

SURVEY OF ŞABRA (JORDAN) 1990 PRELIMINARY REPORT

by

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Retrospective Introduction

Şabra is located in a section of the wadi of the same name which originates south of Wadi Musa, runs from there in a south-southwesterly direction to the ancient site and reaches wadi 'Arabah after many bends. At a distance of only 6.5 km (as the crow flies) from Petra, it cannot be reached by car, not even by landrover. Therefore, little research has been going on in the region since its discovery by Léon de Laborde in 1828 who took the name "Şabra" from his Bedouin guides (de Laborde 1836). In antiquity, Şabra was a Hellenistic town close to an oasis with a presumably perennial spring at the foot of Jabal el-Jathum, which rises to a height of 1125m asl (Fig. 1).

The ruins extant on the right (northwestern) wadi bank are the remains of an "acropolis," of dwellings at the slopes and of several columned buildings on an artificial platform below. At the foot of the acropolis hill, the first excavation of Şabra was undertaken in 1982 (Lindner 1982a: 67-72; 1986a: 151-154; 1989b: 500-505) together with F. Zayadine.

The well-known theatre on the left (southeastern) wadi bank was first described by Léon de Laborde (1836: 195-197), and first thoroughly examined and tentatively measured in 1980 (Lindner 1982c: 39-64). A catch water regulation system and a rock conduit from the basin behind a 17 m dam built 100 m above the wadi bed were found and described by a group from the "Naturhistorische Gesellschaft Nürnberg" (NHG) (Lindner 1982b: 59-64). A caravan track between Şabra and Wadi 'Arabah which runs straight across the foot of the acropolis hill was followed to an ancient copper mine at Umm el-'Amad in

1983 (Lindner 1986a: 170-188).

Most of these discoveries are due to explorations of the Şabra region directed and performed by various teams from NHG in 1969, 1976, 1978 and 1980 (Lindner 1976: 83-96; 1978: 81-96; 1980: 27-32). During the following survey of 1983, southeast of Şabra proper above an S-curve of Wadi Şabra, several house ruins with Early Bronze Age pottery were found (Lindner 1986a: 157). In 1987, during a southern Jordan survey of NHG another Early Bronze site was discovered by Dakhilallah Qublan about 150 m above Şabra (Lindner 1989b: I, 90; II, 504). Eventually, in 1988, E. Schreyer found ancient quarries northwest of Şabra at the slope of Jabal Mutheilya.¹

Survey of Şabra 1990

The survey of 1990 was directed by the author and J.P. Zeitler. With the generous permission granted by Dr. Ghazi Bisheh, then Director-General of the Department of Antiquities of Jordan, the already known sites were re-visited and re-evaluated, the platform with the remains of the columned buildings below the acropolis hill explored, and the mountain ranges on both sides of Wadi Şabra systematically investigated. Two weeks in May were spent by the 10 members of the team in Şabra (PI.1).

Within the area to be described, Wadi Şabra runs roughly from the northeast to the southwest. It is enclosed by the sandstone mountain ranges of Jabal el-Jathum in the southeast and of Jabal Mutheilya in the northwest, both continuing the eastern ridge which bifurcates after leaving Jabal Mansah (Mensah) Kennedy 1925: 19) as an impressive landmark. Whereas Jabal el-Jathum rises

1. Of the various and changing groups I have to thank several active members who contributed to the scientific results: E. Gunsam, R. Gmelin, I. Just, A.

Schmid, E. Schreyer, I. Künne, G. and W. Müller, Mohammad Suleiman Salim, Awath Salama Eid and K. Schmitt-Korte.

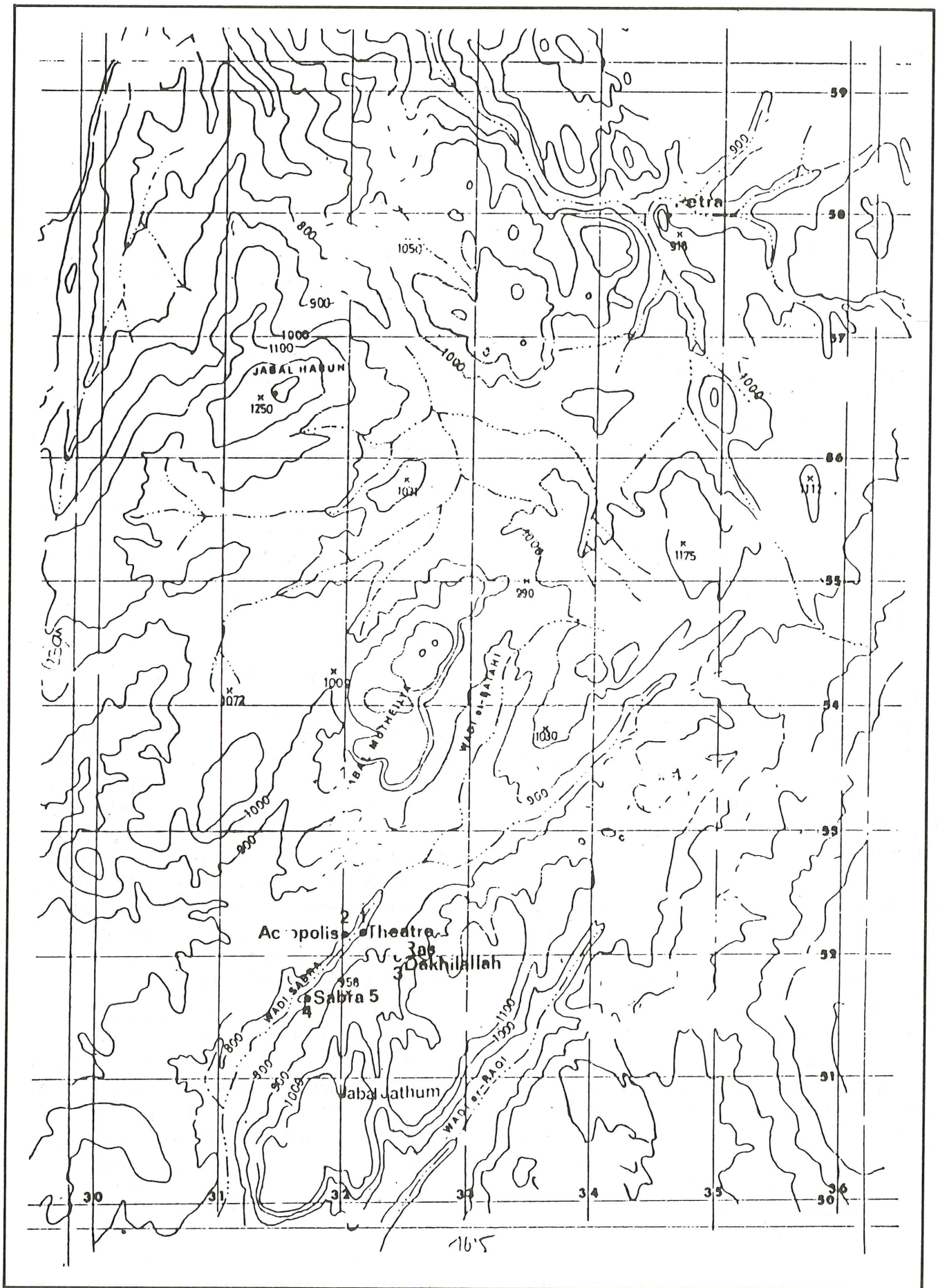


Fig. 1. Sketch map of Şabra and surroundings (E. Schreyer).

steeply from the wadi bed, on the northwestern bank foothills and playa fillings make the ascent easier in the beginning. Then, however, the ascent becomes steeper, but less steep than on the other side, and because of small gullies and gorges, easier to manage.

The Jabal Mutheilya Region

Climbing up the eastern mountainside, abundant ferrous sandstone with thick black crusts and bullet-shaped concretions was seen, but only one small piece of haematite. Surprisingly, fresh charcoal was lying on the ground. Either whole trees or branches of juniper are being burned for charcoal, as observed to the north of Şabra the next day, or one has to think of conflagration by lightning as seen by the author on the ascent to Jabal en-Nmeir at Petra a few years ago. The firewood supply is a main problem of the region. In fact, even in the most remote and almost inaccessible places, all juniper trees are either felled or deprived of their thicker branches. The uneven cuttings show how hard and dense the slowly growing wood is, and of course, how little suited the Bedouins' saws and axes are. Obviously, not only the grazing of far too many goats and sheep, but also wood cutting is destroying the land. Wood gathering expeditions of Bdul families from Petra were noted in Şabra a few years ago.² Woodcutting, hunting and herding prompted people of all ages to create, use and improve trails and tracks up into the mountainside.

There were still other reasons. After a passage through yellowish and ferrous sandstone on a pathway with ancient-looking substructures, an intermontane plain of about 300 × 30m was reached. The place, now filled with sand and rubble from three converging gorges, had once been used for agriculture. Three massive successive walls of 8-14m length were built at some time to slow down the winterly torrents as well as to retain water and soil for planting crops. The boulders and ashlar were chosen from a special hard grey sandstone material, which together with the construction technique resembles very much

the big dam in the opposite Jabal el-Jathum massif.

A few rock shelters on the way up showed signs of recent occupation, probably by herdsmen or wood-gatherers who seek shelter in bad weather. Still farther up, the wadi — now more a gorge — is stepped up in widening natural terraces. In one spot, however, a basin of 6 × 4.5m has been artificially enlarged and closed with a wall still standing 1 m high.

At 1030 m (as1), through a small defile, an *Artemisia Sieberi* (*Artemisia herba alba*) plateau which slightly dips towards the north-east is reached. The site very much resembles Umm el-Biyara, but no traces of occupation at any time were found. After four more similar plateaus, all of them exposed and sloping towards the north and Jabal Harun with the fertile plain south of it, indications of ancient and recent agricultural use increase. At the back of the Jabal Mutheilya massif (at around 1020 m as1) all wadis and gorges are extensively barred successive walls. Several smaller ones were repaired lately. The larger ones are apparently unmodified since antiquity (P1,II,1). In a wide flat gorge, juniper trees are grown to respectable sizes within the built walls where water and soil were preserved.

While circling the massif towards the east in order to find a descent into Wadi Baṭaḥi and from there to Şabra, one could easily understand how important it was at any time to have pathways as shortcuts across the mountain to the arable fields and to pastures between Jabal Mutheilya and Jabal Harun. No wonder that all over the surveyed slopes facing north, flint implements and scatters of coarse pottery were seen.

Farther down the wadi, the slopes of Jabal Mutheilya surprised us with an unexpected amount of haematite together with unworked flint which is to be found already in the debris fillings of the wadi. The haematite pieces vary between hand-size and lens-size. They peter out after two thirds of the ascent. There is no flint above the foothills. A rather thin scattering of Nabataean-Roman pottery

2. "... the Bedouin as any herdsman the born and forsworn enemy of the forest..." Gradmann 1934:

174 in an account on the Palestinian geography and flora which is still true today.

is spread all over the way up. Indications of regular traffic across the mountain are several substructed pathways up to the top of the ridge.

Around a prominent hillock and through a narrow "siq", a wide barren plain is reached in a northwesterly direction. A trail leads to aḍ Ḍaman whose mountains are visible as well as the track coming from Şabra (Lindner 1986a: 175). In front of a rock shelter, stone implements were collected. At about 850 m asl, two ancient quarries already seen in 1988 were investigated. In one of them the top of a hill was cleanly cut off. The debris left after the work still form a heap on one side. The quarrying was done from above. Nearby, a big flat block of sandstone with the masons' cuts in the upper surface was noted (Pl. II, 2).

On the way down, a wall of black stones, especially gathered and brought to the site for their durability, was built across the upper part of a gully leading down to Şabra. Of other barriers only traces are left. Still farther down, one transverses playa fillings of almost pure sand where winterly torrents have cut narrow and high "siqs." Farther south, the fillings partly consist of rubble with unworked flint and haematite pieces. Ascending there through steep gorges and gullies, plenty of ferrous sandstone was noted, but towards the west the haematite peters out again. Many old juniper trees, one of them with the respectable circumference of 2.55m were seen but absolutely no young ones. A few pistachio trees grow at least in inaccessible cracks and slots.

At 850 m asl, a flight of hollowed-out steps in a steep rock wall (Pl. III, 1) situated 350 m (as the crow flies) from the theatre leads to a quarry of yellowish sandstone. After about 8×3×3 m of stone were removed the quarrying was stopped. The rock-wall shows the stone masons' alternating strikes in a herring-bone pattern (Pl. III, 2). The same traces may be observed at the rock wall around the theatre of Şabra, in many places in and around Petra, and even in recent sandstone quarries in Europe.

Fifty metres higher up and 200 m towards the west (as the crow flies), a plateau may be reached only from above. Two more quarries in the same yellowish sandstone show the equal technique of removing the material from an upper level and leaving one or two rock walls with the herring-bone pattern.³

On the barren rock in front of the quarries, many Nabataean (-Roman) pottery sherds were collected. Considering the sloping mountainside where the rain washes down everything movable, a vast amount of sherds must have existed in antiquity (Figs. 2, 3). Unless ropes were used, the quarried ashlar had to be transported first up the mountainside through a narrow gorge before they could be taken to Şabra. With so much, in fact nothing else but sandstone right around the ancient site, the material from the quarries of Jabal Mutheilya was obviously especially useful for certain purposes of building or decorating (Pl. IV, 1).

In the northeastern part of Jabal Mutheilya, foothills rise directly out of the sand of Wadi Şabra. Grave shafts of 1 × 2 m are sunk in different depths into rounded and smoothed rocks in an inaccurate N-S direction (Pl. IV, 2). Ten shafts of the necropolis were counted, but there might be a few more in hidden corners or in the sand of the wadi. All of the graves had been robbed, some of them not too long ago. The covering stones taken out by the robbers were found carefully laid around the shaft openings, and some sand thrown out during the pilfering was not entirely washed away.

An artificially enlarged cave-like rock shelter not far from the necropolis overlooks the valley towards the northeast. Lately, it was half-closed with a concrete wall. A tin drum inside collects water dripping from the ceiling. In front of the shelter an artifact far more ancient was found in 1987. It was half of a carefully made grinding plate of granite. Large dung layers had been thrown out of the cave — an indication of recent use which had been observed by the author several years ago.

3. Thanks are due to architect G. Stolz, Nürnberg, who introduced me to the methods of sandstone quarrying.

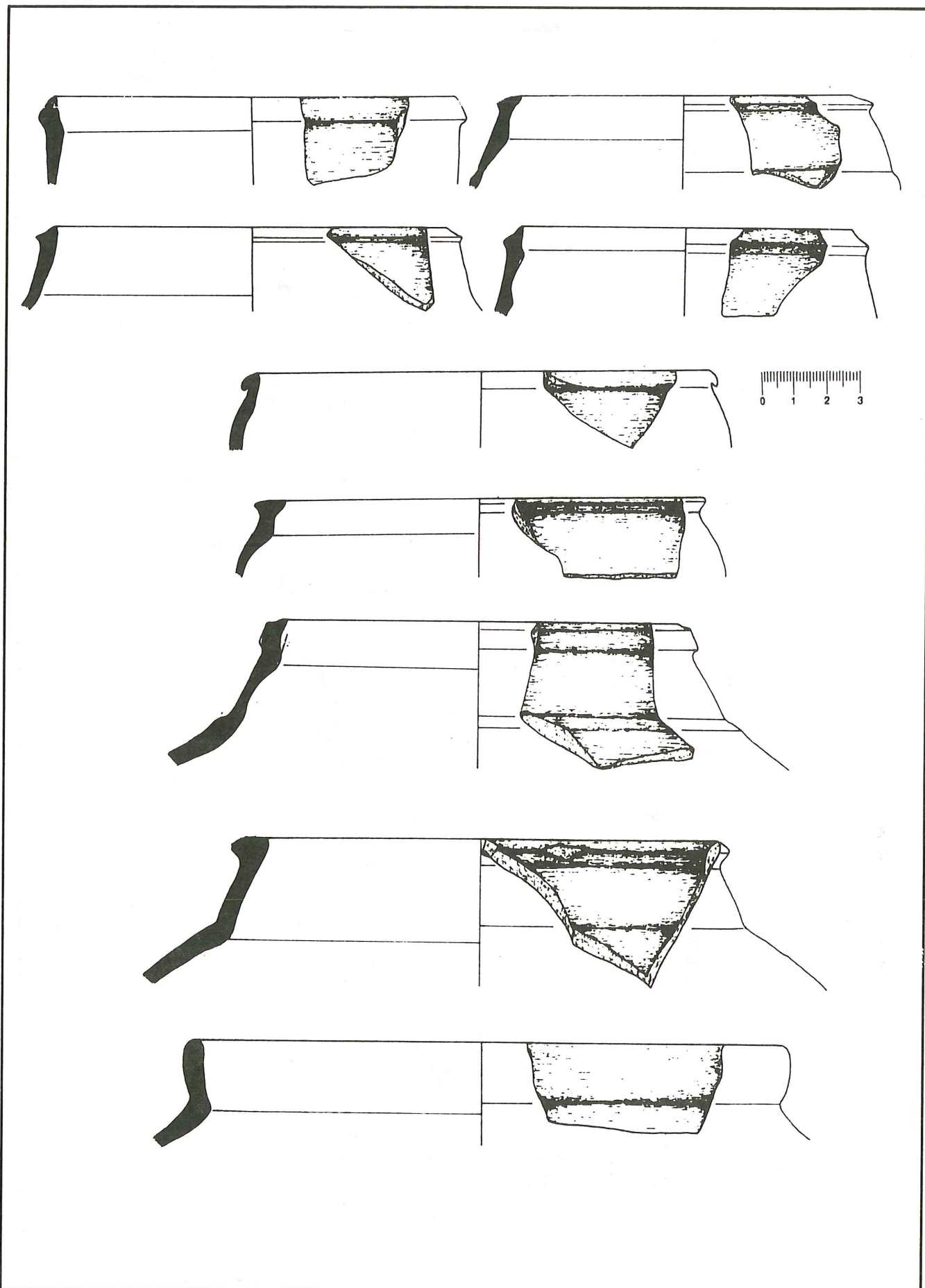


Fig. 2. Pottery from the quarries at the Jabal Mutheilya massif.

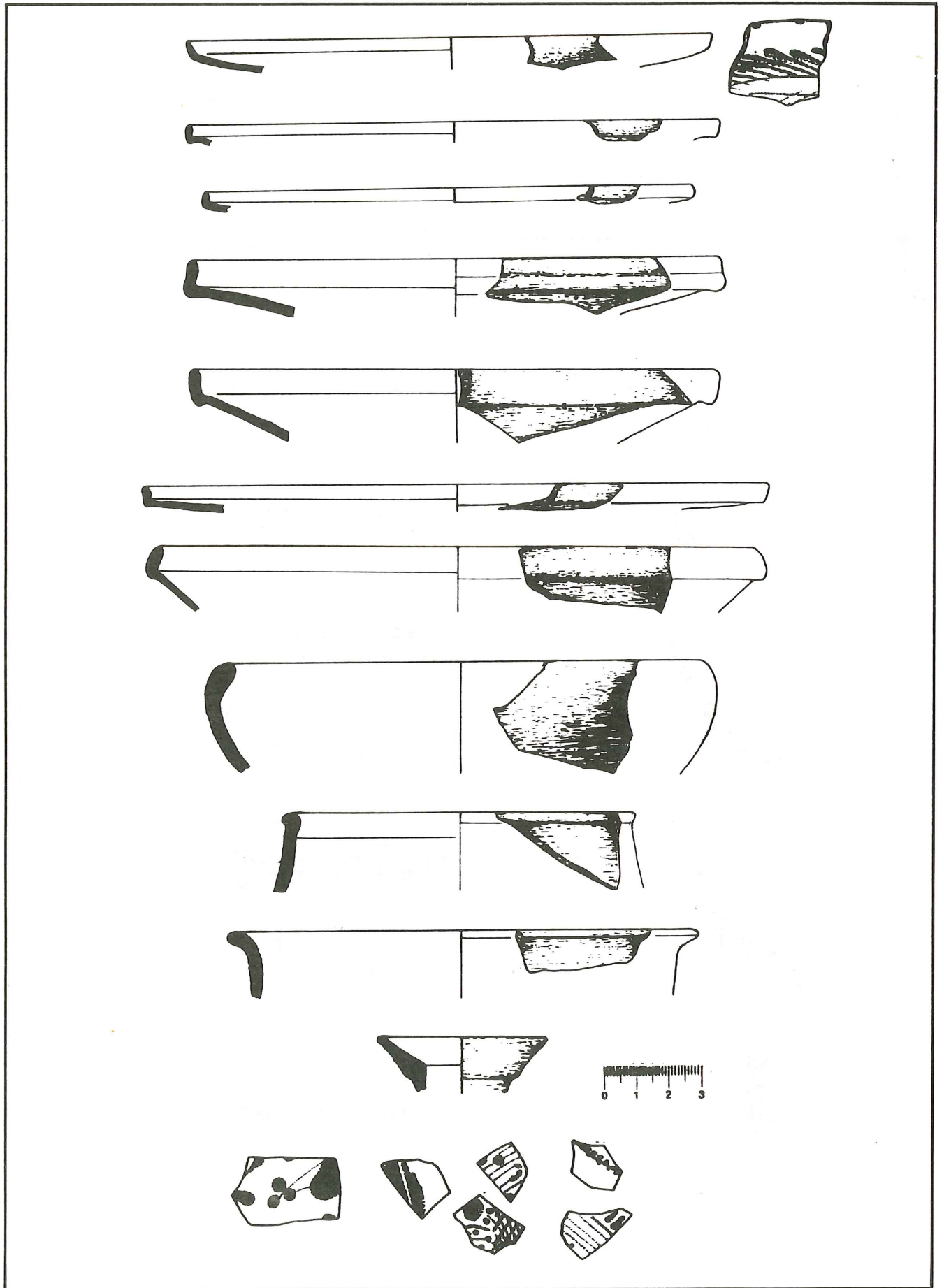


Fig. 3. Pottery from the quarries at the Jabal Mutheilya massif.

The Jabal el-Jathum Massif

The Jabal el-Jathum massif (Fig. 4) with two valleys reaching high up into the mountainside was excellently suited for hydraulic installations. The dam 100 m above the bed of Wadi Şabra, meanwhile well-known, but hardly ever visited, may best be reached from the slope house ruins northeast of the theatre. This dwelling area was found much larger than previously thought during casual inspection. Foundations and courses of standing walls are made of well-hewn, sometimes diagonally-tooled ashlarš (Pl. V, 1). A sounding between the building stones 50 m northeast of the theatre revealed Nabataean pottery of the first to third centuries A.D. The slope settlement extends to the other side of the theatre where the almost perpendicular cliff opposite the acropolis hill was used as back wall of buildings (Pl. V, 2).

In the same cliff, an arcosolium rock chamber was excavated in 1982 (Lindner 1982a: 72-73). A niche in its back wall apparently gave the mountain the adjective "holy" in the map of Jordan 1:50,000. The finds, not finally published so far, were mostly unpainted rather coarse pottery of the second to fourth centuries A.D., a fragment of a stone nimbus (?), a shattered glass flask with a thick bottom and a serrated edge and, on bedrock, two Late Roman lamps with the nozzles blackened by soot and two coins of IULIA DOMNA and GALLIENUS (Lindner 1986a: 154-155; 1989 II, 2: 500-505). According to the finds including the torso of an Aphrodite statuette found nearby (Lindner 1982a: 67-72; 1986a: 151-154), the rock chamber was probably a cultic place in connection with the spring below. Originally, before the third century A.D., it might have been an important tomb.

A small rock-cut cistern in front of the slope house ruins northeast of the theatre is probably one of many hidden now in the sand and rubble of the wadi (Pl. VI, 1). When it was used, the people of Şabra must have controlled the winterly floods and the danger of rock slides above their houses. A whole system of hydraulic constructions was necessary for the flood-control: wadi barriers, reservoirs, artificial terraces and breakwaters from the uppermost gullies and gorges down

to the wadi.

An even now well-trodden, but certainly ancient trail with a few rock-cut steps winds up to a gorge which leads to the big dam and the area, once a basin, behind it. Before, a large rock shelter is passed which has been recently used by the local Bedouins. Layers of dung had been thrown out and no prehistoric remains were seen. A basin in front of it could easily be converted into a water reservoir. 20 m higher up the same trail, many flint implements and a jug handle with a decoration of black dots were collected. Farther northeast, more rock shelters, one with a water-filled pool of 2 × 2 m, another with an empty pothole were noted. Water trickling down from terraces overhead indicated more waterholes or basins within the rock wall (Pls. VI, 2; VII, 1). Thus, the area was blessed with a reliable water supply. Despite the fact that the terrain is very difficult to cross, a tomb of massive boulders at 900m asl demonstrates the presence of people — and the death of one of them — at an unknown time.

The dam and the ensuing partly built, mostly rock-cut conduit were re-examined. The precise measurements of the dam are 17 m long, 4.30 m wide and 5.30 m high. The waterholes of the uppermost terrace of the catchwater regulations system (Lindner 1982b: 236-237; 1982c: 32-35) were filled and again the impression was strengthened that in antiquity those upper terraces were walled up and converted into a series of large reservoirs.

Ras Dakhilallah, named after its discoverer Dakhilallah Qublan from Petra, and marked as "Şabra N" by the author, cannot be easily reached from Wadi Şabra. The lower part of the gorge connecting it with the wadi is impassable. But its middle or upper part can be reached by some climbing from the sand-filled plain which was once the water reservoir behind the big dam (Pl. VII, 2). Then, through the upper part of the gorge with shady passages, big juniper trees and — in May — empty waterholes, the lofty site of Şabra N is gained. It consists of three stepped-up platforms or wide ledges of altogether not more than roughly 800 m² directly at the cliff of Jabal el-Jathum on the one and the precipices down to the former basin on the other side (Pl. VIII, 1).

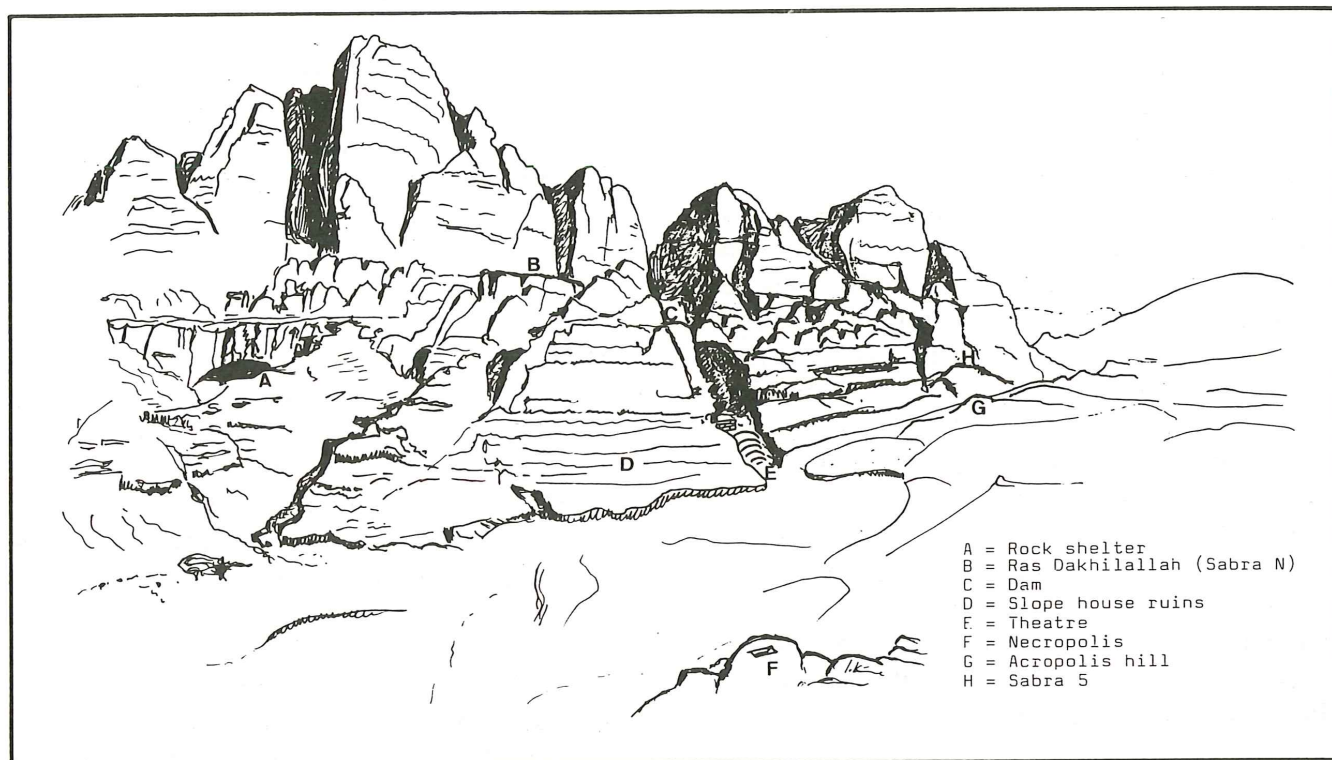


Fig. 4. Sketch of Şabra seen towards the southwest (I. Künne).

If one follows M. Abu Safat (Lindner 1986a: 309-317) who analyzed the erosion and shrinkage of Cambrian sandstone slopes, the site might have lost not more than a few metres of its expanse in 5000 years. The extant number of flints, grinding plates (querns), grinding and pecking stones, and pottery fragments from a station of that small size is astonishing. The sounding of 1987 (Lindner 1989 II,1: 504) revealed Early Bronze Age pottery and sandstone disks together with scrapers on large flakes whose dating as possibly Palaeolithic by H.G. Gebel was contested by J.P. Zeitler who — together with the results of two new soundings in 1990 — dated the lithic and ceramic material as Early Bronze Age throughout. The unstratified material will be published separately in due course.

Except for the two valleys or wadis running from south to north with the eastern one originally filling the basin behind the dam, the region is as intractable as the northeastern part of the mountainside. The eastern wadi passes below Şabra N. Following it upward, between steep cliffs and through cool gorges, one reaches a canyon-like “siq” high up in Jabal el-Jathum massif. The western wadi, actually a valley at the begin-

ning, runs fairly parallel to the other one. By a well-defined path it can be followed to the South. At a narrow spot it was even artificially widened. After about 1000m at 940m asl, a canyon of 3-4 m width leads to a divide at the same height. Ancient constructions are visible in the gravel. Then the trail runs to Wadi el-Raqi and Wadi Tibbn, one more shortcut as seen in the Jabal Mutheilya massif. From a point above the divide at 1050m asl where several stone implements were collected, Jabal Harun and the range of Jabal Mutheilya may be seen.

Wadi Şabra and the Early Bronze Age Site of Şabra 5

The course of Wadi Şabra from the theatre towards the southwest has considerably changed during the more than 20 years observed by the author. Every year, boulders and building stones disappear, others appear. The framed bust of a “sagittarius” seen for the first time in 1969 (Lindner 1986a: 158-161), and the last time with additional damages was not found anymore in 1990. In winter, the flush floods “feed” on the right wadi bank with the temple platform on it. Every year new architectural pieces are revealed. Fallen into the wadi they are swept

away, and if they are of sandstone, crushed to sand.

As before (Lindner 1986a: 158-169), visible structures and constructions of the temple platform and acropolis hill were investigated and drawn in 1990. Together with the formerly found architectural details, a catalogue is in preparation which will be published together with the results of the examination of the acropolis hill.

The wadi running through the ancient site of Şabra is difficult to assess. Where there once was an oasis in antiquity, many ashlar have come to a stop and were buried in sand and gravel over the centuries. Only in the present wadi of durable limestone, quartzite and flint, stones are being transported by wintery torrents. Several boulders, believed by Glueck to be the remains of a pavement across the wadi in front of the theatre and still seen by the author in 1980 (Lindner 1982b: 240), had disappeared in 1990. By the water and sand of the flush floods, heavy boulders are transported over wide distances; that was demonstrated again during the three days' rainfall in the Petra region on March 22-24, 1991.

The presumed oasis of antiquity had to be a man-made garden. Without constant artificial irrigation and gardening, it cannot survive. Therefore, the present flora of Şabra should be about the same as they were before people settled there. However, the flora of today is hampered through the grazing and overgrazing of the whole area by goats, sheep and camels. Herds of 80 goats and 30 sheep were driven twice daily through the wadi in 1990. Naturally, only what is not liked by the animals, namely *Tamarix nilotica*, *Nerium oleander*, *Phragmites australis*, *Arundo donax*, *Imperata cylindrica*, *Juncus arabicus* and *Dittrichia viscosa*, the vegetation of wadis with a high groundwater level can exist. Due to the same conditions as in other places of southern Jordan (e.g. 'Ain ez-Zawi), a single palm tree (*Phoenix dactylifera*) is thriving a few hundreds of metres down wadi from the acropolis hill. Its many dead trunks document an old age. If not a remnant of ancient Şabra, it should at least exemplify its fruit gardens. By the way, greenish dates were collected from the old tree a few years ago.

One of the reasons that the town of Şabra came into existence was, beside the water supply, its location by an ancient track which was later converted into a road by the Nabataeans. Coming from Petra in three branches, it accompanies the wadi on its right northwestern side for about 1000m. Its alignment may be seen clearly from the opposite heights as a cut in the white sandstone. The surface has been swept away, but after turning to the right west and upwards, it runs in five substantially substructured bends and through a hewn-out section to ad-Daman and Abu Khusheiba (Lindner 1986a: 170-175).

Where the only palm tree of Şabra thrives in the wadi, the foothills of Jabal el-Jathum rise steeply from the wadi bed. Stone implements found at the slope (Lindner 1986a: 157) were obviously washed down from above. Four stone heaps on top of a low range paralleling the Jabal el-Jathum massif were recognized as the ruins of dwelling structures (Pl. VIII, 2). The site was safe from wintery floods in the wadi itself and also from torrents coming from the massif. Many grinding plates (querns), grinding and pecking stones, stone implements and pottery fragments, the latter Early Bronze Age according to Zeidan Kafafi and H. G. Gebel, had been noted in 1983 (Lindner 1986a: 157). During a systematic search. (Pl. IX, 1), more material including the fragment of a mortar was collected in 1990. The site "Şabra 5" (or because of the palm tree nearby "Şabra Makan an-Nakhla") was not isolated and has to be seen in the context of Chalcolithic and Early Bronze Age settlements in southern Jordan including es-Sadeh (Lindner *et al.* 1988: 75-99; 1990: 193-225), Şabra N (Ras Dakhilallah), and some other sites identified but still to be investigated more closely.

At a point where the slope of Şabra 5 reaches Wadi 'Arabah, which had running water most of the observed time, a hillock had already posed a problem in 1983. Column drums and diagonally trimmed ashlar were noted in the wadi and above (Lindner 1986a: 157). Was there a columned building in antiquity at that point or was it nothing but an accumulation of material swept down from the town centre? In 1990 only a few of the drums found earlier were still extant.

Apparently, what has been swept down from Şabra comes to rest at the site before the transporting forces of the winterly torrents manifest themselves again⁴.

Beyond the S-curve, the right southwestern bank of Wadi Şabra shows terrace walls, house ruins, and two rock-cut cisterns with Nabataean pottery of different centuries. Obviously, Şabra did not end with the acropolis hill. Farther on, Wadi Şabra runs between banks and cliffs which become higher and higher to a point where it is a frightening abyss between perpendicular walls. There are three detours around the impassable gorge. One is a narrow ledge managable only by people and donkeys, the other a time-consuming track in the northwest across barren, also archaeologically barren, limestone slopes, the third one, no trail at all, means climbing straight up the mountainside where the wadi becomes impassable. The limestone slope as well as the narrow ledge leads to the valley of es-Sadeh, which according to explorations in 1987 and 1988 by teams of the NHG under the author's direction, was inhabited in the Early Bronze Age, in the Iron Age II and during the Nabataean period (Lindner *et al.* 1988; 1990).

The Acropolis Hill of Şabra

The rock hill with the buildings around and on top was in the absence of a different name called "Temple Mount" in contrast to the opposite "Theatre Mount" by the English translator (Lindner 1982b: 231-241). However, "acropolis hill" should be a more appropriate name and will be used in this paper despite the fact that at the foot of the hill, the ruins of columned buildings have been known for a long time (Pl. IX, 2). In fact, de Laborde marked three temples in his sketch map of 1836. As the soundings of 1990 proved, at least one of them may be identified as a temple built in a similar quality as the Petraean temples as far as they are known.

The research directed by J.P. Zeitler is still going on, and the results will be published in due course.

The history of the destruction of the buildings on the platform is not yet clear. When the front part of the acropolis hill broke down, the temple might have already been destroyed. At any rate, the temple or its ruin was covered by the fallen material and subsequently partly laid free by wind and torrents.

The northwestern and southwestern slopes of the acropolis hill were covered with buildings erected on artificial ledges and terraces. According to the well-hewn, partly diagonally trimmed ashlar and single decorated pieces of architecture (see also Lindner 1986a: 158-169), the houses were of astounding quality. The whole hill with intact structures originally looked like a sumptuous Saharian "ksar." Nothing similar is known in the whole region. On, or rather in front of, a small summit plateau, the ruin of a building stands out. Upon foundations of hard limestone, sandstone ashlar do not reveal the purpose of the structure with its sturdy arch in the interior. Bedouins have been excavating in the ruin. Thrown-out pottery fragments lie about. Copper and copper slag are found on the hill, but no traces of a smelting plant could be recognized. The masses of pottery fragments with a slight variation in the upper and lower part of the hill document a long and intensive use between the first and fourth centuries A.D.

Rock channels conducted rainwater from the buildings into a gorge at the southwestern foot of the hill. Sections of channels were bridged with conduit blocks (Lindner 1982a: 72)⁵. Quite possibly, a reservoir was constructed by damming up the gorge which was spanned by arches.

The structures of the hill did not end with the described gorge. On the other southwestern side, during the excavation of 1982, a

4. An example of those transporting and destroying forces of winterly floods was seen in March 1991 when in Palestine, Egypt and Jordan after three days of rain, masses of water rushed into formerly dry wadis, and carried also at Petra enormous amounts of rubble and bigger boulders with them. Thus, the

find of a capital from Şabra several kilometres farther southwest in the wadi was easily explained.

5. The author was persuaded by Prof. Dr. G. Garbrecht, Braunschweig, to prefer the name "conduit block" to the formerly used "guttering stone" which usually denotes draining of waste water.

ground floor of flagstones of another columned building was reached. The find of the marble torso of a hair-drying Aphrodite statuette could not be connected with the building. The strata were inconclusive, being mainly nothing but documents of severe inundations with sand, rubble, marl and stones over many centuries (Lindner 1982a: 67-72).

At the slope of the hill towards the wadi, slag, mostly of iron was found in bigger quantities. Apparently, iron had been used as flux for the smelting of copper. Slag was also used for strengthening the foundation of the platform below the hill (Pl. X, 1). Ore and slag are being analyzed and will be compared with former finds and analyses performed after the 1982 excavation (Lindner 1986a: 158, fn 6). The results, including chronological conclusions about smelting and the construction of the platform and the temple, will be dealt with in the near future (Pl. X,2).

Caravan Tracks Between Şabra and Petra

Three major tracks connected Şabra and Petra, whereas from Şabra to Wadi 'Arabah only one major track could be found. Deep gorges between Şabra and the watershed towards Petra made different tracks for different purposes at different times necessary. Usually, the eastern path through Wadi Baṭaḥi is taken nowadays by the Bedouins. Where it climbs up to a height of 1000 m as1, the curves and bends show unmistakable signs of solid ancient and makeshift recent substructure. The two other tracks farther west have "built" sections up to 3-4 m wide. Big limestone boulders of up to 0.80 × 0.40 × 0.45 m could only be handled and maintained by crews of experienced workers (Pls. XI, 1, 2; XII, 1). Because it is well-known that the heyday of Şabra and Petra was between the

first century B.C. and the third/fourth century A.D., it may safely be assumed that the tracks and road sections were built during that time, and that they have been occasionally repaired at all times to this day (see also Lindner 1986a: 137-141; Lindner and Zeitler 1991: 191). The same is true for multiple wadi barriers between Petra and Şabra (Pl. XII, 2) as parts of an overall irrigation and flood control system known from the whole region (Lindner 1986a: 138; Lindner and Zeitler 1991: 184-187).

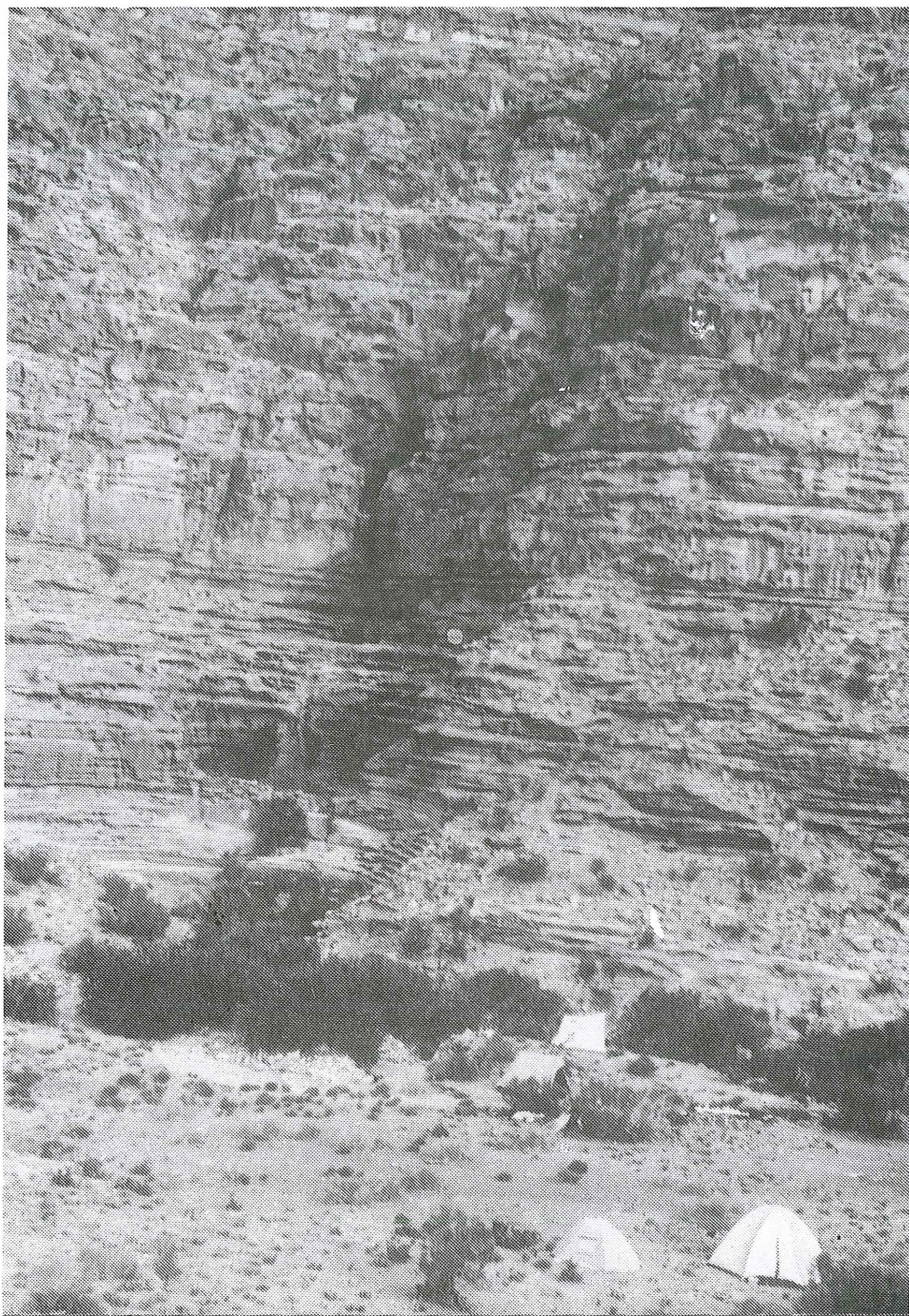
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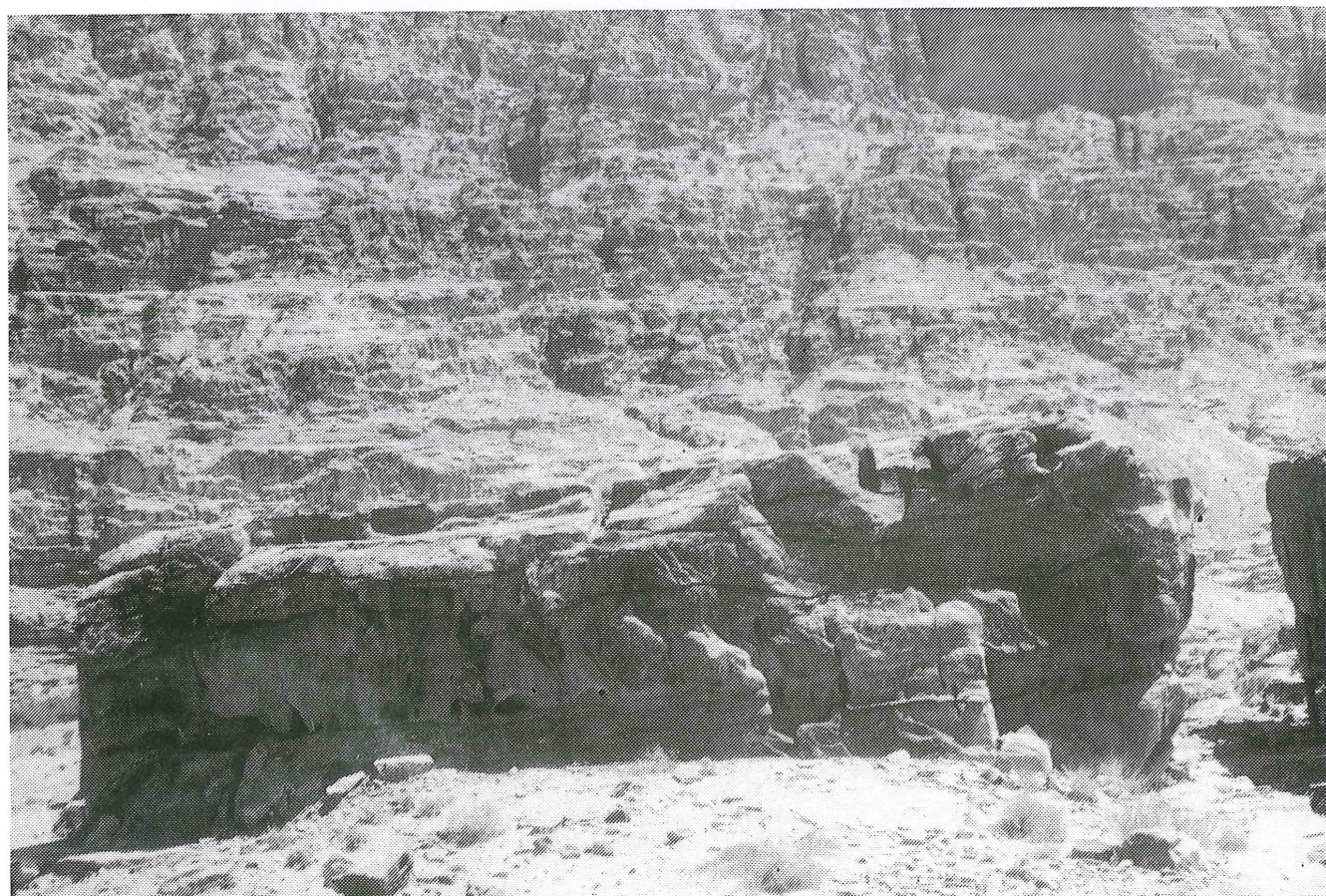
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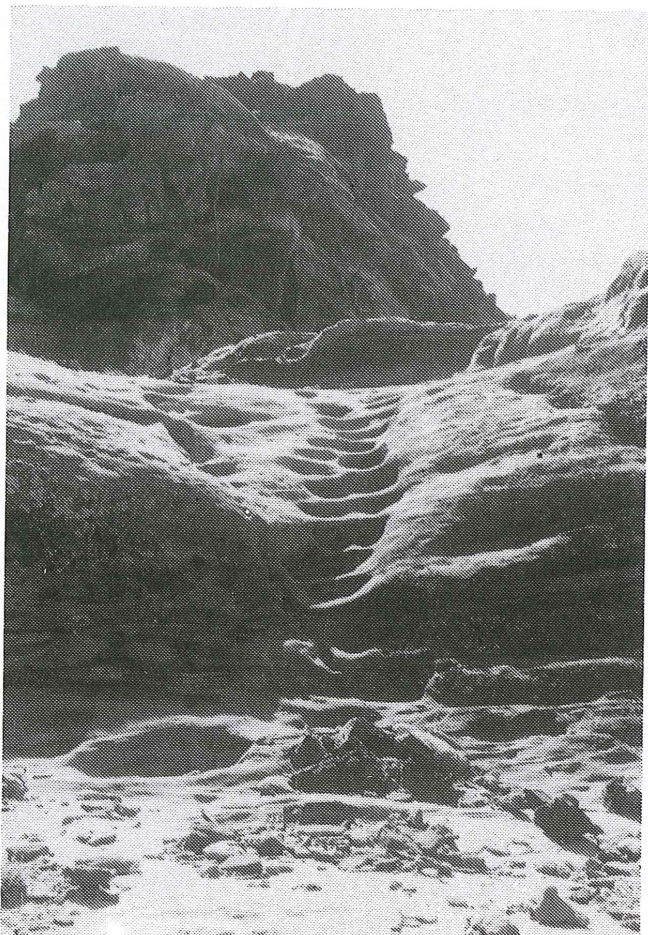
Jabal el-Jathum with the theatre and camp of the survey team, 1990 (Photo: M. Lindner).



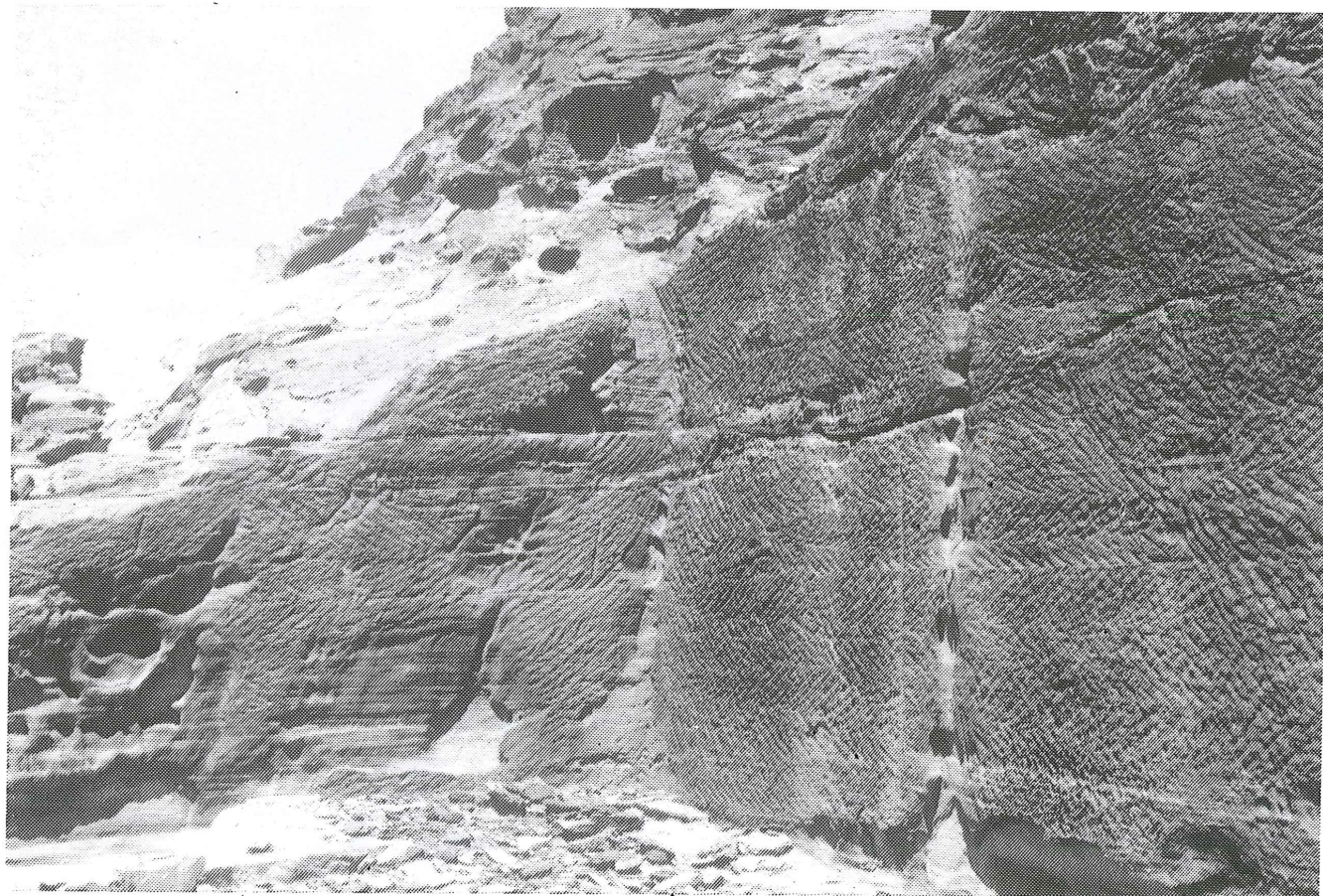
1. Wadi barriers on the northern slope of the Jabal Mutheilya massif (Photo: M. Lindner).



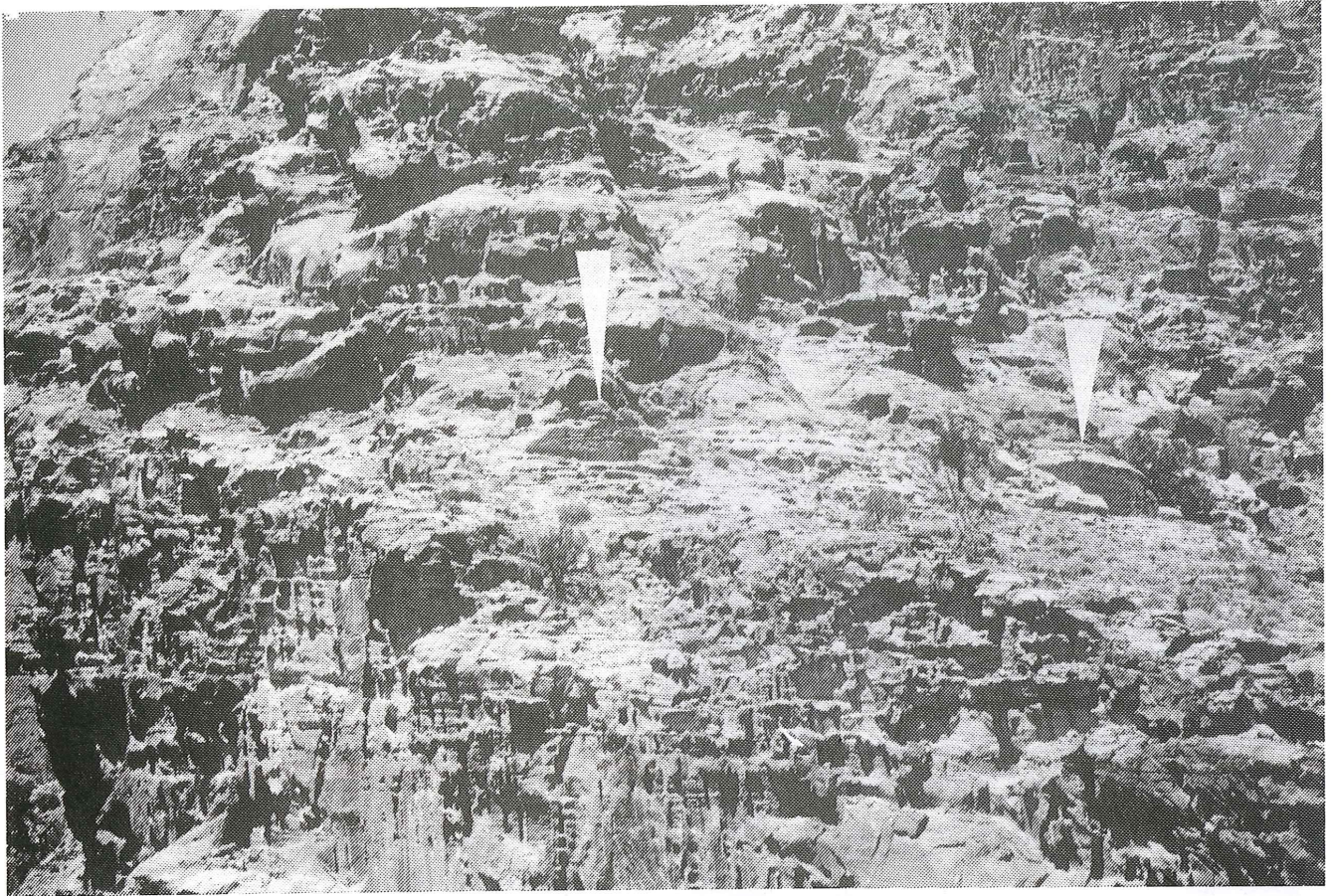
2. Ancient quarry in the Jabal Mutheilya massif with the masons' cuts in the surface.



1. Rock-cut steps in an ancient quarry at Şabra.



2. Ancient quarry with the typical "herring-bone" pattern.



1. Quarries in the Jabal Mutheilya massif.



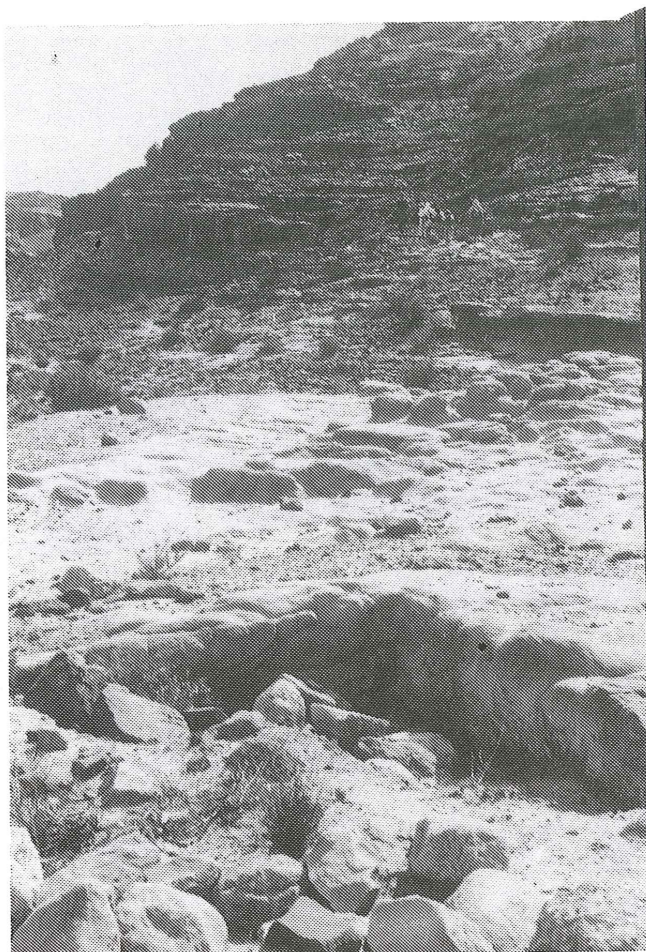
2. Nabataean tombs in the foothills of the Jabal Mutheilya massif.



1. Walls of slope houses at Şabra.



2. Back walls of slope structures at Şabra.



1. Rock-cut cistern at the foot of the slope house ruins, with the ascent to “Şabra N” in background.



2. Rock shelter region in the Jabal el-Jathum massif.



1. 2 × 2 m rock-pool near a rock shelter.



2. Location of Şabra N (Ras Dakhilallah) in the Jabal el-Jathum massif.



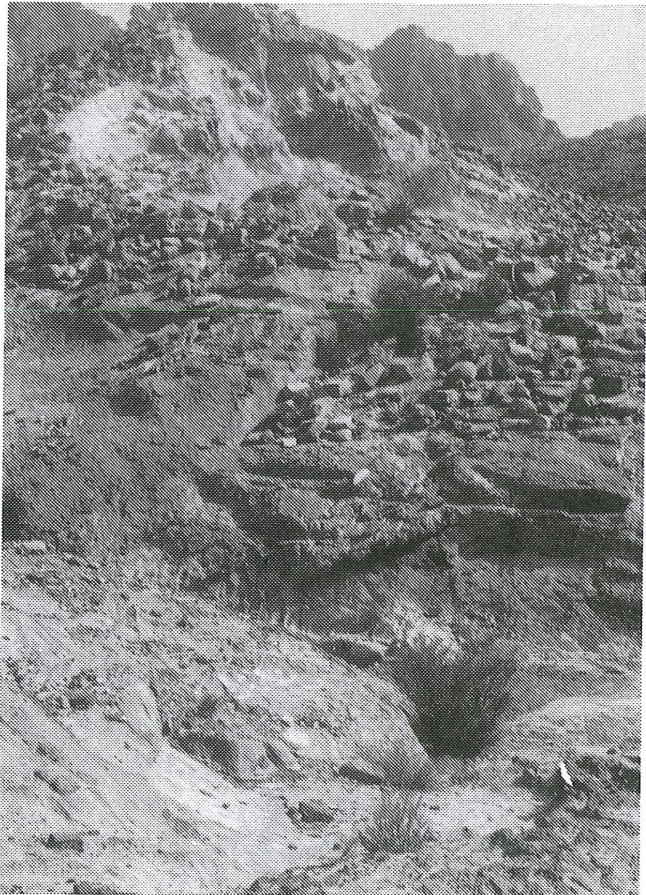
1. Şabra N (Ras Dakhilallah) with Jabal Harun in the background.



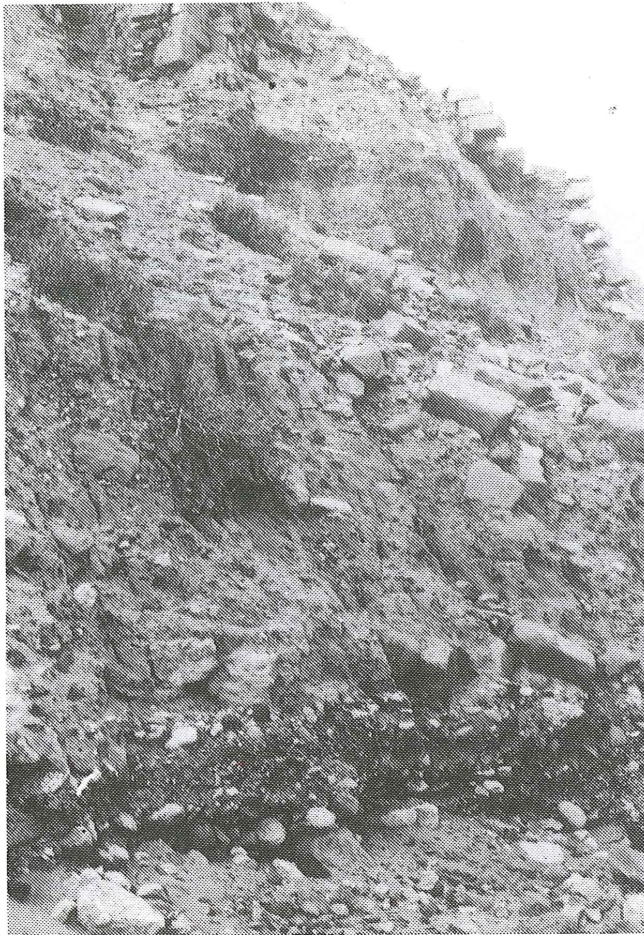
2. Palm tree in Wadi Şabra with the location of the Early Bronze Age site Şabra 5.



1. Early Bronze Age site (Şabra 5) above Wadi Şabra. Towards the southwest.



2. Acropolis hill of Şabra with the Jabal Mutheilya massif in the background.



1. Slag in the substructures of the temple plateau.



2. Development of the temple plateau below the acropolis of Sabra through winterly floods.



1. Built road between Petra and Sabra.



2. Built road between Petra and Sabra.



1. Detail of the built road between Petra and Sabra.



2. Multiple wadi barriers between Petra and Sabra.