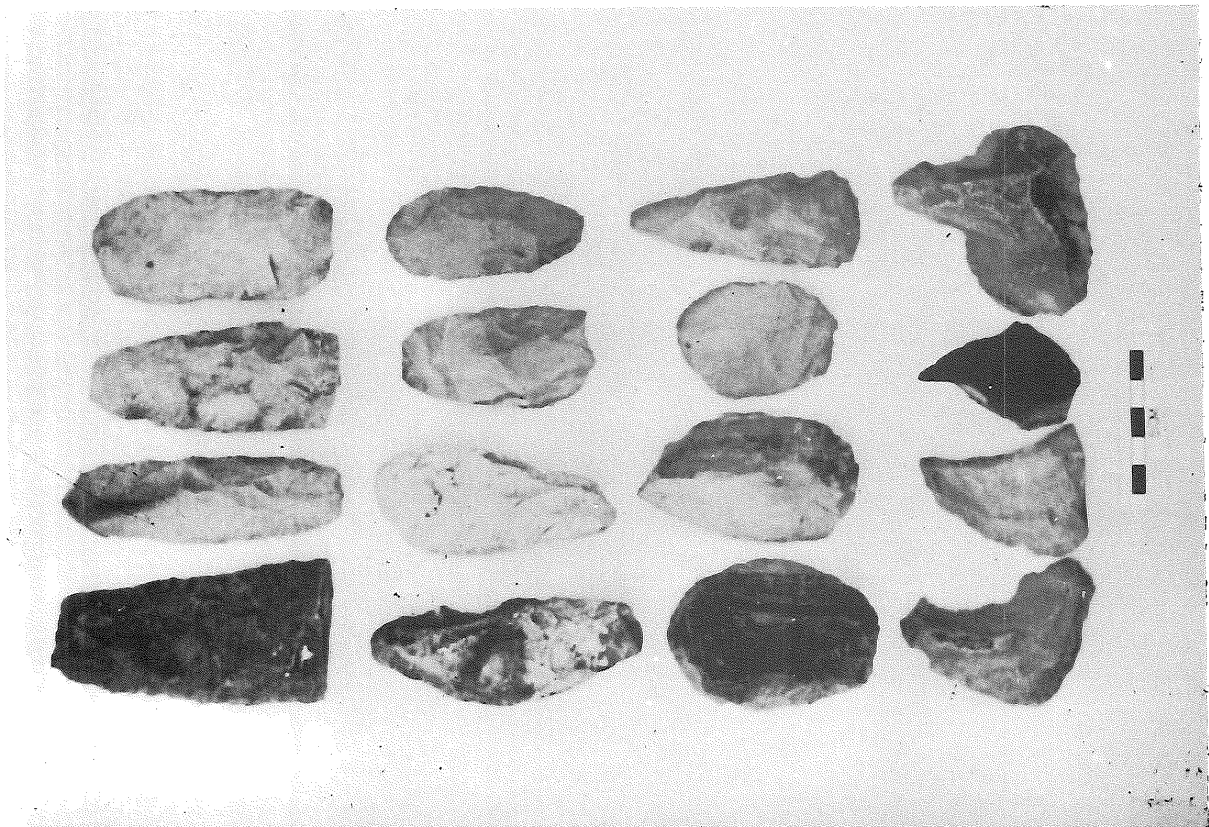
Pl. LXXI,1: Tell er-Rehil (King Talal Site 13), View SW.



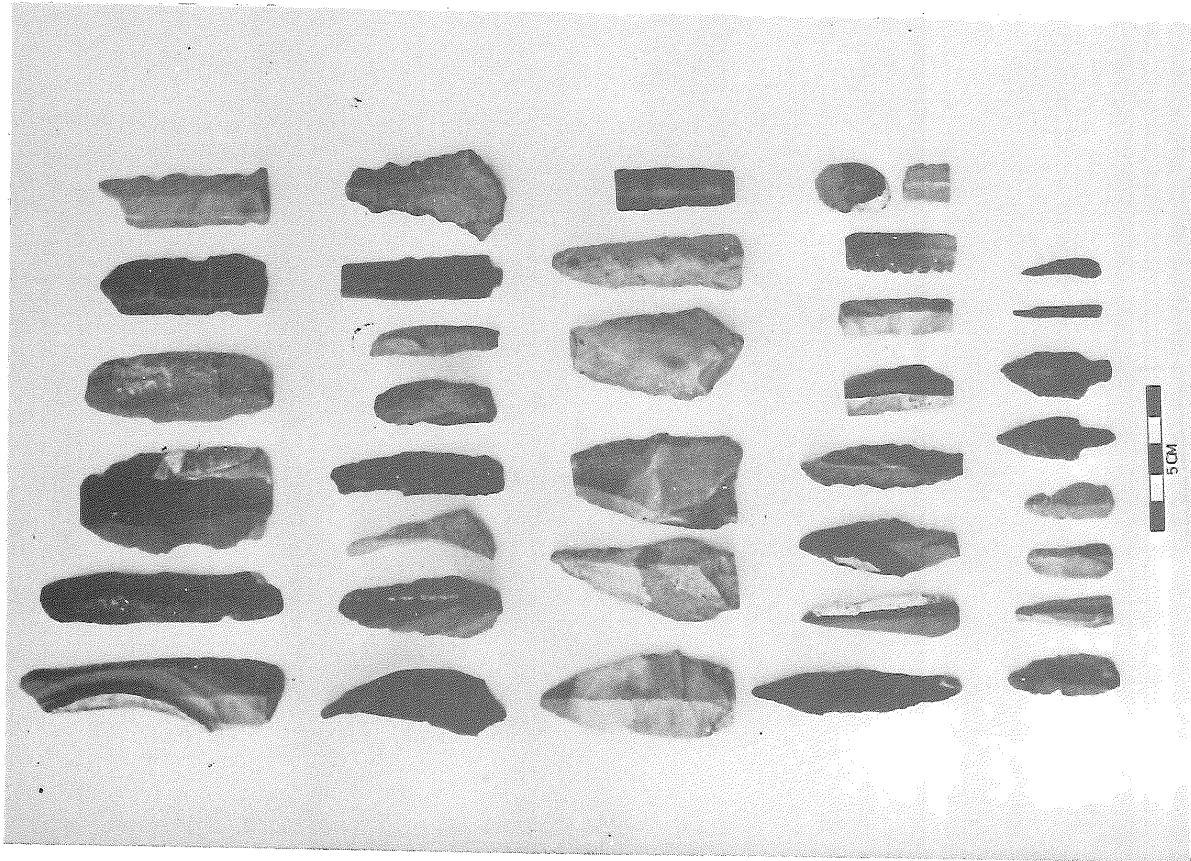
Pl. LXXI,2: Two rock chambers on tell er-Rehil (King Talal Site 13) View NW.



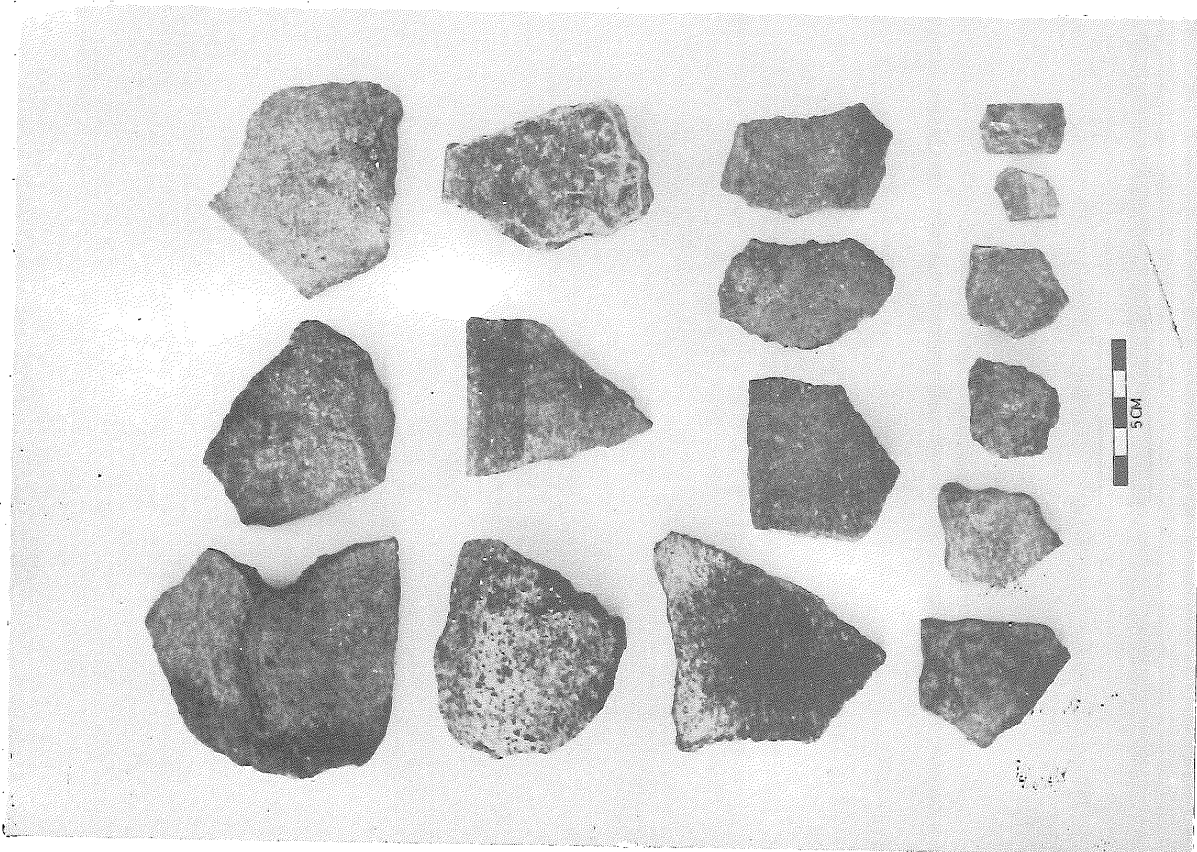
Pl. LXXIV, 1: Neolithic flints from Maqarin Sites 2, 7, 26, 27.



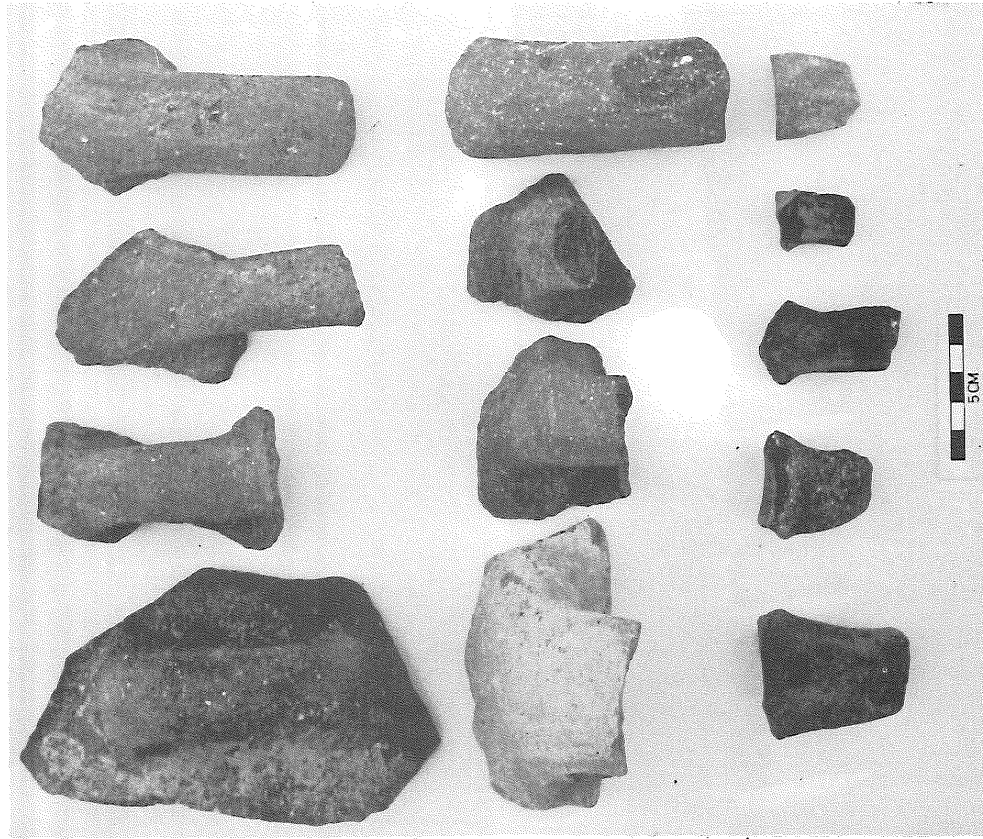
Pl. LXXIV, 2: Neolithic flints from Maqarin sites 2, 26, 27.



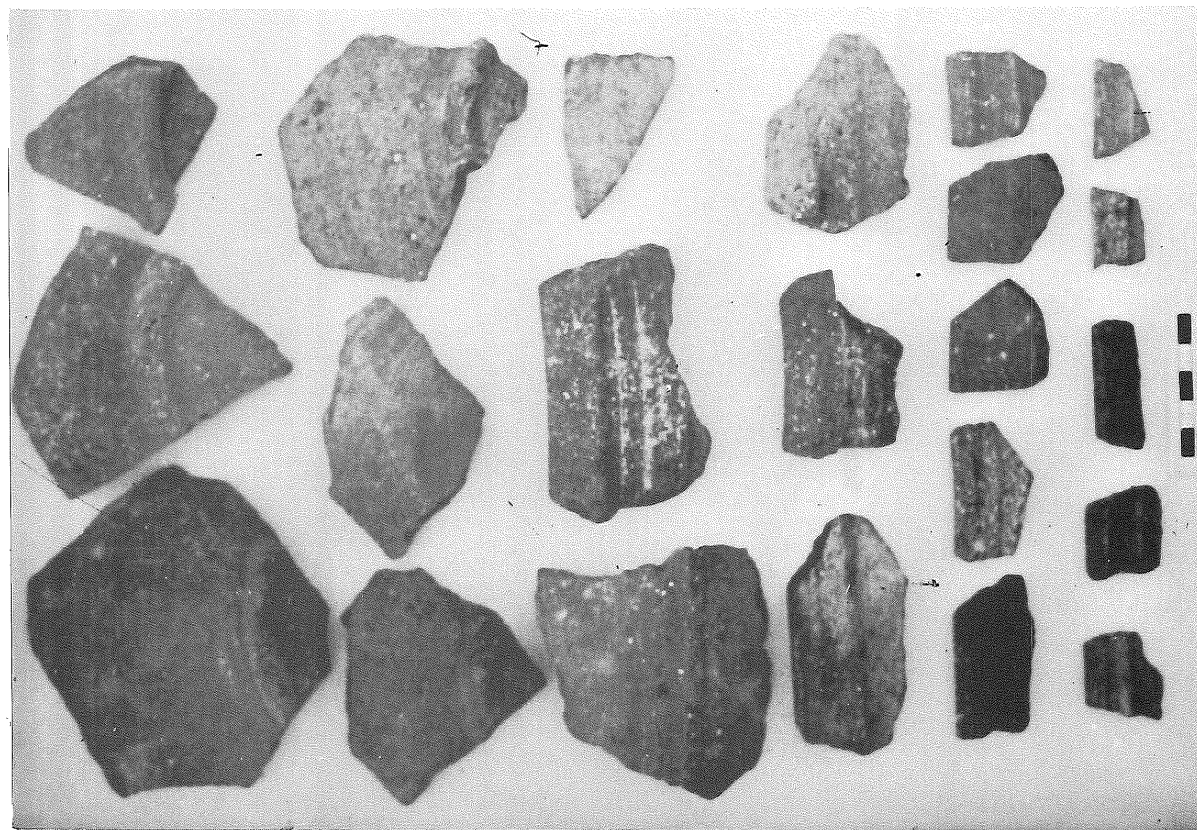
Pl. LXXV,1: Neolithic flints from Maqarin sites 2,7,26,27, area F.



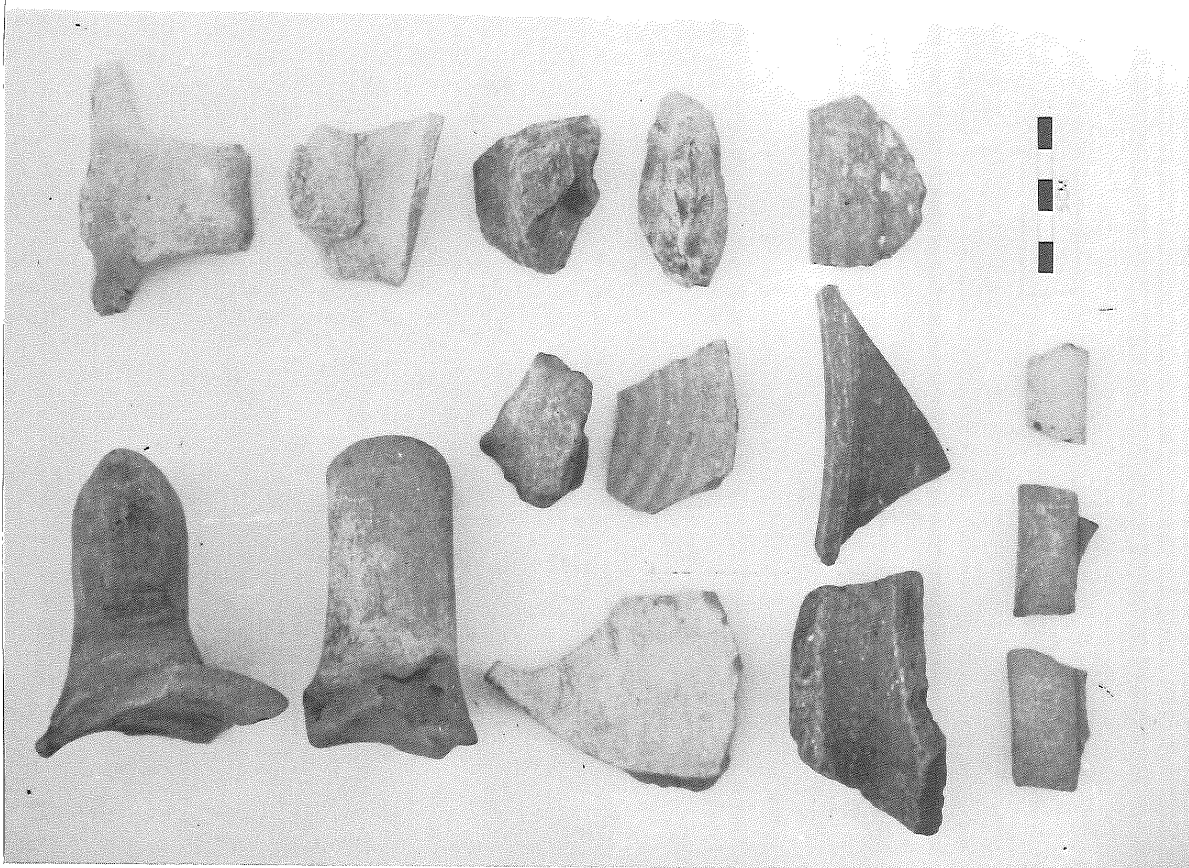
Pl. LXXV,2: Neolithic-Chalcolithic sherds from Maqarin sites 26,30.



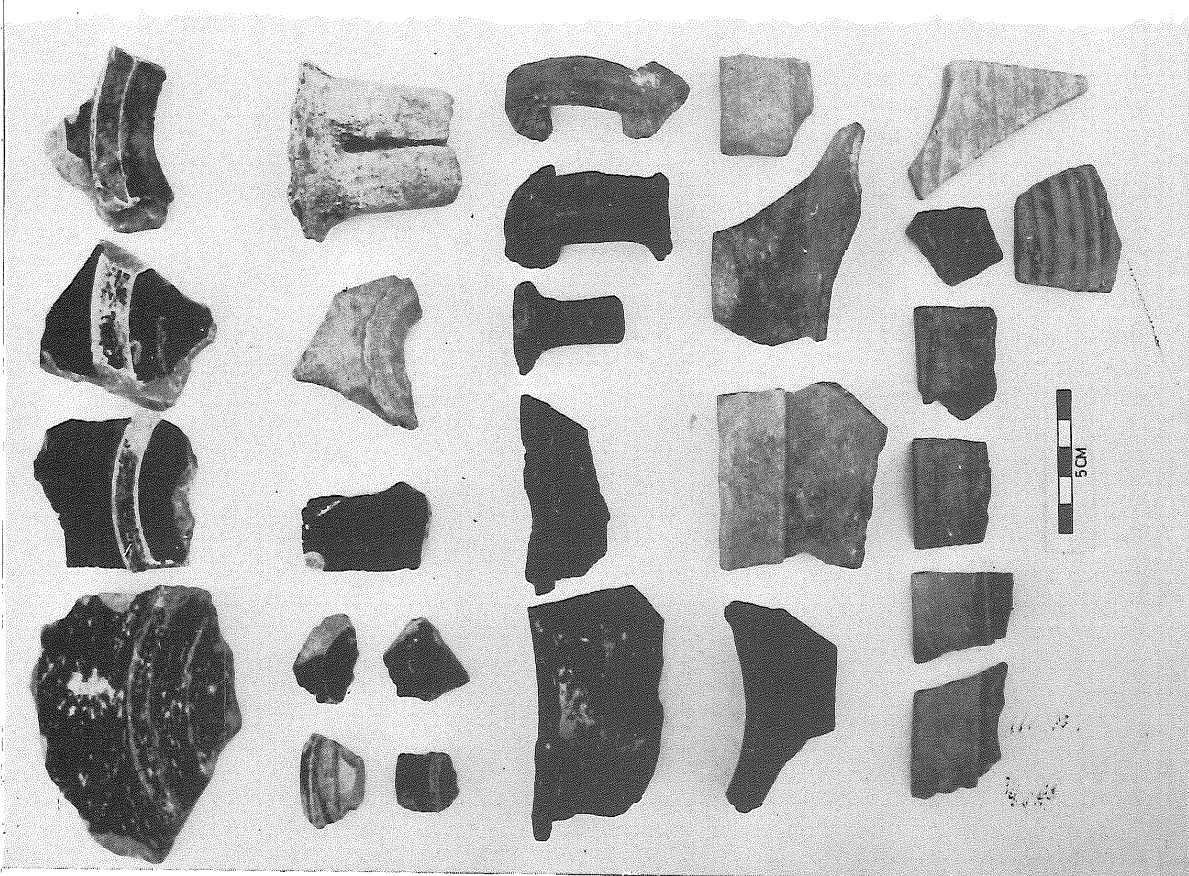
Pl. LXXVIII,1: Iron I B-C sherds from Maqarin site 6.



Pl. LXXVIII,2: Iron I B-C sherds from Maqarin site 6.

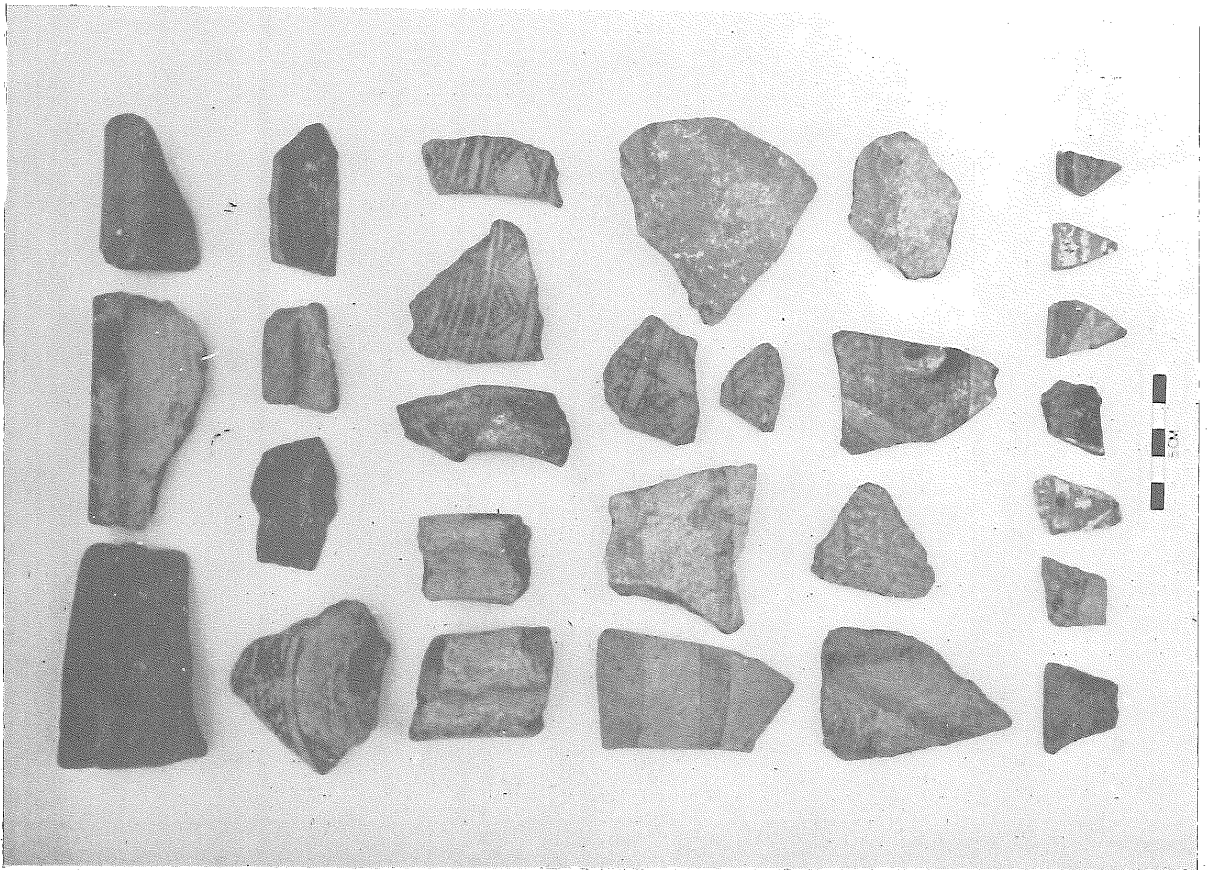


Pl. LXXIX, 1: Hellenistic sherds from Maqarin sites 6, 28.

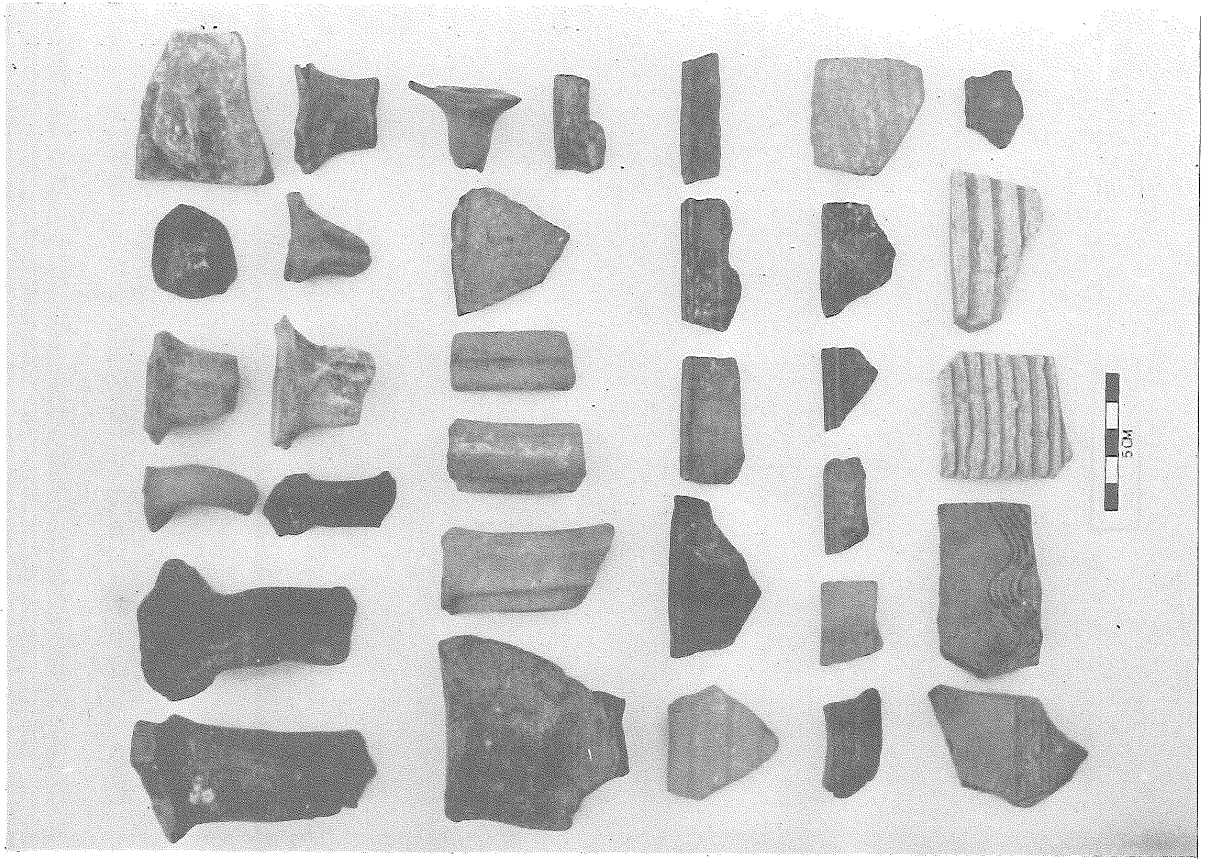


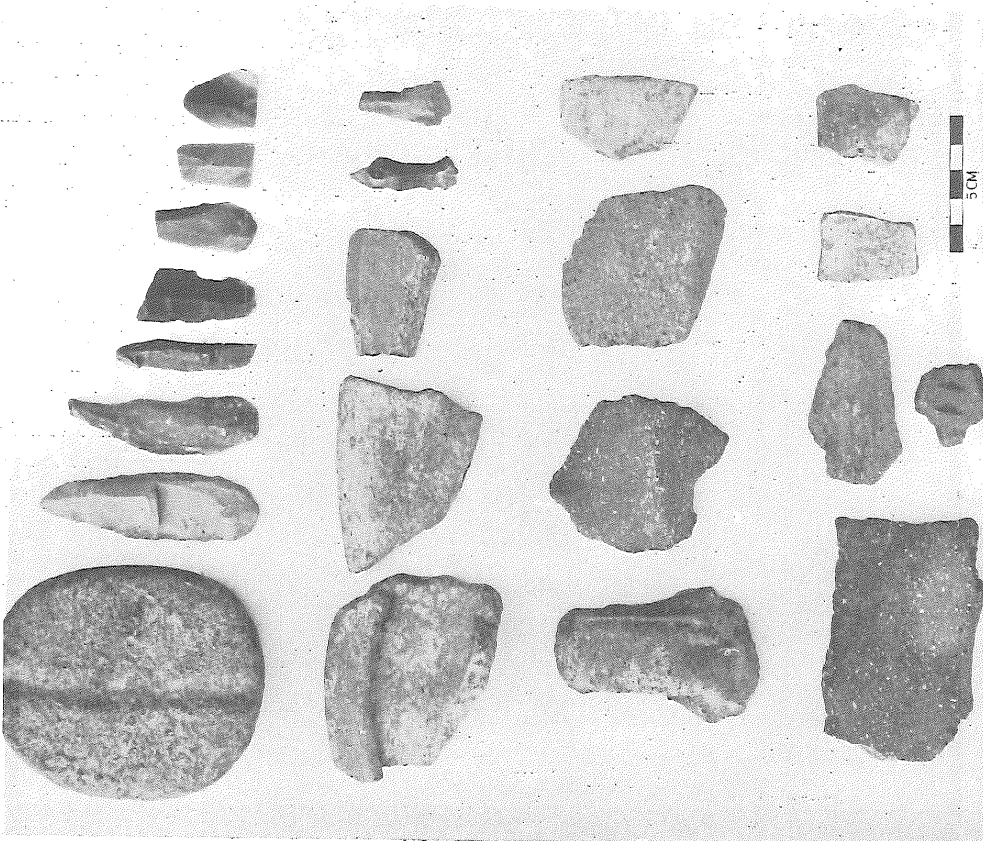
Pl. LXXIX, 2: Early Roman sherds from Maqarin Sites 6, 9, 22, Area D.

Pl. LXXX, 2: Ottoman sherds/Early Modern sherds from Maqarin Area D.

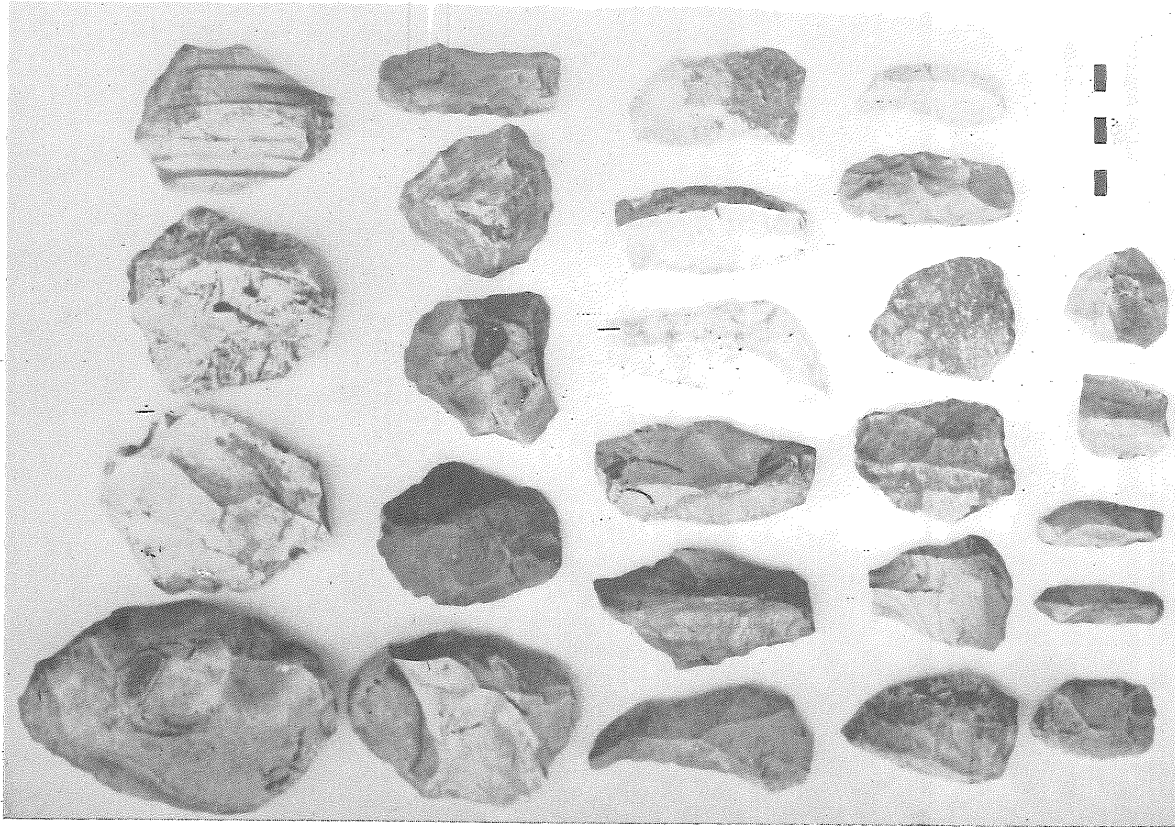


Pl. LXXX, 1: Byzantine sherds from Maqarin sites 3, 4, 5, 17, 21.

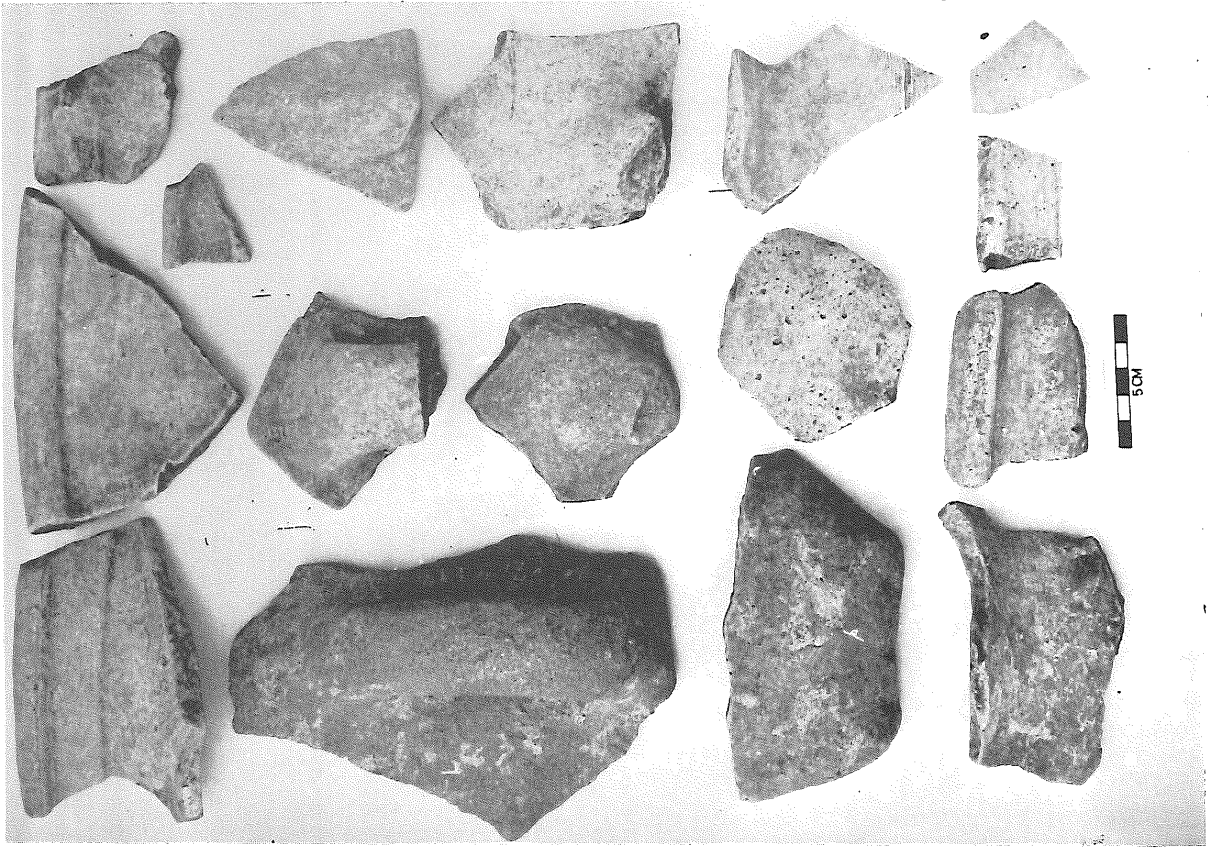




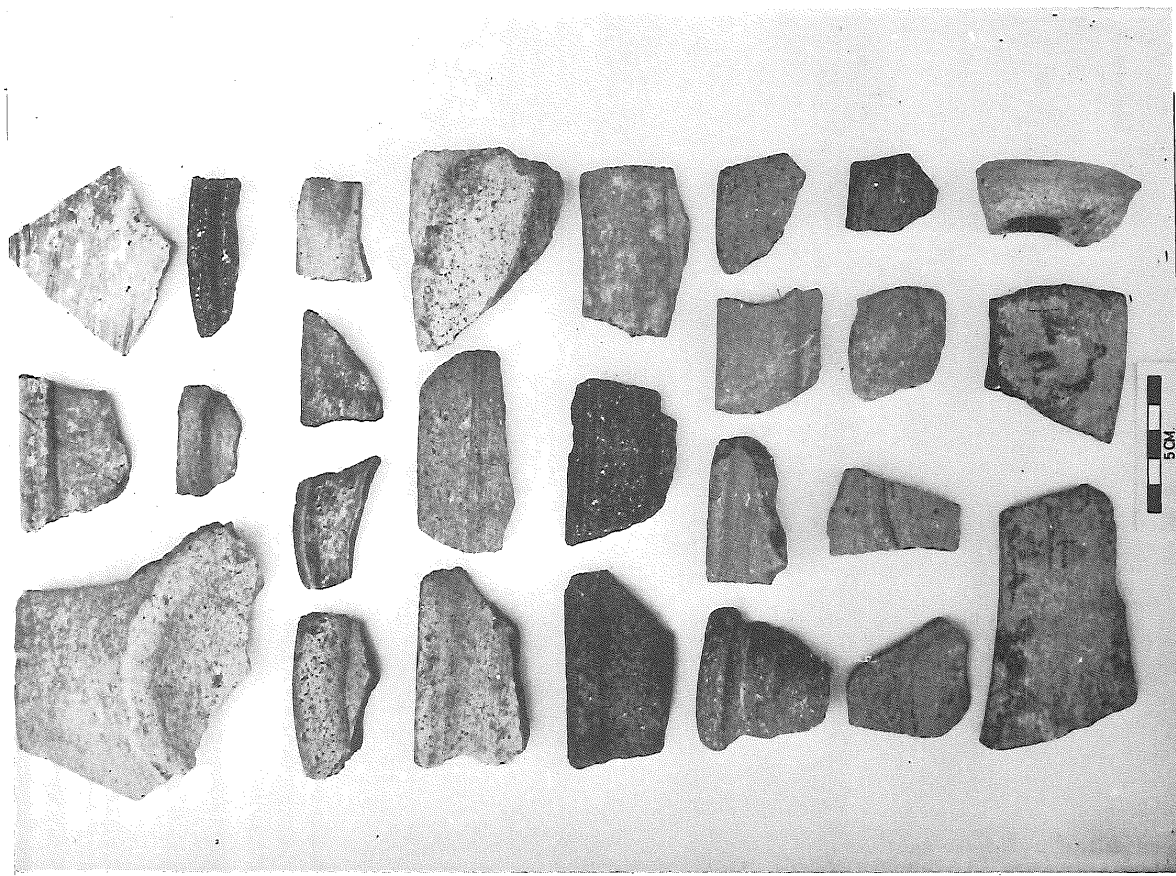
Pl. LXXXI,2: Top row: Neolithic stone and flints from Abu Shawmar (King Talal site 11). Bottom three rows EBI-III from King Talal Sites 5,13.



Pl. LXXXI,1: Paleolithic flints from King Talal sites 2,3,4,Area A,C,E.



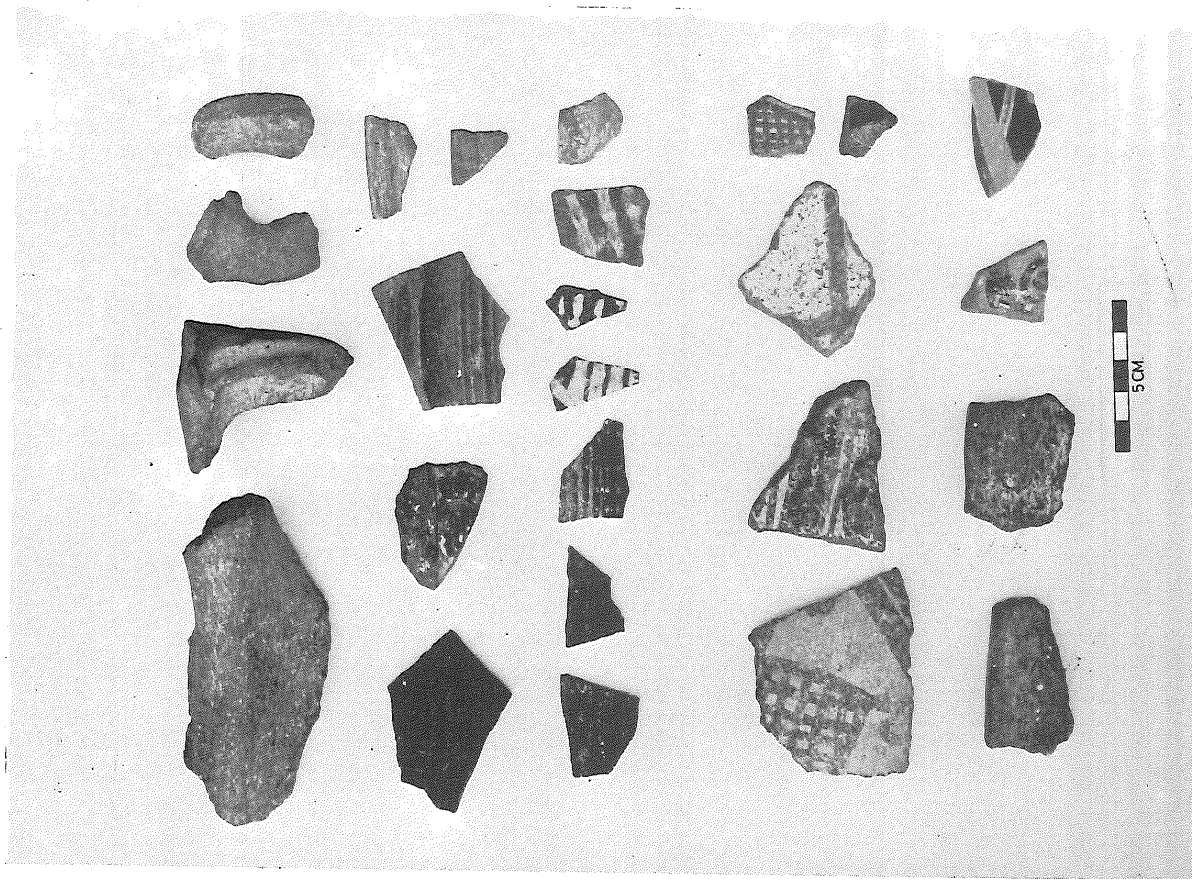
Pl. LXXXII,1: MBII A-B sherds from Abu el Samar (King Talal Site 8).



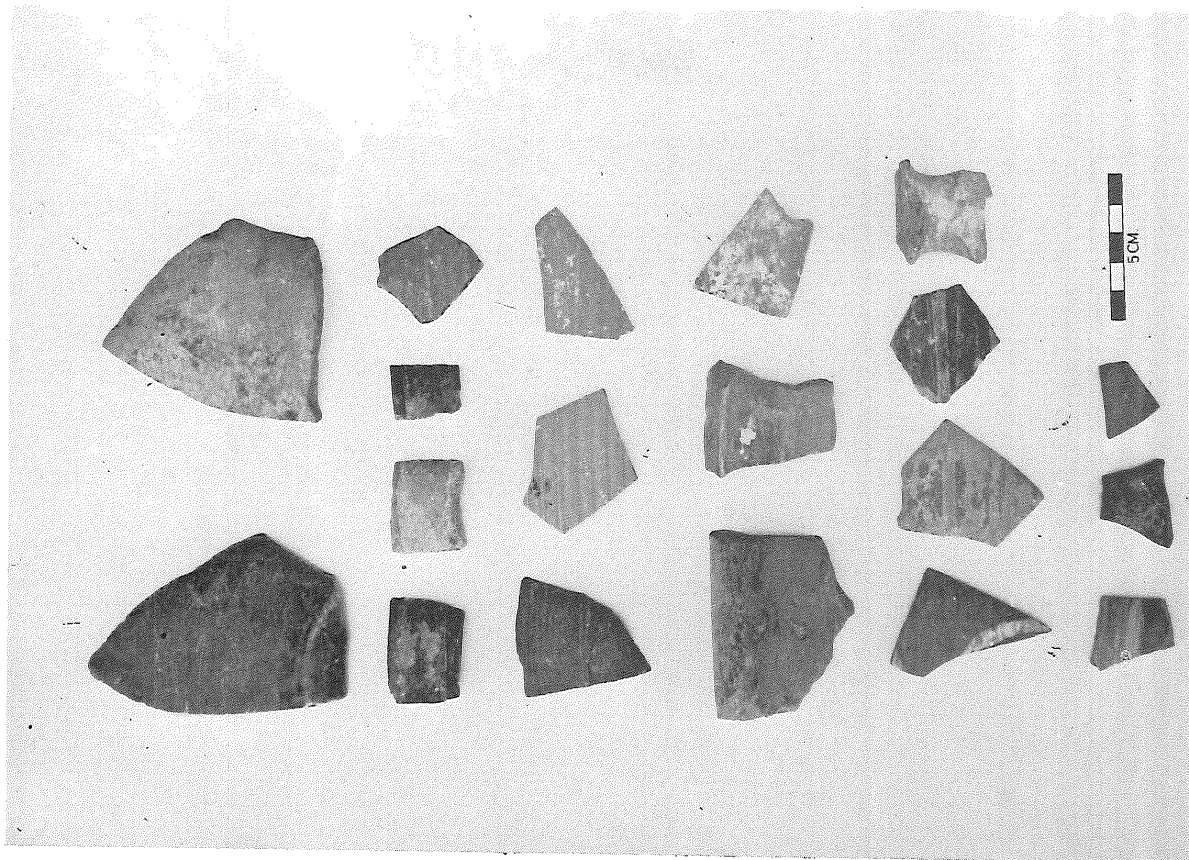
Pl. LXXXII,2: Top three rows: LB sherds from King Talal Sites 8). Middle four rows: Iron I sherds from King Talal sites 1,1,3. Bottom row: Iron II sherds from King Talal site I.

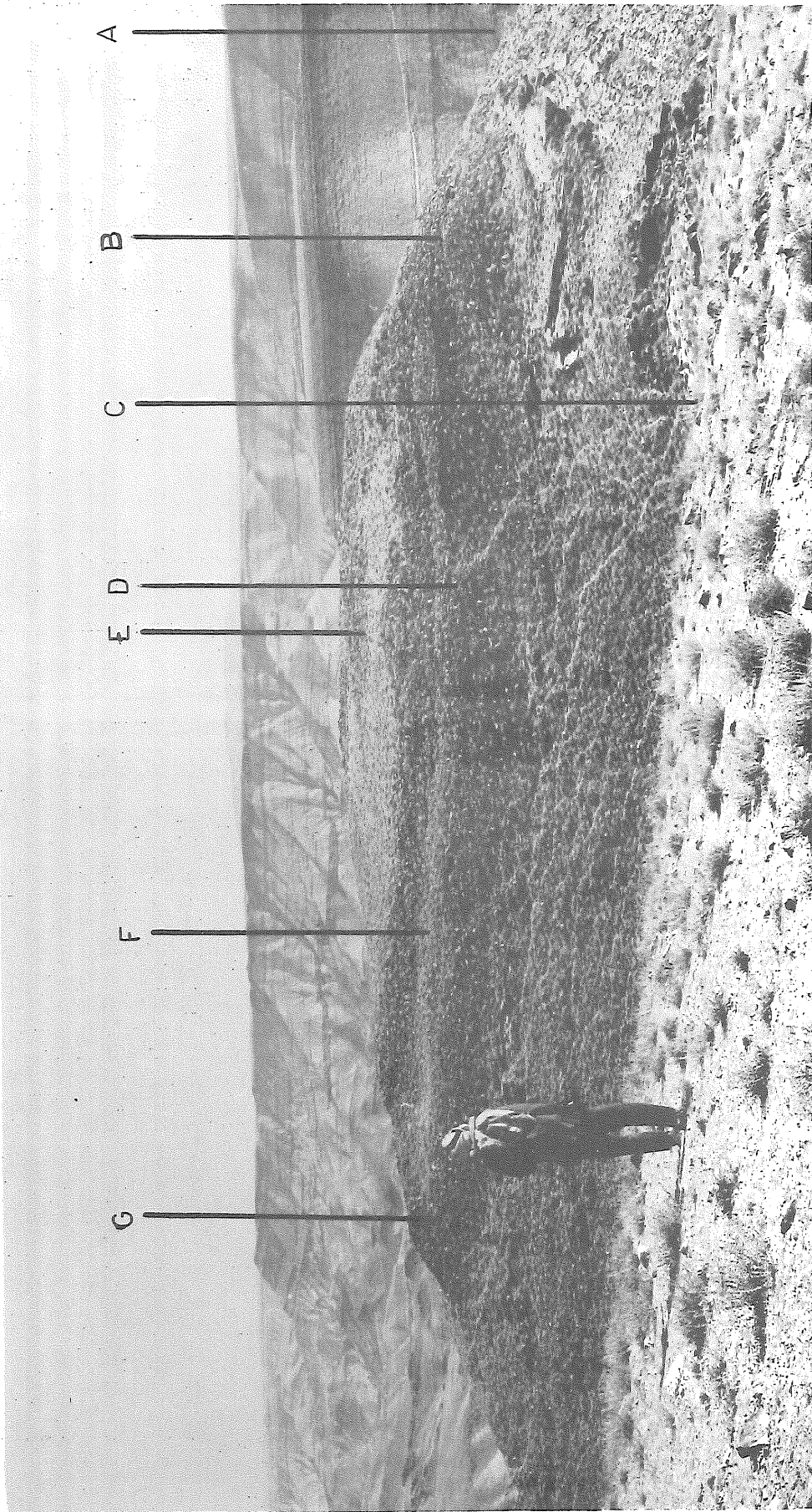


Pl. LXXXIII, 2: Top three rows: Late Byzantine sherds, bottom two rows; Late Ottoman-Early Modern sherds; from Tell Zer'ah (Wadi Arab site 3).



Pl. LCCCIII, 1: Top three rows: Early Byzantine sherds, bottom three rows: Late Byzantine sherds from King Talal site 12.





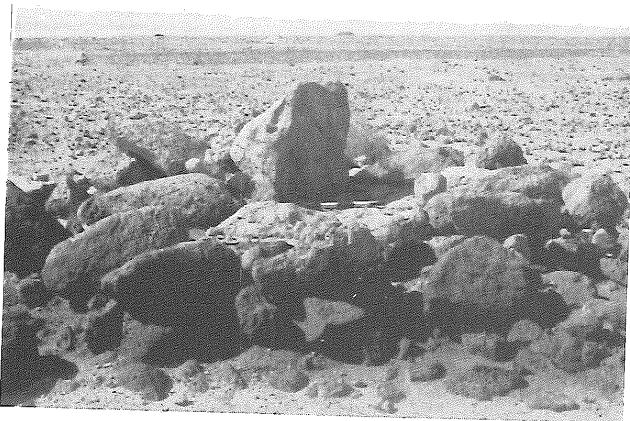
Pl. LXXXIV — Foto de Khirbet Medeineh junto a Samkiéh, mirando hacia el Este. En frente, el plateau del Desierto Oriental.

Legenda:

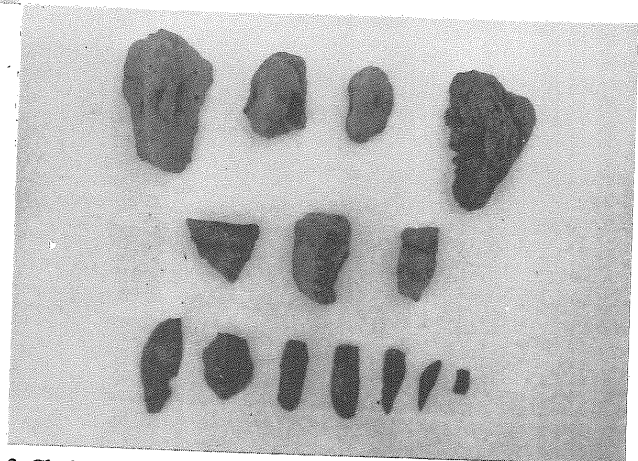
- A. Pasillo con foso que une la Khirbet al plateau de Moab.
- B. Torre exenta de la muralla que defiende el camino de entrada.
- C. Zona de tumbas.
- D. Posible emplazamiento de la puerta de la ciudadela.
- E. Habitaciones interiores adosadas a la muralla oriental.
- F. Pasillo entre las dos murallas occidentales.
- G. Torre esquinual.



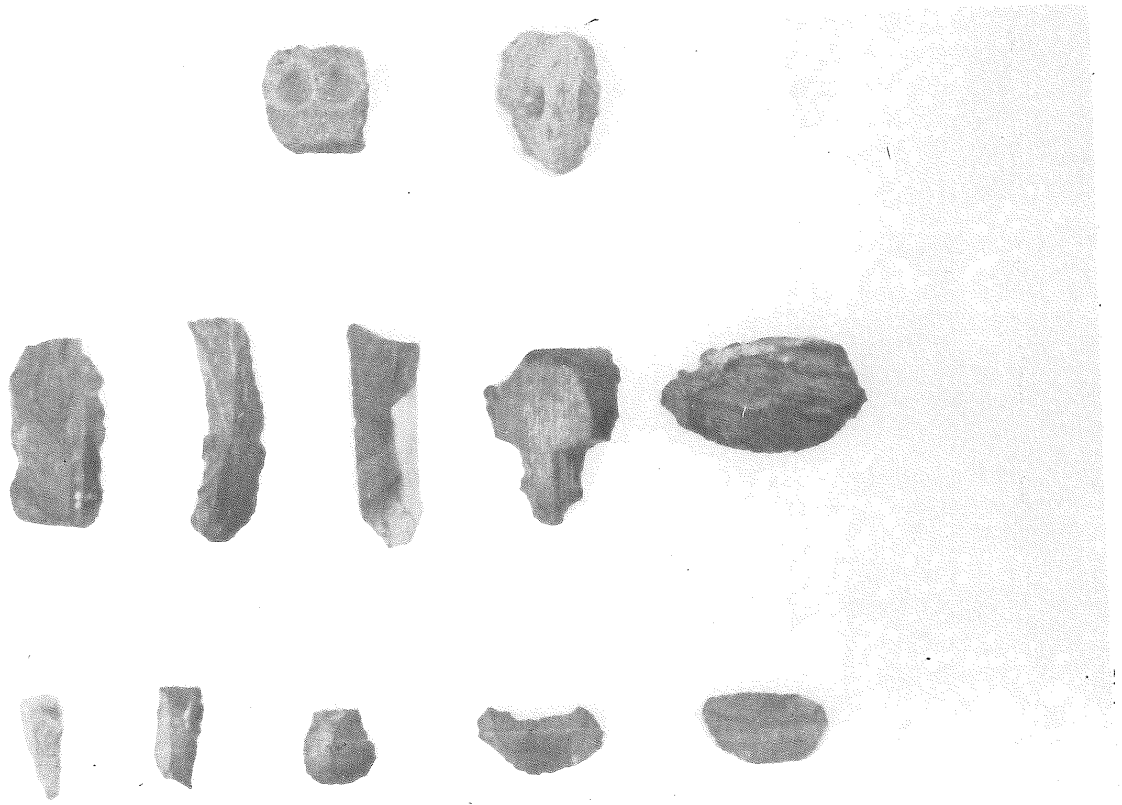
Pl. XXXV, 1-Cairn 1 before excavation (Corp light area). (looking South).



Pl. XXXV, 2-Orthostate Cairn 12 before excavation (look-ing South).



Pl. XXXV, 3-Chalcolithic Sherds and flints from excavation of Wells along the West access road.



Pl.LXXXVI, 1-Surface Survey-Chalcolithic Sherds and Flints.



Pl.LXXXVI, 2-Surface Survey-Chalcolithic and Paleolithic Flints.



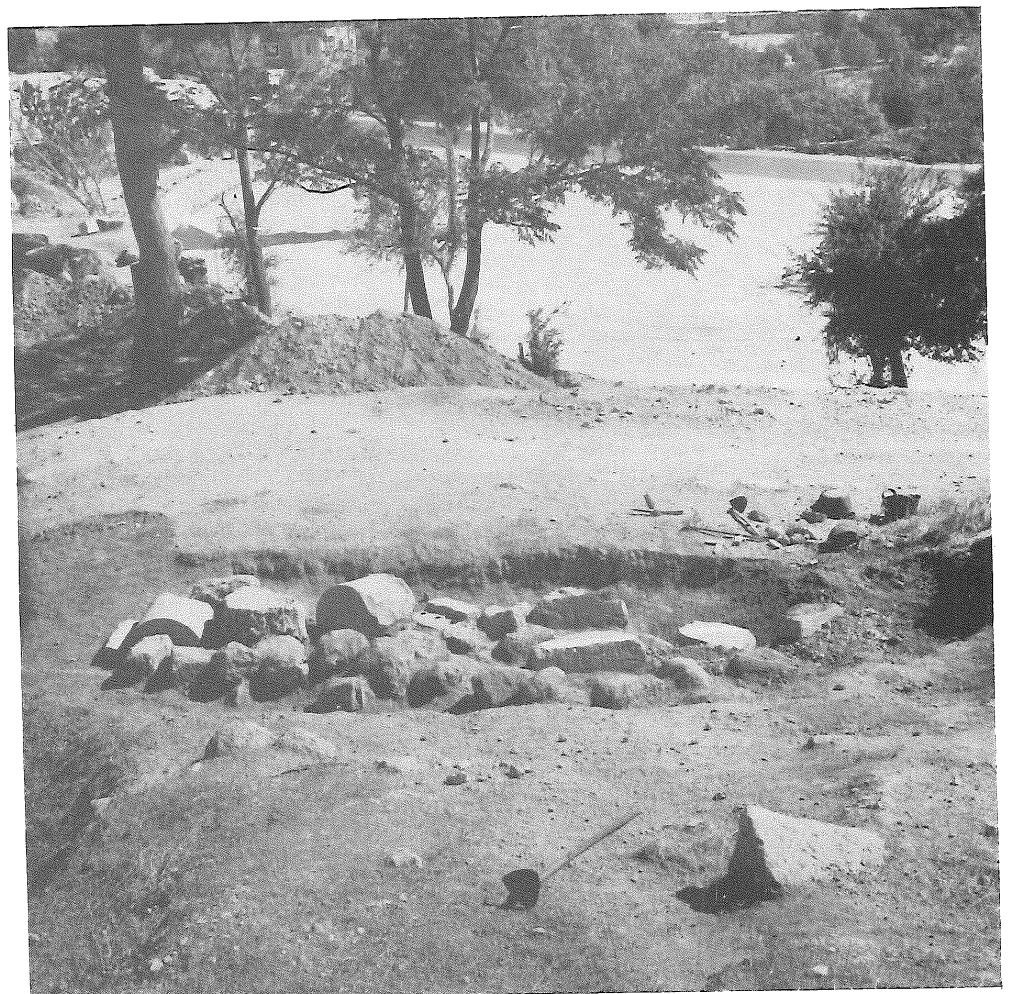
Pl. LXXXVII, 1 - South Gate South Facade



Pl. LXXXVII, 2 - South Gate elements of previous excavations.

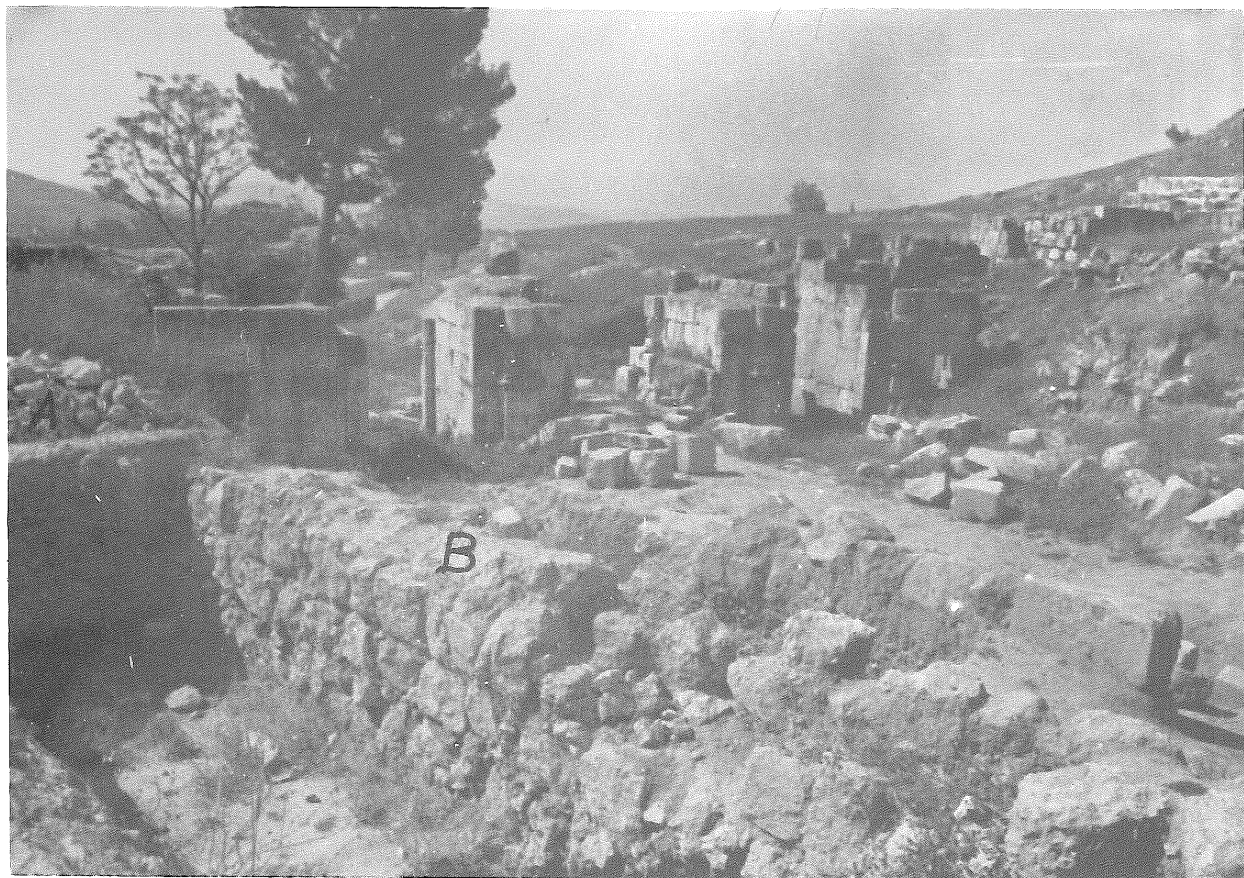


Pl. LXXXVIII, 1 - South Gate Capital.



Pl. LXXXVIII, 2 - Elements discovered on the South Side of the Gate.

Pl. LXXXIX, 1 - Elements of South Pavillon as they have fallen.



Pl. LXXXIX, 2 - South Gate, North Side. A, excavation with red earth layers. B, the wall bordering the East entrance from the South Gate.

Pl. XC, 1 - Subterranean vault under the entrance Zeus Temple lower court yard. Looking West.



Pl. XC, 2 - The same, looking East Apsidal End.

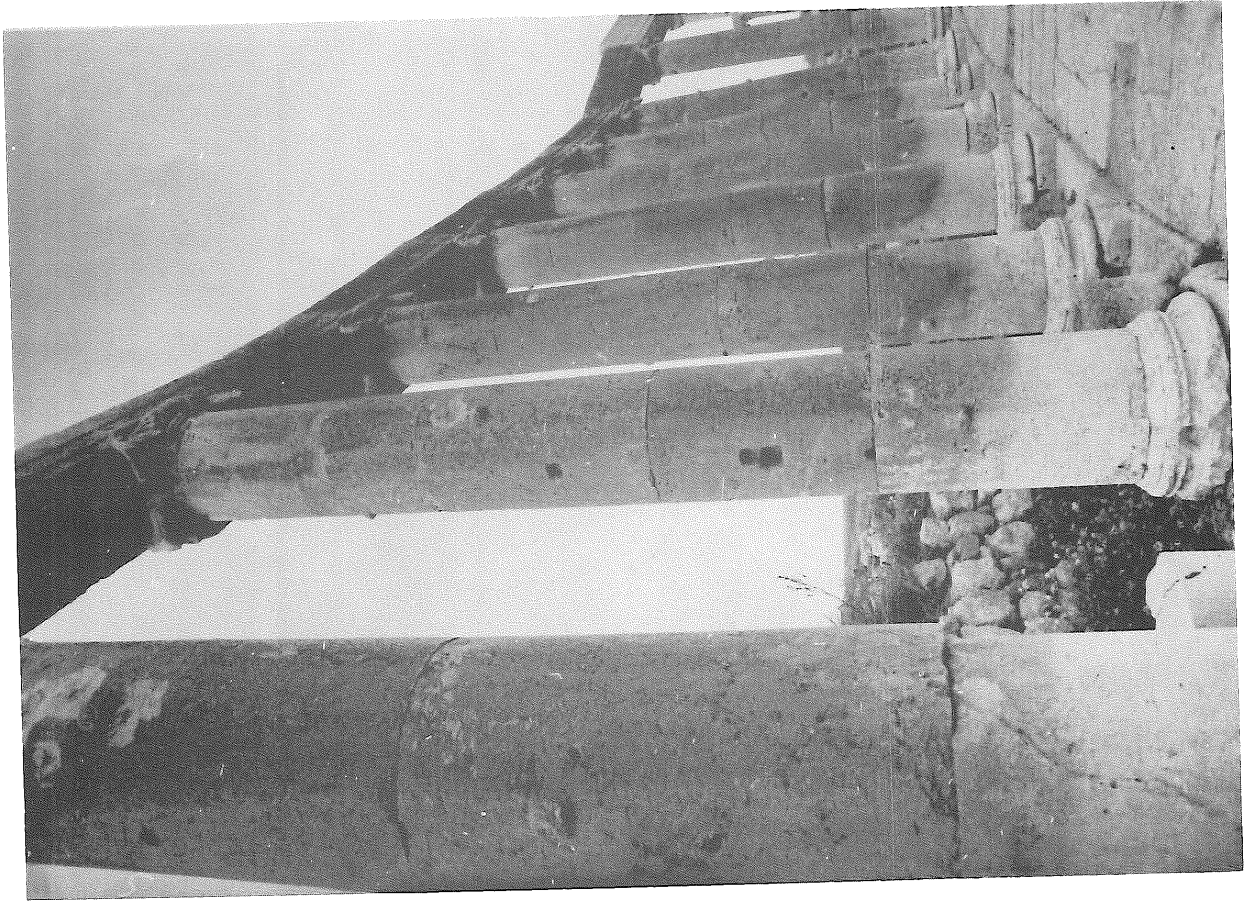




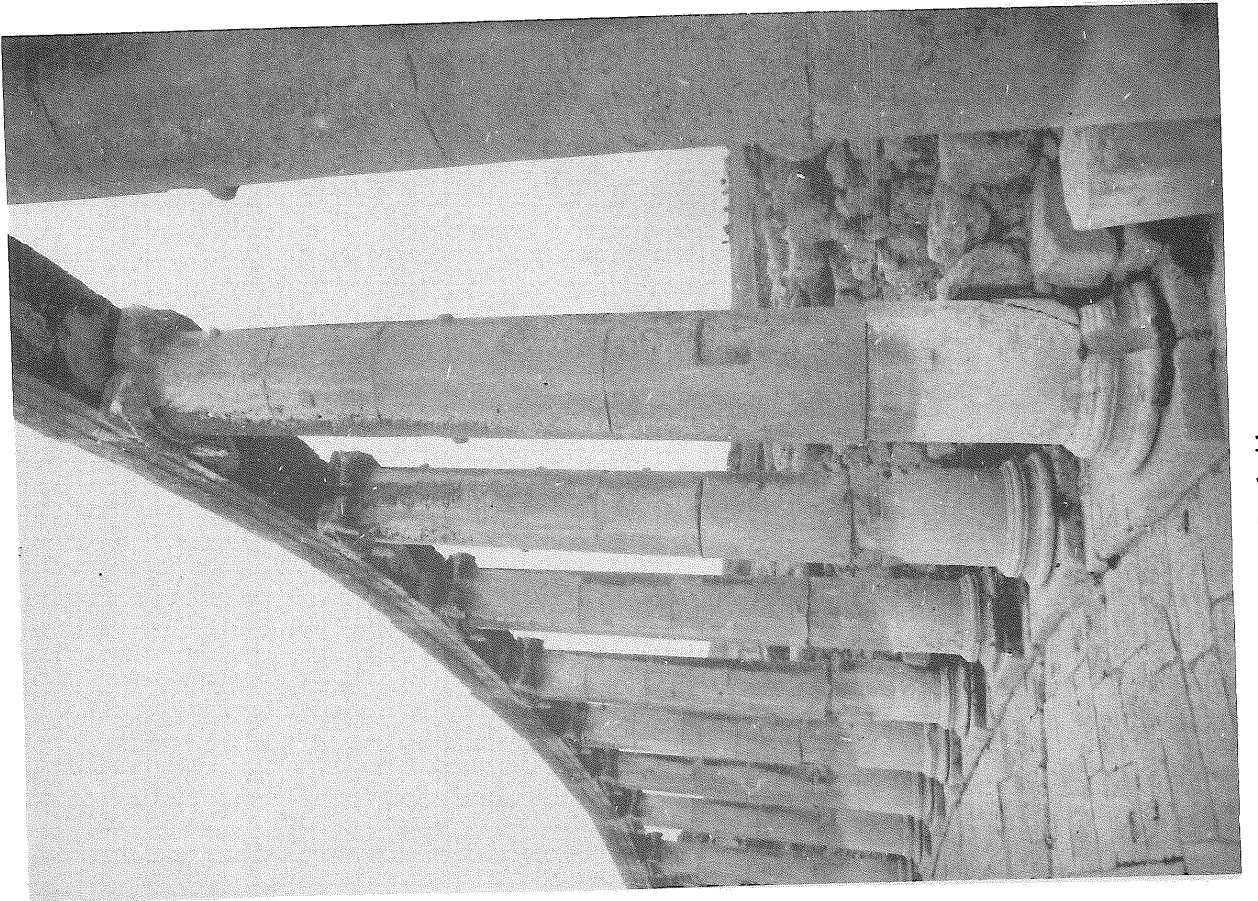
Pl. XCIII, 1 - Two Altars of Forum, one partly restored, with seats on the left side.



Pl. XCIII, 2 - Looking to two Altars through curtained columns.



Pl. XCIV, 1 - North side.



Pl. XCIV, 2 - Curtained columns South side.



Pl. XCI, 1 - Two gates of the vault.



Pl. XCI, 2 - The fallen facade of Zeus on the Forum side.



Pl. XCII, 1 - The main entrance Zeus Lower Court.



Pl. XCII, 2 - Detail of the main entrance.

Pl. XCV, 1 - The Circular sacrificial ground in front of the Propylaeum of Baalbeck with seats along the border (seen on the left side).



Pl. XCV, 2 - Looking from the Propylaeum into the Sacrificial ground.





Pl. XCVII,1-Rooms in CI/XI abutting and built over defensive wall, looking S.E.



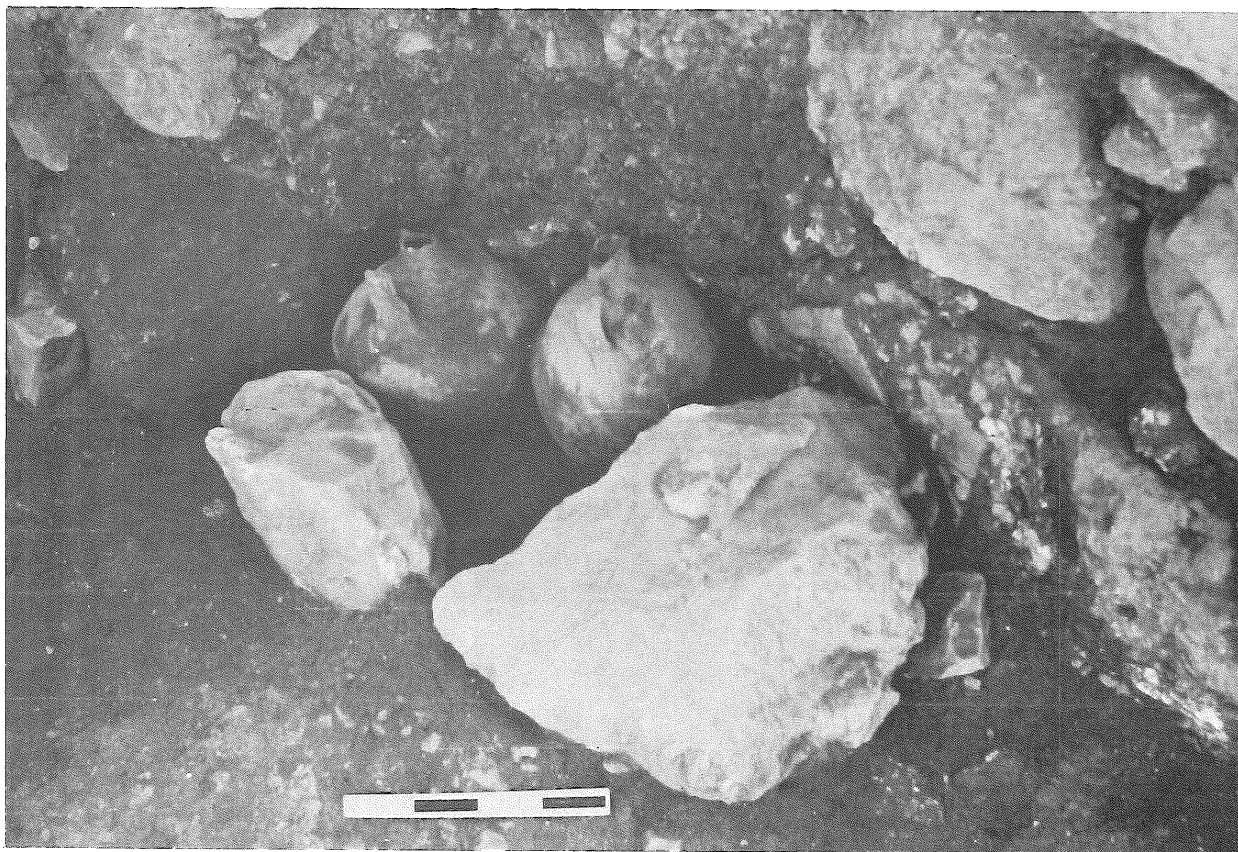
Pl. XCVII,2-Street between C.V and VI, looking north.



Pl. XCVIII,1-Umayyad building, Room B in C.XVI, looking north west.



Pl. XCVIII,2-Umayyad defensive wall showing different phases, looking E.

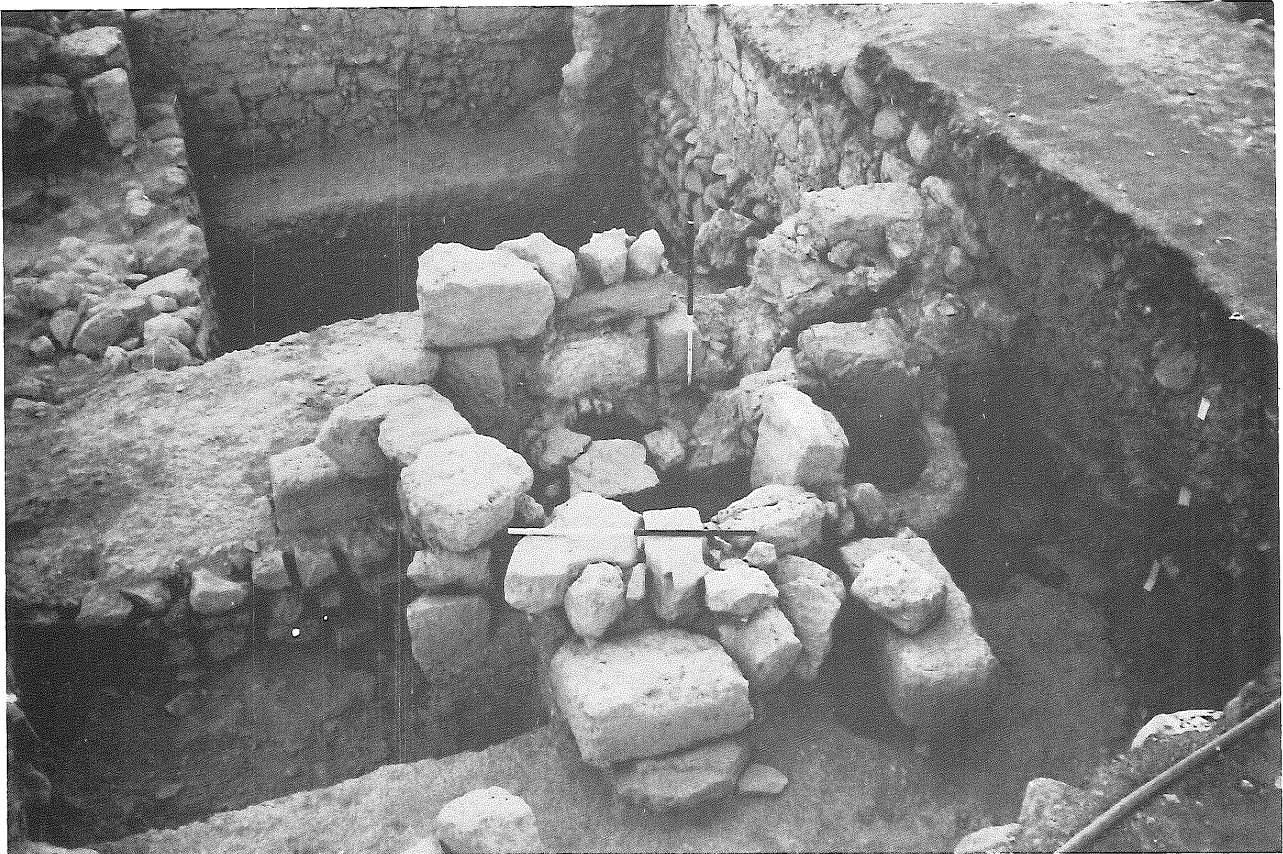


Pl. XCIX,1- jars on floor, looking S.E. in C.VIII. (Room F).



Pl. XCIX,2-Herringbone keying pattern on basins in Room E, looking West.

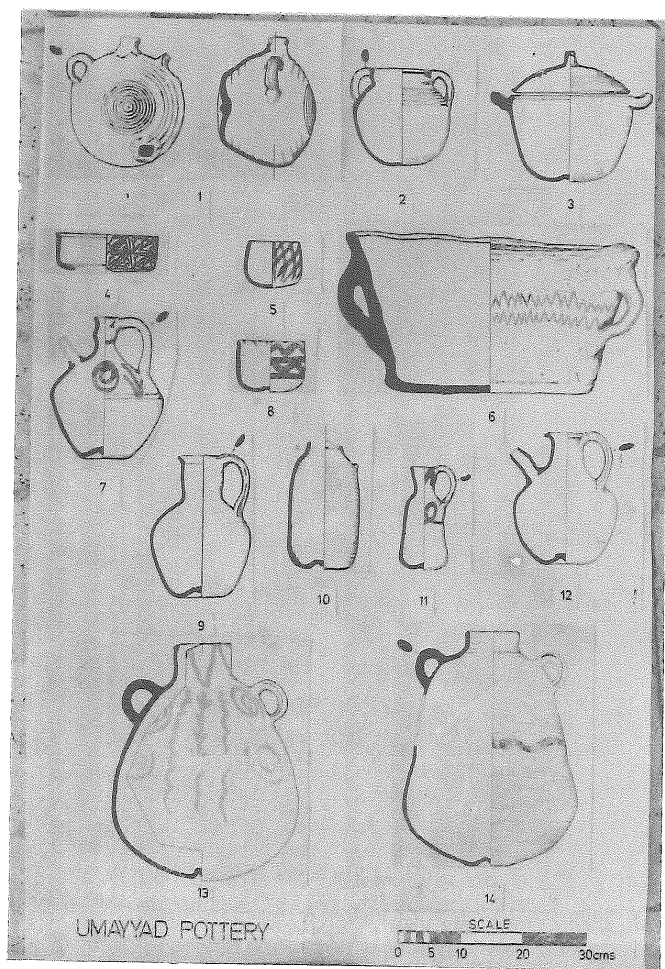




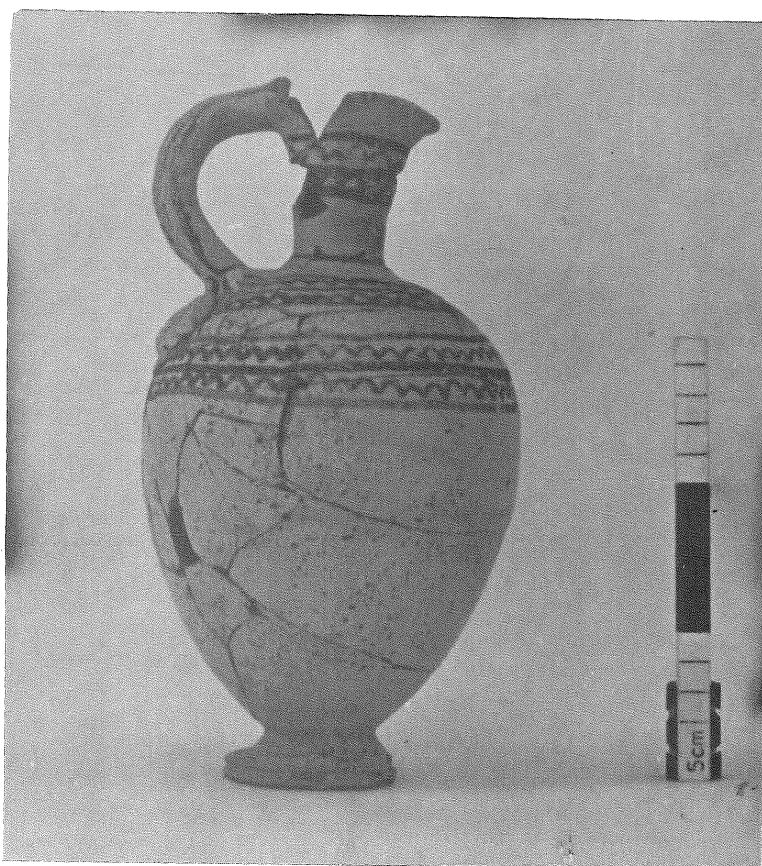
Pl. C,1-Plastered basin at right, with drain leading into a cistern, (stone surround of which under horizontal scale) looking West.



Pl. C,2-Skeleton in doorway to Room B., looking West.



Pl. CI,1-Selection of stratified Umayyad pottery.



Pl. CI,2-Late M.B. IIc/L.B. jug found in c.o.



Pl. XCVI,1-General View of Citadel looking N.N.E. (Present Museum in centre).



Pl. XCVI,2-Room in C.II and XII looking N.W.

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