

# SWISS-LIECHTENSTEIN EXCAVATIONS AT AZ-ZANṬŪR /PETRA: THE TENTH SEASON

by

Bernhard Kolb and Daniel Keller

## Introduction

The tenth season of excavations of Basel University in cooperation with the Swiss-Liechtenstein Foundation for Archaeological Research Abroad (SLFA) in Petra was conducted from August 18 through October 26, 1999. The field team in 1999 included Anne-Cathrine Escher as architectural draughtsperson, Yvonne Gerber as ceramicist, Othmar Jäggi as photographer, Consuelo Keller as square supervisor and small finds registrar, Daniel Keller as square supervisor and glass specialist, Laurent Gorgerat as square supervisor and ceramicist, Matthias Grawehr as square supervisor and lamp specialist, Irma Haussener as scientific draughtsperson, Bernhard Kolb as director, architect and stratigraphist, Darko Milosavljevic as restoration supervisor on EZ III, Markus Peter as numismatist, Annegret Reber as square supervisor and draughtsperson, Jacqueline Studer and Jean-Marie Zumstein as faunal analysts. Intermonument Restauro Ulrich Bellwald was responsible for the consolidation and restoration activities on EZ IV.

In 1999 the excavation activities focused on the Nabataean mansion of the first century AD on site EZ IV to the south of az-Zanṭūr (see Kolb, Keller and Gerber 1998: 259, Fig. 1). On site EZ III we resumed the consolidation of the structures with the intent to complete the necessary work. The main objectives of the 1999 season were the following:

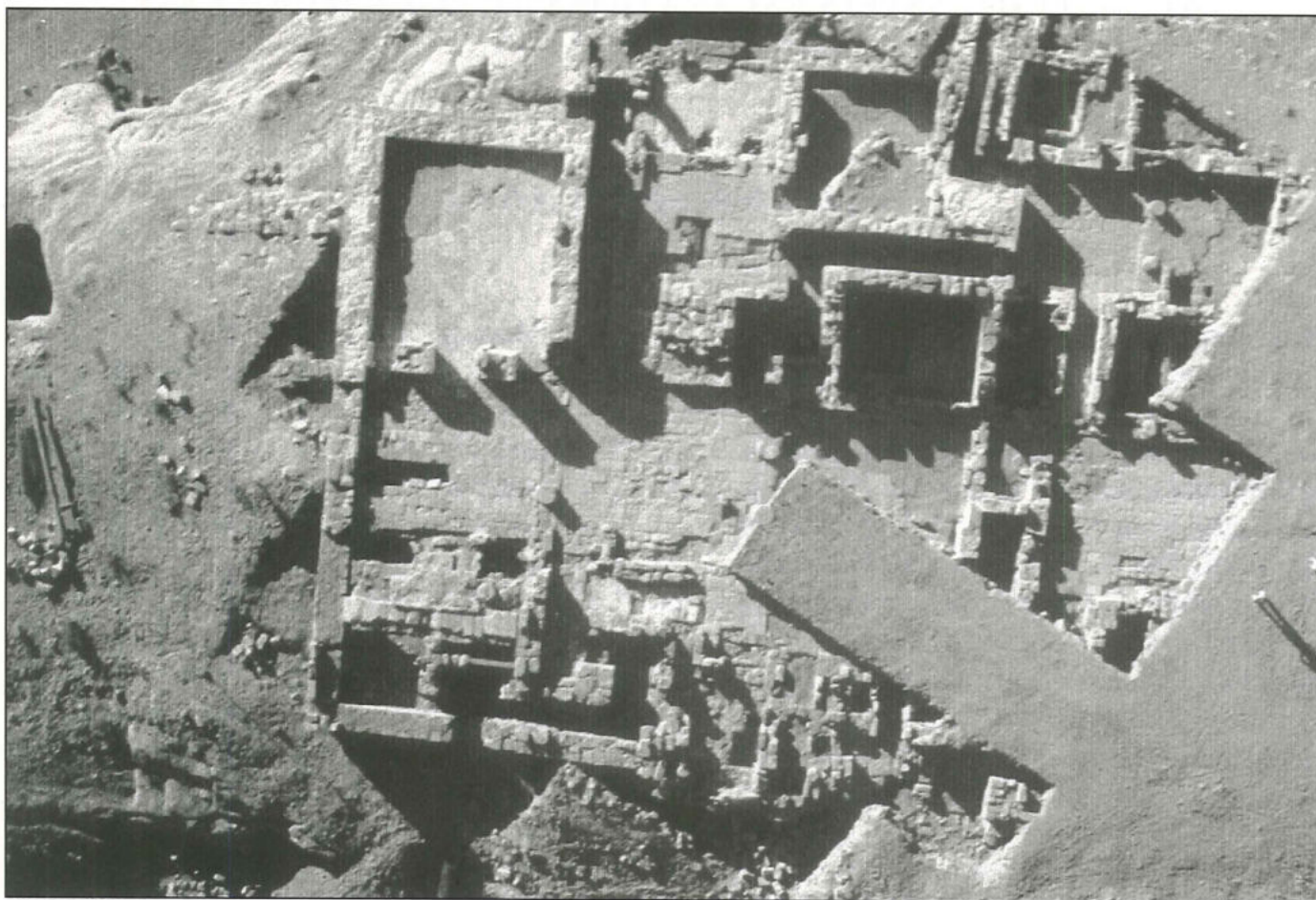
- 1) To resume the current excavation on EZ IV. The architecture and interior decoration of the building exposed since 1996 indicate the presence of an important

Nabataean dwelling of the first century AD which should be investigated to the utmost extent in order to obtain a maximum of information on the architectural conception of a so far unique private building in the Nabataean metropolis of Petra.

- 2) Analysis of the small finds from strata related to the earthquake destruction of 363 AD. The sudden end of the occupation sealed a multitude of finds beneath the débris. The analysis of the finds will shed further light on the development of the sub-Nabataean fine and coarse wares as well as lamp and glass production of the third and fourth centuries. In this context, it is of particular interest that the finds from the destruction layers on EZ IV are of a higher quality than the material we exposed in the humbler dwelling on site EZ I (Bignasca *et al.* 1996). It appears that until the last phase of occupation, the mansion on EZ IV was occupied by comparatively well-off Petraeans.

## The Nabataean Mansion on EZ IV

The excavation on EZ IV focused on the western, central and southern parts of the terrace. 15 grid squares (PQ) of 5 x 5 m were investigated (Figs. 1-2). Squares 89-92/AP established the association of the representational rooms 6, 7 and 17 with the central structures east of room 1. The schematic plan shows that the building was laid out along a main axis running NS, consisting of courtyards 28, 15, 19 and *exedra* 7 which connect to the perpendicularly set banqueting halls 6 and 17. Despite the insertion of two narrow rooms 20 and 21, we can as-



1.EZ IV. Aerial view of the site (photo D. Keller).

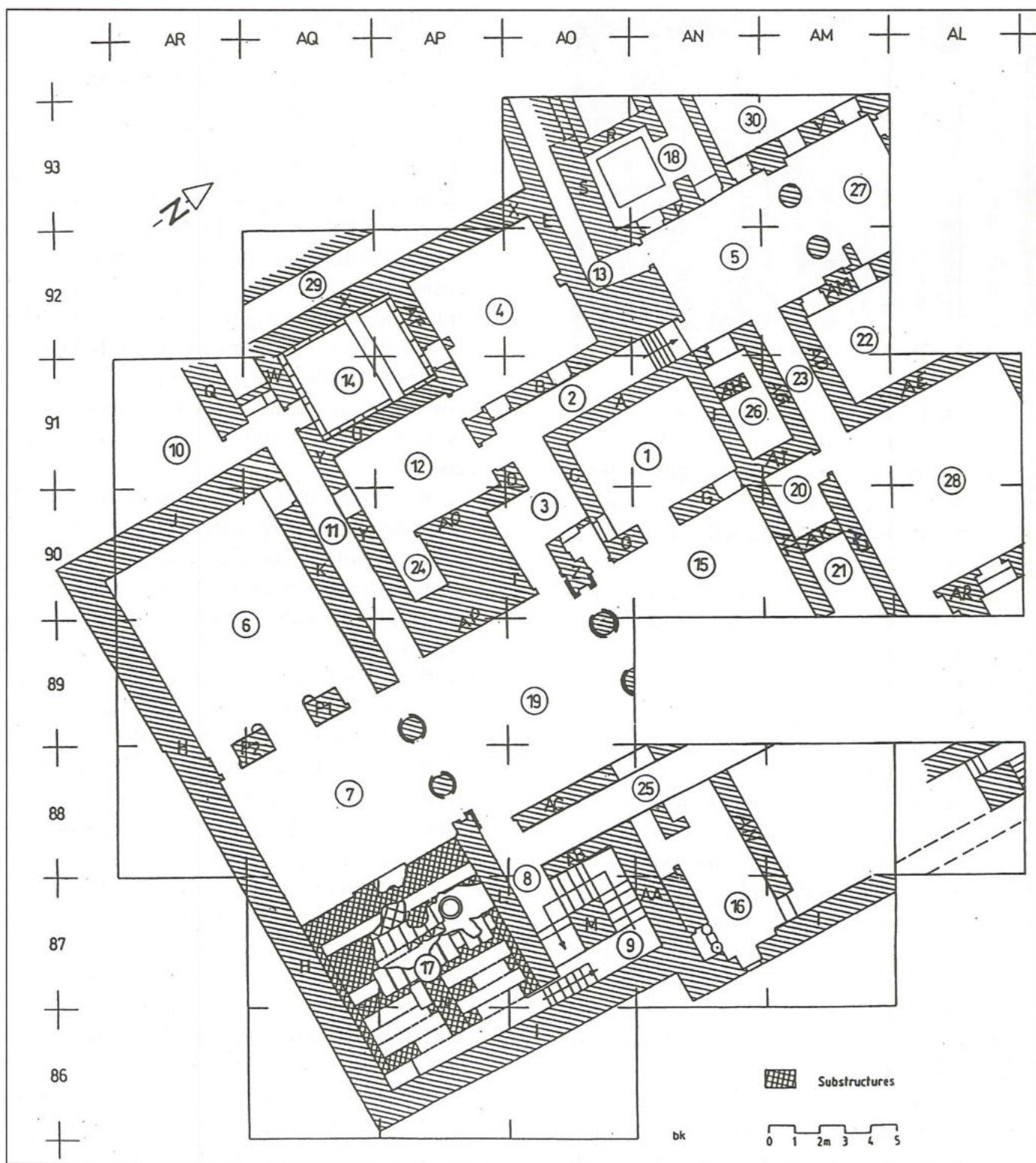
sume that the striking *mise en scène* of the stretch between the supposed main entrance to the north and the reception/banqueting halls at the southern limit was designed to impress the visitor with a grand reception. The alignment of rooms 20, 21 and 26 concealed a step in the bedrock surface of ca. 1 m height along the walls I, AL, AK and AJ (room 21: ca. 924.07 m; courtyard 28: ca. 925.05 m). Clearly set off from the stately part of the mansion are the private and servants' rooms to the east and west of the central courtyards. Focal point of the western private wing was the small courtyard 5. The strict layout of rooms 30, 27 and 22 to the north of courtyard 5 repeats the arrangement of rooms 6, 7, and 17 on reduced scale and prove that - contrary to the Nabataean dwelling on EZ I (Stucky 1996: 46) - the same architectural conception was at work in the realization of private and representational rooms. Worth mentioning is the discovery of

wells underneath rooms 22 and 27. They present vital evidence in reconstructing the water resources of the building.

### Rooms 19, 15 and 21

(PQ 89/AO-AP; 90/AM-AN)

The clearance of squares 89/AO-AP exposed courtyard 19 almost completely (Figs. 1-3). The area measures 7.7 m (NS) by 7.2 m (EW). The northern and southern sides are furnished with *distyloi in antis*. The preserved bottom column drums (Diam. 75 cm) do not rest on ordinary bases but are fitted with 'base collars' of the Ionic-Attic type (Fig.3). The two separately carved elements were mortared to the columns and an additional layer of high-quality plaster covered the joints. The same technique is well attested in the Temple of the Winged Lions (Hammond 1996: 44f., Pl. 13, Figs. 2-3). Courtyard 19 and *exedra* 7 were, as already mentioned elsewhere (Kolb, Gorgerat and



2. EZ IV. Schematic plan of the Nabataean mansion (drawing B. Kolb).

Grawehr 1999: 264), connected by doors in the intercolumnar spaces. The rendering of the intercolumnar spaces on the north side of courtyard 19 is yet unclear. While the bases attest to openings of ca. 45 cm, identical to those on the opposite side in the south, there

are no indications of doors. Moreover, the stylobate does not show the slightest trace of wear which would point to a secondary function as a threshold. Considering the spacing of the bases on the EW axis, a curtain wall between the columns, which was



3. EZ IV. Courtyard 19 seen to the south (photo D. Keller).

dismantled later on, may have been a possible alternative to doors. Such a reconstruction, however, would imply a clear separation of courtyards 19 and 15. Clearance of PQ 89/AN is expected to resolve present uncertainties.

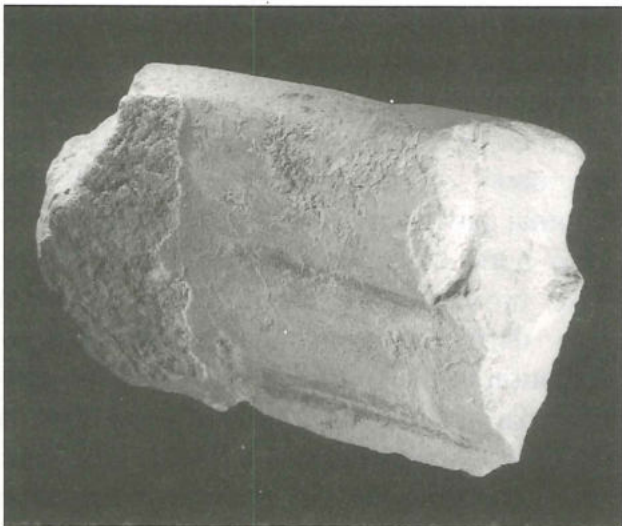
In the earthquake of AD363, the collapsing architectural members damaged the sandstone flagging mainly in the central and north-western sections of the pavement. Between the door to corridor 3 and the eastern column of the north side, a repair of approximately 1.2 m x 2.2 m is discernible. The inserted limestone flags are longer than the original ones and in a much better state. The findings in courtyard 19 are typical for the rather simple stratigraphy on EZ IV: A considerable deposit of earthquake debris covers a ca. 20-30 cm thick layer consisting of fragmented stucco decoration from the walls and columns. The latter context simultaneously seals the stratum of the last phase of occupation.

In the western part of courtyard 15, the mortar bedding of the robbed pavement was exposed. The badly cracked remains of the bedding were in a rather bad condition. Nonetheless, they are of some significance as it was on their level that a hoard of *bullae*, which originally sealed papyri of the second and third centuries, was found in 1998 (Kolb, Gorgerat and Grawehr 1999: 269f.). A small sounding made clear that the subfloor lies on a sterile fill of 20-30 cm

thickness consisting of stone chips and sand. The fill levelled the uneven surface of the bedrock. In square 90/AM the northern wall AL of courtyard 15 and two fragmentary pilasters were exposed. The pilasters divided the southern face of wall AL into three segments and were aligned with the columns of courtyard 19/*exedra* 7, highlighting the strict overall conception of the building. At the eastern end of wall AL a well preserved fragment of the original painted decoration is still *in situ*. Fragments of a red dado and a tripartite border are discernible. The latter consists of a central black band and a linear pattern which frames a panel of uncertain colour.

Walls AP and AC facing courtyard 19 were decorated with different schemes. Closer inspection of the exposed fragments suggests that one frequent scheme was based on white panels with red drafts. A further well represented design included white hexagons with central flowers delineated by red bands.

Dozens of well preserved fragments of Corinthian capitals of heterodox or floral type with rich scrollwork on the *calathos* were found in the destruction layers of courtyards 15 and 19. These capitals originally crowned the huge columns (compare Kolb, Gorgerat and Grawehr 1999: 265, Figs. 5-6). The main colour of the capitals was deep blue as traces on many fragments indicate. Rather surprising were the finds of capital fragments obviously belonging to the Nabataean blocked out type in the northern parts of courtyard 19 and in courtyard 15. Further fragments were exposed in the neighbouring rooms 20, 21, 28, 25, 16 and 2. A series of 8 plug-shaped objects made of sandstone are of special interest. All eight items have the same cross section which is reminiscent of the hull of a ship (Fig. 4). All these separately carved items of slightly varying heights (7-10 cm) and widths (8-10 cm) share the peculiar feature of a smoothed and painted surface on their front ends and on 7-10 cm of their sides which ends in a curving scratched



4. EZ IV. Schematic abacus flower of a Nabataean blocked out capital (photo O. Jaeggi).

line. A painted linear black decoration and remains of gilding in the intermediate zones as well as traces of mortar at the backside are preserved on one of the plugs (see Fig. 4). Most probably, we are dealing with schematic abacus flowers typical for the Nabataean blocked out capitals (McKenzie 1990: 190, Figs. h-j). It is obvious that the plugs/abacus flowers had been fitted into the capitals up to the curved scratch line. Although of no static function, they measure up to 25 cm in length, i.e. they were sunk up to 15 cm into the capitals. The technique of inserting separately carved abacus flowers into the capital is not limited to the blocked out capitals. The pine cones found by the American team in the so-called Great Temple at Petra prove that the same technique was used for Corinthian capitals of the heterodox type (Sharp Joukowsky 1998: 228f. and Fig. 5.49). Considering the quantity of the schematic abacus flowers found in the courtyards 15 and 19, the question arises as to which supports the blocked out capitals belonged. We propose to reconstruct the Corinthian capitals on the columns (courtyard 19) and the blocked out capitals on the *antae* and on the pilasters on the northern wall AL of courtyard 15 respectively. Furthermore, the remains of paint and gilding on some of the best preserved schematic abacus flowers

give an indication of the former appearance of the capitals. We can now confidently rule out the possibility of added moulded stucco decoration (see Lyttleton-Blagg 1990: 95).

The only partially exposed room 21 is situated at the northern limit of the southern and central rooms on identical floor levels (Fig. 5). Contrary to all rooms excavated so far, room 21 was furnished with a plaster floor which is merely preserved along wall AK. Locus 3231 included the whole exposed floor space, except the areas with the plaster still *in situ*. The levels of locus 3231 range from 924.05 m to 923.95 m, corresponding therefore approximately with the level of the plaster floor (924.07 m). The chronologically mixed finds from the mentioned locus represent the time span from the first to the fourth century - as was to be expected. The chronological information given by the material from locus 3251 beneath the aforementioned are of greater value: Glass, lamps and pottery date homogeneously to the first century AD. The data relevant to room 21 are closely comparable to the findings in rooms 20 and 26 (*infra*) confirming the preliminary dating of the initial construction phase to the first century AD. It is hoped that a sounding in room 21, planned for the forthcoming excavation season, will produce even more precisely datable evidence concerning the history of the edifice.



5. EZ IV. Rooms 21, 20, 26 (left) and rooms 23, 22, 28 from the east (photo D. Keller).

**Rooms 20, 26 and 28**

(PQ 90-92/AM-AN; 90-91/AL)

Rooms 21, 20 and 26 form a narrow room alignment on an EW axis, concealing a step of ca. 1 m height in the bedrock between the southern rooms and the higher northern rooms. To the west, the step is covered by the short stairway between corridor 2 and courtyard 5 and to the east by walls F, AL, AK and AJ (see Fig. 2). Interestingly, each and every room of the mentioned alignment was connected to a different room complex: the already discussed room 21 was the northernmost of the stately rooms, while room 20 opened to the north onto courtyard 28 and room 26 was connected to the western courtyard 5. Room 20 is the tiniest room exposed on EZ IV so far (2.7 m x 1.9 m). Remains of a taboun from the fourth century were found in front of the northern wall AJ. A large mortar made of sandstone (Diam. 45 cm) which came to light next to the taboun suggests that room 20 may have functioned as a kitchen, a conjecture which finds further proof in the sandy floor, a feature known from the small Late Roman baking house of the dwellings on site EZ I (Kolb 1996: 58ff.). In the eastern part of room 20 we came upon a lime deposit of a few cm thickness. The deposit as well as a sherd with traces of red pigment are most probably to be interpreted as remains of a restoration phase of the wall-decoration. Further sherds with traces of red pigment were found in locus 3261 (room 28) and in locus 3203 (rooms 11/19). The stratum beneath the lime deposit (locus 3219) comprised fragments of an earlier taboun in the corner of walls F/AI, dated by the pottery finds to the first century AD, i.e. to the initial construction phase.

To the west of room 20 lies room 26 (4 m x 1.9 m) which is divided into a small western anteroom and the eastern main room by the inner wall AH (Fig. 5). The state of pres-

ervation of walls AG and AI is rather poor. At least the first course of hammer dressed fieldstones is still in its original position on the rock-hewn foundation. Except for a few fragments of flagstones along wall F, the original pavement is lost. Located immediately north of the entrance is a tiny taboun. Two bronze coins found under the oven floor during the consolidation, date the installation to the fourth century<sup>1</sup>. In the central area of the main room we came upon a circular deposit of ash of a former fireplace. At least during the last phase of occupation room 26 as well as room 20 served as kitchens. The location of both kitchens adjacent to courtyards (5 and 28) was ideal as it facilitated the extraction of smoke. Due to the absence of a pavement or any related finds, it is impossible to determine the original function of room 26. In the fill of the channel-like carvings along the inner face of walls AG and AI, two bronze coins<sup>2</sup> and huge amounts of fragmented fine and coarse ware pottery as well as lamps and glass came to light. The remarkably homogeneous finds date to the first century AD, thus reminding of the situation in room 26. The material was most probably part of the levelling fill on which the pavement was laid out during the initial construction phase. As for the dating of the building, it is important to note that the finds from rooms 21 and 26 are not contradicting the yet preliminary *terminus post quem* of 20 AD (Kolb, Gorgerat and Grawehr 1999: 269).

The spacious courtyard 28 which is paved with sand and limestone flags extends the 'spine' of the building further north. Not only does it follow the alignment of rooms 15, 19 and 7, but it also repeats the EW measure of 7.2 m. The corridors on its south side connected the courtyard to the rooms of the eastern and western wings. An excellently preserved table or bench stand was ex-

1. EF 3275: Constantine, AE3, 324-330; EF 3276: Constantine, AE3, 330-336.

2. EF 3210: unidentified bronze coin, presumably

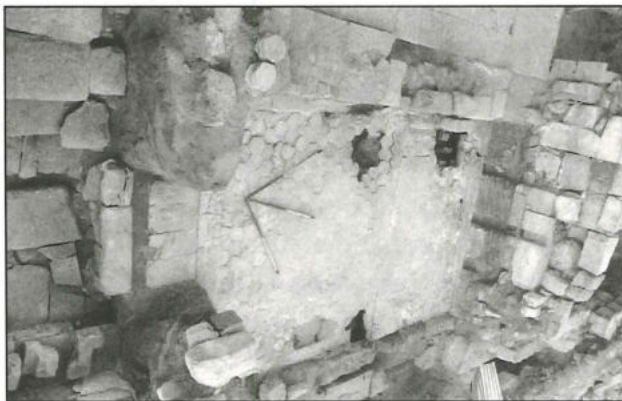
Nabataean. EF 3211: unidentified bronze coin, presumably Nabataean.

posed close to wall AE (see Fig. 5). The narrow front end is adorned with a relief of a very schematic leg and the hoof of a bovine.

### Rooms 14 and 29

(PQ 91-2/AQ-AP)

Complete exposure of the floor-heated room 14 at the southern edge of the terrace gave further clues to the history of the building and, thanks to the good state of preservation, it offered interesting insights into the method of construction of a hypocaust in the centre of the Nabataean realm. The room measures 5.1 m (NS) x 3.4 m and is paved with tiny hexagonal tiles (Fig. 6). A row of rectangular flags (Diam. 60 cm) divides the floor into a southern section of 3 m length and a northern one of 1.5 m. The rectangular flags run on the axis of two pilasters. Originally, they supported an arch which was part of a vaulted ceiling (*infra*). The battered Attic base of the eastern pilaster is still *in situ* while the matching capital was found in the débris. A blocked doorway between rooms 4 and 14 as well as two members of a door post at the southern end of wall U prove that rooms 14, 12 and 4 were interconnected initially and shared the same floor level (923.80 m). At a date yet unknown, the floor level of room 14 was lowered by 1.5 m into the bedrock, and concurrently, the fire channel to the *praefurnium* 29 as well as the



6. EZ IV. Room 14 from the south (photo D. Keller).

door to corridor 11 were cut. Moreover, closely spaced *pilae* or pillars of 60 cm height made of square (Diam. 19.5 cm) and round tiles (Diam. 16 cm) respectively were installed on the levelled bedrock surface of Phase II (Fig. 7). *Bipedales* and cut back *tegulae* were placed onto the pillars - most of them are, unfortunately, cracked by now. The floor itself consists of a 10 cm thick layer of mortar with crushed pottery aggregate and of a paving of hexagonal tiles. By remodelling room 14 as a heated room, the architect followed the Vitruvian instruction (*De Architectura* 5, 10) prescribing the placing of heated rooms in the southwest of a building. It is quite remarkable that not only the location of the *hypocaust*, but also such technical details of construction as measurements and proportions, seem to be based on the description of the famous Roman architect<sup>3</sup>.

The floor was heated by the circulation of hot gasses produced by the furnace in room 29. Usually, a chimney or, more commonly, a few terracotta pipes consisting of box tiles (*tubuli*) (Fig. 8), which were embedded in the wall, were sufficient for creating the necessary draft and thus for maintaining an adequate circulation of hot air. Three ducts for the *tubuli* were carved out of the northern wall AF of room 14 (Fig. 6). Also, many



7. EZ IV. Room 14: view through the fire channel into the hypocaust (photo D. Keller).

3. Vitruvius, *De Architectura*, 5, 10, 2-3. Yegül 1992: 257 notes that the instructions described by Vi-

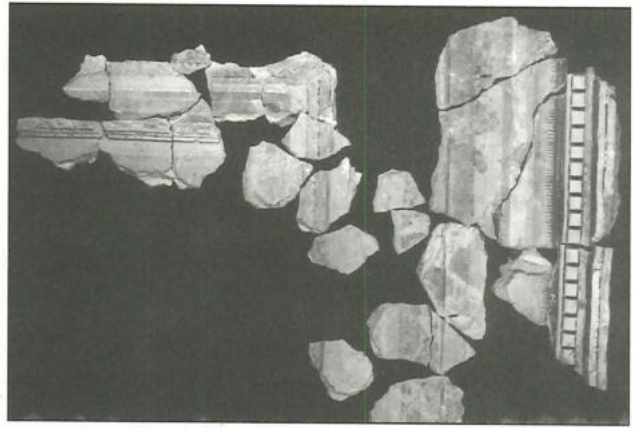
truvius "remained remarkably uniform in its main lines from Syria to Scotland".



8. EZ IV. *Tubulus* from room 14 (photo O.Jaeggi).

fragments of box tiles (18 x 14 x 11 cm) were found scattered on the northern part of the floor. The findings on the pavement indicate that the *tubuli* were broken out of wall AF by the tremors during the earthquake of 363 and thrown together on the floor with fragmented wall-decoration. Since the carved *tubuli* leads are confined to wall AF, we may conclude that they were intended as chimneys rather than wall-heating installations. Questions regarding the function of the floor heated room remain open for the time being. Conceivable, though, is a *caldarium* of a private bath, or some other type of room which could be heated during the winter months. The absence of the water basin - an integral part of a Roman *caldarium* - is puzzling, especially in regard to the discussed background of close references to Roman models in matters of construction. Further excavations in the SW will be necessary for elucidating remaining uncertainties. The later remodelling of the narrow room 29, the *praefurnium* of Phase II, left hardly a trace of its former function.

As during the preceding campaign considerable quantities of the fragmented wall-decoration came to light in room 14 (locus 3215). The findings indicate that most of the painted stucco elements originally belonged to wall AF. A small section of the decoration is illustrated in Fig. 9: The main zone is set below a dentil corona and a frieze of 23



9. EZ IV. Room 14: fragmented decoration from wall AF (photo O. Jaeggi).

cm height. It consists of a panel, framed by a stuccoed file with a lesbian *cyma* on the inner side. Around this inner frame, there are four painted decorative bands. The majority of colours applied to the corona (yellow, purple, pink, white and green) is repeated in the frieze where, by way of coloured, overlapping zigzag-bands, a gradual transition of the colours was achieved. The colours change, top to bottom, from black to purple, to pink, white, light- and dark-blue, giving the impression of a rainbow. A black zigzag-band accentuates the green zone at the bottom of the frieze. Besides the painted panels, fragments of a dark-blue frieze with figured paintings were part of the decoration. Most of the figure scenes have vanished, but a female playing the lyre, facing to the right, is preserved. The frieze is framed horizontally by a simple moulding at the bottom and a moulded and painted ovolo at the upper end. The zone above the projecting ovolo was originally divided by moulded pilasters (14 cm x 2.5 cm). Above the pink bases, the pilasters were painted with at least two different types of decoration, one consisting of white octagons and diamonds, painted on a red background, the other of white flowers and fruit painted on a green background. On the basis of several corona fragments belonging to a lunette with preserved remains of the ceiling-decoration, we can reconstruct a barrel vault covering the room.



All small finds from room 14 can be dated to the fourth century. They lay under a massive deposit of fragmented wall and ceiling decoration. The stratigraphy shows that, firstly, the room was still in use during the fourth century and, secondly, that the murals were only destroyed during the earthquake of 363.

### Rooms 5, 22-23, 27 and 30

(PQ 91-93 / AM)

The layout of rooms 5, 27, 30 and 22, exposed in squares 92-93/AM-AN, closely resembles the layout of rooms 19, 7, 6 and 17 in the stately part of the building (Figs. 1-2). The central *exedra* 27 (ca. 5.3 m x 4.1 m) with two doors to the adjacent western and eastern rooms 30 and 22 respectively, is separated from courtyard 5 by a *distylos in antis* (Fig. 10). Another corresponding feature are the two corridors (18 and 23) along the lateral rooms (cp. 11 and 8). Except for the reverse orientation, the arrangement of rooms in the western wing differs from the stately southern one solely in its reduced scale and the simpler furnishing (*infra*).

The presumably pieced on 'base collars' (*supra*) of the two columns (Diam. 60 cm) between rooms 27 and 5 as well as the eastern *anta* are missing completely, while at least the western *anta* is preserved - although in a critical state. The capital of the western *anta*, found in the débris is in a better state of repair (Fig. 11). It represents McKenzie's heterodox/floral type of the Co-



11. EZ IV. Room 27: Capital of the western *anta* (photo O. Jaeggi).

rinthian capital with the peculiarity of entwined *cauliculi* and vine branches bearing grapes below the volutes. The capital fragments exposed in the area of courtyard 19 during the campaign of 1998 are of similar type, except for additional relieved vine branches on the *abacus* (Kolb, Gorgerat and Grawehr 1999: 265; Fig. 5).

The blocking of all doors between rooms 27 and 22 and two out of the three doors between rooms 27 and 30 cannot be dated so far. The same applies to the removal of the pavement in room 27. The bedding of the latter pavement had collapsed in two places, revealing a beautifully preserved but yet un-cleared cistern which was cut at least 3.5 m deep into the bedrock (Fig. 12). Four closely spaced arches (35-50 cm) span the cistern in a NS orientation. Figure 12 captures the result of an incident which happened some



10. EZ IV. Rooms 27 and 5 to the south (photo D. Keller).



12. EZ IV. Cistern beneath room 27 (photo D. Keller).

1900 years ago: stuck between the springers of the two western arches a complete Nabataean vessel of the late first/early second century AD<sup>4</sup> came to light. Presumably, the receptacle had fallen into the cistern and was then carried up to the arches by the rising water level inside the cistern. Puzzling, however, is the lack of evidence concerning the feeding of the cistern. Presently, neither a horizontal nor a vertical inlet can be ascertained. If the cistern was fed by runoff water collected on the roofs, the water must have entered the cistern through a drain somewhere west of the northern section of wall AM, i.e. in the area where the bedding of the pavement has collapsed. The rock-hewn spill-over channel, conversely, which begins at the south-eastern corner of the cistern, halfway between the eastern column and *anta*, is very well preserved. The water was channelled southward through corridor 2, room 12 and corridor 11, and crossed under the pavement of room 10 (Kolb, Gorge-rat and Grawehr 1999: 267, Fig. 9). A second rock-hewn cistern has been partly exposed east of room 27, in room 22, where the flagstone pavement as well as the sub-floor construction are missing completely. In both cisterns the original waterproof hydraulic mortar is very well preserved.

Remarkably, the fragments of painted interior decoration found in room 27 were numerous. Although the material has not been studied in detail yet, it is clear that white horizontal panels with red drafts were the basic module. The white panels (appr. 135 cm x 45 cm) are painted with outlines of lozenges in shades of blue and grey. Identical in colour but somewhat more elaborate was the rendering of the panels known from the temple at Iram (Savignac and Horsfield 1935: 252ff.; Figs. 6f.). These fragments of decoration belong to the remodelling Phase IIb, during which thin dwarf walls were constructed between the columns of the naos. A

controversial graffito on painted stucco fragments from the inner face of the dwarf walls seems to date Subphase IIb to the year 41 of the reign of Aretas IV (32 AD) (Tholbecq 1998: 245 with note 18; cp. Zayadine 1998: 257). Further evidence suggesting that the Nabataeans were particularly fond of the described panel decoration is provided by the reliefs of the temple at Khirbat adh-Dharih, again dated to the first century AD (Dentzer and Feydy 1990: 233, Fig. 2). Worth noting is that Late Hellenistic and Roman predecessors are commonly restricted to moulded or painted coffered ceilings and vaults (Ling 1972: esp. Pl. XII: Pompeii, House of the Cryptoporticus; Barbet 1985: 82ff., Figs. 46-49). At a date yet unknown, the interior decoration of room 27 was covered by a coat of plaster.

### Structures in Squares 88/AL-AM

For the time being, it is impossible to reconstruct the original layout of the rooms in the eastern wing (see Figs. 1-2) for the structures had obviously been badly affected by the tremors of the earthquake of 363 and, additionally, several humble installations and walls had been constructed during the last phase of occupation, reusing column drums and other spolia and thus obstructing the original arrangement of rooms. In square 88/AM a third, nicely preserved *ṭābūn* of the fourth century was exposed, determining that the area had functioned as a kitchen. At the northern limit of square 88/AL two narrow flights (width: 75 cm) of a second staircase were exposed. In comparison to staircase 9, these stairs were both smaller in scale and inferior in quality. Presumably, they were part of what was, in the initial architectural context, devised as a secondary staircase for servants.

### Restoration and Consolidation

The consolidation of the structures on EZ

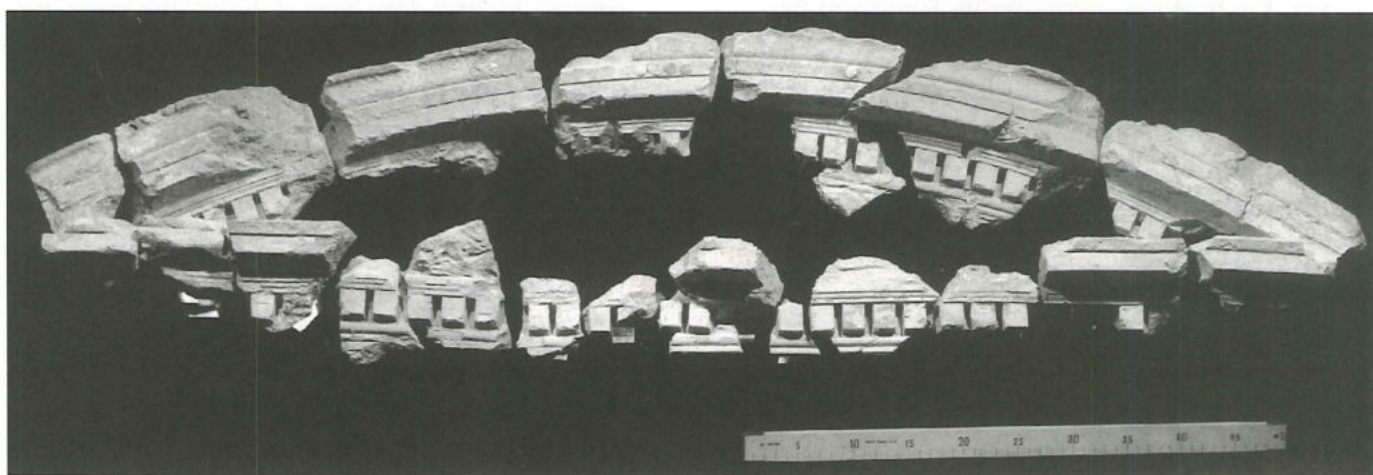
4. For the dating of the vessel thanks are due to Stephan G. Schmid (Athens).

III, the site to the north of az-Zanṭūr was completed during the 1999 season. Darko Milosavljevic and his team of three workmen cleaned and consolidated walls AA, AI, BA, BB, BD, BS, BW, CB and CC (Kolb, Keller and Gerber 1998: 259, Fig. 1). As during the preceding campaigns, the excavation on site EZ IV was accompanied by the necessary consolidation and restoration activities. The very unstable pillar-like structure south of courtyard 5 and the poorly preserved wall V were both repaired and consolidated. In order to stop the deterioration of room 26, the loose hammer-dressed stones of the preserved first course of walls A and AL had to be mortared to the bedrock. The remains of the tiny *ṭābūn* in room 26 were cleaned and stabilized. The restoration of the eastern part of the outer wall H as well as the southernmost part of wall I, was a large-scale, but worthwhile operation (see Fig. 2). The fragments of the polychrome wall decoration on the south face of wall AL (courtyard 15), which were cleaned and successfully protected *in situ*, posed another difficult task. Finally, the cracked, plain plaster on the walls of the adjacent room 21, were cleaned and consolidated.

### Further Activities

From May 3rd through May 18th 1999,

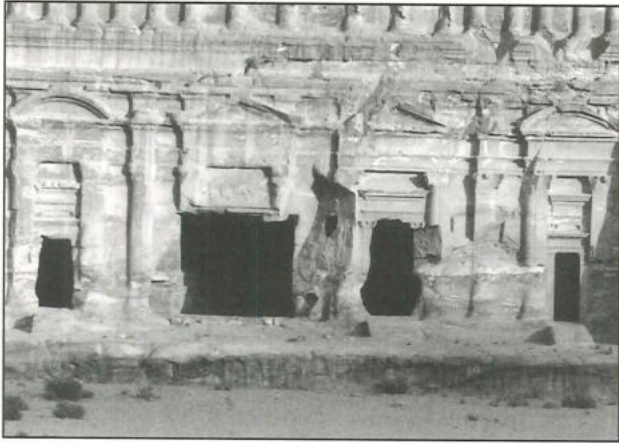
the first of two planned study campaigns took place. During the three week period, the painted stucco fragments recovered from room 6 were studied with the aim of obtaining a clearer understanding of the interior decoration. The draughtsperson Irma Haussener, the restorers Christine Pugin and Ulrich Bellwald and the author himself were part of the small team working at the Burckhardt Center in Petra. 120 crates of fragments were studied, typologically recorded and catalogued. The different types of cornices were drawn and consolidated where necessary. Preliminary results attest to a highly complex decoration based on a moulded architectural framework. Flat pilasters supporting segmental and triangular pediments were combined with bays painted with floral and geometric motifs. Figure 13 illustrates one of the reconstructed segmental pediments. The rich variety of stuccoed cornices and fillets seems to point to a decoration arranged in successive, narrow registers in the upper part of the walls. It looks as if the stuccoed and painted decoration of room 6 was inspired by the monumental tomb façades in Petra. A specifically close parallel may be drawn to the façade of the so-called Palace Tomb<sup>5</sup> where the lowest order consists of twelve supports which carry the entablature (Fig. 14). Four 'ae-



13. EZ IV. Room 6: stucco-moulded segmental arch (photo O. Jaeggi).

5. Evidently, the moulded stucco decoration of the southern outer wall of temple Qasr el-Bint must

be taken into consideration as well. See McKenzie 1990: Pl. 73-74.



14. Petra. Palace Tomb: lowest order of the façade (photo O. Jaeggi).

*diculae*'/doors with triangular and segmental pediments were inserted into the architectural framework. Above the second order, already somewhat reduced in scale, there are three dwarf orders, resulting in a dense horizontal subdivision of the upper façade.

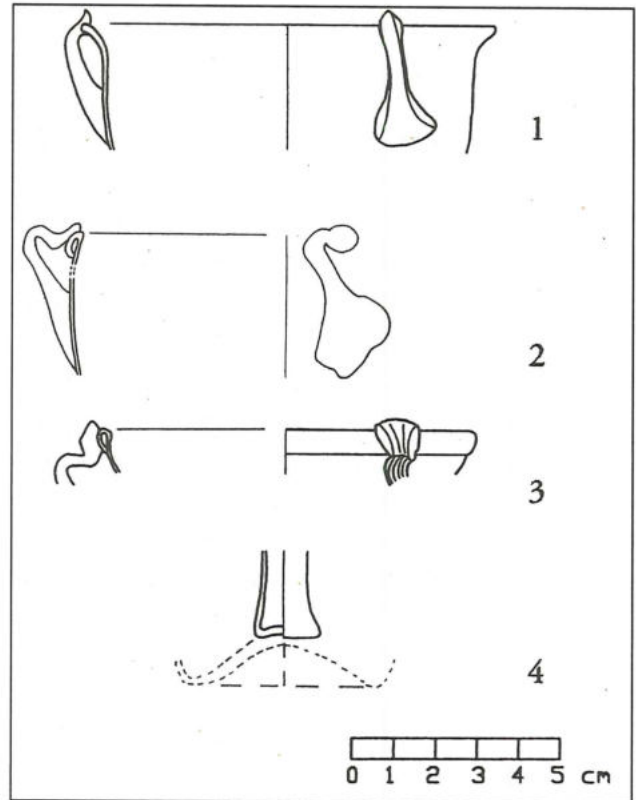
The promising preliminary results from room 6 raise hopes that the yet unstudied fragments of decoration from other rooms of the edifice on EZ IV will shed further light on the interior decoration of Nabataean private architecture, an aspect of the Nabataean style of living not well known so far.

Bernhard Kolb

### Glass Lamps from az-Zanṭūr

A few small glass fragments found on az-Zanṭūr are of particular interest, because they are early examples of glass lamps of the late Roman and early Byzantine Near East. Their contexts allow not only exact dating, but, moreover, they give some indication of their original use.

Fragments of beaker-shaped vessels with a round, flaring rim, a conical or slightly rounded body and three small handles (Fig. 15:1) belong to a first group of glass lamps. Their use as lamps is suggested by the very narrow opening between the handle and



15. EZ I/IV. Late Roman glass lamps (drawings D. Keller).

body of the vessel, which merely left room for a kind of suspension. Further confirmation for their supposed function is given by the three handles which assured balance. In conclusion, they were used as hanging lamps, most probably in the rooms in which they were excavated. They were found in the layers immediately above the floors in rooms 11 and 19 (Nos. 1-3) of the mansion on EZ IV (see Fig. 2). Constantine coins, datable pottery finds and fragments of glass which accompanied the lamp sherds in the same layer, show that the destruction of the building was caused by the earthquake of 363 AD<sup>6</sup>. This firm sealing date is remarkably early for glass lamps. In fact, they seem to be among the earliest examples of a type of lighting which became common during Byzantine and Islamic times.

Fragments of a further glass lamp of the same type (No. 4) found in the upper strata

6. Kolb, Keller and Fellmann Brogli 1997: 234; Kolb, Keller - and Gerber 1998: 261-262; 264; 267-

275; Kolb, Gorgerat and Grawehr 1999: 262; 266; 268.

of rooms 11, 12 and 14, as well as another rim sherd in room 16 (No. 5) deserve special attention. Together with two other rim sherds of this shape found on the site EZ I in mixed contexts (Nos. 6-7), these fragments may represent a shape of glass lamps distinctive of Petra. Except for the latter fragments which come from mixed contexts, all remains of this type were found in the destruction layers of the earthquake of 363, and they do not reappear anymore in later contexts. We may conclude that they represent, at least in the Petra region a specific type belonging to the mid fourth century.

At other archaeological sites of the Eastern Mediterranean such lamps are either completely absent - as in the churches of Palestine and Transjordan - or, alternatively, only a small amount of sherds is documented. The same is true for the western part of the Roman Empire<sup>8</sup>. Only at Sardis (Turkey) such glass lamps seem to be present in a few fragments from the Byzantine shops and churches, but they date to between the fifth and seventh centuries<sup>9</sup>. Similarly belonging to a late date are comparable rim sherds from Gerasa, one from a context of the fourth to fifth century (Meyer 1988: 191 Fig. 6T), and a second one dated to the fifth or early sixth century (Dussart 1998: 82 No. BVI.1211 Pl. 14,16)<sup>10</sup>. In tomb 217 on the Mount of Olives at Jerusalem, occupied between the mid fourth and the mid fifth centuries, a complete specimen of this type was discovered. This glass lamp, however, has a wick holder<sup>11</sup>, a later feature of which there are no traces on the

mentioned rims and handles from EZ IV. Accordingly, the early glass lamps from az-Zanṭūr have to be reconstructed without a wick holder.

A fragment with a tubular wick holder placed on the centre of the concave bottom, was uncovered in room 2 on site EZ I (No. 13, Fig. 15:4). Unquestionably, it belongs to the latest occupation of EZ I which was terminally disrupted by a second earthquake in the early fifth century, most probably in 419 (Kolb 1996: 51; 82). Glass lamps with wick holders therefore appear in Petra as early as the beginning of the fifth century, contradictory to the later date assigned elsewhere (Stern 1999: 480). Rim sherds of the above described type, however, are not present in later contexts anymore. Instead, a type with outfolded rim, three small handles and a conical (Nos. 9-12, Fig. 15:3) or slightly rounded body (No. 8, Fig. 15:2) is recorded. At EZ I, such rim sherds were found in rooms 8 and 28, which were destroyed in the above mentioned earthquake in the early fifth century (Kolb 1996: 51; 65; 71; 89). The simultaneous appearance of outfolded rims and wick holders suggest a new type combining both features. This type is also documented in rooms XXIX and XXX of the recently exposed shops on the Colonnaded Street which were abandoned in the early or mid fifth century<sup>12</sup>. Additional fragments of this type of glass lamp were found in the last phase of use of rooms XXVI-XXVIII dated to the sixth century<sup>13</sup>. The continuous use of these lamps is confirmed by specimens uncovered in the Byz-

7. Neither in the late Roman houses on EZ I, destroyed in the early fifth century AD, nor in the shops on the southern side of the Colonnaded Street, which were in use until the 5th and 6th century AD, nor in the Byzantine monastery on Jabal Hārūn has this type of glass lamp been recorded.  
8. One was found in a church at Como (Italy), another one at Luni (Uboldi 1995: 108; Figs. 2,6-7).  
9. von Saldern 1980: 47-49; No. 246-248; 250 Pl. 11;246-247; 23; 246; 250.

10. Among the late Roman and Byzantine glass finds from the excavations of the Hippodrome at Gerasa there were no fragments of such glass lamps (this glass was studied by the author under the supervision of Kehrberg).  
11. Bagatti-Milik 1958: 148, No. 11, Fig. 35,11, 140,125,15. For the date of this tomb: Kuhnen 198 Beilage 3, No. 98.  
12. For the date: Fiema 1998: 415; 420.  
13. For the use of the rooms XXVI-XXVIII until the latter 5th to the 6th century: Fiema 1998: 420-421.

antine monastery on Jabal Haroun<sup>14</sup>. Therefore, we may assume that glass lamps with outfolded rims, three handles and wick holders were common in the Petra region from the early fifth century onwards.

In search of parallels, two wick holders found at Jalame (Israel) should be mentioned<sup>15</sup>. Notably, these were not produced in the local glass factory of the mid fourth century, nor were they found in layers connected to the workshop. Thus they cannot predate the finale phase of occupation at Jalame which is dated by the coins to the early fifth century (Davidson Weinberg 1988: 19-21).

In Palestine and Transjordan, the majority of glass lamps was found in churches<sup>16</sup> - but not exclusively: specimens from the late Roman forts at en Boqeq and Mezaḍ Tamar<sup>17</sup>, as well as the discussed finds from az-Zanūr evidence their use in purely domestic contexts.

The results from the sites EZ I and EZ IV offered revealing insights regarding their everyday use: unsurprisingly, they were found in dark rooms such as corridor 11 (Nos. 1-3). For the time being, the question of how these lamps were installed remains unanswered. In addition to the main lighting - the hanging lamps - fragments of terracotta lamps evidence the combined use of port-

able lights (Stern 1999: 479)<sup>18</sup>.

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14. The glass finds from the Finnish Jabal Hārūn Project will be studied by J. Lindblom (University of Helsinki) and the author.

15. Davidson Weinberg 1988: 85, No. 386-387, Fig. 4-44, 386-387, Pl. 4-16, 386.

16. Rehovot: Patrich 1988: 134-136, Pl. 12; Nessana: Harden 1962: 84 Nos. 47-50, Pl. 20, 47; el-Lejjun: Jones 1987: 627-628, Fig. 135.71, 136.72-73, 76; Gerasa: Baur 1938: 524, 526, 531

No. 17, 29, 49, Fig. 20, 376. 21, 382. 22, 380; Meyer 1986: 263 Fig. 23h; Kehrberg 1986: 379, 381, Nos. 29, 35-38 Fig. 9, 29. 35-38; Kehrberg 1998: 431; Shavei Zion: Barag 1967: 68-69, Nos. 21-22, Fig. 16, 21-22.

17. en-Boqeq: Gichon 1993: 435 Pl. 51, 7-8, 60, 28; Mezaḍ Tamar: Erdmann 1977: 100, 112-114 Nos. 3-12 Pl. 1, 3-7.

18. pers. comm. M. Grawehr.

## Catalogue

Glass lamps with rounded outgoing rim

- 1) EZ IV 91/AQ-AR Abs. 4 FK 3139 room 11  
four rim sherds with three small handles  
colorless, slightly greenish glass  
 $\varnothing = 10.0$  cm  
height = 3.1 cm  
Fig. 15:1
- 2) EZ IV 89/AP Abs. 6 FK 3221 room 11  
rim sherd with small handle  
bluish green glass  
 $\varnothing = \text{ca. } 10.0$  cm  
height = 2.5 cm
- 3) EZ IV 89/AP Abs. 6 FK 3222 room 19  
rim sherd and two small handles  
bluish green glass  
 $\varnothing$  not determinable  
height = 2.5 cm
- 4) EZ IV 89-91/AQ Abs. 3 FK 3113 rooms 11, 12 and 14  
two rim sherds and a small handle  
colorless, slightly greenish blue glass  
 $\varnothing = \text{ca. } 8.0$  cm  
height = 3.6 cm
- 5) EZ IV 88/AN Abs. 4 FK 3192 room 16  
rim sherd and handle  
colorless, slightly pale greenish glass  
 $\varnothing = \text{ca. } 9.0$  cm  
height = 1.2 cm
- 6) EZ I 99/M Abs. 1 FK 266  
rim sherd with small handle  
colorless slightly greenish blue glass  
 $\varnothing = \text{ca. } 8.0$  cm  
height = 4.9 cm
- 7) EZ III surface find  
rim sherd with small handle  
colorless slightly greenish blue glass  
 $\varnothing = \text{ca. } 7.0$  cm  
height = 3.8 cm

Glass lamps with outfolded rim

- 8) EZ I100/P Abs. 5 FK 479 room 28  
rim sherd with rounded body and small handle  
bluish green glass  
 $\varnothing$  not determinable  
height = 3.75 cm  
Fig. 15,2
- 9) EZ I 100/N-O Abs. 4 FK 225 room 8  
rim sherd with conical body

colorless, slightly pale green glass

ø = ca. 9.0 cm

height = 1.6 cm

Fig. 15,3

10) EZ I 100/N-O Abs. 4 FK 225 room 8

rim sherd

bluish green glass

ø not determinable

height = 0.6 cm

11) EZ I 100/N-O Abs. 3 FK 224 room 8

rim sherd

bluish green glass

ø = 11.4 cm

height = 0.9 cm

12) EZ I 100/O Abs. 4 FK 225 room 8

rim sherd

pale green glass

ø = 7.6 cm

height = 2.3 cm

Wick-holder of a glass lamp

13) EZ I 102/M Abs. 3 FK 30 room 2

lower part of a wick holder

greenish blue glass

ø = 1.4 - 1.6 cm

height = 2.15 cm

Fig. 15,4

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