

**ES-SADEH: AN IMPORTANT EDMITE-NABATAEAN
SITE IN SOUTHERN JORDAN
PRELIMINARY REPORT**

by
M. Lindner, S. Farajat and
J.P. Zeitler

Introduction

To the best of our knowledge, the valley called es-Sadeh by the local bedouins was first seen for archaeological reasons a few years ago by H.R.H. Crown Prince Hassan and a group of archaeologists. They visited the site briefly by helicopter, but published no information. We learned, however, that there were "Nabataean ruins".¹ If one cannot command a helicopter, simpler but perhaps more informative means of transportation have to be chosen. So upon the invitation of Dr. Adnan Hadidi, former Director-General of the Department of Antiquities of Jordan, three members of the Naturhistorische Gesellschaft Nürnberg under the direction of M. Lindner started on foot from Petra in October 1987.² They were accompanied by three Bdul bedouins with Dakhil-Allah Qublan as the outstanding guide and mentor of the project. One camel and three donkeys had to carry luggage, provisions, tents and sometimes a tired explorer. On its way to es-Sadeh the team took the route Naqb er-Ruba'i, Abu Khusheiba, eq-Daman, Sidd edh-Dhawi to Wadi 'Arabah, and thus reached its destination. Šabra was included in the survey on the way back to Petra.³

Location and Description

Es-Sadeh, located 13 km south of Jabal Harun as the crow flies,⁴ is a valley stretching for a few kilometres between the usual sandstone, limestone and quartz porphyry of the rim of the Edomite upland⁵ (Pl. IX, 1 and Fig. 1). Its centre (see below) is ca. 640 m above sea level. The valley with the wadi of the same name runs from east-northeast to west-southwest (simplified to east and west in the following report) between the massif of Jabal Barrat Salama in the north and another one, not named on the map, in the south, called Umm el-'Ala by the bedouins. The entrance of the valley is not visible from the northwest. One has to cross a recent Bedouin cemetery, make a detour towards the south, and back toward the north, before the valley opens. The track to the inside is supported by a stout substructure where a winter brook threatens to obstruct the way. There is no built road through the valley, but it seems noteworthy, as well as to be expected, that from the head of the valley a built camel track continues toward the mountains in the east. On the south bank of the valley a marl cliff created by flash floods towers above the wadi bed.

The main feature from the geological

1. Personal communications from Dr. Adnan Hadidi, Inyazi Shaban and Suleiman Farajat.
2. The members of the exploration team want to express their sincere thanks to Dr. Adnan Hadidi for the suggestion and invitation to explore es-Sadeh and the surrounding region in southern Jordan.
3. Thanks are due to our friend Dakhil Allah Qublan with his helpers Auwad and Harun for excellent guidance and assistance during the whole survey. M. Lindner wishes to thank his companions Mrs. I. Künne and Mrs. E. Schreyer for optimal cooperation before, during

and — concerning this report — after the survey. Botanical observations of Mrs. I. Künne will be published with the final report. The finds and results of the survey around es-Sadeh will be published separately. A short report including Abu Khusheiba, Naqb er-Ruba'i and Šabra was sent to the Department of Antiquities and to Prof. Dr. D. Homès-Fredericq for *Archaeology of Jordan II*.

4. Map: Jordan 1:50,000, sheet 3050 II Series K 737, 35RYU 312453.
5. For geographical reasons the term "upland" seems to be more appropriate than "plateau".



Fig. 1. The valley of es-Sadeh. Drawing: Ingrid Künne.

and ecological point of view is a spring that comes down in a series of cascades into a cleft of hard and brittle quartz porphyry at the head of the valley (Pl. IX,2). The water-supply seems to be perennial; at least there was a small waterfall in the first week of October 1987. The water gathered in a small pool, but disappeared immediately in the gravel of the wadi bed. The existence of a live frog showed that the output was not accidental.

Flash floods have carved and continue to carve a deep gorge with still deeper waterholes in the upper third of the valley. Drinkable water was fetched out of one of those holes in October 1987.

The banks slowly become steeper towards the head of the valley. They are sandstone in the upper south and mostly limestone in the north bank. Quartz porphyry forms barriers near the waterfall and in a second gorge behind the plateau of Umm el-'Ala, an important place, as will be shown later. Two bands on the north bank and on the south cliff that are verdant in summer may have been gardens of the inhabitants in antiquity. On both sides water trickles out of the mountainside between upper sandstone and lower clay-marl strata.⁶ At the south cliff, about 80 m above the wadi bed, the following plants were found and identified by I. Künne:

Tamarix sp. - Tamaricaceae
Salix acmophylla - Salicaceae
Ficus sp. - Moraceae
Vitis vinifera - Vitaceae
Ochradenus baccatus - Resedaceae
Suaeda aegyptiaca - Chenopodiaceae
Reaumuria hirtella var. *palaestina* - Tamaricaceae
Inula viscosa - Asteraceae
Phragmites australis - Poaceae
Juncus arabicus - Juncaceae

The grape vines (*Vitis vinifera*) were found growing beside very old dead trunks.

Part of such a trunk was examined at the University of Weihenstephan (Bavaria), but no results as to the exact age came forth. Despite the fact that grape vines were and are being cultivated in Jordan, one can speculate the existence in es-Sadeh of the remains of an ancient vineyard and orchard (*Ficus* sp.)

Palaeolithic and Neolithic Sites

Only a few flint artifacts were found inside the valley. They are possibly Palaeolithic. Halfway up in the foothills northwest of the valley, Wadi Hammada runs through deep gorges toward Wadi es-Sadeh. Above, Middle-Palaeolithic and Pre-Pottery Neolithic stations were found in white Ordovician sandstone (Fig. 2). A small hillock is virtually covered with blades, and farther to the north-northwest whole strata comprising stone implements are to be found near a second recent Bedouin cemetery. The collection of lithic material during the survey was not systematic, but the site called Ras Raibid appeared to be Palaeolithic.⁷ The flint did not have to be brought from far away. In fact, a whole mountainside farther north is full of flint rubble. Palaeolithic as well as Neolithic man, apparently, preferred living and hunting outside the valley, whereas later inhabitants of the region needed shelter and water inside. It is noteworthy, however, that the present-day bedouins of Wadi 'Arabah again do not dwell in the valley.

Inhabited Slopes

According to the ruins of houses, with the exception of the higher levels, both banks of the valley were settled by man in the first millennium B.C. Ruins of five houses on the north bank, of dimensions up to 10 x 10 m, are built of roughly, but

6. Both verdant sites were lately burned. We were told it was done by some careless child. It could also have been done by lightening. We saw similarly burned places on the slope of Jabal en-Numeir (Petra).

7. We wish to thank H.G. Gebel (Free University

of Berlin) for analyzing the stone implements, and for having some of them drawn for this publication. H.G. Gebel was informed about the location of the lithic site of Wadi Hammada and other sites near and around es-Sadeh as well as at Şabra.

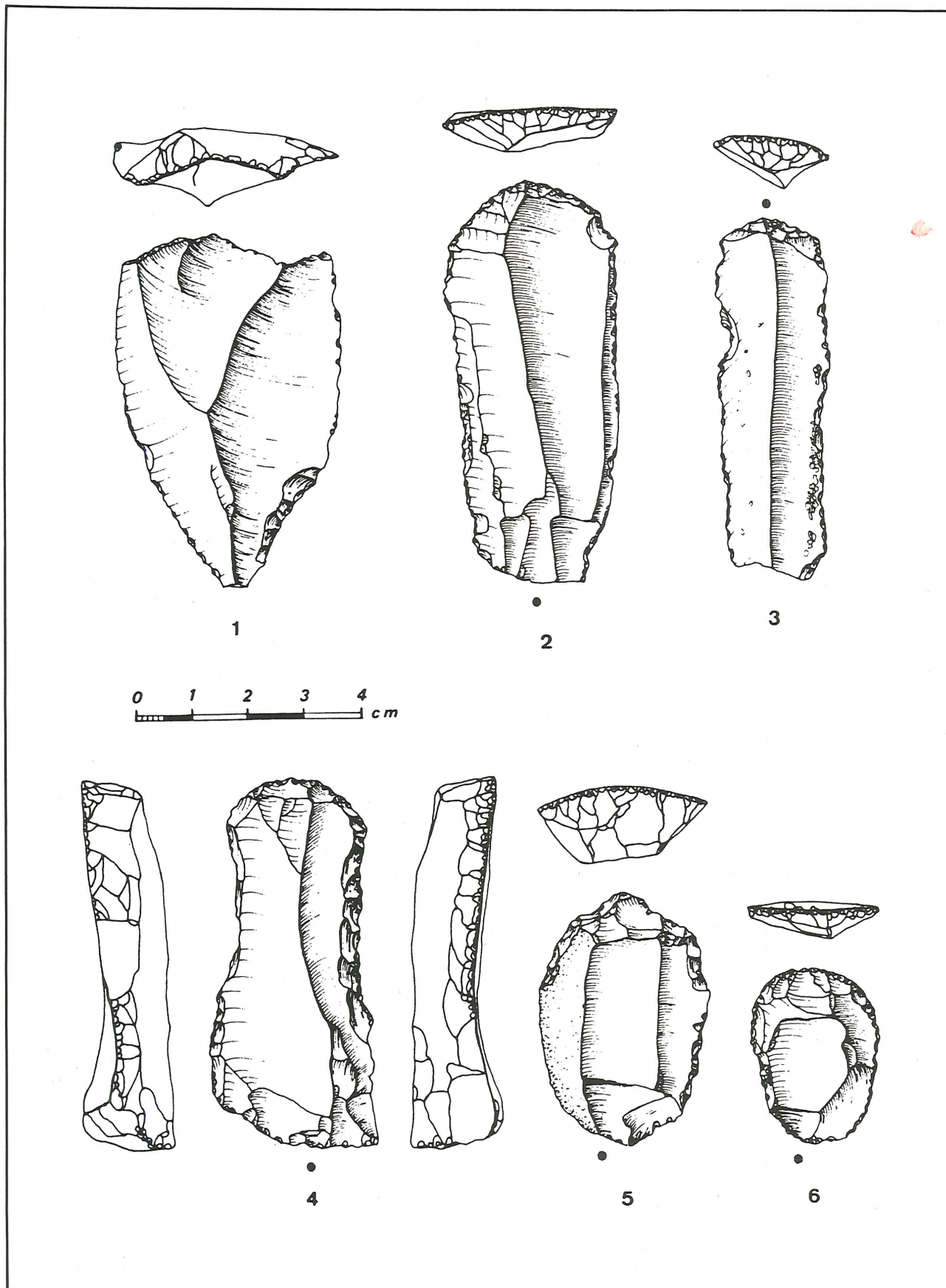


Fig. 2. Wadi Hammada northwest of es-Sadeh. 1 Levallois flake, 2-4 end-scrapers on long blades, 5-6 end-scrapers on flakes.

regularly cut ashlar stones. The surface pottery in and around the buildings is fine Nabataean ware.⁸ The rest of the slope is covered with extensively destroyed terraces, barriers and house foundations, some with Iron II pottery. Five better preserved ruins somewhat higher up the slope contain Nabataean sherds and several ashlar stones with quadrangular holes. Near the centre of the wadi long rows of large sandstone ashlar, two of them with engraved "walking sticks" (tribal *wusum*?), held the soil in place and allowed agriculture or gardening. Due to its geological formation the north bank was and is very much affected by slope slidings and earthquake destruction.

On the south slope more ruins were found. One string of houses extends almost a hundred metres from the lower to the upper end. Pillars made of roughly hewn ashlar are lying on the ground, just as they fell during some unknown earthquake (Pl. X,1). This part of the settlement will be explored during the next campaign.

Centre and Campsite

The natural centre of the valley is situated at 640 m above sea-level below the cliff of Umm el-'Ala. The campsite was chosen here because of the water-supply nearby from the holes in the gorge, and also because the fresh springwater was only a couple of hundred metres away. The gorge is cool in summer. A Bedouin from Wadi 'Arabah has made his cache in a small cave. Some time ago, but certainly not in antiquity, bedouins have driven iron stakes into the ground above the last section of the north wadi bank. It was probably a fence to protect animals from falling into the gorge. A niche with a weathered block idol (Dushara?) is cut into

a big boulder above the gorge. There are worn steps leading up to the idol, the only one found in es-Sadeh.⁹

An Edomite Mountain Settlement

From the valley centre, in fact from the whole valley and even from the foothills, the straight rim of a plateau in front of and separated from the Umm el-'Ala massif proper can be seen. In this context we speak of the Umm el-'Ala plateau, notwithstanding the possibility that only the massif bears that name. Ascending through a narrow valley east and behind the plateau, a porphyry barrier has to be climbed. It is similar to and geographically identical with the one where the waterfall comes down at the head of the valley. Remains of a built conduit were seen at a porphyry wall. Farther on to the right, an arable plain was noticed but not explored in 1987.

At the steep slope behind and below the plateau, one finds the upper section fortified with tumbled walls and set-up stone slabs. The ruin of a considerable structure (Building IV) near the ascent may have been part of the fortification. It was not examined in 1987. Within these fortifications a surprising amount of Iron II (Edomite) and a lesser amount of Nabataean pottery were found. However, the sherds and part of the tumbled stones may be washed down from the plateau, for the thinnest fragments of smooth and painted Iron II (Edomite) pottery were found during the ascent.¹⁰

The plateau, a few hundred metres long at 820 m above sea-level, points like a blunt spur in the same western direction as the valley itself (Pl. X,2). The campsite in the centre can be seen from the edge. The ruins of three houses or house complexes

8. As "fine Nabataean ware", the thin pottery of the 1st and 2nd Cents. A.D., including painted and rouletted ware of the same period, is understood. P. Parr describes the ware with the terms "elegance and beauty". The reader is referred to the well-known publications of P. Parr, Ph. Hammond, K. Schmitt-Korte, N. Khairy and Khairieh 'Amr, whose papers will be cited in the final report.

9. It has to be admitted that the niche and the weathered idol are not typical and cannot be compared readily with the finely cut idol niches of Petra.

10. It was a great and highly appreciated advantage to have had Dr. E.A. Knauf (University of Heidelberg) evaluate the Iron II and Nabataean pottery of es-Sadeh and to get helpful suggestions from him about the publication.

built in different directions could be roughly measured. They can be described as "compartmented longhouses", i.e. they contain long "rooms" within an overall length of ca. 20 m (Building I, Fig. 3) 47 m (Building III, Fig. 5) and 83 m (Building II, Fig. 4) respectively. Building IV was not measured (Pl. XI,1 and 2). Building III closed the spur in the east like a defence wall with an opening in the middle to reach the highest point of the plateau. The western part of Building II is badly destroyed where it extends down the slope. Here, a cistern with a quadrangular opening is the only water reservoir found so far on the plateau (Pl. XII,1).

Of the original buildings only rows of stones, foundations or low walls are visible. They consist of an iron-rich sandstone from nearby which breaks easily, and does not need much trimming. The stone material and building technique are reminiscent of the Edomite houses of Umm el-Biyara (Petra) excavated by C.M. Bennett.¹¹ The surface pottery seen in October 1987 was mainly Iron II (Edomite) with a single stone implement. There was also Nabataean pottery, but nothing evidently later. Only one broken cooking pot discovered in front of a rock shelter farther down the plateau toward the north was an almost complete Late Roman vessel. A sounding measuring 0.5 x 1.0 m in Building III revealed a mud floor at a depth of 0.25 m but no artifacts. At least here, most of the wall courses were destroyed.

The "Tower" Ruin

A ruin of quite another kind from the "longhouse complexes" was found to the northeast on the crest of a prominent sandstone rock (Pl. XII,2). A vast heap about 10 m high consists of well-cut and well-preserved limestone ashlar, one of them measuring about 0.50 x 0.35 x 0.12 m. The stone material at about 860 m above sea-level indicates a tower-like building (Pl. XIII,1). When it was intact it would have overlooked and controlled the plateau, the valley, the spring and access

from all sides including the track from the east. Apparently, it also controlled a track going down steeply to the waterfall. The region where the spring originates can be seen from the tower ruin, but cannot be reached directly. The ashlar of the ruin are well-cut, but featureless, i.e. no bosses or dressing were observed. Of architectural elements, only a few L-shaped sections, possibly doorjambs, could be distinguished in the rubble (Pl. XIII,2). No pottery was found around the ruin and no ground plan could be seen. There are, however, four foundation courses about 9 m long of large ashlar stones on the southeast side of the ruin. They are constructed for durability and load capacity near the edge of the rock, are well-mortared and able to support a substantial building of superior quality (Pl. XIV,1).

A Significant Event

The sojourn on the plateau was shortened by a change of the weather. Already in the morning of October 18, 1987 after a sultry night dew had fallen. Clouds collected above es-Sadeh, and at around 15 hours a thunderstorm with rain and sleet interrupted the archaeological work. For Europeans not familiar with autumn weather in Jordan, the event was both memorable and significant. Within minutes, gutters and holes were filled with running water. Falls from the encircling cliffs of the massif proper cascaded a hundred metres down. Foamy water roared through the wadi and the gorge below the campsite. Rocks came thundering down during the following night, and the modest waterfall of the day before could have been used as a turbin-drive. The frog, of course, had been swept away. But with the exception of a few puddles the wadi bed was dry again by the next morning. No pollution by man could be blamed for the remaining masses of brownish foam. One can imagine what a longer and stronger rainfall would do to the valley, if a short thunderstorm of not more than 15 minutes duration had such con-

11. C.M. Bennett, 'Fouilles d'Umm el-Biyara', *RB* 1966, p. 372-403.

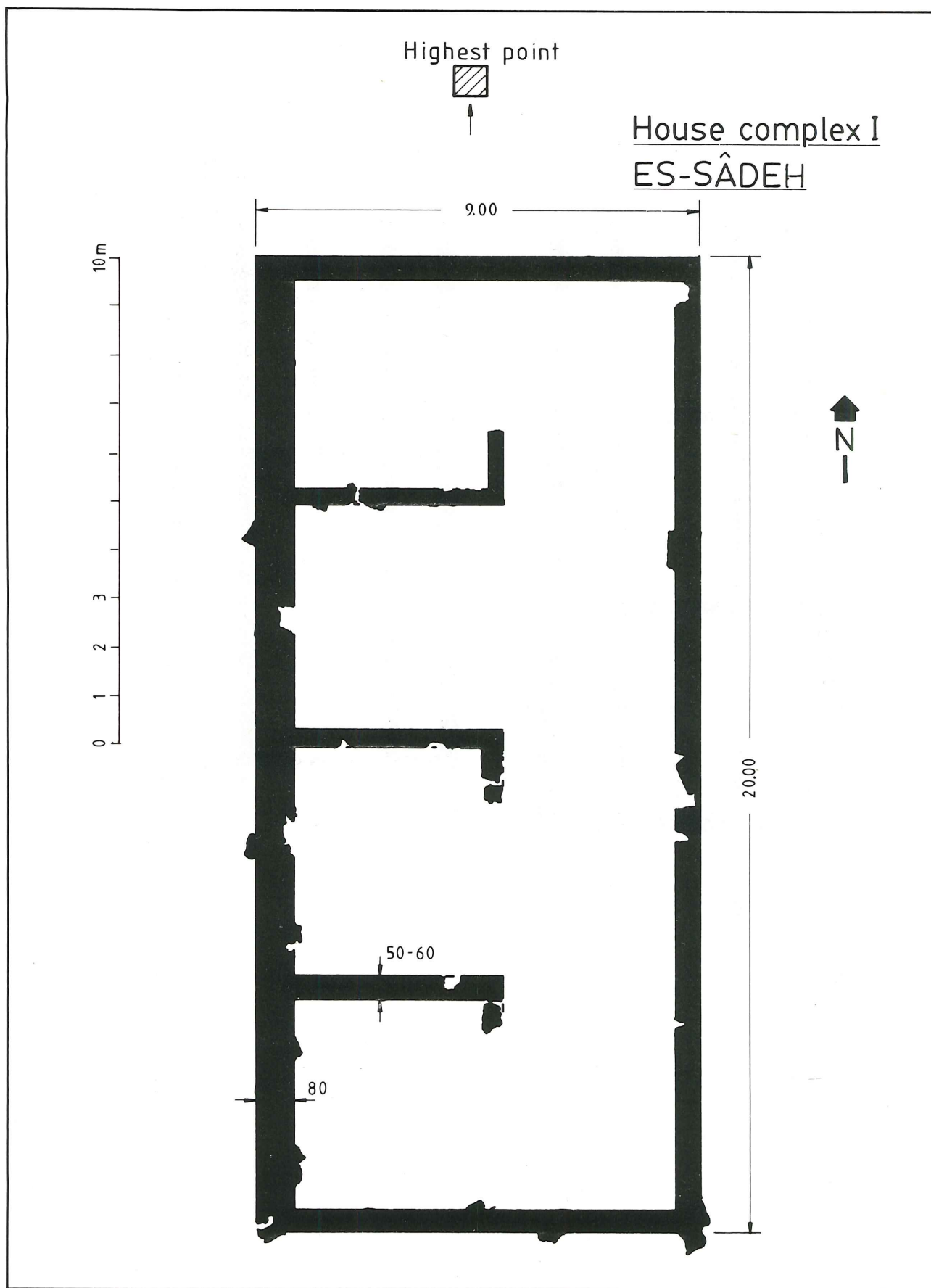


Fig. 3. House Complex I, es-Sadeh.

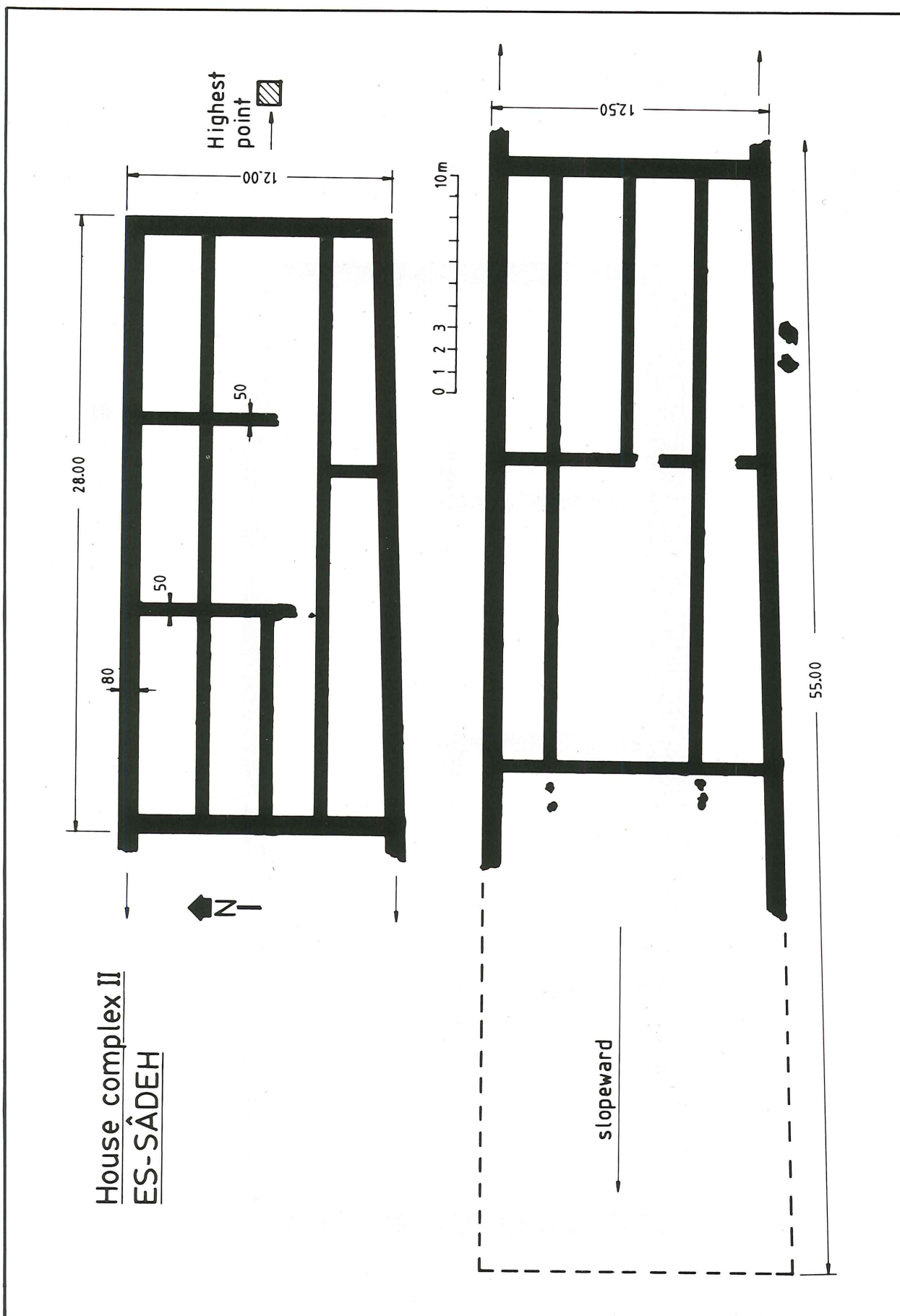


Fig. 4. House Complex II, es-Sadeh.

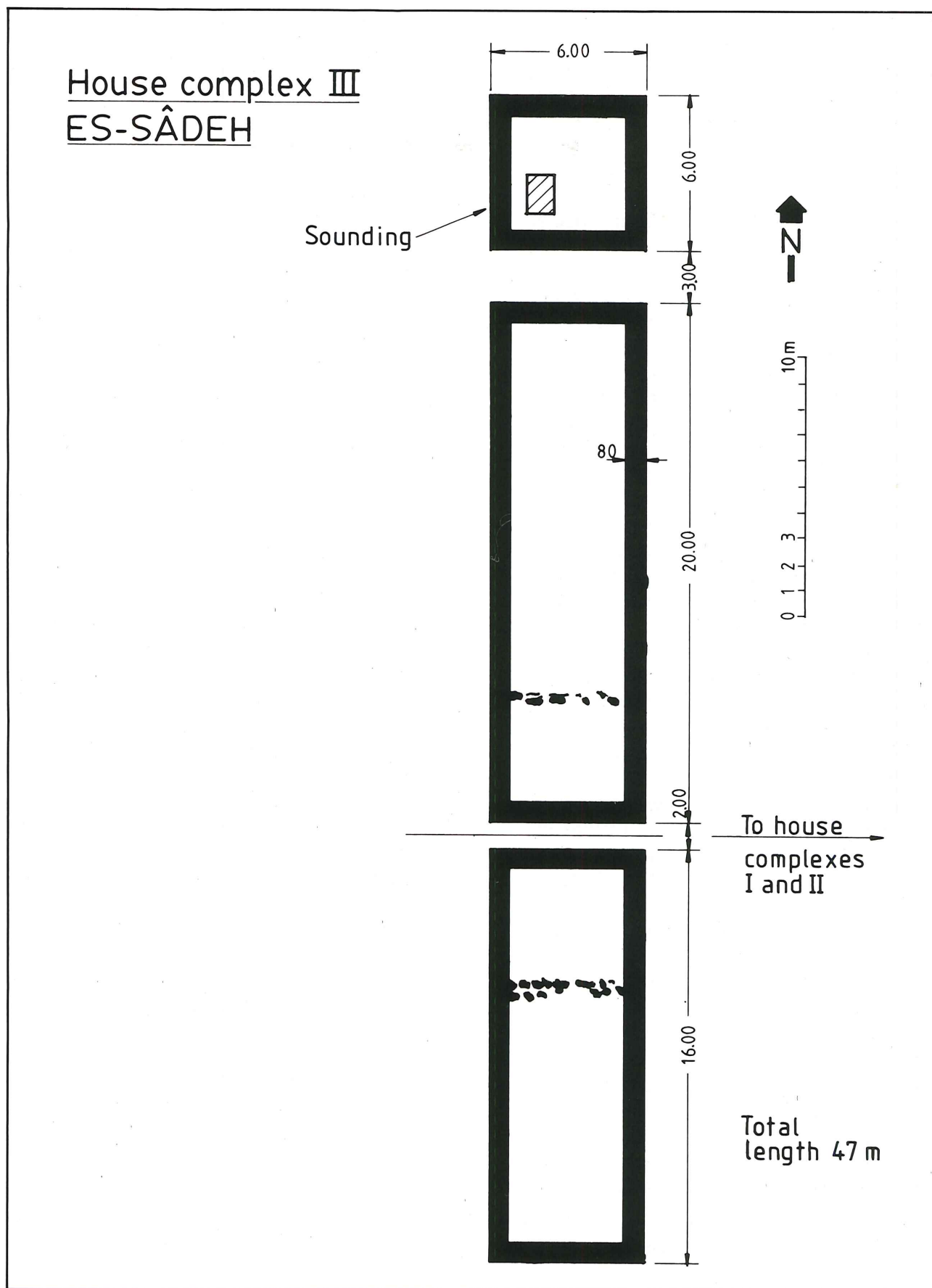


Fig. 5. House Complex III, es-Sadeh.

sequences. It is understandable now why people lived in well-built stone houses in es-Sadeh and in similar regions, and why people without the ability to build stone houses preferred to live outside the valleys.

A Nabataean Sanctuary?

Where the valley of es-Sadeh opens into the 'Arabah, on the crest of an elongated mountain at 670 m above sea-level, the ruin of a building of ca. 17 x 6 m oriented north-south dominates the view across the foothills and the plain (Fig. 6). The rocky outcrop of hard (metamorphic crystallized?) limestone with its steep flanks does not look inviting or promising, and the ruin is hardly visible from below. A trail, however, winds up to the top from the east that may have been the original ascent or even a staircase. Around that trail, already, the finest Nabataean pottery fragments were found. There were also a few flint artifacts, possibly Palaeolithic, but no Iron II or other wares.

The summit is almost entirely occupied by the ruin. The ashlar, however, are so tumbled that it proved difficult to get exact measurements. Two heaps of ashlar and rubble are clustered in the north and south part of the ruin, but it could not be decided whether they fell down where they are now or if they were piled together by robbers. The ashlar are of the same hard limestone as the mountain itself, from where they were quarried. Ancient or present-day treasure hunters have dug some holes into the ruin. One of them may possibly be a cistern. The discarded pottery is similar to that on the slope. A few well-trimmed sandstone ashlar belong to a small arch. No other architectural elements, columns or column fragments were seen. The entrance to the building could only have been on the east side where the trail comes up, the only possible ascent. Also here on the east side, two foundation

walls are laid parallel to the east wall.

The most astonishing feature of the ruined building is a block-like projecting part in the middle of the north wall. The measurements are ca. 1.75 x 1.50 m and 1.80 m high. Its central axis as well as the ground plan of the whole building is directed toward the summit of Jabal Harun which can be seen at about 10° East.¹² A sounding measuring 0.50 x 0.50 m near the block produced Nabataean sherds of about the same quality as in and around the ruin, and a few Iron II fragments.

A Nabataean Village

Whereas from the described mountain one looks westward far across the uninhabited foothills of the Edomite upland into Wadi 'Arabah, to the east a settlement of about 25 houses is built on the slope of an opposite hill. Much more is preserved here than of other houses of es-Sadeh. Up to five courses of excellently hewn ashlar enclose rooms of 8 x 5 and 5 x 3 m (Fig. 7). The houses are mostly connected with each other. Mill and mortar fragments and a scatter of exclusively Nabataean pottery were found on the surface. A wadi called Umm Shed by the bedouins runs behind the village. It may have supplied water for the inhabitants. A cistern should be nearby. The hills around could be used for agriculture.

A Nabataean Conduit¹³

With the exception of the cistern on the Umm el-'Ala plateau, no waterworks belonging to the Iron II period were seen. The Nabataeans, on the contrary, were able to improve their water supply significantly. Starting far above the waterfall mentioned earlier, they built a conduit at the sheer porphyry cliff. As the hard and brittle rock wall could not be carved, no

12. We had to rely on a small compass.

13. As "conduit" all means of conducting water including rock-cut channels, pipes and guttering stones are understood in this report. The term,

thus, means the same as the German "Wasserleitung". The aqueduct in this connection is an aqueduct arch.

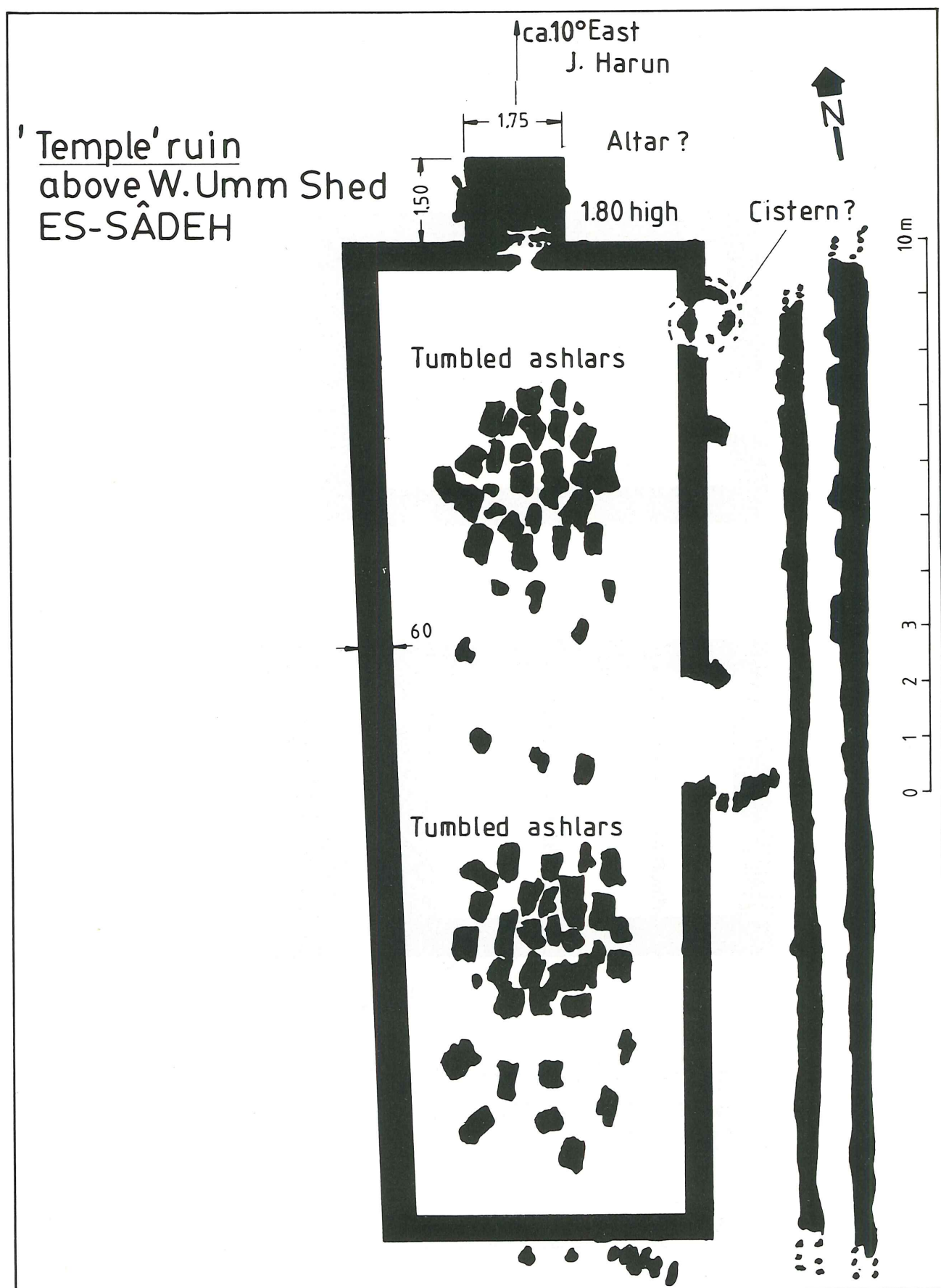
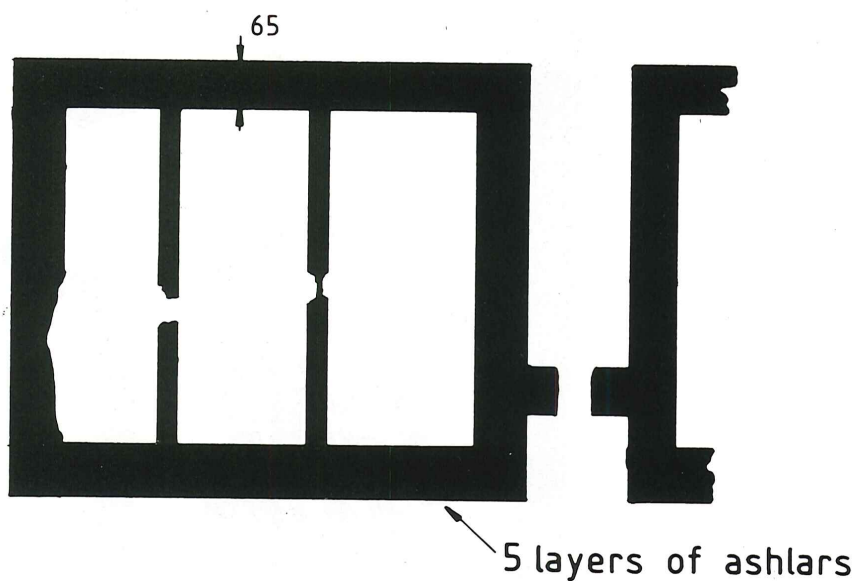
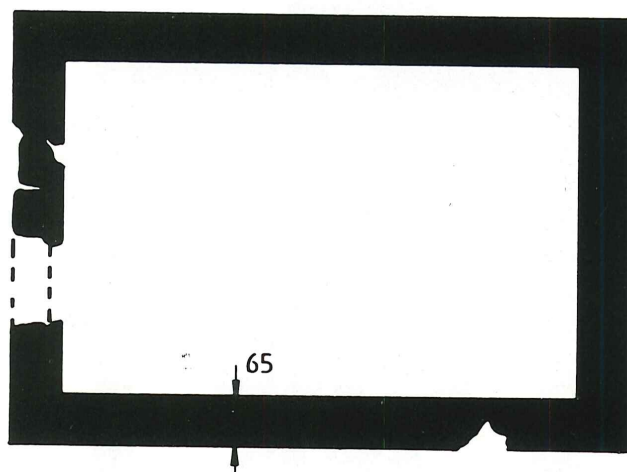


Fig. 6. "Temple" ruin above Wadi Umm Shed es-Sadeh.

House of the settlement Type A
below the Temple Mountain
of ES-SÂDEH



House of the settlement Type B
below the Temple Mountain
of ES-SÂDEH



Fig. 7. Houses of Type A and B below the "Temple" Mountain of es-Sadeh.

rock-cut channels were possible. The conduit, therefore, was composed of pre-fabricated guttering stones made of limestone and placed upon substantial well-mortared limestone substructures (Pl. XIV,2). Around the first bend in the cliff, the water had to be conducted over two lean-to arches. One of them is still extant, the other collapsed at some unknown date. The arch that is still standing is nicely made of well-hewn, mostly bossed ashlar with an abutment of projecting slabs either as a decoration or for the scaffold (Pl. XV,1). The guttering stones are ca. 0.70 m long with the gutter opening measuring 0.12 x 0.10 m (Pl. XV,2)¹⁴. Whereas the first section of the conduit built against the cliff is relatively well preserved, farther west, a section of 60 m out of a total of 200 m is destroyed. The continuation, however, was found, as well as where the conduit seems definitely to end, in a now completely sand-filled cistern of ca. 17 x 8.60 m and an unknown depth. Remains of a less well preserved conduit were seen in the valley leading up to Umm el-'Ala.

IRON II (EDOMITE) POTTERY FROM ES-SADEH (by Suleiman Farajat)

The Finds (Fig. 8).

1. Jar rim with 3 rills. Very thick, coarse ware with many white and black grits on exterior and interior. Light brown, grey core, white deposits (?) on exterior and interior. Some knobs on the body formed by thumbs between the bands that the body is ornamented with, namely 4 bands on the shoulder and two bands below. (Fig. 8:1).
2. Bowl rim fragment. Light reddish slip, dark grey core with many small voids, small white and black grits.

3. Jar handle fragment. Light reddish slip, grey thick core, large white and black grits. Two bands around the body.
4. Cooking pot rim fragment with broken handle. Dark pinkish ware with small white grits.
5. Large decanter handle. Light reddish slip, coarse grey ware, very thick, large white and dark brown grits. Many large and small voids. White deposits on interior.
6. Large jar handle fragment, wide concave. Coarsely hand-made. Light reddish slip, dark greyish core, many large grits. White deposit on interior and exterior.
7. Broken base of a bottle. Coarse light reddish ware, small black and white grits.
8. Base of an unpainted bowl. Light reddish slip, dark greyish core, black and white grits, white deposits on interior. Coarse ware.
9. Carinated bowl rim, out-turned. Red-banded decoration on interior. Buff ware with a few grits. (Fig. 8:8).
10. Deep bowl or crater rim with a small broken handle attached to the rim. Pinkish colour, grey core with small white grits on interior.
11. Everted bowl rim fragment. Light reddish ware with grey core and white deposits on interior. (Fig. 8:4).
12. Everted bowl rim fragment. Grey core, fired light reddish slip with small black grits.
13. Rim fragment. Light pinkish ware, small brown grits. White deposits on interior. (Fig. 8:5).
14. Rim fragment. Pinkish ware, dark grey core, small black and white grits.
15. Rim fragment. Light red ware, grey core, small grits, white deposits on

14. A similar use of guttering stones was observed by M. Lindner in Şabra and in Wadi Ramm. Linder, 'An Archaeological Survey of the Theatre Mount and Catchwater Regulation System at Sabra, South of Petra, 1980', *ADAJ* 26 (1982), p. 240, pl. 63,2). *Idem*, 'Eine archäologische Expedition nach Jordanien 1973', *Jahresmitteilungen der Naturhistorischen Gesellschaft*

Nürnberg = *NHG* 1973, p. 40. N. Glueck had seen it near Wadi Ḥasa (*Explorations in Eastern Palestine* III. *AASOR* 18-19, 1939, p. 57). A similar conduit of guttering stones in Nabataean Ḥumayma was published by J.W. Eady and J.P. Oleson 'The Water-Supply Systems of Nabataean Humayma', *BASOR* 262 (1986), p. 49-76.

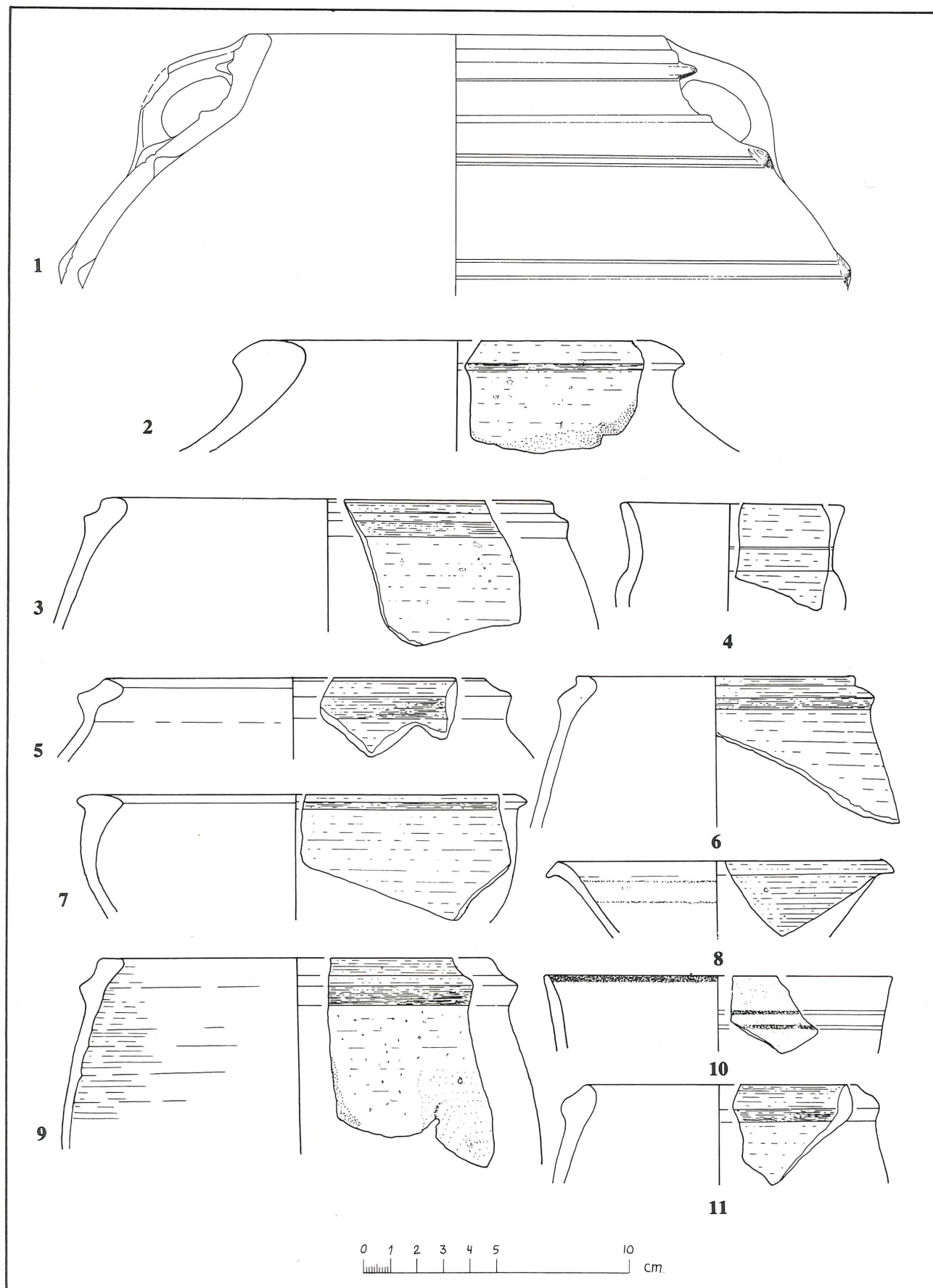


Fig. 8. Pottery types (Iron II-Edomite) from es-Sadeh.

- interior. (Fig. 8:11).
16. Rim fragment. Red ware, many small white and brown grits on exterior.
 17. Rim fragment. Many small voids on exterior and interior. Light reddish ware, dark grey core, small white and brown grits.
 18. Jar rim fragment. Light reddish slip, greyish core, white grits. (Fig. 8:2).
 19. Jar rim fragment. Pinkish ware, grey core, brown grits. White deposit on interior. (Fig. 8:9).
 20. Jar rim fragment. Pinkish slip, grey core, white and black grits. Whitish deposits on exterior. (Fig. 8:3).
 21. Jar rim fragment. Light reddish coarse ware, grey core, white and black grits. Many small voids on exterior and interior. (Fig. 8:6).
 22. Bowl rim fragment. Red ware, white deposits on exterior and interior. (Fig. 8:7).
 23. Everted jar rim fragment. Light reddish slip, dark grey coarse ware with many black grits.
 24. Assyrian bowl rim fragment. Decorated with a black band on exterior and one band on interior, red slip, very fine light red ware. (Fig. 8:10).

Comparisons and Chronology

Es-Sadeh belongs to a chain of Edomite settlements on mountain tops or spurs like es-Sela', Ba'ja and Umm el-Biyara. Typically, in those place rock-cut cisterns were filled with rain water. After having analyzed the finds of es-Sadeh, the pottery found on Umm el-Biyara, Ba'ja and es-Sadeh can be easily and precisely distinguished. There are close parallels in the technique of production. The assemblages of the three sites are identical. As in the other cases the vessel types of es-Sadeh consist of large vessels (storage jars and pithoi) and small vessels (bowls, cooking pots, cups, platters, bottles) and other fine wares.

The *large vessels* are coarsely made, rough ware. They are easy to identify by the thickness and the clay fabric with many large and small grits. The thicker fragments have dark grey cores. The surface colours are light reddish and buff. The rims are thickened and everted with usually three rills. This type is paralleled in the Umm el-Biyara and Ba'ja storage jar rims. The two handles are attached to the vessel so that they link rim and shoulder. Knobs are found within two rows of lines surrounding the shoulder of the vessel. It is to be noted that the knobs were formed with the potter's thumb. His prints can still be seen. The normally thick and everted rim type is also found at es-Sadeh.

Small and medium vessels are mainly represented by cooking pots, bowls, cups, decanters and mugs. The cooking pots of es-Sadeh parallel those of Umm el-Biyara and Ba'ja. The clay contains fewer and smaller grits than the large vessels. The fabric is almost the same. In all of the three sites, the vessels are made of similar clay with grey core and pink or light reddish color. The general forms of the es-Sadeh ware parallel those of Umm el-Biyara and Ba'ja. The rims are similar, i.e. ridged and everted. Some pots were made with handles and some without. The other small vessels from es-Sadeh have parallels at both other sites, and some other Edomite sites like Buṣeirah and el-Ḥarara (Ghrareh).¹⁵ The popularity of the unpainted pottery and its wide-spread distribution in many Edomite sites is important. C.M. Bennett suggested that the coarse pottery was used by the people and the painted ware by the ruling class.¹⁶ Of the only two pieces of *painted ware* found so far in es-Sadeh, one is an imitation of an Assyrian decoration. The other fragment belongs to a genuine Assyrian bowl. It is of fine, thin, well levigated red ware. The decoration consists of two bands of a black pattern on the exterior and one band in the upper part of the interior.

15. S. Hart, 'Five Soundings in Southern Jordan', *Levant* 19 (1987), p. 33-47; *idem*: 'The Edom Survey Project 1984-85: The Iron Age'. In: *Studies in the History and Archaeology of*

Jordan III, 1987, p. 287-290.

16. At least concerning Buṣeirah, C.M. Bennett had no doubts: 'Excavations at Buseirah, Southern Jordan, 1973', *Levant* 7 (1975), p. 15.

Summary: The results of the pottery analysis, as far as the Iron II wares are concerned, showed very close parallels between the pottery of es-Sadeh and that of Umm el-Biyara and Ba'ja. Further research in es-Sadeh and its neighbourhood will shed more light on the Iron II settlement of the Edomite upland in southern Jordan.

THE NABATAEAN POTTERY OF ES-SADEH (by John P. Zeitler)

Analyzing surface finds, especially pottery, is usually a rather dubious task. This is even more the case with Nabataean pottery where the definition of chronological developments is still needed. The general objective of publications of Nabataean ware is therefore to add another point on distribution maps rather than to outline the history and development of a specific site by its pottery, the latter quite easily done for most other periods in Jordan.

The reason for this archaeological drawback is straightforward. The lack of stratified and typo-chronologically seriated pottery from Petra makes any attempts at dating impossible. The only material hitherto reliable in a chronological context comes from the excavations of P. Parr during the fifties in the centre of Petra.¹⁷ Relatively small trenches showed a complex stratigraphy, often disturbed by foundation trenches. Random samples of the pottery published give some clues of its development.

It is a lucky coincidence that a huge quantity of stratified pottery from Petra is at the disposition of the author. The material comes from the excavations of the Naturhistorische Gesellschaft Nürnberg in Petra conducted under the direction of the author in cooperation with the Department

of Antiquities of Jordan. The stratigraphy of two buildings in sequence with intermediate layers offers a first-hand inside view into the development of Nabataean pottery from the end of the 1st Cent. B.C. into at least the 2nd Cent. A.D.¹⁸ It is therefore possible to concentrate on the chronological significance of the Nabataean pottery from es-Sadeh. The large amount gathered during the field survey made restrictions necessary. The material discussed here was chosen in order to show the variability of types rather than their proportions in a statistical sense. Further fieldwork will be necessary before the latter leads to any definite conclusions.¹⁹

The Finds

1. Rim and neck of *cooking pot*, pink ware, fine to medium black grits, simple rim, rim dia. 10 cm (temple, surface). Fig. 9:1.
2. Rim and neck of *cooking pot*, pink orange ware, fine white grits, simple rim, rim dia. 14.5 cm (houses in valley entrance). Fig. 9:2.
3. Rim and neck of *cooking pot*, pink ware, fine white grits, simple rim, rim dia. 10 cm ("temple" slope). Fig. 9:3.
4. Rim and neck of *cooking pot*, pink ware, fine white and black grits, simple rim, rim dia. 10.5 cm (temple, surface). Fig. 9:4.
5. Rim and neck of *cooking pot*, brownish red ware, fine white grits, simple rim, rim dia. 17.5 cm ("temple" slope). Fig. 9:5.
6. Rim, neck and shoulder of *cooking pot*, pink-buff ware, medium white and brown grits, simple rim, slightly profiled, rim dia. 11 cm ("watch towers" at wadi entrance). Fig. 9:6.
7. Rim and neck of *cooking pot*, reddish orange ware, medium brown grits,

17. P. Parr, 'A Sequence of Pottery from Petra.' In: *Near Eastern Archaeology in the Twentieth Century, Essays in Honor of Nelson Glueck*, New York, 1970, p. 348 ff.

18. A preliminary report will be published in M. Lindner (ed.), *Petra und das Königreich der*

Nabataer, 5th ed., München, 1989.

19. Our special thanks go to E. Herrmann, E. Schreyer and C. Seifert, who helped enormously with drawing, cataloguing and discussing the finds.

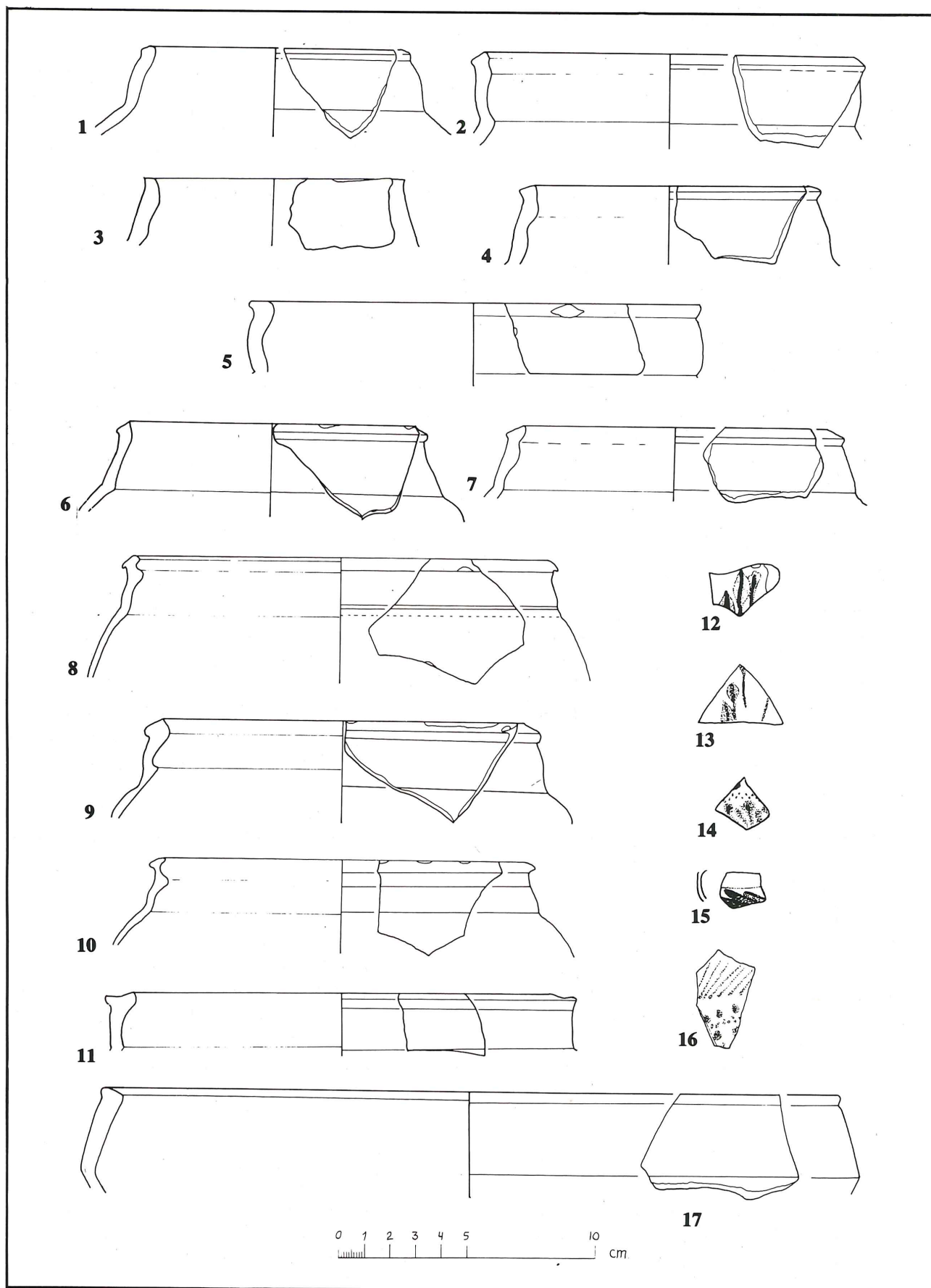


Fig. 9. Nabataean pottery from es-Sadeh. Pots and early painted pottery.

- simple rim, slightly profiled, rim dia. 11 cm ("temple" surface). Fig. 9:7.
8. Rim, neck and shoulder of *cooking pot*, reddish orange ware, fine white grits, elaborated rim, rim dia. 16 cm ("watch towers" at wadi entrance). Fig. 9:8.
 9. Rim and neck of *cooking pot*, reddish orange ware, medium white grits, elaborated rim, rim dia. 14.5 cm ("watch towers" at wadi entrance). Fig. 9:9.
 10. Rim, neck and shoulder of *cooking pot*, pink ware, medium white grits, elaborated rim, rim dia. 14 cm ("watch towers" at wadi entrance). Fig. 9:10.
 11. Rim and neck of large *pot*, reddish ware, outside fire-blackened, medium brown-grey grits, elaborated rim, rim dia. 18.5 cm (houses below "temple"). Fig. 9:11.
 12. Fragment of *painted bowl*, pink eggshell ware, grey core, no grits, outside burnished, leaf motive in light and dark brownish red mat paint on interior ("temple" slope). Fig. 9:12.
 13. Fragment of *painted bowl*, orange eggshell ware, no grits, outside burnished, leaf motive in light and dark brownish red mat paint on interior ("temple" slope). Fig. 9:13.
 14. Fragment of *painted bowl*, orange eggshell ware, no grits, outside burnished, alternatively arranged rounded and elongated leaves in light and dark brownish red mat paint on interior ("temple" slope). Fig. 9:14.
 15. Fragment of *painted bowl*, pink orange eggshell ware, no grits, leaf motive in light and dark brownish red mat paint on interior ("temple" slope). Fig. 9:15.
 16. Fragment of *painted bowl*, pink orange eggshell ware, very few fine white grits, line and dots motive in light brownish red mat paint on interior ("temple", upper layer). Fig. 9:16.
 17. Fragment of large *bowl*, light reddish ware, medium white grits, simple profiled rim, rim dia. 29 cm (houses on west slope). Fig. 9:17.
 18. Broken *cooking pot*, almost complete, with two handles, pink ware, grey core, grey grits, curved rim, rim dia. 12 cm (isolated mountain spot). Fig. 10:1.
 19. Fragment of *painted bowl* with incurving rim, pink eggshell ware, no grits, line with rounded triangles on rim, line pattern on interior, both in light brownish red mat paint (houses below "temple"). Fig. 10:2.
 20. Fragment of *painted bowl* with incurving rim, pink eggshell ware, no grits, outside burnished, line with irregular, elongated dots and elongated leaves in light and dark brownish red mat paint on interior ("temple" slope). Fig. 10:3.
 21. Fragment of *painted bowl* with incurving rim, orange pink eggshell ware, no grits, outside fire-blackened, triangles on rim and leaves in light and dark brownish red mat paint on interior ("temple", surface). Fig. 10:4.
 22. Fragment of *painted bowl* with incurving rim, pink eggshell ware, small white grits, outside fire blackened, triangles on rim and irregular motive in dark brown mat paint on interior ("temple," surface). Fig. 10:5.
 23. Fragment of *bowl* with collar-rim, reddish eggshell ware, medium white grits, rim dia. 22 cm ("watch towers" at wadi entrance). Fig. 10:6.
 24. Fragment of *bowl* with collar-rim, reddish eggshell ware, very few small white grits, rim dia. 20 cm ("temple" slope). Fig. 10:7.
 25. Fragment of *bowl* with collar-rim, reddish orange eggshell ware, very few small white grits, rim dia. 18.5 cm ("temple" slope). Fig. 10:8.
 26. Fragment of *bowl* with collar-rim, pink ware, medium brown grits, rim dia. 15.5 cm ("temple" slope). Fig. 10:9.
 27. Fragment of *cup* or *juglet*, red ware, fine white grits, with fragment of handle, vegetable motive in dark brown mat paint on exterior (houses at valley entrance). Fig. 10:10.
 28. Fragment of *painted bowl*, red ware, fine and medium white grits, palmette motive in dark brown mat paint on interior (houses at valley entrance). Fig. 10:11.

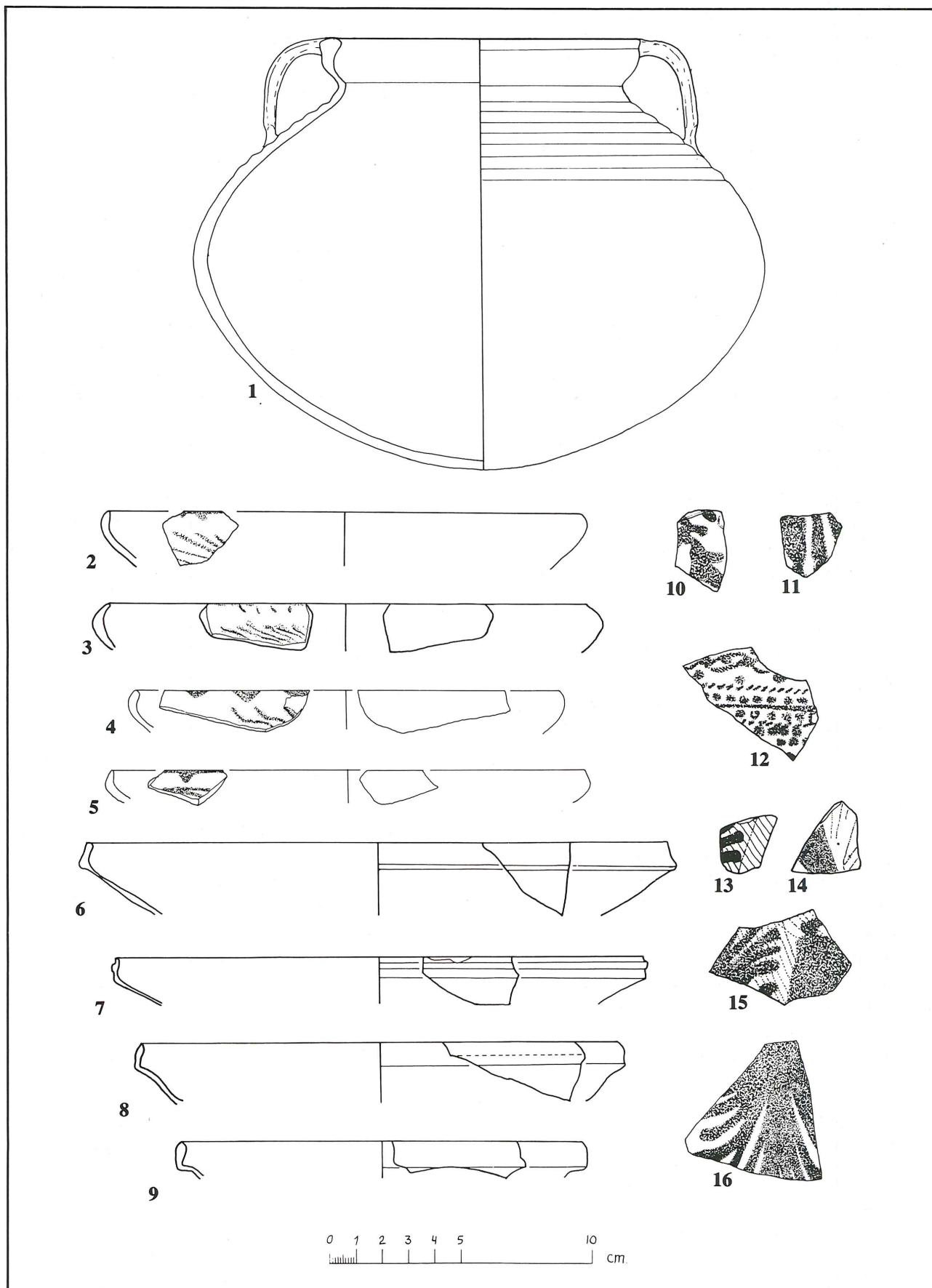


Fig. 10. Nabataean pottery from es-Sadeh. Cooking pot, bowls and later painted ware.

29. Fragment of *painted bowl*, orange eggshell ware, very few small white grits, eye, line and dots motive in light brownish red on interior (houses at valley entrance). Fig. 10:12.
30. Fragment of *painted bowl*, orange eggshell ware, no grits, outside burnished, palmette motive in dark brown, line motive in light brownish red mat paint on interior ("temple" slope). Fig. 10:13.
31. Fragment of *painted bowl*, pink orange eggshell ware, very few small white grits, outside burnished, palmette, dots and line motive in medium reddish brown mat paint on interior ("temple" slope). Fig. 10:14.
32. Fragment of *painted bowl*, pink orange eggshell ware, very few small white grits, outside burnished, palmette motive in dark brown, line motive in light brownish red mat paint on interior ("temple," surface). Fig. 10:15.
33. Fragment of *painted bowl*, pink eggshell ware, very few small white grits, outside burnished, palmette motive in dark brown, line motive in medium brown mat paint on interior ("temple," upper layer). Fig. 10:16.

Chronology

One of the most common types of Nabataean pottery is the *cooking vessel*. Some examples showing a simple rim date to the late 1st Cent. B.C. (Fig. 9:1-7). In the Petra excavations of 1987 that type is associated with late Hellenistic fish-plates and Terra Sigillata, the latter comparable with material from Samaria-Sebaste²⁰ and Dhiban²¹. In Parr's sequence, the type is

quite common in phases VI and VII²². It is obvious from both Parr's and our excavations that the above-mentioned type of cooking vessel stratigraphically predates a second one with an elaborated rim, abundant in the es-Sadeh material (Fig. 9:8-11). In Petra, the latter type does not occur before the middle of the 1st Cent. A.D., perhaps even later. In Parr's sequence, the type appears during phase XI²³. Its presence in Roman-Nabataean sites suggests a long life span. The only example of Late Roman pottery from the es-Sadeh survey (Fig. 10:1) was found on an isolated spot, among Iron II pottery on top of Umm el-'Ala. It has close parallels, showing the same kind of a convex rim, in the Late Roman-Early Byzantine layers from el-Lejjun.²⁴

Bowls are another common type of Nabataean pottery. Several attempts were made to associate styles of decoration with a chronological sequence²⁵, but a convincing scheme is still needed. In the 1987 excavations in Petra, some clear distinction of the shape of the bowls could be combined with their stratigraphic positions. The earliest form, dating to the end of the 1st Cent. B.C., shows a curving, out-turned rim. This type is rare in the es-Sadeh samples (Fig. 9:17). It is contemporary with simple bowls with an incurving rim (Fig. 10:2-5), sometimes with painted decoration. The same type is rather frequent in Parr's material from phases VI and VII. Later types dating to the middle of the 1st Cent. A.D. show a sharply bent, collar-like rim (Fig. 10:6-9). These are also later in Parr's sequence, with some examples in his phase VIII²⁶, mostly however, not earlier than phase XI.²⁷

With some restrictions, a similar chro-

20. J.C. Crowfoot, G.M. Crowfoot and K.M. Kenyon, *Samaria-Sebaste III*, Fig. 78, 1-8.
 21. A.D. Tushingham, *The Excavations at Dhiban (Dhibân) in Moab; The Third Campaign 1952-53*, AASOR 40 (1972), Fig. 4:30.
 22. P. Parr, *op. cit.*, Fig. 3: 32, 33, 38.
 23. P. Parr, *op. cit.*, Fig. 6: 83, 86.
 24. S. Th. Parker, *The Roman Frontier in Central Jordan*. BAR (340, II), Fig. 100: 83.
 25. K. Schmitt-Korte, 'Die bemalte nabatäische

Keramik: Verbreitung, Typologie und Chronologie'. In: M. Lindner (ed.), *Petra und das Königreich der Nabatäer*, 4th ed., München, 1980, p. 174 ff; K. Schmitt-Korte, 'Beitrag zur nabatäischen Keramik', *Arch. Anz.* (1968), p. 496 ff.

26. P. Parr, *op. cit.*, Fig. 3: 27, 28, 35, 36.

27. P. Parr, *op. cit.*, Fig. 4: 43, 44; these early types still show a curved rim.

nological pattern of the es-Sadeh pottery can be obtained from the *painted ware*. Inside-rim decoration, mainly rounded triangles as in Fig. 10:2,4,5, can be ascribed to the earlier production in Petra, both in the new excavations and in Parr's sequence where it is present in phase V/VI²⁸. It is often combined with naturalistic vegetative patterns in thin slip²⁹ which appear on some small fragments of the es-Sadeh pottery (Fig. 9:12-15). The more common palmette motives in thick slip (Fig. 10:10, 13-16) seem to be slightly later, but more reliable material would be appreciated before closer dating can be undertaken.

Conclusion

Although the pottery of es-Sadeh was gathered from different sub-sites, most spots show the same range of Nabataean pottery, both in quality and chronology. No distinctions between an early and a later site can be made. The most likely explanation lies in a continuous settlement of es-Sadeh from at least the end of the 1st Cent. B.C. until the middle of the 1st Cent. A.D., perhaps even somewhat later. Pottery describable as typically Roman did not appear, but more samples have to be analyzed.

The final stage of the settlement can be fixed before the Roman conquest in 106 A.D. Most interestingly, no differences in style or quality between the es-Sadeh ware and the Petra ware could be found. This demonstrates a close link between Nabataean pottery production in the provinces and the capital. There are two explanations: Either pottery was traded from Petra to provincial places, or, more likely, provincial potters reached the same standard as their colleagues in Petra. The occurrence of fine painted ware within and by house complexes, i.e. dwellings, is paralleled in the new excavations at Petra. Therefore, the assumption that fine painted ware was strictly used for religious purposes has to be corrected. It seems highly probable that also the finest quality of Nabataean pottery was nothing more than part of the every-

day ware and, in fact, a kind of cheap mass product.

Discussion and Interpretation

The location of es-Sadeh corresponds to the generally accepted "area" of Edomite occupation in a strip not much broader than 10-25 km east of Wadi 'Arabah, determined by the elevation and annual rainfall of the region (Fig. 11). The modern day presence of fig trees, grape vines and once arable fields explains how people could live in es-Sadeh in spite of the bareness of the valley. The spring, of course, and the waterholes in the gorge-like section of the wadi were the main attractions. Apparently, the valley was settled and developed twice, in Iron II and Nabataean times. The structures on the plateau of Umm el-'Ala support this assumption, as does the water-supply system of the Nabataeans. The odd long-houses of the Edomite settlement show foreign, maybe Mesopotamian, influence. So far, we do not know their purpose. They could have been a stronghold in times of distress or built as a precaution. Maybe they formed a kind of acropolis or they were used as storehouses or their use changed in the course of time. We also do not know yet the relation of the mountain settlement to the other buildings on the slopes of the valley. Those buildings, with the exception of the "Nabataean village" by Wadi Umm Shed, have to be examined for their origin. Another problem is posed by the tower ruin above the Umm el-'Ala plateau. It is tempting to attribute it to the Iron II-Edomite period, because it was the best look-out of the valley, guarding at the same time the mountain settlement, the access routes from the east and south, and a track to the spring. The long building on the elongated mountain-top near the valley entrance seems to be a cultic structure. Location, surface sherd scatter and alignment toward Jabal Harun make the interpretation as a Nabataean sanctuary, if not a "temple", almost but not absolutely certain. There were a few Iron II sherds,

28. P. Parr *op. cit.*, Fig. 5: 66-69, 71; 7: 109.

29. P. Parr, *op. cit.*, Fig. 3: 26.

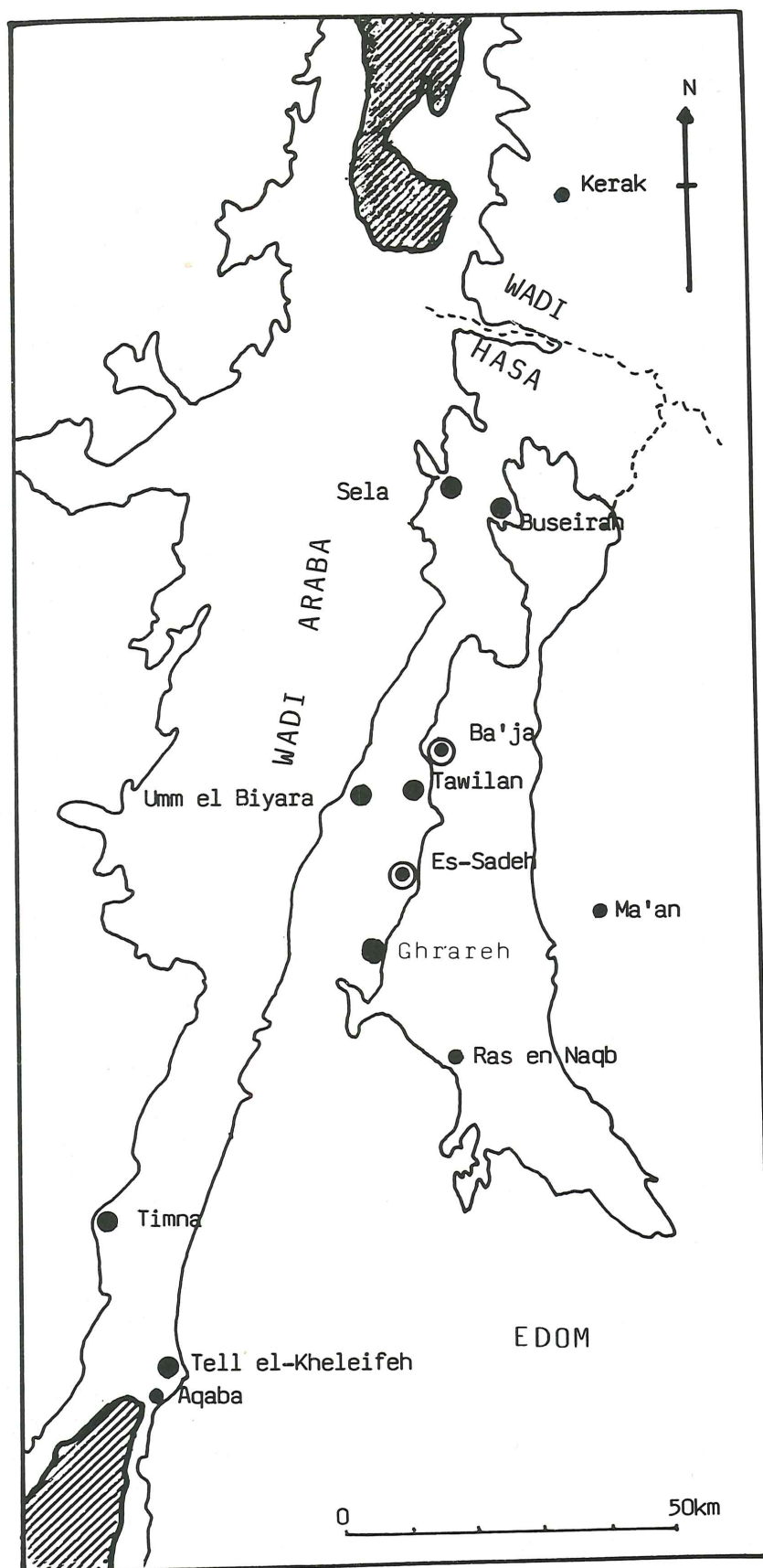


Fig. 11. Sketch map of Edom and Edomite sites in Southern Jordan.

and Jabal Harun was probably sacred also to the Edomites who, as we know now, built long structures for other purposes.

The conduit of pre-fabricated guttering stones as well as the poorly preserved second conduit in the valley to the south is, of course, Nabataean. There are enough parallels in Ḥumayma, Šabra and Wadi Ramm. The beautiful arch, a showpiece par excellence, has no parallel in Petra or in any other Nabataean settlement. Possibly, a Greek or Roman architect planned and built it. As part of the planned water-supply system, together with the conduit and the large cistern, it belongs to the beginning of our era rather than toward the end of Nabataean independence. Classical archaeology may corroborate the dating on stylistic grounds.³⁰

There is another important question: Was es-Sadeh continually inhabited up to the 1st Cent. B.C. and if so, who lived there?³¹ Or was there a gap of a few centuries with only nomads using the water of the spring? M. Oakeshott has recently compiled the essential characteristics of Edomite pottery from Buṣeirah, Ṭawilan, Tell el-Khalifeh and Umm el-Biyara.³² In the meantime two more Edomite sites

were discovered by groups of the Naturhistorische Gesellschaft Nürnberg under M. Lindner's direction: Ba'ja 10 km north and es-Sadeh 15 km south of Petra. Another archaeological site, namely es-Sela' near Buṣeirah was, after Glueck, intensively re-examined by M. Lindner and his group (1969-1980), and its pottery analyzed by F. Zayadine.³³ Es-Sela' is a multi-phase fortified site which according to the pottery found on the surface was used from the Early Bronze to the Ayyubid/Mamluk period, and, as already pointed out by Glueck, definitely by an Edomite population.³⁴

Ba'ja is an almost inaccessible and therefore easily defendable mountain stronghold.³⁵ The pottery is almost parallel to that of Umm el-Biyara and es-Sadeh. Thus the chain of more or less contemporary Edomite settlements along the rim of the Edomite upland has been provided with three more links.

The amount of pottery collected from the surface at es-Sadeh is small so far, but there is no doubt that it is Edomite ware and that it belongs to the "distinctive East Jordanian pottery assemblage" envisaged by M. Oakeshott. If we follow M. Weip-

30. According to Ch. Börker (University of Erlangen-Nürnberg) the aqueduct arch is reminiscent of aqueducts in Aspendos and Caesarea Maritima. A. Schmidt-Colinet (University of Bern) emphasizes "die Blüte der Bossen- und Spiegelquader in herodianischer und vorherodianischer Zeit". K. Dornisch (Bildungszentrum Nürnberg) sees parallels in Pisidian Antiochia, and E.M. Ruprechtsberger (Stadtmuseum Linz, Austria) calls the aqueduct arch of es-Sadeh "ein eindrucksvolles Denkmal römischer Ingenieurleistung im nabatäischen Umfeld... nicht sehr wahrscheinlich vor dem Ende des 1. Jahrhunderts n. Chr.". We wish to express our appreciation for these expert opinions transmitted in letters without delay.

31. The question about the continuity of the Edomite settlement of Edom until the coming of the Nabataeans and later has been raised several times, lately again by J.R. Bartlett, 'From Edomites to Nabataeans. A Study in Continuity,' *PEQ* 111 (1979), p. 33-66. His affirmative answer, however, is being contested, for instance, by E.A. Knauf, 'Die Herkunft der Nabatäer'. In: M. Lindner (ed.), *Petra - Neue Ausgrabungen und Entdeckungen*. Delp Verlag Mün-

chen, 1986, p. 81-83 and by S. Hart, 'Some Preliminary Thoughts on Settlement in Southern Jordan', *Levant* 9 (1986), p. 51-58. For E.A. Knauf a "continuity of population" not necessarily of settlement seems probable (personal communication).

32. M.F. Oakeshott, 'The Edomite Pottery', *Journal for the Study of the Old Testament*, Suppl. Series 24 (1983), p. 53-63 with the necessary bibliographical data. In the meantime S. Hart has sounded another Edomite settlement, namely Ghrareh (see footnote 15).

33. M. Lindner, 'Es-Sela' - eine antike Fliehburg 50 km nördlich von Petra'. In: M. Lindner (ed.), *Petra und das Königreich der Nabatäer*, 4th ed. Delp Verlag München, 1983, p. 258-271. A fifth edition (1989) is forthcoming.

34. S. Hart in his short article 'Sela. The Rock of Edom', *PEQ* 118 (1986), p. 91-95, about a survey of Sela' in 1984 did not take notice of the former surveys of Glueck (1936) and M. Lindner (1969-1980). Both had identified Sela' as an Edomite site as well.

35. M. Lindner and Suleiman Farajat, 'An Edomite Mountain Stronghold North of Petra (Ba'ja III)', *ADAJ* 31 (1987), p. 175-185.

pert, the Mesopotamian rulers procured tranquillity and prosperity for Edom in the 8th to 6th Cents. B.C. Most settlements discovered so far are to be dated to that period, which coincides with the amalgamation of Edom under a single king, and with the "existence then of a vigorous Edomite civilization."³⁶ Unfortunately up to now, those sites cannot be more precisely dated by excavation than to the time span indicated historically.³⁷ Considering the lack of significant archaeological remains from the Edomite upland and that es-Sadeh does not offer any definitely earlier pottery, the 7th/6th Cents. B.C. should be more probable for our Edomite settlement than the 8th/7th Cents. B.C.³⁸ According to the surface pottery, the 7th/6th Cents. B.C. (Iron Age II) is therefore tentatively suggested as a date for the settlement of es-Sadeh. That period should have been tranquil and prosperous for Edom. Nevertheless at es-Sadeh we find a mountain settlement on a wind-blown, bare rock-spur comparable to Umm el-Biyara and the almost inaccessible stronghold of Ba'ja. The contradiction may be explained by E.A. Knauf who sees a psychological reason, the "thrust for independence, autonomy and autarky" of a tribal society.³⁹ Custom and tradition, of course, have also to be taken into account.

Summary

Es-Sadeh, a valley of the Edomite upland ca. 15 km south of Petra was explored by a team of the Naturhistorische Gesellschaft Nürnberg under M. Lindner's direction in October 1987. The project was part of a survey in southern Jordan includ-

ing Abu Khusheiba, ed-Daman and Šabra. Because the stay in es-Sadeh could not last more than a few days, only preliminary results can be formulated. Es-Sadeh is a multi-phase site with a spring. Palaeolithic, Neolithic, Iron II (Edomite) and Nabataean remains were seen. With the exception of a few surface finds of probably Palaeolithic material, the main lithic finds were located on the outskirts northwest of the valley. The non-systematic surface collection comprised various periods: Middle Palaeolithic, Epi-Palaeolithic and Pre-Pottery Neolithic. Iron Age II is represented by houses and pottery. On a plateau called Umm el-'Ala by the bedouins, three "compartmented longhouses" of ca. 20, 47 and 83 m were discovered. The building technique is reminiscent of the Edomite houses on Umm el-Biyara (Petra). Above the settled mountain spur the ruin of a tower-like building consists of a large heap of well-hewn ashlar without bossing or diagonal tooling. A single cistern was found near the longest building. The pottery on the way up and around the ruined "longhouses" was mostly Iron II together with smaller amounts of Nabataean ware. The Iron II pottery is of the same type and probably of the same period as the material found and excavated on Umm el-Biyara and Ba'ja. At the latter site a group of the Naturhistorische Gesellschaft Nürnberg under M. Lindner's direction found another Edomite stronghold on an almost inaccessible mountain top. Up to date one group of houses of es-Sadeh, actually a village, can be interpreted as Nabataean. It is located below an elongated mountain top with a 17 x 6 m ruin of an atypical building. Surface pottery and pottery of a

36. N. Glueck, *Explorations in Eastern Palestine III*. AASOR 18/19 (1939), p. 26-32.

37. E.A. Knauf sees the transition of Edom to full statehood when it became an Assyrian vassal in 734 B.C. (see end of footnote 38).

38. M. Oakeshott, after study and comparison of the Edomite pottery of Buṣeirah, Ṭawilan and Umm el-Biyara, resignedly states that precise dating is not at present possible. S. Hart (see footnote 31) suggests that none of the sites with Iron Age pottery examined by him could be dated before the 7th Cent. B.C., and that this

seems to be true almost universally for the area (sc. between Buṣeirah and Ghrareh). See also the concurring statements of J.R. Bartlett, 'The Rise and Fall of the Kingdom of Edom,' *PEQ* 104 (1972), p. 26-37; M. Weippert 'Edom and Israel', *Theolog. Realenzyklopädie* 9 (1982), p. 291 ff. and S. Hart (see footnote 31) who are shared by E.A. Knauf in his yet unpublished paper "From Edomites to Nabataeans — An Outline of South-Jordanian History in the Course of the First Millenium B.C."

39. Personal communication.

sounding are overwhelmingly Nabataean. The structure has its central axis and a block-like front structure directed toward the visible summit of Jabal Harun. There was, however, also a scatter of Iron II sherds. The interpretation of the building as a Nabataean sanctuary or even a "temple" has to be considered. The "show-piece" of the Nabataean period of es-Sadeh is a beautiful arch with bossed ashlar, part of a conduit of pre-fabricated guttering stones on limestone substructures. The water from a spring was brought into a cistern of ca. 17 x 8.60 m and an unknown depth. For the water-supply a second conduit and the waterholes in a gorge-like section of the wadi were important. The Edomite settlement of es-Sadeh is tentatively dated in the 7th/6th Cents. B.C., the Nabataean settlement since the

beginning of the Christian era. Late Nabataean pottery was the smallest part of the surface material, and the earliest Nabataean ware came from the 1st Cent. B.C. A few open questions and unsolved problems are discussed. Hopefully, they will be answered during a second survey of es-Sadeh in 1988.

M. Lindner
J.P. Zeitler
Naturhistorische Gesellschaft
Nürnberg
Gewerbemuseumsplatz 4
D-8500 Nürnberg 1

S. Farajat
Department of Antiquities
Petra

