
Remains of an Opus Reticulatum Building in Jerusalem

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IN 1879 C. Schick published the remains of an ancient structure which he had observed during the construction of a house 250 m. north-west of the Damascus Gate in Jerusalem (Fig. 1, top).¹ He noticed a circular wall built of small square stones, and later identified the technique as opus reticulatum.² He also found some decorated stones (Fig. 1, bottom). Fourteen years later, in 1893, Schick made further soundings while a second house was being built near the first one.³ A further section of the circular wall was then exposed and he also dug a sounding in what he estimated to be the centre of the round structure, assuming a diameter of 24 m. (Fig. 2). Here he had anticipated either a central pillar or a tomb, but since only bedrock was found, he interpreted the structure as an open courtyard which could have served as a palaestra, an amphitheatre or a similar structure.⁴

These remains, partially demolished and covered over, were neglected by later scholars, with the exception of Vincent.⁵ An excavation was undertaken in 1977 to study further this interesting structure.⁶

The round structure was built on a small rocky hill, about 85 × 65 m. in size, elevated about 3–5 m. above its immediate surroundings. The site is close to the modern Damascus Gate, which is built above an ancient gate possibly originally belonging to the Second Temple period, and to the ancient road leading to it.⁷ Many tombs and

¹ C. Schick: *Neue Funde im Norden von Jerusalem*, *ZDPV* 2 (1879), pp. 102–104, Pl. III.

² Letters from Baurath C. Schick, *PEFQSt* (1893), p. 298.

³ *Ibid.*, p. 299.

⁴ *Ibid.*

⁵ P.L.H. Vincent: *Jerusalem de l'ancien testament*, Paris, 1954, pp. 30–31.

⁶ The excavation was initiated by Ehud Netzer, and sponsored by the Department of Antiquities and Museums in cooperation with the Institute of Archaeology, Hebrew University of Jerusalem, under the direction of Sara Ben-Arieh and Ehud Netzer. David Stacey also participated in the excavation. Surveying and plans were done by Ehud Netzer and photographs by Zeev Radovan. The pottery section of this article was written by Sara Ben-Arieh. We are grateful to Mr. Teddy Kollek, Mayor of Jerusalem, who assisted in obtaining permission to excavate from the owners of the land, to whom thanks are also due. We would also like to thank Dan Bahat for his helpful comments.

⁷ M. Avi-Yonah: *The Third and Second Walls of Jerusalem*, *IEJ* 18 (1968), pp. 98–125 *passim*; R.W. Hamilton: *Excavations against the North Wall of Jerusalem 1937–8*, *QDAP* 10 (1944), pp. 1–54, especially p. 26, Fig. 2, Pl. VI:2.

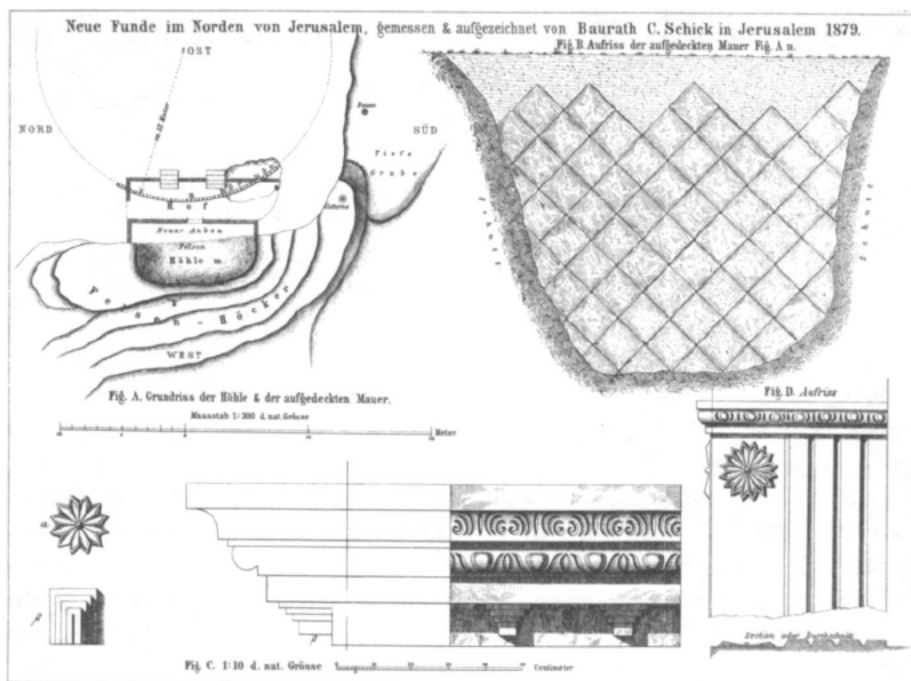


Fig. 1. Plan (A), detail of opus reticulatum wall (B) and architectural fragments (C-D) from Schick's excavations in 1879 (from *ZDPV* 2 [1879], Pl. III).

monuments were built along this road, the best known of which is the misnamed 'Tomb of the Kings'. Fortunately, no houses have been built on the site since 1893, but our work was limited by modern fences, minor structures and sewage installations. By prior agreement with the landlord, the soundings were filled in as soon as the excavations were finished in November 1977. We shall first describe our four main soundings and then discuss the structure (Figs. 3, 4).

THE MAIN SOUNDING, 101/102

This sounding began as two separate trenches, 101 and 102, which were later joined into one long trench measuring 19×2 m. (with a small annexe of 2×2 m.). Along most of the length of the trench, the top 1.5–1.8 m. consisted of five layers of earth (referred to below as the 'five upper layers'). From the top, the layers were grey, reddish-grey, reddish-brown, grey with many small gravel stones and grey with traces of red. Below these five upper layers, of which the uppermost ones are of recent date, we reached bedrock at either end of the trench, but not in the centre. At the northern end we noticed the top of an opus reticulatum wall level with the bedrock and at the point where the bedrock disappeared at this height. After further excavation, we found that

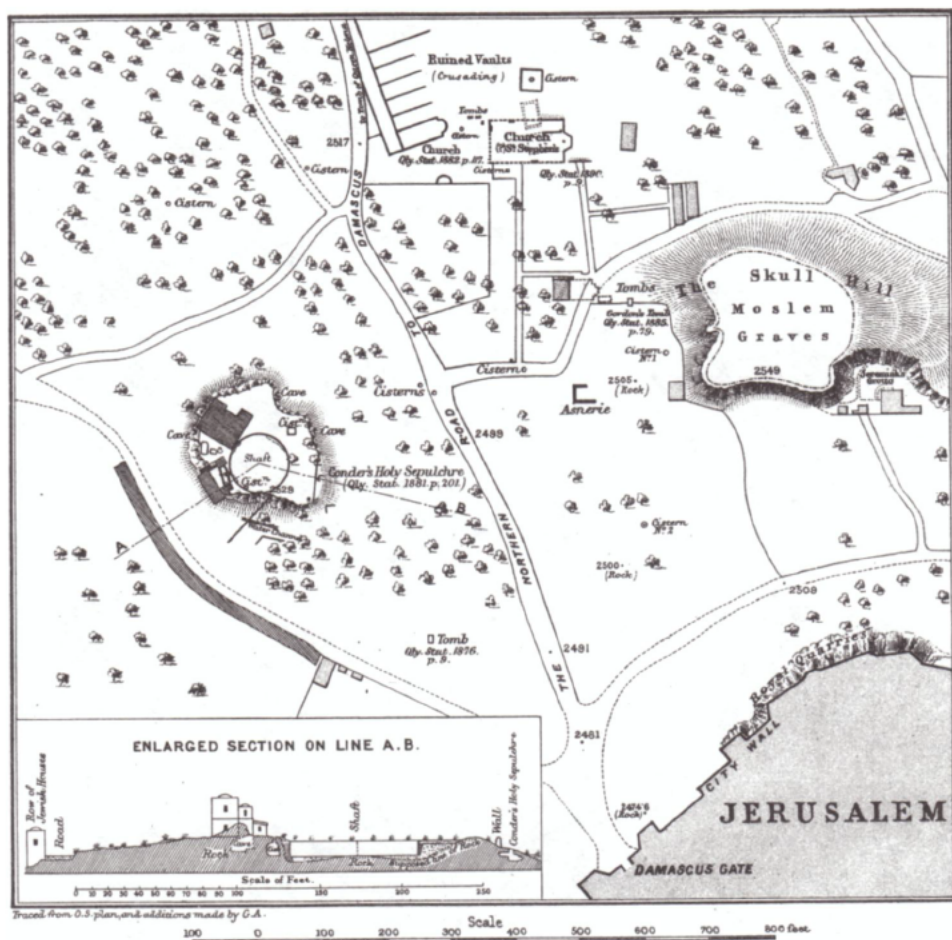


Fig. 2. Plan and section of Schick's excavations in 1893 (from *PEFQS* [1893], opp. p. 298).

this wall was preserved for a height of 2 m. and that at its base bedrock again appeared. It was thus clear that the bedrock has been quarried to leave a vertical scarp against which a 40 cm. thick facing of opus reticulatum was built. About 10 cm. of this facing consisted of worked stones and the other 30 cm. of a mixture of small field stones and mortar. At the top of this scarp, the bedrock rose slightly to the north, though rough levelling could be observed for 1.6 m. from the edge of the scarp. We assume that this levelling was done to provide a foundation for the circular wall that stood here. The assumed width of the wall is thus about 2 m. (1.6 m. of levelling and 40 cm. of facing). Below and to the south of this wall some rough levelling was done for about 1.3 m., but beyond that the bedrock seems to follow its natural contours. A pronounced step down,

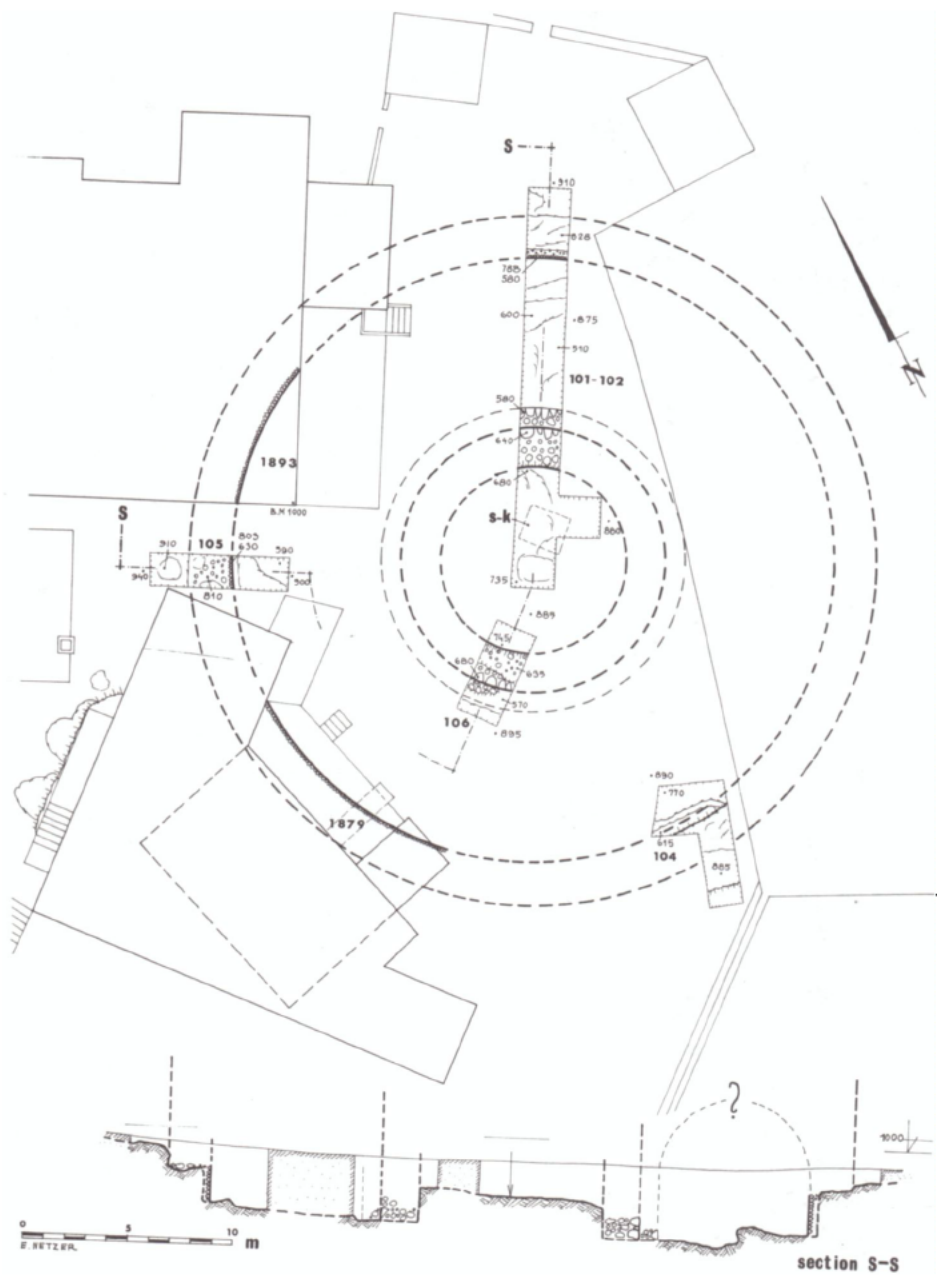


Fig. 3. Plan and combined section of the excavations.

85 cm. deep and probably natural, appeared 3.5 m. from the wall. We shall first discuss the stratification from the wall to this step and then from there south to the bedrock.

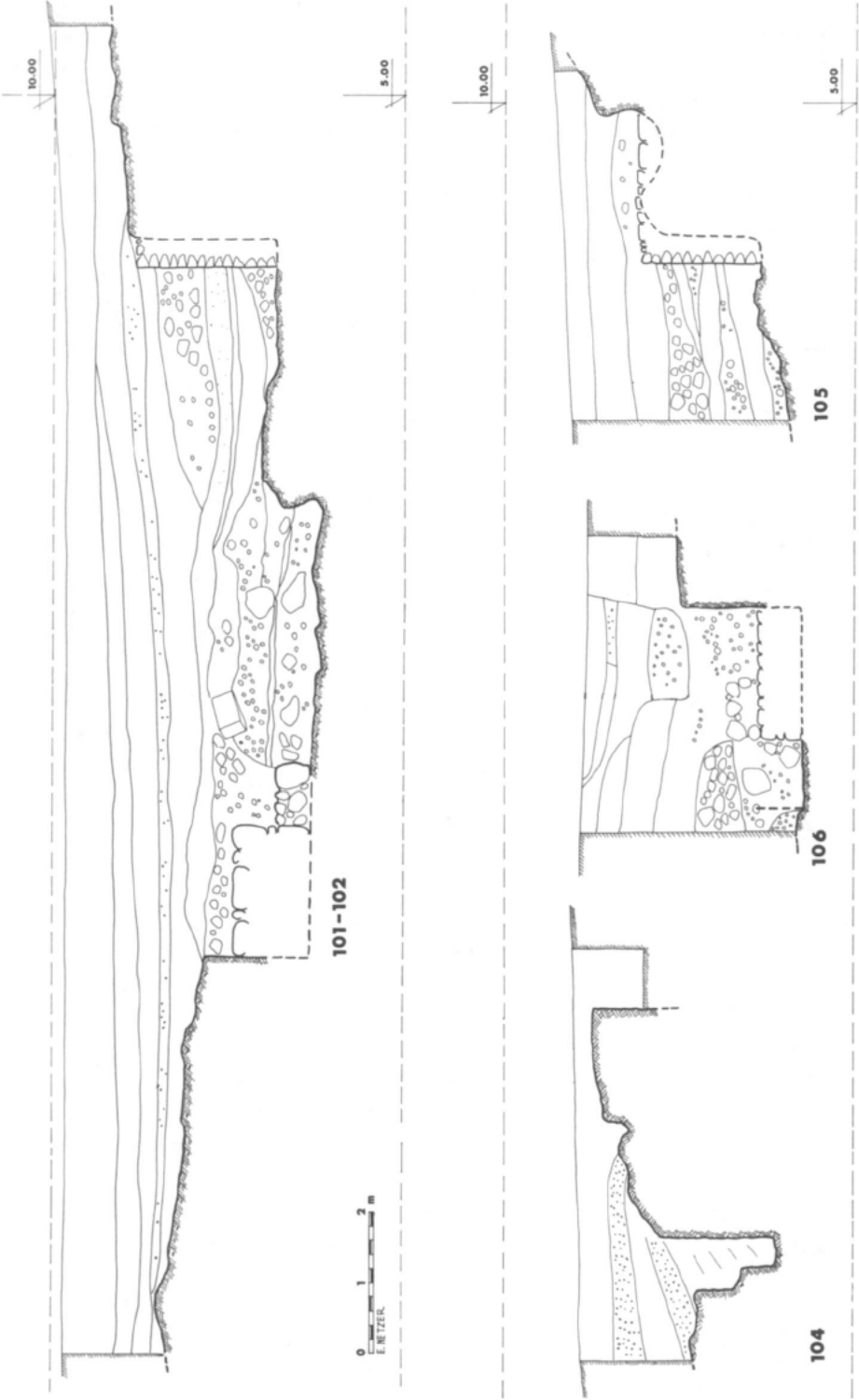


Fig. 4. Sections of Soundings 101/102, 104, 105 and 106.

Stratification from wall to step (Pl. 17:A). The lowest layer on the bedrock is up to 40 cm. deep, yellowish in colour and contains many opus reticulatum stones. The mortar with which the opus reticulatum wall was built was of a similar yellowish colour. Above this were three layers of earth without any sizeable stones, the lowest yellowish-brown, the middle yellow and the uppermost brownish-grey and containing some sherds. On top of these layers was a 60 cm. thick layer containing many field stones and a few stones of opus reticulatum; above this were the five upper layers described above.

The layer on the bedrock represents, we believe, the earliest stage of the destruction of the building. The other layer containing opus reticulatum stones probably represents a later stage of fairly systematic robbing, after which the building more or less disappeared below the surface.

Stratification from step to bedrock in the south. The stratigraphy here is somewhat different from the above. On the bedrock is a layer, 40–60 cm. deep, of crumbled soft rocks, some whitish, some yellowish, that may be debris from quarrying. Many field stones appeared in this layer, some of fair size. This material was probably deposited immediately after the construction of the building. Part of this layer was covered by a thin reddish layer, either a slight levelling of the area or possibly a working surface during construction. Above this was a stratum of yellowish quarrying debris containing many small field stones and a few larger ones. The top of this stratum is uneven, with a difference in elevation of as much as 30 cm. We cannot be certain whether this stratum was deposited during the construction of the building, or represents debris from a later period of destruction, though we tend to believe the former. Covering this layer are two layers of reddish-grey earth which are the continuation of two of the three earth layers that cover the debris on bedrock abutting the wall (see above). They are topped by the five upper layers. Special attention should be given to a large ashlar block (34 × 59 cm.), slightly convex and obviously originally from a circular wall, which was found in these layers.

One of the most important contributions of our new study was the discovery of an inner circular wall that we first noticed in this section at its southern end (Figs. 3, 4). Here the bedrock was again quarried into a vertical scarp, at this point 1.5 m. high, against which the circular wall was built. The main circular wall, 1.8 m. thick, was built of large field stones with a yellow mortar similar to that employed in the construction of the opus reticulatum wall. An outer face, 85 cm. thick, was added to this wall, also built of field stones but bound with grey mortar. Above this 'double' wall, evidence of robbing, particularly above the outer face, could clearly be seen. Covering this wall was a greyish-white layer in which were found most of the fragments of architectural elements. Above this we found the ubiquitous five upper layers.

To the south of the scarp against which this inner wall is built, the bedrock continues more or less horizontally to the end of the section, 6 m. to the south. It varies from 1.3 to 2 m. below the modern surface and is covered by the five upper layers. At the end of the trench was a rectangular pit measuring 1.5 × 2 m., filled with gravel that reached down to the bedrock. Almost certainly this was the sounding made by Schick while

trying to locate the centre of the building (s-k in Fig. 3). To the east of it, we found the edge of another pit filled with gravel, sherds and mosaic tesserae probably from the Byzantine period.

SOUNDING 106

In order to establish firmly the existence of the inner circular wall mentioned above, Sounding 106 (Figs. 3–4) was opened; it measured 2×4.5 m. and was south-west of Sounding 101/102. The upper layers were disturbed by a recent pit and thus it was hard to follow the stratification here. Again we found the scarp quarried out of the bedrock, at this point 1.7 m. high. This quarrying for the inner wall meant that a round 'island' of bedrock, 8.8 m. in diameter, was left standing. The inner wall here had been robbed as in Sounding 101/102, and little remained of the outer face (Pl. 17:B). Here again grey mortar was used instead of the yellow mortar used in the main wall. A few fragments of carved ashlar were found in this section, together with a complete ashlar 85 cm. long with a shallow concave face which had at one time been built into the inner face of a circular wall. As in Sounding 101/102, we found the yellowish crumbled soft rock on the bedrock.

SOUNDING 105

This sounding (Figs. 3–4), west of Sounding 101/102, measured 6.5×1.5 m. In the gap between the houses we again located the opus reticulatum wall that Schick had first noticed at the time of their construction. At the western end of the sounding, the bedrock is very close to the existing surface; east of this, we uncovered the top of the outer circular wall, 2.2 m. wide (Pl. 18:A). In fact what we uncovered represented the levelling process for the main wall; in places, sections of bedrock protruded through the layer of field stones held together with yellow mortar. Over this wall was a 20 cm. deep stratum of whitish material containing a few stones, probably remnants of robbing. The opus reticulatum face is here preserved to a height of 1.7 m. and was again built against a quarried scarp. East of the wall, many strata sloped slightly towards the centre of the building; three of them consisted of small field stones and gravel with a few opus reticulatum stones, separated by brown earth layers which contained some ash. The stone layers here also probably represent various stages of destruction and robbing. The bedrock below the wall was very irregular even close to the robbed wall.

SOUNDING 104

This sounding (Figs. 3–4) was made south-east of the main Sounding 101/102 and Sounding 106. It was about 6 m. long and varied in width from 1.5 to 3.5 m. Although we did not find the opus reticulatum wall here, we did find the scarp, 1.8 m. high at this point, cut out of the bedrock to take the wall. About 3.2 m. to the south is another scarp

facing south, perhaps that mentioned by Schick.⁸ Although no opus reticulatum stones were found *in situ*, two fallen ones were found in a groove in the bedrock carved along most of the length of the scarp exposed. The strata here consist of a number of slightly sloping layers, some of which were of gravel and sherds separated by layers of reddish earth. The bedrock from the bottom of the scarp towards the centre of the building is very uneven and rises rapidly. Thus it must be stressed that the scarp was intended only for the insertion of the facing and does not represent an attempt at levelling the whole area.

In contrast to the one circular wall observed by Schick and interpreted as a sunken court, we now have the foundations of two concentric circular walls. The outer wall had an internal diameter of 28.6 m. (not 24 m. as calculated by Schick); if this wall was about 2–2.3 m. thick, as we assume, its external diameter was about 33 m. The inner wall has an external diameter of 12.4 m. and an internal diameter of 8.8 m. identical to that of the above-mentioned rock 'island'. Attached to the exterior of this inner wall was a facing 85 cm. thick, giving an overall diameter of 14.1 m. There is an area 7.2 m. wide (or 8.05 m. if we do not take into account the outer face of the inner wall) between the two circular walls.

Our analysis of the sections gives a strong indication that no floor levels extended over the elevations exposed by us. The only explanation for this is that these walls were the foundations of an enclosed substructure below ground level. Thus it is not feasible that this was an open courtyard.

The opus reticulatum was found only on the inner face of the outer wall. We do not know how the outer face was built, but the concave ashlar block suggests that the inner wall above bedrock was not faced with opus reticulatum. Normally opus reticulatum forms the outer face of a concrete wall.⁹ Thus, the use of opus reticulatum here merely to face the bedrock is somewhat puzzling. Perhaps it was intended to prevent the penetration of moisture into the foundation.

We have no doubt that the building that stood on the foundation was built partially or totally of good-quality ashlar masonry, testimony for this being the discovery of four carved ashlar blocks which could only have come from a large circular building of about this diameter. Even the pattern of the chiselling on these stones corresponds to that on the opus reticulatum stones, indicating a common source. In this building then were incorporated two building techniques, the local use of ashlar and the imported Roman technique of opus reticulatum and concrete. A similar integration of techniques can be seen in Jericho, where opus reticulatum walls are incorporated with mud-brick walls.¹⁰

⁸ Schick (above, n. 1), p. 103.

⁹ M.E. Blake: *Ancient Roman Construction in Italy from the Prehistoric Period to Augustus*, Washington, 1947, *passim*; D.S. Robertson: *Handbook of Greek and Roman Architecture*, Cambridge, 1964, pp. 232–234.

¹⁰ E. Netzer: The Hasmonean and Herodian Winter Palaces at Jericho, *IEJ* 25 (1975), pp. 93–94; idem, The Winter Palaces of the Judean Kings at Jericho at the end of the Second Temple Period, *BASOR* 228 (1977), p. 9.

Thus in Jerusalem, as in Jericho, it appears that local and foreign builders worked side by side. However, we assume that here the outer faces of the walls of the building were of ashlar and that opus reticulatum was only employed in the substructure. The technique may also have been used to cast barrel-vaulted ceilings, as in Jericho,¹¹ instead of the local method of using curved voussoirs. An indirect hint at the existence of a barrel vault between the two walls is the existence of an outer face to the inner circular wall upon which the barrel vault might have rested; on the outer wall, it would have rested on the opus reticulatum facing.

The exposed remains are too sketchy to form a solid basis for a reconstruction of this building. We can only assume, from its dimensions and the thickness of the walls, that it was a fairly high building. The inner circle may originally have been higher than the outer one. The evidence is not adequate to determine whether there were any projections. The main difficulty in seeing the building as simply round is the existence of a higher scarp of bedrock now integrated into one of the modern houses (Fig. 2).

From the scanty remains, it is hard to draw any conclusions as to the building's function, but its position on a rocky knoll close to the main road leading to the north and outside a possibly contemporary gate gives a strong indication that it was a monument and mausoleum. A factor adding to this conclusion is that in Herod's time, when it was probably constructed (see below, pp. 171–175), it would have been outside the city-walls, as it is today. There is no archaeological or written evidence to suggest that this was part of a large complex such as a palace or a fortress. It is thus hard to see any function for this building besides that of a mausoleum, on the pattern of Roman round mausolea such as the tomb of Augustus.¹² The many tombs found in this neighbourhood also add weight to our conclusion.

It is possible that this building is Herod's monument, mentioned twice by Josephus in connection with the siege of Titus.¹³ This hypothesis seems acceptable because the building is, in all probability, one of Herod's projects and no definite alternative identification of Herod's monument has been made. In view of the fact that Herod and Augustus were contemporary, the typological similarity of our structure with the mausoleum of Augustus is of great interest.

THE POTTERY

The pottery, which was not found on stratified floors, can typologically be attributed to two periods, the Herodian and the Late Roman–Byzantine. The Herodian types (Fig. 5:1–11), found near the opus reticulatum walls in the lower layers, have parallels in

¹¹ Above, n. 9; Netzer (above, n. 10), *IEJ*, p. 93.

¹² J.M.C. Toynbee: *Death and Burial in the Roman World*, London, 1971, p. 144.

¹³ See *War*, V, 108, 507.

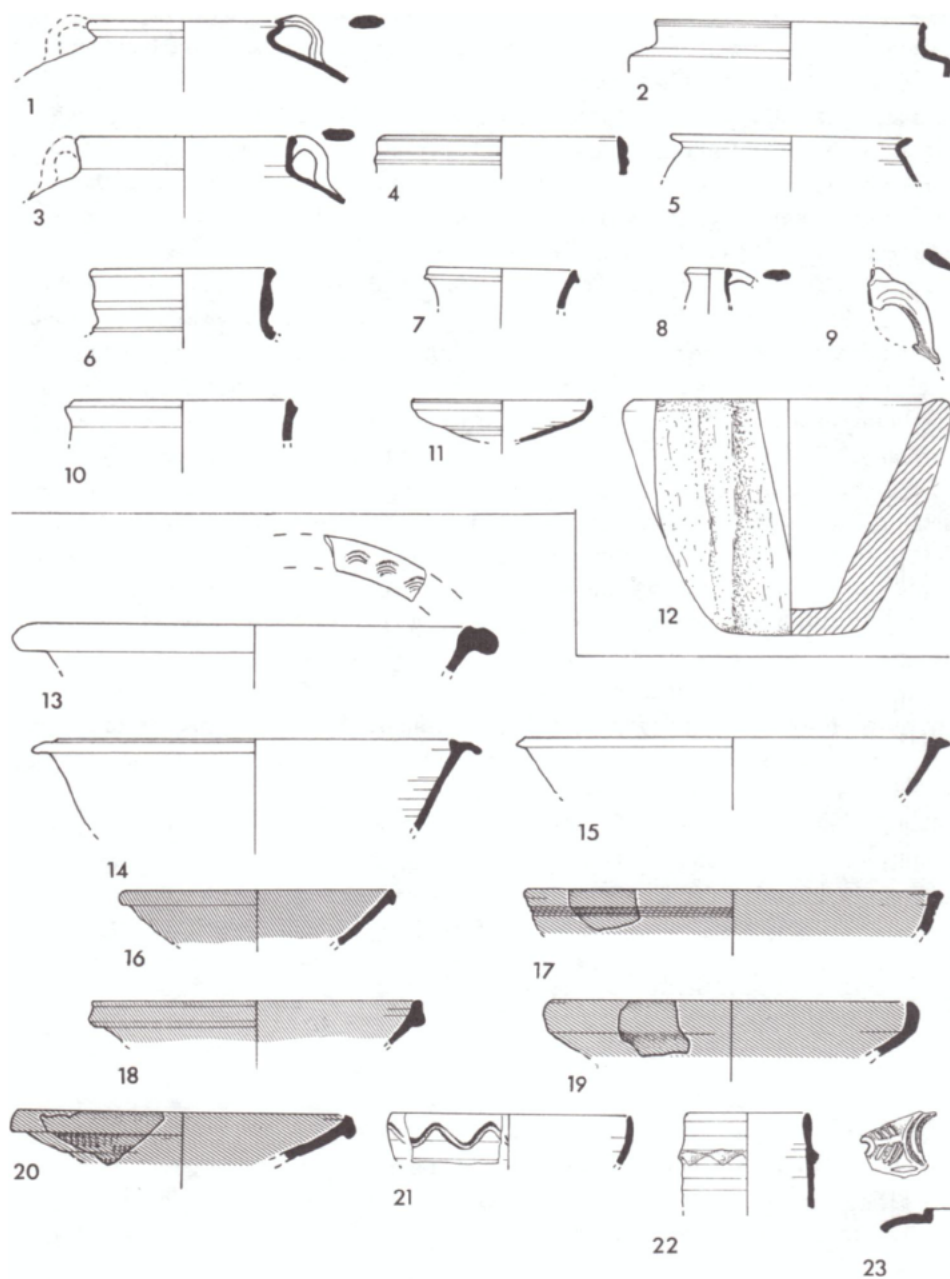


Fig. 5. Pottery from the excavations; 1-11 — Herodian; 13-28 — Late Roman-Byzantine; 12 — Herodian stone vessel.

Jerusalem as well as at other sites in Israel.¹⁴ The stone cup (Fig. 5:12) is also well known.¹⁵

The pottery of the Late Roman–Byzantine period (Fig. 5:13–23) is mostly of local manufacture with parallels in Jerusalem and elsewhere.¹⁶ A few fragments of imported vessels were also recovered.¹⁷ Among these are African Red Slip Ware, Form 99 (Fig. 5:16)¹⁸ and Form 63 (Fig. 5:17),¹⁹ while Late Roman C ('Phocaeen Red Slip Ware'²⁰) is represented by Form 3 (Fig. 5:18)²¹ and Form 1 (Fig. 5:19).²² The third kind of Late Roman fine ware found in Israel, Cypriote Red Slip Ware, is present in the Form 9 bowl (Fig. 5:20).²³

The lamp (Fig. 5:23) is of a type very common in the Byzantine period and has been reported from Jerusalem and other sites.²⁴

FRAGMENTS OF ARCHITECTURAL DECORATION²⁵

In the debris excavated in and around the building, several architectural fragments were found. These are made of local limestone, dressed with a toothed chisel in a rough and poor technique.²⁶ The following fragments deserve comment:

1. Cornice fragments of which survive a cavetto and the top of an ovolo moulding (Fig. 6:1), other fragments of the ovolo moulding (Fig. 6:2–3), and broken modillions from the cornice soffit (Fig. 6:4–5).
2. Fragment of acanthus foliage which may belong to a Corinthian capital.

¹⁴ L.Y. Rahmani: Jewish Rock-Cut Tombs in Jerusalem, *'Atiqot* (English Series) 3 (1961), p. 99, Fig. 5:1–25; R.P.R. de Vaux: Les grottes de Murabba'at et leurs documents, *RB* 60 (1953), p. 255 and Fig. 4 on p. 259.

¹⁵ Rahmani (above, n. 14), Fig. 5:26.

¹⁶ For bowls as in Fig. 5:13–15, see Hamilton (above, n. 7), Figs. 7:6; 9:3, 7; for bowls like Fig. 5:21, see *ibid.*, Fig. 8:3–4. These have been termed 'Fine Byzantine Wares', M. Gichon: Fine Byzantine Wares from the South of Israel, *PEQ* 106 (1974), pp. 119–139, especially p. 127, Figs. 4, 5. For a parallel to the jar in Fig. 5:22, see Hamilton (above, n. 7), Fig. 16:6.

¹⁷ I wish to thank Dr. Barbara L. Johnson of the Ben-Gurion University of the Negev who has dealt with these.

¹⁸ J.W. Hayes: *Late Roman Pottery*, London, 1972, pp. 152–155, Fig. 28; see also S. Loffreda: *Cafarnao II: La ceramica*, Jerusalem, 1974, Fig. 40:14.

¹⁹ Hayes (above, n. 18), p. 109, Fig. 18.

²⁰ For the suggestion of the name 'Phocaeen Red Slip Ware' instead of Late Roman C, see J.W. Hayes: *Supplement to Late Roman Pottery*, London, 1980, pp. 525–526.

²¹ Hayes (above, n. 18), pp. 329–338, Figs. 67–69; for a parallel from Jerusalem, see Sara Ben-Arieh and E. Netzer: Excavations along the 'Third Wall' of Jerusalem, 1972–1974, *IEJ* 24 (1974), Fig. 4:17 on p. 103.

²² Hayes (above, n. 18), pp. 325–327, Fig. 65.

²³ *Ibid.*, pp. 379–382, Figs. 81, 82.

²⁴ Hamilton (above, n. 7), Fig. 10:5–8; Renate Rosenthal and Renée Sivan: *Ancient Lamps in the Schloessinger Collection* (*Qedem* 8), Jerusalem, 1978, pp. 116–120.

²⁵ This section was contributed by Ronny Reich of the Department of Antiquities and Museums.

²⁶ It is probable that these entablature fragments were meant to be partially covered with a thin, smooth layer of stucco, a technique common in the Herodian palaces of the Second Temple period.

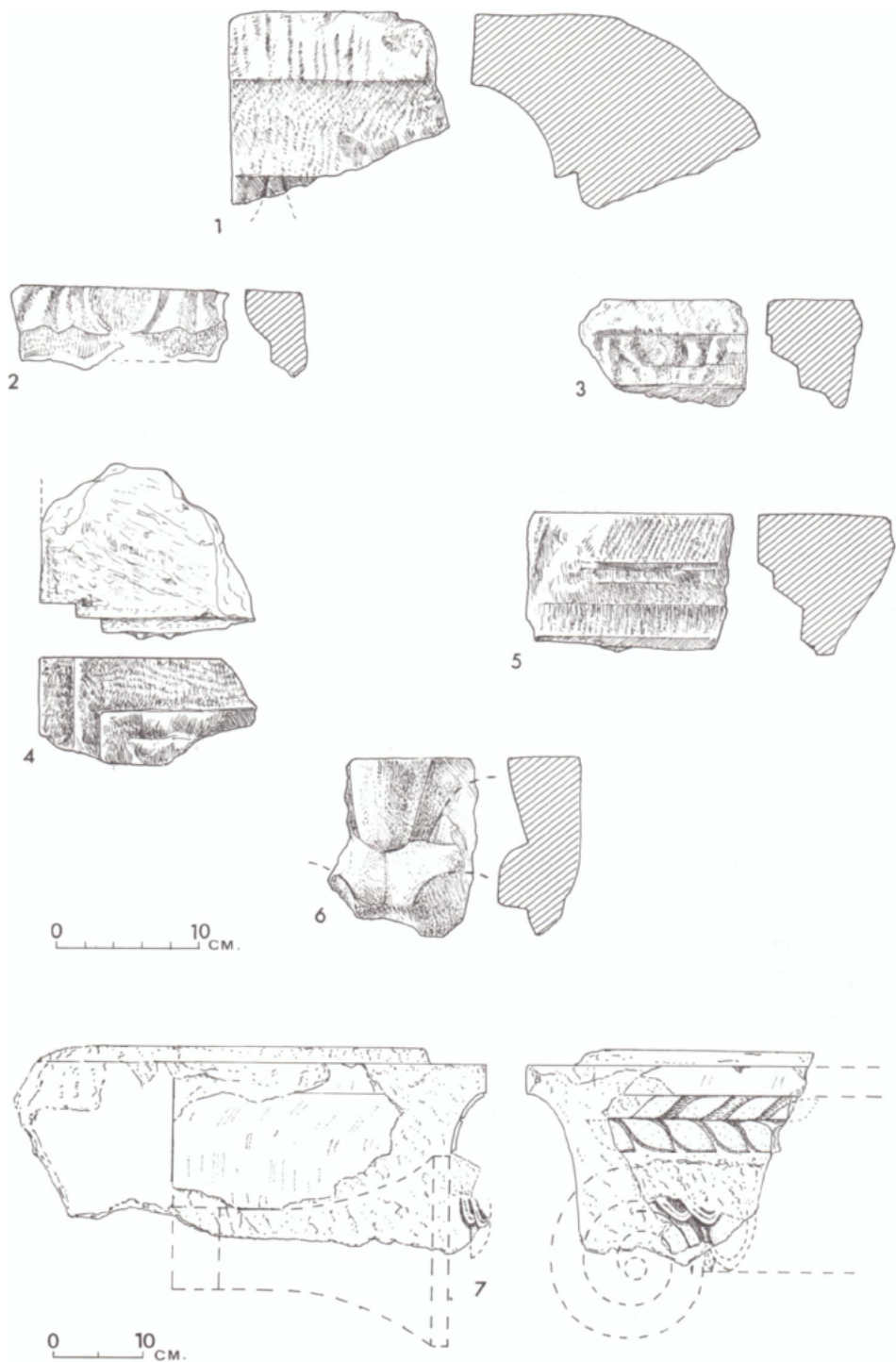


Fig. 6. Architectural fragments from the excavations.

3. Fragment of a Corinthian capital(?) (Fig. 6:6). This fragment is difficult to identify. It is probably part of the helix and calyx on which a cone-shaped object rests. It may belong to a capital of the type found in the Jewish Quarter of Jerusalem²⁷ and the 'Tomb of the Kings',²⁸ both from the Second Temple period.

4. Small fragment of an Ionic capital (Fig. 6:7). A small section of the left volute and an adjacent portion of the echinus are preserved. At this point two small palmette leaves which cover the first egg of the echinus can be distinguished. It is possible to estimate only roughly the column's diameter at about 35–40 cm.

On the preserved section of the left pulvinus, there are signs that it terminates at its centre, thus indicating an engaged column, presumably decorating an entrance or a wall. On the cavetto below the abacus a branch of leaves is carved in high relief (Pl. 18:B). This area on the Ionic capital is usually left plain. Close parallels could not be found and one must assume that it was a mannerism of a local artisan.

To the architectural fragments listed above, two fragments published by Schick²⁹ should be added.

5. Fragment of a cornice (Fig. 1, below centre) decorated as follows (from the top downwards): broad band; cavetto decorated with a wide spreading palmette; band; ovolo; soffit decorated with alternating modillions and twelve-petalled rosettes. A cornice of similar design and date was found nearby in the 'Tomb of the Kings'.

6. Fragments of a frieze (Fig. 1, below right) decorated with: band; ovolo; band; frieze with metope bearing a sixteen-petalled rosette and a four-segmented triglyph. The fragment terminates at its right side and it is obvious that it faced the side of the building. On the façade the same pattern continued, as attested by another rosette seen on Schick's drawing, in section. The Doric frieze with triglyph and rosette in the metope is typical of mausolea in Jerusalem in the Second Temple period.³⁰ However, the arrangement of its elements is somewhat unusual. It contains four- rather than three-segmented triglyphs, it terminates at the corner with a metope rather than a triglyph and the rosette occupies only a small part of the metope rather than a central position, as in all other Doric friezes in Jerusalem.

We must assume that the two fragments, cornice and frieze, were part of the same entablature, carried by several Ionic columns. One possibility for connecting these fragments with the round building would be to reconstruct a portico projecting from one of its sides.

²⁷ N. Avigad: *The Upper City of Jerusalem*, Jerusalem, 1980, pp. 150–151 (Hebrew).

²⁸ M. Kon: *The Tombs of the Kings*, Tel Aviv, 1947, Pl. XIV:b (Hebrew). This fragment shows signs of better workmanship than the others, similar to that of the above-mentioned parallels.

²⁹ Schick (above, n. 1), Pl. III, Figs. C, D. Schick pointed to the rough and imprecise workmanship. He suggested that the fragments were connected with a synagogue or the church of St. Stephen.

³⁰ N. Avigad: *The Rock-Carved Façades of the Jerusalem Necropolis*, *IEJ* 1 (1951), pp. 96–106; idem, *Ancient Monuments in the Kidron Valley*, Jerusalem, 1954, pp. 97–98 (Hebrew).



B: Sounding 106, looking north-east. In background, scarp quarried from bedrock, with remains of wall at its front.



A: Northern part of Sounding 101/102, looking north-north-west. Note step in bedrock in front of wall.

PLATE 18



B: Architectural fragment.

A: Sounding 105, looking west-north-west, top of opus reticulatum wall.

OPUS RETICULATUM BUILDING IN JERUSALEM



C: Locus 15 after excavation; note broken quern *in situ*.